

9889

Diagram No. LS-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey .. Hydrographic.....
Field No. HSB-10-3-80.....
Registry No. ... H-9889.....

LOCALITY

State Ontario--New York.....
General Locality Niagara River.....
Sublocality Tonawanda to Chippawa.....

1980

CHIEF OF PARTY
LCDR G.W. Jamerson

LIBRARY & ARCHIVES

DATE June 8, 1988.....

9889

*Qua 7
Cht
1483...
14822... APPLICATION*

HYDROGRAPHIC TITLE SHEET

H-9889 ✓

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

FIELD NO.

HSB-10-3-80 ✓

State New York Ontario -- New York

General locality Niagara River

Locality North Tonawanda to ^{Chippawa} Niagara Falls

Scale 1:10,000 ✓ Date of survey 6/18/80 - 10/14/80
5/22/80 - 10/17/80

Instructions dated 25 JAN 1977 * Project No. OPR-W216-HFP-78

Vessel Hydrographic Surveys Branch, HFP-2

Chief of party George W. Jamerson

Surveyed by Andrew A. Armstrong

Soundings taken by echo sounder, hand lead, pole Raytheon 719-B

Graphic record scaled by A. Armstrong, K. Klinefelter, D. Parris, E. Martin

Graphic record checked by A. Armstrong

Protracted by _____ Automated plot by Field Sheet PDP8/e
AMC-Xynetics 1200¹

Verification by Hydrographic Surveys
AMC Verification Branch

Soundings in ~~feet~~ feet at ~~MLW~~ ~~MLW~~ low water datum per COE Niagara
River profile (23 OCT 1962)
See Water Level Notes.

- REMARKS: *Change No. 1, March 30, 1977* #11, February 12, 1979
- Change No. 2, March 31, 1977 #12, ^{March} ~~May~~ 7, 1979
- Change No. 3, May 31, 1977 #13, ^{July} ~~January~~ 25, 1980 ⁷⁹
- Change No. 4, July 11, 1977 #14, February 25, 1980
- Change No. 5, December 21, 1977
- Change No. 6, March 1, 1978
- Change No. 7, April 13, 1978
- Change No. 8, April 28, 1978
- Change No. 9, May 18, 1978
- Change No. 10, September 14, 1978

(1)

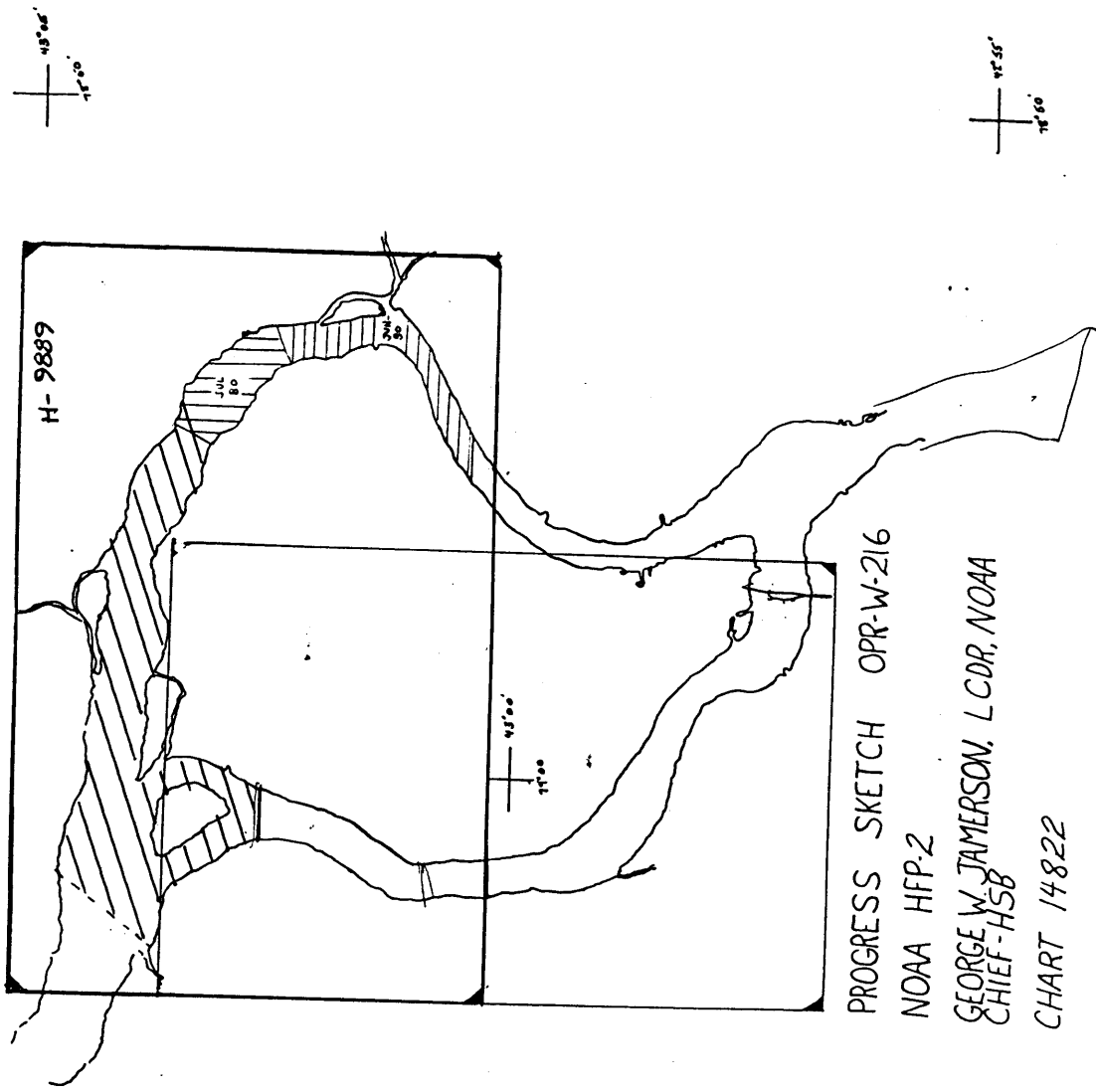
INDEX

	Page
Hydrographic Title Sheet.....	1
Boatsheet Layout.....	2
A. Project.....	3
B. Area Surveyed.....	4
C. Sounding Vessel.....	5
D. Sounding Equipment and Corrections to Echo Soundings.....	5-6
E. Hydrographic Sheets.....	6
F. Control Stations.....	6
G. Hydrographic Position Control.....	6-7
H. Shoreline.....	7-8
I. Crosslines.....	8
J. Junctions.....	8
K. Comparison with Prior Surveys.....	9-16
L. Comparison with Chart.....	17-
M. Adequacy of Survey.....	18
N. Aids to Navigation.....	18
O. Statistics.....	18
P. Miscellaneous.....	18
Q. Recommendations.....	19
R. Automated Data Processing.....	19
S. Reference to Reports.....	19
Projection Parameters.....	20 *
Field Tide or Water Level Notes.....	21-24 *
Geographic Names List. (FIELD).....	25-26 *
Abstract of Corrections to Echo Soundings/TC-TI.....	27-66 *
Abstract of Corrections to Electronic Position Control.....	67-76 *
List of Stations (Signal List).....	77
Abstract of Positions.....	78-80 *
Bottom Samples (NOAA Form 75-44).....	81-85 *
Landmarks for Charts (NOAA Form 76-40).....	86-93
Approval Sheet.....	94-95
	96

* Removed from the original Descriptive Report and
 filed with the original survey records.

AWOIS/SURF MAM 9/6/88

Coast
 Pilot →



PROGRESS SKETCH OPR-W-216
 NOAA HFP-2
 GEORGE W. JAMERSON, LCDR, NOAA
 CHIEF-HSB
 CHART 14822

Four July
 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9889
HSB-10-3-80

Scale 1:10,000

Chief of Party: Lt. Cdr. George W. Jamerson
Officer-in-Charge: Lt. Cdr. Andrew A. Armstrong
Hydrographic Surveys Branch, Hydrographic Field Party #2
Launches 520 and 1278

A. PROJECT

This survey was accomplished under Project Instructions OPR-W216-HFP-78, dated January 25, 1977, and amended by:

- Change No. 1, March 30, 1977
- Change No. 2, March 31, 1977
- Change No. 3, May 31, 1977
- Change No. 4, July 11, 1977
- Change No. 5, December 21, 1977
- Change No. 6, March 1, 1978
- Change No. 7, April 13, 1978
- Change No. 8, April 28, 1978
- Change No. 9, May 18, 1978
- Change No. 10, September 14, 1978
- Change No. 11, February 12, 1979
- Change No. 12, ~~March~~ ^{May} 7, 1979
- Change No. 13, ~~January 25,~~ ^{July 17,} 1980
- Change No. 14, February 25, 1980

B. AREA SURVEYED

The area surveyed was the Upper Niagara River, on the east, north and northwest sides of Grand Island, New York, and Ontario and was bounded by the following points:

Lat. 43°00'⁵00"N, Long. 78°52'^{5 15}30"W
Lat. 43°00'00"N, Long. 78°55'^{8 2}00"W
Lat. 43°02'³00"N, Long. 79°01'⁰00"W
Lat. 43°03'²30"N, Long. 79°03'¹00"W
Lat. 43°05'³00"N, Long. 79°02'³30"W
Lat. 43°05'⁴00"N, Long. 78°52'^{39 44}30"W

This survey was conducted from ~~May 22,~~ ^{June 18} 1980 to October ~~17,~~ 1980 (J.D. ~~143~~ ¹⁷⁴ to ~~291~~ ²⁸⁸) inclusive.
14 174 288

C. SOUNDING VESSEL

All soundings obtained on this survey were obtained from NOAA Launches 520 and 1278 (EDP #0520 and 1278). All survey records are annotated with the vessel numbers above.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The following Raytheon fathometer equipment was used during the survey:

JD 170 - 171: Recorder Model #719-B
 and Serial #5784
JD 241 - 288

JD 176 - 241: Recorder Model #719-B
 Serial #7881

Some difficulty was encountered with the 719-B fathometers. They had a tendency to ride up the paper take up reel, requiring constant adjustment of the initial and the two calibration lines. This frequently resulted in momentary deviations from the "zero" initial setting. These deviations were taken into account when scanning the graphic record.

Recorder 7881 had problems with the chart drive, and would occasionally slow down or stop altogether. The motor was apparently running properly, but the friction drive system was failing. This problem was noted at the time of occurrence and accounted for during scanning. This recorder was taken out of use on JD 241 for this reason.

The AMC-built electronic sounding clock was used for a great deal of the survey. It automatically triggered sounding marks and fix marks and provided audio tones for fixes. It worked well until sent back to AMC for examination. After that, it did not work correctly, and its use was discontinued. When operational, it was a great improvement over standard manual and voice methods of data collection. A debugged version should be standard equipment for all non-automated surveys.

Settlement and squat tests on Launches 520 and 1278 were run on May 28, 1980 (JD 149) at the Buffalo Harbor Breakwater. The results of these tests are included in the Appendix of this report. Settlement and squat corrections will be applied via the TC/TI tape during plotting of the smooth sheet at the Atlantic Marine Center and were not applied to the field sheet.

Velocity and instrument corrections were determined by barcheck. They were applied to the final field sheet. As

there is no practical way to differentiate pole soundings in computer plotting, velocity corrections are erroneously applied to them. Smooth plotting at AMC with TC/TI input will correct this. The lengths of the line on the bar were checked on JD 165 and on JD 282. The results of this inspection showed that no corrections were necessary. Sounding poles were measured on JD 149 and JD 282. No corrections were necessary.

E. HYDROGRAPHIC SHEETS (Field Sheets)

The field sheets were prepared in the field using a PDP8/e computer and a DP-3 complot plotter. Work sheets, semi-smooth sheets, smooth field sheets, and overlay sheets are included with this survey. Mainscheme hydrography, crosslines, splits, detached soundings and important developments are plotted on the smooth field sheets while other developments, bottom samples, prior survey soundings, junction soundings, charted soundings, presurvey review items, shoreline revisions, and aids to navigation are shown on various overlay sheets. Projection and electronic control parameters for the field sheets are included in the Appendix of this report. The final smooth sheet and verification of this survey will be accomplished at the Atlantic Marine Center on the Harris/7 computer and the Xynetics 1201 plotter.

F. CONTROL STATIONS

Control stations used during this survey were either existing geodetic control stations published by NGS or were established by HSB Support Section and HFP-2 to third order or better standards. All stations are referred to the North American 1927 datum. A list of all control stations used during this survey is included in the Appendix of this report.

G. HYDROGRAPHIC POSITION CONTROL

The method used to control this survey was Range-Azimuth. The "see field sheet" system of control was used behind Cayuga Island. (See Field Sheet positions are based upon the NANJI shoreline provided, and hence subject to any corrections made to that shoreline. See Section H.)

The equipment used to control this survey was Del Norte Trisponder.

DMU 172/Master 246/Remote 174 - JD 170 - 193
DMU 432/Master 199/Remote 174 - JD 197 - 280
DMU 432/Master 199/Remote 927 - JD 281 - 284
DMU 172/Master 199/Remote 247 - JD 288

Problems encountered with the use of this equipment were very slight. A recurring negative variation of 2-4m was noted between opening and closing calibrations of DMU 432. Opening and closing calibrations were meaned each day for a single daily corrector. In weather of about 38°F on JD 288, DMU 432 would not come on line. After swapping various system components, DMU 172 finally came up after about a 45-minute warm-up. This may be a problem in any cold weather, open boat, survey with Del Norte.

The control equipment was calibrated by daily static calibrations before and after each period of hydrography. Calibration sites were based on third-order EDM distances between a station and a fixed point (such as a piling) or on inverse distance between two stations. A baseline calibration was run on JD 168. As the cold weather severely affected the Del Norte, no closing baseline calibration was feasible. Daily calibrations are sufficiently steady to be used with confidence.

H. SHORELINE - See also section 2.6. of the Evaluation Report.

Shoreline detail for this survey was obtained from Chart #LS312/14832 blown up to the scale of the survey, 26th and 27th Editions dated 1974 and 1977, "NANCI" source material of 1975.

The shoreline from this source was very poor. Based on hydrographic and third order geodetic comparison, the shoreline seems to be offset about 15m to the east. In addition, the shoreline detail is smoothed out in many areas. In some cases, the non-NANCI chart depicts more precise detail, and is not so offset. The prior survey by the U.S. Corps of Engineers has an excellent shoreline in both detail and accuracy. Hydrographic comparison with features on that shoreline was excellent. Unfortunately, too many areas have changed for that shoreline to be of current value. There were no photogrametric locations of rocks or other salient offshore features from the manuscript to check by hydrographic means. There are, however, hundreds of small private piers on the river. Most were shown on the NANCI sheet, and all were perpendicular to the shoreline unless otherwise noted in the volume. The offset mentioned above was so severe it was just impossible to draw the piers on the sheet.

All shoreline on the final field sheets was inked in blue because of the offset problem. The hydrographer felt it was not possible to verify the shoreline sufficiently

well to re-ink in black. In one area of distinct change, a new shoreline was inked in red. This was in the area of PSR 24, just north of Tonawanda Island. Some inlets were filled in to make land for a sewage treatment plant. This new shoreline was located by hydrographic means. The hydrographer also feels that there has been some shoreline erosion in the vicinity of the Spicer Creek mouth, but cannot say so confidently because of the shoreline problems.

If an accurate shoreline is to be combined with this survey for future editions of the chart, it is strongly recommended that completely new photography be flown in the project area.

I. CROSSLINES - See section 3.2. of the Evaluation Report.

Crosslines constitute five percent of the mainscheme hydrography. Channel center lines could be included to bring crosslines to eleven percent. Much of the river has a very irregular bottom, so crosslines were run only in those areas of fairly smooth bottom where comparison with mainscheme would be meaningful. 90 percent of the crossings agree within one foot. No soundings are in disagreement at crossing by more than two feet. The reasons for the disagreement of soundings at crossing may be due to a lack of water level information to reduce soundings in the field.

J. JUNCTIONS - See section 5. of the Evaluation Report.

This survey junctions with Survey H-9841 to the southwest. Field soundings from both surveys were used for comparison.

Seventy-five percent of these junction soundings agree within two feet when compared with the current survey, and none of the junction soundings are in disagreement by more than ~~four~~^{one} ~~foot~~^{foot}. The current survey is consistently deeper. The reason for this disagreement is believed to be the difference in correctors applied to the two surveys, notably field water levels to H-9841 and velocity to H-9889. The relief in the area of the junction is also quite steep, which can account for some of the greater variations.

The hydrographer recommends that in the junction areas, the soundings from the current survey be charted and that the depth curves be meaned together after both surveys have been finally reduced.

K. COMPARISON WITH PRIOR SURVEYS - See also section 6. of the Evaluation Report

This survey area was previously covered by the following Corps of Engineers prior surveys:

1. I-1775 (1940), 1:10,000 scale
2. I-1776 (1940), 1:10,000 scale
3. ~~I-1777 (1940), 1:10,000 scale~~ Does not fall in the survey area.

The sheets from the 1940 survey in addition to the 1940 data, had soundings added from two other sources. These soundings are in colors which are not distinguishable on the photostatic copy provided the hydrographer. The hydrographer cannot tell whether a specific sounding, not obviously on a line, is from the 1940 survey or is added out of context from its source. At least some of the PSR soundings appear to fall into this category.

Both prior and present surveys show a highly irregular river bottom. Adjacent soundings frequently vary from each other by several feet. In general, the contours of the prior survey are very similar in shape to those of the present survey, although about two feet shoaler. Since water level corrections have not been applied to the present survey, it is highly likely that this difference will diminish greatly or disappear in final plotting.

Aside from the many areas which have been filled in or otherwise altered by construction, the significant differences in the survey are limited to isolated shoal soundings. Since very little development appears on the 1940 survey sheet, the nature of some of these shoal soundings is unclear. A number of these spots are found just downstream from Tonawanda Island. Many of these six-foot prior survey soundings coincide with eight-foot soundings on the present survey, which is consistent, but some of them were unverified. Some of these shoal areas, located on the present survey, are isolated boulders of 3-8 feet in diameter. These can be detected almost only by chance when the boat passes directly over them. Some were located only after several hours of running very closely spaced lines. Because these solitary boulders do exist, it is recommended that the unverified, isolated 6-foot soundings at Lat. $43^{\circ}02'02''$, Long. $78^{\circ}53'44''$ and Lat. $43^{\circ}02'18''$, Long. $78^{\circ}53'46''$ from the 1940 survey be retained. With these exceptions, it is recommended that the soundings from the present survey supersede the prior survey soundings.

The following presurvey review items were investigated during this survey:

in Lat. 43°44'25"N, Lon 78°59'37"W From LS-1775 (1940),
PSR Item 11A, a submerged wreck, was searched for on JD 239 for about one hour. Water clarity was poor. Very heavy weeds precluded a chain drag. The wreck predates extensive filling and shoreline construction in the area. The symbol falls very near the present shoreline in a stagnant area of heavy weeds where boat traffic is highly unlikely. It is probable that the wreck was removed or covered over during the shoreline filling. ~~The hydrographer recommends deletion from the chart.~~ *Do not concur - see section 6.28 of the Evaluation Report* AW015
6847

PSR Item 11B, a submerged wreck was searched for on JD 225 and 227, and was not found. Water depth in the area was three feet or less. Very heavy weeds obstructed vision and precluded a chain drag. An elderly gentleman living on the property just ashore was quite positive that the wreck had been removed several years ago. He was quite unfriendly and refused to provide any further information. Other property owners nearby were not familiar with the wreck at all. The hydrographer recommends that the wreck symbol be deleted from the chart. NC

in Lat 43°42'39"N, Lon 78°53'27"W From LS-1776 (1940)
PSR Item 11C, two submerged wrecks, was investigated on several days, including 171, 275 and 288. One wreck was located, a beached barge, which is shown as part of the shoreline on the Nanci sheet. It has, in fact, filled in to such an extent to actually be part of the shoreline. The second wreck, although not specifically found, falls within a foul area of pier ruins and piles. Some of the ruins may be remnants of a wreck, but cannot be distinguished from the other ruins. The hydrographer recommends that the beached barge be considered part of the shoreline, as on the Nanci sheet, rather than a wreck, and that the other wreck symbol be deleted also, in favor of a general designation of ruins. Photographs are included. *See section 6.6.28) of the Evaluation Report.* AW015
6848

Lat 43°42'42"N, Lon 78°53'52"W From LS-1776 (1940)
PSR Item 11D, a submerged wreck, was searched for a total of about one hour on several days, primarily JD 220. Water clarity at the time of the investigation was fair, to about 4 feet. Weeds and a seasonal swimming platform in the area precluded a wire drag. The wreck was not found. Long-time property owners near the location were consulted. Although they have boated and swum in the area for many years, they have not seen a wreck. The wreck symbol actually falls ashore on the Nanci shoreline, and there does appear to have been some fill added to the shore in that area. The hydrographer recommends deletion from the chart. *See section 6.6.35) of the Evaluation Report.* NC

in Lat 43°01'30"N, Lon 78°53'36"W, From LS-1776 (1944)
PSR Item 11E, was located on JD 171. Although listed as submerged wrecks, portions of the wrecks were bare about 1/3 feet. The area in the vicinity of Pos. 145, 146 and 147 is quite foul with wrecks and piles or beams. Precise outlines of the wrecks cannot be clearly defined. The hydrographer recommends that a wreck symbol be plotted at Lat. 43°01'32.3", Long. 78°53'36.5" and that another wreck symbol be plotted between Lat. 43°01'27.8", Long. 78°53'37.3" and Lat. 43°01'29.7", Long. 78°53'36.7". These are dangerous wrecks in an area of heavy recreational boating. Photographs are included. See section 6.b.39) of the Evaluation Report.

AW015
6899

in Lat 43°02'57"N, Lon. 79°00'07"W From LS-1775 (1944)
PSR 11I, was located on JD 256. The fully submerged wreck showed clearly on the fathogram, but was not visible to the eye. Pole soundings over the wreck indicated a fairly large area of hard spots, probably wood beams, filled in with soft mud. The hydrographer believes it is probably a sunken barge. A least depth of 7.7 feet was recorded on the fathometer. Pole soundings were all deeper. The least depth (Pos. 1975) was located at Lat. 43°02'57.1", Long. 79°00'06.5". The hydrographer recommends that a wreck symbol remain on the chart at this position. See section 6.a.4) of the Evaluation Report.

AW015
6850

in Lat 43°03'51.6"N, Lon 78°59'24.6"W, From LS-1775 (1944),
PSR 12A, a visible wreck, was located on JD 225 (Pos. 1133) and further delineated on JD 234 (Pos. 1440, 1441). Some heavy iron plate is awash at Lat. 43°03'51.6", Long. 78°59'25.9". The wreck is a combination of iron and wood remains of a fairly large vessel (50m long) and represents a definite hazard. The hydrographer recommends that a wreck symbol remain charted at the above position. See section 6.a.10) of the Evaluation Report.

AW015
6851

in Lat. 43°03'40"N, Lon. 78°54'55.2"W, From LS-1776 (1944)
PSR Item 12B, a visible wreck, was easily located on JD 183 (Pos. 390). It is, in fact, something of a landmark. A very large cylindrical iron object (bare 8 feet, 5 feet diameter) sticks straight up into the air. The hydrographer was told by some local boatowners that the object is the boiler of a ferry that once operated in the area. No other remains were visible in the vicinity, however, the hydrographer recommends that a wreck symbol be charted at Lat. 43°03'00.6", Long. 78°54'55.4". A photograph is included. See section 6.b.24) of the Evaluation Report.

6852

This wreck is closely related to the ruins of PSR Item 14. A large area of submerged and visible ruins is delineated by positions 386-388. A photograph is included. The hydrographer recommends the retention of the ruins designation in the locations described by the above positions. See section 6.b.25) of the Evaluation Report.

PSR Item 13, ^{one} ~~two~~ four-foot soundings, ^{was} ~~were~~ thoroughly developed over a period of several days. Two seven-foot soundings (Pos. 817 and 1153) were found which coincide very closely to the locations of the PSR items. The shoal spots are apparently isolated boulders since they appear only as small spikes on the fathogram, rising about three-feet off the bottom. Because of their small size and the

current in the river, it was not possible to verify the depth with a pole. ~~The hydrographer recommends that the reduced soundings from the current survey, located at Lat. 43°03'21.5", Long. 78°55'23.7" and Lat. 43°03'23.8", Long. 78°55'30.0" supersede the four foot soundings from the 1911 survey.~~ In the course of the search for the PSR items, another similar six-foot spike was located at Lat. 43°03'20.7", Long. 78°55'31.0". The hydrographer believes that these soundings would more accurately be represented as submerged rocks than as shoals. See section 6.6.21) of the Evaluation Report.

in Lat 43°03'13.8"N, Lon 79°00'14.4"W
PSR Item 16, [^]submerged piles, were located as charted on JD 256 (Pos. 1976 and 1977). The piles extend in a continuous double line about four and eight feet off the shoreline between Lat. 43°03'17.0", Long. 79°00'14.1", and Lat. 43°03'12.9", Long. 79°00'15.1". Some of the piles were submerged 1-2 feet and some were awash. The hydrographer recommends that submerged piles be charted in the specified location. See section 6.2.18) of the Evaluation Report.

in Lat 43°02'48"N, Lon 79°00'36"W,
PSR Item 17, [^]a two-foot sounding originating on a 1911 survey was searched for extensively on JD 259, 262, and especially on JD 266 and 281. The area was developed with 5m line spacing in two different directions. Water clarity in the area was good, with visibility to about five feet. Chain drag was not practical due to the weeds in the area. Although an isolated boulder could possibly have escaped fathometer and continuous pole sounding on line, the hydrographer believes it highly unlikely. On JD 281, the wind was perfectly calm and the river surface was glassy. Any depth anomaly of that magnitude (6-7 feet less than surrounding water) would surely have created an eddy which would have been visible. No such eddy was present. The hydrographer recommends deletion of the two-foot sounding from the chart. -Concur. See section 6.2.19) of the Evaluation Report.

Three other PSR soundings, unnumbered, in dashed circles, were developed. An eight-foot sounding charted at Lat. 43°03'55.2", Long. 78°56'42.8" was verified with a nine-foot sounding (Pos. 1606) at Lat. 43°03'55.0", Long. 78°56'42.6". It was not possible in the current to obtain a confirmation pole sounding.

A six-foot sounding charted at Lat. 43°04'01.0", Long. 78°58'43.5" was not verified. The area was developed with 25m line spacing. At the location of the six-foot charted sounding, a deceptive fathometer trace was encountered. It appears very much to be a shoal on the graphic record, but repeated pole soundings were taken over the area with no sounding less than eleven feet. The bar check was towed through the area at ten feet and never struck bottom, but

did collect lots of grass. The hydrographer believes that if sonar was used in the 1940 survey, that this grass patch may be the source of the six-foot sounding on the chart. The least depth obtained in the area, a conservative 10 feet, was located at Lat. $43^{\circ}04'02.3''$, Long. $78^{\circ}58'43.5''$. ~~The hydrographer recommends that soundings from the current survey supersede the six-foot sounding.~~ Do not concur - 9 ft least depths obtained in the area. See section 6.2.2(φ) of the Evaluation Report.

Another six-foot sounding is charted at Lat. $43^{\circ}03'44.0''$, Long. $79^{\circ}00'35.0''$. The area of this survey was thoroughly developed on JD 273. No shoal sounding was found at the site of the charted six feet, but two previously uncharted ridges were located and developed 200m and 400m to the north-west. A least depth of 6.8^φ feet (Pos. 2356) was located at Lat. $43^{\circ}03'45.3''$, Long. $79^{\circ}00'41.0''$. Least depth on the second ridge of 8.9 feet (55 sec. past 2426) was located at Lat. $43^{\circ}03'52.1''$, Long. $79^{\circ}00'47.0''$. Present survey depths should be charted.

PSR Item 24, submerged obstructions, PA, ^{charted in Lat $43^{\circ}02'17.4''$ N, Long $78^{\circ}53'21''$ W} from a Coast Guard Auxiliary report, were investigated for one-half hour on JD 178 and 288. The area is just offshore a very popular fishermen's park. Chain drag was precluded by heavy weeds in the area. Extended pole and fathometer search was limited by the considerable disruption it would have caused to a large number of anglers fishing from the wall. On JD 288, however, the fathometer trace indicated the possible existence of submerged piles (between Pos. 2599 and 2600). Nothing was located with a pole at that time. The piles, if they do exist, are only about 2m from the bulkhead. The bulkhead is marked with signs advising of submerged pilings and directing boaters to keep clear.

The sketch upon which PSR 24 is based, and apparently upon which basis the charted shoreline in the area was revised, is in error. The inlets shown as filled in the sketch are, in fact, still open, and the ones shown as open are, in fact, filled in. The correct shoreline is shown in red ink on the final field sheet overlay. The row of piles which appeared in the area on the 1940 survey (which remain in the unaltered area, just downstream of the PSR site) seem to fall just inshore of the limits of the bulkhead which is now Fisherman's Park. The hydrographer recommends that the submerged obstruction symbol be deleted from the chart, and that symbols for submerged piles be charted along the wall instead. Concur. See section 6.6.3(4) of the Evaluation Report.



PSR #11c *Berge in ruins*



PSR #11c *RUINS*



PSR Ile north



PSR Ile South



PSR 12B & 14



View of Falls from work area

L. COMPARISON WITH THE CHART See also section 7. of the Evaluation Report.

This survey was compared as the survey progressed with Chart 14832, 27th Edition, and with Chart 14832, 27th Edition, October 1, 1977, blown up to the scale of the survey. The following changes in the chart, in addition to those discussed elsewhere in the report, were detected. A small island and piles, charted at the eastern entrance to the Little River at Cayuga Island do not exist. The piles were removed by the Corps of Engineers in 1979. (See Dist. 9 LNM 23-79, August 13, 1979, page 5). Two cribs shown on the chart near Edgewater at Lat. $43^{\circ}02'39''$, Long. $78^{\circ}54'33''$ do not exist, at least above water or near the surface. The inshore crib falls among some private piers, and could not be dragged. A chain drag was run for the offshore crib. A hang occurred twice at the charted location. Nothing at all was detected on the fathometer. It may be that the remains of this crib are present on the bottom, but they do not present any hazard in 12 feet of water. The hydrographer recommends that the symbols be changed to submerged cribs, and reduced in size. If they do exist, they are certainly not very large. -Concur

In the vicinity of Lat $43^{\circ}44'21''$ N
Lon $78^{\circ}59'45''$ W
See section 7.2.3 of the Evaluation Report

A shoal area, which probably bares at datum, and is not shown on the chart, is present near the mouth of Burnt Ship Creek. The area, known locally as a reef, is an elongated rocky bar which runs parallel with the 6-foot contour. The least depth (Pos. 1997) of 7/10 feet was located at Lat. $43^{\circ}03'31.5''$, Long. $78^{\circ}59'56.0''$. Chart as shown on the present survey.

The very deep water at the Hydro Electric Plant intakes near Lat. $43^{\circ}04'35''$, Long. $79^{\circ}00'52''$ is not reflected on the chart.

An 8-foot shoal area charted at Lat. $43^{\circ}04'02''$, Long. $79^{\circ}01'15''$ is in an area of very heavy weeds where interpretation of the fathogram is difficult. To make matters worse, the bottom is very irregular in this area. Pole soundings frequently miss the peaks. The hydrographers interpretation of the fathogram suggests deeper water than shown on the chart. Chart as shown on the present survey.

The chart is very cluttered with unnecessary detail such as business names and club names. These names, such as the Rodeway Inn, now the Red Jacket Inn, change frequently and give the impression of an outdated chart. These names should be removed from the chart. Disposition deferred to the chart compiler.

No previously uncharted dangers to navigation were detected by this survey.

M. ADEQUACY OF SURVEY -

This survey is complete and adequate to warrant its use to supersede prior surveys for charting in the common areas. Change No. 11 of the project instructions directs that all Title 33 dumping grounds be surveyed with not less than 50m line spacing. Part of a dumpsite north of Buckhorn Island State Park was not surveyed to those requirements. This can be accomplished when HFP-2 returns to the area in the summer of 1981. - Not accomplished

N. AIDS TO NAVIGATION

All floating and fixed aids to navigation in the survey area were located and comparisons between their charted, Light List (Vol. IV, 1980), and surveyed positions and descriptions were made. All aids were found to adequately serve the apparent purpose for which they were established. The Tonawanda Harbor Channel Leading Light has been removed, although it remains on the chart, and in the Light List. The third order positions of private fixed aids determined by HSB Support Section of 1980 vary in most cases by a small amount from the charted positions. The charted positions should be updated with the more accurate data.

USCG District 9 has proposed to eliminate Niagara River Channel buoys #15 and #16. The hydrographer saw no reason to disagree. All USCG buoys in the Niagara River are removed for the winter. All buoy positions reported in this survey are now outdated.

Cable and bridge clearances were checked and found to be accurately charted with the exception of the North Grand Island Bridges. The charted clearance of 46 feet is in error. The correct clearance at the time of hydrography was 63.5 feet. See section 7.2.9) of the Evaluation Report.

O. STATISTICS

Total Number of Positions	2602
Lineal Nautical Miles of Mainscheme	139.6
Lineal Nautical Miles of Crossline	7.9
Lineal Nautical Miles of Development	49.9
Total Lineal Nautical Miles of Hydro	197.4
Total Square Nautical Miles of Hydro	8.1
Number of Bottom Samples	55

P. MISCELLANEOUS

Third order positions of landmarks were not obtained by the hydrographic field party. The party has neither the equipment nor the personnel to do so.

Q. RECOMMENDATIONS

See Sections D, H, J, K, L, M, and R for specific recommendations.

R. AUTOMATED DATA PROCESSING

Programs used during field data acquisition and field processing of this survey are as follows:

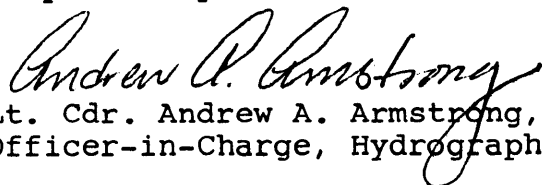
<u>PROGRAM</u>	<u>DESCRIPTION</u>	<u>VERSION DATE</u>
RK201	Grid, Signal & Lattice Plot	4/18/75
RK212	Visual Station Table Load	4/01/74
RK216	Range-Azimuth Non-Real Time Plot	2/05/76
RK300	Utility Computations	2/05/76
RK330	Reformat and Data Check	5/04/76
PM360	Electronic Corrector Abstract	2/02/76
RK407	Geodetic Inverse/Direct Computation	9/25/78
AM602	Elinore-Line Oriented Editor	5/20/75

RK216 is plagued with idiosyncrasies. This program is very heavily used by the hydrographic field parties. Resolution of the many and frequently reported bugs would improve operating efficiency considerably.

S. REFERENCE TO REPORTS

Control Report for OPR-W216, dated July, 1980.

Respectfully submitted,



Lt. Cdr. Andrew A. Armstrong, NOAA
Officer-in-Charge, Hydrographic Field Party #2

SIGNAL TAPE
 HSB 10-3-80
 H 9889
 OPR W-216
 UPPER NIAGARA RIVER

129	43 50	06286	79 04	47 519	139	0000	000000	SKYLON, 1972
028 7	43 01	10398 ₇	078 53	15989 ₃₃	250	0000	000000	H-59-NY 1980
010 4	43 03	22316 ₅	078 54	10818	250	0000	000000	H-60-NY 1980
011 1	43 04	05128	078 56	21477 ₆	250	0000	000000	H-61-NY 1980
016 7	43 03	17343	078 55	33043	250	0000	000000	H-65-NY 1980
018 4	43 03	52090	079 00	12945	250	0000	000000	H-63-NY 1980
022 4	43 02	20055	079 00	24749	250	0000	000000	GRA-BRI 3 1972
023 4	43 02	05770	079 00	28204	250	0000	000000	GRA-BRI 3 1972 AZ MK A
024 5	43 01	34041	079 00	42861	139	0000	000000	BM 3222 A 1980 - Not Used
034 6	43 03	11405	078 59	51789	250	0000	000000	H-64-NY 1980
036 4	43 01	29894	078 55	37052	139	0000	000000	GR IS TV STA WUTV ^{MAST,} _^ 1972
037 1	43 04	04476	078 56	19447 ₆	250	0000	000000	H-61-NY RMI 1980
056 1	43 01	16968 ₆	078 53	33955 ₈	139	0000	000000	INTAKE TON IS CRIB LT 1980
058 4	43 01	32525 ₄	078 53	29848 ₅₁	139	0000	000000	INTAKE N TON IS CRIB LT 1980
060 4	43 01	56952 ₇₀	078 53	38810	250	0000	000000	INTAKE LOCKPORT CRIB LT 1980
064 4	43 03	02649	079 00	02274	250	0000	000000	ELECT CHEM HOOKER _^ CRIB LT 1980
066 4	43 03	39582 ₄₉₉	079 00	12276	139	0000	000000	INTAKE BUCKHORN IS _^ CRIB LT 1980
068 1	43 04	01676 ₄	079 00	22167 ₃	139	0000	000000	BUCKHORN IS DIKE LT 2 1980 - Not Used
070 5	43 04	10553 ₆₀	079 00	27497 ₈	250	0000	000000	BUCKHORN IS DIKE LT 1 1980
072 5	43 04	13230	079 00	14949	139	0000	000000	N.F. TRANS LT B 1980
074 7	43 04	13358 ₃	079 00	12065 ₄	139	0000	000000	INTAKE N.F. CRIB LT 1980 - Not Used
076 1	43 03	57991	079 00	09268 ₁	139	0000	000000	N.F. TRANS LT C 1980
078 2	43 03	53052	078 59	38109	250	0000	000000	N BRIDGE CRIB LT 1980
080 5	43 04	01785 ₇	079 00	18591	139	0000	000000	BUCKHORN IS DIKE LT 3 1980
082 2	43 04	09982	078 59	59981	139	0000	000000	CORP N MOHAWK _^ LT 1980
084 6	43 03	46324	078 57	18997 ₀	250	0000	000000	H-77-NY 1980
085 2	43 03	43732	078 57	42557 ₄	139	0000	000000	SANDY BEACH YACHT CLUB LT 1980 SBYC LT 1980
086 6	43 01	25021 ₁₉	078 52	57217 ₂₂	250	0000	000000	H-67-NY 1980
088 4	43 01	56364 ₀	078 52	59228 ₃₀	250	0000	000000	BENCHMARK E412, 1980 H-69-NY 1980

All stations were recovered or positioned by HSB Survey Support Section 05/80.

(77)

Replaces C&GS Form 567.

- TO BE CHARTED
- TO BE REVISED
- TO BE DELETED

REPORTING UNIT
(If field Party, Ship or Office)

HFP-2

STATE

New York

LOCALITY

Upper Niagara River

DATE

10/10/80

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)

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.)	DATUM		POSITION		METHOD AND DATE OF LOCATION (See instructions on reverse side)	CHARTS AFFECTED
		LATITUDE		LONGITUDE			
		° / ' "	D.M. Meters	° / ' "	D.P. Meters		
W-216	HSB 10-3-80	H-9889	North American 1927				
LIGHT	BUCKHORN ISLAND DIKE LT 2 (LL. 496) (Sig. 068)	43 04	79 00	22.1668	NGS POSITION EXISTENCE VERIFIED	14832	
LIGHT	BUCKHORN ISLAND DIKE LT 3 (LL. 497) (Sig. 080)	43 04	79 00	18.5912	"	"	
LIGHT	NIAGARA MOHAWK CORP LT (LL. 491) (Sig. 082)	43 04	78 59	19.9807	"	"	
LIGHT	NIAGARA FALLS TRANS LT B (LL. 493) (Sig. 072)	43 04	79 00	14.9493	"	"	
LIGHT	NIAGARA FALLS TRANS LT C (LL. 494) (Sig. 076)	43 03	79 00	09.2617	"	"	
LIGHT	NIAGARA FALLS INTAKE CRIB LT (LL. 492) (Sig. 074)	43 04	79 00	12.0647	"	"	
LIGHT	BUCKHORN IS. INTAKE CRIB LT (LL. 498) (Sig. 066)	43 03	79 00	12.2762	"	"	
LIGHT	HOOVER ELECT CHEM CRIB LT (LL. 499) (Sig. 064)	43 03	79 00	02.2745	"	"	

(86.)

L-86(83) L-420(86) L-66(88)

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	A. A. ARMSTRONG LCDR, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	A. A. ARMSTRONG
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.)	
<p>OFFICE</p> <p>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</p> <p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field P - Photogrammetric L - Located Vis - Visually V - Verified</p> <p>1 - Triangulation 5 - Field identified 2 - Traverse 6 - Theodolite 3 - Intersection 7 - Planetable 4 - Resection 8 - Sextant</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>FIELD (Cont'd)</p> <p>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</p> <p>II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>
<p>ORIGINATOR</p> <p><input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)</p> <p>FIELD ACTIVITY REPRESENTATIVE</p> <p>OFFICE ACTIVITY REPRESENTATIVE</p> <p><input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE</p>	

Replaces C&GS Form 567.

NONFLOATING AIDS

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)

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If field Party, Ship or Office)
HFP-2

LOCALITY
Upper Niagara River

DATE
10/10/80

STATE
New York

DATUM
North American 1927

CHARTING NAME
W-216

DESCRIPTION
HSB 10-3-80 H-9889

REPORTING UNIT
(If field Party, Ship or Office)
HFP-2

LOCALITY
Upper Niagara River

DATE
10/10/80

STATE
New York

DATUM
North American 1927

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)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° /	' "	° /	' "			
		D.M. Meters	D.P. Meters	D.M. Meters	D.P. Meters			
LIGHT	TONAWANDA INTAKE CRIB LT (Sig. 056) (LL. 476)	43 01	16.9675 ⁶	78 53	33.9551 ⁸		NGS Position EXISTENCE VERIFIED	14832
LIGHT	NORTH TONAWANDA INTAKE CRIB LT (Sig. 058) (LL. 481)	43 01	32.5054 ⁴	78 53	29.8484 ⁵¹		NGS POSITION EXISTENCE VERIFIED	14832
LIGHT	LOCKPORT INTAKE CRIB LIGHT (Sig. 060) (LL. 483)	43 01	56.9817 ⁷⁹	78 53	18.8104 ³		"	14832
LIGHT	SMITH BOYS INNER HBR N LT (LL. 484)	43 01	46.8228 ⁸	78 52	14.5056 ⁸		"	14832
LIGHT	SMITH BOYS INNER HBR S LT (LL. 485)	43 01	44.9867 ²	78 52	14.0055 ⁸		"	14832
LIGHT	SMITH BOYS TON ISLE N LT	43 01	47.8274 ¹⁸	78 52	16.6078 ⁶		"	14832
LIGHT	SMITH BOYS TON ISLE S LT	43 01	44.6688 ⁵	78 52	15.6869 ⁹		"	14832
LIGHT	SANDY BEACH YACHT CLUB LIGHT (Sig. 085) (LL. 486)	43 03	43.7320 ⁶	78 57	42.5558 ⁴		"	14832
LIGHT	NORTH BRIDGE CRIB LT (Sig. 078)	43 03	53.0522 ⁸	78 59	18.1091 ⁷		"	14832
LIGHT	BUCKHORN ISLAND DIKE LT 1 (Sig. 070) (LL. 495)	43 04	10.5584 ⁶	79 00	27.4967 ⁸⁰		"	14832

RESPONSIBLE PERSONNEL		ORIGINATOR
TYPE OF ACTION	NAME	
OBJECTS INSPECTED FROM SEAWARD	A. A. Armstrong LCDR, NOAA	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	A. A. Armstrong	FIELD ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
(Consult Photogrammetric Instructions No. 64.)

OFFICE	FIELD (Cont'd)
I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 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.	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

Replaces C&GS Form 567.

NONFLOATING AIDS ~~CHARTS~~ 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)

TO BE CHARTED (Field Party, Ship or Office)
 TO BE REVISED
 TO BE DELETED
 The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.
 OPR PROJECT NO. _____ JOB NUMBER _____ SURVEY NUMBER _____

REPORTING UNIT: HFP-2
 STATE: New York
 LOCALITY: Upper Niagara River
 DATE: 10/10/80
 DATUM: North American 1902
 POSITION: _____

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° /	'	° /	'			
W-216	HSB 10-3-80 H-9889							
LIGHT	LITTLE RIVER RGE REAR LT (LL. 488)	43	04	33.36	78 57	11.05	Existence verified from auto charting	14832
LIGHT	LITTLE RIVER RGE FRONT LT (LL. 487)	43	04	31.47	78 57	10.31	"	14832
LIGHT	LASALLE YACHT CLUB PIER EAST LT (LL. 489)	43	04	22.71	78 59	06.91	"	14832
LIGHT	LASALLE YACHT CLUB PIER WEST LT (LL. 490)	43	04	22.91	78 59	08.91	"	14832

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	ORIGINATOR <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETTIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	FIELD ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	OFFICE ACTIVITY REPRESENTATIVE <input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
(Consult Photogrammetric Instructions No. 64,

OFFICE	FIELD (Cont'd)
<p>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</p>	<p>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</p>
<p>FIELD</p> <p>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</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	A. A. Armstrong LCDR, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	A. A. Armstrong
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
	FIELD ACTIVITY REPRESENTATIVE
	OFFICE ACTIVITY REPRESENTATIVE
	<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
(Consult Photogrammetric Instructions No. 64.)

OFFICE	FIELD (Cont'd)
I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	B. Photogrammetric field positions** require date 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 *FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If laid Party, Ship or Office)
HFP-2

STATE
New York

LOCALITY
Upper Niagara River

DATE
10/10/80

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

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

OPR PROJECT NO. W-216

JOB NUMBER HSB 10-3-80

SURVEY NUMBER H-9889

DATUM

North American 1902
POSITION

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

DESCRIPTION

LATITUDE
D.M. Meters

LONGITUDE
D.P. Meters

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

OFFICE

FIELD

CHARTS AFFECTED

CHARTING NAME	DESCRIPTION	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION (See instructions on reverse side)	OFFICE	FIELD	CHARTS AFFECTED
		D.M. Meters	° /	D.P. Meters	° /				
TOWER	OVERHEAD CABLE TOWER	43 03	484 51.85	78 59	8.156 59.98	Existence verified. Position from auto charting			14832
TOWER	HYDRO-ELECTRIC INTAKE TOWER WEST	43 04	40.589	79 01	01.523	"			14832
TOWER	HYDRO-ELECTRIC INTAKE TOWER EAST	43 04	37.961 38.148	79 00	52.652 50.977	"			14832
TOWER	CANADIAN HYDRO-ELECTRIC INTAKE TOWER	43 03	58.634 59.36	79 03	11.52 477	"			14832
TOWER	CANADIAN HYDRO-ELECTRIC INTAKE TOWER	43 04	03.68 03.33	78 03	26.826 19.77	"			14832
TOWER	OVERHEAD POWER CABLE SUPPORT CL 11.5 FT REPORTED	43 00	90φ 13.02	78 55	155 26.53	"			14832
TOWER	OVERHEAD POWER CABLE SUPPORT	43 00	12.894 13.81	78 55	26.991 24.83	"			14832
TOWER	OVERHEAD POWER CABLE SUPPORT	43 00	776 27.32	78 55	695 40.19	"			14832
TOWER	OVERHEAD POWER CABLE SUPPORT	43 00	54φ 28.31	78 55	87φ 38.09	"			14832
TOWER	TOWER	43 00	37.95	78 54	26.24	"			14832

12

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	A. A. Armstrong LCDR, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	A. A. Armstrong
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,

ORIGINATOR
<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
FIELD ACTIVITY REPRESENTATIVE
OFFICE ACTIVITY REPRESENTATIVE
<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

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 - Visually
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-Y
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGAMMETRIC 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.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)

HFP-2

STATE

New York

LOCALITY

Upper Niagara River

DATE

8/6/80

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

~~NAVIGATIONAL~~ LANDMARKS FOR CHARTS

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)

OPR PROJECT NO.

W-216

HAVE HAVE NOT

been inspected from seaward to determine their value as landmarks.

DATUM

North American 1902

POSITION

OFFICE

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.)

DATUM

LATITUDE

LONGITUDE

OFFICE

FIELD

CHARTS
AFFECTED

RADIO
TOWER

OCCULTING RED AND FIXED RED LIGHT
Does not fall on H-9889

43 01

18.60

78 51

48.74

Existence Veri-
fied. Position
from auto charting

"

14832

STACK

STACK
No landmark value (field editor)

43 01

13.09

78 53

06.44

"

"

TANK

TANK

43 01

16.01

78 53

06.207
05.95

"

"

"

STACK

NORTH TONAWANDA STACK

43 02

09.817
11.422

78 53

05.172
538

"

"

"

RADIO
MAST

RADIO MAST

43 02

356
41.462

78 53

22.164
21.98

"

"

"

TANK

TANK

43 02

36.960

78 53

13.372
92

"

"

"

MICRO
MAST

MICROWAVE MAST

43 04

387
26.11

78 56

23.481
22.39

"

"

"

TANK

TANK

43 04

328
26.42

78 56

21.724
20.68

"

"

"

STACK

STACK

43 04

28.765

78 58

41.418

"

"

"

TOWER

OVERHEAD CABLE TOWER No landmark
CL 79 FT REF value (field editor)

43 04

28.889

79 00

01.246

"

"

"

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	A. A. Armstrong LCDR, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	A. A. Armstrong
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
FIELD ACTIVITY REPRESENTATIVE OFFICE ACTIVITY REPRESENTATIVE	
<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION' <i>(Consult Photogrammetric Instructions No. 64.)</i>	
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 *FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

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

~~NOAA FORM 76-40~~ LANDMARKS FOR CHARTS

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)
 HFP-2

LOCALITY
 Upper Niagara River

STATE
 New York

DATE
 8/6/80

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

OPR PROJECT NO. W-216
 JOB NUMBER HSB 10-3-80
 SURVEY NUMBER H-9889

DATUM
 North American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° /	// D.M. Meters	° /	// D.P. Meters			
STACK	No landmark value (field editor) TONAWANDA SPAULDING FIBRE STK, 1972 225 FT	43 00	18.653	78 53	12.073		NGS STATION EXISTENCE VERIFIED	14832
TV MAST	GRAND ISLAND TV STATION WUTV MAST, 1972 959 FT (Sig. 036)	43 01	29.894	78 55	37.050		"	"
STACK	NIAGARA FALLS DEPONT E STACK, 1972 No landmark value (field editor)	43 04	52.647	79 00	34.930		"	"
RADIO MAST	NIAGARA FALLS RADIO STATION WJL MAST, 1972	43 04	42.467	79 00	05.378		"	"

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	A. A. Armstrong LCDR, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	A. A. Armstrong
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
	FIELD ACTIVITY REPRESENTATIVE
	OFFICE ACTIVITY REPRESENTATIVE
	<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION' (Consult Photogrammetric Instructions No. 64,	
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	
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.	
II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75	
III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75	
**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.	

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If laid Party, Ship or Office)
HFP-2

STATE
New York

LOCALITY
Upper Niagara River

DATE
8/6/80

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)

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

OPR PROJECT NO. W-216

JOB NUMBER
HSB 10-3-80

SURVEY NUMBER
H-9889

DATUM
North American 1902

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

CHARTS AFFECTED
14832

CHARTING NAME
SPIRE

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

LATITUDE
43 02

LONGITUDE
78 52

OFFICE

FIELD

Existence verified. Position from auto charting

CHARTING NAME
TOWER

DESCRIPTION
OVERHEAD CABLE TOWER

LATITUDE
43 04

LONGITUDE
79 00

OFFICE

FIELD

"

CHARTING NAME
STACK

DESCRIPTION
TONAWANDA WATER WORKS STACK
No landmark value (field editor)

LATITUDE
43 01

LONGITUDE
78 53

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

CHARTING NAME

DESCRIPTION

LATITUDE

LONGITUDE

OFFICE

FIELD

"

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	A. A. Armstrong LCDR, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	A. A. Armstrong
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	FIELD (Cont'd)
<p>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</p>	<p>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</p>
<p>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</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>

NOAA FORM 77-6
(10-72)

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

COAST PILOT REPORT

PLEASE MAIL TO:

Director
National Ocean Survey
National Oceanic and Atmospheric Administration
ATTENTION: C324
Rockville, Maryland 20852

This record of your experience and observations when coasting, entering port, and/or following inside channels will be used to correct, amplify, or confirm the description now given in the Coast Pilot.

Please use additional sheets if more space is needed.

Additional report forms will be provided upon receipt of each report.

GEOGRAPHIC LOCATION

Upper Niagara River

LATITUDE	LONGITUDE	CHART NUMBER 14832	COAST PILOT NUMBER 6
VESSEL HFP-2		MASTER/COMMANDING OFFICER G. W. Jamerson	
DATE OF OBSERVATION Field Season 1980		OBSERVER A. A. Armstrong	

I. LANDMARKS: Mention those visible from seaward and useful for navigation (day and/or night); include natural ranges and indicate the pair of marks forming a range. Photographs of landmarks difficult to describe are solicited; each view should be labeled with the distance off and the direction towards which the camera was pointed,

TYPE	CHARTED		LATITUDE (Approximate)	LONGITUDE	DESCRIPTIVE INFORMATION HELPFUL IN IDENTIFICATION
	YES	NO			

II. RADAR: List best radar targets and, if known, give maximum useful radar range at which the object can be positively identified and used. Mention under remarks places you have observed radar returns to be misleading.

NAME OR TYPE OF FEATURE (Include approximate latitude and longitude if necessary to identify on chart)	MAXIMUM USEFUL RANGE

III. ROUTES: Where entrance and inside routes are not marked by aids to navigation, show recommended directions for Coast Pilot (latitude and longitude of entrance point, and distances and true courses made good); include natural steering ranges if available.

(94)

IV. DANGERS: Mention those of concern to the navigator where special caution should be indicated in the Coast Pilot.

V. CURRENTS: Indicate places you have experienced conditions of current where special caution should be mentioned in the Coast Pilot.

VI. ANCHORAGES: Mention best anchorage in the area and other secure anchorages having good holding ground.

LOCATION (Include anchorage bearings and natural ranges if available)

TYPE OF BOTTOM OBSERVED:

RECOMMENDED FOR VESSELS:

	EXCEL	GOOD	FAIR	POOR	COMMENT	LENGTH	DRAFT
HOLDING QUALITY						_____ TO _____ FT.	_____ TO _____ FT.
PROTECTION OFFERED							
ACCESSABILITY							

VII. REMARKS: Aids to navigation - p. 216, left column, 11.9-14 - Tonawanda Harbor Channel Leading Light removed.

Dumping along Grand Island Shore - p. 216, right column, 11.34-41 - These buoy numbers are out of date. No buoy exists where 11 was. 9 is now where 13 was. No buoy exists where 17 was. 13 is where 19 was. No buoy exists where 21 was.

Bridges Across Tonawanda Harbor - p. 218 Table - The Tonawanda Island Railway Bridge does not open. 8.2 ft. clearance was measured at 1748 GMT on August 29, 1980.

North Grand Island Bridge - p. 219, left column 11.1-7 - The clearance of the center span is 63.5 feet, not 46.5 feet.

VIII. OTHER COAST PILOT CHANGES

U.S. COAST PILOT			
NUMBER	EDITION	PAGE	LINE(S)

NOTE: Any chart(s) submitted with your report to show conditions will be replaced free of charge.

READ: STRIKE OUT: INSERT AFTER: (Circle one)

REMARKS (con't)

Little River at Cayuga Island, p. 218, right column 11.33-56 - the upper entrance has a narrow channel with 4 ft of water. A temporary bridge crosses the channel just upstream of the fixed bridge to Cayuga Island it had only 5.7 ft. of clearance at 1930 GMT on Aug. 28, 1980. It appears that it will remain for at least a year or two. An aerial cable passes over just next to the temporary bridge. It had a clearance of 20.5 ft. at 1430 GMT on Oct. 15, 1980.

APPROVAL SHEET
SURVEY H-9889 (HSB-10-3-80)

The hydrographic records transmitted with this report are complete and adequate to supersede prior surveys for charting with no additional field work recommended.

Direct daily supervision was not given by me during the field work.

Approved and forwarded,



George W. Jamerson
Lt. Cdr. NOAA
Chief, Hydrographic Surveys Branch

REFERENCE NO.

MOA23-54-88

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY (Check):

- ORDINARY MAIL AIR MAIL
 REGISTERED MAIL EXPRESS
 GBL (Give number) _____

TO:

Chief, Data Control Branch, N/CG243
 Room 151, WSC-1
 National Ocean Service
 Rockville, MD 20852

DATE FORWARDED

2 June 1988

NUMBER OF PACKAGES

two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H- 9889 (HSB-10-3-80)
OPR-W216-Ontario--New York, Niagara River
Tonawanda to Chippawa

- Pkg #1 (tube): 1 Smooth sheet
 1 Position overlay
 3 Excess overlays (levels 1, 2, & 3/3)
 1 Final field sheet (6 mylar sheets)

- Pkg #2 (box): 1 Original Descriptive Report
 1 Accordion file containing fathograms, master and corrector printouts for the following days: 170, 171, 176, 177, 183, 187, 193, 197, 198, 199, 200, 206, 211, 212, 213, 220, 221, 225, and 226
 1 Accordion file containing fathograms, master and corrector printouts for the following days: 227, 228, 233, 234, 238, 239, 241, 242, 247, 249, 252, 253, 256, 259, 260, 262, 268, 269, 273, and 275

FROM: (Signature)

Robert G. Roberson
 Robert G. Roberson

RECEIVED THE ABOVE
 (Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
 N/MOA23
 Atlantic Marine Center
 439 W. York Street
 Norfolk, VA 23510-1114

REFERENCE NO.

MOA23-54-88

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU
BY (Check):

- ORDINARY MAIL AIR MAIL
- REGISTERED MAIL EXPRESS
- GBL (Give number) _____

TO:

Chief, Data Control Branch, N/CG243
Room 151, WSC-1
National Ocean Service-NOAA
Rockville, MD 20852

DATE FORWARDED

2 June 1988

NUMBER OF PACKAGES

two (2)


NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H- 9889 (HSB-10-3-80)
OPR-W216-Ontario--New York, Niagara River
Tonawanda to Chippawa

Pkg #2 (box): (continued)

- 1 Accordion file containing fathograms, master and corrector printouts for the following days: 280, 281, 284, 288, Calibration Site measurements, Horizontal Control Information for H-61-NY, RM1, D.P. Computations, TC/TI Listings, Miscellaneous Work Sheets, Data removed from the original Descriptive Report, and 1 envelope labeled: "Photogrammetric Information T-01127".
- 8 NOAA Form 77-44 "SOUNDINGS"
- 1 Envelope labeled: "H-9889 Photos"

FROM: (Signature)


Robert G. Roberson

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
N/MOA23
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

MOA23-54-88

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU
BY (Check):

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) _____

TO:

Chief, Data Control Branch, N/CG243
 Room 151, WSC-1
 National Ocean Service-NOAA
 Rockville, MD 20852

DATE FORWARDED

2 June 1988

NUMBER OF PACKAGES

two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H- 9889 (HSB-10-3-80)
OPR-W216-Ontario--New York, Niagara River
Tonawanda to Chippawa

- Pkg #2 (box): (continued)
- 1 Cahier containing:
 Final Position Listing
 Final Control Listing
 - 1 Cahier containing:
 Final Sounding Listing
 Line File Listing
 - 1 Envelope containing Water level, TC/TT, and
 Velocity Corrector printouts

FROM: (Signature)

Robert G. Roberson
 Robert G. Roberson

RECEIVED THE ABOVE
 (Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
 N/MOA23
 Atlantic Marine Center
 439 W. York Street
 Norfolk, VA 23510-1114

06/02/88

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H- 9889

NUMBER OF CONTROL STATIONS	16
NUMBER OF POSITIONS	2546
NUMBER OF SOUNDINGS	7345

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	61	05/15/81
VERIFICATION OF FIELD DATA	510	04/04/85
QUALITY CONTROL CHECKS	136	
EVALUATION AND ANALYSIS	198	01/30/87
FINAL INSPECTION	48	01/26/87
TOTAL TIME	953	
MARINE CENTER APPROVAL		01/30/87

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: MOA231

Hourly heights are approved for

Water Level Station Used: Tonawanda Island, N. Y. (906-3018)

Period: July 29, 30, & 31, 1980

HYDROGRAPHIC SHEET: H-9889

OPR-W216-HFP-77

Locality: Upper Niagara River

Plane of reference: Low Water Datum (IGLD 1955: 562.7Feet)

Remarks:

Actual observed water level data for the three days requested were unavailable due to an inoperative Corps of Engineers gage. Attached are calculated hourly water level heights derived by computing the average difference for each hour of the data available for the months of July and August 1980 at LaSalle Yacht Club, Tonawanda Island, and Huntley Station gage locations. These calculated heights may vary from actual water level heights.


Chief, Water Levels Section

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: CAM3

Hourly heights are approved for

Water Level Station Used: See remarks

Period: June 18, 1980 - October 14, 1980

HYDROGRAPHIC SHEET: H-9889

OPR-W216-HFP-77

Locality: Upper Niagara River

Plane of reference: See remarks

Remarks: The following list of Water Level Stations and their corresponding Low Water Datum (feet IGLD) should be used for this survey:

42/58/18, 78/55/48	Huntley Station, N.Y.	(906-3016)	563.1'
43/01/42, 78/53/12	Tonawanda Island, N.Y.	(906-3018)	562.7'
43/04/24, 78/59/6	LaSalle Y.C., N.Y.	(906-3013)	561.1'

*For the Plane of Reference (Low Water Datum) depths are referred to the sloping surface of the river when Lake Erie is at elevation 568.6 feet.**

** Per telephone communication between Mr. Brooks, OA/CZ, Water Levels Branch and R.D. Sanocki, OA/CAM31, AMC. 10 Nov, 1982*

Philip C. Morris
Chief, Water Level Branch

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: MOA231

Hourly heights are approved for

Water Level Station Used: See Remarks

Period: August 7, 1980 - October 10, 1980

HYDROGRAPHIC SHEET: H-9889

OPR- W216-HFP-77

Locality: Upper Niagara River

Plane of reference: See Remarks

Remarks: The following list of Water Level Stations and their corresponding Low Water Datum (feet IGLD 1955) should be used for this survey.

Huntley Station, N.Y. (906-3016) 563.1'

Tonawanda Island, N.Y. (906-3018) 562.7'

LaSalle Y.C., N.Y. (906-3013) 561.1'

Niagara Intake, N.Y. (906-3012) 560.7'



Chief, Water Levels Section

GEOGRAPHIC NAMES

H-9889

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
BUCKHORN ISLAND											1
BURNT SHIP CREEK											2
CAYUGA ISLAND											3
CHIPPAWA CHANNEL											4
EDGEWATER											5
GRAND ISLAND											6
LITTLE RIVER (1)											7
LITTLE RIVER (2)											8
NAVY ISLAND											9
NEW YORK (title)											10
NIAGARA FALLS											11
NIAGARA RIVER (title)											12
NORTH TONAWANDA											13
ONTARIO (title)											14
SANDY BEACH (locality)											15
SPICER CREEK											16
TONAWANDA											17
TONAWANDA CHANNEL											18
TONAWANDA ISLAND											19
TWOMILE CREEK											20
WOODS CREEK											21
											22
											23
											24
											25

Approved:

Charles E. Harrington
Chief Geographer - NJ CG2x5

JUN 25 1986

ATLANTIC MARINE CENTER
EVALUATION REPORT

SURVEY NO.: H-9889

FIELD NO.: HSB-10-3-80

Ontario--New York, Niagara River, Tonawanda to Chippawa

SURVEYED: 18 June through 14 October 1980

SCALE: 1:10,000

PROJECT NO.: OPR-W216-HFP-78

SOUNDINGS: RAYTHEON DE-719B
Fathometer, Hand lead,
Sounding pole

CONTROL: DEL NORTE/WILD T-2
Theodolite (Range/
Azimuth), See Field
Sheet

Chief of Party.....G. W. Jamerson

Surveyed by.....A. A. Armstrong
.....J. K. Klinefelter
.....D. J. Parris
.....E. L. Martin

Automated Plot by.....XYNETICS 1201 Plotter (AMC)

1. INTRODUCTION

a. No unusual problems were encountered during office processing.

b. Notes in the Descriptive Report were made in red during office processing.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections F., G., and S. of the Descriptive Report. See also section 4.f. of this report.

b. Shoreline originates with Class III, final reviewed photogrammetric manuscript TP-01127 of 1980-82. The copy of the shoreline manuscript provided to the hydrographer was a 1:10,000 scale enlargement of the manuscript which was compiled at a scale of 1:20,000. The 1:10,000 scale enlargement was also used to apply shoreline to the present survey. Shoreline revisions in red have been taken from the smooth field sheet. A field edit was conducted in 1982. The field edit data was applied to the present survey during office processing.

3. HYDROGRAPHY

a. Soundings at crossings are in excellent agreement and comply with the criteria found in sections 4.6.1 and 6.3.4.3. of the HYDROGRAPHIC MANUAL; however, crosslines were not run west of Longitude 79°00'30"W in the Niagara River.

b. The standard depth curves could not be drawn in their entirety because of their proximity to the shoreline. Some supplemental and dashed curves were also drawn to delineate bottom relief.

c. The development of the bottom configuration and determination of least depths is considered adequate with the following exception:

The hydrographer adhered to not exceeding the 100 meter line spacing regarding the requirements found in the Project Instructions. Additional development in areas of irregular bottom and shoal development was minimal for this survey which is described as having "...a highly irregular river bottom..." by the hydrographer in section K. of the Descriptive Report. The line spacing should have been reduced to fifty (50) meters in order to provide a better delineation of the bottom configuration. Additionally, if the sounding interval had been reduced by the hydrographer, the delineation of the bottom would have been enhanced. See also section 4.d. of this report.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL with the following exceptions:

a. The hydrographer failed to take twice daily bar checks as required by sections 1.5.2. and 4.9.5.1.1. of the HYDROGRAPHIC MANUAL. The hydrographer took thirty-nine (39) out of a possible eighty-two (82) bar checks for launch 520 and six (6) out of a possible eight (8) bar checks for launch 1278.

b. A note in sounding volume 8 of 8, day 275, page 3 stated, "Velocity tables closed out". There were no bar checks taken on or after this day. These additional data would have provided additional for the computation of sound velocity correctors. It is imperative that the hydrographer strive to collect all of the data possible for the most complete and comprehensive survey.

c. A separate sounding volume is to be used for each vessel used to obtain hydrographic data. Section 4.8.3.1. of the HYDROGRAPHIC MANUAL addresses this requirement.

d. The hydrographer's comparison with the to applicable prior surveys was very poor. If the hydrographer had made a thorough comparison between the present and prior surveys, many of the supplemental soundings and features would have been superseded because the hydrographer would have seen the need for additional lines of hydrography in the survey area. As a direct result of this poor comparison it was

necessary to bring forward many soundings and features to supplement the present survey.

e. In general, the developments run by the hydrographer were accomplished by splitting the main scheme hydrography. Section 1.4.3. of the HYDROGRAPHIC MANUAL describes the proper method for the "Development of Shoals and Other Hazards".

f. The hydrographer ran range azimuth sounding lines on portions of the present survey by steering electronic control arcs but without identifying the location of the shore station used. As a result an accurate position could not be computed for soundings between fixes on these lines of hydrography. Data for less than 100 fixes were affected. This did not substantially degrade the overall sounding position control for the survey.

5. JUNCTIONS

H-9841 (1979) 1:10,000 to the south
H-10020 (1982) 1:10,000 to the south

Standard junctions were effected with the junctional surveys H-9841 (1979) and H-10020 (1982). There are no junctional surveys to the west.

Charted depths and present survey sounding to the west are in general harmony.

6. COMPARISON WITH PRIOR SURVEYS

LS-1247 (1910-13) 1:10,000
LS-1775 (1940) 1:10,000
LS-1776 (1940) 1:10,000

The above prior surveys taken together cover the present survey area. The present and prior survey geographic positions are based upon the North American Datum of 1927 (NAD 27). Charted geographic positions are based upon the North American 1902 Datum.

a. LS-1775 (1940) covers the western portion of the present survey and compares favorably with the present survey. Prior survey depths are generally one (1) to two (2) feet shoaler than the present survey depths. A noticeable exception to this general deepening trend of the present survey is the area adjacent to Niagara Falls, New York. In the vicinity of Latitude 49°04'24"N, Longitude 79°00'39"W the present survey is now up to fourteen (14) feet deeper than the prior survey. This deepening trend is directly attributable to the construction of two (2) dikes that are approximately 330 meters long by 25 meters wide and 400 meters long by 25 meters wide and dredging for power plant intakes on the north shore of the

river. These two (2) dikes are on the northwest end of Buckhorn Island.

The shoreline along the north side of the Niagara River from Longitude 79°01'30"W to Longitude 78°58'30"W has been filled southward as much as 300 meters. This process has radically changed the appearance of the area. Two (2) islands shown on the prior survey as Connors Island no longer exist; the area has been filled, and the area adjacent to the fill has been dredged for intakes for a hydro-electric power plant.

The following should be noted:

1) A pier with boathouse located in the vicinity of Latitude 43°02'33"N, Longitude 79°00'19"W was not located by the hydrographer. Two (2) piles were brought forward from the prior survey to supplement the present survey. Two (2) piles are shown on the chart in this location; it is recommended that the piles be revised to submerged piles as shown on the present survey. *Applyd* NC

2) Piles in Latitude 43°02'40"N, Longitude 79°00'16"W on the prior survey were not located by the hydrographer. Three (3) piles are charted in this location. The piles were brought forward from the prior survey as submerged ruin to supplement the present survey. It is recommended that the charted piles be revised to submerged piles in the charted location. *Applyd* NC

3) Piles shown on the prior survey in a T-shape in Latitude 43°02'54"N, Longitude 79°00'06"W were not found by the present survey. The possibility that these piles are submerged is not considered disproved by the present survey. The delineation was brought forward from the prior survey to the present survey as submerged ruin. It is recommended that these piles be charted as submerged piles as shown on the present survey. *Applyd* NC

4) Presurvey Review Item 11I, the wreck located on the prior survey in Latitude 43°02'57"N, Longitude 79°00'07"W may have been located on the present survey with an echo sounder least depth of six (6) feet at the sounding datum. The hydrographer's investigation reasonably concludes the object found to be a wreck. The wreck is charted as a sunken wreck with a note depth over wreck 5 feet. The source of the five (5) foot depth is unascertainable and is not considered disproved. The wreck is charted as a sunken wreck with a note depth over wreck 5 feet. A discussion of the wreck found by the hydrographer is found in section K., page 11 of the Descriptive Report. It is recommended that the sunken wreck and note depth over wreck 5 feet be retained as charted. *Applyd* NC

5) A row of piles extending from the shoreline on the prior survey in Latitude 43°03'08"N, Longitude 78°59'56"W was

not found by the present survey. The row of piles have been brought forward from the prior survey to supplement the present survey. The piles are not charted and the possibility of the existence of submerged piles is not disproved by the present survey. It is recommended that this row of piles be charted as submerged piles as shown on the present survey. *Applyd* N/C

6) A rock pile shown on the prior survey in Latitude 43°04'30.3"N, Longitude 79°00'50.8"W was not found by the present survey. Present survey depths in the area are nineteen (19) feet. Prior survey depths were not obtained in the immediate area of the rock pile; however, the nearest prior survey depths are four (4) to five (5) feet about 125 meters south. This area has undergone considerable change, and the rock pile is not charted. The pile is considered disproved by the present survey. It is recommended that the present survey depths be charted. *Applyd* N/C

7) Two six foot (6-ft) soundings shown on the prior survey in the vicinity of Latitude 43°04'35"N, Longitude 79°00'37"W were not found by the present survey. The present survey depths in the area are nineteen (19) to twenty (20) feet. This area has undergone extensive change, and the prior survey soundings are not charted. It is recommended that the hydrography from the present survey be charted. *Applyd* N/C

8) Presurvey Review Item 11A, a scow wreck shown on the prior survey in Latitude 43°04'25"N, Longitude 78°59'37"W was not found by the present survey. The scow wreck has been brought forward from the prior survey as a sunken wreck to supplement the present survey. The scow wreck is currently charted as a non-dangerous sunken wreck. It is recommended that the sunken wreck be retained as charted. *N/C* 6847

9) The pier ruin and crib from the prior survey is shown in the vicinity of Latitude 43°03'51"N, Longitude 78°59'34"W on the present survey as crib ruins. The pier ruins were not found by the present survey. There are five (5) visible objects charted as cribs on the chart. A submerged pier ruin which is not considered disproved and a submerged crib have been brought forward from the prior survey to supplement the present survey. It is recommended that the area be charted as shown on the present survey. *Applyd* N/C

10) Presurvey Review Item 12A, the sunken wreck shown on the prior survey in Latitude 43°03'51.6"N, Longitude 78°59'24"W was located as a hulk by the present survey. The wreck bares two (2) feet at the sounding datum on the present survey. The wreck is currently charted as visible wreck. It is recommended that a visible wreck be charted from the hulk shown on the present survey. *Applyd* 6851

11) A crib in Latitude 43°04'22"N, Longitude 78°58'48"W on the prior survey was not found by the present survey. There

are piers shown on the chart in this location. It is recommended that the submerged crib be charted as shown on the present survey. *Applyd* N/C

12) Two (2) piles in the vicinity of Latitude 43°04'51"N, Longitude 78°58'45"W were not found by the present survey. The piles have been brought forward from the prior survey as submerged piles to supplement the present survey. Visible piles are charted in the above location. It is recommended that these two (2) charted piles be revised to submerged piles. *Applyd* N/C

13) Three (3) groups of piles, one (1) at the entrance to the Little River and two (2) in the Little River, in Latitude 43°04'23"N, Longitude 78°58'40"W and in the vicinity of Latitude 43°04'26"N, Longitude 78°58'16"W, respectively, were not found by the present survey. These three (3) groups of piles while not charted and are not considered disproved by the present survey. The three (3) groups of piles have been brought forward from the prior survey as submerged piles to supplement the present survey. It is recommended that the groups of piles be charted as submerged piles unless subsequent information available to the chart compiler indicates otherwise. *Applyd* N/C

14) The west end of Cayuga Island has been extended through accretion or filling approximately 100 meters to the west since the prior survey was conducted. This change is reflected on the chart; no change in charting status is recommended. *N/C* N/C

15) A group of four (4) piles shown on the prior survey is charted in Latitude 43°03'43"N, Longitude 78°58'28"W. These piles were not found by the present survey. These piles have been brought forward to the as submerged piles from the prior survey to supplement the present survey. This group of piles is charted as visible piles. It is recommended that the charted piles be revised to submerged piles. *Applyd* N/C

16) Soundings in the "DUMPING GROUND" shown on the prior survey in approximate Latitude 43°03'51"N, Longitude 78°58'39"W compare favorably with present survey depths. The "DUMPING GROUND" is charted. It is recommended that the present survey depths be charted and the charted "DUMPING GROUND" be deleted unless it is determined that the dumping ground is still in use; in which case the "DUMPING GROUND" should be retained as charted. *N/C* N/C

17) The three (3) marsh islets shown on the prior survey in the vicinity of Latitude 43°03'45"N, Longitude 78°58'09"W, and charted as three (3) marsh islets should be revised to the configuration and location shown on the present survey. *Applyd* N/C

18) Pre-Survey Review Item 16, charted submerged piles, in the vicinity of Latitude 43°03'13.8"N, Longitude 79°00'14.4"W originate with prior survey LS-1775 (1940). The existence of the piles was verified by the present survey. The piles bare one (1) foot at the sounding datum. The piles should be charted as shown on the present survey. *Applyd* NC

19) Pre-Survey Review item 17, a charted 2-ft sounding, in Latitude 43°02'48.0"N, Longitude 79°00'36.0"W originates with a prior survey of 1911-13. The sounding was brought forward to the prior survey LS-1775 (1940). A thorough examination of the fathograms obtained during the investigation of the 2-ft sounding failed to show any evidence of the item. Considering the beam width of the DE-719B fathometer and the water depth it is possible that the hydrographer may have missed the sounding; however, the investigation by the hydrographer is considered sufficiently thorough to disprove the sounding. It is recommended that the 2-ft sounding be deleted from the chart. *Retain as charted* NC

20) A 6-ft sounding (a dashed circle Presurvey Review Item) in Latitude 43°04'01"N, Longitude 78°58'44"W originates with prior survey LS-1775 (1940). The hydrographer investigated the area with reduced line spacing with negative results. The development run by the hydrographer is not considered adequate to verify or disprove the existence of the sounding. The sounding has been brought forward from the prior survey to supplement the present survey. It is recommended that the charted 6-ft sounding be retained as charted. NC

21) Numerous prior survey soundings were brought forward to supplement the present survey. The soundings selected to be brought forward to the present survey were deemed those that would help provide a better delineation of the irregular river bottom where the present survey coverage is not considered sufficient. ✓

b. H-1776 (1940) compares favorably with the present survey. Generally prior survey depths are one (1) to two (2) feet shoaler than present survey depths. Some major shoreline change have occurred in the common area. The first major shoreline change has occurred along the south side of Cayuga Island where the shoreline has accreted or been filled as much as 100 meters. In the vicinity of Latitude 43°04'12"N, Longitude 78°56'30"W the shoreline has accreted or been filled as much as 120 meters. The shoreline at the south end of Tonawanda Island has also undergone considerable change. ✓

The following items should be noted:

1) Two (2) piers shown on the prior survey in the vicinity of Latitude 43°04'20"N, Longitude 78°57'56"W were located by the present survey. The westerly pier is shown in ruin on the present survey, and the easterly pier is shown as

being considerably shorter than on the prior survey. A single pier ruin is charted in this location. It is recommended that the charted pier ruin be deleted and the pier and pier ruin be charted as shown on the present survey. *Apply* NC

2) Two (2) piers and a row of piles in the vicinity of Latitude 43°04'20"N, Longitude 78°57'23"W on the prior survey were not located by the present survey. A pier ruin was found by the present survey in the same location as the western pier. Two (2) piles are shown on the chart in the location of the row of piles. The row of piles and eastern pier have been brought forward from the prior survey as submerged piles and submerged pier ruin to supplement the present survey. It is recommended that the charted information be deleted, and the area be charted as shown on the present survey. NC

3) Three (3) piles shown on the prior survey in Latitude 43°04'18"N, Longitude 78°57'19"W were not located by the present survey. The piles are charted in the location shown on the prior survey. The piles have been brought forward from the prior survey as submerged piles to supplement the present survey. It is recommended that the charted piles be deleted, and submerged piles be charted as shown on the present survey. NC

4) A pier shown on the prior survey in Latitude 43°04'19"N, Longitude 78°57'14"W was found in ruin on the present survey. The pier is shown as intact on the chart. The shoreline in this area has changed considerably. It is recommended that the present survey configuration of the area be charted. NC

5) A wreck (hulk) shown on the prior survey in Latitude 43°04'17"N, Longitude 78°57'15"W was not located by the present survey. The wreck was searched for by the hydrographer and was considered disproved. This wreck is listed as Pre-survey Review item 11B in the Project Instructions. The wreck is charted as a sunken wreck. The wreck apparently originates with a hulk shown on prior survey LS-1776 (1940). It is recommended that the wreck be deleted from the chart considering the information obtained from a local citizen concerning the removal of the wreck. *N/C see p.10 of DR.* NC

6) Two (2) rows of piles in a T-shape on the prior survey in the vicinity of Latitude 43°04'13"N, Longitude 78°56'45"W were not found by the present survey with the prior configuration in the above location. A short section of pier ruins was found by the present survey. This section corresponds to a portion of the piles shown on the prior survey. The remainder of the piles shown on the prior survey have been brought forward from the prior survey as submerged piles to supplement the present survey. The piles while not charted are not considered discredited. Considerable change, accretion or filling, has taken place in this area and further NC

to the east, approximate Longitude 78°56'15"W. It is recommended that the submerged piles be charted as shown on the present survey. *Applyd*

7) Four (4) piers in the vicinity of Latitude 43°04'05"N, Longitude 78°56'09"W on the prior survey were located by the present survey. The present survey configuration shows three (3) piers in the area a fourth pier in the area has been brought forward as submerged pier ruin from the prior survey to supplement the present survey. The area shoreline configuration has changed and a pier is charted in the area. It is recommended that the charted area be revised and charted as shown on the present survey. *Applyd* NC

8) A pier and three (3) cribs on the prior survey in the vicinity of Latitude 43°04'03"N, Longitude 78°56'02"W were not located as pier and cribs. These features are not on the chart. This area is cluttered with piers, piles, pipes, and ruins on the present survey. It is recommended that the chart compiler make a selection of salient offshore features from the present survey for charting in this area. *Applyd danger curve* NC

9) The rock located in Latitude 43°04'04"N, Longitude 78°55'59.5"W on the prior survey was located by the present survey; in addition, two (2) other rocks were located by the present survey in the general area. The first rock is in Latitude 43°04'02"N, Longitude 78°55'58"W and awash; the second rock is in Latitude 43°04'03"N, Longitude 78°55'55"W and bares one (1) foot at Low Water Datum. It is recommended that the rock on the prior survey, which is presently charted, and the additional rocks be charted as shown on the present survey. NC

10) A rock in Latitude 43°04'02"N, Longitude 78°55'52"W on the prior survey was also located by the present survey at the same position. Three (3) additional rocks were located by the present survey in Latitude 43°04'01"N, Longitude 78°55'51"W, Latitude 43°04'01"N, Longitude 78°55'20"W, and Latitude 43°04'00"N, Longitude 78°55'20"W. The rocks vary from bareing one (1) foot at Low Water Datum to being awash at Low Water Datum. The rock shown on the prior survey is charted. It is recommended that the charted rock be retained, and the additional rocks be charted as allowed by the chart scale. NC

11) Between Longitude 78°55'18"W and Longitude 78°55'57"W there are numerous small piers along the northern shore of the river. The prior survey also shows many small piers in the area. Considering the forty (40) year time span between surveys, it is recommended that the chart compiler examine this area closely and use the present survey to chart the piers in this area. NC

12) Between Longitude 78°57'39"W and Longitude 78°58'07"W there are numerous small piers on the southern shore of the river. The prior survey also shows many small piers in

the area. Considering the forty (40) year time span between surveys, it is recommended that the chart compiler examine this area closely and use the present survey to chart piers in this area.

13) A pier shown on the prior survey in the vicinity of Latitude $43^{\circ}03'44''N$, longitude $78^{\circ}57'35''W$ was not found by the present survey. A pier was located by the present survey approximately fifteen (15) meters east of the pier on the prior survey. The pier on the present survey is substantially shorter than the pier on the prior survey. The pier has been brought forward as submerged pier ruin from the prior survey to supplement the present survey. A pier and two (2) piles are charted in this area. The source of the piles was unascertainable. It is recommended that the charted pier and piles be revised to submerged ruins and submerged piles, and the adjacent present data be charted as shown on the present survey. *Apply d*

14) Between Longitude $78^{\circ}56'45''W$ and Longitude $78^{\circ}57'23''W$ on the south shore of the river there are many more small piers, piles, and ruins on the present survey than the prior survey. There are many more pier, piles, and ruins shown on the chart between the same longitudes. Considering the forty (40) year time span between the present and prior surveys it is recommended that the piers, piles, and ruins shown on the present survey be charted in this area. *Apply d*

15) Two (2) rows of piles (apparently pier ruins) in the vicinity of Latitude $43^{\circ}03'41''N$, Longitude $78^{\circ}57'12''W$ on the prior survey were not found by the present survey. This feature is shown as two (2) piles on the chart. It is recommended that the charted piles be revised to submerged piles in the charted location. *Apply d*

16) Four (4) piles in the vicinity of Latitude $43^{\circ}03'40''N$, Longitude $78^{\circ}56'33''W$ on the prior survey were located by the present survey in the same position; however, the hydrographer described the feature as pier ruins. It is recommended that the pier ruins be charted as shown on the present survey. *Apply d*

17) A pier and dock in the vicinity of Latitude $43^{\circ}03'37''N$, Longitude $78^{\circ}56'29''W$ on the prior survey were not found by the present survey. The shoreline in this area no longer shows these features. The shoreline charted in this location shows a small pier with a different configuration and two (2) piles. The piles were not located by the present survey. It is recommended that the charted pier be revised to submerged piles and the shoreline be shown as delineated on the present survey. *Apply d revise charted piles to subm*

18) A crib located in Latitude $43^{\circ}03'58''N$, Longitude $78^{\circ}55'42''W$ off the end of a pier on the prior survey was not

found by the present survey. The pier shown on the prior survey adjacent to the crib was brought forward as pier ruins by the present survey. The pier is charted along with two piles nearby; however, the crib is not presently charted. The piles were not verified by the present survey. This area was also indicated as being foul during field edit. It is recommended that the area be shown as delineated by the present survey. *Apply d* N/C

19) A charted 8-ft sounding (a dashed circle Presurvey Review Item) in Latitude $43^{\circ}03'55''N$, Longitude $78^{\circ}56'44''W$ originates with a prior survey conducted in 1911-13. The sounding was brought forward to prior survey LS-1776 (1940). A development was run to verify or disprove the charted sounding, and an eight (8) foot sounding was found in Latitude $43^{\circ}03'54.93''N$, Longitude $78^{\circ}56'43.96''W$ by the present survey. It is recommended that the present survey data be charted in this area. *Apply d* N/C

20) Along the north shore of the river between Latitude $78^{\circ}55'15''W$ and Latitude $78^{\circ}56'00''W$ there are numerous private piers, pier ruins, piles, etc. It is recommended that these be charted as shown on the chart with consideration given to chart scale. *Apply d* N/C

21) Presurvey Review item 13, a 4-ft sounding, in Latitude $43^{\circ}03'24.0''N$, Longitude $78^{\circ}55'31.0''W$ originates with a prior survey conducted in 1911-13. The hydrographer's investigation of the item is not considered adequate to verify or disprove the item's existence. The 4-ft prior survey sounding was brought forward to LS-1776 (1940) and subsequently brought forward from LS-1776 (1940) to supplement the present survey. It is recommended that the 4-ft sounding be retained as charted. *N/C* N/C

22) A 4-ft sounding (a dashed circle Presurvey Review Item) in Latitude $43^{\circ}03'21''N$, Longitude $78^{\circ}55'25.5''W$ originates with prior survey LS-1776 (1940) and was subsequently charted. The hydrographer developed the area around the charted sounding using reduced line spacing. An echo sounder least depth of five (5) feet was obtained in Latitude $43^{\circ}03'21.29''N$, Longitude $78^{\circ}55'24.67''W$. The 4-ft depth is not considered disproved by the present survey and was brought forward from the prior survey to supplement the present survey. *N/C* N/C

23) A pier shown on the prior survey in Latitude $43^{\circ}03'45''N$, Longitude $78^{\circ}55'11''W$ was not located by the present survey; however, a rock awash at the sounding datum was located by the present survey approximately ten (10) meters from the offshore end of the pier. The rock may be remains of the pier shown on the prior survey. Additionally, two (2) small piers are shown on the present survey in the vicinity of the pier shown on the prior survey. It is recommended that the rock be charted as shown on the present survey. *Apply d* N/C

24) Pre-Survey Review item 12B, a charted visible wreck, in Latitude 43°03'01"N, Longitude 78°54'56"W originates with prior survey LS-1776 (1940). The wreck is shown as a sunken wreck on prior survey LS-1776 (1940). The wreck was investigated by the hydrographer, and an old boiler was located by the present survey in Latitude 43°03'00.56"N, Longitude 78°54'55.41"W. The boiler bares ten (10) feet at the sounding datum. No change in charting status is recommended. *N/C* 6852

25) Pre-Survey Review item 14, pier ruins, in Latitude 43°02'58.2"N, Longitude 78°54'54.0"W originate with prior survey LS-1776 (1940). At the time the prior survey was conducted there was a pier in this location. Apparently the pier has fallen into disrepair in the interim which resulted in the pier ruins being charted. Ruins are shown on the shoreline manuscript; however, a different delineation was drawn from a change made to the manuscript made by the hydrographer. It is recommended that the pier ruins be charted as shown on the present survey. *Apply* N/C

26) Two (2) piers in Latitude 43°02'55"N, Longitude 78°54'50"W and Latitude 43°02'53"N, Longitude 78°54'44"W on the prior survey were not found by the present survey. The piers are not charted. The northerly pier is in an area of piers and pier ruins on the present survey. It is recommended that the chart compiler chart the area of the northerly pier as shown on the present survey. The southern pier has been brought forward as a submerged pier ruin from the prior survey to supplement the present survey; it is recommended that the submerged pier ruin be charted as shown on the present survey. *Apply* N/C

27) A crib shown on the prior survey in Latitude 43°02'49"N, Longitude 78°54'34"W was not found by the present survey. Two (2) cribs are charted in the vicinity. The crib from the prior survey was brought forward as a submerged crib to supplement the present survey. The crib falls in an area of numerous small piers on the present survey. No change in charting status is recommended. *N/C* N/C

28) Pre-Survey Review item 11C, two (2) sunken wrecks, in the vicinity of Latitude 43°02'39.0"N, Longitude 78°53'27.0"W originate with prior survey LS-1776 (1940). A close examination reveals that there is only a single wreck on the prior survey with numerous piles shown inshore of the wreck and a pier to the south. It is recommended that this area be charted as shown on the present survey. *Apply* N/C

29) A rock awash and three (3) piles shown on the prior survey in the vicinity of Latitude 43°02'22"N, Longitude 78°53'56"W were not found by the present survey. The rock is charted at the above location. The rock awash was brought forward from the prior survey to supplement the present survey. The proximity of the of the features to each other precluded the application of the piles to the chart. No change in charting status is recommended. *N/C* N/C

30) Three (3) piles and the offshore end of a pier in Latitude 43°03'28"N, Longitude 78°54'25"W shown on the prior survey were found by the present survey. The configuration shown on the present survey is considerably different than the prior survey configuration. There has been significant shoreline change in the area, and the prior survey features are not charted. Two (2) small piers are presently charted in the vicinity. It is recommended that the present survey results be charted in this location. *Applyd*

31) A row of piles, running parallel to the shoreline, shown on the prior survey from Latitude 43°02'25"N, Longitude 78°53'33"W to 43°02'42"N, Longitude 78°53'23"W were not found by the present survey. The present survey indicates that there is riprap and shoreline change along the shoreline. Additionally, a yacht club (Niagara River Yacht Club) has been built in the area. The construction of the yacht club necessitated the removal of a portion of the piles for the dredging of the entrance for the yacht club in Latitude 43°02'50"N, Longitude 78°53'32"W. The yacht club is charted. This area should be charted as shown on the present survey. *Applyd*

32) A wreck (hulk) shown in Latitude 43°02'29.5"N, Longitude 78°53'24"W on the prior survey is behind the present shoreline. The wreck is not charted. No change in charting status is recommended. *N/C*

33) Two (2) of the four (4) docks shown on the prior survey on the eastern shore of the river in the vicinity of Latitude 43°02'24"N, Longitude 78°53'21"W no longer exist. The present survey shows only the southern two (2) docks with different configurations. The shoreline in the two (2) existing docks is shown in dashed red (as approximate) on the present survey. It is recommended that the shoreline in this area be revised to the delineation shown on the present survey. *Applyd*

34) Rows of piles are charted along the shoreline on the prior survey in the vicinity of the previously discussed docks. The present survey found rows of submerged piles along the shoreline in this area. A submerged obstruction, PA, Presurvey Review Item 24, is charted in Latitude 43°02'17.4"N, Longitude 78°53'21"W and originates with Chart Letter 1485 of 1976 (CL-1485/76). The chart letter describes the obstruction as a rock and submerged piles. It is recommended that the charted submerged obstruction, PA be deleted and the submerged piles be charted as shown on the present survey. *Applyd*

35) A seawall from the prior survey in Latitude 43°02'01.5"N, Longitude 78°53'53"W was not found by the present survey; however, the seawall falls behind the shoreline on the present survey. A sunken wreck is shown in this vicinity on the chart. The wreck also falls behind the shoreline shown on the present survey. The charted wreck is Presurvey Review Item

11D. The present survey shoreline should be charted in this area, and the charted wreck be deleted from the chart. *Applyd*

36) The piles in Latitude 43°01'50"N, Longitude 78°53'46"W on the prior survey were not found by the present survey; however, a platform that is 10 feet by 10 feet was found in this location. The piles are charted from the prior survey. It is recommended that the charted piles be deleted and a platform charted as shown on the present survey. *Revised Subm piles, Apply platform* NC

37) The three (3) piles in Latitude 43°01'43"N, Longitude 78°53'41"W on the prior survey were located by the present survey in the same location. The present survey located four (4) piles bearing two (2) feet at the sounding datum. The piles are charted from the prior survey. It is recommended that the charted piles be revised to submerged piles. *Applyd* NC

38) The piles on the prior survey in Latitude 43°01'39"N, Longitude 78°53'39"W were not located by the present survey. The piles have been brought forward as submerged piles from the prior survey to supplement the present survey. A visible pile is charted in the vicinity. It is recommended that the submerged piles be charted as shown on the present survey. *Applyd* NC

39) Pre-Survey Review Item 11E, two (2) charted sunken wrecks, in Latitude 43°01'30.0"N, Longitude 78°53'36.0"W, originates with prior survey LS-1776 (1940). Three (3) of four (4) wrecks shown on the prior survey in the vicinity of Latitude 43°01'31"N, Longitude 78°53'36"W were located by the present survey. Detached positions were taken on three (3) wrecks on the present survey. The present survey also delimits a "foul area" around the wrecks. Two (2) sunken wrecks are presently charted. It is recommended that a foul area and sunken wrecks be charted as shown on the present survey. *Applyd* 88A NC

40) A double row of piles on the prior survey in Latitude 43°01'26"N, Longitude 78°53'38"W were found by the present survey. The piles bare two (2) feet at the sounding datum and are charted. No change in charting status is recommended. *N/C* NC

41) A row of piles extending from Latitude 43°01'22"N, Longitude 78°53'40"W to Latitude 43°01'18"N, Longitude 78°53'42"W on the prior survey were found by the present survey. The piles bare two (2) feet at the sounding datum and are charted. No change in charting status is recommended. *N/C* NC

42) In the Little River, east of Tonawanda Island, there are rows of piles along both shores of the river. Only a few of these rows of piles were apparent when the hydrography was run for the present survey, and only one (1) section is charted as a continuous row of piles. Several sections of submerged piles are shown on the present survey. It is NC

recommended that the chart compiler examine this area on the present survey and determine which features are appropriate for charting at the scale of the chart. *Revised appropriately*

43) A large dock on the east side of Tonawanda Island on the prior survey in Latitude 43°01'38"N, Longitude 78°53'00"W, has been filled and no longer exists. No change in charting status is recommended. *N/C*

44) A fixed bridge in the vicinity of Latitude 43°01'11"N, Longitude 78°52'54"W has been constructed to Tonawanda Island since the prior survey was conducted. The bridge is charted and no change in charting status is recommended. *N/C*

45) The two (2) docks at the entrance to the Erie Canal Latitude 43°01'27"N, Longitude 78°52'52"W are not configured as shown on the prior survey. The docks are charted as shown on the prior survey. It is recommended that the docks be charted as shown on the shoreline manuscript used for the present survey. *N/C*

46) Along the southern shore of the river between Longitude 78°53'05"W and 78°54'42"W there are numerous rows of piles. None of these rows of piles were found by the present survey, nor are they charted. It is recommended that this area be charted as shown on the present survey. *Row to Subm*

47) A row of piles in Latitude 43°01'07"N, Longitude 78°53'57"W on the prior survey was not found by the present survey. This row of piles falls slightly west of an area of submerged piles on the present survey. These piles are not charted; no change in charting status is recommended. *Apply d*

48) Three (3) piles in Latitude 43°01'05"N, Longitude 78°53'59"W on the prior survey were not found by the present survey; however, two (2) piles baring eight (8) feet were located by the present survey approximately thirty (30) meters southwest of the piles on the prior survey. The piles shown on the prior survey fall behind the present survey shoreline. The prior survey information is not charted; no change in charting status is recommended. The piles shown on the present survey to the southwest should be charted as shown on the present survey. *Apply d*

49) An L-shape pier in Latitude 43°01'04"N, Longitude 78°54'02"W on the prior survey was not found by the present survey. There are two (2) piles that bare eight (8) feet are approximately twenty (20) meters northeast of the pier. The pier is not charted; no change in charting status is recommended. The piles mentioned in this paragraph are the same piles discussed in the previous paragraph. ✓

50) A rock awash in Latitude 43°00'53.5"N, Longitude 78°54'35"W on the prior survey was verified by the present survey. The rock is charted; no change in charting status is recommended. NC
N/C

51) A T-shaped configuration of piles in Latitude 43°00'52"N, Longitude 78°54'44"W on the prior survey was verified by the present survey; however the configuration shown on the present survey is not the same. A row of piles is shown on the chart at this location. The piles found on the present survey bare two (2) feet at the sounding datum. No change in charting status is recommended. NC
N/C

52) Two (2) wrecks (hulks) and a T-shaped configuration of piles are shown in Latitude 43°00'18"N, Longitude 78°54'55"W, Latitude 43°00'16"N, Longitude 78°55'00"W, and Latitude 43°00'16"N, Longitude 78°55'02"W, respectively. The wrecks were not found by the present survey; however, a smaller pier was found in the location of the T-shaped piles. The chart has a T-shape configuration of four (4) piles and a small pier shown in this area. The wrecks are not charted. A small pier originating with the shoreline manuscript extends to the location of the northerly wreck shown on the prior survey, and two (2) pile symbols with the note "row of subm piles" are shown at the offshore end of the southerly wreck. Although the wrecks were neither verified or disproved, the existence of the wrecks is doubtful. The present survey located piers, rows of piles, and rows of submerged piles in this area. It is recommended that the present survey information be charted in this area. *Applied* NC

53) Between Longitude 78°55'09"W and Longitude 78°55'39"W along the northern shore of the river numerous small piers, piles, and pier ruins were found by the present survey. The chart also shows many small pier, piles, etc. in this area. It is recommended that the chart compiler examine this area for changes and apply any data required from the present survey. *Applied* NC

54) Three (3) piles in Latitude 43°00'32"N, Longitude 78°55'30"W on the prior survey were not found by the present survey. The piles are at the end of a pier on the present survey. The piles are not charted; no change in charting status is recommended. N/C

55) A pier and two (2) sets of piles in the vicinity of Latitude 43°00'28"N, Longitude 78°55'37"W on the prior survey fall in an area of pier ruins on the present survey. Piers and piles are shown on the chart in this area. No change in charting status is recommended. N/C

56) Three (3) piers in the vicinity of Latitude 43°01'14"N, Longitude 78°53'10"W were not found by the present survey. A potable water intake (PWI) is shown on the present survey in the immediate vicinity of the three (3) piers. NC

Additionally, the shoreline in this area has been changed by filling forty (40) to fifty (50) meters in this area. The piers are not charted. It is recommended that the PWI be charted as shown on the present survey. *Apply d*

57) Two (2) piers in the vicinity of Latitude 43°01'07.5"N, Longitude 78°53'19"W on the prior survey were not found by the present survey. There has been shoreline accretion in this area of approximately twenty (20) meters. The piers are not charted; no change in charting status is recommended. *N/C*

58) Two (2) small piers in Latitude 43°01'03"N, Longitude 78°53'26"W and Latitude 43°01'01"N, Longitude 78°53'29"W were not found by the present survey. The piers are not charted; no change in charting status is recommended. *N/C*

59) A pier shown on the prior survey in Latitude 43°00'54"N, Longitude 78°53'16" was not found by the present survey. A note "crib" is on the present survey in the immediate area of a shoreline protrusion. There is no position for the crib. The crib originates with a red note on a copy of the shoreline manuscript TP-01147 that was submitted by the field. It is not known whether the hydrographer or field editor submitted this copy of the manuscript. Two (2) marked up copies of the shoreline manuscript were submitted, one by the hydrographer and another by the field editor. A close examination of the prior survey revealed that a small unlabeled rectangular feature is shown in this location. The pier is not charted; no change in charting status is recommended for the pier. It is also recommended that the note crib be charted as shown on the present survey. *Apply d*

60) Numerous piers, piles and ramps exist south of Two Mile Creek to Longitude 78°54'48"W. The note "ramps" is charted in the area. It is recommended that the configuration shown on the present survey be charted with consideration given to chart scale. ✓

61) A pier and piles on the prior survey in the vicinity of Latitude 43°00'27"N, Longitude 78°55'00" were not found by the present survey. The shoreline manuscript does not show a pier and piles or ruins in the area. The pier and piles have been brought forward from the prior survey as submerged ruins and submerged piles to supplement the present survey. These piles and pier are charted as ruins on chart 14832. It is recommended that the present configuration be retained as charted. *N/C*

62) Numerous prior survey soundings were brought forward to supplement the present survey. The soundings selected to be brought forward to the present survey were deemed those that would help provide a better delineation of the irregular river

bottom where the present survey coverage is not considered sufficient. ✓

Except as noted above the present survey is adequate to supersede the above prior surveys within the common area.

7. COMPARISON WITH CHART 14382 27th Edition, Oct. 1/77

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys, and unascertainable miscellaneous sources. It should be noted that the charted positions addressed below are based upon the North American 1902 Datum and present survey positions are based on the NAD 27. Attention is directed to the following:

1) A concrete obstruction located by the present survey in Latitude $43^{\circ}03'40.25''N$, Longitude $79^{\circ}00'06.14''W$ was not shown on the chart. This obstruction is probably a crib surrounding a transmission tower for overhead cables. Erosion of the shoreline has probably exposed this structure, or a crib had to be constructed after the base of the tower was exposed. *Apply d*

2) A charted pier with finger piers in Latitude $43^{\circ}04'51''N$, Longitude $78^{\circ}58'48''W$ is shown as pier ruin on the present survey. A note that this pier was found in ruin is on a copy of the shoreline manuscript submitted by the hydrographer. It is recommended that the charted pier be revised to pier ruin as shown on the present survey. *Apply d*

3) A small islet and two (2) piles shown on the chart in Latitude $43^{\circ}04'20''N$, Longitude $78^{\circ}57'04''W$ were not found by the present survey. The islet was not shown on the shoreline manuscript. The islet originates with prior survey LS-1776 (1940). The source of the two (2) piles is not known; however, there are six (6) "spars" shown on the prior survey south of the islet. It is recommended that the islet and the charted piles be deleted from the chart. *N/C*

4) Two (2) charted submerged piles in Latitude $43^{\circ}03'57''N$, Longitude $78^{\circ}55'37''W$ originate with a miscellaneous source and were not located by the present survey. No change in charting status is recommended. *N/C*

5) Four (4) charted piles in Latitude $43^{\circ}03'49''N$, Longitude $78^{\circ}55'18''W$ originate with a miscellaneous source and were not located by the present survey; however, pier ruins were found in this area on the present survey. It is recommended that the charted piles be revised to pier ruins. *Apply d*

6) A submerged crib with a depth of five (5) feet over it was located by the present survey in Latitude $43^{\circ}03'21''N$, *N/C*

Longitude 78°55'45"W. There is no crib in this location on the prior survey or the chart. It is recommended that this submerged crib be charted as shown on the present survey. *Applied*

7) Several submerged pipelines crossing the river and submerged pipelines from potable water intakes (PWI) charted in the area of the present survey are neither verified or disproved by the present survey. These charted pipelines should be retained as charted. *N/C*

8) A charted pair of jetties and submerged portion of the jetties in the vicinity of Latitude 43°04'20"N, Longitude 78°58'43"W were not investigated by the field unit. Telephone calls to La Salle American Marine Incorporated of Niagara Falls, New York, (716) 283-5859, Mr. John Koszuta of the Survey Branch of the U. S. Army Corps of Engineers, Buffalo District, (716) 876-5454, and Mr. Ralph Ross of the Marine Chart Branch, Rockville, Maryland, FTS 443-8677 confirmed that there are no jetties in the area, visible or submerged. Mr. Ross determined that the lines were applied to the chart in error and that the lines are actually channel lines that originated prior to 1956. Mr. Ross also stated that the next edition of the chart would be changed to reflect the channel lines. *Remove Jetties*

9) The charted bridge clearance of 46 feet for the North Grand Island Bridge was measured by the hydrographer and determined to be 63.5 feet. The seventeen and one-half (17.5) foot difference between the charted clearance and field determination is not sufficiently explained in the field records to warrant a change in the charted clearance value. No change in charting status is recommended. It is recommended that the bridge clearance be checked at some convenient opportunity. *N/C*

Except as noted above the present survey is adequate to supersede the charted hydrography in the common area.

b. Controlling Depths

There are a several conflicts between the present survey depths and the charted project depths for the Niagara River Channel and the Tonawanda Channel shown on the chart.

The charted project depth for the Niagara River Channel is twelve (12) feet. Shoal depths of eight (8) to eleven (11) feet were found in the Niagara River Channel along a line running from Latitude 43°03'27"N, Longitude 78°55'32"W to Latitude 43°02'59"N, Longitude 78°54'29"W. These depths are along the southern edge of the channel. The shoalest depth within the charted channel limits, eight (8) feet, is in Latitude 43°03'21.67"N, Longitude 78°55'13.48"W.

The charted project depth for the Tonawanda Channel is twenty-one (21) feet. Shoal depths of fifteen (15) to nineteen

(19) feet were found in the Tonawanda Channel west of Tonawanda Island along the charted eastern channel limit. The shoalest depth, fifteen (15) feet, is in Latitude 42°01'40.40"N, Longitude 78°53'22.67"W.

Considering the discontinuance of aids to navigation in the Niagara River Channel discussed in the following section, the U. S. Army Corps of Engineers, Buffalo District was contacted concerning the continued maintenance of the channel. Mr. Jack La Fontaine, Operations and Maintenance Branch, U. S. Army Corps of Engineers, Buffalo District, (716) 876-5454, was contacted and stated that the project is still maintained by the district, however, traffic in the channels is not very heavy and shallow draft.

c. Aids to Navigation

The hydrographer located twenty-six (26) floating aids to navigation and twenty-two (22) fixed aids to navigation in the survey area. Twenty-two (22) of the floating aids are federal aids and four (4) are privately maintained. These aids appear adequate to serve their intended purpose. A conversation with the Aids to Navigation Team (ANT), Buffalo, New York established that all of the floating aids that are in the survey area are seasonal and are removed during the winter. Additionally, the aids to navigation located by the hydrographer that are north of the turning basin at Tonawanda Island have been discontinued. This fact was confirmed by a telephone conversation with Mr. Leon Gudger of the Aids to Navigation Section, FTS 443-8800, Rockville, Maryland. Local Notice to Mariners 21 of 1985 (LNM 21/85) is the source for the discontinuance of these buoys.

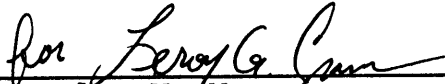
Control Station Identification (CSI) cards were submitted by the field editor for several privately maintained fixed aids to navigation. These cards were for the three (3) La Salle Yacht Club Lights (CSI card #3), Little River Range lights to the east end of Cayuga Island (CSI card #4), and the Sandy Beach Yacht Club Light (CSI card #5). The Sandy Beach Yacht Club Light was located using Third order, Class I methods by field personnel because it was used as a control station for hydrographic operations. The CSI cards are included in the original data submitted for this survey.

8. COMPLIANCE WITH INSTRUCTIONS


This survey complies with the Project Instructions except as noted in sections 3. and 4. of this report.

9. ADDITIONAL FIELD WORK

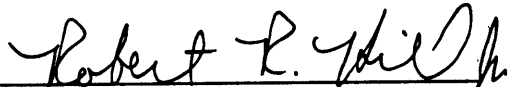
This is considered an adequate basic survey.



Douglas V. Mason
Cartographic Technician
Verification of Field Data



Robert G. Roberson
Supervisory Cartographer
Evaluation and Analysis



Robert H. Hill, Jr.
Senior Cartographic Technician
Verification Check

ADDENDUM TO ACCOMPANY SURVEY H-9889

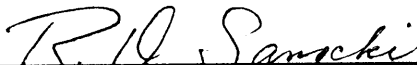
The average values for shifting surveyed NAD 1927 positions to NAD 1983 positions for this survey are as follows:

Position shifts (NAD 1983 minus NAD 1927):
Average latitude shift = 0.208 seconds = 6.4 meters
Average longitude shift = -0.861 seconds = -19.6 meters

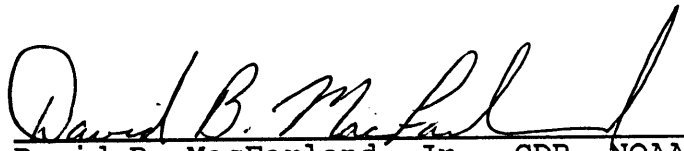
INSPECTION REPORT
H-9889

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey complies with National Ocean Service requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected



R. D. Sanocki
Chief, Hydrographic Surveys
Processing Section
Hydrographic Surveys Branch



David B. MacFarland, Jr., CDR, NOAA
Chief, Hydrographic Surveys Branch

Approved: 30 January 1987



Ray E. Moses, RADM, NOAA
Director, Atlantic Marine Center

LS-2

LS-2

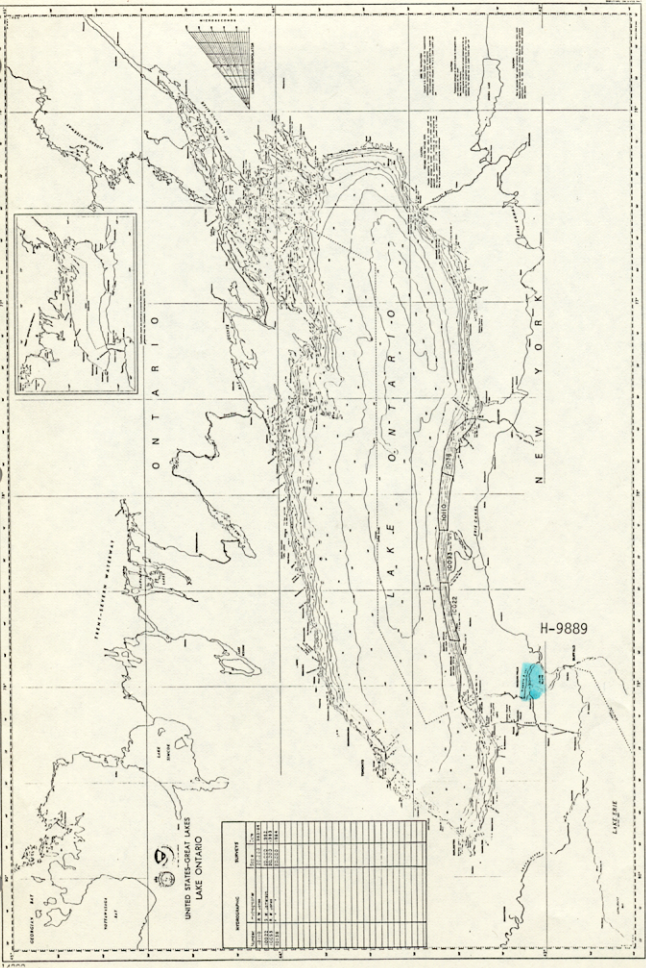


DIAGRAM NO. LS-2

LS-2

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9889

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

- 1. Letter all information.
- 2. In "Remarks" column cross out words that do not apply.
- 3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
14832	3-30-89	ED MARTIN	Full Part Before After Marine Center Approval Signed Via Drawing No. 4 in Full
14882	8-29-91	<i>[Signature]</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. 7 in Full
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.

APPLD TO STD 6-20-88 R1