

438
(1979)

00680

00680

NOAA FORM 76-35

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

DESCRIPTIVE REPORT

Type of Survey .. Shoreline & Harbor Chart Mapping

Job No. .. CM-7313 Map No. .. TP-00680...

Classification No. Final Edition No. ...].

LOCALITY

State .. Minnesota & Wisconsin

General Locality .. West End of Lake Superior

Locality Duluth-Superior Harbor

1970 TO 1979

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	
PHOTOGRAMMETRIC OFFICE Photogrammetry Division Rockville, Md.		SURVEY TP- <u>00580</u> MAP EDITION NO. <u>1</u> MAP CLASS <u>Final</u> JOB <u>PH- CM-7313</u>	
OFFICER-IN-CHARGE Cdr. James Collins		LAST PRECEDING MAP EDITION TYPE OF SURVEY ☐ ORIGINAL ☐ RESURVEY ☐ REVISED JOB PH- _____ MAP CLASS _____ SURVEY DATES: 19__ TO 19__	

I. INSTRUCTIONS DATED	
1. OFFICE	2. FIELD
Instructions - Revision of Chart 966 CM-7313, 10/15/76 Instructions - Aerotriangulation CM-7313, 1/3/77	

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) Int. Great Lakes Datum (IGLD) 1955 is 601.66 Ft. or +1.66 ft. Lake Superior Low Water Datum Duluth Gage.
3. MAP PROJECTION Polyconic	4. GRID(S) STATE _____ ZONE _____
5. SCALE 1:15,000 (Inset 1:30,000)	STATE _____ ZONE _____

III. HISTORY OF OFFICE OPERATIONS			
OPERATIONS	NAME	DATE	
1. AEROTRIANGULATION BY METHOD: Analytic LANDMARKS AND AIDS BY	K. Baker	5/77	
2. CONTROL AND BRIDGE POINTS PLOTTED BY METHOD: Meter Bar & Beam Pts. CHECKED BY	F.R. Watts	8/70	
	F.R. Watts	8/70	
3. STEREOSCOPIC INSTRUMENT PLANIMETRY BY COMPILED BY CHECKED BY	F.R. Watts	8/74	
	F.R. Watts	8/74	
INSTRUMENT: Belfort	CONTOURS BY	NA	
SCALE: 1:4,000 (Inset 1:6,000)	CHECKED BY		
4. MANUSCRIPT DELINEATION PLANIMETRY BY	A. Barbuzinski	9/74	
	CHECKED BY	F.R. Watts	9/74
METHOD: Stereo Model Mosaic	CONTOURS BY	NA	
	CHECKED BY		
SCALE: 1:15,000 (Inset 1:30,000)	HYDRO SUPPORT DATA BY	NA	
	CHECKED BY		
5. OFFICE INSPECTION PRIOR TO FIELD EDIT BY	R. Kornspan	2/77	
	H. Lucas	4/79	
6. APPLICATION OF FIELD EDIT DATA CHECKED BY	R. Kornspan	4/79	
7. COMPILATION SECTION REVIEW BY	F.R. Watts	4/79	
8. FINAL REVIEW BY	F.R. Watts	4/10/	
9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH BY	F.R. Watts	4/11	
10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH BY	F.R. Watts	4/12	
11. MAP REGISTERED - COASTAL SURVEY SECTION BY	<i>24. 20. M. W. 1977</i>	7	

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COMPILATION SOURCES

1. COMPILATION PHOTOGRAPHY

CAMERA(S) AF Geocon 1 151.862 mm Focal Length Wild RC-8 152.29mm Focal length		TYPES OF PHOTOGRAPHY LEGEND		TIME REFERENCE	
TIDE STAGE REFERENCE* Not applicable		(C) COLOR (P) PANCHROMATIC (I) INFRARED		ZONE Central	☐ STANDARD
☐ PREDICTED TIDES ☐ REFERENCE STATION RECORDS ☐ TIDE CONTROLLED PHOTOGRAPHY				MERIDIAN 90th	☒ DAYLIGHT
NUMBER AND TYPE	DATE	TIME	SCALE	Lake	STAGE OF TIDE Level
70 AF(C) 001-041	8/24/70		1:20,000	601.26-600=	+1.26ft
73 L(C) 8156-8161	8/7/73	1102	1:30,000	}	601.94-600= +1.94ft
73 L(C) 8162-8169	8/7/73	1117	1:30,000		
74 L(C) 4066-4074	7/5/74	1311	1:30,000		
				601.66-600=	+1.66ft

REMARKS * Shoreline is based on the visible line on the photographs (International Great Lakes Datum, IGLD).

This photography was lost during the move after the Lake Survey Center was closed down.

2. SOURCE OF MEAN HIGH-WATER LINE:

Not applicable

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

Low water datum based on Duluth gage

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

5. FINAL JUNCTIONS

NORTH	EAST	SOUTH	WEST
-----	----- Inapplicable -----	-----	-----

REMARKS

This is an entire harbor chart area.

Tp-00680

HISTORY OF FIELD OPERATIONS

I. ☒ FIELD INSPECTION OPERATION☐ FIELD EDIT OPERATION

OPERATION	NAME	DATE
1. CHIEF OF FIELD PARTY		
2. HORIZONTAL CONTROL RECOVERED BY	J. Ropes	7/71
ESTABLISHED BY	J. Ropes	7/71
PRE-MARKED OR IDENTIFIED BY	J. Ropes	7/71
3. VERTICAL CONTROL RECOVERED BY	NA	
ESTABLISHED BY	NA	
PRE-MARKED OR IDENTIFIED BY	NA	
4. LANDMARKS AND AIDS TO NAVIGATION RECOVERED (Triangulation Stations) BY	NA	
LOCATED (Field Methods) BY	NA	
IDENTIFIED BY	NA	
5. GEOGRAPHIC NAMES INVESTIGATION TYPE OF INVESTIGATION ☐ COMPLETE ☐ SPECIFIC NAMES ONLY ☒ NO INVESTIGATION		
6. PHOTO INSPECTION CLARIFICATION OF DETAILS BY	NA	
7. BOUNDARIES AND LIMITS SURVEYED OR IDENTIFIED BY	NA	

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED

NA

2. VERTICAL CONTROL IDENTIFIED

NA

PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION

3. PHOTO NUMBERS (Clarification of details)

NA

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

NA

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME

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

7. SUPPLEMENTAL MAPS AND PLANS

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

COMPLETION REPORT - NATIONAL ARCHIVES
BRIDGING PHOTOGRAPHS " "
FIELD EDIT ORALID " "
" " PHOTOGRAPHS " "

TP-00680

HISTORY OF FIELD OPERATIONS

I. ☐ FIELD INSPECTION OPERATION☒ FIELD EDIT OPERATION

OPERATION	NAME	DATE
1. CHIEF OF FIELD PARTY	Robert S. Tibbetts	
2. HORIZONTAL CONTROL RECOVERED BY	NA	
ESTABLISHED BY	NA	
PRE-MARKED OR IDENTIFIED BY	NA	
3. VERTICAL CONTROL RECOVERED BY	NA	
ESTABLISHED BY	NA	
PRE-MARKED OR IDENTIFIED BY	NA	
4. LANDMARKS AND AIDS TO NAVIGATION RECOVERED (Triangulation Stations) BY		
LOCATED (Field Methods) BY		
IDENTIFIED BY	Robert S. Tibbetts	
5. GEOGRAPHIC NAMES INVESTIGATION TYPE OF INVESTIGATION ☐ COMPLETE ☒ SPECIFIC NAMES ONLY BY ☐ NO INVESTIGATION	Robert S. Tibbetts	
6. PHOTO INSPECTION CLARIFICATION OF DETAILS BY	NA	
7. BOUNDARIES AND LIMITS SURVEYED OR IDENTIFIED BY	NA	

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED

NA

2. VERTICAL CONTROL IDENTIFIED

NA

PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION

3. PHOTO NUMBERS (Clarification of details)

73 L 8156-8158-8160-8166 and 74 L 4068-4070 and 4072

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

NA

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME

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

7. SUPPLEMENTAL MAPS AND PLANS

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

TP-00680

RECORD OF SURVEY USE

I. MANUSCRIPT COPIES

COMPILATION STAGES			DATE MANUSCRIPT FORWARDED	
DATA COMPILED	DATE	REMARKS	MARINE CHARTS	HYDRO SUPPORT
Class III Manuscript	Sept. 1974	Cronoflex copy given to Area 7 for trans. to C.G. at Duluth		
Final reviewed prior to registration	Apr. 1979	Class I map Field Edit applied	5-2-79	

II. LANDMARKS AND AIDS TO NAVIGATION

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

NUMBER	CHART LETTER NUMBER ASSIGNED	DATE FORWARDED	REMARKS
	438	5-2-79	Forms of nonfloating aids to navigation and landmarks for chart to be revised.

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:

4. ☐ DATA TO FEDERAL RECORDS CENTER. DATE FORWARDED: _____

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	

TP-00680

Duluth-Superior Harbor, Minnesota & Wisconsin

April 1979

The purpose of this survey is to provide a shoreline and harbor map for nautical chart compilation and maintenance. This map is Duluth-Superior Harbor, Minnesota and Wisconsin, at a scale of 1:15,000 with an inset at 1:30,000 scale which is the upper St. Louis River.

Field operation to establish horizontal control were performed in July 1971. The final adjustment to the data was completed in August 1972. Field edit operations were completed in December 1978.

Four strips of natural color photography were flown at 1:20,000 scale by the U.S. Air Force in August 1970. Two supplemental strips of natural color was flown in September 1973, by NOS at 1:30,000 scale. Four additional strips were flown prior to field edit in 1978 at 1:20,000 scale, also in natural color.

A Belfort (Kelsh type) stereoplotter, using the 1:20,000 and 1:30,000 scale photography, was used to compile this map. All stereo models were photographically reduced with a precision line camera and paneled to the chart projection. Stablebase negative and positive copies were prepared as the final compilation.

Final review was completed in April 1979 by the Quality Control Group (Rockville Office). All work performed was found to be satisfactory.

INSET

Photogrammetric Plot Report
Duluth-Superior Harbor

Job CM-7313

May 1977

Area Covered

The area covered by this report is the Duluth, Minnesota, Superior, Wisconsin Harbor covered by Lake Survey Chart 966, 1:15,000 scale, including the Upper St. Louis River (1:30,000 inset).

Method

Three strips (1:30,000) of bridging photography were measured by analytic aerotriangulation methods. The three strips of photography were controlled by field and office identified control.

Tie points were used on all strips to insure an adequate junction during strip adjustments.

A manuscript will be plotted on the coradomat for revision purposes to the Lake Survey Chart, for landmarks, aids to navigation, and control verification.

Adequacy of Control

Several triangulation stations, flagstaffs in particular, were not visible on the photography.

The majority of the 80 additional control points intersected in the field were accurate within NOS standards.

There was no control in the area of the dam on the St. Louis River so only points in the eastern half of the inset map are adjusted.

Supplemental Data

The USGS quadrangles were used to provide vertical control for the strip adjustments.

Photography

The coverage, overlap and quality of the photography were accurate for the job.

Submitted by:

Karin Baker
Karin Baker

Approved & Forwarded:

John D. Oerrow Jr.
Chief, Aerotriangulation Section

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CONTROL USED IN STRIP ADJUSTMENT

STRIP 1

	<u>X</u>	<u>ERROR</u>	<u>Y</u>
✓ 67111	- 1.6		- 2.5
✓ 67112	- 1.1		- 2.2
✓ 68129	.4		- .8
✓ 69114	- 2.6		1.3
✓ 71111	1.1		- .99
72124 <i>NOT IN CHART AREA</i>	.22		.56

STRIP 2

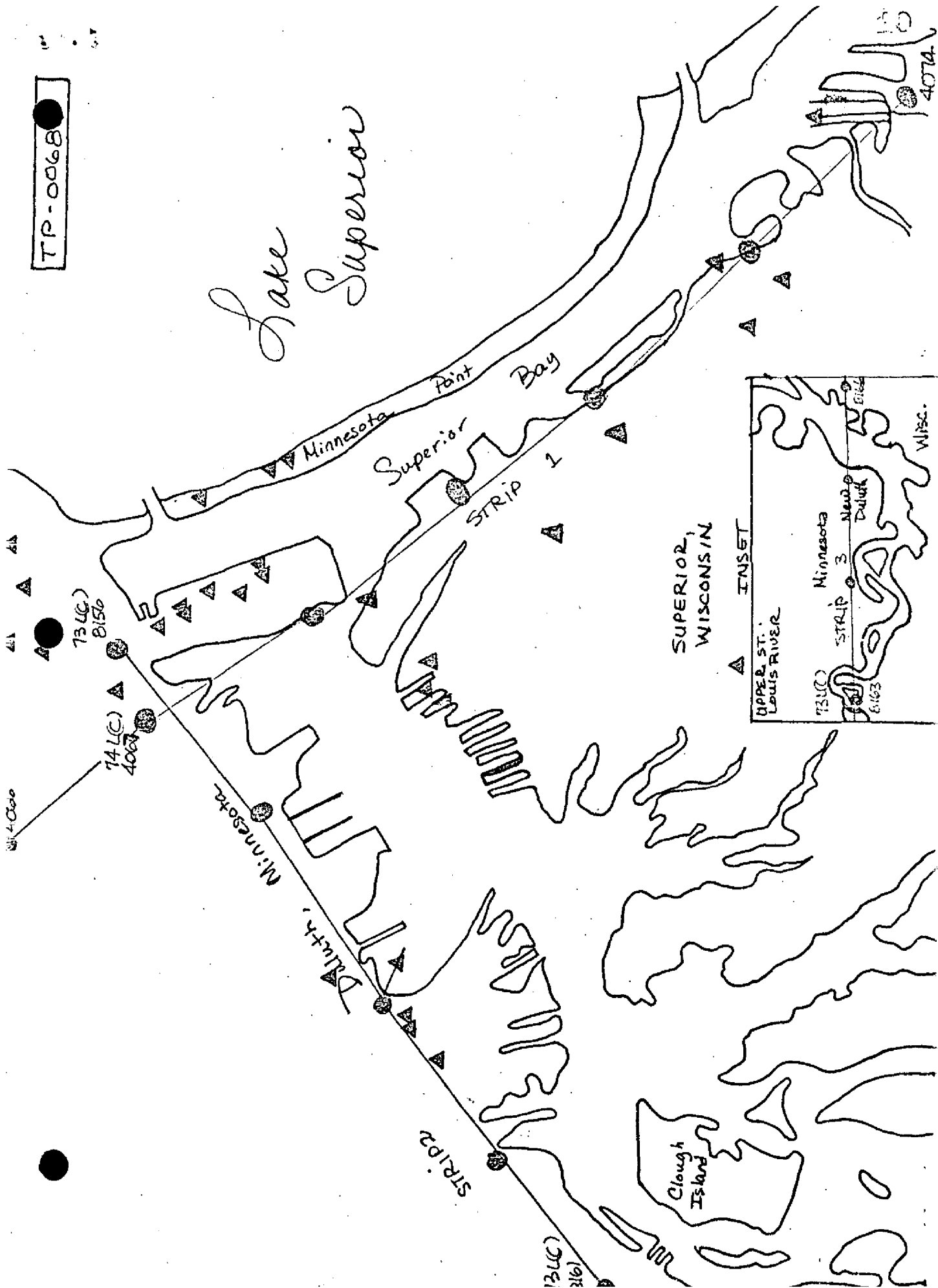
✓ 67111	- .05		- .56
✓ 158110	.24		- 2.4
✓ 158114	- .19		2.8
✓ 161125	- .0		.19

STRIP 3

✓ 161125	- .00		.00
✓ 165122	- 0.0		0.0

TP-0068

Lake Superior



DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY		
	CM 7313	NA 1927			
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRIANGULATION POINT NUMBER	COORDINATES IN FEET STATE MAINE ^{NEW YORK} ZONE NORTH ^{NORTH}	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	REMARKS
DULUTH, TV STATION WBOC		67112	X= 1470 506.67 ✓ Y= 599 190.45 ✓	φ 46-47-25.776 ✓ λ 92-06-50.093 ✓	Good ✓
MAST 1952 R 1965	Δ	67114	X= 1472 646 ✓ Y= 598 135 ✓	φ 46-47-15.92 ✓ λ 92-06-18.96 ✓	NOT ON CHART
DULUTH, CATHOLIC OR ME CHURCH SPIRE, 1905	Δ	67115	X= 1473 987 ✓ Y= 598 577 ✓	φ 46-47-20.63 ✓ λ 92-05-59.86 ✓	Good ✓
DULUTH, CENTRAL HIGH SCHOOL, CUPOLA SPIRE, 1905 R 1974	Δ	67111	X= 1467 659.83 ✓ Y= 594 038.16 ✓	φ 46-46-34.188 ✓ λ 92-07-29.009 ✓	Good ✓
DULUTH, EXINGER MEMORIAL TOWER 1952, R 1974	Δ	67113	X= 1470 221 ✓ Y= 597 402 ✓	φ 46-47-08.05 ✓ λ 92-06-53.51 ✓	NOT ON CHART
DULUTH, WEATHER BUREAU SIGNAL TOWER 1905		67116	X= 1471 138 ✓ Y= 591 651 ✓	φ 46-46-11.55 ✓ λ 92-06-38.14 ✓	Good ✓
DULUTH, GENERAL ELEVATOR, FLAGSTAFF 1952		68111	X= 1472 158 ✓ Y= 590 135 ✓	φ 46-45-54.86 ✓ λ 92-06-22.92 ✓	NOT ON CHART
DULUTH, ELEVATOR H STACK 1921		68112	X= 1472 357.26 ✓ Y= 590 261.93 ✓	φ 46-45-58.162 ✓ λ 92-06-20.107 ✓	NOT ON CHART
DULUTH, NORRIS GRAIN CO. ELEVATOR FLAGSTAFF 1952		68115	X= 1473 313.23 ✓ Y= 588 538.46 ✓	φ 46-45-41.406 ✓ λ 92-06-05.725 ✓	Good ✓
DULUTH, OCCIDENT ELEVATOR FLAGSTAFF 1952		68116	X= 1473 731.59 ✓ Y= 588 106.00 ✓	φ 46-45-37.248 ✓ λ 92-05-59.554 ✓	NOT ON CHART
DULUTH, PV ELEVATOR FLAGSTAFF 1952 R 1974			COMPUTATION CHECKED BY	DATE	
LISTED BY S. S. S. S. S.		DATE 1 Apr 77	LISTING CHECKED BY	DATE	
HAND PLOTTING BY		DATE	HAND PLOTTING CHECKED BY	DATE	

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.		JOB NO.		GEODEIC DATUM		ORIGINATING ACTIVITY	
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRI-ANGULATION POINT NUMBER	COORDINATES IN FEET STATE <u>WISCONSIN</u> ZONE <u>NORTH</u>	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE		REMARKS	
(11) DULUTH, CAPITOL ELEVATOR, FLAGSTAFF, 1952		68113	X= 1473.173 ✓ Y= 589.395 ✓	φ 46-45-49.82 ✓ λ 92-06-08.07 ✓			Not on Chart
(12) DULUTH, PEABODY ELEVATOR CO., STACK 1921		68114	X= 1473.993.57 ✓ Y= 588.236.29 ✓	φ 46-45-38.602 ✓ λ 92-05-55.842 ✓			Good ✓
(13) DULUTH, U.S. COAST GUARD, LOOKOUT, TOWER, 1952		68117	X= 1476.403.28 ✓ Y= 592.458.74 ✓	φ 46-46-20.893 ✓ λ 92-05-22.839 ✓			Good ✓
(14) DULUTH, POLICE RADIO STATION, KWA. 939, MAST 1952		68118	X= 1478.810.94 ✓ Y= 588.429.38 ✓	φ 46-45-41.758 ✓ λ 92-04-46.747 ✓			Good ✓
(15) DULUTH, PARK POINT SCHOOL, STACK, 1921		68119	X= 1479.149 ✓ Y= 587.311 ✓	φ 46-45-30.81 ✓ λ 92-04-41.47 ✓			Good ✓
(16) INTERSTATE BRIDGE, DRAW SPAN OPERATORS, TOWER, 1905		68120	X= 1473.634.78 ✓ Y= 584.163.60 ✓	φ 46-44-58.322 ✓ λ 92-05-59.447 ✓			Not on Chart
(17) SUPERIOR, FARMERS UNION ELEVATOR, FLAGSTAFF 1952, R. 1974		69111	X= 1473.133.58 ✓ Y= 580.768.64 ✓	φ 46-44-24.692 ✓ λ 92-06-05.352 ✓			Good
(18) SUPERIOR, ELEVATORS, GARY, SOUTH GABLE 1905, R. 1935		69112	X= 1471.207.58 ✓ Y= 581.291.16 ✓	φ 46-44-29.344 ✓ λ 92-06-33.194 ✓			Not on Chart
(19) SUPERIOR, GOLBE ELEVATOR CO., STACK, 1921		69113	X= 1471.895 ✓ Y= 581.640 ✓	φ 46-44-32.97 ✓ λ 92-06-23.46 ✓			Good
(20) DULUTH, COLLEGE CLOCK TOWER, 1952, R. 1974	Δ	158114	X= 1458.947.29 ✓ Y= 584.144.22 ✓	φ 46-44-54.245 ✓ λ 92-09-30.273 ✓			Good -
COMPUTED BY	DATE	COMPUTATION CHECKED BY	DATE				
LISTED BY	DATE	LISTING CHECKED BY	DATE				
HAND PLOTTING BY	DATE	HAND PLOTTING CHECKED BY	DATE				

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NOAA FORM 76-41 (6-75)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION			
DESCRIPTIVE REPORT CONTROL RECORD					
MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY		
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRIANGULATION POINT NUMBER	COORDINATES IN FEET STATE <u>MINNESOTA</u> ZONE <u>NORTH</u>	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	REMARKS
(20) DULUTH, UNION MATCH CO., CUPOLA 1904		158113	x= 1458 379.80 ✓ y= 579 791.00 ✓	φ 46-44-11.139 ✓ λ 92-09-36.719 ✓	Not on Chart
(22) DULUTH, UNION MATCH CO. WATER TANK 1904 R 1944		158112	x= 1458 504.76 ✓ y= 579 735.22 ✓	φ 46-44-10.622 ✓ λ 92-09-34.904 ✓	Not on Chart
(23) DULUTH, MINNESOTA POWER AND LIGHT CO. STACK 1952 R 1958		158111	x= 1460 413.75 ✓ y= 579 430.21 ✓	φ 46-44-08.124 ✓ λ 92-09-07.389 ✓	Good ✓
(24) WEST DULUTH, IRVING SCHOOL, CHIMNEY 1905	Δ	158110	x= 1456 253 ✓ y= 579 577 ✓	φ 46-44-08.416 ✓ λ 92-10-07.16 ✓	Not on Chart
(25) SUPERIOR, ST. MARY'S HOSPITAL, SPIRE 1905 R 1935		69114	x= 1475 739 ✓ y= 575 467 ✓	φ 46-43-33.06 ✓ λ 92-05-25.96 ✓	STACK ON CHART ✓
(26) EAST SUPERIOR, LINCOLN SCHOOL, FLAGSTAFF, 1905 R 1935		110111	x= 1481 284.67 ✓ y= 573 142.65 ✓	φ 46-43-11.555 ✓ λ 92-04-05.512 ✓	Not on Chart
(27) SUPERIOR, ELEVATOR K, STACK, 1905 R 1935	Δ	11111	x= 1486 771.87 ✓ y= 570 272.17 ✓	φ 46-42-44.633 ✓ λ 92-02-45.724 ✓	Not on Chart
(28) EAST SUPERIOR, CHURCH, PRESBYTERIAN, 1905 R 1935	Δ	11112	x= 1484 209.82 ✓ y= 568 851.96 ✓	φ 46-42-29.966 ✓ λ 92-03-21.950 ✓	Not on Chart
(29) SUPERIOR, ST. FRANCIS XAVIER CATH. CHURCH, SPIRE (STEEPLE) 1952		11113	x= 1486 460.58 ✓ y= 566 984.97 ✓	φ 46-42-12.117 ✓ λ 92-02-48.974 ✓	Good
(30) SUPERIOR, WEATHER BUREAU, SIGNAL TOWER 1905 R 1935		11114	x= 1492 328.50 ✓ y= 566 507.14 ✓	φ 46-42-08.886 ✓ λ 92-01-24.635 ✓	Not on Chart
COMPUTED BY	DATE	COMPUTATION CHECKED BY	DATE		
LISTED BY	DATE	LISTING CHECKED BY	DATE		
HAND PLOTTING BY	DATE	HAND PLOTTING CHECKED BY	DATE		

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	JOB NO.	STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRI-ANGULATION POINT NUMBER	COORDINATES STATE ZONE	GEODETIC DATUM	ORIGINATING ACTIVITY	REMARKS
	CM 7313							
		SUPERIOR, ELEVATOR T, SOUTH GABLE, 1905		3101 013	X= 1469840 ✓ Y= 568887 ✓	NA 1927 CONSIN NORTH		Not on chart
		SUPERIOR, RADIO STATION WEBB, SOUTH MAST 1952		32102 16311	X= 1471419.40 ✓ Y= 562950.98			Not on chart
		SUPERIOR DULUTH HARBOR - SOUTH ENTRANCE LT		67502 3341	X= ✓ Y= ✓			Good
		DULUTH HARBOR - NORTH ENTRANCE LT		3442 67501	X= ✓ Y= ✓			Good
		DULUTH HARBOR - N. CORNER JENCO'S DOCK		3543 67402	X= ✓ Y= ✓			DELETE
		DULUTH HARBOR - N. CORNER SDC LINE RR DOCK		3644 67401	X= ✓ Y= ✓			DELETE
		DULUTH HARBOR - HALLE H DOCK		3745 68406	X= ✓ Y= ✓			DELETE
		DULUTH HARBOR - CAPITOL ELEVATOR STACK		68405 3846	X= ✓ Y= ✓			Good
		DULUTH HARBOR - S. CORNER HYMAN DOCK		68404 3947	X= ✓ Y= ✓			DELETE
		DULUTH HARBOR - S. CORNER PEAVEY DOCK	Δ	68403 4048 68402	X= ✓ Y= ✓			DELETE
		COMPUTED BY		DATE	COMPUTATION CHECKED BY			DATE
		LISTED BY		DATE	LISTING CHECKED BY			DATE
		HAND PLOTTING BY		DATE	HAND PLOTTING CHECKED BY			DATE

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

* DOCK CORNERS

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY		
	CM 7313	NA 1927			
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRI-ANGULATION POINT NUMBER	COORDINATES IN FEET STATE ZONE	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	REMARKS
DULUTH HARBOR - PORT AUTHORITY N. LT.		68501 41129	X= Y=	φ 46-45-16.60 λ 92-05-36.90	Good
DULUTH HARBOR - PORT AUTHORITY S. LT.		68502 42210	X= Y=	φ 46-45-11.32 λ 92-05-39.31	Good
DULUTH HARBOR - P R R BRIDGE		43211 69405	X= Y=	φ 46-44-45.75 λ 92-06-29.99	DELETE
DULUTH HARBOR - N. CORNER CONTINENTAL GRAIN MKT		44212 69404	X= Y=	φ 46-44-13.82 λ 92-04-47.86	DELETE
DULUTH HARBOR - S. CORNER SUPERIOR FIBER DOCK		45213 69403	X= Y=	φ 46-44-05.74 λ 92-04-36.35	DELETE
DULUTH HARBOR - N. CORNER HURON CEMENT DOCK		69120 46214 69402	X= Y=	φ 46-44-00.038 λ 92-04-28.337	DELETE
DULUTH HARBOR - ANGLE IN SMALL DOCK		69401 47215	X= Y=	φ 46-45-07.68 λ 92-04-25.63	DELETE
DULUTH HARBOR - DULUTH BOAT CLUB DOCK		48216 70408	X= Y=	φ 46-44-30.96 λ 92-03-51.64	DELETE
DULUTH HARBOR - CORNER PARK DOCK		70407 49217	X= Y=	φ 46-43-56.20 λ 92-03-23.77	DELETE
DULUTH HARBOR - ANGLE IN AIRPORT DOCK		70406 50218	X= Y=	φ 46-43-36.00 λ 92-02-50.95	DELETE
COMPUTED BY	DATE	COMPUTATION CHECKED BY	DATE		
LISTED BY	DATE	LISTING CHECKED BY	DATE		
HAND PLOTTING BY	DATE	HAND PLOTTING CHECKED BY	DATE		

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

* Dock CORNERS

87 of

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION									
DESCRIPTIVE REPORT CONTROL RECORD									
MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY	COORDINATES IN FEET		GEOGRAPHIC POSITION		REMARKS	
				STATE	ZONE	φ LATITUDE	λ LONGITUDE		
	CM 7313		NA 1927	ALASKA NORTH					
		SOURCE OF INFORMATION (Index)	AEROTRI-ANGULATION POINT NUMBER	X=	Y=				
* 39		DULUTH HARBOR - RR INTERSECTION	724043 61 L29			φ 46-40-57.64 ✓	λ 92-01-27.39 ✓		DELETE
		DULUTH HARBOR - RR INTERSECTION (TRESSEL)	72403 62 L30			φ 46-41-02.20 ✓	λ 92-00-54.08 ✓		DELETE
* 40		DULUTH HARBOR - S. CORNER LAND SPIT	72401 63 L31			φ 46-41-38.83 ✓	λ 92-00-21.52 ✓		DELETE
		DULUTH HARBOR - END OF RETAINER WALL	72402 64 L32			φ 46-41-49.71 ✓	λ 92-00-48.87 ✓		DELETE
39		DULUTH HARBOR - INNER HARBOR LT	72501 65 L33			φ 46-42-16.18 ✓	λ 92-01-00.48 ✓	Good	
40		DULUTH HARBOR - S PIERHEAD LT	71504 66 L34			φ 46-42-26.77 ✓	λ 92-00-44.99 ✓	Good	
41		DULUTH HARBOR - S BREAKWATER LT	71502 67 L35			φ 46-42-36.74 ✓	λ 92-00-22.23 ✓	Good	
42		DULUTH HARBOR - N BREAKWATER LT	71501 68 L36			φ 46-42-42.19 ✓	λ 92-00-27.57 ✓	Good	
43		DULUTH HARBOR - N PIERHEAD LT	71503 69 L37			φ 46-42-30.92 ✓	λ 92-00-49.20 ✓	Good	
* 44		DULUTH HARBOR - N CORNER M & O ELEVATOR "O" DOCK	71401 70 L38			φ 46-42-46.39 ✓	λ 92-02-44.07 ✓		DELETE
COMPUTED BY				COMPUTATION CHECKED BY		DATE			
LISTED BY				LISTING CHECKED BY		DATE			
HAND PLOTTING BY				HAND PLOTTING CHECKED BY		DATE			

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

* DOCK CORNERS

S. J. JOURNAL

DESCRIPTIVE REPORT CONTROL RECORD

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

MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY		
	CM 7313	NA 1927			
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRIANGULATION POINT NUMBER	COORDINATES IN FEET STATE ZONE	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	REMARKS
* DULUTH HARBOR - N CORNER MFO ELEVATOR "M" DOCK		71409 71739	X= Y=	φ 46-42-43.03 ✓ λ 92-02-38.65 ✓	DELETE
DULUTH HARBOR - N CORNER PEAVEY FLOUR DOCK		71407 72740	X= Y=	φ 46-42-38.79 ✓ λ 92-02-34.84 ✓	DELETE
44 DULUTH HARBOR - PEAVEY FLOUR MILL CHY		71408 73741	X= Y=	φ 46-42-34.32 ✓ λ 92-02-40.49 ✓	GOOD
* DULUTH HARBOR - N CORNER LAKEHEAD PIPE DOCK		71406 74742	X= Y=	φ 46-42-32.21 ✓ λ 92-02-22.95 ✓	DELETE
* DULUTH HARBOR - END NORTHERN PACIFIC RY WALL		71403 75743	X= Y=	φ 46-42-14.64 ✓ λ 92-01-39.23 ✓	DELETE
* DULUTH HARBOR - END GREAT NORTHERN RY WALL		71402 76744	X= Y=	φ 46-42-11.15 ✓ λ 92-01-34.88 ✓	DELETE
* DULUTH HARBOR - N. END ORE DOCK No 2.		72407 77745	X= Y=	φ 46-42-09.26 ✓ λ 92-01-25.01 ✓	DELETE
* DULUTH HARBOR - N CORNER END C of E DOCK		71404 78746	X= Y=	φ 46-42-34.40 ✓ λ 92-01-22.34 ✓	DELETE
* DULUTH HARBOR - END OF WALL, SUPERIOR ENTRY		71405 79747	X= Y=	φ 46-42-25.86 ✓ λ 92-01-16.14 ✓	DELETE
* DULUTH HARBOR - E CORNER GREAT LAKES DOCK		69400 80748	X= Y=	φ 46-44-29.06 ✓ λ 92-07-04.66 ✓	DELETE
COMPUTED BY	DATE	COMPUTATION CHECKED BY	DATE		
LISTED BY J. J. S. BECK	DATE 1/1/77	LISTING CHECKED BY	DATE		
HAND PLOTTING BY	DATE	HAND PLOTTING CHECKED BY	DATE		

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

* DOCK CORNERS ETC.

pg of

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION									
DESCRIPTIVE REPORT CONTROL RECORD									
MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY	COORDINATES IN FEET		GEOGRAPHIC POSITION		REMARKS	
				STATE	ZONE	φ LATITUDE	λ LONGITUDE		
	CIN 7313	NA 1927		WISCONSIN	NORTH				
		AEROTRI- ANGULATION POINT NUMBER	SOURCE OF INFORMATION (Index)						
* 45		69407 81L49				φ 46-44-23.70 ✓	λ 92-07-28.31 ✓	DELETE	
		69408 82L50				φ 46-44-34.34 ✓	λ 92-06-23.33 ✓	GOOD ✓	
46		69113? 83L51				φ 46-44-32.97 ✓	λ 92-06-23.44 ✓	GOOD SUPERIOR TANK ARE ELVENTH STREET	
* 47		69409 84L52				φ 46-44-46.71 ✓	λ 92-06-11.90 ✓	DELETE	
		68401 85L53				φ 46-45-21.28 ✓	λ 92-06-43.56 ✓	GOOD NOT OF VALUE	
		68402 86L54				φ 46-45-27.62 ✓	λ 92-07-09.65 ✓	DELETE	
* 48		68407 87L55				φ 46-45-06.73 ✓	λ 92-07-19.99 ✓	DELETE	
		68408 88L56				φ 46-45-02.60 ✓	λ 92-07-26.28 ✓	DELETE	
		89L57				φ 46-42-39.90 ✓	λ 92-09-58.78 ✓	DELETE	
		158403 90L58				φ 46-43-27.55 ✓	λ 92-08-23.84 ✓	GOOD ✓	
COMPUTED BY		DATE	COMPUTATION CHECKED BY		DATE				
LISTED BY		DATE	LISTING CHECKED BY		DATE				
HAND PLOTTING BY		DATE	HAND PLOTTING CHECKED BY		DATE				

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

* DOCK CORNERS

P10 of

NOAA FORM 76-41 (6-75)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION			
DESCRIPTIVE REPORT CONTROL RECORD					
MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY		
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRIANGULATION POINT NUMBER	COORDINATES IN FEET STATE <u>WISCONSIN</u> ZONE <u>NORTH</u>	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	REMARKS
DULUTH HARBOR - E RR BRIDGE		158402 91159	X=	φ 46-43-42.44 ✓	NOT ON CHART
			Y=	λ 92-08-35.86 ✓	
DULUTH HARBOR - AERIAL CABLE W. TOWER		158404 92160	X=	φ 46-43-27.61 ✓	GOOD ✓
			Y=	λ 92-08-43.61 ✓	
DULUTH HARBOR - MINN POWER & LIGHT CO STACK		158411 93161	X=	φ 46-44-08.17 ✓	GOOD # 23
			Y=	λ 92-09-07.40 ✓	
DULUTH HARBOR - MINN POWER & LIGHT CO TANK		158401 94162	X=	φ 46-44-08.17 ✓	GOOD ✓
			Y=	λ 92-09-06.42 ✓	
DULUTH HARBOR - FRASIER SHIPYARD POINT No. 2, DRYDOCK		69411 95163	X=	φ 46-44-49.52 ✓	DELETE
			Y=	λ 92-05-39.71 ✓	
DULUTH HARBOR - W CORNER E SLIP, FRASIER SHIPYARD		69412 96164	X=	φ 46-44-47.43 ✓	DELETE
			Y=	λ 92-06-20.02 ✓	
DULUTH HARBOR - FRASIER SHIPYARD POINT No. 1, DRYDOCK		69410 97165	X=	φ 46-44-48.74 ✓	DELETE
			Y=	λ 92-05-43.18 ✓	
DULUTH HARBOR - W. CORNER, W SLIP, FRASIER SHIPYARD	modified	669) 98166	X=	φ 46-44-13.77 ✓	DELETE
			Y=	λ 92-06-26.98 ✓	
DULUTH HARBOR - S. RADIO MAST, KOAL		159402 99167	X=	φ 46-43-12.95 ✓	GOOD ✓
			Y=	λ 92-10-34.33 ✓	
DULUTH HARBOR - N. RADIO MAST, KOAL		159403 100168	X=	φ 46-43-15.57 ✓	GOOD ✓
			Y=	λ 92-10-35.21 ✓	
COMPUTED BY		DATE	COMPUTATION CHECKED BY		DATE
LISTED BY		DATE	LISTING CHECKED BY		DATE
HAND PLOTTING BY		DATE	HAND PLOTTING CHECKED BY		DATE

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

* Dock CORNERS

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	JOB NO.	STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRI-ANGULATION POINT NUMBER	COORDINATES IN FEET		GEOGRAPHIC POSITION		REMARKS	
					STATE	ZONE	φ LATITUDE	λ LONGITUDE		
	CM 7313				NA 1927					
		DULUTH HARBOR - S. CORNER, S. DOCK, DRILLS MARINA		160401 101L 69			φ 46-42-18.51 ✓ λ 92-12-05.60 ✓		DELETE	
*		DULUTH HARBOR - S. CORNER, MIDDLE DOCK, DRILLS MARINA		160402 102L 70			φ 46-42-21.10 ✓ λ 92-12-03.26 ✓		DELETE	
*		DULUTH HARBOR - S. CORNER N. DOCK, DRILLS MARINA		160403 103L 71			φ 46-42-23.41 ✓ λ 92-12-01.12 ✓		Delete	
53		DULUTH HARBOR - STACK NEAR DRILLS MARINA		160404 104L 72			φ 46-42-28.96 ✓ λ 92-12-14.01 ✓		GOOD ✓	
54		DULUTH HARBOR - WWJG RADIO MAST	Δ	165402 105L 73 105L 72			φ 46-39-18.96 ✓ λ 92-12-39.47 ✓		GOOD ✓	
55		DULUTH HARBOR - R.J. REYNOLDS S. CHY		105403 106L 74			φ 46-39-12.07 ✓ λ 92-13-19.07 ✓		GOOD ✓	
56		DULUTH HARBOR - S. FLOODLIGHT TR.		105401 107L 75			φ 46-39-40.46 ✓ λ 92-13-05.85 ✓		GOOD ✓	
57		DULUTH HARBOR - STANDPIPE		165404 108L 76 108L 75			φ 46-40-08.98 ✓ λ 92-13-56.10 ✓		GOOD ✓	
58		DULUTH HARBOR - N. FLOODLIGHT TR.		161402 109L 77			φ 46-40-10.70 ✓ λ 92-13-07.79 ✓		GOOD ✓	
59		DULUTH HARBOR - UNIVERSAL ATLAS CEMENT STACK	Δ	161401 110L 78 101L 75			φ 46-40-54.55 ✓ λ 92-13-24.06 ✓		GOOD ✓	
COMPUTED BY					COMPUTATION CHECKED BY					DATE
LISTED BY					LISTING CHECKED BY					DATE
HAND PLOTTING BY					HAND PLOTTING CHECKED BY					DATE

COMPILATION REPORT

TP-00680

May 1977

31. Delineation

All features were delineated by stereoplotter compilation. The stereo-models were positioned to 1972 Lake Survey field positions. Aero-triangulation was subsequently performed for verification of charted detail which checked out very well.

The position of the dam on the Upper St. Louis River is questionable since insufficient control exists in the area (Great Lakes Chart 966 inset). The right side of the stereomodel was set to control, scaled, and leveled to the water surface. The result seems adequate but will require field edit for verification.

32. Horizontal Control

Horizontal control was adequate (see Photogrammetric Plot Report). The only exception is the dam at the west end of the inset as mentioned above.

33. Supplemental Data

The original manuscript was revised graphically to update charted detail to conform more closely to NOS symbolization wherever possible. (See Summary for LS Chart 966, Duluth-Superior Harbor TP-00680 - CM-7313.)

34. Contours and Drainage

Contours are not applicable. Drainage features were compiled from both the 1:20,000 scale and 1:30,000 scale photography where each respective source was used.

35. Shoreline and Alongshore Detail

Office interpretation of the photography was adequate for delineating the shoreline and alongshore details, with the exception of marshy areas along the St. Louis Bay area and the Upper St. Louis River. Field clarification is requested.

36. Offshore Details

No unusual problems were encountered.

37. Landmarks and Aids to Navigation

All chimneys, stacks, water tanks, towers, etc., that could be positioned by stereoplotter were compiled. Positions for charted features were verified by aerotriangulation. Landmarks and aids to navigation will be determined by field edit.

38. Control for Future Surveys

See 37 above.

39. Junctions

Refer to Form 76-36B

40. Horizontal Accuracy

This map complies with the National Map Accuracy Standards with the possible exception of the west end of the inset area (Upper St. Louis River) which will be verified by field edit.

41. Background

This harbor chart compilation was begun in November 1971. The original control was taken from USATOPOCOM, 1969 computer printout of all available geodetic control. (Book #4, Quad 12 and Book #5 Quad 9 and 13.)

After setting the first model it was evident that insufficient control existed to position the 1:20,000 scale, Aug 1970, U.S. Air Force photography. A layout of existing photos was made on a Lake Survey Chart 966 and additional control required was likewise indicated and submitted to the LS Revisory field party.

The NOS photography was flown in September 1973 at a scale of 1:30,000 to complete the compilation area. In 1974 an additional strip was flown to update the newly compiled chart. Ratio prints were prepared and revisions were made graphically.

42 thru 45. Inapplicable.

46. Comparison with Existing Maps

NONE

47. Comparison with Nautical Charts

Comparison was made with the following nautical chart:

14975 (14735 LS 966 shown on chart) 25th Edition, Dec 4, 1976, 1:15,000

Many changes are evident in shape and position of planimetric detail. The chart is on North American 1902 Datum but the new TP Sheet manuscript is on North American 1927 Datum.

No other comparisons were made.

The total harbor chart should be reengraved prior to next printing after field edit and field edit corrections are made.

Submitted by,

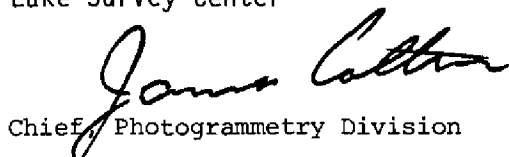


F. R. Watts

Approved and Forwarded:



F. R. Watts
Chief, Photogrammetry Section
Lake Survey Center


Chief, Photogrammetry Division

SUMMARY FOR LS CHART #966 DULUTH SUPERIOR HARBOR
TP-00680 - CM-7313

A stablebase blackline copy of the photogrammetric manuscript (stereo-plotter compilation models reduced and paneled at the scale of 1:15,000 to a polyconic projection with an inset at 1:30,000) was updated by revising symbolization and completion of chart detail to the extent allowable with new photo coverage.

Black-and-white prints and transparencies were ratioed from the 1973 and 1974 color photography and the above mentioned work was performed graphically. These ratioed prints and transparencies were controlled by like features, e.g., piers, docks, shoreline, shoreline roads, and other near shoreline or shoreline features.

Geographic names were applied to this manuscript as supplied by the Staff Geographer. Map revisions were made to conform with NOS Ltr. dated 15 October 1976, Coastal Mapping Division Instructions, C342/W.

This map is a photogrammetrically compiled, planimetric base that meets NSMA. It has had office interpreted revisions using the latest mapping photography subject to correction by field edit and final review. Landmarks and aids to navigation were not investigated by a field party prior to compilation.

Submitted by:

Henri Lucas

Henri Lucas

27

FIELD EDIT REPORT
Duluth-Superior Harbor
Job CM-7313 Map TP00680

52 Adequacy of Compilation

Compilation was adequate. The MHWL was accepted as compiled unless otherwise indicated on the Field Edit Ozalid.

A new coal loading facility is located just east of the C&NW RR Bridge, along the South Channel in St. Louis Bay. The approximate location is indicated on the Field Edit Ozalid and Ratio Photo No. 74L4068. This facility should be readily visible on the 1978 photographs.

54 Recommendations

None.

56 Landmarks and Non Floating Aids to Navigation

There were no new structures of landmark value noted during edit. Previously charted landmarks were visually checked on the chart and have been indicated by a check mark on Chart No. 14975.

There are 25 fixed aids within the compiled limits of this map, all were visually verified and have been indicated by a check mark on Chart No. 14975.

57 Photo Points

Only those points such as Cupolas, Tanks, Spires and Flagstaffs, etc., are of landmark value. All pier corners, center line RR and waters edge, etc., have been deleted on Form 76-40 in the remarks column.

58 Photography

Photography consisted of 1:15,000 Ratio Photos obtained 7 Sept. 1973 and 5 July 1974. Seven (7) photographs Nos. 73L8156-8158-8160-8166 and 74L4068-4070-and 4072 were provided for field edit use.

59 Disposition of Data

The Field Edit Ozalid, Film Ozalid, Photographs and all pertinent data were forwarded to the Director, Atlantic Marine Center, ATTN: CAM51, for disposition.

for: Leo F. Bugnet
for: Robert S. Tibbetts
Photo Party 62
17 Dec 1978

January 15, 1979

GEOGRAPHIC NAMES

FINAL NAME SHEET

CM 7313 (Duluth-Superior Harbor, Minn., Wis.)

⁰⁰⁶⁸⁰
TP-00866

- | | |
|--------------------------------------|--------------------------|
| ✓ Allouez | ✓ Missabe Junction |
| ✓ Allouez Bay | ✓ Mission Creek |
| ✓ Allouez Bay Channel | ✓ Morgan Park (Ppl) |
| ✓ Amik Island | ✓ Mud Lake |
| ✓ Barkers Island | ✓ Nekuk Island |
| ✓ Beer Creek | ✓ Nemadji River |
| ✓ Bear Island | ✓ New Duluth |
| ✓ Billings Park (Ppl) | ✓ North Channel |
| ✓ Bluff Creek | ✓ Oliver |
| ✓ Burlington Northern (RR) | ✓ Ondaig Island |
| ✓ Central Park (Ppl) | ✓ Park Point |
| ✓ Chases Point | ✓ Perch Lake |
| ✓ Chicago & North Western (RR) | ✓ Pokegama Bay |
| ✓ Clough Island | ✓ Red River |
| ✓ Cross Channel | ✓ Rices Point |
| ✓ Duluth | ✓ Riverside |
| ✓ Duluth Harbor Basin | ✓ Riverview |
| ✓ Duluth Missabe and Iron Range (RY) | ✓ St. Louis Bay |
| ✓ Duluth Ship Canal | ✓ St. Louis River |
| ✓ Duluth Winnipeg & Pacific (RY) | ✓ Sargent Creek |
| ✓ Dwrights Point | ✓ Soo Line (RR) |
| ✓ East End (Ppl) | ✓ South Channel |
| ✓ East Gate Basin | ✓ Spirit Island |
| ✓ Fond du Lac | ✓ Spirit Lake |
| ✓ Gary | ✓ Steelton |
| ✓ Grassy Point | ✓ Superior |
| ✓ Harding Island | ✓ Superior Bay |
| ✓ Hog Island | ✓ Superior Entry |
| ✓ Howards Bay | ✓ Superior Front Channel |
| ✓ Keene Creek | ✓ Superior Harbor Basin |
| ✓ Kilchlis Meadow | ✓ Tallas Island |
| ✓ Kimballs Bay | ✓ Tower Bay Slip |
| ✓ Kingsbury Creek | ✓ Wahbagon Island |
| ✓ Knowlton Creek | ✓ West Gate Basin |
| ✓ Lake Superior | ✓ Wisconsin |
| ✓ Little Pokegama Bay | ✓ Wisconsin Point |
| ✓ Minnesota | ✓ West Duluth |
| ✓ Minnesota Channel | ✓ Twin Lakes |
| ✓ Minnesota Point | |
| ✓ CONNORS POINT | |
| ✓ ONEOTA | |

Approved by:

Charles E. Harrington
 Charles E. Harrington, C3x5
 Chief Geographer

Materials on File

Federal Records Center

Field Edit Photographs
Bridging Photographs
Field Edit Ozalid (Discrepancy Print)
Project Completion Report

Bureau Archives

Registered copy of map
Descriptive Report

Geodesy

Geodetic Records
Recovery Cards

Marine Chart Division

Chart Maintenance Print
Forms 76-40

Office of Geographer

Geographic Names Standard

Reproduction Division

Map Negative (reduced copy)

Physical Science Service Branch

Map Negative (reduced copy)

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	
POSITIONS DETERMINED AND/OR VERIFIED	
DETERMINED BY INSTRUMENT	LISTED BY <i>Harold Lucas</i> <i>RB</i> <i>Dennis</i>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
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	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.	

Replaces C&GS Form 567.

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
LANDMARKS FOR CHARTS

☐ TO BE CHARTED ☒ TO BE REVISED ☐ TO BE DELETED		REPORTING UNIT IF Field Party, Ship or Office) PHOTO PARTY 62	STATE MINNESOTA WISCONSIN	LOCALITY DULUTH - SUPERIOR HARBOR	DATE 12-11-78
The following objects HAVE ☒ HAVE NOT ☐ been inspected from seaward to determine their value as landmarks.					
OPR PROJECT NO.	JOB NUMBER CM 7313	DATUM NA 1927			
		SURVEY NUMBER			

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

CHARTING NAME	JOB NUMBER C M 7313	SURVEY NUMBER	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	DATUM NA 1927				METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED
				POSITION		OFFICE	FIELD			
				LATITUDE						
				LONGITUDE						
°	'	°	'	D.M. Meters	D.P. Meters					
TOWER	DULUTH HARBOR, AERIAL CABLE EAST TOWER	46 43	27.55	92 08	33.84	734 (C) 8158 9-7-73	V-VIS 6-22-78	14975		
TOWER	DULUTH HARBOR, AERIAL CABLE WEST TOWER	46 43	27.61	92 08	43.61	"	"	"		
TANK	DULUTH HARBOR, MINNESOTA POWER & LIGHT CO. TANK	46 44	08.17	92 09	06.42	"	"	"		
MAST	DULUTH HARBOR, KDAL RADIO MAST (SOUTH)	46 43	12.95	92 10	34.33	734 (C) 8159 9-7-73	"	"		
MAST	DULUTH HARBOR, KDAL RADIO MAST (NORTH)	46 43	15.57	92 10	35.21	"	"	"		
STACK	DULUTH HARBOR, STACK (NEAR DRILLS MARINA)	46 42	28.96	92 12	14.01	734 (C) 8160 9-7-73	"	"		
MAST	DULUTH HARBOR, WWSG RADIO MAST	46 39	18.96	92 12	39.47	734 (C) 8165 9-7-73	"	"		
CHIMNEY	DULUTH HARBOR, R. J. REYNOLDS SOUTH CHIMNEY	46 39	12.07	92 13	19.07	"	"	"		
FLOOD LIGHT TOWER	DULUTH HARBOR, FLOODLIGHT TOWER (SOUTH)	46 39	40.46	92 13	05.85	"	"	"		
STANDPIPE	DULUTH HARBOR, STANDPIPE	46 40	08.98	92 13	56.10	"	"	"		

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	
POSITIONS DETERMINED AND/OR VERIFIED <i>DETERMINED BY INSTRUMENT</i>	LISTED BY <i>Huskins / Bruce Danner</i>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
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 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.	

Replaces C&GS Form 567.

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
LANDMARKS FOR CHARTS

REPORTING UNIT (Field Party, Ship or Office)		LOCALITY		DATE		ORIGINATING ACTIVITY	
TO BE CHARTED	TO BE REVISED	TO BE DELETED	STATE	DULUTH - SUPERIOR	HARBOR	12-11-78	HYDROGRAPHIC PARTY GEODETIC PARTY PHOTO FIELD PARTY COMPILATION ACTIVITY FINAL REVIEWER QUALITY CONTROL & REVIEW GRP. COAST PILOT BRANCH (See reverse for responsible personnel)
The following objects HAVE ☒ BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.		JOB NUMBER		DATUM			
OPR PROJECT NO.		CM 7313		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		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED	
		LATITUDE	LONGITUDE	OFFICE	FIELD		
MAST	DULUTH, TV STATION WEBC MAST 1952	46 47	92 06	742(C) 4067 7-5-74	V-VIS 6-23-78	14975	
SPIRE	DULUTH, CENTRAL HIGH SCHOOL, CUPOLA SPIRE 1905	46 47	92 05		"	"	
TOWER	DULUTH, ENGER MEMORIAL TOWER 1952	46 46	92 07		"	"	
ELEVATOR F.P.	DULUTH, GENERAL ELEVATOR, FLAG-STAFF 1952	46 46	92 06		"	"	
ELEVATOR F.P.	DULUTH, OCCIDENT ELEVATOR FLAGSTAFF 1952	46 45	92 06	742(C) 4068 7-5-74	"	"	
STACK	DULUTH, PEAVEY ELEVATOR CO. STACK 1921	46 45	92 05		"	"	
LOOKOUT TOWER	DULUTH, U.S. COAST GUARD LOOKOUT TOWER 1952	46 46	92 05		"	"	
MAST	DULUTH, POLICE RADIO STATION, KWA 939, MAST	46 45	92 04		"	"	
STACK	DULUTH, PARK POINT SCHOOL, STACK 1921	46 45	92 04		"	"	
ELEVATOR F.P.	SUPERIOR, FARMERS UNION ELEVATOR, FLAGSTAFF 1952	46 44	92 06	742(C) 4069 7-5-74	"	"	

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	
POSITIONS DETERMINED AND/OR VERIFIED <i>DETERMINED BY INSTRUMENT</i>	<i>LISTED BY THIS WORKER Bruce A. Brown</i>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW	☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
ACTIVITIES	FIELD ACTIVITY REPRESENTATIVE 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 A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	III. 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.

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
LANDMARKS FOR CHARTS

REPORTING UNIT (Field Party, Ship or Office)		LOCALITY	DATE
PHOTO PARTY 62		DULUTH-SUPERIOR HARBOR	12-11-78
TO BE CHARTED		ORIGINATING ACTIVITY	
☒ TO BE REVISED		☐ HYDROGRAPHIC PARTY	
☐ TO BE DELETED		☐ GEODETIC PARTY	
		☐ PHOTO FIELD PARTY	
		☒ COMPILATION ACTIVITY	
		☐ FINAL REVIEWER	
		☐ QUALITY CONTROL & REVIEW GRP.	
		☐ COAST PILOT BRANCH	

(See reverse for responsible personnel)

The following objects HAVE ☒ HAVE NOT ☐ been inspected from seaward to determine their value as landmarks.

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION				METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED
		LATITUDE		LONGITUDE		OFFICE	FIELD	
		D.M. Meters	D.P. Meters	D.M. Meters	D.P. Meters			
STACK	SUPERIOR, GLOBE ELEVATOR CO., STACK 1921	46 44	32.97	92 06	23.44	74 L (C) 4068 7-5-74	V-VIS 6-22-78	14975
CLOCK TOWER	DULUTH, COLLEGE CLOCK TOWER, 1952	46 44	54.345	92 09	30.273	73 L (C) 8158 9-7-73	"	"
STACK	DULUTH, MINNESOTA POWER & LIGHT CO. STACK, 1952	46 44	08.124	92 09	07.389	"	"	"
STACK	SUPERIOR, ST. MARYS HOSPITAL STACK, 1905	46 43	33.06	92 05	25.96	74 L (C) 4069 7-5-74	"	"
SPIRE	SUPERIOR, ST. FRANCIS XAVIER CATHOLIC CHURCH SPIRE (STEEPLE) 1952	46 42	12.117	92 02	48.974	74 L (C) 4071 7-5-74	"	"
STACK	DULUTH HARBOR, CAPITOL ELEVATOR STACK	46 45	50.75	92 06	05.09	74 L (C) 4068 7-5-74	"	"
AERO BN.	DULUTH HARBOR AERO BEACON	46 43	-	92 02	-	74 L (C) 4070 7-5-74	"	"
CHIMNEY	DULUTH HARBOR-PEAVEY FLOUR MILL CHIMNEY	46 42	34.32	92 02	40.49	74 L (C) 4071 7-5-74	"	"
TANK	DULUTH HARBOR TANK	46 44	34.34	92 06	23.33	74 L (C) 4069 7-5-74	"	"
CHIMNEY	DULUTH HARBOR CHIMNEY	46 44	32.97	92 06	23.44	"	"	"

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	
POSITIONS DETERMINED AND/OR VERIFIED DETERMINED BY INSTRUMENT	LISTED BY <i>John Lucas</i> <i>R. J. Lucas</i>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
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. 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.	

Replaces C&GS Form 567.

NONFLOATING AIDS [REDACTED] 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)

DATE _____

DATE 12-11-78

LOCALITY
DULUTH - SUPERIOR
HARBOR

STATE
MINNESOTA
AND
WISCONSIN

REPORTING UNIT
(Field Party, Ship or Office)
PHOTOGRAMMETRIC BR
PHOTOGRAMMETRY DIV

The following objects HAVE ☐ HAVE NOT ☒ been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER
-----------------	------------	---------------

JOB NUMBER

DATUM

WA 1927

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

opis on

FIELD

POSITION

LATITUDE

LONG

"

"

(Record reason for deletion of landmark or aid to navigation.
Show triangulation station names, where applicable, in parentheses.)

**CHARTING
NAME**

**CHARTS
AFFECTED**

DULUTH - SUPERIOR HARBOR
ST LOUIS BAY SOUTH CHANNEL

RANGE REAR LIGHT

46 14

72 08

48.0

744(c) 4068
7-5-74

51675

ST LOUIS RIVER

RANGE FRONT LIGHT

46 43 1/2

9208

34.0

100

34075

SPACE REAR LIGHT

46 43A

3

21.0

22

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	
POSITIONS DETERMINED AND/OR VERIFIED	
DETERMINED BY INSTRUMENT	LISTED BY <i>Paul Lucas</i>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	
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	III. 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 II. 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 (If field party, ship or office) PHOTOGRAMMETRIC BR. PHOTOGRAMMETRY DIV. WISCONSIN		STATE MINNESOTA AND WISCONSIN		LOCALITY DULUTH - SUPERIOR HARBOR		DATE 12-11-78					
The following objects HAVE ☐ HAVE NOT ☒ been inspected from seaward to determine their value as landmarks.		JOB NUMBER CM-7313		SURVEY NUMBER NA 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.)	POSITION		LONGITUDE		OFFICE	FIELD				
		LATITUDE D.M. Meters	LONGITUDE D.P. Meters								
	DULUTH - SUPERIOR HARBOR										
LIGHT	MARINA LIGHT 2 ✓	46 46 N	92 05 W	22.5		74L(C) 4067 7-5-74					14975
LIGHT	MARINA LIGHT 4 ✓	46 46 N	92 05 W	18.0		"					"
LIGHT	DULUTH MARINE TERMINAL EAST LIGHT	46 45 N	92 05 W	36.90		74L(C) 4068 7-5-74					"
LIGHT	DULUTH MARINE TERMINAL SOUTH LIGHT	46 45 N	92 05 W	39.31		"					"
	ST. LOUIS BAY NORTH CHANNEL										
-RGE F LIGHT	RANGE FRONT LIGHT	46 44 N	92 08 W	39.4		74L(C) 4068 7-5-74					"
-RGE R LIGHT	RANGE REAR LIGHT	46 44 N	92 08 W	48.0		74L(C) 4067 7-5-74					"
	ST. LOUIS BAY SOUTH CHANNEL										
-RGE F LIGHT	RANGE FRONT LIGHT	46 44 N	92 08 W	34.0		74L(C) 4068 7-5-74					"

4

5

6

7

8

9

10

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	
POSITIONS DETERMINED AND/OR VERIFIED <i>DETERMINED BY INSTRUMENT</i>	<i>LISTED BY Luis Lucas Ramirez</i>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW	☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
ACTIVITIES	FIELD ACTIVITY REPRESENTATIVE 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 P - Photogrammetric L - Located Vis - Visually V - Verified 1 - Triangulation 5 - Field identified 2 - Traverse 6 - Theodolite 3 - Intersection 7 - Planetable 4 - Resection 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. 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 II. 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.	

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION									
NONFLOATING AIDS [REDACTED] FOR CHARTS									
NOAA FORM 76-40 (6-74) Replaces C&GS Form 567.		REPORTING UNIT (Field Party, Ship or Office) PHOTOGRAMMETRIC BR. PHOTOGRAMMETRY DIV. WISCONSIN		STATE MINNESOTA AND WISCONSIN		LOCALITY DULUTH - SUPERIOR HARBOR		DATE 12-11-78	
The following objects HAVE ☐ HAVE NOT ☒ been inspected from seaward to determine their value as landmarks.		JOB NUMBER CM-7313		SURVEY NUMBER		DATUM NA 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.)	POSITION		LONGITUDE		FIELD		CHARTS AFFECTED	
		LATITUDE D.M. Meters	LONGITUDE D.P. Meters	LATITUDE D.M. Meters	LONGITUDE D.P. Meters	OFFICE	FIELD		
	DULUTH - SUPERIOR HARBOR ALLOUEZ BAY								
11 LIGHT	BURLINGTON NORTHERN WEST DOCK LIGHT	46 42	08.2	92 01	21.4	742(C) 4071 7-5-74		14975	
12 LIGHT	RICES POINT LEADING LIGHT	46 45	19.0	92 06	09.0	742(C) 4068 7-5-74		"	
13 -RGE F LIGHT	RANGE FRONT LIGHT	46 42	26.0	92 02	07.0	742(C) 4071 7-5-74		"	
14 -RGE R LIGHT	RANGE REAR LIGHT	46 42	16.0	92 01	52.0	"		"	
	DULUTH HARBOR								
15 LIGHT	SOUTH BREAKWATER OUTER LIGHT ✓	46 46	48.44	92 05	15.01	742(C) 4067 7-5-74		"	
16 LIGHT	NORTH PIER LIGHT ✓	46 46	51.54	92 05	17.03	"		"	
17 LIGHT	SOUTH BREAKWATER INNER LT. ✓	46 46	49.5	92 05	31.2	"		"	

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)

TYPE OF ACTION		RESPONSIBLE PERSONNEL	
NAME		ORIGINATOR	
OBJECTS INSPECTED FROM SEAWARD		☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)	
POSITIONS DETERMINED AND/OR VERIFIED <i>DETERMINED BY INSTRUMENT</i>	<i>LISTED BY Frank Lucas</i> <i>By Frank Lucas</i>	☐ FIELD ACTIVITY REPRESENTATIVE ☐ OFFICE ACTIVITY REPRESENTATIVE ☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	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 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 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 III. 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 (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 (If field party, ship or office) PHOTOGRAMMETRIC BR. PHOTOGRAMMETRY DIV.		STATE MINNESOTA AND WISCONSIN		LOCALITY DULUTH - SUPERIOR HARBOR		DATE 12-11-78					
The following objects HAVE ☐ HAVE NOT ☒ been inspected from seaward to determine their value as landmarks.		JOB NUMBER CM-7313		DATUM NA 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.)	POSITION		LATITUDE		LONGITUDE		OFFICE	FIELD		
		D.M. Meters	D.P. Meters	D.M. Meters	D.P. Meters						
	DULUTH - SUPERIOR HARBOR ENTRY										
18 LIGHT	SOUTH BREAKWATER LIGHT N/A	46 42	36.74	92 00	22.23	74L(C) 4071 7-5-74	14975				
19 LIGHT	NORTH BREAKWATER LIGHT N/A	46 42	42.19	92 00	27.57	"	"				
20 LIGHT	INNER NORTH PIERHEAD LIGHT N/A	46 42	30.92	92 00	49.20	"	"				
21 LIGHT	INNER SOUTH PIERHEAD LIGHT N/A	46 42	26.71	92 00	44.99	"	"				
22 LIGHT	SUPERIOR HARBOR BASIN LIGHT N/A	46 42	16.18	92 01	00.48	"	"				
	ALLOUEZ BAY										
23 LIGHT	ALLOUEZ ORE DOCK NO. 3 WEST LT. N/A	46 42	16.00	92 01	44.0	74L(C) 4071 7-5-74	"				
24 LIGHT	ALLOUEZ ORE DOCK NO. 3 EAST LT. N/A	46 42	15.8	92 01	43.0	"	"				
25 LIGHT	BURLINGTON NORTHERN EAST DOCK LIGHT N/A	46 42	08.2	92 01	21.0	"	"				

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	
POSITIONS DETERMINED AND/OR VERIFIED <i>DETERMINED BY INSTRUMENT</i>	<i>LISTED BY [Signature] [Signature]</i>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
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 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	III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGAMMETRIC 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.	

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO.

TP-00680

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.

[illegible]