9656

Diag. Cht. No. LS-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC

Field No. LA-10-3-76

Office No. H-9656

LOCALITY

State OHIO & PENNSYLVANIA

General Locality SOUTH SHORE OF LAKE ERIE

Locality EAST OF CONNEAUT HARBOR

1976

CHIEF OF PARTY
William R. Daniels

LIBRARY & ARCHIVES

DATE Feb. 1, 1978

☆ U.S. GOV. PRINTING OFFICE: 1976—669-441

9656

INDEX

✓ = Misc. items removed from the D.R. and filed with the field records

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-9656

HYDROGRAPHIC TITLE SHEET

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.

LA-10-3-76

State: Ohio & Pennsylvania

General locality: South Shore of Lake Erie

Locality: East of Conneaut Harbor

Scale: 1:10,000 Date of survey: 8/19/76 - 10/5/76

Instructions dated: April 1, 1976 (Laidly) Project No.: OPR-300-LA-76

Vessel: Launch 1264 and Launch 1638

Chief of party: William R. Daniels, LCDR, NOAA

Surveyed by: R. Bagalay & J. Nahas

Soundings taken by echo sounder, ~~hand lead, pole~~: echo sounder

Graphic record scaled by: Kayser, Meinert, Ristau, Hart, Reed, Beech

Graphic record checked by: J. Rolland

Protracted by: NA ~~Smooth Sheet~~ Automated plot by: Field Sheet PDP/8e = COMPLOT ~~AMC-CALCOMP 618~~

Verification by: AMC- Verification Branch M.B. Hickson

Soundings in fathoms feet at MLW MLLW: Feet at LWD of Lake Erie (568.6 ft. IGLD 1955)

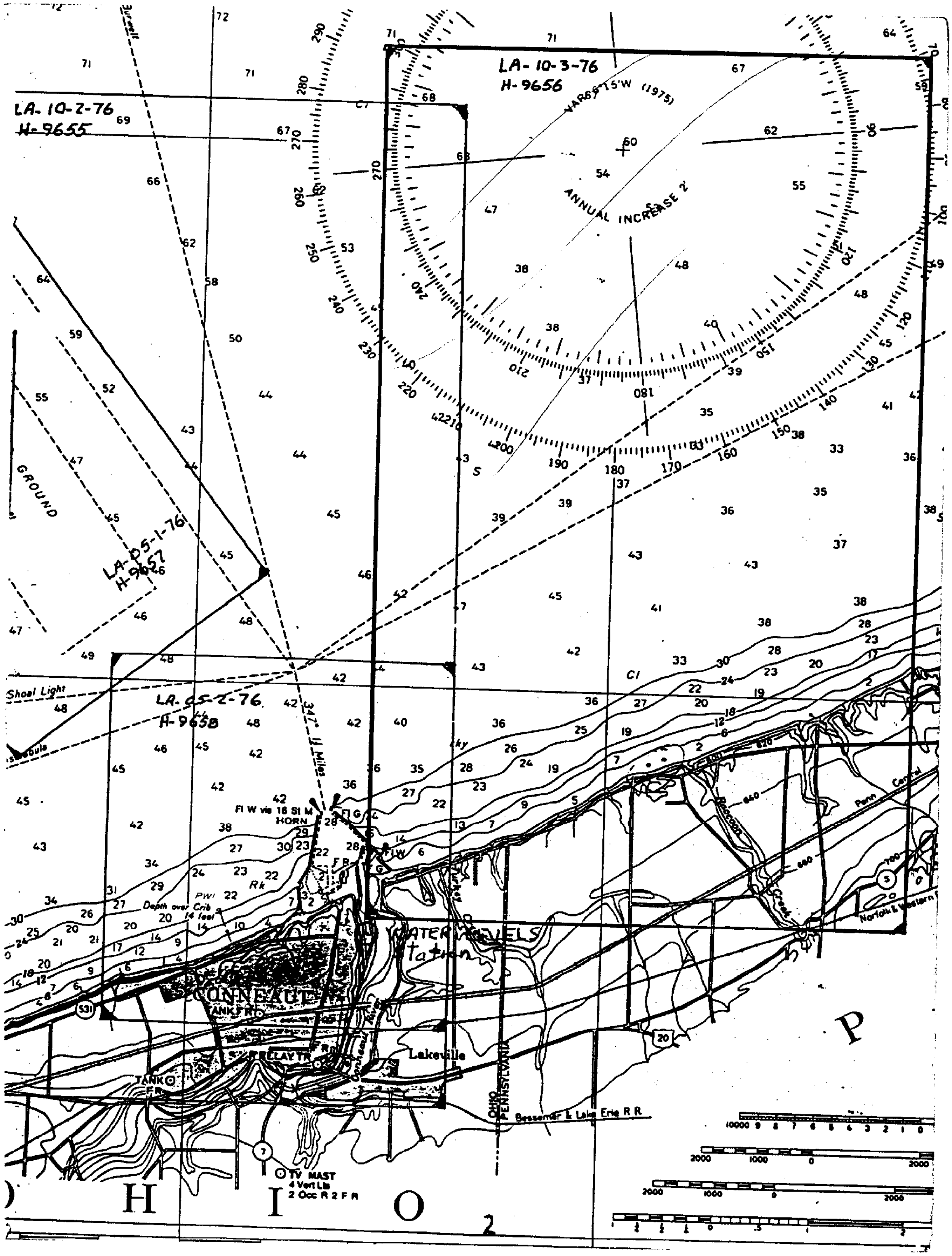
REMARKS:

Applied to stds 7/10/78

1

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

U.S. G.P.O. 1972-769-565/519 REG. #6


LA-10-3-76
H-9656
LA-10-2-76
H-9655
LA-05-1-76
H-9657
LA-05-2-76
H-9658
VAR 6°15'W (1975)
ANNUAL INCREASE 2'
GROUND
Shoal Light
347° 11 Miles
Fl W via 16 St M
HORN
Depth over Crib 14 feet
CONNEAUT
TANK FR
Lakeville
WATER LEVELS Station
Penn Central
Norfolk & Western
Bessemer & Lake Erie R R
OHIO
PENNSYLVANIA
TV MAST
4 Vert Lts
2 Occ R 2 F R
O H I O
P
2

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9656(Field #LA-10-3-76)

Scale 1:10,000 (1976) NOAA Launch 1264 and 1638
William R. Daniels Chief of Party

A. PROJECT

Project OPR-300-LA-76, Lake Erie (3 1/2 miles east of Ashtabula, Ohio to 6 miles east of Erie, Pennsylvania) is a combined total of 15 surveys. The survey described herein (LA-10-3-76) was accomplished in accordance with Project Instructions, OPR-300-LA-76, dated April 1, 1976.

B. AREA SURVEYED

The survey was made in the inshore waters along the south shore of Lake Erie extending from Conneaut Harbor to 5 miles east of Conneaut Harbor. The area surveyed is bounded on the south by the shoreline. It extends offshore to past the 60 foot contour and is bounded by Longitudes 80°32'25" and 80°26'50". The survey was begun on August 19, 1976 and completed on October 5, 1976.

C. SOUNDING VESSEL

The NOAA Launch 1264 (Laidly) was used for the majority of the sounding on this survey. Launch 1638 was used for the close inshore portion. Launch 1264 used position numbers 1 through 2584, and 1-58 (bottom samples). Launch 1638 used position numbers 1 through 675.

D. SOUNDING EQUIPMENT

Sounding equipment used aboard 1264 during the entire period of this survey was the Ross Fineline 5,000 Digital Depth Recorder, serial number 1087. The recorder operated well during the survey. Soundings were not digitized correctly due to a malfunction in the Hydroplot Controller, depths outputted consisted of only 0, 2, or 6 in the tenths digit. In addition, a 4 foot value was OCCASSIONALLY added to soundings. This discrepancy was due to a connection between the Raytheon digitizer box and the Ross power supply. This discrepancy was corrected during rescanning.

Sounding equipment used aboard Launch 1638 consisted of a Raytheon DE-723D Fathometer, serial number 1278.

CORRECTIONS TO ECHO SOUNDINGS

The initial on the DE-723 never varied more than 0.1 foot from the 0 line during the survey. No initial corrections were

applied to the soundings. Regular phase checks were obtained for the Ross Fathometer. The analog and digital depths did not agree at many times during this survey. An analog to digital correction (instrument error, Col. Q) was applied to soundings and changed during rescanning.

Velocity of sound correctors were derived from the Direct Comparison Log, Column P, Corr. (C-N).

Direct Comparison of the Analog Record and the Digital Readings against true bar depths were made only under ideal conditions, at intervals of once or twice a day, and at random locations throughout the work area.

A static draft correction of 2.5 feet was determined for the LAIDLY (1264) and a static draft of 1.0 feet was determined for Survey Boat 1638. Static draft corrections for both vessels were accomplished by conventionally approved methods. Settlement and squat tests were made on both vessels assigned to this survey on June 5, 1976. The tests were conducted inside Fairport Harbor. The project depth of 25 feet was more than adequate for the tests and the harbor breakwalls provided protection from open lake sea swells. Test procedures were in accordance with recommendations in secion 4.9.4 of the provisional Hydrographic Manual. A leveling instrument was set up on one of the harbor piers and sightings taken on a level rod held vertically and perpendicular to the transducer while the launch made several passes at various hydro speeds.

E. HYDROGRAPHIC SHEETS

DCU tapes containing depth and ranging data were generated by the data logger on board Launch 1638. The data was plotted off line at AMC after raw tapes were merged with azimuth tapes to produce Range-Azimuth master tapes.

Raw data master tapes from 1264 (Laidly) were generated and data plotted on the boat sheet in real-time using the On-Board Hydroplot System. Edited master tapes, corrector tapes, etc., were generated at AMC. All data was field smooth plotted on two computer sheets. The final smooth plot and verification will be accomplished by the Verfication Branch (CAM31), Atlantic Marine Center, Norfolk, Virginia.

F. CONTROL STATIONS

Control was established by Lake Survey Personnel during 1974, 1975, and 1976. Monumented third-order or better stations used during this survey are as follows:

(004) Water LSC, 1974
(047) CONN LSC, 1974 (2nd order)
(058) Conneaut E. Gap Light, 1975
(059) State Line LSC, 1975
(060) Racoon Creek LSC, 1975
(061) Dan's Beach LSC, 1975, ~~1975~~

Non-recoverable stations located by the party and used on this survey are as follows:

(147) CONN C. O. E., 1976
(999) CONN X2, 1976
(146) Susette, 1976

G. HYDROGRAPHIC POSITION CONTROL

Control for Launch 1264 (Laidly) was Del Norte in the Range-Range Mode. Control for Launch 1638 was Range-Azimuth using Del Norte and a transit cut.

Calibration was by simultaneous transit cuts to the vessel and by direct measurement over a known distance. There were some days when no calibration was obtained due to low visibility. Corrections were obtained from preceding or succeeding days when the same equipment was used.

The following is a list of equipment and serial numbers used during the survey:

Vesno 1264

T/R Master Transponder (S/N 246) with OMNI 360°X30° antenna (S/N 412)
DMU Transponder 202A with TSA (S/N 192)
Parallel Buffer, 200-1PLA (S/N 127)
Hydroplot System

DEC Hydroplot Controller	SN	76005941-0700004
DEC Computer PDPS/E	SN	PRO 308130
DEC Reader/Punch	SN	040214005
Teletype #1 ASR33	SN	465065
Teletype #2 ASR33	SN	453287
Complot DP3/5 Plotter	SN	5848-19

Sounding System

Ross Fineline 5000 Depth Recorder SN 1087

The following is a list of equipment and serial numbers used on VESNO 1638 during this survey.

VESNO 1638

Position Control

T/R Master Transponder (S/N 273) with OMNI 360°X30° antenna (S/N 146).
DMV Trisponder 202A W/TSA (S/N 292)
Parallel Buffer 200-1PLA with DCU interface (S/N 124)
DCU Hifix Type T10251 (S/N A104)
Remote Display, Model 244 (S/N 103)
Teletype ASR 33 (S/N 500144)

Sounding System

Raytheon 723D Depth Recorder (S/N 2043)

Office Processing Hydroplot System

DEC Computer PDP 8/E (S/N Pro 309104)
DEC H. S. Reader/Punch (S/N 0211123)
Teletype #1 ASR333 (S/N 458 267)
Teletype #2 ASR33 (S/N 436 575)
Complot DP 3/5 Plotter (S/N 5279-1)

H. SHORELINE ✓

Due to extensive beach erosion along the south shore of Lake Erie and the lack of current photography, only approximate shoreline is shown on the Boat Sheet in pencil. The shoreline was obtained from the U. S. Lake Survey Blue Line Drawing dated 1948. The Blue Line drawing is included with data submitted to verification for this project. No field edit was accomplished on this survey due to lack of adequate manuscripts. Shore line on the smooth sheet is shown in brown and is only for orientation, shoreline from U.S. Army Corps of Engineers ~~GS~~ GLS

I. Crosslines ✓ Surveys FS 16 (1948) and FS 17 (1948).

Crosslines were run at 10.2 percent of the total main scheme hydrography. Crosslines are in good agreement with differences generally one foot or less.

J. JUNCTIONS

Has not been processed to a stage that would allow a junction to be made.

Junction with contemporary surveys H-9658 on the western edge accomplished during the 1976 field season is excellent. ~~This survey does not junction with any surveys on the north or east~~. An adequate junction on the west has been effected with survey H-9655 (1976).

K. COMPARISON WITH PRIOR SURVEYS

Comparison with GLS Blue Line Field Charts FS 16 and FS 17 show good agreement with differences generally less than three feet.

Prior Surveys are: 1-1709 (1937)
1-2038 (1960)
(1-1872) → 1-Conneaut Harbor, Ohio (1948)

The much greater density of sounding coverage in the 1976 surveys provides a more detailed development of depth curves than do the prior surveys.

No significant features were discovered or developed during this survey.

L. COMPARISON WITH THE CHART

Comparison with NOA Chart 14824 (formally LS33), 19th Edition dated March 1, 1975, scale 1:80,000 shows good agreement.

No mention is made in the records of this survey of the two rocks charted near Latitude 41°59'22.5"N, Longitude 80°29'22.5"W. See the Verifier's Report.

There were no P.S.R. Items within the survey area.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting except as follows:

A holiday was left in the regular system of lines near Latitude 41°59.3', Longitude 80°31.3'. It is not of sufficient size to consider the survey as incomplete. If necessary, it can be picked up as a chart deficiency item by the revisory party.

N. AIDS TO NAVIGATION

There are no floating aids to navigation within the area of this survey.

O. STATISTICS

VESNO 1264 (Laidly)

Total number of positions	2640
Total N. M. of sounding line	528
Nautical miles of crossline	54
Square nautical miles surveyed	22.4
Number of bottom samples	58

VESNO 1638

Total number of positions	672
Total N. M. of sounding line	50.9
Nautical miles of crossline	4.8
Square nautical miles surveyed	2.6
Number of bottom samples	0

Totals - both vessels 1264 and 1638

Total number of positions	3312
Total N. M. of sounding line	578.9
Nautical miles of crossline	58.8
Square nautical miles surveyed	25.0
Number of bottom samples	58

P. MISCELLANEOUS

Velocity Table 2 (LA-5-2-76) was used for VESNO 1264 on this survey.

Q. RECOMMENDATIONS

Shoreline should be obtained as soon as possible by conventional photogrammetric methods and additional hydro should be collected in some areas between the six foot contour and 0 foot contour.

Concur

R. AUTOMATED DATA PROCESSING

The following programs were used during the data collection and processing of this survey.

	Number	Version
Range-Range real time hydroplot	RK 111	1/30/76
Grid, Signal, and Lattice Plot	RK 201	4/18/75
Range-Range Non-Real Time Plot	RK 211	1/15/76
Visual Station Table Load	RK 216	4/01/74
Range-Azimuth Non-Real Time Plot	RK 216	2/05/76
Reformat and Data Check	RK 330	5/04/76
Geodetic Inverse/Direct Computation	RK 407	10/23/75
H/R Geodetic Calibration (By Azimuth)	RK 562	9/10/74
Elinore	AM 602	5/20/75

Although RK 562 (H/R Geodetic Calibration by Azimuth) has been removed from the hydroplot system program inventory, it was found advantageous that the Lakes Hydro Party make use of this program due to the necessity to calibrate by Azimuth (because of the heavy haze factor which makes it near impossible to locate station signals).

S. REFERENCES TO REPORTS

None

Respectively submitted,

Robert Lewis

For/ Cdr. John O. Rolland

*044	7	41	57	39226	080	34	24367	250	0000	00000	Water LSC, 1974 (3rd order) Quad 410804
047	7	41	58	47501	080	33	29418	250	0022	00000	CONN LSC, 1974 (2nd or.) Quad 410804
147	7	41	58	38421	080	33	02171	254	0000	00000	CONN COE, 1976 (3rd or.) Quad 410804
999	7	41	58	47507	080	33	29361	254	0022	00000	CONN X2, 1976 (3rd or.) Quad 410804
146	7	41	58	03336	080	33	22584	254	0000	00000	Susette, 1976 (3rd or.) Quad 410804
*058	7	41	58	25561	080	32	45826	250	0000	00000	CONN E. Gap Lt.,1975 (3rd or.) Q.410804
*059	7	41	58	38251	080	31	07745	250	0015	00000	St. Line LSC,1975 (3rd or.) Quad 410804
*060	7	41	59	23935	080	28	55561	250	0000	00000	Racoon Ck. LSC,1975,(3rd or)Quad 410804
*061	7	42	00	07293	080	26	47396	250	0000	00000	Dan's Bch. LSC,1975,(3rd or)Quad 420802

*Third order, Class II EODM Positioned Direct From CONN LSC, 1974 CONN LSC, Second Order EODM Traverse Station (Cleveland to Buffalo Scheme).

A Settlement and squat abstract for both survey launches are shown below with accompanying graphs. (See Page)

LAIDLY (LAUNCH 1264)
SQUAT TEST, JUNE 5, 1976

RPM	LEVEL ROD READING, FT	CORRECTIONS, FT.	TRA-FEET
0	6.86	0	2.5
550	6.73	+0.07	2.6
800	6.96	+0.10	2.6
1000	6.98	+0.12	2.6
1150	7.04	+0.18	2.7
1350	7.11	+0.25	2.8
1500	7.09	+0.23	2.7
1800	6.83	−0.03	2.5
2100	6.50	−0.36	2.1
2300	6.27	−0.59	1.9

SURVEY BOAT 1638
SQUAT TEST, JUNE 5, 1976

RPM	LEVEL ROD READING, FT	CORRECTIONS, FT.	TRA-FEET
0	6.60	0	1.0
500	6.63	+0.03	1.0
700	6.59	−0.01	1.0
900	6.63	+0.03	1.0
1100	6.65	+0.05	1.0
1300	6.68	+0.08	1.1
1500	6.71	+0.11	1.1
1700	6.77	+0.17	1.2
1900	6.85	+0.25	1.2

NOAA 59-11

DIRECT COMPARISON FOR SOUND VELOCITY

LA-10-3-76 (H-9656)

LAUNCH 1638

VELOCITY TABLE # 1

DAY	5	10	15	20	25	30	35	40	
236	+0.1	+0.2	+0.3	+0.4	+0.5	+0.7			
238	+0.1	+0.2	+0.3	+0.4	+0.5	+0.8			
239	+0.2	+0.2	+0.2	+0.4	+0.4	+0.3			
240	0	+0.1	0	+0.1	+0.1	+0.3			
					+1.5 ✓				
Σ	+0.4 ✓	+0.7 ✓	+0.8 ✓	+1.3 ✓	~~+2.0~~	+2.1 ✓			
MEAN	+0.1 ✓	~~+1.15~~ +0.17 ✓	+0.2 ✓	+.32 ✓	~~+0.5~~ +.38	+.52 ✓			

TABLE # 1

TRUE DEPTH (—)	P	=	N
5	(+.1)	=	4.9
10	(+.175)	=	9.83
15	(+.2)	=	14.8
20	(+.32)	=	19.68
25	(+.38)	=	24.62
30	(+.52)	=	29.48

BAR CHECK FOR DAYS 236 AND 338 ARE INCLUDED WITH LA-5-2-76 DATA (H-9658)

Table #1

+0.2 +0.4 +0.6 +0.8

0 *(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)*

CORRECTIONS IN FEET, ~~FATHOMS~~

~~10~~ 5
~~20~~ 10
~~30~~ 15
~~40~~ 20
~~50~~ 25
~~60~~ 30
~~70~~ 35
~~80~~ 40
90
100
110
120
130
140
150
160
170
180
190

DEPTHS IN ~~fathoms~~ feet

(For deep water add a 0 to these figures)

NOAA FORM 76-21 (10-72) U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship Launch 1638

Ronald R. Bagaly Comdg.

These corrections are to be used between Aug. 25, 1976 and Oct 5, 1976.

in the locality Conneaut Harbor on South Shore Lake Erie, Ohio

for hydrographic surveys Nos. H-9656

Table #1

Corr	Depth (Ft.)
0	4.5
+0.2	21.5
+0.4	28.6
+0.6	35.0
+0.8	9999

Velocity Table Revised during Verification

46 1240

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NOAA 59-11

DIRECT COMPARISON
FOR SOUND VELOCITY

LA 5-2-76 (TABLE #2) H-9658

SURVEY VESSEL LAIDLY 1264

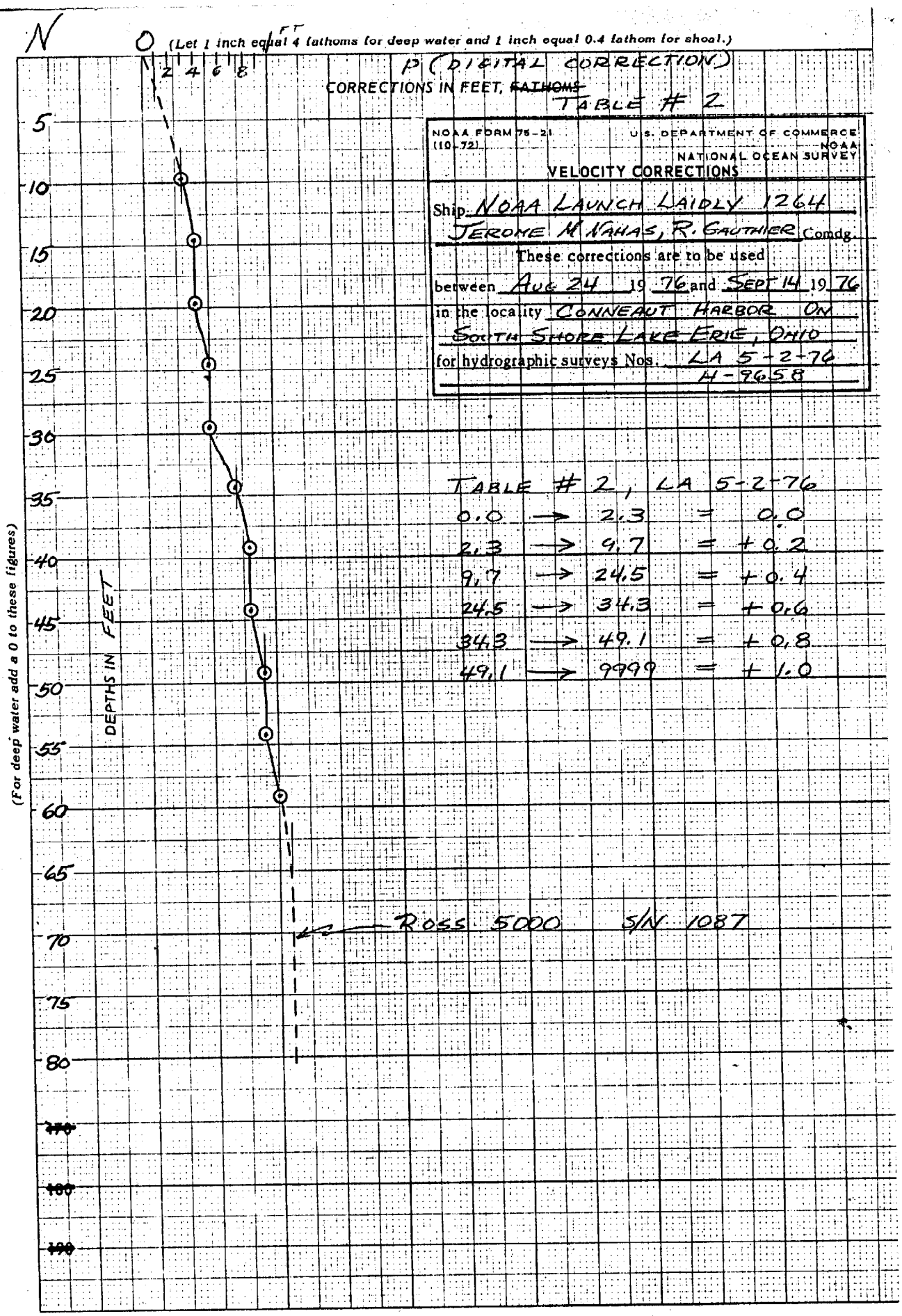
	10	15	20	25	30	35	40	45	50	55	60
215	+.3	+.3	+.3	+.5	+.5	+.7	+.8	+.9	+.9	+1.0	+1.0
216	+.3	+.4	+.5	+.5	+.6	+.7	+.8	+.9	+.9		
217	+.2	+.2	+.3	+.3	+.4	+.6	+.6	+.8	+.9		
224	+.3	+.4	+.5	+.5	+.5	+.7	+.7	+.8	+.9	+.9	+.9
32	+.3	+.4	+.5	+.5	+.6	+.8	+.8	+.9	+.9	+.9	+1.1
239	+.5	+.5	+.5	+.5	+.7	+.8	+.9				
251	+.3	+.4	+.4	+.5	+.5	+.7	+.7	+.7			
257	+.3	+.4	+.4	+.4	+.5	+.6	+.7	+.7	+.8	+.8	+.8
Σ	+2.5	+3.0	+3.4	+3.7	+4.3	+5.6	+6.0	+5.7	+5.3	+3.6	+3.8
MEAN	+.3	+.4	+.4	+.5	+.5	+.7	+.8	+.8	+.9	+.9	+1.0
	.31	.38	.42	.46	.54	.70	7.5	.81	.88	.90	.95

Ross 5000
S/N 1087

TABLE #2

TRUE DEPTH	(-)	P	=	N	
10	—	(+.3)	=	9.7	9.69
15	—	(+.4)	=	14.6	14.62
20	—	(+.4)	=	19.6	19.58
25	—	(+.5)	=	24.5	24.49
30	—	(+.5)	=	29.5	29.46
35	—	(+.7)	=	34.3	34.30
40	—	(+.8)	=	39.2	39.25
45	—	(+.8)	=	44.2	44.19
50	—	(+.9)	=	49.1	49.12
55	—	(+.9)	=	54.1	54.10
60	—	(+1.0)	=	59.0	59.05

JN



NOAA FORM 75-21 (10-72) U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship NOAA LAUNCH LAIDLY 1264
JEROME M NAHAS, R. GAUTHIER Comdg.

These corrections are to be used between AUG 24 19 76 and SEPT 14 19 76 in the locality CONNEAUT HARBOR ON SOUTH SHORE LAKE ERIE, OHIO for hydrographic surveys Nos. LA 5-2-76 H-9658

TABLE # 2, LA 5-2-76

0.0	→	2.3	=	0.0
2.3	→	9.7	=	+0.2
9.7	→	24.5	=	+0.4
24.5	→	34.3	=	+0.6
34.3	→	49.1	=	+0.8
49.1	→	9999	=	+1.0

46 1240

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H-9656

LA-10-3-76

Velocity Tables

```
000045 0 0000 0001 000 163800 009656
000[illegible] 0 0002
000[illegible] 0 0004
000[illegible] 0 0006
000[illegible] 0 0008
000023 0 0000 0002 000 126400 009656
000097 0 0002
000245 0 0004
000343 0 0006
000491 0 0008
999999 0 0010
```

OPR _____

SOUNDING CORRECTION ABSTRACT

VESSEL 1638

FIELD NO. LA-10-3-76

REGISTRY NO. H- H-9656

Julian Date	From Time (GMT)	To Time (GMT)	Velocity Corr. Table No.	(Note: TRA Corr. is the algebraic sum of these columns) Draft Corr.	Instrument Error Corr.	Initial Corr.	S&S Corr.	TRA Corr. ft/fms	Remarks
238	150800	172700	1	1.0	0	0	+0.2	1.2	1800 RPM's
244	175700	212830	1	1.0	0	0	+0.2	1.2	
259	151300	190130	1	1.0	0	0	+0.2	1.2	
260	151400	155850	1	1.0	0	0	+0.2	1.2	
278	140000	173100	1	1.0	0	0	+0.2	1.2	
279	181400	192500	1	1.0	0	0	+0.2	1.2	

OPR 300

SOUNDING CORRECTION ABSTRACT

VESSEL 1264

FIELD NO. LA-10-3-76

REGISTRY NO. H- 9656

Julian Date	From Time (GMT)	To Time (GMT)	Velocity Corr. Table No.	(Note: TRA Corr. is the algebraic sum of these columns) Draft Corr.	Instrument Error Corr.	Initial Corr.	S&S Corr.	TRA Corr. ft/fms	Remarks
232	154646	214842	2	2.5	0	0	-.2	2.3	2000 RPMS
233	141758	221703	2	2.5	0	0	-.2	2.3	
236	132847	165859	2	2.5	0	0	-.2	2.3	
240	144210	201648	2	2.5	0	0	-.2	2.3	
244	142527	144121	2	2.5	0	0	-.2	2.3	
251	144941	203141	2	2.5	0	0	-.2	2.3	
257	173224	201755	2	2.5	0	0	0	2.5	1800 RPMS on Ranging
259	141136	180431	2	2.5	0	0	0	2.5	Bottom Samples
260	144036	173710	2	2.5	0	0	0	2.5	Bottom Samples
264	132657	142831	2	2.5	0	0	-.2	2.3	2000 RPM's
268	162538	215122	2	2.5	0	0	-.2	2.3	
273	125553	134909	2	2.5	0	0	-.2	2.3	
274	150024	191518	2	2.5	0	0	-.2	2.3	
274	193804	200023	2	2.5	0	0	0	2.5	Bottom Samples

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9656

GEOGRAPHIC NAMES (field)

Name on Survey	A FORMER LS ON CHART NO. (14824) ~33	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	
TURKEY CREEK										1
RACCOON CREEK										2
CONNEAUT										3
LAKE ERIE										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
					APPROVED					20
					Chas. E. Harrington					21
					STAFF GEOGRAPHER - CS1x2					22
					23 Feb. 1978					23
										24
			33							25

NOAA FORM 76-155 SUPERSEDES C&GS 197

U.S. G.P.O. 1972-769-565/516 REG #6

APPROVAL SHEET

SURVEY H-9656 (LA-10-3-76)

The hydrographic records transmitted with this report are complete and adequate.

No direct supervision was given by me during field work and the field sheet was not examined by me during hydrography.

This survey is considered adequate to supersede previous surveys in the same area, with note being made of the small holiday mentioned in Section M. of this report.

Approved and forwarded

William R. Daniels
LCDR., NOAA
Chief of Party

APPROVAL SHEET
FOR
SURVEY H-9656

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has/~~has not~~ been made. A new final sounding printout has/~~has not~~ been made.

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Provisional Hydrographic Manual. Exceptions are listed in the Verifier's Report.

Date: 1/12/78

Signed: for R. D. Samuelson

Title: Chief, Verification Branch

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: CAM 3

Hourly heights are approved for

Water Level Station Used: Conneaut, Ohio 906-3043

Period: August 19, 1976 thru October 5, 1976

HYDROGRAPHIC SHEET: H-9656

OPR- 300-LA-76

Locality: Lake Erie

Plane of reference: Low Water Datum (IGLD 1955 : 568.6 Feet)

Remarks:

Philip C. Marris
Chief, Water Level Section

Don M. Spellman
Chief, Tides & Water Levels Branch

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-9656

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	4&2
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	2

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES	X					2-misc.
CAHIERS	2 - with Printouts		X			
VOLUMES	2					
BOXES			1- smooth			

T-SHEET PRINTS *(List)*

SPECIAL REPORTS *(List)*

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	*VERIFICATION*	*TOTALS*
POSITIONS ON SHEET			3297
POSITIONS CHECKED			3297
POSITIONS REVISED			743
SOUNDINGS REVISED			442
SOUNDINGS ERRONEOUSLY SPACED			101
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			0
	TIME — HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	4		4
VERIFICATION OF CONTROL			2
VERIFICATION OF POSITIONS			40
VERIFICATION OF SOUNDINGS			68
COMPILATION OF SMOOTH SHEET			10
APPLICATION OF TOPOGRAPHY			1
APPLICATION OF PHOTOBATHYMETRY			0
JUNCTIONS			1
COMPARISON WITH PRIOR SURVEYS & CHARTS			11
VERIFIER'S REPORT			8
OTHER			20
TOTALS	4	161	165

Pre-Verification by F. Saunders	*Beginning Date* 08/20/77	*Ending Date* 08/20/77
Verification by K. Ainsley, J. Wilson, M. Hickson	*Beginning Date* 09/07/77	*Ending Date* 01/10/78
Verification Check by R. D. Sanocki	*Time (Hours)* 4	*Date* 01/13/78
Marine Center Inspection by Hydrographic Inspection Team (AMC)	*Time (Hours)* 8	*Date* 01/17/78
Quality Control Inspection by T. W. Wellman	*Time (Hours)* 54	*Date* 2-22-78
Requirements Evaluation by D. J. Hill	*Time (Hours)* 1	*Date* 5-30-78

D. R. Engle 6 5-24-78

REGISTRY NO. _____

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

REGISTRY NO. H-9656

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9656 FIELD NO. LA-10-3-76

Ohio and Pennsylvania, South Shore of Lake Erie, East of Conneaut Harbor

SURVEYED: August 19 through October 5, 1976

SCALE: 1:10,000 PROJECT NO.: OPR-300

SOUNDINGS: Ross Fineline 5,000
Raytheon DE-723D

CONTROL: Del-Norte
Theodolite (T-2)
(Range-Range and
Range-Azimuth)

Chief of Party ..... W. Daniels
Surveyed by ..... R. Bagalay
..... J. Nahas
Automated Plot by ..... CALCOMP Plotter-618 (AMC)
Verified and Inked by ..... M. Hickson M. Hickson
January 9, 1978

1. Introduction

No unusual problems were encountered. Necessary changes made by the verifier to the Descriptive Report are denoted in red ink. Velocity Table Number 1 has been revised and is reflected in the new graph and table in the Descriptive Report.

2. Control and Shoreline

a. The source of control is adequately described in Section F of the Descriptive Report.

b. The shoreline is for orientation only and is shown in brown on the smooth sheet as per letter File No. D7-1, Serial No. 77-38. There is no current shoreline available and the useage of charted or other available shoreline is required. A comparison between the chart and the U.S. Army Corps of Engineers GLS Blue Line Surveys (1972 ~~FS-16~~ and FS-17) of 1948 reflect similar shoreline features. The Blue Line surveys were chosen for shoreline due to the larger scale providing better delineation. Refer to Section H of the Descriptive Report. (See Q.C. Report-items 5 and 7)

3. Hydrography

a. Depths at crossings are in good agreement.

b. Depth contours were drawn at the standard intervals of 6, 12, 18, 30, and 60 feet. Supplemental depth contours of 3, 24, and 36 feet were added to aid in the delineation of the bottom configuration. Brown curves were added to portray features not apparent from normal contours.

c. Bottom configuration was adequately developed with the exception of the holiday centered at latitude 41° 59' 15" N and longitude 80° 31' 20" W. The 24-foot contour was interpolated through this area. Two soundings were brought forward from prior survey 1-1709 (1937) into the holiday area. These two soundings are plotted in red as follows:

23-foot sounding at latitude 41° 59' 10" N and longitude 80° 31' 24" W
26-foot sounding at latitude 41° 59' 21" N and longitude 80° 31' 25" W

4. Condition of Survey

The sounding records, smooth sheet and accompanying overlays, hydrographic records, and the Descriptive Report are adequate and conform to the requirements of the Provisional Hydrographic Manual, except as noted below:

a. The holiday noted in paragraph 3.c. of this report.

b. Position numbers duplicated between hydrography and bottom samples. See Section 4.4.6 of the Provisional Hydrographic Manual.

c. A comparison with the charts in the survey area should be made by the hydrographer while conducting the survey. The comment in the Descriptive Report regarding two rocks under Section L, Comparison With Chart, is inappropriate.

5. Junctions

An adequate junction on the west has been effected with survey H-9655 (1976).

Survey H-9658 (1976) in the southwestern junctional area of the present survey has not been processed to a stage that would allow a junction to be accomplished. The junction in this area has been deferred and will be completed by the Quality Control Branch, C352, pending completion of processing and transmittal of data.

A survey joining on the east of the present survey is planned but field operations have not been scheduled.

There is no contemporary survey to the north of the present survey.

6. Comparison With Prior Surveys

a (See Q.C. Report - item 6)

b. 1-2038 (1960) 1:80,000
1-1709 (1937) 1:40,000
1-Conneaut Harbor, Ohio (1948) 1:10,000 (Survey 1-1872. See Q.C. Report-item 6)

These prior surveys (all U.S. Lake Survey) cover a majority of the surveyed area. Comparisons with the above surveys reveal a similar general bottom configuration in the deeper offshore areas. The inshore areas have changed due to extensive beach erosion and displacement of bottom material. The older surveys display a much wider line and sounding spacing and do not portray bottom configurations as well as the present survey. (See Q.C. Report-item 6-c)
The differences between the present survey and the prior surveys are attributed to a more detailed and sophisticated present survey and changes in shoal inshore waters due to erosion.

The present survey is considered adequate to supersede the prior surveys within the common areas.

7. Comparison With Chart 14824 (19th Edition, March 1, 1975)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and soundings ~~and obstructions~~ not readily ascertainable. The previously discussed prior surveys require no further consideration.

Eleven (11) charted soundings from the common area on the 1:80,000 charted area are from an unknown source. All charted soundings common to the survey area on the 1:10,000 inset are from an unknown source. The two rocks at latitude 41° 59.4' N, longitude 80° 29.3' W and latitude 41° 59.3' N, longitude 80° 29.5' W are from ~~an unknown source;~~ however, survey* 1-Conneaut Harbor, Ohio (1948) has eight (8) small rock symbols in the same general area. The present survey makes no mention of these rocks. Refer to Section L of the Descriptive Report.

The present survey is adequate, with the exception of the holiday, to supersede the charted hydrography, both of known and unknown sources, within the common area. The two rocks mentioned above should be retained on the chart.

* U.S. Lake Survey 1-1872 (1948)

* Same source - See QC Report - Item L

b. Aids to Navigation

There are no aids to navigation in the area of the present survey.

8. Compliance With Instructions

This survey adequately complies with the Project Instructions, except as noted below:

a. This survey does not comply with Section 4.3 of the Project Instructions as to effective field determination of survey adequacy as evidenced by the holiday referred to in paragraph 3.c. of this report.

b. This survey does not comply with Section 4.10 of the Project Instructions as to the required minimum number of bar checks for the determination of corrections to echo soundings.

9. Additional Field Work

This is an adequate basic survey with the exception of the holiday noted in paragraph 3.c. of this report. Additional field work is recommended to cover the holiday and also to define the low water line by hydrography in conjunction with photogrammetric operations.

Inspection Report
H-9656

Any verification errors regarding procedures and presentation of survey data detected during inspection by the Hydrographic Inspection Team have been corrected before submission for administrative approval. HIT comments regarding quality of field work, compliance with instructions, and adequacy of the survey have been incorporated within the Verifier's Report.

Examined and Approved:
Hydrographic Inspection Team
Date: 1/18/78

R.D. Sanocki, Acting Chief
Robert A. Trauschke, CDR, NOAA
Chief, Processing Division

Charles H. Nixon
Charles H. Nixon, CAPT, NOAA
Chief, Operations Division

R. D. Sanocki
R. D. Sanocki
Technical Assistant
Processing Division

C. Douglas Mason
C. Douglas Mason, LT, NOAA
Chief, Electronic Data
Processing Branch

Guy F. Trefethen
Guy F. Trefethen
Team Leader
Verification Branch

Approved/Forwarded

Robert C. Munson
Robert C. Munson
RADM, NOAA
Director, Atlantic Marine Center

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352/KWW

February 22, 1978

TO: A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman
Quality Evaluator

SUBJECT: Quality Control Report for H-9656 (1976), Ohio and Pennsylvania, South Shore of Lake Erie, East of Conneaut Harbor

A quality control inspection of H-9656 has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, decisions and actions by the verifier, and cartographic presentation of data.

Junctional sheets H-9655 (1976) on the west and H-9658 (1976) on the southwest are not available for a quality control inspection of the junctions, the adequacy of which will be considered during the course of their quality control inspections.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as discussed in the Verifier's Report, the HIT Report, and as follows:

1. The Field Water Level Note was inappropriately removed from the Descriptive Report during verification. Such a note is an integral part of the Descriptive Report and, as such, should remain in the Descriptive Report. (See provisional manual--section 5.3.5(2).) The absence of the Field Water Level Note hampered the certain determination of the water level station utilized to provide corrections for the hydrography on the present survey.

2. The formal Water Level Note was not included in the Descriptive Report during verification. It was therefore necessary to request the Water Level Approval Note during quality control evaluation. (See provisional manual--section 6.6(5).)

3. Numerous bottom characteristics were shown on the smooth sheet in a misleading manner during verification; e.g., "M rky" or "fne S rky."

The provisional manual (section 4.7) is considered insufficiently definitive in establishing the final annotation of such bottom characteristics on the smooth sheet. The bottom in such areas, however, is considered to be primarily composed of solid rock formations with a relatively thin covering of mud or sand and, as such, provides poor anchorage for vessels. In such cases, it is the preferred practice to annotate the smooth sheet exclusively as "rky" thereby indicating the predominant nature of the bottom.

4. Several bottom characteristics were incompletely annotated on the smooth sheet during verification; i.e., were lacking any reference to the observed color(s) of the particular bottom sample. (See provisional manual--sections 4.7.2 and 7.3.10.)

5. The shoreline east of longitude 80°27.00' on the verified smooth sheet was in conflict with the hydrography in the area which showed 3- and 4-foot depths inshore of the high water line. Since there is no available definitive source for the shoreline in the noted area and inasmuch as it is shown for orientation purposes only, the shoreline in the area of conflict as shown on the boat sheet of the present survey was transferred to the present smooth sheet in brown ink thus reconciling the noted conflicts.

Section 2 of the Verifier's Report is supplemented by the following:

The shoreline extending from longitude 80°26.35' to longitude 80°27.50' originates with the boat sheet of the present survey due to conflicts between the present hydrography and the Corps of Engineers' sources listed above.

6. Reference section 6 of the Verifier's Report:

The prior survey identified in the referenced section as 1-Conneaut Harbor, Ohio (1948) 1:10,000, is misidentified and should be listed as prior survey 1-1872 (1948) 1:10,000. Further, several additional prior surveys covering portions of the area common to the present survey were not considered during verification. In addition, the referenced section of the Verifier's Report does not indicate the general magnitude of depth differences between the present and prior surveys. (See provisional manual--section 6.6(11).)

Section 6 of the Verifier's Report is supplemented by the following:

a.

1-669	(1875)	1:10,000
1-672	(1875)	1:60,000
1-681	(1876)	1:10,000

These earlier surveys fall in the area of the present survey but are not discussed in the present report.

b. The following listing of prior surveys supersedes the incomplete listing in the referenced section of the Verifier's Report:

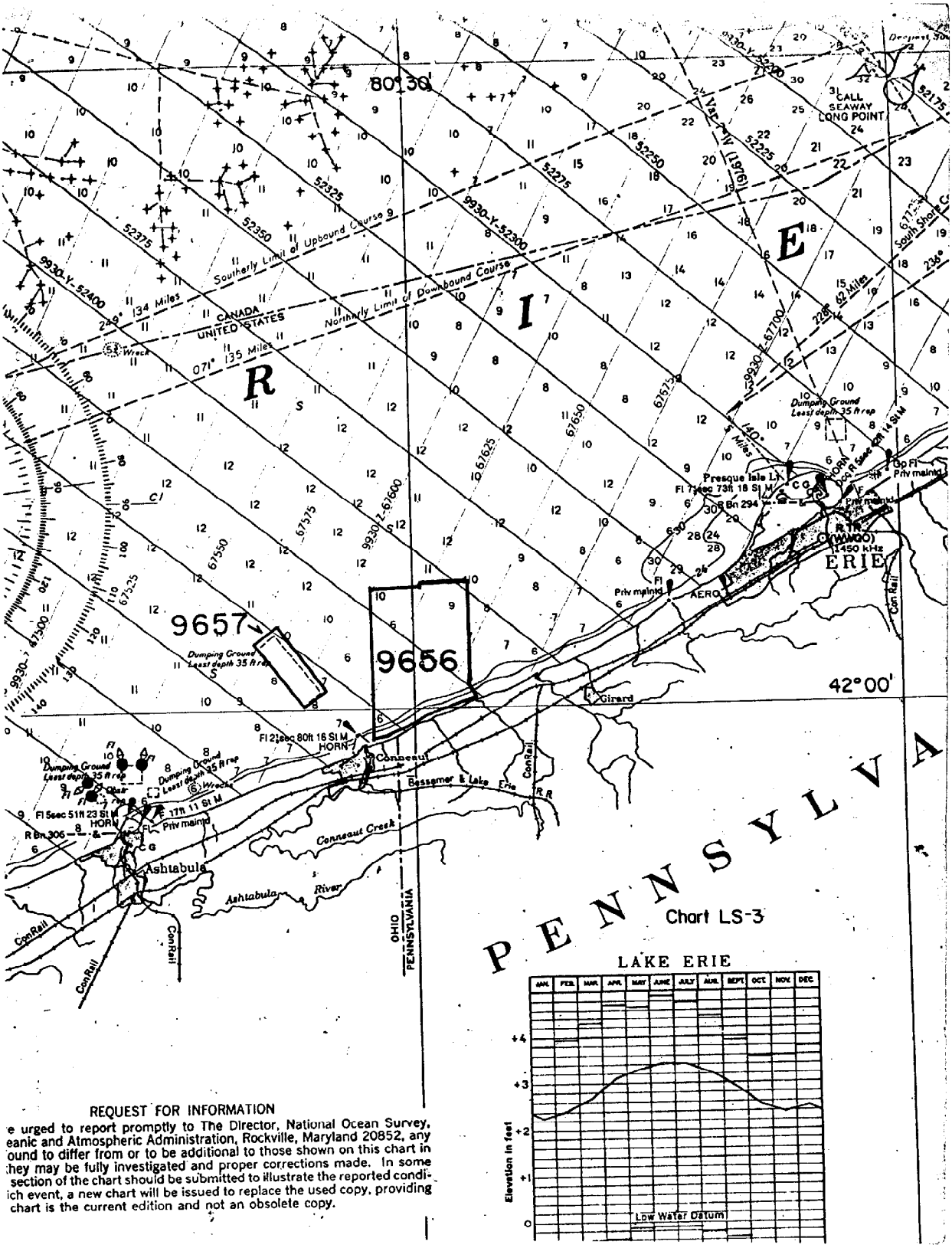
1-1602	(1932)	1:80,000
1-1709	(1937)	1:40,000
1-1713	(1937)	1:10,000
1-1792	(1940)	1:20,000
1-1872	(1948)	1:10,000
1-2038	(1960)	1:80,000

c. The general text of the discussion pertaining to the surveys listed in item b, above, is supplemented by the following:

There is a variable pattern of depth differences ranging from areas of stable depths to scattered depth differences of ±6 feet. Two rocks awash and a submerged rock in the vicinity of latitude 41°59.33', longitude 80°29.44' were carried forward to supplement the present survey.

7. The shoreline (shown in brown for orientation purposes only) on the present survey is identified as originating with U.S. Corps of Engineers surveys of 1948. In the immediate vicinity of latitude 41°59.35', longitude 80°29.25', however, there exists a discrepancy of approximately 125 meters between the brown shoreline shown on the present survey and the corresponding segment of shoreline as shown on prior Corps of Engineers survey 1-1872, also of 1948. Rectification of the noted discrepancy is precluded by the lack of any definitive source for the segment of shoreline in question; however, the shoreline in this area has been inked as shown by the hydrographer on the boat sheet.

cc:
C35
C351



REQUEST FOR INFORMATION

e urged to report promptly to The Director, National Ocean Survey, eanic and Atmospheric Administration, Rockville, Maryland 20852, any ound to differ from or to be additional to those shown on this chart in hey may be fully investigated and proper corrections made. In some section of the chart should be submitted to illustrate the reported condi- ich event, a new chart will be issued to replace the used copy, providing chart is the current edition and not an obsolete copy.

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9656

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
14820	9-29-78		~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. EXAM FOR CRITICAL CORR ONLY NONE APPLIED.
14824	1/23/80	J. Briggs	Full ~~Part Before~~ After ~~Verification~~ Review Inspection Signed Via
			Drawing No. 3 (Quality Controlled survey fully applied)
14820	12-21-81	B. Stennard	Full ~~Part Be~~fore After Verification Review Inspection Signed Via
			Drawing No. 5 applied thru chart 14824
14828	11-7-79	K Ross	Full Part Before After Verification Review Inspection Signed Via
			Drawing No. New Chart.
14820M	4-14-82	[illegible]	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 5 Appl in full thru #14828M
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
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			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63