# DESCRIPTIVE REPORT

This map edition will not be field edited.

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<tbody>
<tr>
<td>TP-00359</td>
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</tr>
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</table>

**Job No.** CM-8407  

**Map Classification**  
CLASS III (FINAL)

**Type of Survey**  
SHORELINE

## LOCALITY

**State** MINNESOTA  
**General Locality** LAKE SUPERIOR  
**Locality** SILVER BAY, TACONITE HARBOR, AND GRAND MARAIS HARBOR

1984 TO 19

REGISTERED IN ARCHIVES

DATE
DESCRIPTIVE REPORT - DATA RECORD

PHOTOGRAHMATIC OFFICE
Coastal Mapping Unit
Atlantic Marine Center, Norfolk, VA

OFFICER-IN-CHARGE
A. Y. Bryson, CDR

I. INSTRUCTIONS DATED

1. OFFICE
Compilation
October 28, 1985

2. FIELD
Control
June 12, 1985

II. DATUMS

1. HORIZONTAL: 1927 NORTH AMERICAN

2. VERTICAL:

   □ MEAN HIGH-WATER
   □ MEAN LOW-WATER
   □ MEAN LOWER LOW-WATER
   □ MEAN SEA LEVEL

OTHER (Specify)

3. MAP PROJECTION
Lambert Conformal Conic Projection

4. GRID(S)
STATE
Minnesota
ZONE
North

III. HISTORY OF OFFICE OPERATIONS

1. AEROTRIANGULATION
   METHOD: None
   LANDMARKS AND AIDS BY
   NAME
   DATE
   N.A.
   N.A.

2. CONTROL AND BRIDGE POINTS
   METHOD: Xynetics
   PLOTTED BY
   CHECKED BY
   W. McLemore
   W. McLemore
   Aug. 1985
   Aug. 1985

3. STEEROSCOPIC INSTRUMENT
   COMPIATION
   INSTRUMENT: Wild B-8
   PLANIOMETRY BY
   CHECKED BY
   W. McLemore/F. Mauldin
   Sept. 1985
   Sept. 1985

   SCALE: 1:10,000
   CONTOURS BY
   CHECKED BY
   N.A.
   N.A.
   N.A.
   N.A.

4. MANUSCRIPT DELINEATION
   METHOD: Smooth drafted
   PLANIMETRY BY
   CHECKED BY
   CONTOURS BY
   CHECKED BY
   Hydro support data
   Checked by
   P. Evans
   P. Evans
   F. Mauldin
   F. Mauldin
   Oct. 1985
   Nov. 1985
   N.A.
   N.A.
   N.A.
   N.A.
   N.A.

5. OFFICE INSPECTION PRIOR TO...
   REVIEW
   Date
   N.A.

   9. DATA forwarded to photogrammetric branch
   10. DATA EXAMINED IN PHOTOMGRAMMETRIC BRANCH
   11. MAP REGISTERED - COASTAL SURVEY SECTION
   REVIEW
   By
   Date
   F. Mauldin
   Nov. 1985
   J. Hancock
   Dec. 1985
   Jan. 1986
   F. Mauldin
   Feb. 1986

NOAA FORM 76-36A
SUPERSEDES FORM C&GS 181 SERIES
1. Compilation Photography

CAMERA(S) Wild RC-10 (Z)
(focal length = 153.15 mm)

<table>
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<tr>
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<th>DATE</th>
<th>TIME</th>
<th>SCALE</th>
<th>*</th>
<th>TIME REFERENCE</th>
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<tr>
<td>Silver Bay</td>
<td>May 15, 1984</td>
<td>13:45'</td>
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<tr>
<td>Taconite Harbor</td>
<td>May 15, 1984</td>
<td>13:36'</td>
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<td>Grand Marais Harbor</td>
<td>May 15, 1984</td>
<td>13:23'</td>
<td>1:10,000</td>
<td>600.9 ft.</td>
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REMARKS
*Water level at the time of photography is indicated as recorded from the Grand Marais, Minnesota gage. Low Water Datum for Lake Superior is 600.0 feet.

2. Source of Mean High-Water Line:

The term "mean high water line" is not applicable. The shoreline is defined as the visible line of contact on the photographs between land and water. Delineation of the shoreline was derived by photointerpretation of the above listed color compilation photographs.

3. Source of Mean Low-Water or Mean Lower Low-Water Line:

This item is not applicable to this project.

4. Contemporary Hydrographic Surveys (List only those surveys that are sources for photogrammetric survey information.)

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<tr>
<th>SURVEY NUMBER</th>
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<th>SURVEY COPY USED</th>
<th>SURVEY NUMBER</th>
<th>DATE</th>
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5. Final Junctions

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<tr>
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REMARKS
The three harbors covered by this map do not junction with each other or any other surveys.
### HISTORY OF FIELD OPERATIONS

**1. FIELD INSPECTION OPERATION**

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<thead>
<tr>
<th>OPERATION</th>
<th>NAME</th>
<th>DATE</th>
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<tr>
<td>1. CHIEF OF FIELD PARTY</td>
<td>J. Dunford</td>
<td>July 1985</td>
</tr>
<tr>
<td>2. HORIZONTAL CONTROL</td>
<td>J. Dunford</td>
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</tr>
<tr>
<td>3. VERTICAL CONTROL</td>
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<td>July 1985</td>
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<tr>
<td>4. LANDMARKS AND AIDS TO NAVIGATION</td>
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<td>None</td>
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<tr>
<td>5. GEOGRAPHIC NAMES</td>
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#### TYPE OF INVESTIGATION
- [ ] COMPLETE
- [ ] SPECIFIC NAMES ONLY
- [ ] NO INVESTIGATION

#### SOURCE DATA

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<thead>
<tr>
<th>PHOTO NUMBER</th>
<th>STATION NAME</th>
<th>PHOTO NUMBER</th>
<th>STATION DESIGNATION</th>
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<tr>
<td>842(C)</td>
<td>11 Sub Pts derived from SILVER BAY 1982 and BEAVER Bay 1953</td>
<td>3674-3677</td>
<td>11 NOAA Forms 76-53 (CSI)</td>
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</table>

#### OTHER FIELD RECORDS

- 11 NOAA Forms 76-53 (CSI)
- 20 NOAA Forms 76-19
- 6 NOAA Forms 75-63 (Solar)
- 11 NOAA Forms 76-135

**2. FIELD EDIT OPERATION**

<table>
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<tr>
<td>J. Dunford</td>
<td>July 1985</td>
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**3. PHOTO NUMBERS (Clarification of details)**

None

**4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED**

None
### Field Inspection Operation

**Operation** | **Name** | **Date**
--- | --- | ---
1. CHIEF OF FIELD PARTY | J. Dunford | July 1985
2. HORIZONTAL CONTROL | J. Dunford | July 1985
3. VERTICAL CONTROL | N.A. | N.A.
4. LANDMARKS AND AIDS TO NAVIGATION | None | None
5. GEOGRAPHIC NAMES INVESTIGATION | N.A. | N.A.
6. PHOTO INSPECTION | N.A. | N.A.
7. BOUNDARIES AND LIMITS | N.A. | N.A.

### Source Data

1. HORIZONTAL CONTROL IDENTIFIED
   - Photoidentified
   - **PHOTO NUMBER**: 842(C)
   - **3662-3665**
   - 9 Sub Pts derived from TACONITE, 1982

2. VERTICAL CONTROL IDENTIFIED
   - Photoidentified
   - **PHOTO NUMBER**: 842(C)
   - **3662-3665**
   - 9 Sub Pts derived from TACONITE, 1982

3. PHOTO NUMBERS (Clarification of details)
   - None

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED
   - None

5. GEOGRAPHIC NAMES:
   - REPORT
   - NONE

6. BOUNDARY AND LIMITS:
   - REPORT
   - NONE

7. SUPPLEMENTAL MAPS AND PLANS
   - None

8. OTHER FIELD RECORDS (Sketch books, etc. DO NOT list data submitted to the Geodesy Division)
   - 9 NOAA Forms 76-53 (CS1)
   - 14 NOAA Forms 76-19
   - 11 NOAA Forms 75-63 (Solar)
   - 6 NOAA Forms 76-86
   - 5 NOAA Forms 76-135
   - 1 NOAA Form 76-156
   - 2 NOAA Forms 76-52
   - Project Data
### HISTORY OF FIELD OPERATIONS

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<td>VERTICAL CONTROL</td>
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### SOURCE DATA

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

- 7 NOAA Forms 76-53 (CSI)
- 14 NOAA Forms 76-19
- 13 NOAA Forms 75-63 (Solar)
- 12 NOAA Forms 76-86
- 9 NOAA Forms 76-135
- 1 NOAA Form 76-156
- 2 NOAA Forms 76-52

*Project Data*
### I. MANUSCRIPT COPIES

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<th>Compilation Stages</th>
<th>Date</th>
<th>Remarks</th>
<th>Marine Charts</th>
<th>Hydro Support</th>
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<td>Compilation complete</td>
<td>Nov. 1985</td>
<td>Class III Manuscript</td>
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<td>Final Review, Class III</td>
<td>Dec. 1985</td>
<td>Final Class III Map</td>
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### II. LANDMARKS AND AIDS TO NAVIGATION

#### 1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

<table>
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<td>1-16-86</td>
<td>Landmarks for Charting</td>
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<td>1-16-86</td>
<td>Aids for Navigation for Charting</td>
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### III. FEDERAL RECORDS CENTER DATA

1. **xx Field Identified Photographs**
2. **xx Control Station Identification Cards; xx Form Nos Submitted by Field Parties.**
3. **xx Source Data (except for Geographic Names Report) as listed in Section II, NOAA Form 76-36C.**
4. **xx Report to Federal Records Center.**

### IV. SURVEY EDITIONS

<table>
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<th>Survey Number</th>
<th>Job Number</th>
<th>Type of Survey</th>
<th>Map Class</th>
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CM-8407
LAKE SUPERIOR
SILVER BAY, TACONITE HARBOR
AND GRAND MARAIS HARBOR
MINNESOTA
SHORELINE MAPPING
SCALE 1:10,000
(CHART INSETS)
SUMMARY TO ACCOMPANY
DESCRIPTIVE REPORT

TP-00359
CM-8407

This final Class III shoreline manuscript comprises project CM-8407. This single manuscript includes three 1:10,000 scale harbor inset maps covering the shoreline areas of Silver Bay, Taconite Harbor and Grand Marais Harbor, Lake Superior, Minnesota.

The purpose of this project is to provide current charting information for nautical chart maintenance and to furnish support data for future hydrographic operations.

Photo coverage was adequately provided by natural color photographs. Aerial photographs of the three sites were taken May 15, 1984 at 1:10,000 scale with the Wild RC-10(Z) camera.

Field operations prior to compilation consisted of obtaining aerial photography and the recovery, establishment and photoidentification of horizontal control necessary to effect stereo model orientation of the compilation photographs.

Compilation was accomplished at the Coastal Mapping Unit, Atlantic Marine Center in November 1985. No aerotriangulation activity was performed since sufficient geodetic control was field determined for stereo instrument compilation. Manuscript preparation and the plotting of horizontal control was performed by the compilation unit. Delineation of map detail was based upon interpretation of the 1:10,000 scale photographs.

Final review was performed at the Atlantic Marine Center in December 1985. A Chart Maintenance Print was prepared and forwarded to the Marine Chart Branch. Final 76-40 forms for the landmarks and fixed navigational aids were provided for each map. Also, a Notes to Hydrographer Print was prepared for future hydrographic activity.

This Descriptive Report contains all pertinent information used to compile the three final Class III maps portrayed on the manuscript. The original base manuscript and related data were forwarded to the Washington Science Center for final registration.
FIELD INSPECTION

TP-00359

There was no field inspection prior to compilation. Field work accomplished consisted of aerial photography and the recovery and photoidentification of the horizontal control necessary for the compilation of the project. There was no field inspection of the shoreline performed.
FIELD REPORT
CM-8407
SILVER BAY, MN

The project was completed according to Project Instructions dated June 12, 1985. The project consisted of photoidentifying 11 horizontal control points. These points were chosen and pricked on the photographs by the Photogrammetry Branch in Rockville. Some of these points could not be used, so other points were selected as close to these points as possible. All photo points on this project were located by third-order traverse methods.

The field work on this project was completed in one and one-half weeks by one field and two office personnel from AMC.

All data for the project was given to the Compilation Unit at AMC.

Submitted by

James E. Dunford, Jr.
FIELD REPORT
CM-8407
TACONITE HARBOR, MN

The project was completed according to Project Instructions dated June 12, 1985. The project consisted of photoidentifying 9 horizontal control points. These points were chosen and pricked on the photographs by the Photogrammetry Branch in Rockville. Some of these points could not be used, so other points were selected as close to these as possible. Photo Points 1-7 were located by third-order traverse from Station TACONITE 1982. Photo Points 8-9 were located by Doppler Satellite System. Temporary points were established with the satellite position near the photo points; a traverse was then made between the temporary points and the photo points using a sun azimuth. Station TACONITE was established in 1982 with the Doppler Satellite System by Gary Frederick.

The field work on this project was completed in one week by one field and two office personnel from AMC.

All data for the project was given to the Compilation Unit at AMC.

Submitted by

James E. Dunford, Jr.
FIELD REPORT
CM-8407
GRAND MARAIS, MN

The project was completed according to Project Instructions dated June 12, 1985. The project consisted of photoidentifying 7 horizontal control points. Photo points were chosen and pricked on the photos by the Photogrammetry Branch in Rockville. Some of these points could not be used, so other points were pricked as close to these points as possible. All photo points were located from Station MARAIS 1982 by spur traverse using sun azimuth. Station MARAIS was established in 1982 with the Doppler Satellite System by Gary Frederick.

The field work on this project was completed in one week by one field and two office personnel from AMC.

All date for the project was give to the Compilation Unit at AMC.

Submitted by

James E. Dunford, Jr.
PHOTOGRAMMETRIC PLOT REPORT
CM-8407
SILVER BAY, TACONITE HARBOR, GRAND MARAIS HARBOR,
LAKE SUPERIOR, MINNESOTA
AUGUST 1985

21. AREA COVERED

This report pertains to the area covered by three 1:10,000 scale harbor maps located along the north shore of Lake Superior, Minnesota. These three maps are contained on one manuscript, TP-00359.

22. METHOD

The densification of horizontal control by aerotriangulation methods was not necessary for this project. Consequently, the Photogrammetric Compilation Section, Atlantic Marine Center prepared three base manuscripts for the plotting of horizontal control and basic compilation. All control was field established and photoidentified on the 1:10,000 scale compilation photos. A 1:10,000 scale manuscript representing each mapping area, was ruled on the Xynetics 1201 plotter using the Minnesota North Zone State Plane Coordinate System. This system is based on the Lambert Conformal Conic Projection.

23. ADEQUACY OF CONTROL

The horizontal control provided adequate coverage for stereo model orientation and will meet National Standards of Map Accuracy.

24. SUPPLEMENTAL DATA

USGS quadrangles will be used to supply vertical control for compilation.

25. PHOTOGRAPHY

Single strip coverage of 1:10,000 scale photographs was adequately provided for each of the three mapping areas.

Submitted by

William T. McLemore

William T. McLemore
Coastal Mapping Unit, AMC

Approved and forwarded

Billy H. Barnes
Chief, Photogrammetric Section, AMC
# Descriptive Report Control Record

<table>
<thead>
<tr>
<th>MAP NO.</th>
<th>JOB NO.</th>
<th>GEOGRAPHIC POSITION</th>
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<td>1927 N.A.</td>
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<th>AEROTRI-ANGULATION POINT NUMBER</th>
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<td>BEAVER BAY, 1953</td>
<td>Quad 470912</td>
<td>Sta. 1002</td>
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<td>North</td>
<td>Coastal Mapping</td>
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<td>y=</td>
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| REMARKS | | |
|---------|------------------|

**COMPUTED BY**

<table>
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<tr>
<th>DATE</th>
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<tbody>
<tr>
<td>8-26-85</td>
<td>P. Mauldin</td>
<td>10-30-85</td>
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**HAND PLOTTING BY**

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<tbody>
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# Descriptive Report Control Record

**Map No.** (Silver Bay)  
**Job No.** CM-8407  
**Geodetic Datum** 1927 N.A.  
**Originating Activity** Coastal Mapping Unit, AMC, Norfolk, VA

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<th>Source of Information</th>
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<th>Remarks</th>
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<td></td>
<td></td>
<td>( y = )</td>
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<td></td>
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**Computed By**  
**Date**  
**Computation Checked By**  
**Date**

**Listed By** W. McLemore, Jr.  
**Date** 8-26-85  
**Listing Checked By** F. Mauldin  
**Date** 10-30-85

**Hand Plotting By**  
**Date**  
**Hand Plotting Checked By**  
**Date**

*Supersedes NOAA Form 75-41, 2-75 Edition Which is Obsolete.*
### Descriptive Report Control Record

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<tr>
<th>Station Name</th>
<th>Source of Information (Index)</th>
<th>Aerontri-Angulation Point Number</th>
<th>Coordinates in Feet</th>
<th>Geographic Position</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taconite, 1982</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>47 31 17.4749'</td>
<td></td>
</tr>
<tr>
<td>Sub Point 1</td>
<td>AMC comp.</td>
<td></td>
<td>y=</td>
<td>90 55 23.0814'</td>
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<tr>
<td>Sub Point 2</td>
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<td></td>
<td></td>
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<td>y=</td>
<td>90 55 17.6333'</td>
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</tr>
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<td>Sub Point 3</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>47 31 19.6970'</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>90 55 38.1546'</td>
<td></td>
</tr>
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<td>AMC comp.</td>
<td></td>
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</tr>
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<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>90 55 52.7309'</td>
<td></td>
</tr>
<tr>
<td>Sub Point 5</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>47 31 43.4570'</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>90 54 59.4071'</td>
<td></td>
</tr>
<tr>
<td>Sub Point 6</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>47 31 33.5600'</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>90 54 26.1238'</td>
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</tr>
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<td>Sub Point 7</td>
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<td></td>
<td>X=</td>
<td>47 31 56.4784'</td>
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<td></td>
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<td>90 54 36.5755'</td>
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</tr>
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<td>Sub Point 8</td>
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<td></td>
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<td>y=</td>
<td>90 55 04.9887'</td>
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</tr>
<tr>
<td>Sub Point 9</td>
<td>AMC comp.</td>
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<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>90 56 22.7905'</td>
<td></td>
</tr>
</tbody>
</table>

**Computed By:**

- **Date:** 8-26-85
- **Computation Checked By:** F. Mauldin
- **Date:** 10-30-85

**Listed By:** W. McLomare, Jr.

**Hand Plotting By:**

**Date:**

---

Supercedes NOAA Form 76-41, 2-71 Edition which is Obsolete.
# Descriptive Report Control Record

<table>
<thead>
<tr>
<th>STATION NAME</th>
<th>SOURCE OF INFORMATION</th>
<th>AEROTRIANGULATION POINT NUMBER</th>
<th>COORDINATES IN FEET</th>
<th>GEOGRAPHIC POSITION</th>
<th>ORIGINATING ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARAIS, 1982</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>( \phi = 47.44)</td>
<td>Coastal Mapping</td>
</tr>
<tr>
<td>Sub Point 1</td>
<td>AMC comp.</td>
<td></td>
<td>y=</td>
<td>( \lambda = 90.20)</td>
<td>AMC, Norfolk, VA</td>
</tr>
<tr>
<td>Sub Point 2A</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>( \phi = 47.45)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>( \lambda = 90.19)</td>
<td></td>
</tr>
<tr>
<td>Sub Point 2B</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>( \phi = 47.45)</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>( \lambda = 90.20)</td>
<td></td>
</tr>
<tr>
<td>Sub Point 3</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>( \phi = 47.44)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td>y=</td>
<td>( \lambda = 90.20)</td>
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<td>y=</td>
<td>( \lambda = 90.20)</td>
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<td>AMC comp.</td>
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<td>X=</td>
<td>( \phi = 47.44)</td>
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<td></td>
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<td>y=</td>
<td>( \lambda = 90.20)</td>
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<td>Sub Point 5</td>
<td>AMC comp.</td>
<td></td>
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<td></td>
<td></td>
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<td>y=</td>
<td>( \lambda = 90.20)</td>
<td></td>
</tr>
<tr>
<td>Sub Point 6</td>
<td>AMC comp.</td>
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<td>X=</td>
<td>( \phi = 47.44)</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>( \lambda = 90.21)</td>
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</tr>
<tr>
<td>Sub Point 7</td>
<td>AMC comp.</td>
<td></td>
<td>X=</td>
<td>( \phi = 47.44)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y=</td>
<td>( \lambda = 90.20)</td>
<td></td>
</tr>
</tbody>
</table>

**Computed by**
- DATE: [Computation Checked by] Date

**Listed by**
- W. McLeMors, Jr.
- DATE: 8-26-85
- LISTING CHECKED BY: [Listing Checked by] Date

**Hand Plotting by**
- DATE: [Hand Plotting Checked by] Date

* superseded NOAA Form 74-41, 2-71 edition which is obsolete.*
31 - DELINEATION

Delineation was accomplished using stereo instrument compilation methods. Instrument compilation was used to delineate shoreline, alongshore and interior detail based upon office interpretation of the 1:10,000 scale compilation color photographs. All photographs used to compile this manuscript are listed on NOAA Form 76-36B. The photography was adequate.

32 - CONTROL

No aerotriangulation operations were performed. Sufficient geodetic control was field photoidentified to effect model orientation of the color compilation photographs with an average of 5 identified points per model. All geodetic stations photoidentified were third-order, Class I or better. All control held well in the instrument.

U.S. Geological Survey quadrangles were used to provide vertical control for leveling the stereo models. The density and distribution of quadrangle elevations were adequate.

33 - SUPPLEMENTAL DATA

None.

34 - CONTOURS AND DRAINAGE

Contours are not applicable to this project. Drainage was compiled from office interpretation of the photography.

35 - SHORELINE AND ALONGSHORE DETAILS

The shoreline and alongshore details were compiled from office interpretation of the photographs as described in item #31. The shoreline compiled was the visible line of contact between land features and the water surface at the time of photography. Based on the International Great Lakes Datum (1955), the water level taken at Grand Marais, Minnesota, gage was 600.9 feet. Low Water Datum for Lake Superior is 600.0 feet.

36 - OFFSHORE DETAILS

Offshore details were compiled by instrument methods as described in item #31.

37 - LANDMARKS AND AIDS

There were 8 charted landmarks and 17 charted aids within the mapping limits of this manuscript. Among these, 8 landmarks and 12 aids were either located or verified photogrammetrically. Appropriate information was prepared on the 76-40 form and submitted with this map.
38 - CONTROL FOR FUTURE SURVEYS

None.

39 - JUNCTIONS

Refer to the Data Record Form 76-36B, Item 5 of the Descriptive Report.

40 - HORIZONTAL AND VERTICAL ACCURACY

See item #32.

46 - COMPARISON WITH EXISTING MAPS

A comparison was made with the following U.S. Geological Survey Quadrangles:
Grand Marais, Minn., dated 1960, scale 1:24,000
Good Harbor Bay, Minn., dated 1958, scale 1:24,000
Schroeder, Minn., dated 1955, scale 1:24,000, photorevised 1976
Silver Bay, Minn., dated 1982, scale 1:24,000.

47 - COMPARISON WITH NAUTICAL CHARTS

A comparison was made with the following NOS charts:
14967; 19th edition, dated October 30, 1982, scale 1:120,000 (3-1:10,000 scale insets)
14966; 19th edition, dated January 15, 1983, scale 1:120,000

ITEMS TO BE APPLIED TO NAUTICAL CHARTS IMMEDIATELY

None.

ITEMS TO BE CARRIED FORWARD

None.

Submitted by,

[Signature]

P. L. Evans, Jr.
Cartographic Technician
25 October 1985

Approved,

[Signature]

James L. Byrd, Jr.
Chief, Coastal Mapping Unit
GEOGRAPHIC NAMES

FINAL NAME SHEET

CM-8407 (Grand Marais, Silver Bay, & Taconite Harbor, Minnesota)

TP-00359

Bear Island
Beaver Island
East Bay
Erie Mining Company Railroad (RR)
Grand Marais (Grand Marais)
Grand Marais Harbor
Gull Island
Lake Superior (title)
Mining Railroad (RR)
Pellet Island
Silver Bay
Silver Bay Harbor
Taconite Harbor
Taconite Harbor (locality)
Two Island River
White Rock Creek

Approved:

Charles E. Harrington
Chief Geographer
Nautical Charting Division
Charting and Geodetic Services
61 - GENERAL STATEMENT

Refer to the Summary included in this Descriptive Report.

62 - COMPARISON WITH REGISTERED TOPOGRAPHIC SURVEYS

Not applicable.

63 - COMPARISON WITH MAPS OF OTHER AGENCIES

A comparison was made with the following 1:24,000 scale U.S.G.S. quadrangles:
Grand Marais, Minn., dated 1960
Good Harbor Bay, Minn., dated 1958
Schroeder, Minn., dated 1955, photorevised 1976
Silver Bay, Minn., dated 1982.

64 - COMPARISON WITH CONTEMPORARY HYDROGRAPHIC SURVEYS

Prior to final review, no contemporary hydrographic survey was accomplished in the area common to this map.

Hydrographic support data was prepared and submitted for future hydrographic activity.

65 - COMPARISON WITH NAUTICAL CHARTS

A comparison was made with the following NOS charts:
14967, 19th edition, dated Oct. 30, 1982, 1:120,000 scale (includes 3 1:10,000 scale insets)
14966, 19th edition, dated Jan. 15, 1983, 1:120,000 scale
14961, 6th edition, dated Nov.- 10, 1984, 1:600,000 scale

66 - ADEQUACY OF RESULTS AND FUTURE SURVEYS

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

Submitted by,
Jerry L. Hancock
Final Reviewer

Approved for forwarding,
Billy W. Barnes
Chief, Photogrammetric Section, AMC

Approved,
J. M. Moneg
Chief, Photogrammetric Section, Rockville

Ronald K. Brewer
Chief, Photogrammetry Branch, Rockville
By photogrammetric methods, field positions are determined by field observer.

Field positions are determined by field observer.

EXAMPLE: V-112-

Enter V-112, "V" indicates position verified visually on photograph.

EXAMPLE: T-12-

Acute, with date of recovery.

EXAMPLE: T-12-

When a landmark is recovering, enter "T".

EXAMPLE: 74L(C) 282-

8-12-

EXAMPLE: 74L(C) 6042-

L-12-

L-12-

EXAMPLE: 74L(C) 6042-

L-12-

L-12-

EXAMPLE: 74L(C) 6042-

L-12-

Office of field identified objects and located objects.

Office of field identified objects and located objects.

Responsibility for entries under method and date of location.

Activities and revision group and final review.

Forms organized by quality control.

Object identified and location of object.

Object identified and location of object.

1. Field identified and located objects.

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165. Office identified and located objects.
The following objects HAVE NOT been inspected from seaward to determine their value as landmarks.

<table>
<thead>
<tr>
<th>CHARTING NAME</th>
<th>DESCRIPTION</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>METHOD AND DATE OF LOCATION</th>
<th>CHARTS AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>STACK SW of 2</td>
<td></td>
<td>4717, 11.85</td>
<td>91 15, 37.40</td>
<td>842 (C) 3674, 5-15-84</td>
<td>14967</td>
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<tr>
<td>STACK NE of 2</td>
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<td>47 17, 11.47</td>
<td>91 15, 36.35</td>
<td>842 (C) 3674, 5-15-84</td>
<td>14967</td>
</tr>
</tbody>
</table>
**Vertical Control Points**

Vertically, or in part, points control established by photogrammetric methods.

*PHOTOGRAMMETRIC FIELD POSITIONS ARE DETERMINED BY FIELD OPERATOR.

### Field Positions are determined by field operator

6-12-75

**Example:** P-2-6-L

**Location and date of field work:**

4 - Reception
3 - Intersection
2 - Traverse
1 - Triangulation
5 - Field Identified
7 - Planimeter
6 - Theodolite
8 - Sextant

**Position Verified Visually on Photograph:**

11. Position Verified Visually on Photograph

**Example:** V-13

**Date, Year, and Date:**

enter 

**Position Verified station recorded:**

11. TRIANGULATION STATION RECORDED

**Example:** 7622-42872

**Date:** 8-16-75

**Example:** P-8-V

**Position Verified station recorded:**

get

**Position Identified by symbols as follows:**

1. NEW POSITION DETERMINED OR VERIFIED

**Example:** 7562-5042

**Location and date of field work:**

1. Office Identified and Located objects

**Form originated by quality control and revised by review:**

P L. REVISIONS

**Type of Action:**

RESponsible PERSONAL

**Name:**

**Originator:**

**Activity:**

**Representative:**

**Quality Control and Review Group:**

**Field Activity Representative:**

**Geodetic Party:**

**Hydrographic Party:**

**Photo Field Party:**

**Form:**

**Instructions for entries under method and date of location:**

1. Office Identified and Located objects

2. Objects Inspected from seaward

3. Lines Determined and Verified

4. Form originated by quality control and revised by review

5. L. REVISIONS

6. Position Verified station recorded

7. Position Verified Visually on Photograph

8. Sextant

9. Planimeter

10. Theodolite

11. Theodolite

12. Traverse

13. Intersection

14. Reception

15. Verification

16. Field Identified

17. Photogrammetry

18. Position Verified

19. Station recorded

20. Theodolite

21. Sextant

22. Planimeter

23. Intersection

24. Reception

25. Verification

26. Field Identified

27. Photogrammetry

28. Position Verified

29. Station recorded

30. Theodolite

31. Sextant

32. Planimeter

33. Intersection

34. Reception

35. Verification

36. Field Identified

37. Photogrammetry

38. Position Verified

39. Station recorded

40. Theodolite

41. Sextant

42. Planimeter

43. Intersection

44. Reception

45. Verification

46. Field Identified

47. Photogrammetry

48. Position Verified

49. Station recorded

50. Theodolite

51. Sextant

52. Planimeter

53. Intersection

54. Reception

55. Verification

56. Field Identified

57. Photogrammetry

58. Position Verified

59. Station recorded

60. Theodolite

61. Sextant

62. Planimeter

63. Intersection

64. Reception

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66. Field Identified

67. Photogrammetry

68. Position Verified

69. Station recorded

70. Theodolite

71. Sextant

72. Planimeter

73. Intersection

74. Reception

75. Verification

76. Field Identified

77. Photogrammetry

78. Position Verified

79. Station recorded

80. Theodolite

81. Sextant

82. Planimeter

83. Intersection

84. Reception

85. Verification

86. Field Identified

87. Photogrammetry

88. Position Verified

89. Station recorded

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93. Intersection

94. Reception

95. Verification

96. Field Identified

97. Photogrammetry

98. Position Verified

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102. Planimeter

103. Intersection

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105. Verification

106. Field Identified

107. Photogrammetry

108. Position Verified

109. Station recorded

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115. Verification

116. Field Identified

117. Photogrammetry

118. Position Verified

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166. Field Identified

167. Photogrammetry

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173. Intersection

174. Reception

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176. Field Identified

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178. Position Verified

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180. Theodolite

181. Sextant

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183. Intersection

184. Reception

185. Verification

186. Field Identified

187. Photogrammetry

188. Position Verified

189. Station recorded

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191. Sextant

192. Planimeter

193. Intersection

194. Reception

195. Verification

196. Field Identified

197. Photogrammetry

198. Position Verified

199. Station recorded

200. Theodolite

201. Sextant

202. Planimeter

203. Intersection

204. Reception

205. Verification

206. Field Identified

207. Photogrammetry

208. Position Verified

209. Station recorded

210. Theodolite

211. Sextant

212. Planimeter

213. Intersection

214. Reception

215. Verification

216. Field Identified

217. Photogrammetry

218. Position Verified

219. Station recorded

220. Theodolite

221. Sextant

222. Planimeter

223. Intersection

224. Reception

225. Verification

226. Field Identified

227. Photogrammetry

228. Position Verified

229. Station recorded

230. Theodolite

231. Sextant

232. Planimeter

233. Intersection

234. Reception

235. Verification

236. Field Identified

237. Photogrammetry

238. Position Verified

239. Station recorded

240. Theodolite

241. Sextant

242. Planimeter

243. Intersection

244. Reception

245. Verification

246. Field Identified

247. Photogrammetry

248. Position Verified

249. Station recorded

250. Theodolite

251. Sextant

252. Planimeter

253. Intersection

254. Reception

255. Verification

256. Field Identified

257. Photogrammetry

258. Position Verified

259. Station recorded

260. Theodolite

261. Sextant

262. Planimeter

263. Intersection

264. Reception

265. Verification

266. Field Identified

267. Photogrammetry

268. Position Verified

269. Station recorded

270. Theodolite

271. Sextant

272. Planimeter

273. Intersection

274. Reception

275. Verification

276. Field Identified

277. Photogrammetry

278. Position Verified

279. Station recorded

280. Theodolite

281. Sextant

282. Planimeter

283. Intersection

284. Reception

285. Verification

286. Field Identified

287. Photogrammetry

288. Position Verified

289. Station recorded

290. Theodolite

291. Sextant

292. Planimeter

293. Intersection

294. Reception

295. Verification

296. Field Identified

297. Photogrammetry

298. Position Verified
### Charting Details

**Reporting Unit:** Coastal Mapping Unit

**Local:** ANM, Norfolk, VA

**State:** Minnesota

**Locality:** Taconite Harbor

**Date:** 9/24/85

The following objects **HAVE NOT** been inspected from seaward to determine their value as landmarks:

<table>
<thead>
<tr>
<th>Charting Name</th>
<th>Description</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Datum</th>
<th>Office</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>R BN</td>
<td>Taconite Harbor Radiobeacon &amp; Taconite Harbor West Entrance Lt. 3</td>
<td>47° 31'</td>
<td>90° 55'</td>
<td>N.A. 1927</td>
<td>84Z(C) 3664</td>
<td>5-15-84</td>
</tr>
<tr>
<td>LIGHT</td>
<td>Taconite Harbor Range Rear Light</td>
<td>47° 31'</td>
<td>90° 54'</td>
<td>N.A. 1927</td>
<td>84Z(C) 3662</td>
<td>5-15-84</td>
</tr>
<tr>
<td>LIGHT</td>
<td>Taconite Harbor West Entrance Light 4</td>
<td>47° 31'</td>
<td>90° 55'</td>
<td>N.A. 1927</td>
<td>84Z(C) 3663</td>
<td>5-15-84</td>
</tr>
<tr>
<td>LIGHT</td>
<td>Taconite Harbor East Pierhead Light 2</td>
<td>47° 31'</td>
<td>90° 54'</td>
<td>N.A. 1927</td>
<td>84Z(C) 3662</td>
<td>5-15-84</td>
</tr>
<tr>
<td>LIGHT</td>
<td>Taconite Harbor East Entrance Light 5</td>
<td>47° 31'</td>
<td>90° 54'</td>
<td>N.A. 1927</td>
<td>84Z(C) 3662</td>
<td>5-15-84</td>
</tr>
</tbody>
</table>
By photogrammetric methods, exterior, or in part, upon control established positions are determined by field observer.

# PHOTOGRAMMETRIC FIELD POSITIONS ARE DETERMINED BY FIELD OBSERVER.

8-12-75
EXAMPLE: VII-a.
E.G. V.II., and date.

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

8-12-75
EXAMPLE: Trilateration. Rec.
Rec., with date of recovery. Trilateration Station is recovered, enter 'Trilateration when a landmark or aid, which is also a tit, is recovered.

III. TRILATERATION STATION RECOVERED

74(L) 2982
8-12-75
EXAMPLE: P-8-V.

1. NEW POSITION DETERMINED OR VERIFIED

FIELD

75(E) 6642
8-12-75
EXAMPLE: Office (Determined and located objects)
Office (Determined and located objects)

INSTRUCTIONS FOR ENTRIES UNDER METHOD AND DATE OF LOCATION

REPRESENTATIVE QUALITY CONTROL OBSERVER GROUP REVIEW

Office Activity Representative

FIELD Activity Representative

OTHER (Specify)

COORDINATE PARTY

PHOTO FIELD PARTY

RESPONSIBLE PERSONAL NAME

ACTIVITIES

AND DATE OF LOCATION

AND REVIEWED OR QUALITY CONTROL REVIEW

Completed by Quality Control

COORDINATE DETERMINED AND VERIFIED

OBJECTS INSPECTED FROM SUBAERIAL
<table>
<thead>
<tr>
<th>CHARTING NAME</th>
<th>DESCRIPTION</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>OFFICE</th>
<th>FIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>STACK</td>
<td>NE 1 of 3</td>
<td>50.87°</td>
<td>37.91°</td>
<td>842 (C) 3662</td>
<td>5-15-84</td>
</tr>
<tr>
<td>STACK</td>
<td>Center 1 of 3</td>
<td>50.38°</td>
<td>38.63°</td>
<td>842 (C) 3662</td>
<td>5-15-84</td>
</tr>
<tr>
<td>STACK</td>
<td>SW 1 of 3</td>
<td>50.06°</td>
<td>39.34°</td>
<td>842 (C) 3662</td>
<td>5-15-84</td>
</tr>
<tr>
<td>S' PIPE</td>
<td></td>
<td>28.53°</td>
<td>44.98°</td>
<td>842 (C) 3664</td>
<td>5-15-84</td>
</tr>
</tbody>
</table>
By photogrammetric methods, verify, or in part, then control established positions are dependent on field positions as determined by field operator.

Field positions are determined by field operator.

**Example:** 7.12-75

Field: 8.75-6-L

April 8, 1975, and date.

11.1 Position Verified Visually on Photograph

**Example:** 8-12-75

Enter V-12, V-15, and date.

11.2 Position Verified Reacted on Photograph

**Example:** 7.12-75

Reactor: 8-12-75

When a landmark or object is also a field:

11.3 Transcription Station Recovered

**Example:** 7.12-75

Field: 8-12-75

**Example:** 7.12-75

Localize and locate the object.

1. Office Identified and located objects

2. PHOTOGRAMMETRIC FIELD POSITIONS RECOMMENDED

3. PHOTOGRAMMETRIC FIELD POSITIONS RECOMMENDED

Table: Instructions for Entries Under Method and Date of Location

<table>
<thead>
<tr>
<th>Activities</th>
<th>Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Activity Representative (Pending)</td>
<td>P. Evans, Sep 79, 7952</td>
</tr>
<tr>
<td>Field Activity Representative (Pending)</td>
<td></td>
</tr>
<tr>
<td>Other (Specify)</td>
<td></td>
</tr>
<tr>
<td>Geodetic Party</td>
<td></td>
</tr>
<tr>
<td>Hydrographic Party</td>
<td></td>
</tr>
<tr>
<td>Photo Field Party</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Consult Photogrammetric Instructions for field activities.
The following objects **HAVE** been inspected from seaward to determine their value as landmarks.

<table>
<thead>
<tr>
<th>CHARTING NAME</th>
<th>DESCRIPTION</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIGHT (R Bn)</td>
<td>Grand Marais Light &amp; Radio Beacon</td>
<td>42.7903°</td>
<td>16.3760°</td>
<td>47 44 90 20</td>
</tr>
<tr>
<td>LIGHT</td>
<td>Grand Marais West Breakwater Light</td>
<td>40.18°</td>
<td>23.32°</td>
<td>47 44 90 20</td>
</tr>
<tr>
<td>LIGHT</td>
<td>Grand Marias Harbor Inner Breakwater Light 7</td>
<td>53.78°</td>
<td>19.97°</td>
<td>47 44 90 20</td>
</tr>
</tbody>
</table>
By photographic methods.

PHOTOGRAMMETRIC FIELD POSITIONS ARE DEPENDENT ON PHOTOGRAPHY.

EXAMPLE: 74L(C)2982
8-12-75

EXAMPLE: Triangulation station

EXAMPLE: Field work

EXAMPLE: 75E(C)6042
8-12-75

FIELD IDENTIFIED AND LOCATED ACCIDENTS

Office

ACTIVITIES AND RESEARCH AND FINAL REVIEW FORMS ORGANIZED BY QUANTITY CONTROL REVIEWER

OFFICE ACTIVITY REPRESENTATIVE

P. Bays, Sept. 1985

J. Durant, July 1985

OBJECTS IDENTIFIED AND LOCATED ACCIDENTS

Photo field party

HYDROGRAPHIC PARTY

DEED TEAM PARTY

OTHER (Specify)

NAME

RESPONSIBLE PERSONNEL

INSTRUCTIONS FOR ENTRIES UNDER METHOD AND DATE OF LOCATION

PHOTOGRAMMETRIC INFORMATION NO.4.

1. Field positions determined or verified

EXAMPLE: F-2-4-L

Determination of 4 Field work.

8-12-75

4. Resection

7. Interpolation

6. Theodolite

5. Field identified

3. Intersection

2. Traverse

1. Triangulation

L - Located

V - Visually

P - Photogrammetric

When a landmark or aid which is also a TR

When a landmark or aid which is not a TR

EXAMPLE: Tr. L, TR

Enter the applicable data by symbols as follows:

NEW POSITION DETERMINED OR VERIFIED

FIELD

TR.

VERIFIABLE

REPRESENTATIVE

QUALITY CONTROL AND REVIEW GROUP

REVIEWER

P. Bays, Sept. 1985

J. Durant, July 1985

OBJECTS IDENTIFIED FROM SEAWARD

PHOTO FIELD PARTY

HYDROGRAPHIC PARTY

DEED TEAM PARTY

OTHER (Specify)
**MONITORING AID OR LANDMARKS FOR CHARTS**

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

<table>
<thead>
<tr>
<th>CHARTING NAME</th>
<th>DESCRIPTION</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>OFFICE</th>
<th>FIELD</th>
<th>CHARTS AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>Coast Guard Flagpole</td>
<td>45.9430</td>
<td>57.5620</td>
<td>84Z(C)3655</td>
<td>F-1-2-6</td>
<td>14967</td>
</tr>
<tr>
<td>R MAST</td>
<td></td>
<td>47 44</td>
<td>90.19</td>
<td>84Z(C)3655</td>
<td>5-15-84</td>
<td>14967</td>
</tr>
</tbody>
</table>
By photogrammetric methods, variations based entirely upon ground survey methods. Field positions are determined by field operator.

**EXAMPLE:** 8-12-75
Enter V-V, W-V, and date.

**V.** Position Verified Visually on Photograph

8-12-75

**EXAMPLE:** 8-12-75
Enter with date of recovery. Recovery section is recovered, enter T-rang.

**T.** Triangulation Station Recovered

8-12-75

**EXAMPLE:** 8-12-75
Grid used to locate or identify the object.

**G.** Photogrammetric Field Positions Recovered

(Note: Photogrammetric method to be used)

**1.** New Position Determined or Verified

**2.** Office Identified and Located

**3.** Received

**4.** Accepted

**5.** Field Identified

**6.** Traverse

**7.** Intersection

**8.** Quadrant

**9.** Re-section

Field Control

Office

**P.** Evans, Sept., 1985

**J.** Dunford, July, 1985

Office Identified and Located

**E.** Objects Inspected From Steamboat

Responsibilities of Personnel

Actions

Survey Control and Review Group

Field Control Representative

Office Activity Representative

Other (Specify)

Accounting Party

Hydrographic Party

Photo Field Party

NOTE: Each entry in the chart will be followed by a notation noting the action or activity responsible for the completion of the entry.
A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Enter 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.

<table>
<thead>
<tr>
<th>CHART</th>
<th>DATE</th>
<th>CARTOGRAPHER</th>
<th>REMARKS</th>
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<tr>
<td></td>
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<td></td>
<td>Full Part Before After Verification Review Inspection Signed Via Drawing No.</td>
</tr>
<tr>
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