

TP-01081

TP-01081

NOAA FORM 76-35

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

DESCRIPTIVE REPORT

Type of Survey ... Shoreline
Job No. ... CM-8008 Map No. ... TP-01081
Classification No. Final Edition No. ... 1
Field Edited

LOCALITY

State ... Minnesota-Wisconsin
General Locality ... Superior Bay
Locality ... Rices Point
.....

1980 TO 1981

REGISTRY IN ARCHIVES

DATE
O

NOAA FORM 76-36A (3-72)		U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMIN.	
DESCRIPTIVE REPORT - DATA RECORD		TYPE OF SURVEY <input checked="" type="checkbox"/> ORIGINAL <input type="checkbox"/> RESURVEY <input type="checkbox"/> REVISED	
PHOTOGRAMMETRIC OFFICE Photogrammetry Division Rockville, Maryland OFFICER-IN-CHARGE Walter S. Simmons		SURVEY TP. <u>01081</u> MAP EDITION NO. <u>(3)</u> MAP CLASS <u>Final</u> JOB <u>PH. CM-8008</u>	
PHOTOGRAMMETRIC OFFICE Photogrammetry Division Rockville, Maryland OFFICER-IN-CHARGE Walter S. Simmons		LAST PRECEDING MAP EDITION TYPE OF SURVEY <input type="checkbox"/> ORIGINAL <input type="checkbox"/> RESURVEY <input type="checkbox"/> REVISED JOB PH. _____ MAP CLASS _____ SURVEY DATES: 19__ TO 19__	
I. INSTRUCTIONS DATED			
1. OFFICE		2. FIELD	
Aerotriangulation - October 16, 1980		Field - April 17, 1981	
II. DATUMS			
1. HORIZONTAL: <input checked="" type="checkbox"/> 1927 NORTH AMERICAN		OTHER (Specify)	
2. VERTICAL: <input type="checkbox"/> MEAN HIGH-WATER <input type="checkbox"/> MEAN LOW-WATER <input type="checkbox"/> MEAN LOWER LOW-WATER <input type="checkbox"/> MEAN SEA LEVEL		OTHER (Specify) International Great Lake Datum 1955	
3. MAP PROJECTION Lambert Conformal		4. GRID(S) STATE Wisconsin ZONE North	
5. SCALE 1:5,000		STATE ZONE	
III. HISTORY OF OFFICE OPERATIONS			
OPERATIONS		NAME	DATE
1. AEROTRIANGULATION BY METHOD: Analytic LANDMARKS AND AIDS BY		R. Kelly 80/S. Solbeck 81	Dec 80 & 81
2. CONTROL AND BRIDGE POINTS PLOTTED BY METHOD: Calcomp CHECKED BY		J. Taylor	Jan 1981
3. STEREOSCOPIC INSTRUMENT PLANIMETRY BY COMPILATION CHECKED BY INSTRUMENT: B-8 SCALE: 1:5,000 CONTOURS BY CHECKED BY		J. Schad C. Lewis	Jan 1981 Apr 1981
4. MANUSCRIPT DELINEATION PLANIMETRY BY CHECKED BY METHOD: Graphically Smooth Drafted SCALE: 1:5,000 HYDRO SUPPORT DATA BY CHECKED BY		J. Schad 81/J. Moler 82 C. Lewis 81/F. Wright 82 J. Schad C. Lewis	Mar 81/Feb 82 Apr 81/Feb 82 Mar 1981 Apr 81
5. OFFICE INSPECTION PRIOR TO FIELD EDIT BY		C. Lewis	" "
6. APPLICATION OF FIELD EDIT DATA BY CHECKED BY		J. Schad F. Wright	Aug 81 " "
7. COMPILATION SECTION REVIEW BY		F. Wright	Mar 82
8. FINAL REVIEW BY		R. Kelly	June 82
9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH BY		R. Kelly (Signed)	Oct June 82
10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH BY		Howard D. Wolfe	4 1983
11. MAP REGISTERED - COASTAL SURVEY SECTION BY		Howard D. Wolfe	4 1983

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

COMPILATION SOURCES

TP-01081

1. COMPILATION PHOTOGRAPHY

CAMERA(S) Wild RC-8(E) Focal Length = 152.71 mm		TYPES OF PHOTOGRAPHY LEGEND (C) COLOR (P) PANCHROMATIC (I) INFRARED		TIME REFERENCE	
TIDE STAGE REFERENCE <input type="checkbox"/> PREDICTED TIDES <input checked="" type="checkbox"/> REFERENCE STATION RECORDS <input type="checkbox"/> TIDE CONTROLLED PHOTOGRAPHY				ZONE Control	<input type="checkbox"/> STANDARD
				MERIDIAN 75th	<input checked="" type="checkbox"/> DAYLIGHT
NUMBER AND TYPE	DATE	TIME	SCALE	STAGE OF TIDE	
80-EC-5796-99	8/31/80	15:43	1:15,000	1.0 feet above Lake	
80-EC-5754-56	"	15:05	"	Superior Low Water	
80-EC-5735-37	"	14:42	"	Datum	

REMARKS

Lake Superior Low Water Datum = 600.00 feet

2. SOURCE OF MEAN HIGH-WATER LINE: SHORELINE

Shoreline was compiled from the above listed photographs and represents the visible line of contact between the water level and land features.

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

5. FINAL JUNCTIONS

NORTH TP-01078	EAST TP-01082	SOUTH No Contemporary Survey	WEST TP-01080
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REMARKS

TP-01081

HISTORY OF FIELD OPERATIONS

I. ☐ FIELD INSPECTION OPERATION☒ FIELD EDIT OPERATION

OPERATION	NAME	DATE
1. CHIEF OF FIELD PARTY	CDR Frank P. Rossi	
2. HORIZONTAL CONTROL RECOVERED BY ESTABLISHED BY PRE-MARKED OR IDENTIFIED BY	E. Steigerwald	7/81
3. VERTICAL CONTROL RECOVERED BY ESTABLISHED BY PRE-MARKED OR IDENTIFIED BY	NA	
4. LANDMARKS AND AIDS TO NAVIGATION RECOVERED (Triangulation Stations) BY LOCATED (Field Methods) BY IDENTIFIED BY	E. Steigerwald, L. Neterer	6/81
5. GEOGRAPHIC NAMES INVESTIGATION TYPE OF INVESTIGATION <input type="checkbox"/> COMPLETE <input type="checkbox"/> SPECIFIC NAMES ONLY <input checked="" type="checkbox"/> NO INVESTIGATION		
6. PHOTO INSPECTION CLARIFICATION OF DETAILS BY	E. Steigerwald, L. Neterer	6/81
7. BOUNDARIES AND LIMITS SURVEYED OR IDENTIFIED BY	NA	

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED		2. VERTICAL CONTROL IDENTIFIED	
PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION
80EC 5798	Duluth Peavey Elevator Co. Stack Superior Globe Elevator Co. Stack Superior Farmers Union Elevator Flagstaff		
3. PHOTO NUMBERS (Clarification of details) 80EC5755, 5756, 5798, 5799			
4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED			
PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME
80EC5798	Stack		
5798	Chimney		
5798	Elev		
5799	Tank		
5799	Stack		
5799	Duluth Marine Terminal East & South Lights		
5. GEOGRAPHIC NAMES: <input type="checkbox"/> REPORT <input checked="" type="checkbox"/> NONE		6. BOUNDARY AND LIMITS: <input type="checkbox"/> REPORT <input checked="" type="checkbox"/> NONE	
7. SUPPLEMENTAL MAPS AND PLANS None			
8. OTHER FIELD RECORDS (Sketch books, etc. DO NOT list data submitted to the Geodesy Division) Master Field Edit Print, Plane Table Print, Photos 80EC5755, 5756, 5798, 5799, Form 76-40's (2), Field Edit Report.			

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

RECORD OF SURVEY USE

TP-01081

I. MANUSCRIPT COPIES

COMPILATION STAGES			DATE MANUSCRIPT FORWARDED	
DATA COMPILED	DATE	REMARKS	MARINE CHARTS	HYDRO SUPPORT
Shoreline, offshore, alongshore, hydro positions	April 1981	Class III Manuscript		Apr 14, 81
Field edit applied	Aug 1981	Class I Manuscript		
Recompiled southern part of sheet	Feb 1982	Aerotriangulation Readjustment, Datum		
Field Edit Unreviewed		Class I Manuscript Pending Final Review		May 1982
Final Review	May 1982	Final Map	Aug 1982	July 1982

II. LANDMARKS AND AIDS TO NAVIGATION

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

NUMBER	CHART LETTER NUMBER ASSIGNED	DATE FORWARDED	REMARKS
Pages 4	76-40 (S)	Aug 1982	

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 **

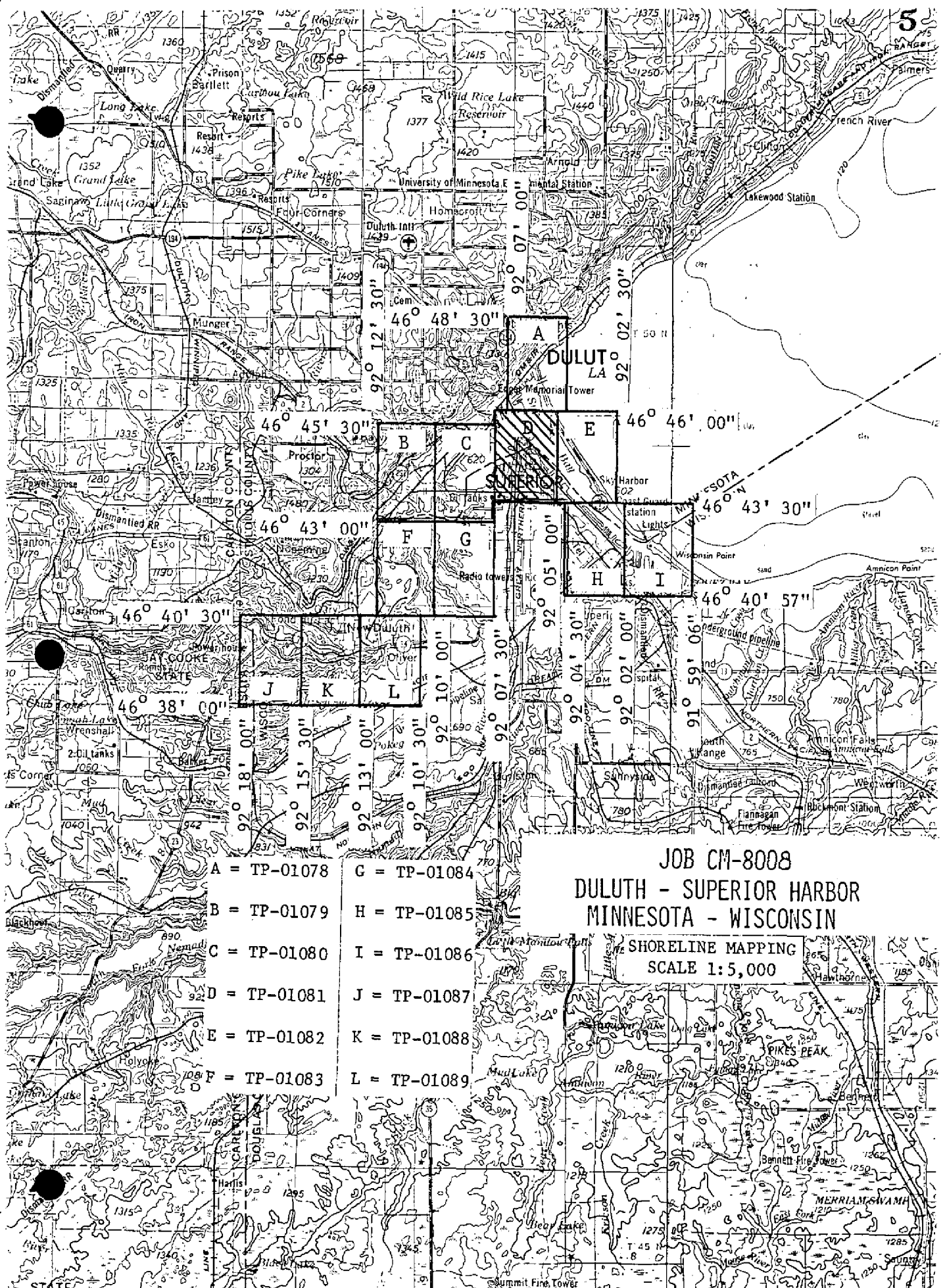
1. ☒ BRIDGING PHOTOGRAPHS; ☒ DUPLICATE BRIDGING REPORT; ☒ COMPUTER READOUTS.
2. ☒ CONTROL STATION IDENTIFICATION CARDS; ☐ FORM NOS 567 SUBMITTED BY FIELD PARTIES.
3. ☐ SOURCE DATA (except for Geographic Names Report) AS LISTED IN SECTION II, NOAA FORM 76-36C.

** All indicated data will be forwarded to the Federal Record Center upon completion of the entire project.

4. ☐ DATA TO FEDERAL RECORDS CENTER. DATE FORWARDED: SEPTEMBER 14, 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 <input type="checkbox"/> REVISED <input type="checkbox"/> RESURVEY	
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	MAP CLASS <input type="checkbox"/> II. <input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL	
THIRD EDITION	SURVEY NUMBER TP - _____ (3)	JOB NUMBER PH - _____	TYPE OF SURVEY <input type="checkbox"/> REVISED <input type="checkbox"/> RESURVEY	
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	MAP CLASS <input type="checkbox"/> II. <input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL	
FOURTH EDITION	SURVEY NUMBER TP - _____ (4)	JOB NUMBER PH - _____	TYPE OF SURVEY <input type="checkbox"/> REVISED <input type="checkbox"/> RESURVEY	
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	MAP CLASS <input type="checkbox"/> II. <input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL	



Summary
TP-01081

This map is one of twelve 1:5,000 scale shoreline maps that comprise Job CM-8008. The purpose of this job is to provide contemporary shoreline data for the support of hydrographic operations and to furnish data for nautical chart revision.

This map portrays the shoreline and alongshore detail of Duluth Superior Harbor, Minnesota and Wisconsin.

Field operations were not planned for TP-01078 through TP-01082, TP-01085 and TP-01086 prior to aerotriangulation. It was anticipated that geodetic intersection stations and photo points established in 1972, by the Lake Survey for CM-7313, TP-00680 be used for horizontal control for the lower portion of CM-8008 for the aerotriangulation of TP-01083, TP-01084 and TP-01087 through TP-01089.

Natural color photographs were taken August 31, 1980, with the Wild RC-8(E) camera at 1:15,000 scale, which were provided to aerotriangulation and compilation.

Aerotriangulation was performed at the Washington Science Center, Rockville, Maryland. The 1:15,000 scale natural color photographs were bridged using analytic aerotriangulation methods.

Compilation was performed at the Washington Science Center, Rockville, Maryland, by the Coastal Mapping Section. The interior was limited to detail to the first road adjacent to the shoreline. Detail within this area was kept to a minimum.

TP-01078 through TP-01082, TP-01085 and TP-01086 were compiled using control taken from CM-7313, TP-00680, established in 1972. Control was adequate for compilation except for the southeast portion of TP-01080 and the southern portion of TP-01081 which was resolved by using the May 1981 control. A class III copy of this map was forwarded to the Hydrographic Survey Division in April 1981.

Field edit was performed in June 1981 by personnel assigned to the Atlantic Marine Center. Refer to the Field Edit Report bound with this Descriptive Report.

Application of field edit was performed at the Washington Science Center, Rockville, Maryland.

Final Review for this map was performed at the Washington Science Center, Rockville, Maryland, in May 1981 by the Quality Control Group. This map complies with the National Standards of Map Accuracy.

A Chart Maintenance Print was prepared during the final review and forwarded to the Marine Chart Division. Also, a print copy with notes to the hydrographer was forwarded to the Hydrographic Survey Division, which will supercede the Class III print forwarded April 1981. Accompanying the above forwarded print copies are 76-40 forms, listings of landmarks and nonfloating aids to navigation.

The context of this Descriptive Report contains all pertinent reports and listings of data used to compile this Final Map.

A stable base positive copy of this Final Map and Descriptive Report, will be registered in the NOS Archives.

FIELD INSPECTION REPORT

TP-01081

There was no field inspection prior to compilation. Field work .
accomplished was limited to the photo coverage and the establish-
ment of horizontal control.

Photogrammetric Plot Report

Duluth-Superior Harbor
Minnesota-Wisconsin

CM-8008
December 1980

21. Area Covered

This report covers seven 1:5,000 scale sheets, TP-01078, TP-01079, TP-01080, TP-01081, TP-01082, TP-01085 and TP-01086 of Duluth-Superior Harbor, Minnesota-Wisconsin.

22. Method

Four strips of 1:15,000 scale photography were bridged by analytic aerotriangulation methods and adjusted to ground on the Wisconsin State Plane Coordinate System, Wisconsin North Zone. These four strips provided horizontal and vertical control for compilation. Aids and landmarks were located during the bridging. Using photo control point 31 South Cover Land Spit (761831) as a terminal control point to adjust strip three, it was determined that there is some field discrepancy in the position of this point. Strip three was again adjusted using photo point 35 South Breakwater Light (762804) as a terminal control point. In this adjustment a position for tie point 761804 was established to be used as a terminal control station in adjusting strip four.

Since 761831 is common to strips three and four, strip four was bridged measuring 761831 to provide a terminal control point position for adjusting strip three.

23. Adequacy of Control

Photo control points position within 1.0 and 2.0 meters provided by Great Lakes Revisory Section, geodetic control and tie points were office identified. Although, control held within the accuracy required by National Standards of Maps at 1:15,000 scale, it did not meet NOS requirements. To meet NOS requirements it will be necessary for a photo field party to establish and photoidentify control or to panel control and refly the project.

24. Supplemental Data

Local shoreline and US Geological Survey quadrangles were used to provide vertical elevations for vertical adjustments of bridges.

25. Photography

RC-8 E_C photography was used for the four bridging strips. Photography was adequate as to coverage and definition.

Submitted by,

Robert B. Kelly
Robert B. Kelly

Approved and Forwarded:

Don O. Norman

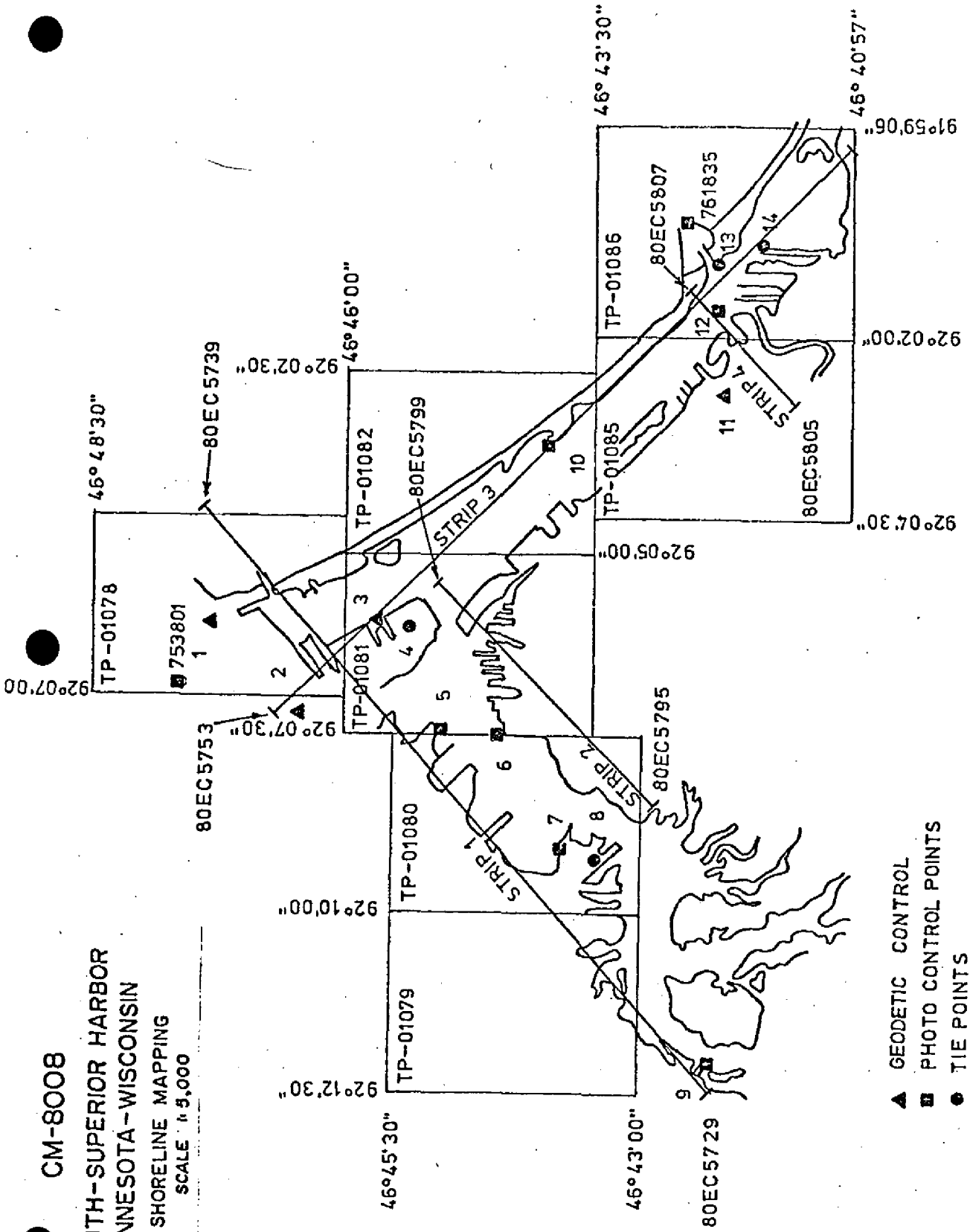
Don O. Norman
Chief, Aerotriangulation Section

CM-8008

DULUTH-SUPERIOR HARBOR
MINNESOTA-WISCONSIN

SHORELINE MAPPING

SCALE 1"=5,000'



- ▲ GEODETIC CONTROL
- PHOTO CONTROL POINTS
- TIE POINTS

Closures to Control
(in feet)

Strip 1

	X	Y
729870 South Corner Middle Dock	0.0	0.1
733862 Minn. Power & Light Co. Tk.	-0.3	-1.0
735856 West Corner Lakehead Dock	0.1	1.1
738103 Duluth Centrol High Sch. Cupola Spire	0.0	-0.2

Strip 2

732801 Tie Point	0.0	0.0
797849 West Corner Superior Terminal Dock	0.0	0.0
799801 Tie Point	0.0	0.0

Strip 3

753120 Duluth Enger Memorial Tower	-0.3	-0.1
736110 Duluth Peavey Elevator Co. Stack, 1921	1.2	0.4
759817 Corner Park Dock	-3.0	0.1
806137 Superior St. Francis Xavier Cath. Church Spire, 1952	2.9	0.9
763831 Tie Point	-0.8	-1.3

Strip 4

806137 Superior St. Francis Xavier Cath. Church Spire, 1952	0.0	0.0
761843 End Northern Pacific Ry Wall	0.0	0.0
761804 Tie Point	0.0	0.0

ADDENDUM TO CM-8008
DULUTH-SUPERIOR HARBOR
MINNESOTA-WISCONSIN
APRIL 1981

Strip three was remeasured and adjusted to determine positions for hydrographic points and additional landmarks.

Strip four should not be used, because of inadequacy of control.

CLOSURES TO CONTROL FOR STRIP THREE

	X	Y
753801 DULUTH TV STA. WEBC MAST	-1.7	2.3
736120 DULUTH ENGER MEMORIAL TOWER	1.2	-1.3
736110 DULUTH PEAVEY ELEVATOR CO. STACK, 1921	3.2	-1.0
759817 CORNER PARK DOCK	-4.0	-0.3
806137 SUPERIOR ST. FRANCIS XAVIER CATH. CHURCH SPIRE, 1952	1.3	-0.3
761835 SOUTH BREAKWATER LIGHT	1.3	0.4

PHOTOGRAMMETRIC PLOT REPORT
Duluth-Superior Harbor
Minnesota-Wisconsin
CM-8008
December 1981

21. AREA COVERED

The area covered by this report is the shoreline of the St. Louis River from Fond Du Lac, Minnesota, northeast to where the river enters St. Louis Bay at Duluth, Minnesota. The river provides the boundary between Minnesota and Wisconsin. The project is covered by five (5) 1:5,000 scale manuscripts (TP's - 01083, 01084, 01087, 01088, 01089). TP-01081 will also be included in this project.

22. METHOD

Three strips of 1:15,000 scale color photography were bridged by standard analytic aerotriangulation methods. Strips 1A and 2A were each extended to include that portion of their respective strips which were bridged in December 1980. Strip 1 consisted of photographs 80E(C) 5795 through 5799, and Strip 1A was 80E(C) 5787 through 5796. Strip 2 was 80E(C) 5729 through 5739, and 2A was 80E(C) 5723 through 5731.

Field identified control was provided and supplemented by office identified control. Tie points were used to ensure an adequate junction between the strips and to control Strip 2. The State Plane Coordinates for this project were based on the Wisconsin North Zone.

Ratio values were determined from the bridging photography, which is also to be used for compilation purposes.

23. ADEQUACY OF CONTROL

In May 1981, a field party established five 3rd order control stations to be used to control Strips 1A, 2A, and 5. This photography covers TP-01083, TP-01087, TP-01088 and TP-01089. The control was adequate and will probably meet NOS manuscript requirements.

Oliver 1981, sub point two, is the center line end of a pier. It would not fit the other control by 1 foot in X and 10 feet in Y. Jim Shea, Coastal Survey Section, AMC, believes that the pier was rebuilt after the photography was taken. This point was not used in the adjustment.

Photos 7595 and 7596 were used in the adjustment of Strip 2, as well as, in the adjustment of Strip 2A. Points on these photos differed by up to 10 feet in the two adjustments. The discrepancy was probably due to the quality of the control (which had an accuracy of 1.0 to 2.0 meters) and the inability to determine the exact image of the photo control point during mensuration of Strip 2.

It was decided to readjust Strips 1 and 1A as one continuous strip, followed by readjusting Strips 2 and 2A as one continuous strip using tie points from 1 and 1A. These adjustments may not meet NOS manuscript requirements in areas not influenced by control established in May 1981.

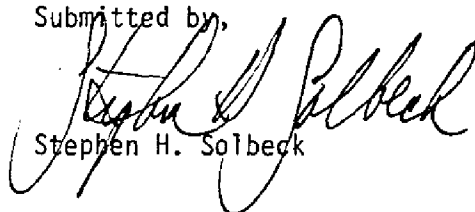
24. SUPPLEMENTAL DATA

USGS quads were used to provide vertical control for the adjustments. Nautical Charts were used to locate aids and landmarks.

25. PHOTOGRAPHY

The coverage, overlap, and quality of the photography proved adequate for the job.

Submitted by,

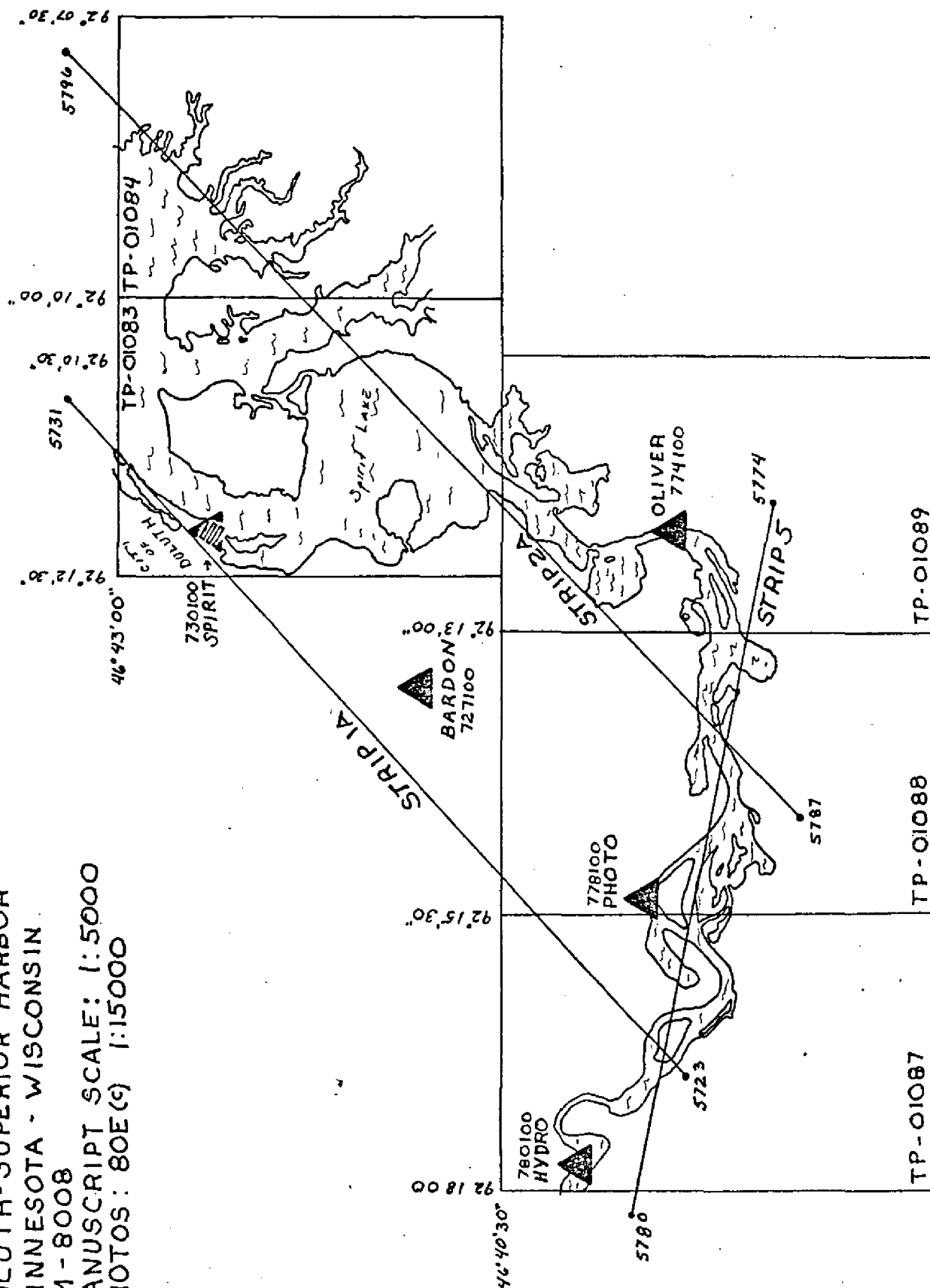

Stephen H. Solbeck

Approved and Forwarded:



Don O. Norman
Chief, Aerotriangulation Section

DULUTH-SUPERIOR HARBOR
 MINNESOTA - WISCONSIN
 CM-8008
 MANUSCRIPT SCALE: 1:5000
 PHOTOS: 80E(9) 1:15000



CM-8008
FIT TO CONTROL
(in feet)

STRIP 1 and 1A (combined)

	<u>X</u>	<u>Y</u>
▲ 780101	-1.077	- .779
780102	- .095	-1.680
723801	1.249	-1.233
723802	1.013	-1.799
723803	.990	-1.527
724801	.873	- .963
724802	.457	- .560
724803	.822	- .283
▲ 778101	1.593	.835
▲ 778102	.519	.195
727101	-1.751	.538
▲ 727102	-1.681	- .108
729869	-3.832	3.134
729870	- .444	2.141
730101	-1.598	.426
▲ 730102	- .623	1.506
731867 (plotted 731467)	2.103	6.988
731868 (plotted 731468)	- .091	2.565
▲ 733124	1.513	-1.115
▲ 733862	.447	-1.298
735855	4.411	5.460
735856	1.109	1.518
736110	.482	2.310
736805	- .310	2.992
738103	-1.406	.891
738801 (plotted 738501)	-9.282	-7.111
▲ 738802 (plotted 738502)	- .690	.764

STRIP 2 and 2A (combined)

724804	1.276	-1.292
▲ 724805	.728	- .749
▲ 725802	- .682	.636
726801	.026	.416
726802	.263	- .041
774101	.578	.936
774102	1.068	-9.104
727801	.840	.606
727802	.053	1.233
▲ 728801	- .398	.862
728802	.610	.162

FIT TO CONTROL
(continued)

STRIP 2 and 2A (cont)

	<u>X</u>	<u>Y</u>
729801	- .134	.429
729802	- .372	- .505
▲ 730801	.405	- .776
730802	- .206	- .811
731801	- .883	- .503
▲ 732801	- .123	- .435
732802	- .359	.570
733801	.396	-1.004
733802	-1.322	-1.376
797849	-1.899	4.628
756801	-1.359	3.288
▲ 756802	-1.183	2.708
798801	.128	- .784
▲ 798802	.679	- .627
▲ 799801	.579	-1.616

STRIP 5

▲ 774101	- .005	.001
774102	.085	-11.028
778101	.705	-2.271
▲ 778102	.024	- .011
▲ 780101	- .454	.740
▲ 780102	.435	- .730

▲ Stations held during bridging

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	STATION NAME	JOB NO.	SOURCE OF INFORMATION (Index)	AEROTRIANGULATION POINT NUMBER	GEODETIC DATUM		GEOGRAPHIC POSITION		ORIGINATING ACTIVITY	REMARKS
					COORDINATES IN FEET STATE <u>WIS</u> ZONE <u>N 62 T 4</u>	ϕ LATITUDE λ LONGITUDE				
TP-01081	Duluth Peasey Elan	Cm 8008	460921	110	X=	1 473 993.57	ϕ	46 45 38.602		
					Y=	588 236.29	λ	92 05 55.842		
CO Stack 1921	Superior, Globe Elan	1102	460921	116	X=	1 471 895.	ϕ	46 44 32.97		
					Y=	581 640.	λ	92 06 23.46		
Superior, Farmington Elan. Flagstaff 1952	1100	(field)	460921	117	X=	1 473 133.58	ϕ	46 44 24.692		
					Y=	580 768.64	λ	92 06 05.252		
West Gate 1980	(field)		460921		X=	1 471 717.321	ϕ	46 44 46.20		
					Y=	583 036.199	λ	92 06 26.54		
SF Lewis 1980	(field)		460921		X=	1 467 385.793	ϕ	46 44 23.77		
					Y=	580 827.920	λ	92 07 27.87		
					X=		ϕ			
					Y=		λ			
					X=		ϕ			
					Y=		λ			
					X=		ϕ			
					Y=		λ			
					X=		ϕ			
					Y=		λ			
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					X=		ϕ			
					Y=		λ			
					X=		ϕ			
					Y=		λ			
					X=		ϕ			
					Y=		λ			
COMPUTED BY					COMPUTATION CHECKED BY				DATE	
LISTED BY	J. SCHAD				LISTING CHECKED BY	C. LEWIS			DATE	1-81
HAND PLOTTING BY					HAND PLOTTING CHECKED BY				DATE	

Compilation Report
TP-01081

31. Delineation

This map manuscript was compiled using the B-8 stereoplotter and holding to pass points established by the Aerotriangulation Section. The limits of detail shown is to the first main road adjacent to the shoreline. Detail within this area was kept to a minimum (Refer to Item 46).

32. Control

See the Aerotriangulation Report for the adequacy of horizontal control. Vertical control taken from USGS quads was used in the leveling of the stereomodels.

33. Supplemental Data

None

34. Contour and Drainage

Contours are not applicable. Drainage was compiled from office interpretation of the photos.

35. Shoreline and Alongshore Detail

The shoreline and alongshore details shown on this manuscript represent the lake level at the time of photography. The lake level at the time of the photography was (1) foot above the Lake Superior Low Water Datum. All shoreline and alongshore features are from office interpretation of these photographs.

36. Offshore Detail

Offshore detail compiled; area of grass in water, piling, obstruction area and foul areas will be verified by field party.

37. Landmark and Aids

The position of four landmarks were determined and three geodetic positions were verified by the Aerotriangulation Section. Three aids to navigation were identified during compilation (See NOAA Form 76-40).

38. Control for Future Surveys

Photo-hydro points were established by compilation section and position determined by analytical methods. These positions are to be given to the hydro-field party, (copy bound with this report). *See Addendum*

39. Junctions

TP-01081, junctions with TP-01078 to the north, TP-01082 to the east, TP-01080 to the west and none to the south.

40 through 45. Inapplicable46. Comparison with Existing Maps

During compilation a continuous comparison was made with TP-00680. This survey was compiled at a scale of 1:15,000 using the format from chart 14975 and is intended as a new base for this chart, but has yet to be applied. Although, some duplication of features exist, the interior detail shown on TP-01081 consist mainly of features that have been constructed or changed since TP-00680 was compiled. TP-01081 is not intended to supersede the interior portion of TP-00680, but should be used only to add those new features compiled.

Comparison was made with the following USGS 7.5 minute quads:

Superior, Wisc-Minn, 1954 photorevised 1969, 1975, scale 1:24,000
Duluth, Minn, 1953 photorevised 1969, scale 1:24,000

47. Comparison with Nautical Charts

Comparison was made with Nautical Chart 14975, scale 1:15,000, 26th Edition, April 26, 1980.

Items to be applied to Nautical Charts immediately - None

Items to be carried forward - None

Submitted by,



James Schad

Approved and Forwarded:



Frank Wright
Chief, Coastal Mapping Section

ADDENDUM TO COMPILATION REPORT

TP-01081

Due to readjustment of the original aerotriangulation, the southern part of this manuscript was recompiled. Photo-hydro points established by previous compilation are not shown on the new manuscript because they did not meet NOS accuracy standards.



J. Jeffery C. Moler
March 4, 1982

ADDENDUM TO COMPILATION REPORT

Photogrammetric data previously furnished (during the 1981 field season) for use as possible hydrographic control signal sites in the Duluth-Superior Harbor area should not be used and was not bound with this report.



Robert B. Kelly
June 8, 1982

FIELD EDIT REPORT
TP-01081

51. Method

A 19-foot MonArk outboard boat was used to inspect the entire shoreline from the water. All changes were noted on the master field edit print and photographs 80EC5755, 5756, and 5798. A plane table survey was used to verify landmarks and fixed aids to navigation.

52. Adequacy of Compilation

Compilation of this manuscript was very good. The scale of the photography, and the fact that it was flown so recently helped make the field edit go smoothly. The biggest discrepancy was in areas which had been compiled as grassy areas, but turned out to be simply shallow water. There were also some minor discrepancies in the shoreline interpretation of areas in ruin, but these were easily resolved by field inspection.

53. Map Accuracy

Refer to Photogrammetric Plot Report, CM-8008 for statement of map accuracy of horizontal control.

54. Recommendations

Photo centers should be shown on all manuscripts. This will make it easier for the field editor to orient the photos, and to determine which photos to use to locate features.

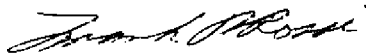
Some chronopaque photos for this manuscript were not sent with the project. All these photos should be supplied.

Assistance with field edit by office compilers should be continued. Office personnel will benefit from the field experience, and can offer valuable expertise to the ships.

55. Examination of Proof Copy

No statement.

Chief of Party

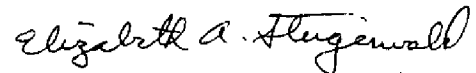


CDR Frank P. Rossi

Respectfully submitted,



Lowell O. Neterer, Jr.



ENS Elizabeth A. Steigerwald

Review Report
Shoreline Survey
TP-01081

61. General Statement

A final review was performed for this shoreline map. No major discrepancies were encountered. Bulkheads in ruins, Pilings in ruins and Pilings were used interchangeable by the field person. Any ruins forming the shoreline were labeled Bulkhead ruins. Ruins not touching the shoreline were labeled Piling. Both are shown by the standard dash line symbol. The cultural feature name, Piling in ruins, was not used. For a complete analysis of compilation, refer to the Compilation Report bound with this Descriptive Report.

62. Comparison with Registered Topographic Survey - None

63. Comparison with Maps of Other Agencies

Refer to the Compilation Report paragraph 46, bound with this Descriptive Report.

64. Comparison with Contemporary Hydrographic Surveys - None

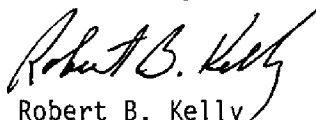
65. Comparison with Nautical Charts

Refer to the Compilation Report, paragraph 47, bound with this Descriptive Report.

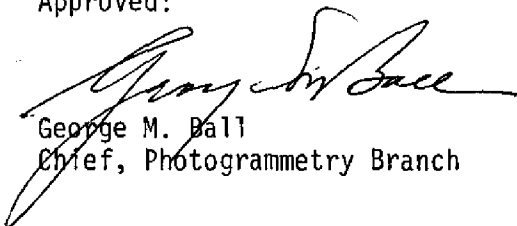
66. Adequacy of Results and Future Surveys

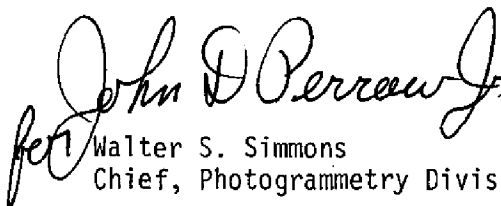
This map complies with photogrammetric instructions for shoreline mapping and meets accuracy required by National Standards of Maps.

Submitted by,


Robert B. Kelly
Final Reviewer

Approved:


George M. Ball
Chief, Photogrammetry Branch


Walter S. Simmons
Chief, Photogrammetry Division

June 3, 1982

GEOGRAPHIC NAMES

FINAL NAME SHEET

CM-8008, (Duluth-Superior Harbor, Minn. - Wis.)

TP-01081

Burlington Northern (RR)

Chicago and North Western (RR)

Connors Point

Duluth

Duluth Winnipeg and Pacific (RY)

Hearding Island

Howards Bay

Minnesota Point

Rices Point

St. Louis Bay

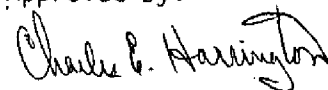
Soo Line (RR)

Superior

Superior Bay

Tower Bay Slip

Approved by:



Charles E. Harrington
Chief Geographer, OA/C3x5

Information on Dissemination of Project Material

CM-8008

Duluth-Superior Harbor Minnesota & Winconsin

National Archives/Federal Record Center

Aerotriangulation Photographs

Plot Report

Computer Printouts

Control Identification Cards (Horizontal)

NOAA Form(s) 76-41 (Descriptive Report Control Record)

Master Field Edit Sheets

Project Diagrams

Listing of Hydrographic Control Points

Listing of Plotted Points

Ratio Photographs

Bureau Archives

Registered Maps

Descriptive Reports

Reproduction Division

8X Reduction Negative of Each Map

Office of Staff Geographer

Geographer Names Standard

Marine Chart Division

Chart Maintenance Print

76-40 LISTIN PHOTOGRAMMETRIC BRANCH NATIONAL OCEAN SURVEY NOAA DATATAB
PHOTOGRAMMETRY DIVISION DEPARTMENT OF COMMERCE USA VERSION 782707

* SVY TP-01081 * RPT UNIT CMD, ROCKVILLE MD. * PAGE 1 OF 4 *
* JOB CM8008 * STATE MINNESOTA-WISCONSIN *
* PRJ * LOCALITY DULUTH SUPERIOR HBR * ORIGINATING ACTIVITY *
* DTM NA1927 * DATE 03/19/81 * COMPILATION *
*
* OBJECTS INSPECTED FROM SEAWARD * E. STEIGERWALD, L. NETERER * HYDROGRAPHIC PARTY *
* POSITIONS DETERMINED * E. STEIGERWALD, L. NETERER * FIELD REPRESENTATIVE *
* AND/OR VERIFIED BY * JAMES E. SHAD * OFFICE COMPILER *
* FIELD AND OFFICE * N/A * DIGITIZER *
* ACTIVITIES * ALFRED BETHEA * DATA PROCESSER *
*
* KEY FOR ENTRIES UNDER METHOD AND DATE OF LOCATION *
* FIELD (CONT. D) *
* OFFICE *
* 1. OFFICE IDENTIFIED AND LOCATED OBJECTS. *
* THE NUMBER AND DATE (INCLUDING MONTH, DAY *
* AND YEAR) OF THE PHOTOGRAPH USED TO *
* IDENTIFY AND LOCATE THE OBJECT ARE SHOWN. *
* EXAMPLE 75E(C)6042 *
* 8-12-77 *
*
* FIELD *
* 1. NEW POSITION DETERMINED OR VERIFIED *
* KEY TO SYMBOLS *
* 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* SHOW THE METHOD OF *
* LOCATION AND DATE OF FIELD WORK. *
* EXAMPLE F-2-6-L *
* 8-12-76 *
*
* FIELD POSITIONS ARE DETERMINED BY FIELD *
* OBSERVATIONS BASED ENTIRELY UPON GROUND *
* SURVEY METHODS *
*
* 2. TRIANGULATION STATION RECOVERED *
* WHEN A LANDMARK OR AID WHICH IS ALSO A TRI- *
* ANGULATION STATION IS RECOVERED, A TRIANG. *
* REC. WITH DATE OF RECOVERY IS SHOWN. *
* EXAMPLE TRIANG. REC. *
* 8-12-76 *
*
* 3. POSITION VERIFIED VISUALLY ON PHOTOGRAPH *
* SHOWN BY 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. *
*
* NOTE: WHERE THE NAME OF AN AID INCLUDES THE IMMEDIATE GEOGRAPHIC HEADING UNDER WHICH IT IS LISTED, *
* A DASH (-) IS USED TO INDICATE THE GEOGRAPHIC HEADING WHICH IS PART OF THE OFFICIAL NAME. *

[illegible]

