10020

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-10-6-82....

Registery No. ....~~H-10200~~ H-10020....

LOCALITY

State ....New York....

General Locality ....Upper Niagara River....

Sublocality ....Chippawa Channel....

1982

CHIEF OF PARTY
LCDR G.W. Jamerson

LIBRARY & ARCHIVES

DATE ....January 25, 1988....

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

10020

Area 7
[illegible] Ref 6/3/88)

14832 } To Sign off see
14822 } "Record of Application"

14820-NC

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

AWOIS/SURF MSM 9/88

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTER NO.
	HYDROGRAPHIC TITLE SHEET	H-10020 ✓
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-10-6-82

State New York

General locality Upper Niagara River

Locality Chippawa Channel

Scale 1:10,000 Date of survey 3 Jun - 19 Aug 1982

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

Vessel Hydrographic Surveys Branch, HFP-4

Chief of party Lt. Cdr. George W. Jamerson

Surveyed by C. B. Greenawalt, N. E. Perugini, E. L. Martin, D. M. Bryant, L. S. Biscorner, J. L. Daniel, J. P. Oswald, R. W. Adams, D. J. Parris

Soundings taken by echo sounder, ~~XXXXXXX~~, pole

Graphic record scaled by HFP-4 personnel

Graphic record checked by HFP-4 personnel

Protracted by N/A Automated plot by PDP8/E (FIELD) XYNETICS 1244 Plotter (AMC)

Verification by AMC Verification ~~Branch~~ Section Personnel

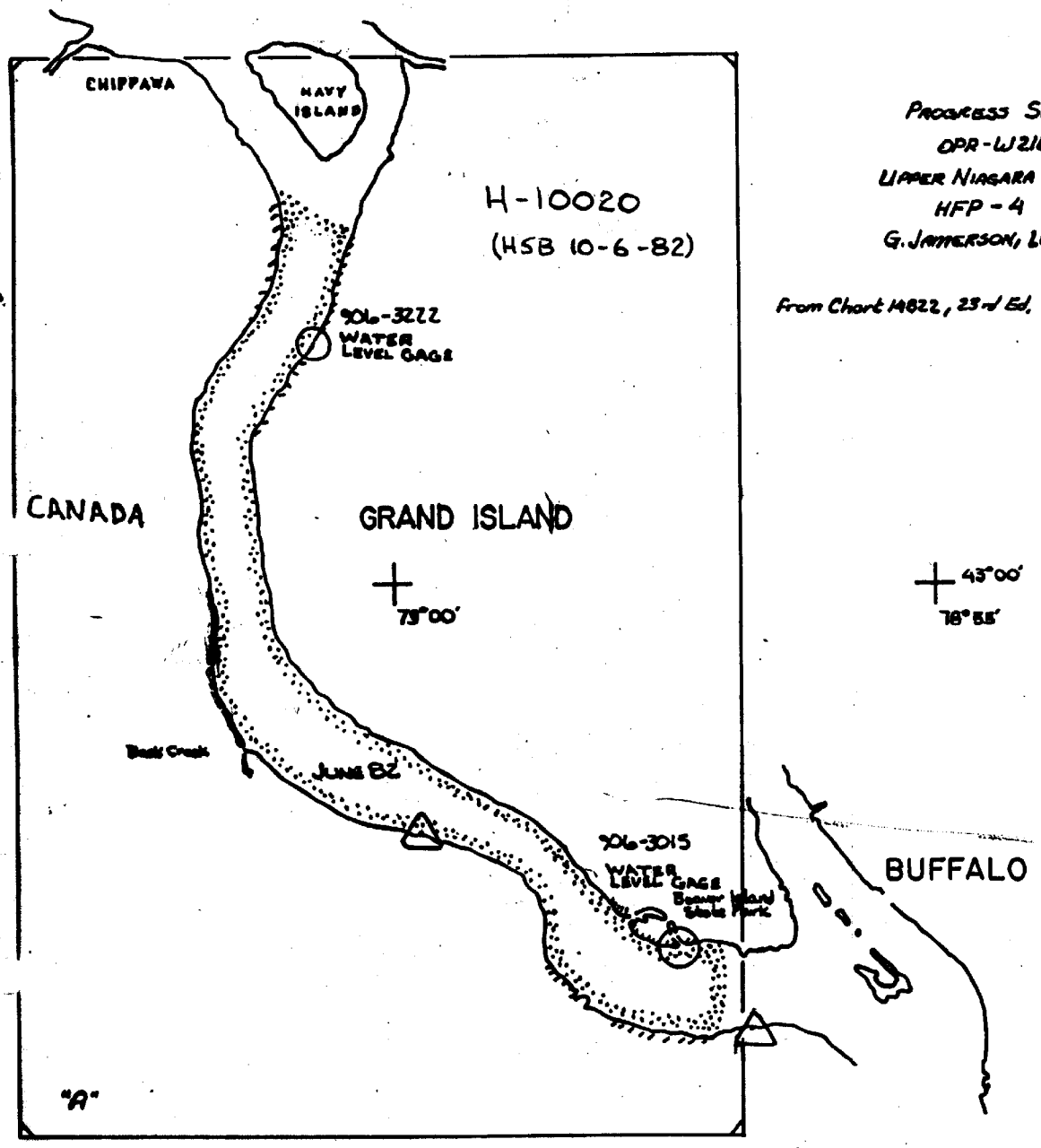
Soundings in ~~XXXXX~~ feet at ~~MLW~~ ~~XXXXX~~ LWD (IGLD 1955: 568.6 FEET)

REMARKS: Notes in the Descriptive Report were made during office processing.

Change No. 1	dated 30 March 1977	Change No. 9	dated 18 May 1978
2	31 March 1977	10	14 September 1978
3	31 March 1977	11	12 February 1979
4	11 July 1977	12	7 March 1979
5	21 December 1977	13	19 July 1979
6	1 March 1978	14	25 February 1980
7	13 April 1978	15	9 April 1981
8	28 April 1978	16	8 March 1982

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GPO: 1974-0-768-081/1207



PROGRESS SKETCH
OPR-WJ216
UPPER NIAGARA RIVER, NY
HFP - 4
G. JAMERSON, LCDR, NOAA

From Chart 14822, 23rd Ed. Aug 26/78

	May 1982	June 1982	July 1982	August 1982	
Sq NM Sounding	0	3.0	0	0	
LNM Miscellaneous	0	61.0	41.5	49.6	
LNM Tie - From	0	65.0	88.5	90.0	
LNM Sounding	0	129.4	49.2	24.1	
Bottom Samples	0	0	0	30	
Control Stations	3	0	0	2	
Tide/Water level Gages	2	0	0	2	

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-10020
HSB-10-6-82

Scale: 1:10,000
Chief of Party: Lt. Cdr. George W. Jamerson
Officer-in-Charge: Lt. C. Brian Greenawalt
Hydrographic Surveys Branch, Hydrographic Field Party #4
Launch: 520

A. PROJECT

This survey was accomplished under Project Instructions OPR-300-HFP-77 (later changed to OPR-W216-HFP-78), dated January 25, 1977 and amended by:

Change No. 1, March 30, 1977
2, March 31, 1977
3, March 31, 1977
4, July 11, 1977
5, December 21, 1977
6, March 01, 1978
7, April 13, 1978
8, April 28, 1978
9, May 18, 1978
10, September 14, 1978
11, February 12, 1979
12, March 07, 1979
13, July 19, 1979
14, February 25, 1980
15, April 09, 1981
16, March 08, 1982

The purpose of this survey was to perform basic hydrography on the Upper Niagara River.

B. AREA SURVEYED

The area surveyed was the portion of the Niagara River to the west of Grand Island, New York. The area is bound by the Canadian shoreline on the west; the western shoreline of Grand Island, New York on the east; the line joining 42°56'30"N, 78°57'10"W and 42°57'30"N, 78°57'W on the south; and the line joining 43°02'40"N, 79°01'00"W, and 43°02'40"N, 79°00'50"W on the north.

This survey was conducted from June 3, 1982 through August 19, 1982, inclusive.

C. SOUNDING VESSEL

All soundings on this survey were obtained from Launch 520 (EDP number 0520). All survey records were annotated with the vessel number 0520.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings except pole soundings were recorded with a Raytheon Fathometer Model DE719-B, serial number 9221.

Calibration zero, tide and draft, and speed of sound settings were monitered continuously. Adjustments were made either on-line, or when the fathograms were scanned.

Soundings were affected intermittently by interference from VHF-FM radio transmissions on JD 194, 203, and 229. The interference caused the initial trace to move 0.1 feet. This change in depth was taken into consideration when the fathograms were scanned.

When weather, depth, and current permitted, bar checks were taken to the full length of the bar check chain at the beginning and end of each day's hydrography. Bar checks could not be taken over the full depth range because of the current and weather.

Velocity of sound corrections were computed from bar check averages. Corrections were based on 22 bar checks for Table I, 23 bar checks for Table II, and 5 bar checks for Table III. Bar check abstracts, velocity correction plots, and a listing of the velocity correction tapes are included in the Appendix.

Velocity and TC/TI corrections were not applied to the soundings on the final field sheet. Velocity and TC/TI correction tapes are included with the data. Corrections were applied to the smooth sheet

E. HYDROGRAPHIC SHEETS (FIELD)

Field sheets used for this survey were prepared in the field using a PDP8/e computer and a DP-3 complot plotter. Work sheets, preliminary sheets, final field sheets and overlay sheets are included with this survey. Mainscheme soundings and crosslines are plotted on the final field sheet. Developments, bottom samples, pre-survey review investigations, charted soundings, junction soundings, prior survey soundings, and aids to navigation are shown on various overlay sheets.

Projection parameter tape listings are included in the Appendix.

All records will be forwarded to the Verification Branch at the Atlantic Marine Center for verification and smooth plotting.

F. CONTROL STATIONS

Control stations used during this survey were either existing geodetic control published by the National Geodetic Survey (NGS) or control established by the Hydrographic Survey Support Section, the Coastal Surveys Section, or party personnel. All positions are based on the North American 1927 Datum.

A list of calibration points and control stations used during this survey are included in the Appendix.

See Horizontal Control Report and Field Edit Report, CM-8104 TP-001127, included ~~in the Appendix.~~ with the field records

G. HYDROGRAPHIC POSITION CONTROL

This survey was controlled entirely by range-azimuth methods using a Del Norte Trisponder System for range control and a Wild T-1 theodolite (S/N 14007) for azimuth control.

The following Del Norte equipment was used aboard NOAA Launch 0520:

Equipment	S/N	Julian Days used
DMU	429	154-166
	159	168-197
	298	203-215, 221, 223-231
	179	217-218, 222
Master	1070 (78)	154-166
	250 (78)	168-197
	620 (74)	203-231

The following Del Norte remote units were used on shore:

Remote	245 (72)	154-158
	256 (74)	161-166
	244 (76)	168-197
	1063 (78)	203-231

Daily calibrations showed a marked drift in the correctors (from positive to negative) each day. Warm-up time was increased from 30 minutes to 45-60 minutes. Additional calibration checks were taken during the day.

In addition to this drift the following problems with the Del Norte equipment were encountered:

JD 167 - Erratic rates on DMU, S/N 429; Master, S/N 1070; Remote, S/N 256.
JD 200 - Erratic rates on DMU, S/N 159; Master, S/N 250; Remote, S/N 244. DMU would not clear.
JD 201 - Erratic rates on DMU, S/N 429; Master, S/N 250; Remote, S/N 244.
JD 203-231 - Del Norte showed an intermittent 5-meter error due to VHF-FM radio interference.

The master units aboard Launch 0520 were mounted on a galvanized pipe mast about 2.5 meters above the waterline. Remote units were mounted on Wild instrument tripods at the shore stations.

The Del Norte equipment was baseline calibrated before the survey began and after the survey was completed. The equipment was also calibrated whenever its accuracy was in question. The

baseline calibrations were conducted in accordance with AMC Operations Order 79, dated February 25, 1982. The baseline distance had been measured to third-order standards. Results are included ~~in the Appendix~~. with the survey records.

Static calibration checks over distances measured with an AGA Model 76 Geodimeter or an HP-3810 were made each day at the beginning and end of hydrography, and occasional during the day. No daily correctors were applied on the corrector tapes except on JD 155 (corrector = -5m at 172200Z), JD 187 (corrector = -6m at 163000Z), and JD 221 (corrector = -4m at 143100Z). Data is included in the Sounding Volumes.

H. SHORELINE

Shoreline details for this survey were transferred to the final field sheet from an enlargement of shoreline manuscript TP-01127.

Field edit, performed by the Coastal Mapping Section in June 1982, is shown on the final field sheet. This field edit was supplemented by hydrographic positions taken on all man-made and natural features. The shoreline was verified by running sounding lines as close to shore as possible. Changes to the shoreline manuscript are shown on the final field sheet in red. Data was incorporated into smooth sheet during office processing.

All question addressed to the hydrographer were investigated. The items and results of each investigation follow. The geographic positions refer to the areas outlined on TP-01127.

Piling at latitude 43°02'30"N, longitude 79°00'20"W, was searched for and one ~~pile~~ pipe was found. See position #1412. In Lat 43°02'19.23"N, Lon 79°00'27.12"W bearing 3-ft above LWD.

Piling at latitude 43°01'50"N, longitude 79°00'30"W was searched for and two piles were found. See positions 1414 and 1415. Chart as shown on the present survey. 1414 Lat 43°01'53.60"N, Lon 79°00'32.47"W
1415 Lat 43°01'51.39"N, Lon 79°00'33.30"W

Piling at latitude 43°01'25"N, longitude 79°00'58"W was searched for. The area is foul with piles. See position 1446. Chart as shown on the present survey. 1446 Lat 43°01'23.79"N, Lon 79°00'57.05"W

Ruins at latitude 43°00'16"N, longitude 79°01'15"W were searched for and several submerged piles were found. See positions 2154-2156. Chart as shown on the present survey
2154 - Lat 43°00'21.39N Lon 79°01'15.89"W
2155 Lat 43°00'21.14"N Lon 79°01'15.61"W
2156 - Lat 43°00'21.93"N Lon 79°01'15.85"W

Obstruction at latitude 42°59'45"N, longitude 79°01'45"W was searched for but not found. Obstruction was probably a temporary pier. Concur Recommendation: Delete from manuscript TP-01127.

Rock, Ruins, and Piles in vicinity of latitude 42°~~59~~58'00"N, longitude 79°00'~~30~~14"W were searched for and numerous items found. See positions 2081 through 2084 and 2092 through 2094. Chart as shown on the present survey.

Obstruction at latitude 42°58'20"N, longitude 79°00'25"W was searched for but not found. Heavy grass in the area prevented a thorough search and wire drag. Recommendation: Retain as plotted on manuscript TP-01127. Chart as shown on the present survey.

Ruins and Piers at latitude 42°58'40"N, longitude 78°59'25"W were searched for and found. See positions 2018-2125 and 2060. Chart as shown on the present survey.

Ruins and Piling near latitude 42°58'15"N, longitude 78°58'30"W were located. See positions 1867 through 1903. Chart as shown on the present survey.

I. CROSSLINES - See section 3.a. of the Evaluation Report

Crosslines totaled 19.2 miles or 12.9% of the mainscheme soundings. Ninety-six percent (96%) of all crossline soundings agree within one foot of the mainscheme soundings. The remainder of the crossline soundings agree within three feet in areas where the bottom is extremely jagged.

J. JUNCTIONS

This survey junctions well with the following surveys:

H-9889 (1980), 1:10,000 scale to the north, and
H-9841 (1979), 1:10,000 scale to the southeast

When compared with Survey H-9889, which has not been reduced for water levels, 71% of the jucntion soundings agree within 1-2 feet. ~~The remainder of the soundings agree within 4 feet.~~

When compared with Survey H-9841, 94% of the junction soundings agree within one foot and the remainder varied by no more than two feet.

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

This survey was covered by the following prior surveys:

1-1775 (1940); 1:10,000 scale
1-1777 (1940); 1:10,000 scale

The present survey agrees with the prior survey to within one foot for 94% of the soundings compared. No soundings disagree by more than four feet.

Discrepancies between the present survey and the prior surveys can be attributed to the lack of developments and the 100-meter line spacing on the prior survey. Concur

L. COMPARISON WITH THE CHART

Chart 14832, 28th Edition, June 13, 1981, scale 1:30,000, was used to compare with the present hydrography. When the distoration of the enlargement and the different data (NAD 1902 vs NAD 1927) were taken into account, the two agree well. Of the soundings compared, 82% agree within one foot, and all agree within three feet.

The following numbered presurvey review items were investigated:

PSR Item 11-H - Submerged Wreck charted at latitude 42°57.92'N, longitude 78°58.2'W (from Survey 1-1777, 1940):

Survey 1-1777 shows this wreck in about three feet of water and close to shore. A visual search, totalling ten staff=hours, was made of the area on JD 211 between 1404Z and 1508Z. Visibility was good to ten feet. Heavy grass and a jagged bottom profile prevented using wire drag methods. Recommendations: Retain submerged wreck symbol as charted. Concur - See also section 6. of the Evaluation Report.

PSR Item 15 - The one foot sounding charted at latitude 43°01.98'N, longitude 79°00.62'W, (from Survey 1-1775, 1940): This sounding was investigated on JD 194. A least depth of 1.1 ft was found at latitude 43°01.97'N, longitude 79°00.62'W at 170700Z, position number 1413 (See Volume 6). The position was checked at 142000Z on JD 229 (See Volume 10). Recommendation: Chart a rock-submerged one foot at latitude 43°01.97"N, longitude 79°00.62"W. Concur - See also section 6. of the Evaluation Report

PSR Item 25 - Pipe, PA, charted at latitude 42°58.15'N, longitude 78°59.18'W (from Chart letter 2170, 1976). Pipe was searched for and found at latitude 42°58.15'N, longitude 78°59.23'W at 175900Z on JD 229. It is a five foot diameter water intake pipe with a least depth of 1.0 ft. Recommendations: Chart a pipe, submerged one foot, at latitude 42°58.~~15'W~~ Φ9.16"N longitude 78°59.~~23'W~~ 13.98"W. Concur - Chart as shown on the present survey

The following unnumbered PSR Items were investigated:

(1) 10-ft Shoal, charted at latitude 42°59.40'N, longitude 79°01.25'W. This shoal was transferred to the chart from Survey 1-1777 (1940). The area was investigated on JD 158, 175, and 203. See positions 227 through 231, positions 922 through 928, and positions 1661 through 1673. Sounding lines spaced at 25-meters yielded a least depth of ~~9.9~~ Φ ft on JD 203, 163723Z, at latitude 42°59'23"N, longitude 79°01'19"W. Recommendations: ~~Retain the charted 10-ft sounding as charted~~. Chart present survey data

(2) 10-ft Shoal - charted at latitude 42°59.00'N, longitude 79°01.08'W. These soundings were transferred to Survey 1-1777 (1940) from another source, probably the W. S. Richmonds Survey, 1911-1913. This area was investigated on JD 158, 181 and 203. See positions 255-260, 1080-1097, and 1688-1720. Sounding lines spaced at 25-meters yielded a least depth of ~~8.8~~ 9 ft on JD 181, 135817Z, at latitude 42°59'04"N and longitude 79°01'05"N. Recommendation: Supersede the charted soundings with the ~~8.8~~ 9 ft sounding from this survey. Let 42°59'Φ4.36"N, Lon 79°Φ1'14.42"W. Concur

(3) 11-ft Sounding - charted at latitude 42°58.85'N, longitude 79°00.95'W. The soundings origin is unknown. The area was developed with 25-meter line spacing. See position 1733-1748. A least depth of ~~12.4~~ 13 feet was found on JD 204, 152320Z, at latitude 42°58'52"N, longitude 79°00'57"W. Recommendations: Supersede the charted 11-ft sounding with the ~~12~~ 13-ft sounding from this survey. Concur - chart depths from the present survey

(4) 12-ft Sounding - charted at latitude 42°58.53'N, longitude 79°00.53'W. This sounding was transferred to Survey 1-1777 (1940) from another source, probably the W. S. Richmond's Survey, 1911-1913. This area was developed with 25-meter line

spacing. See positions 402-410 (JD 166), 979-994 (JD 179), 1256-1259 (JD 189) and 1741-1754 (JD 204). A least depth of 12.~~N~~[2] ft was found on JD 204 (154620Z) at latitude 42°58'29"N, longitude 79°00'~~26~~[28]"W. Recommendations: Supersede the charted sounding with the 12 ft. sounding found by this survey. Concur 12-ft sounding also found in Lat 42°58'36"N, Lon 79°00'32"W. Applied HO52

(5) 14-ft Sounding - charted at latitude 42°57.72'N, longitude 78°58.45'W. This sounding was transferred to Survey 1-1777 (1940) from another source, probably the W. S. Richmonds Survey, 1911-1913. This area was developed with 25-meter line spacing. See positions 634-652 (JD 172), 1224-1240 (JD 189) and 1776-1787 (JD 204). A least depth of ~~17~~ 18 ft was found on JD 204 (173910Z) at latitude 42°57.~~72~~[44]'N, longitude 78°58.~~45~~[26]'W. Recommendation: Supersede the charted 14 ft sounding with the 17 ft sounding from this survey. Concur 18 ft sounding found in Lat 42°57'43"N, Lon 78°58'24" Applied HO52

All charted features within the survey area were investigated. The following discrepancies were found:

OBSTR REP charted at latitude 42°57'~~26~~[ok]"N, longitude 78°57'39"W. The obstruction was searched for on JD 210 but was not found. See positions 1841 through 1850. The least depth found in this area was ~~9.0~~ 19.4 feet. ~~Recommendation: Delete the charted symbol and "OBSTR REP" legend~~. See sections 6. and 7.a of the Evaluation Report Retained HO52 6879

OBSTR REP charted at latitude 42°57'~~26~~[27.5]"N, longitude 78°57'~~20~~[21]"W. This obstruction is the southeast limit of the shoal extending from Beaver Island. Recommendation: Delete the charted symbol and the "OBSTR REP" legend. Chart the shoal as shown on the final ~~field~~ smooth sheet. An obstr (fallen tree) was also located approximately 70 meters to the NNE of the shoal

Three Piles charted at latitude 42°58'32"N, longitude 78°59'14"W. The piles were searched for but not found. Recommendation: ~~Delete these three piles~~. Chart as shown on the present survey. Applied HO52

Four Piles charted at latitude 42°58'55"N, longitude 79°00'06"W were searched for but not found. Recommendation: ~~Delete the piles from the chart~~. Chart as shown on the present survey Retained on charts

Rock Awash charted at latitude 42°59'03"N, longitude 79°00'21"W. This rock was found within the shoal area close to shore. No position or least depth was taken because the rock was inaccessible at the time of the search. Recommendation: Retain the rock as charted. Concur - Rock was brought forward from prior survey retained HO52

Piles charted at latitude 42°59'08"N, longitude 79°00'32"W were searched for but not found. Recommendation: ~~Delete the piles from the chart~~. - Chart as shown on the present survey. retained HO52

Pier Ruins charted at latitude 42°59'10"N, longitude 79°00'36"W were searched for but not found. Recommendation: ~~Delete the pier ruins from the chart~~. - Revise to submerged ruins as brought forward to the present survey. retained HO52

Two Piers charted at latitude 42°59'18"N, longitude 79°00'48"W were searched for but not found. Recommendation: ~~Delete the two piers from the chart~~. See section 7.a.3. of the Evaluation Report. Applied HO52

Pier Ruins charted at latitude 42°59'36"N, longitude 79°01'03"W were searched for but not found. Recommendation: ~~Delete pier ruins from the chart~~. See Section 7.a.2. of the Evaluation Report

Pier Ruins charted at latitude 43°00'00"N, longitude 79°01'42"W were searched for but not found. However, a private ramp now exist here. See position 2234. Recommendations: Delete the pier ruins from the chart and add the legend "Private Ramp" at latitude 43°00'00.7"N, longitude 79°01.43.7"W. Concur

Pier charted at latitude 43°01'39"N, longitude 79°00'42"W, was searched for but not found. Recommendation: ~~Delete this pier from the chart~~. Revise to submerged pier ruins

Two Piles ~~Pilings~~ charted at latitude 43°01'48"N, longitude 79°00'32"W, were searched for but not found. Recommendation: ~~Delete these pilings from the chart~~. Revise to submerged piles.

Pilings charted at latitude 43°01'56"N, longitude 79°00'35"W, were searched for but not found. Recommendation: ~~Delete these pilings from the chart~~. Revise to submerged piles.

Subm Crib charted at latitude 42°58'06"N, longitude 78°58'20"W was searched for on JD 211 (Position 1946-1960), but was not found. The property owner stated that the crib exists and can be seen when the water is clear. Position 1954 marks the inshore end of the pipeline leading to the crib. Recommendation: Retain as charted. - Concur

Subm Crib (PWI) charted at latitude 42°57'55"N, longitude 78°54'14"W was searched for on JD 211 (Positions 1930-1945) but not found. Recommendation: Retain as charted. - Concur

Rock awash symbols should be added at the following locations:

Symbol	Location	Reference
Rk cov 1 ft at LWD ✓	43°01'58"N;79°00'37"W	Pos 1413 ~~PSR # 15~~
Rk ~~at LWD~~ bare 1ft at LWD	43°01'03"N;79°01'15"W	Pos 2164
Rks ~~at LWD~~ bare 1ft & awash at LWD, respect.	43°00'52"N;79°01'19"W	Pos 2162, 2163
Rk cov 8' ft at LWD	43°00'46"N;79°01'19"W	Pos 2161
Rks ~~cov 1 ft at LWD~~	43°00'17"N;79°01'15"W	Pos 2152
Rk ~~at LWD~~ bares 1ft at LWD	43°00'16"N;79°01'15"W	Pos 2151
Rks ~~at LWD~~ bares 3ft at LWD	43°00'01"N;79°01'11"W	Pos 2149
Rk ~~at LWD~~ bares 1ft at LWD	42°59'06"N;79°00'35"W	Pos 2094 charted
Rks at LWD	42°59'05"N;79°00'30"W	Pos 2093
Rk shoal cov 1 ft at LWD	42°59'05"N;79°00'31"W	Pos 2092
Rk ~~shoal cov 1 ft~~ bares 4ft at LWD	42°58'58"N'79°00'17"W	Pos 2084
Rk ~~shoal~~ awash at LWD	42°58'58"N;79°00'16"W	Pos 2083
Rks ~~at LWD~~ bares 1ft at LWD	42°58'58"N;79°00'14"W	Pos 2081 & 2082
Rk ~~at LWD~~ bares 2ft at LWD	42°58'46"N;78°59'44"W	Pos 2069
Rk cov 8' ft at LWD	42°58'31"N;78°59'09"W	Pos 2022

Symbol	Location	Reference
RK Shoal cov 1 ft at LWD Northend	42°58'28"N;78°59'02"W	Pos 2018 charted
Rk shoal cov 1 ft at LWD Southend	42°58'26"N;78°58'56"W	Pos 2019
Rk 4.5 ft above LWD	42°58'24"N;78°58'50"W	Pos 1901
Rk cov 2 ft at LWD	42°56'56"N;78°57'26"W	Pos 1922
Rk cov 1 ft at LWD	42°58'13"N;78°59'30"W	Pos 2289
Rk awash ~~cov 1 ft~~ at LWD	42°58'20"N;79°00'13"W	Pos 2290
Rk awash ~~cov 1 ft~~ at LWD	42°58'24"N;79°00'29"W	Pos 2292 charted
Rk cov 1 ft at LWD	43°00'32"N;79°01'47"W	Pos 2235
Rk cov 3 ft at LWD	43°00'31"N;79°01'47"W	Pos 2236
Rk at LWD	43°02'22"N;79°01'00"W	Pos 1552
Rk at LWD	43°02'12"N;79°01'03"W	Pos 1558

M. ADEQUACY OF SURVEY

All fathograms were scanned and checked for peaks and deeps, and the appropriate changes were made to the original records.

This survey is complete and is adequate to supersede all prior surveys for charting. - See Evaluation Report

N. AIDS TO NAVIGATION

All fixed aids to navigation in the survey area were located and their positions and descriptions were compared with those listed in Light List Volume IV, 1982, and as shown on Chart 14832, 28th Edition, June 13, 1981. These aids adequately serve the apparent purpose for which they were established. Copies of NOAA Form 76-40, Report on Landmarks for Charts and Nonfloating Aids to Navigation are included in the Appendix.

No floating aids exist within the project area.

One submerged pipeline crosses the river within the survey limits. It is charted between latitude 43°00'04"N, longitude 79°02'45"W, and latitude 43°00'06"N, longitude 79°02'14"W. On the Canadian Shore it is marked by a sign: "Pipeline (High Pressure Petroleum) Interprovincial Pipeline Ltd., Sarnia, Ontario". The owner of the property through which the pipeline passes stated that the pipeline was buried about six feet. No positions were taken on the ends of the pipeline. Recommendation: Retain the pipeline as charted. - Concur

Two overhead cables cross the entrance channel to Big Six Mile Creek Marina. Neither pose a danger to navigation because the vertical clearance is greater than the bridge at the entrance. The first cable crosses between latitude 43°01'30"N, longitude 79°00'12"W and latitude 43°01'30"N, longitude 79°00'10"W. The second cable crosses between latitude 43°01'31"N, longitude 79°00'13"W, and latitude 43°01'31"N, longitude 79°00'10"W.

Recommendation: Chart the overhead cables at the above positions. Concur

The vertical clearance of the bridge across the entrance to Big Six Mile Creek Marina was measured at 180000Z on JD 233 and found to be 16.0 feet above LWD.

The vertical clearance of the bridge across Black Creek was measured at 145600Z on JD 225 and found to be 8.0 feet above LWD.

O. STATISTICS

Total number of positions	2405
Lineal nautical miles of mainscheme hydrography	148.3
Lineal nautical miles of crosslines	19.2
Lineal nautical miles of development	36.2
Total lineal nautical miles of hydrography	203.7
Total square nautical miles of hydrography	7.0
Number of detached positions	153
Number of water level stations installed	2
Number of bar checks	53
Number of bottom samples*	30

*Oceanographic Log Sheet M are included in the Appendix

P. MISCELLANEOUS

Complete surveys of Beaver Island State Park Marina, Bix Six Mile Creek Marina and the Niagara Parks Commission Marina could not be done because of the number of boats present.

Numerous piers are constructed along both the United States and Canadian shores. These piers are temporary and are removed after the boating season each year.

Areas shoaler than 10 feet were subject to heavy grass growths in mid-July and August. The grass obscured the river bottom from both fathometer and visual searches, and prevented wire drag.

Q. RECOMMENDATIONS

It is recommended that Chart 14832 have a cautionary note about the water level fluctuations caused by the diversion of river water by the hydroelectric plants. Concur

It is recommended that the field edit information as shown on the manuscript be applied to the smooth sheet. Applied during processing at AMC.

It is recommended that this survey supersede all prior surveys in the area.

See Section H, L, and N for additional recommendations.

R. AUTOMATED DATA PROCESSING

The following hydroplot system programs were used during this survey:

PROGRAM	VERSION	DATE
RK201	Grid, Signal and Lattice Plot	5/18/76
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	Data Reformat and Check	5/04/76
AM602	Extended Line Oriented Editor	5/20/75

S. REFERENCE TO REPORTS

Horizontal Control Report
Field Edit Report for Manuscript TP-01127 (CM8104)

Respectfully Submitted,

C. Brian Greenawalt

C. Brian Greenawalt
Lt., NOAA
OIC, HFP-4

SIGNAL TAPE LISTING

OPR V-216

HSB 10-6-82

H-10020

171	7	43	03	52090	079	00	12945	139	0000	000000	H-63-NY, 1980
174	1	43	05	06288	079	04	47361	139	0000	000000	Niagara Falls Skylon Tower, 1972*
178	2	43	01	18410	079	01	47320	250	0000	000000	Ontario A, 1980
183	3	42	53	50750	079	01	24150	250	0000	000000	Ontario B, 1980
187	0	42	57	50298	078	58	42107	250	0200	000000	Ontario C, 1980
188	7	43	03	00649	079	00	02274	250	0000	000000	Hooker Elect Chem Crib Lt., 1980
189	7	43	03	19378	078	59	28672	139	0000	000000	WHLD E Mast, 1982
190	1	43	00	17746	078	59	34456	139	0000	000000	WHLD W Mast, 1972*
191	7	42	58	18402	079	00	11124	250	0000	000000	Ontario D, 1982
193	7	42	56	56991	078	56	47512	250	0000	000000	Ontario E, 1982
195	1	43	02	55968	079	00	37296	250	0000	000000	Navy, 1982
300	1	43	02	05770	079	00	28204	250	0000	000000	GRA-BR13 Az mark A, 1980
322	1	43	01	34041	079	00	42861	139	0000	000000	BM 3222 A, 1980
324	2	43	01	27723	079	00	42527	250	0000	000000	BM 3222 B, 1982
350	2	42	58	36043	078	59	25365	250	0000	000000	Pk Cal Pt "D", 1982

* located by NGS
other control located by HSB.

Form Approved. OMB No. 41-R2455

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, CHIPPAWA CHANNEL

LATITUDE	LONGITUDE	CHART NUMBER	COAST PILOT NUMBER
		14832	6

VESSEL	MASTER/COMMANDING OFFICER
HFP-4	G. W. JAMERSON, CHIEF, HSB
DATE OF OBSERVATION	**OBSERVER**
MAY - AUGUST 1982	C.B. GREENAWALT, OIC HFP4

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 (Approximate)	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.

USCOMM-DC 4894-P72

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:

	EXCEL.	GOOD	FAIR	POOR	COMMENT
HOLDING QUALITY					
PROTECTION OFFERED					
ACCESSIBILITY					

RECOMMENDED FOR VESSELS:

LENGTH	DRAFT
____ TO ____ FT.	____ TO ____ FT.

VII. REMARKS:

VIII. OTHER COAST PILOT CHANGES

U.S. COAST PILOT			
NUMBER	EDITION	PAGE	LINE(S)
6	APRIL 1982	151	

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

READ STRIKE OUT: INSERT AFTER: (Circle one)

13R: ... Channel has a controlling depth of about 9 feet.

23/25R: ... pump-out facilities are available. The controlling depth of the marina is 6 feet at the entrance with 8 feet reported alongside the berths.

30/32R: ... ranges are available. The controlling depth of the entrance channel is 6 feet with 6 to 9 feet alongside the berths. A fixed bridge and two overhead cables cross the entrance channel. The vertical clearance is 16 feet.

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

[redacted] LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HFP-4	New York	Grand Island	8/20/82

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
W216	HSB-10-6-82	H-10020	1927 North American

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
R. MAST	WBEN, 930 KHz, 4 Vert Lts, 2 Occ R, 2 FR Northeast of two (Grand Is Rad Sta WBEN E Mast)	42 58	43.781	78 57	23.264		Triang Rec 6/18/82	14822 14832
R. MAST	WEBN, 930 KHz, 4 Vert Lts, 2 Occ R, 2 FR Southwest of Two (Grand Is Rad Sta WBEN W Mast)	42 58	40.779	78 57	26.694		Triang Rec 6/18/82	14822 14832
R. MAST	WHLD, 1270 KHz, 4 Vert Lts, 2 Occ R, 2 FR, Southwest of Two (Grand Is Rad Sta WHLD E Mast)	43 00	19.378	78 59	28.672		Triang Rec 6/20/82	14822 14832
R. MAST	WHLD, 1270 KHz, 4 Vert Lts, 2 Occ 2 FR West Mast (Grand Is Rad Sta WHLD W Mast)	43 00	17.746	78 59	34.456		Triang Rec 6/20/82	14822 14832
TANK	Beaver Island State Park Tank	42 57	55.754	78 57	32.567		Triang Rec 6/20/82	14822 14832
CUPOLA	Beaver Island State Park Building (Beaver Is Park Bldg, Cupola, NY, 1941)	42 57	37.589	78 57	04.174		Triang Rec 6/20/82	14822 14832

39.

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	C. Brian Greenawalt, Lt. NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	C. Brian Greenawalt, Lt. NOAA	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

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	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field Identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

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

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U. S. GPO:1975-0-665-080/1155

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

NONFLOATING AIDS [redacted] FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HFP-4	New York	Grand Island	8/20/82

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
W-216	HSB-10-6-82	H-10020	1927 North American

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	″ D.M. Meters	LONGITUDE ° ′	″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	Beaver Island State Park East Bulkhead Light Qk FL W, 14 ft L.L.#459, Pri Maint.	42 57	28.519	78 57	15.548		F-2-6-L Aug 1982	14832
LIGHT	Beaver Island State Park East Entrance Light Fl. R.,2S,14 ft,L.L.#460, Priv Maint. (Beaver Is State Park E.Ent Lt)	42 57	27.818	78 57	17.290		Triang Rec May 1982	14832 14822
LIGHT	Beaver Island State Park West Entrance Light, Fl G.,2S,14ft, L.L.#461,Priv Maint. (Beaver Is State Park W. Ent Lt)	42 57	29.135	78 57	20.639		Triang Rec May 1982	14832 14822
LIGHT	Beaver Island State Park West Bulkhead Light Qk. Fl W., 14 ft. L.L.#462, Priv Maint.	42 57	30.357	78 57	21.636		F-2-6-L Aug 1982	14832
LIGHT	Niagara Falls Channel Hooker Electro-Chemical Crib Light, Fl. W. 7S 9 ft L.L.#499, Priv Aid (Hooker Elect Chem Crib Lt)	43 03	00.649	79 00	02.274		Triang Rec. May 1982	14822 14832
LIGHT	Chippawa Channel Big Six Mile Creek Lt F.R. 6 ft. L.L.#500, Priv Maint	43 01	36.754	79 00	44.382		F-2-6-L June 1982	14832 14822

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	C. Brian Greenawalt, LT., NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	C. Brian Greenawalt, LT., NOAA	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

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	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field Identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

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

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

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

APPROVAL SHEET
SURVEY H-10020 (HSB-10-6-82)

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,

Geo. W. Jamerson

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

NOAA FORM 61-29 (12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.

MOA23-01-88

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

5 January 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-10020 (HSB-10-6-82)
OPR-W216-New York, Upper Niagara River
Chippawa Channel

Pkg #1 (tube): ~~1~~ Smooth sheet
~~1~~ Original Descriptive Report
~~1~~ Position overlay
~~3~~ Excess overlays (levels 1, 2, &3/3)
~~1~~ Final field sheet (3 mylar sheets)

Pkg #2 (box): ~~1~~ 2 Accordian file containing fathograms, master and corrector printouts for the following days: 154, 155, 158, 161, 162, 166, 168, 169, 172, 174, 175, 179, 181, 187, 189, 194-197, 203, 204, 208, 210, 211, 215, 217, 218, 221-223, data removed from the original Descriptive Report, and 1 folder containing Electronic calibration data and bar check data.
~~10~~ NOAA Form 77-44 "SOUNDINGS"

FROM: *(Signature)* Robert G. Roberson

Return receipted copy to:

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

RECEIVED THE ABOVE
(Name, Division, Date)

Dwayne S. Clark
January 22, 1988
N/CG243

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆ U.S. G.P.O. 1981-564-008/1048

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.
MOA23-01-88

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
5 January 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-10020 (HSB-10-6-80)
OPR-W218-New York, Upper Niagara River
Chippawa Channel

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/TI, and Velocity Corrector printouts

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

NOAA FORM 61-29 SUPERSEDES FORM C&GS 419 WHICH MAY BE USED.

☆ U.S. G.P.O. 1981-564-008/1048

01/05/88

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10020

NUMBER OF CONTROL STATIONS	10
NUMBER OF POSITIONS	2357
NUMBER OF SOUNDINGS	9809

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	31	12/31/82
VERIFICATION OF FIELD DATA	515	08/30/84
QUALITY CONTROL CHECKS	106	
EVALUATION AND ANALYSIS	117	09/28/87
FINAL INSPECTION	48	09/21/87
TOTAL TIME	817	

MARINE CENTER APPROVAL 09/29/87

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10020

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
BAKER CREEK										1
BAYERS CREEK										2
BEAVER ISLAND										3
BIG SIX MILE CREEK										4
BLACK CREEK										5
CHIPPAWA CHANNEL										6
COOK POINT										7
GRAND ISLAND										8
MILLER CREEK										9
NAVY ISLAND										10
NEW YORK (title)										11
NIAGARA RIVER (title)										12
OAKFIELD										13
ONTARIO (title)										14
SHEENWATER										15
										16
										17
										18
					Approved:					19
					Charles S. Harrington					20
					Chief Geographer - N/CG2x5					21
										22
					SEP 25 1986					23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

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: June 3, 1982 - August 19, 1982

HYDROGRAPHIC SHEET: H-10020

OPR-W216-HFP-78

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'
Beaver Island, N.Y.	(906-3015)	562.9'
Big Six Mile Creek, N.Y.	(906-3222)	561.3'
Niagara Intake, N.Y.	(906-3012)	560.7'

Philip C. Morris

Chief, Water Levels Section

ATLANTIC MARINE CENTER
EVALUATION REPORT

SURVEY NO.: H-10020 FIELD NO.: HSB-10-6-82

New York--Ontario, Upper Niagara River, Chippawa Channel

SURVEYED: 3 June through 19 August 1982

SCALE: 1:10,000 PROJECT NO.: OPR-W216-HFP-78

SOUNDINGS: RAYTHEON DE-719B Fathometer, Sounding Pole

CONTROL: DEL NORTE/WILD T-1 Theodolite (Range/Azimuth)

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

Surveyed by.....C. B. Greenawalt
.....N. E. Perugini
.....E. L. Martin
.....D. M. Bryant
.....L. S. Biscorner
.....J. L. Daniel
.....J. P. Oswald
.....R. W. Adams
.....D. J. Parris
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.

c. The digital records for this survey contain multiple header records identifying two (2) digital files: the main sheet and inset number one (1).

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections F., G., and S. of the Descriptive Report.

b. Shoreline originates with final reviewed class III photogrammetric manuscript TP-01127 of 1980-82. Additional information shown in red originates with the hydrographic survey and supplements the shoreline manuscript. The shoreline manuscripts was enlarged to 1:10,000 scale for application to the present survey.

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.

b. The standard depth curves could not be drawn in their entirety; the zero (0) curve was not delineated because of vessel safety. Some brown 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:

There is a small holiday between the present survey and the junctional survey H-9841 (1979) to the east in the vicinity of Latitude 42°56'57"N, Longitude 78°57'06"W. This does not significantly degrade the overall survey results. See also section 6. 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 Descriptive Report for this survey is well written. The information in the body of the report is clear and concise.

b. Twice daily bar checks were not taken. Fifty (50) out of a possible sixty-two (62) bar checks were taken. This does not effect the overall quality of the survey. The number of bar checks taken versus the number that should have been taken reflects a conscious effort on the part of the field unit to perform at a high level of competency.

5. JUNCTIONS

H-9841 (1979) to the southeast
H-9889 (1980) to the north

A standard junction was effected with the junctional surveys. See also section 6. of this report.

6. COMPARISON WITH PRIOR SURVEYS

LS-1775 (1940) 1:10,000
LS-1777 (1940) 1:10,000

The two (2) prior surveys listed above cover the present survey area in its entirety.

a. LS-1775 (1940) compares very well with the present survey in the common area; depths vary from plus or minus (+/-)

one (1) to three (3) feet. Differences are attributable to improved positioning methods and better development of the bottom configuration by the present survey.

The following should be noted:

✓ 1) A pier and pile shown on the prior survey in the vicinity of Latitude 43°02'33.5"N, Longitude 79°00'19.0"W was not located by the field unit. Two (2) piles are charted in the vicinity of Latitude 43°02'34.1"N, Longitude 79°00'19.1"W. It is recommended that the charted piles be revised to submerged piles. The two (2) submerged piles were found by junctional survey H-9889 (1980). Applyd

✓ 2) A pier shown on the prior survey in Latitude 43°02'19.0"N, Longitude 79°00'26.7"W was not located by the field unit; however, a pipe baring three (3) feet at LWD was found in Latitude 43°02'19.23"N, Longitude 79°00'27.12"W. The pipe is probably related to the pier shown on the prior survey. The pier is not charted. It is recommended that the pipe be charted as shown on the present survey. Applyd

✓ 3) A pier shown on the prior survey in Latitude 43°02'12.1"N, Longitude 79°01'03.1"W corresponds to a rock found by the field unit in Latitude 43°02'12.18"N, Longitude 79°01'03.10"W. It is recommended that a rock awash be charted as shown on the present survey. Applyd

4) A crib shown on the prior survey in Latitude 43°02'08.7"N, Longitude 79°00'29.7"W was not investigated by the field unit. The crib is not charted. The crib has been brought forward as a submerged crib from the prior survey to supplement the present survey. It is recommended that the chart compiler research the history of this crib and make an appropriate charting disposition. Applyd

✓5) A rock with a 1-ft depth over it is shown on the prior survey in Latitude 43°01'58.4"N, Longitude 79°00'37.0"W, PSR item #15, in Latitude 43°01'58.8"N, Longitude 79°00'37.2"W originates with LS-1775 (1940). A rock covered by one (1) foot at LWD was found by the present survey in Latitude 43°01'58.45"N, Longitude 79°00'37.03"W. A one foot shoal sounding is presently charted in Latitude 43°01'58.8"N, Longitude 79°00'37.2"W. A dangerous rock awashshould be charted in the surveyed location. Applyd

✓ 6) Three (3) piles shown on the prior survey in the vicinity of Latitude 43°01'57.6"N, Longitude 79°00'31.6"W correspond to northern two (2) of four (4) charted piles in the vicinity of Latitude 43°01'57.0"N, Longitude 79°00'31.8"W. A row of submerged piles was brought forward from the prior survey to supplement the present survey. It is recommended that the charted piles be revised to submerged piles. Applyd

7) A pier and row of piles shown on the prior survey in Latitude 43°01'56.0"N, Longitude 79°00'31.5"W correspond to southern two (2) of four (4) charted piles in the vicinity of Latitude 43°01'57.0"N, Longitude 79°00'31.8"W. A row of submerged piles was brought forward to the present survey from the prior survey to supplement the present survey. It is recommended that the charted piles be revised to submerged piles. Applyd

8) Two (2) piers shown on the prior survey in the vicinity of Latitude 43°01'53.6"N, Longitude 79°00'32.0"W were not located by the field unit. The piers are not charted. A pile baring eight (8) feet was found in Latitude 43°01'53.80"N, Longitude 79°00'32.07"W. It is recommended that the pile be charted as shown on the present survey. Applyd

9) A pier shown on the prior survey in Latitude 43°01'51.1"N, Longitude 79°00'32.2"W A pipe and pier found by present survey in Latitude 43°01'51.39"N, Longitude 79°00'33.30"W and Latitude 43°01'51.18"N, Longitude 79°00'33.70"W, respectively. It is recommended that the pipe and pier be charted as shown on the present survey. Applyd

10) A pier shown on the prior survey in Latitude 43°01'48.7"N, Longitude 79°00'34.5"W The pier was not located by the present survey. Two (2) piles are charted in the vicinity of Latitude 43°01'48.5"N, Longitude 79°00'33.5"W. The pier was brought forward as submerged ruins from the prior survey to supplement the present survey. It is recommended that the two (2) piles be revised to submerged pier ruins. Applyd

11) The entrance to Big Six Mile Creek in the vicinity of Latitude 43°01'35.8"N, Longitude 79°00'42.7"W is now wider than shown on the prior survey and a small pier shown at the northern side of the mouth was not found by the field unit. A jetty with a light is charted on the south side of the entrance and two piles are shown in the vicinity of Latitude 43°01'36.5"N, Longitude 79°00'43.3"W. Several piles were found in the vicinity of the mouth were found by the field unit. It is recommended that the configuration of Big Six Mile Creek be charted as shown on the present survey provided that the chart scale will allow. Applyd

12) Piles shown on the prior survey in Latitude 43°01'34.0"N, Longitude 79°00'47.4"W were not found by the field unit. A charted pier in Latitude 43°01'32.5"N, Longitude 79°00'46.9"W is approximately 47.6 meters SSE of the piles shown on the prior survey which corresponds to a pier on the prior survey. The piles shown on the prior survey are not charted. No change in charting status is recommended. N/C

13) A pier shown on the prior survey in Latitude 43°01'33.0"N, Longitude 79°00'48.2"W corresponds to a charted pier. The field unit located a pile that bares six (6) feet in

Latitude 43°01'32.78"N, Longitude 79°00'48.15"W. The pile is not charted. It is recommended that the pile be charted as shown on the present survey. Applyd

14) A pier shown on the prior survey in Latitude 43°01'31.2"N, Longitude 79°00'50.3"W was not located by the field unit. The field unit located four (4) piles baring three (3) feet in Latitude 43°01'30.86"N, Longitude 79°00'50.38"W. The pier shown on the prior survey is not charted. It is recommended that the four (4) piles be charted as shown on the present survey. Applyd

15) A pier shown on the prior survey in Latitude 43°01'25.2"N, Longitude 79°00'55.6"W was not located by the field unit. Two (2) piles are charted in the vicinity of Latitude 43°01'25.0"N, Longitude 79°00'55.9"W. These piles were not located by the field unit. It is recommended that the charted piles be revised to submerged ruins as shown on the present survey

16) A pier shown on the prior survey in Latitude 43°01'23.8"N, Longitude 79°00'56.5"W was not located by the field unit. The field unit located piles baring two (2) feet in Latitude 43°01'23.97"N, Longitude 79°00'57.05"W. Three (3) piles are charted in the vicinity of Latitude 43°01'23.9"N, Longitude 79°00'56.9"W. It is recommended that the piles located by the field unit be charted as pier ruins as shown on the present survey.

17) A pier shown on the prior survey in Latitude 43°00'32.8"N, Longitude 79°01'16.2"W was not located by the field unit. A pier is charted in Latitude 43°00'32.2"N, Longitude 79°01'16.2"W. The pier was brought forward from the prior survey as submerged ruins to supplement the present survey. It is recommended that the charted pier be revised to submerged pier ruins.

18) A pier shown on the prior survey in Latitude 43°00'30.8"N, Longitude 78°01'16.0"W was not located by the field unit. Piles were located by the field unit in Latitude 43°00'30.64"N, Longitude 78°01'16.00"W. These piles are approximately four (4) meters south of the pier shown on the prior survey. The piles are not presently charted. It is recommended that a foul area be charted as shown on the present survey.

19) Piles shown on the prior survey in Latitude 43°00'25.7"N, Longitude 79°01'15.8"W were not located by the field unit; however, an area foul with rocks and piles that bares one (1) foot at LWD was located by the field unit in Latitude 43°00'25.81"N, Longitude 79°01'15.50"W. It is recommended that the foul area be charted as shown on the present survey. Applyd

20) A pier shown on the prior survey in Latitude 43°00'23.2"N, Longitude 79°01'15.6"W was not located by the field unit; however, five (5) piles were located by the field unit in Latitude 43°00'23.00"N, Longitude 79°01'15.68"W. It is recommended that this pier be charted as piles as shown on the present survey. Applyd

21) Piles shown on the prior survey in Latitude 43°00'21.7"N, Longitude 79°01'16.0"W were located by the field unit in a line from Latitude 43°00'21.93"N, Longitude 79°01'15.85"W to Latitude 43°00'21.14"N, Longitude 79°01'15.81"W. The area was described as a foul area. It is recommended that the area be charted as a foul area. Applyd

22) A pier shown on the prior survey in Latitude 43°00'18.0"N, Longitude 79°01'15.3"W was not found by the field unit; however, an area with rocks, piles, and pipe was located in Latitude 43°00'17.75"N, Longitude 79°01'15.50"W and Latitude 43°00'17.45"N, Longitude 79°01'15.45"W. It is recommended that the area be charted as a rock awash as shown on the present survey. Applyd

23) A rock awash shown on the prior survey in Latitude 43°00'16.5"N, Longitude 79°01'15.3"W was found by the field unit in Latitude 43°00'16.31"N, Longitude 79°01'15.31"W. The rock bares one (1) foot at LWD. This rock is not presently charted. It is recommended that the rock awash be charted as shown on the present survey. Applyd

The following tabulation is comprised of objects originating with prior survey LS-1775 (1940) that were neither verified or disproved by the present survey. These features are not presently charted. No change in charting status is recommended.

Object	Latitude (N)	Longitude (W)
Pier	43°02'27.9"	79°00'22.2"
Pier	43°02'26.2"	79°00'23.2"
Pier	43°02'20.4"	79°00'26.4"
Pier	43°02'11.6"	79°00'29.3"
Pier	43°02'07.3"	79°01'05.0"
Pier	43°02'06.5"	79°00'29.6"
Pier	43°02'04.5"	79°00'30.0"
Pier	43°02'03.2"	79°00'30.2"
Pier	43°02'01.5"	79°00'30.5"
Pier	43°01'59.8"	79°00'30.8"
Pier	43°01'47.8"	79°01'17.7"
Pier	43°01'43.7"	79°01'21.6"
Pier	43°01'27.0"	79°00'53.6"
Pier	43°01'25.6"	79°00'54.5"
Piers	43°01'17.0"	79°01'03.1"
Pier	43°01'00.2"	79°01'18.0"
Pile	43°00'59.9"	79°01'18.6"

Ruins	43°00'38.9"	79°01'17.7"
Pier	43°00'33.9"	79°01'16.3"
Pier	43°00'32.1"	79°01'16.4"
Piles	43°00'29.8"	79°01'16.0"
Pier	43°00'29.1"	79°01'16.0"
Pile	43°00'20.1"	79°01'15.8"

N/C

b. LS-1777 (1940) compares very well with the present survey in the common area; depth vary from plus or minus (+/-) one (1) to three (3) feet. Differences are attributable to improved positioning methods and better development of the bottom configuration by the present survey.

The following should be noted:

1) A pier shown on the present survey in Latitude 43°00'05.3"N, Longitude 79°01'12.9"W is 12.3 meters north of a pier shown on the prior survey in Latitude 43°00'04.9"N, Longitude 79°01'12.9"W. The pier is not presently charted. It is recommended that the pier be charted as shown on the present survey. Applyd

2) A pier shown on the prior survey in Latitude 43°00'03.0"N, Longitude 79°01'12.6"W was not found; however the field unit located two piles that are covered one (1) foot in Latitude 43°00'03.76"N, Longitude 79°01'12.75"W. These piles are not charted. It is recommended that the piles be charted as shown on the present survey. Applyd

3) A pier shown on the prior survey in Latitude 42°59'58.6"N, Longitude 79°01'11.2"W was not located by the field unit. Two (2) charted piles are shown in Latitude 42°59'58.4"N, Longitude 79°01'10.9"W. A row of piles awash at LWD was located in this area by the field unit. The charted piles should be revised to piles that cover at high water. Applyd

4) A pier shown on the prior survey in Latitude 42°59'51.5"N, Longitude 79°01'09.5"W was not found by the field unit. The shoreline in the area has receded, and a stake that bares three (3) feet at LWD was found in Latitude 42°59'51.48"N, Longitude 79°01'08.21"W. Pier ruins are presently charted in Latitude 42°59'51.6"N, Longitude 79°01'08.3"W. It is recommended that the pier ruins be retained.

5) A pier shown on the prior survey in Latitude 42°59'47.3"N, Longitude 79°01'07.7"W was identified as a temporary pier by the field unit. A pier and pile are charted in Latitude 42°59'47.3"N, Longitude 79°01'07.4"W. The pile was not found by the field unit. It is recommended that the charted pile be revised to a submerged pile in the presently charted location, and the pier be charted as shown on the present survey. Applyd

6) A pier and piles shown on the prior survey in the

vicinity of Latitude 42°59'43.0"N, Longitude 79°01'07.2"W was neither verified or disproved by the field unit. A pier and piles are presently charted in the vicinity of Latitude 42°59'42.8"N, Longitude 79°01'07.0"W. The field unit did locate a rock groin that is awash at LWD on the west end and bares one (1) foot at LWD between Latitude 42°59'39.43"N, Longitude 79°01'06.22"W and Latitude 42°59'40.18"N, Longitude 79°01'07.72"W and a rock awash at LWD in Latitude 42°59'40.80"N, Longitude 79°01'06.56"W. It is recommended that the charted pier and piles be revised to a foul area as shown on the present survey. Applyd

7) T-shaped pier ruins shown on the prior survey in Latitude 42°59'34.6"N, Longitude 79°01'03.3"W was neither verified or disproved by the field unit. Pier ruins are charted in the same location. The charted ruins are configured in a straight line. The pier ruins were brought forward from the prior survey to supplement the present survey. The charted ruins are configured in a straight line. It is recommended that the charted pier ruins be revised to submerged pier ruins as shown on the present survey.

8) A pier shown on the prior survey in Latitude 42°59'22.4"N, Longitude 79°00'52.1"W was located by the field unit and was described as a groin ruin. The field unit located the feature in Latitude 42°59'22.27"N, Longitude 79°00'52.23"W. The groin is not presently charted. It is recommended that groin be charted as shown on the present survey.

9) A pier shown on the prior survey in Latitude 42°59'13.9"N, Longitude 79°01'38.4"W was not located by the field unit: however, two (2) piles were baring three (3) feet at LWD were located in Latitude 42°59'13.95"N, Longitude 79°01'37.94"W. Two (2) piles are presently charted in the vicinity of Latitude 42°59'13.9"N, Longitude 79°01'37.3"W. No change in charting status is recommended.

10) A pier shown on the prior survey in Latitude 42°59'13.1"N, Longitude 79°01'37.9"W was located by the field unit in Latitude 42°59'12.85"N, Longitude 79°01'37.94"W. The pier is presently charted in Latitude 42°59'13.5"N, Longitude 79°01'37.1"W. It is recommended that charted pier be revised to the position and configuration shown on the present survey.

11) A pier shown on the prior survey in Latitude 42°59'08.4"N, Longitude 79°00'33.4"was neither verified or disproved by the field unit. Three (3) piles are presently charted in Latitude 42°59'08.4"N, Longitude 79°00'33.0'W. It is recommended that the piles be revised to submerged pier ruins as shown on the present survey. Applyd

12) A crib shown on the prior survey in Latitude 42°59'07.7"N, Longitude 79°00'33.6"W was neither verified or disproved by the field unit. The crib is presently charted in

Latitude 42°59'07.8"N, Longitude 79°00'32.5"W. It is recommended that the charted crib be revised to a submerged crib as shown on the present survey. Applyd

13) Three (3) rocks awash shown on the prior survey in the vicinity of Latitude 42°59'06.5"N, Longitude 79°00'34.5"W were located by the field unit. Two (2) rocks were located by the field unit in Latitude 42°59'05.16"N, Longitude 79°00'30.94"W (bares 2 feet at LWD), and Latitude 42°59'06.82"N, Longitude 79°00'35.72"W (bares 1 foot at LWD). Two (2) of the three (3) rocks shown on the prior survey are presently charted. The rocks awash not located by the present survey were brought forward from the prior survey to supplement the present survey. It is recommended that the two (2) charted rocks be retained and the rocks found by the present survey be charted as is deemed appropriate by the chart compiler. Applyd

14) A rock awash shown on the prior survey in Latitude 42°59'00.8"N, Longitude 79°00'22.1"W was neither verified or disproved by the field unit. A rock awash is presently charted in Latitude 42°59'00.9"N, Longitude 79°00'21.4"W. This rock awash was brought forward from the prior survey to supplement the present survey. No change in charting status is recommended.

15) A pier ruin shown on the prior survey in Latitude 42°58'54.9"N, Longitude 79°00'06.4"W was neither verified or disproved by the field unit. Four (4) piles are charted in the vicinity of 42°58'54.7"N, Longitude 79°00'06.1"W. It is recommended that the charted piles be revised to submerged pier ruins as shown on the present survey.. Applyd

16) An L-shaped pier shown on the prior survey in Latitude 42°58'39.8"N, Longitude 78°59'33.4"W was not found by the field unit; however a small pier ruin was found in Latitude 42°58'40.01"N, Longitude 78°59'32.65"W. There is nothing presently charted in the vicinity. It is recommended that the pier ruin be charted as shown on the present survey.

17) An L-shaped pier shown on the prior survey in Latitude 42°58'35.9"N, Longitude 78°59'25.4"W was not found by the field unit; however, a concrete pier with submerged piles along its southern side was located in Latitude 42°58'36.07"N, Longitude 78°59'25.61"W. A pier ruin is also charted in this area. It is recommended that the charted pier ruin be deleted and the pier and submerged piles be charted as shown on the present survey.

18) A pier shown on the prior survey in Latitude 42°58'32.6"N, Longitude 78°59'16.6"W was not found by the field unit; however, piles baring two (2) feet at LWD were located in Latitude 42°58'33.60"N, Longitude 78°59'16.79"W. Pier ruins are presently charted in this location. It is recommended that the piles be charted as shown on the present survey. Applyd

19) A pier shown on the prior survey in Latitude 42°58'33.0"N, Longitude 78°59'14.2"W was not found by the field unit. The pier is not presently charted. A small temporary pier with a different configuration was located by the field unit in Latitude 42°58'32.77"N, Longitude 78°59'13.86"W. It is recommended that the pier be charted as shown on the present survey Applyd

20) A pier ruin shown on the prior survey in Latitude 42°58'32.0"N, Longitude 78°59'13.9"W was neither verified or disproved by the field unit. The ruins are presently charted as three (3) piles in Latitude 42°58'31.5"N, Longitude 78°59'13.8"W. It is recommended that the three (3) piles be revised to submerged piles as shown on the present survey. Applyd

21) Piles shown on the prior survey in Latitude 42°58'31.6"N, Longitude 78°59'09.6"W were located by the field unit in Latitude 42°58'31.37"N, Longitude 78°59'09.96"W. The field unit located a row of piles; the offshore end bares one (1) foot at LWD. Two (2) piles are presently charted in Latitude 42°58'31.3"N, Longitude 78°59'09.7"W. It is recommended that the charted piles be revised and a row of piles be charted as shown on the present survey. Applyd

22) Piles shown on the prior survey in Latitude 42°58'30.0"N, Longitude 78°59'05.5"W were located by the field unit in Latitude 42°58'31.37"N, Longitude 78°59'09.96"W. The field unit located a row of piles; the offshore end bares one (1) foot at LWD. Two (2) piles are presently charted in Latitude 42°58'29.6"N, Longitude 78°59'05.6"W. It is recommended that the charted piles be revised to a row of piles as shown on the present survey. Applyd

23) A submerged seawall shown on the prior survey extends from Latitude 42°58'28.9"N, Longitude 78°59'02.3W to Latitude 42°58'24.1"N, Longitude 78°58'49.5"W was located by the field unit between Latitude 42°58'28.87"N, Longitude 78°59'02.45W and Latitude 42°58'26.31"N, Longitude 78°58'56.03W. In addition to the seawall configuration on the prior survey, two (2) rocks awash were also shown on top of the seawall on the prior survey. The seawall is presently charted along with the two (2) rocks. The seawall has been brought forward from the the prior survey to supplement the present survey. Numerous small piers have been constructed behind the seawall. It is recommended that the seawall be charted as shown on the present survey. Applyd

24) A rock awash shown on the prior survey in Latitude 42°58'24.3"N, Longitude 79°00'29.1"W was located by the field unit in Latitude 42°58'24.37"N, Longitude 79°00'29.62"W. The rock awash is presently charted. It is recommended that the charted rock awash be revised to the position shown on the present survey. Applyd

25) A pier shown on the prior survey in Latitude 42°58'20.3"N, Longitude 79°00'19.9"W was located by the field unit in Latitude 42°58'20.47"N, Longitude 79°00'20.09"W. The pier is presently charted. It is recommended that the pier be charted as shown on the present survey. Applyd

26) A pier shown on the prior survey in Latitude 42°58'19.7"N, Longitude 79°00'10.5"W was verified by the field unit in Latitude 42°58'20.0"N, Longitude 79°00'10.5"W. The pier on the present survey originates with the shoreline manuscript TP-01127 (1980-82). A pier is charted in the area. It is recommended that the pier be charted as shown on the present survey. Applyd

27) A pier and piles shown on the prior survey in Latitude 42°58'19.5"N, Longitude 78°58'41.8"W was not found by the field unit; however, a pier and a pile (baring five (5) feet) were found in Latitude 42°58'19.14"N, Longitude 78°58'42.58"W and Latitude 42°58'19.14"N, Longitude 78°58'41.84"W, respectively. An L-shaped pier is presently charted in this vicinity. It is recommended that the charted pier be removed, and the pier and pile be charted as shown on the present survey. Applyd

28) A pier shown on the prior survey in Latitude 42°58'18.6"N, Longitude 78°58'39.9"W was not located by the field unit; however, a pier was located in Latitude 42°58'18.28"N, Longitude 78°58'40.75"W. The pier is not presently charted. It is recommended that the pier shown on the present survey be charted as shown on the present survey.

29) A fence shown on the prior survey in Latitude 42°58'11.6"N, Longitude 78°58'29.1"W was not found by the field unit. A pier, partially in ruin, was located in Latitude 42°58'11.2"N, Longitude 78°58'29.66"W. The fence is not presently charted. A pier with two (2) piles on the offshore end is presently charted at this location. It is recommended that the pier ruin be charted as shown on the present survey. Applyd

30) A pier shown on the prior survey in Latitude 42°58'11.4"N, Longitude 78°58'28.2"W was not found by the field unit; however, a pier with the offshore end in ruin was found in Latitude 42°58'10.89"N, Longitude 78°58'29.27"W. A pier with a boathouse are charted in the vicinity of Latitude 42°58'11.3"N, Longitude 78°58'29.0"W. It is recommended that the pier be charted as shown on the present survey. Applyd

31) A pier shown on the prior survey in Latitude 42°58'09.4"N, Longitude 78°58'26.1"W was neither verified or disproved by the field unit. A pier and piles are charted in Latitude 42°58'09.4"N, Longitude 78°58'25.7"W. It is recommended that the pier and piles be deleted and a pier be charted as shown on the present survey.

32) A pier shown on the prior survey in Latitude 42°58'07.8"N, Longitude 78°58'24.3"W was located by the present survey in Latitude 42°58'07.5"N, Longitude 78°58'24.9"W. The configuration of the pier has changed, and it is recommended that the pier be charted as shown on the present survey. Apply

33) A pier and pier ruin shown on the prior survey in Latitude 42°58'06.0"N Longitude 78°58'22.6"W was not found by the field unit; however, a new pier is shown on the present survey in Latitude 42°58'06.2"N Longitude 78°58'23.1"W. A pier ruin is presently charted in this vicinity. It is recommended that the charted pier ruins be revised and charted as shown on the present survey.

34) A pier and piles shown on the prior survey in Latitude 42°58'00.8"N, Longitude 78°58'17.8"W were not located by the filed unit; however, a pier with a boat house was located in Latitude 42°58'00.45"N, Longitude 78°58'18.39"W. An L-shaped pier is presently charted in Latitude 42°58'01.0"N, Longitude 78°58'17.6"W. It is recommended that the charted pier be removed, and the present survey delineation charted.

35) Submerged piles shown on the prior survey in Latitude 42°57'57.6"N, Longitude 78°58'14.5"W were neither verified or disproved by the field unit. The submerged piles are presently charted. The submerged piles have been brought forward from the prior survey to supplement the present survey. No change in charting status is recommended.

36) A sunken wreck shown on the prior survey in Latitude 42°57'55.4"N, Longitude 78°58'11.7"W, Presurvey Review item #11H, was searched for by the field unit with negative results. The wreck has been brought forward from the prior survey to supplement the present survey. This wreck is presently charted in Latitude 42°57'55.2"N, Longitude 78°58'12.0"W. No change in charting status is recommended. Charted 14832

37) Piles shown on the prior survey in Latitude 42°57'48.4"N, Longitude 78°58'04.2"W were neither verified or disproved by the field unit. The piles are not presently charted. It is recommended that the chart compiler ascertain the authority for the removal of these piles from the chart and make the appropriate charting disposition. N|C

38) Piles shown on the prior survey in Latitude 42°57'47.2"N, Longitude 78°58'02.9"W were neither verified or disproved by the field unit. The piles are not presently charted. It is recommended that the chart compiler ascertain the authority for the removal of these piles from the chart and make the appropriate charting disposition. N|C

39) A row of plies, apparently a bulkhead, shown on the prior survey in Latitude 42°57'38.7"N, Longitude

78°57'51.5"W, adjacent to Beaver Island, were neither verified or disproved by the field unit. The piles are not presently charted. It is recommended that the chart compiler ascertain the authority for the removal of these piles from the chart and make the appropriate charting disposition. N/C

40) A pile cluster shown on the prior survey in Latitude 42°57'29.1"N, Longitude 78°57'38.1"W was neither verified or disproved by the field unit. The piles are not presently charted. The piles are approximately 97.8 meters NNE of a charted obstruction (reported) in Latitude 42°57'26"N, Longitude 78°57'39'W. It is recommended that the chart compiler ascertain the authority for the removal of these piles from the chart and make the appropriate charting disposition. See also section 7.a.5) of this report. N/C

41) A wharf shown on the prior survey in Latitude 42°57'09.6"N, Longitude 78°57'17.5"W was found by the field unit. There have been modifications made to the wharf since the prior survey was conducted. No change in charting status is recommended.

42) The small holiday area in the vicinity of Latitude 42°56'56"N, Longitude 78°57'06"W was supplemented with depths from prior survey LS-1777 (1940) to complete the portrayal of the bottom configuration.

The following tabulation is comprised of features originating with prior survey LS-1777 (1940) that were neither verified or disproved by the present survey. These piers and/or ruins are not presently charted. No change in charting status is recommended.

Object	Latitude (N)	Longitude (W)
Pier	43°00'13.5"	79°01'14.9"
Pier	43°00'12.9"	79°01'14.8"
Pier	43°00'11.8"	79°01'14.7"
Pier	43°00'09.9"	79°01'14.4"
Pier	43°00'06.9"	79°01'13.3"
Pier	42°59'57.6"	79°01'10.2"
Pier	42°59'57.1"	79°01'10.1"
Pier	42°59'54.7"	79°01'09.8"
Pier	42°59'53.6"	79°01'09.3"
Pier	42°59'49.7"	79°01'08.1"
Pier	42°59'44.3"	79°01'07.4"
Pier	42°59'24.3"	79°00'53.5"
Pier	42°59'20.3"	79°00'49.5"
Piles	42°59'18.6"	79°01'40.2"
Pier	42°59'10.0"	79°00'36.7"
Pier	42°58'58.2"	79°00'13.4"
Pier	42°58'55.8"	79°00'09.5"
Pier	42°58'42.7"	79°01'13.2"
Pier	42°58'33.5"	78°59'17.5"

Pier	42°58'31.1"	78°59'07.9"
Row of piles	42°58'30.8"	78°59'07.0"
Pier	42°58'24.0"	78°58'47.2"
Pier	42°58'23.1"	78°58'45.7"
Pier	42°58'17.7"	78°58'38.8"
Pier and piles	42°58'14.9"	78°58'35.4"
Pier	42°57'53.5"	78°58'42.5"
pier	42°57'50.6"	78°58'41.3"

N/C

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

7. COMPARISON WITH CHART 14832 (28TH Edition, June 13/81)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and miscellaneous sources. The following should be noted:

1) A charted pier in Latitude 43°00'33.2"N, Longitude 79°01'16.2"W was neither verified or disproved by the field unit, and does not originate with the prior surveys. It is recommended that the pier be revised to submerged pier ruins. Applyd

2) A charted pier ruin in Latitude 42°59'35.6"N, Longitude 79°01'02.7"W was neither verified or disproved by the field unit, and does not originate with the prior surveys. It is recommended that the pier ruins be revised to submerged pier ruins.

3) Two (2) charted piers in the vicinity of Latitude 42°59'18.9"N, Longitude 79°00'47.5"W were neither verified or disproved by the field unit, and do not originate with the prior survey. It is recommended that the piers be revised to submerged pier ruins. Applyd

4) A charted crib with a legend Depth over crib 8 ft in Latitude 42°58'06.2"N, Longitude 78°58'26.6"W was neither verified or disproved by the field unit, and does not originate with the prior surveys. No change in charting status is recommended.

5) The charted obstruction reported in Latitude 42°57'26"N, Longitude 78°57'39"W is not considered disproved by the present survey. An uncharted pile cluster is shown on prior survey LS-1777 (1940) approximately 97.8 meters NNE of the charted obstruction. The charted obstruction and the pile cluster may be the same feature. The source of the charted obstruction should be evaluated against the prior survey pile cluster during chart compilation.

The present survey is adequate to supersede the charted hydrography in the common area.

b. Aids to Navigation

There are no floating aids in the survey area. The hydrographer located four (4) fixed aids to navigation within the survey area.

8. COMPLIANCE WITH INSTRUCTIONS

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

9. ADDITIONAL FIELD WORK

This is a good basic survey.

Franklin L. Saunders
Cartographic Technician
Verification of Field Data

Robert G. Roberson
Supervisory Cartographer
Evaluation and Analysis

Harry R. Smith
Senior Cartographic Technician
Verification Check

ADDENDUM TO ACCOMPANY SURVEY H-10020

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 = 0.205 seconds = 6.3 meters
Average longitude shift = -0.851 seconds = -19.3 meters

INSPECTION REPORT
H-10020

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval 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

William A. Wert, LCDR, NOAA
Chief, Hydrographic Surveys Branch

Approved: 29 September 1987

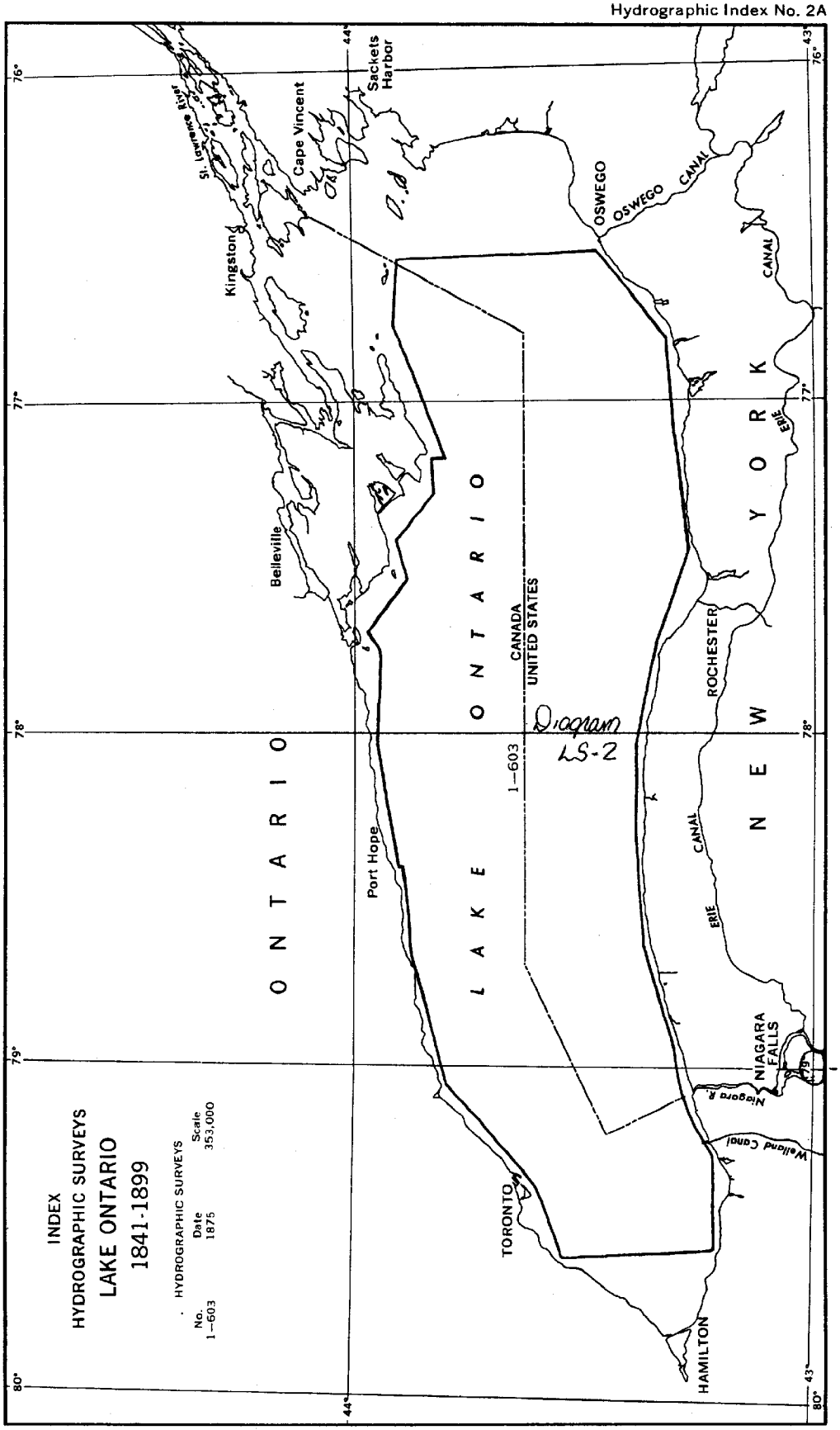
Ray E. Moses, RADM, NOAA
Director, Atlantic Marine Center

U.S. DEPARTMENT OF COMMERCE

NOAA—NATIONAL OCEAN SURVEY, LAKE SURVEY CENTER

630 Federal Building and U.S. Courthouse, Detroit ,Michigan 48226

Hydrographic Index No. 2A



-H-10020

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. ~~H-10200~~ H-10020

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	10/28/88	R. WILKFIELD	~~Full~~ Part ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 4 EXAM. For critical corrections ONLY
14822	11/10/88	R Bluntfield	~~Full~~ Part ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 6 EXAM. For critical Correction only.
14832	3-27-89	ED MARTIN	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 4
14832	3/8/90	Elizabeth Barrington	Full ~~Part Before~~ After Marine Center Approval Signed Via Full application of
			Drawing No. Soundings from SS
14822	3/14/90	Elizabeth Barrington	Full ~~Part Before~~ After Marine Center Approval Signed Via Full application of
			Drawing No. Soundings from SS thru - 14832
			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.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.