9655

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-10-2-76

Office No. H-9655

LOCALITY

State OHIO

General Locality LAKE ERIE (SOUTH SHORE)

Locality VICINITY OF CONNEAUT

1976

CHIEF OF PARTY
William R. Daniels

LIBRARY & ARCHIVES

DATE August 2, 1978

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

9655

INDEX

✓= 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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-9655

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-10-2-76

State Ohio

General locality Lake Erie (South Shore)

Locality Vicinity of Conneaut

Scale 1:10,000 Date of survey July 21, 1976 - Aug 4, 1976

Instructions dated April 1, 1976 Project No. OPR-300-LA-76

Vessel NOAA Launch LAIDLY (1264), NOAA Launch 1638

Chief of party Lt. Cdr. William R. Daniels

Surveyed by R. Bagalay, J. Nahas

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

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

Graphic record checked by Scott Bradford

Protracted by - - - Automated plot by CALCOMP-618 (AMC)

Verification by AMC-Verification Branch D.V. Mason June 28, 1978

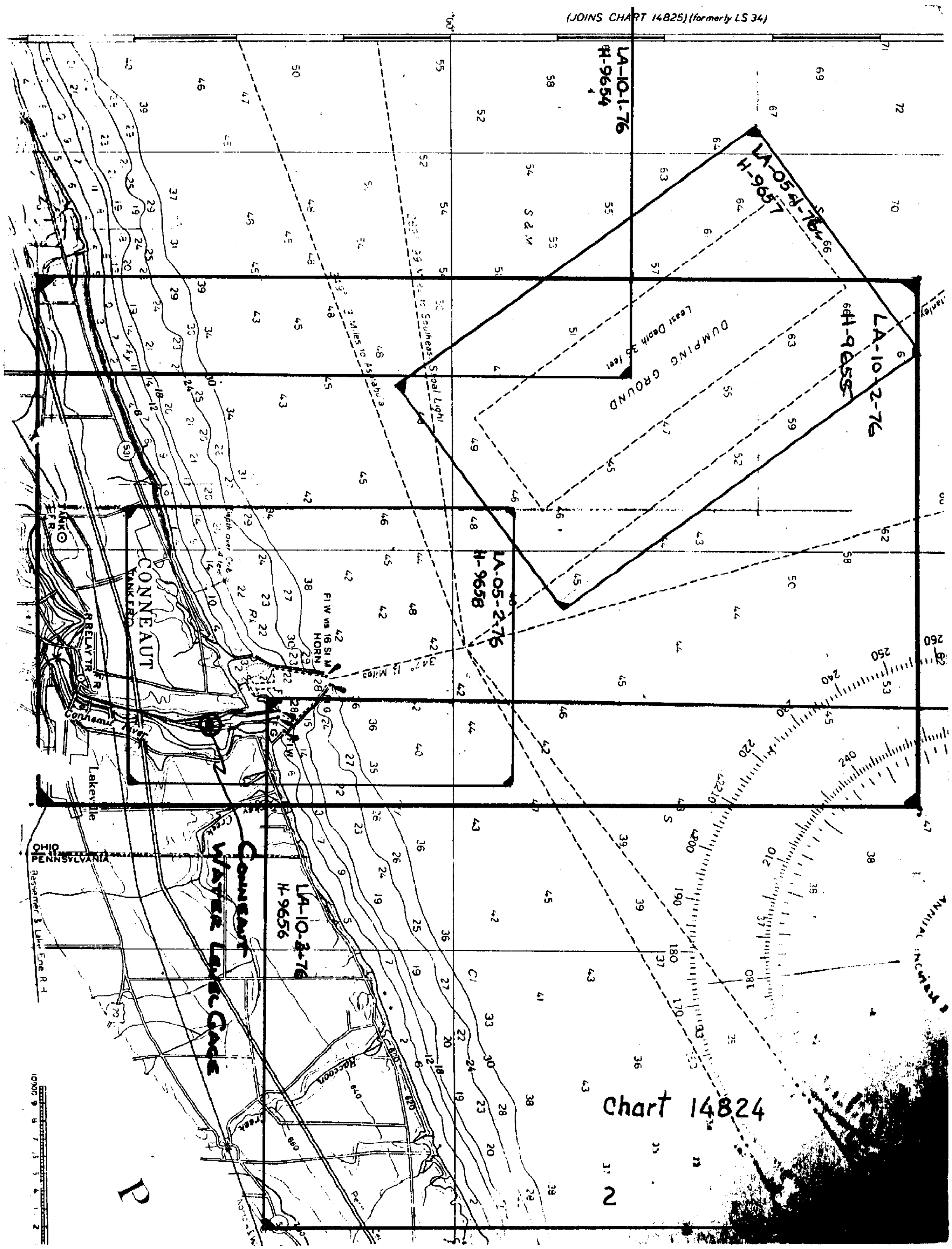
Soundings in ~~fathoms~~ feet at ~~MLW~~ ~~MLLW~~ Lake Erie LWD (568.6 ft., IGLD, 1955)

REMARKS:

Applied to chts 10/26/78

NOAA FORM 77-28 SUPERSEDES FORM C&GS-937.

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



(JOINS CHART 14825) (formerly LS 34)
LA-10-1-76
H-9654
LA-05-4-76
H-9657
LA-10-2-76
H-9655
DUMPING GROUND
Least Depth 36 feet
LA-05-2-76
H-9658
CONNEAUT
Conneaut Water Level Gage
LA-10-2-76
H-9656
OHIO
PENNSYLVANIA
Lakeville
Chart 14824
2

Descriptive Report to Accompany
Hydrographic Survey H-9655
(Field #LA-10-2-76)

SCALE: 10:000 YEAR: 1976
VESSEL: Hydrographic Surveys Branch CHIEF OF PARTY: William R. Daniels

A. Project

Project OPR-300-LA-76, Lake Erie (3-1/2 miles east of Ashtabula, Ohio, to 6 miles east of Erie, Pa.) is a combined total of 15 surveys. The survey described herein (2nd of five completed surveys) 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 5-1/2 miles west of Conneaut Harbor to 1/2 mile east of Conneaut Harbor. The area surveyed is bounded on the south by the 6 foot depth contour and by Survey H-9658 along Latitude 41°59'45"N. It extends offshore to just past the 60 foot depth contour and is bounded by Longitude's 80°38'00"W and 80°32'40"W. The survey was started on July 21, 1976, and was completed on August 4, 1976.

C. Sounding Vessel

The NOAA Launch LAIDLY (1264) was used for the majority of sounding on this survey. Launch 1638 was used for sounding in shoal areas. Launch 1264 used position numbers 1782-4070 and 1-54 (bottom samples). Launch 1638 used position number ~~2787-3060~~ 6789-8970.

D. Sounding Equipment

Sounding equipment used aboard the LAIDLY (1264) during the entire period of this survey was the Ross Fineline 5000 digital depth recorder, Serial Number 1087. The recorder operated well during the entire survey. The digitizer unit operated fairly well for the entire period of the survey, although due to a malfunction in the Hydroplot Controller, any given depth outputted through the Controller was rounded in the tenths digit to 0, 2 or 6. The depth units were logged fine, except on occasion, a plus four foot discrepancy would be logged. This discrepancy was due to a faulty connection between the Raytheon digitizer box and the Ross power supply. All discrepancies were found and corrected during scanning.

Deviations of the intial draft setting from the 0-foot line were noted on the fathogram during scanning and were taken into account when the soundings were corrected for the DE723 records. Regular phase checks were obtained for the Ross fathometer.

Sounding equipment used on Launch 1638 was a Raytheon DE-723-D #2043.

See appendix of this report for discussion of determination and tables for settlement and squat.

Fathometer instrument error was determined from the Direct Comparison Log, Column Q, Instrument Error (J-P). Instrument error was applied to the analog record during scanning of the digital and analog records.

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).

E. Hydrographic Sheets

DCU tapes containing depth and ranging data were generated by the data logger on board Launch 1638. This data was plotted off line using the Hydroplot system in the office processing trailer after raw tapes were merged with azimuth tapes to produce Range-azimuth master tapes.

Raw data master tapes from the LAIDLY (1264) were generated and data plotted on the boat sheet in real-time using the on-board Hydroplot system. Edited master and corrector tapes, velocity tapes, tide tapes (water level data), and TC/TI tapes were generated in both the LAIDLY and the field office trailer.

All data was smooth field plotted on two computer sheets. The final smooth plot and verification will be accomplished by the Verification Branch (CAM31), Atlantic Marine Center, Norfolk, VA.

F. Control Stations

Monumented third-order horizontal control stations used in this survey and listed on the survey sheet are: (039) Bridge LSC Hydro, 1974; (041) Luther LSC Hydro, 1974; (043) Harrington LSC, 1974; (044) Water LSC, 1974; (045) Ashtabula LT, 1974; (059) State Line LSC, 1975; (061) Dan's Beach LSC, 1974; (142) Rishavy, 1976; (143) Nevermore, 1976; (146) Susette, 1976. Monumented 2nd-order station used in this survey is CONN LSC, 1974. The Horizontal control used for this field survey was established to specifications set by the National Geodetic Survey and in compliance with the Hydrographic Manual.

G. Hydrographic Position Control

A Del Norte SHF electronic positioning system was used in the Range-Range mode to control positions taken by Launch 1264. Calibration was obtained by taking theodolite cuts from shore to the survey vessel along with simultaneous Del Norte readings. Program RK-562 was used to compute the calibration corrections.

Launch 1638 utilized Range-azimuth positioning procedures and a DCU (Digital Control Unit) for logging input data. This boat operated in shallow water inside the Banana area inherent in normal Range-Range positioning. The launch was operated in the time sharing mode with the LAIDLY. Calibration was obtained by direct comparison of a known distance with the Del Norte readings.

An abstract of equipment and stations used follows:

VESNO 1264 (LAIDLY)

Day 203			
Range 1	"B"	(047)	Conneaut LSC, 1974
Range 2	"A"	(041)	Luther LSC Hydro, 1974
Day 204, 208			
Range 1	"A"	(044)	Water LSC, 1974
Range 2	"C"	(041)	Luther LSC Hydro, 1974
Day 212			
Range 1	"B"	(047)	Conneaut LSC, 1974
Range 2	"A"	(041)	Luther LSC Hydro, 1974
Day 212			
Range 1	"C"	(044)	Water LSC, 1974
Range 2	"A"	(041)	Luther LSC Hydro, 1974
Day 215, 216, 217			
Range 1	"A"	(059)	State Line LSC, 1974
Range 2	"C"	(043)	Harington LSC, 1974
Day 239			
Range 1		(061)	Dan's Beach LSC, 1974
Range 2	"A"	(044)	Water LSC, 1974
Day 247			
Range 1	"B"	(043)	Harington LSC, 1974
Range 2	"A"	(039)	Bridge LSC Hydro, 1974
Day 253			
Range 1	"A"	(044)	Water LSC, 1974
Range 2	"C"	(041)	Luther LSC Hydro, 1974

VESNO 1638 (Range-Azimuth)

Day 222
Del Norte Unit "B" at 047 Conneaut LSC, 1974
Theodolite at 143 Nevermore, 1976, initial on 142 Rishavy, 1974.
Day 223
Del Norte Unit "D" at 047 Conneaut LSC, 1974
Theodolite at 047 initial on 045 Ashtabula LT, 1974
Day 224
Del Norte Unit "D" at 047 Conneaut LSC, 1974
Theodolite at 047 initial on 146 Susette, 1976

The following is a list of equipment and serial numbers used on VESNO 1264 during this survey.

VESNO 1264

Position Control
T/R Master Transponder (S/N 246) with OMNI 360° X 30° Antenna (S/N 412).
DMU Trisponder 202A with TSA (S/N 192).
Parallel Buffer, 200-1PLA (S/N 127).

Hydroplot System

DEC Hydroplot Controller	S/N 76005941-0700004
DEC Computer PDP 8/E	S/N PRO308130
DEC Reader/Punch	S/N 040314005
Teletype #1 ASR33	S/N 465065
Teletype #2 ASR33	S/N 453287
Complot DP 3/5 Plotter	S/N 5848-19

Sounding System

Ross Fineline 5000 Depth Recorder S/N 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° X 30° antenna (S/N 146)
DMU Trisponder 202A W/TSA (S/N 292)
Parallel Buffer 200-1 PLA 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)

The following is a list of equipment and serial numbers used as support equipment by both vessels.

Del Norte Support Equipment

Remote Transponders A (S/N 174), B S/N 244), C (S/N 256), D (S/N 264).
Remote Transponder A (S/N 667)
Master Transponder D (S/N 620)
OMNI Antenna 360 x 30 (S/N 147)
Sector Antennas 180 x 5 (S/N 049 and 011)
Directional Antennas 87 x 5 (S/N 150, 204, 162, 171).

Office Processing Hydroplot System

DEC Computer PDP 8/E (S/N PRO 309104)
DEC H.S. Reader/Punch (S/N 0211123)
Teletype #1 ASR-33 (S/N 458267)
Teletype #2 ASR-33 (S/N 436575)
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. FS-12, FS-16 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.

I. Crosslines

Crosslines were run at 15% of the main scheme hydrography. Crosslines are in good agreement with differences generally 1 foot or less.

J. Junctions

Junction with contemporary surveys H-9656 and H-9658, H-9654 and H-9657 accomplished during the 1976 field season is excellent. No other prior surveys junction with this survey.

K. Comparison with Prior Surveys

Comparison with GLS blue line field sheets FS15 and FS16 show good agreement with differences generally less than 2 feet. See Verification Report

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 NOS Chart 14824 (formerly LS33), 19th Edition, dated March 1, 1975, scale 1:80,000, shows good agreement. Depths agree generally within 1 to 2 feet.

M. Adequacy of Survey

This survey is complete and adequate to supersede prior surveys for charting.

N. Aids to Navigation

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

O. Statistics

VESNO 1264 (LAIDLY)

Number of positions	2345
Nautical miles of sounding line	335
Nautical miles of crossline	53
Square nautical miles surveyed	27
Number of bottom samples	54

VESNO 1638

Number of positions	168
Nautical miles of sounding line	27
Nautical miles of crossline	0
Square nautical miles surveyed.	2
Number of bottom samples	0

TOTALS - Both Vessels

Positions	2513
Miles of Sounding Lines	362
Square Miles	29
Miles of Crossline	53
Number of bottom samples	54

P. MISCELLANEOUS

None

Q. Recommendations

It is recommended that shoreline be obtained as soon as possible by conventional photogrammetric methods and that additional hydro should be collected in some areas between the 6-foot contour and 0-foot contour.

R. Automated Data Processing

Program Name	Number	Version
Range-Range real time hydroplot	RK111	1/30/76
Grid, signal and lattice plot	RK201	4/18/75
Range-Range non-real time plot	RK211	1/15/76
Visual Station Table Lead	RK212	4/01/74
Range-azimuth non-real time plot	RK216	2/05/76
Utility Computations	RK300	2/05/76
Reformat and Data Check	RK330	5/04/76
Geodetic Inverse/Direct Computation	RK407	10/23/75
Geodetic Utility Package	RK409	9/15/73
Predicted Tide Generator	AM500	11/10/72
Smooth tide generator	AM501	1/23/70
H/R Geodetic Calibration (By Azimuth)*	RK562	9/10/74
Elinore	AM602	5/20/75
Tape Duplicator	RK606	8/22/74

* Although RK562 has been removed from the hydroplot system program inventory, it was found advantageous to use the program due to the necessity to calibrate by azimuth (because of the heavy haze factor which makes it impossible to locate station signals).

S. References to Reports

None

Respectfully Submitted:

for Robert Lewis

John O. Rolland
Cdr., NOAA

WATER LEVEL NOTE

Water level reductions of soundings were based on a mean water level elevation from which a mean state was determined by taking the difference between the average lake elevation and the LWD of Lake Erie (568.6 ft., IGLD, 1955). The average stage was found to be - 4.0 ft. This data was then manually formulated into a tide tape format by the use of AM-602.

A separate tide tape (water level tape) for both Survey Boat 1638 and Survey Launch LAIDLY 1264 were generated.

The tide tapes generated for the smooth field sheet plot are subject to error and should be regenerated with hourly stage correctors determined from the Conneaut gage. The Ashtabula Harbor and Erie Harbor gages may serve as a "back-up" for the determination of the final correctors to be applied.

The final water level hourly and daily elevations of the Ashtabula, Conneaut, and Erie gages are available at:

Water Level Gaging Section
NOAA/National Ocean Survey
WSC-1, Room 622, C3314
6001 Executive Boulevard
Rockville, Maryland 20852

LOCATION OF WATER LEVEL GAGES

The Stevens gages were located at the U. S. Coast Guard Station, Ashtabula Harbor, and at the Pittsburgh and Conneaut Dock Company located in Conneaut, Ohio.

LOCATION - Ashtabula Harbor Gage (secondary)
Latitude - 41°54'10"
Longitude - 80°47'53"

PERIOD - May 13, 1976 thru October 4, 1976
206 days

LOCATION - Conneaut Gage (primary)
Latitude - 41°57'42"
Longitude - 80°32'51"

PERIOD - May 24, 1976 thru October 4, 1976
195 days

On May 13, 1976, replaced State of Ohio Stevens automatic gage located at Ashtabula Harbor (U.S. Coast Guard Station) with AMC/Hydro Section spring driven recorder SN 39740-64, Zero Electric Tape Reference gage was also installed on May 13, 1976.

On May 24, 1976, installed Stevens automatic gage (spring driven) at south end of the P&C Dock Company slip. The Zero electric tape gage was also installed on May 24, 1976.

May 2, 1977 CAM11/RAL

TO: Chief, Tides Branch, C331

FROM: John O. Rolland, CAM11
Chief, Hydro. Surveys Branch

SUBJECT: Request for water level data

Please furnish water level data to AMC Processing Division for Survey H-9655 (LA-10-2-76), Project OPR-300-LA-76.

Two gages were installed, one at the Pittsburg and Conneaut Dock Co., Conneaut, Ohio and the other at the U.S. Coast Guard Station Ashtabula, Ohio. The gage at Conneaut was in operation from 24 May 1976 to 4 October 1976. Records from these gages have been transmitted to Water Level Gaging Section, NOAA/NOS (C3314).

The following times of hydro are rounded off to the nearest hour before and after hydro:

Julian Day (1976)	Hydro Begins (GMT)	Hydro Ends (GMT)
203	1300	2000
204	1400	2000
208	1700	1900
212	1300	2000
215	1500	2200
216	1300	2100
217	1400	2400
222	1500	2000
223	2100	0100 (224)
224	1400	1600
239	2200	2300
247	1600	2000
253	1300	1800

cc: Processing

VESNO 1264 VELOCITY TABLE 1 LA-10-2-76 (N-9655)

```
000047 0 0000 0001 000 126400 100276
000097 0 0002
000245 0 0004
000343 0 0006
000441 0 0003
000300 0 0010
999999 0 0010
```

NOAA 59-11

LAIDLY (1264)

* U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1044 Region 6

DIRECT COMPARISONS
FOR SOUND VELOCITY
LA 10-2-76 (TABLE #1) H-9655
LA 10-1-76 (TABLE #3) H-9654

	10	15	20	25	30	35	40	45	50	55	60
204	+.3	+.3	+.4	+.4	+.6	+.8	+.8	+.9	+.9		
210	+.3	+.4	+.4	+.5	+.6						
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	+.5	+.6	+.6	+.8	+.9		
239	+.5	+.5	+.5	+.5	+.7	+.8	+.9				
Σ =	+1.9	+2.1	+2.4	+2.7	+3.5	+3.6	+3.9	+3.5	+3.6	+1.0	+1.0
MEAN =	+.32	+.35	+.40	+.45	+.58	+.72	+.78	+.88	+.90	+1.0	+1.0
MEAN =	+.3	+.4	+.4	+.5	+.6	+.7	+.8	+.9	+.9	+1.0	+1.0

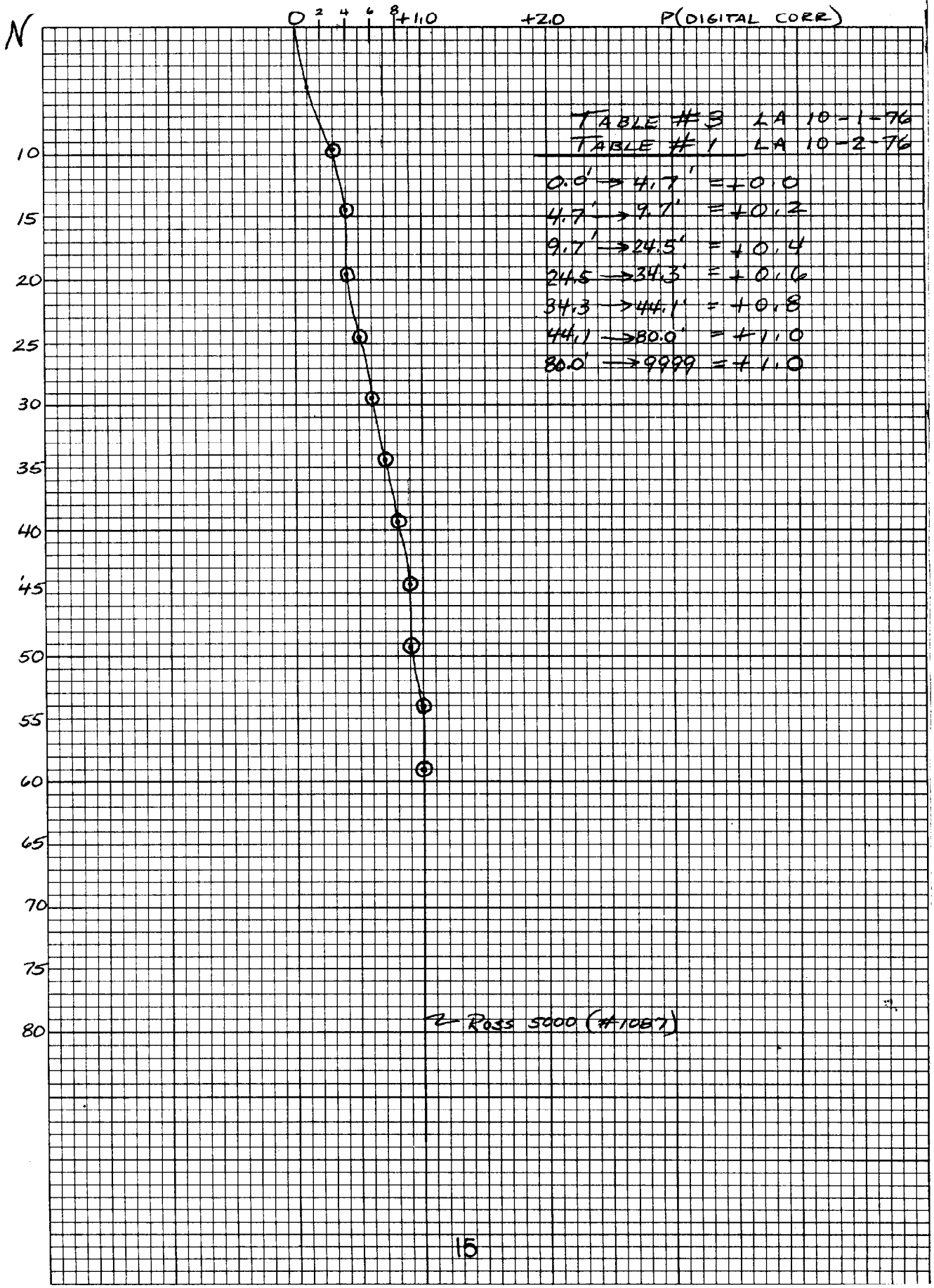
Ross 5000 (#1087)

TABLE 1

TRUE DEPTH − P = N

10	−	(+.3)	=	9.7
15	−	(+.4)	=	14.6
20	−	(+.4)	=	19.6
25	−	(+.5)	=	24.5
30	−	(+.6)	=	29.4
35	−	(+.7)	=	34.3
40	−	(+.8)	=	39.2
45	−	(+.9)	=	44.1
50	−	(+.9)	=	49.1
55	−	(+1.0)	=	54.0
60	−	(+1.0)	=	59.0

JHN

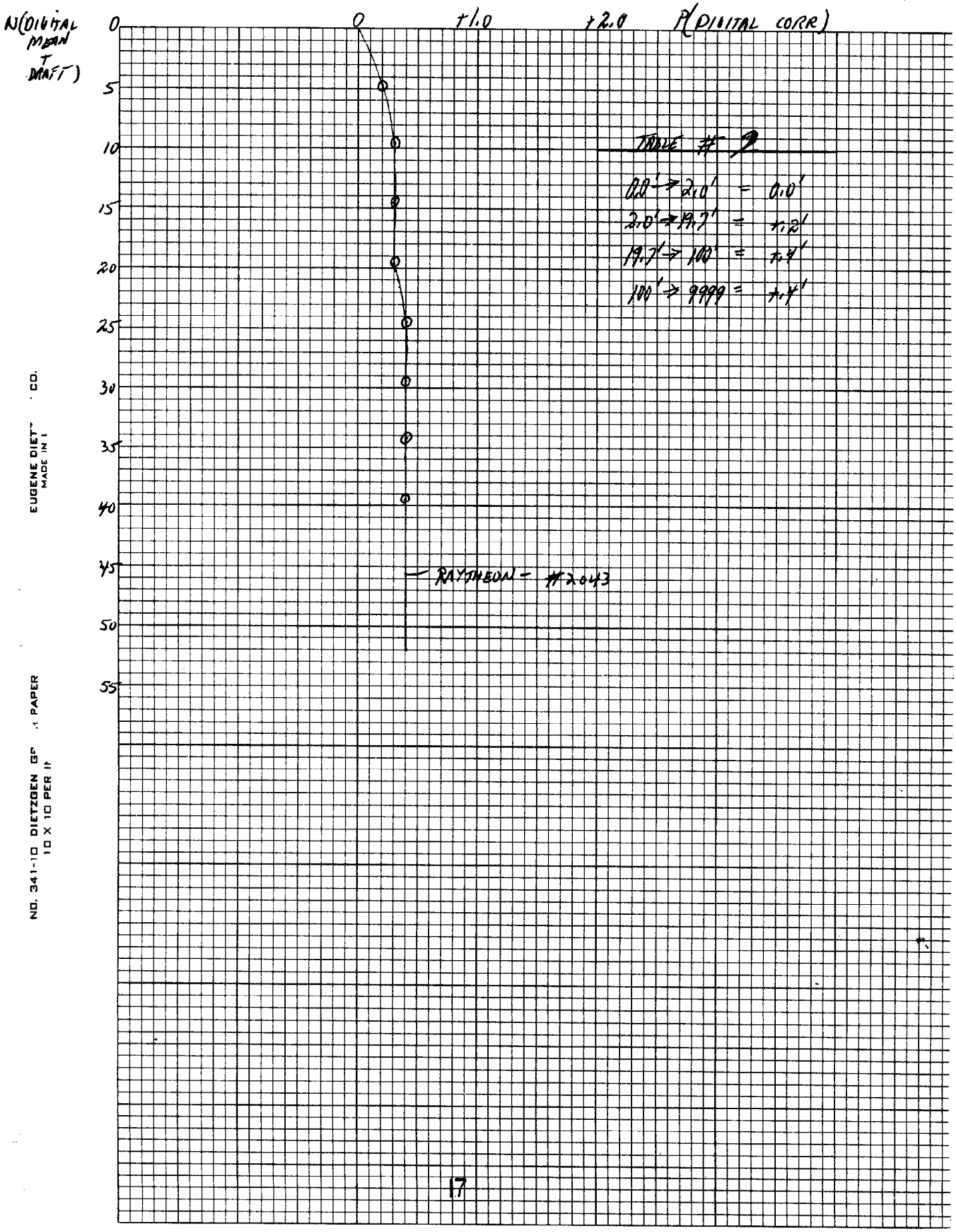


EUGENE DIETZGEN CO.
MADE IN U

NO. 341-10 DIETZGEN GR... PAPER
10 X 10 PER IN

VESNO 1638 VELOCITY TABLE 2 LA-10-2-76 (H-9655)

```
000020 0 0000 0002 000 163300 100276
000197 0 0002
001000 0 0004
999999 0 0004
```



EUGENE DIETZ CO.
MADE IN U.S.A.

NO. 341-10 DIETZGEN GRAPH PAPER
10 X 10 PER INCH

NOAA 59-11

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1044 Region 6

1638 DIRECT COMPARISON FOR SOUND VELOCITY

LA - 10-2-76

DAY	5	10	15	20	25	30	35	40
222	±.2	±.2	±.2	±.3	±.4	±.5		
223	±.2	±.4	±.3	±.4	±.4	±.5		
224	±.2	±.2	±.3	±.2	±.4	±.4	±.6	±.6
Σ	±.6	±.8	±.8	±.9	±1.2	±1.4	±.6	±.6
MEAN =	±.2	±.26	±.26	±.3	±.4	±.46	±.6	±.6
RD. MEAN	±.2	±.3	±.3	±.3	±.4	±.5	±.6	±.6

TABLE # 2

TRUE DEPTH − P = N

5 − (±.2) = 4.8
10 − (±.3) = 9.7
15 − (±.3) = 14.7
20 − (±.3) = 19.7
25 − (±.4) = 24.6
30 − (±.5) = 29.5
35 − (±.6) = 34.4
40 − (±.6) = 39.4

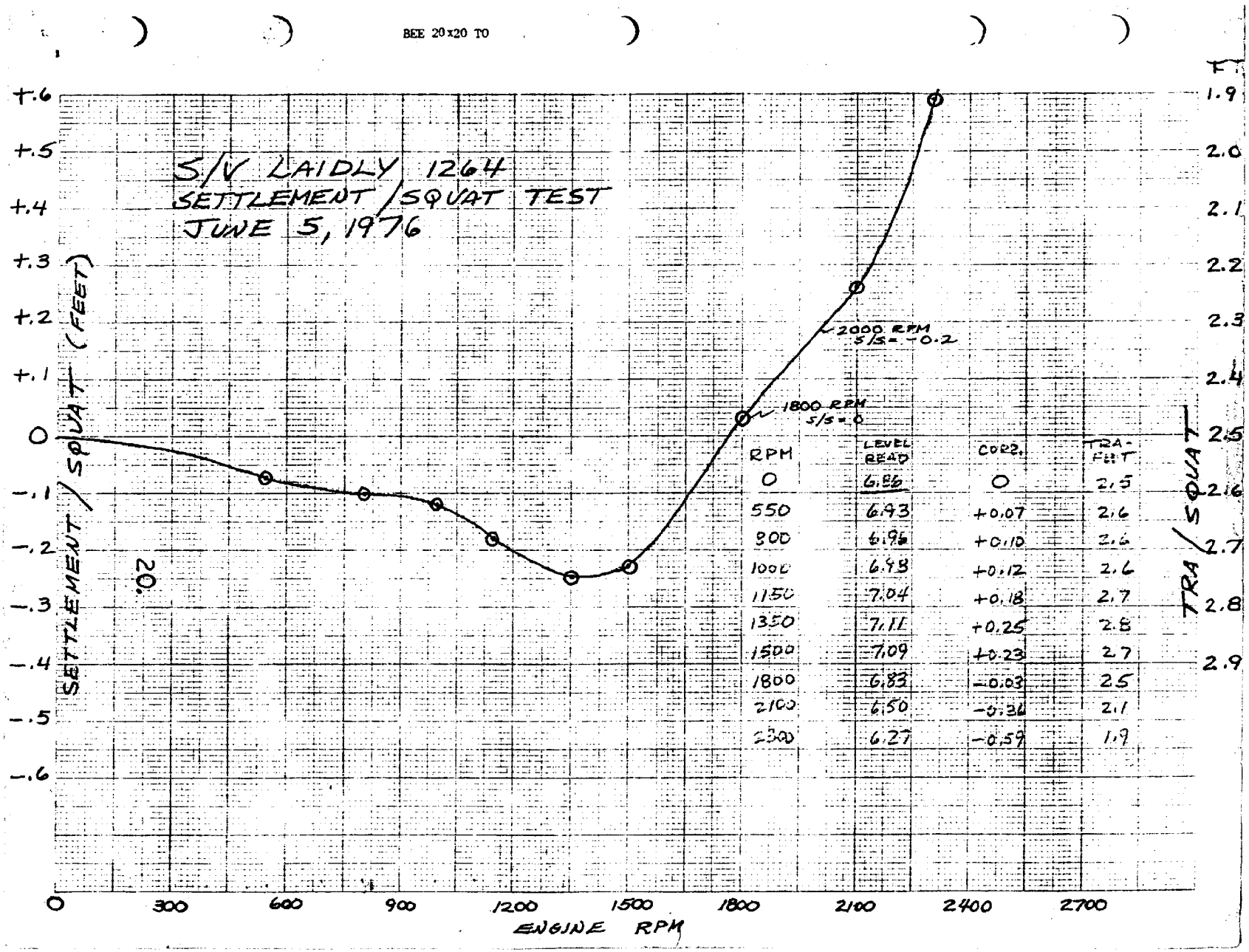
Settlement and squat tests were made on both launches on June 5, 1976. The tests were conducted inside the Fairport Harbor. The project depth of 25 feet was more than adequate for the tests and the harbor breakwalls provided protection from open lake sea swells. Test procedures were in accordance with recommendations in Section 4.9.4 of the Provisional Hydrographic Manual. An abstract of corrections follows.

Launch 1264 (LAIDLY)

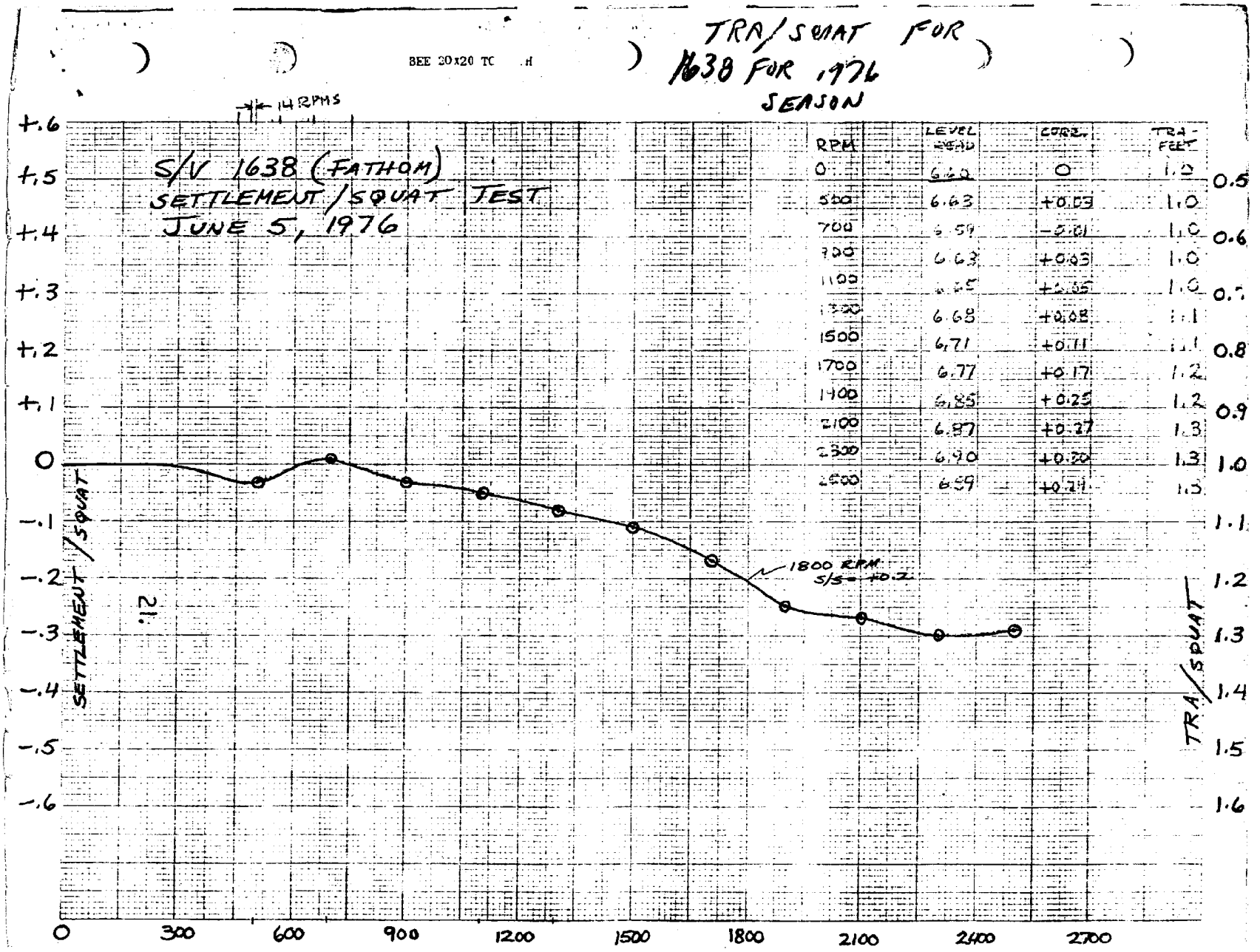
RPM	LEVEL READING (ft)	CORRECTION (ft)	TRA - FEET
0	6.86	0	2.5
550	6.93	+0.07	2.6
800	6.96	+0.10	2.6
1000	6.98	+0.12	2.6
1150	7.04	+0.18	2.7
1350	7.11	+0.25	2.8
1500	7.09	+0.23	2.7
1800	6.83	-0.03	2.5
2100	6.50	-0.36	2.1
2300	6.27	-0.59	1.9

Launch 1638

RPM	LEVEL READING (ft)	CORRECTION (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
2100	6.87	+0.27	1.3
2300	6.90	+0.30	1.3
2500	6.89	+0.29	1.3



RPM	LEVEL READ	COR2.	TRA-FWT
0	6.86	0	2.5
550	6.93	+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


TRA/SQUAT FOR 1638 FOR 1976 SEASON
BEE 20x20 TC H
14 RPMS
S/V 1638 (FATHOM)
SETTLEMENT/SQUAT TEST
JUNE 5, 1976
RPM
LEVEL HEAD
CORR.
TRA-FEET
0 6.20 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
2100 6.97 +0.37 1.3
2300 6.90 +0.30 1.3
2500 6.89 +0.29 1.3
1800 RPM S/S = +0.2
SETTLEMENT/SQUAT
TRA/SQUAT
+.6
+.5
+.4
+.3
+.2
+.1
0
-.1
-.2
-.3
-.4
-.5
-.6
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
0
300
600
900
1200
1500
1800
2100
2400
2700

LA 10-2-76, H-9655

Station List

039	7	41 55 19106	080 42 49449	250 0000 000000	Bridge LSC, 1974 (3rd Order) Quad 410804
041	7	41 56 33521	080 38 48123	250 0000 000000	Luther LSC, 1974 (3rd Order) Quad 410804
142	7	41 56 27483	080 39 08728	254 0028 000000	Rishavy , 1976 (3rd Order)
043	7	41 57 17026	080 35 48746	250 0000 000000	Harrington, LSC, 1974 (3rd Order) Quad 410804
143	7	41 57 15402	080 35 52530	254 0000 000000	Nevermore, 1974 (3rd Order)
044	7	41 57 39226	080 34 24367	250 0000 000000	Water LSC, 1974 (3rd Order) Quad 410804
045	7	41 55 06603	080 47 45260	139 0021 000000	Ashtabula Lt. 1974 (3rd Order) Quad 410804
146	7	41 58 03336	080 33 22584	254 0000 000000	Susette AMC, 1976 (3rd Order)
047	7	41 58 47501	080 33 29418	250 0022 000000	Conn LSC, 1974 (2nd Order) Quad 410804
059	7	41 58 38251	080 31 07745	250 0015 000000	State Line, 1975 (3rd Order) Quad 410804
061	7	42 00 07293	080 26 47396	250 0000 000000	Dans Beach, 1975 (3rd Order) Quad 420802

Third Order, CLASS 11 EODM Positioned Direct From Conn LSC, 1974 *

Third Order, CLASS 11 EODM Positioned Direct From Ashtabula LSC, 1974 **

Conn LSC, Second Order EODM Traverse Station (Cleveland to Buffalo Scheme)

Ashtabula LSC, Second Order EODM Traverse Station (cleveland to Buffalo Scheme)

APPROVAL SHEET

H-9655 (LA-10-2-76)

The acquisition of hydrographic data represented on LA-10-2-76 was accomplished under the supervision of Ronald R. Bagalay (25%) and Jerome M. Nahas (75%). The Descriptive Report was prepared by Cdr. John O. Rolland.

About 30% of the subsequent data processing was accomplished in the field by the temporary staff of the LSC Hydrographic Section personnel. The remaining 70% of the data processing and check scanning was accomplished by Jeffrey S. Bradford at the Atlantic Marine Center in the former LSC Hydro base trailer located in the AMC dispatching yard.

The hydrographic survey, LA-10-2-76, is considered to be complete and adequate to supersede previous surveys in the same area.

Approved and Forwarded

William R. Daniels

William R. Daniels
Chief, Hydrographic Surveys 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: July 21, 1976 to September 9, 1976

HYDROGRAPHIC SHEET: H-9655

OPR- 300-LA-76

Locality: Lake Erie

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

Remarks:

Philip C. Marris 7-19-78
Chief, Water Level Section

Don M. Spillman
Chief, Tides & Water Levels Branch

APPROVAL SHEET
FOR
SURVEY H- 9655

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 Hydrographic Manual. Exceptions are listed in the Verifier's Report.

Date: 7/11/78

Signed: Harry R. Smith

Title: Chief, Verification Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9655

GEOGRAPHIC NAMES

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	
CONNEAUT										1
LAKE ERIE										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
					APPROVED					18
					Chas. E. Harrington					19
					CHIEF GEOGRAPHER-C3X8					20
					18 AUG. 1978					21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

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

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

HYDROGRAPHIC SURVEY STATISTICS

H-9655

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	4
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		1			1-misc.data
CAHIERS	1-with Printouts					
VOLUMES	2					
BOXES			1-Smooth			

T-SHEET PRINTS *(List)*

SPECIAL REPORTS *(List)* 1- Chart Mark-up

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			2513
POSITIONS CHECKED		200	
POSITIONS REVISED		3	
SOUNDINGS REVISED		115	
SOUNDINGS ERRONEOUSLY SPACED		0	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)			
VERIFICATION OF CONTROL		2	
VERIFICATION OF POSITIONS		19	
VERIFICATION OF SOUNDINGS	4	45	
COMPILATION OF SMOOTH SHEET		34	
APPLICATION OF TOPOGRAPHY		0	
APPLICATION OF PHOTOBATHYMETRY		0	
JUNCTIONS		7	
COMPARISON WITH PRIOR SURVEYS & CHARTS		24	
VERIFIER'S REPORT		6	
OTHER			
TOTALS	4	137	141

Pre-Verification by F. Lamison	*Beginning Date* 05/26/77	*Ending Date* 05/26/77
Verification by F. Lamison, K. Ainsley, D. Mason	*Beginning Date* 06/18/77	*Ending Date* 06/28/78
Verification Check by H. Smith	*Time (Hours)* 4	*Date* 06/30/78
Marine Center Inspection by Hydrographic Inspection Team (AMC)	*Time (Hours)* 20	*Date* 07/11/78
Quality Control Inspection by R.W. Wellman	*Time (Hours)* 29	*Date* 8-18-78
Requirements Evaluation by D.J. Hill	*Time (Hours)* 1	*Date* 10/13/78

Camera: B. Myers 10/3/78 HW

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-9655

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 8/16/83 TIME REQUIRED_____ INITIALS LG

REMARKS:

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9655 FIELD NO. LA-10-2-76

Ohio, Lake Erie (South Shore)

SURVEYED: July 21, 1976 through August 4, 1976

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

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

CONTROL: Del-Norte
(Range-Range and
Range-Azimuth)

Chief of Party ..... W. Daniels
Surveyed by ..... R. Bagalay
..... J. Nahas
..... T. Hart
..... J. Beach
..... M. Reed
..... A. Kayser
..... M. Ristau
Automated Plot by ..... CALCOMP-618 Plotter (AMC)
Verified and Inked by ..... D. V. Mason DVM
June 28, 1978

1. Introduction

a. No unusual problems were encountered during the verification of this survey.

b. The projection parameter was revised during verification. The red changes in the Descriptive Report were made by the verifier.

2. Control and Shoreline

a. The source of control is adequately described under Sections F and G of the Descriptive Report.

b. No shoreline manuscripts were available at the time of the survey or during verification. Shoreline detail was transferred, in brown, from U.S. Lake Survey Blue Line Drawings, FS-15 and FS-16, 1948.

3. Hydrography

a. Depths at crossings are in excellent agreement.

b. The standard depth curves ~~were~~ are adequately delineated with the inclusion of the 24-foot supplemental curve to further delineate the bottom configuration. A 40-foot brown curve was added to further delineate a shoal area. There is no 0-foot curve. The survey stopped in 4 and 5 feet of water.

c. The development of bottom configuration and the investigation of least depths are considered adequate.

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, except as follows:

a. Sounding Volumes are considered useless for this survey. No stamps, position numbers, vessel speeds, hydro data, or anything else that pertains to hydrography is entered in the sounding volumes. what was!

b. Fathograms were not correctly annotated, stamps were not filled out, position numbers were triplicated, and two fathograms had no position numbers at all. On Julian Day 222 the first 21 positions of the fathogram are missing.

c. Corrector printouts were logged with the wrong electronic correctors. Changes are inked in red on the corrector printouts and the Electronic Corrector Abstract.

5. Junctions

Adequate junctions were effected with the following surveys:

H-9654 (1976) 1:10,000 to the west
H-9657 (1976) 1:5,000 to the northwest
H-9658 (1976) 1:5,000 to the southeast (Not available during Q.C. inspection)

A copy of H-9656 (1976) 1:10,000 is not available at the Atlantic Marine Center. An effective junction with this survey should be made by Quality Control. (See Q.C. Report - item 2)

An adequate junction could not be effected with H-9658 to the east, due to a 150-meter gap between the two surveys.

There are no contemporary surveys to the north.

6. Comparison With Prior Surveys

(See Q.C. Report - item 3)

1-1709 (1937) 1:40,000 ← { 1-1713 (1937) 1:10,000
1-1871 (1948) 1:10,000 ← { 1-1792 (1940) 1:20,000
1-2038 (1960) 1:80,000

Comparison with the above prior surveys, ~~are in~~ revealed depths to be in generally good agreement* and no discussion is necessary, except inshore prior survey 1-1871 is 1 to 3 feet shoaler than the present survey. This may be attributed to survey methods and natural changes in the area. * Scattered depth differences of as much as ± 4 ft. are noted.

The present survey is adequate to supersede all of the above prior surveys in 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 requires no further consideration.

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

b. Aids to Navigation

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

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 an excellent basic survey and no additional field work is recommended.

Inspection Report
H-9655

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:

Robert A. Trauschke, CDR, NOAA
Chief, Processing Division

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

R. D. Sanocki
Technical Assistant
Processing Division

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

Guy F. Trefethen
Team Leader
Verification Branch

Approved/Forwarded

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

August 18, 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-9655 (1976), Ohio, Lake Erie (South Shore), Vicinity of Conneaut

A quality control inspection of H-9655 was accomplished to monitor the survey for obvious deficiencies with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, junctions, shoreline transfer, verifier's decisions and actions, and cartographic presentation of data.

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 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 inspection. (See section 6.6(5) of the Hydrographic Manual - Fourth Edition.)

2. The junctional note for H-9656 on the east was not inked on the smooth sheet. However, a statement to the effect that an adequate junction was made with H-9655 is included in the Verifier's Report of H-9656. The following comment pertaining to the aforementioned junction should have been stated in section 5 of the Verifier's Report:

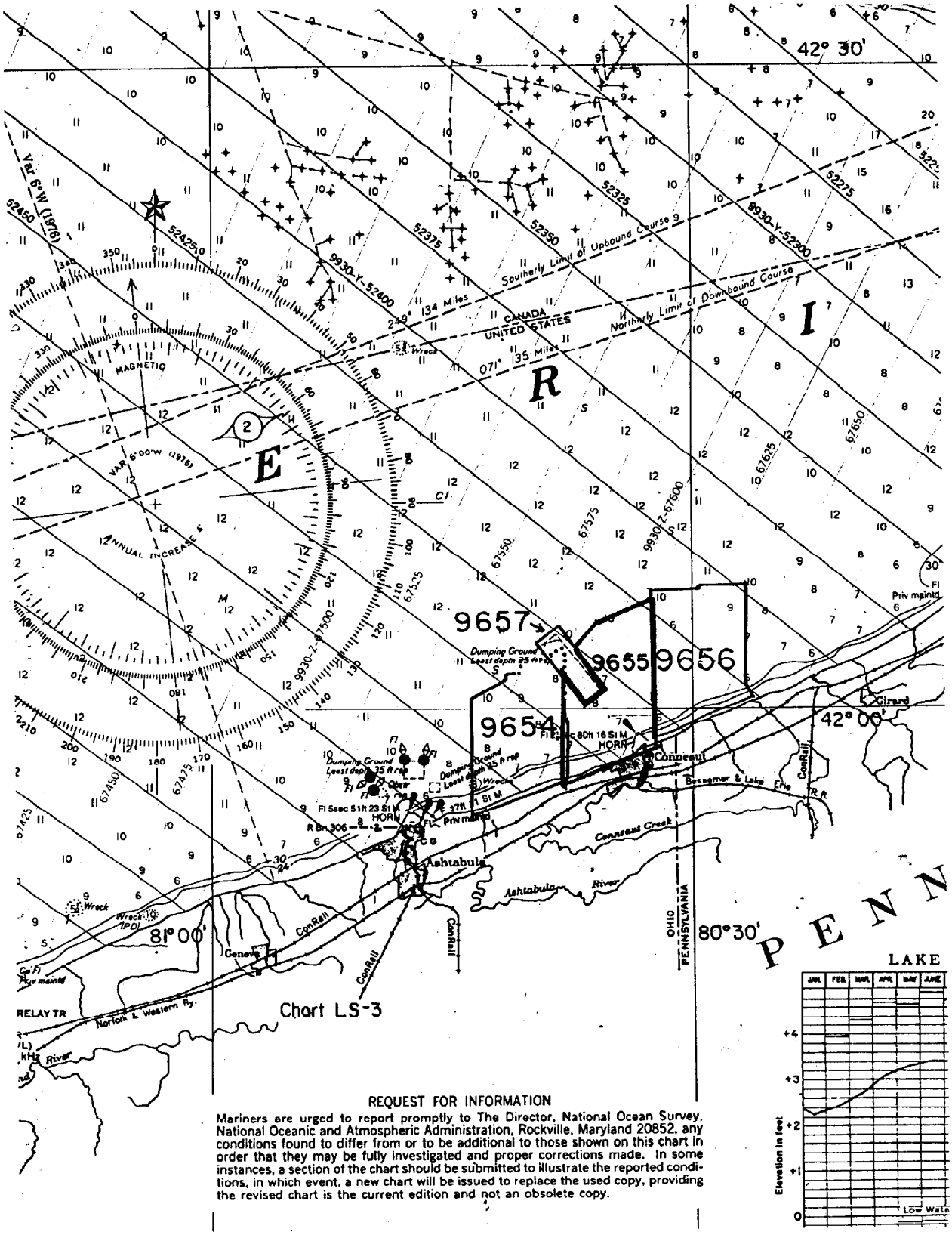
"The junction on the east with H-9656 (1976) was discussed in the Verifier's Report for that survey."

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

Two additional prior surveys cover portions of the present survey area and should have been included in the referenced section. They were added to the listed prior surveys and comparisons were effected during the quality control inspection.

4. Geographic names should have been lettered "lightly in pencil" on the smooth sheet during verification. They were added to the smooth sheet during quality control inspection. (See section 7.3.12.3 of the Hydrographic Manual - Fourth Edition.)

cc:
C35
C351



REQUEST FOR INFORMATION

Mariners are urged to report promptly to The Director, National Ocean Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20852, any conditions found to differ from or to be additional to those shown on this chart in order that they may be fully investigated and proper corrections made. In some instances, a section of the chart should be submitted to illustrate the reported conditions, in which event, a new chart will be issued to replace the used copy, providing the revised 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. H-9655

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	11-30-78	E Clark	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. 3 EXAM FOR CRITICAL CORRECTIONS NONE APPLD.
14824	1/25/80	J. Briggs	Full ~~Part Before~~ After ~~Verification~~ Review Inspection Signed Via
			Drawing No. 3 (quality controlled sheet) Fully applied
14820	12-17-81	B. Stannard	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 5 applied thru chart 14824.
14828	11-7-74	A Blass	Full Part Before After Verification Review Inspection Signed Via
			Drawing No. New Chart
14820M	4-14-82	Mary B. Morris	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 5 Appl'd 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
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-978.

USCOMM-DC 8558-P63