

9537

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-10-3-74
Office No..... H-9537

LOCALITY

State OHIO
General Locality LAKE ERIE (SOUTH SHORE)
Locality APPROACHES TO FAIRPORT HARBOR

1974

CHIEF OF PARTY
Teddy D. Kuchciak

LIBRARY & ARCHIVES

DATE March 26, 1979

☆ U.S. GOV. PRINTING OFFICE: 1976-600-441

9537

Area 7

Chart

14837

14825

14520

14820M - Rep. 100 (4-12-62)

INDEX

	Page
Hydrographic Title Sheet.....	1
Boatsheet Layout.....	2
A. Project.....	3
B. Area Surveyed.....	3
C. Sounding Vessel.....	3
D. Sounding Equipment and Corrections to Echo Soundings.....	3-4
E. Hydrographic Sheets.....	4
F. Control Stations.....	4
G. Hydrographic Position Control.....	5-6
H. Shoreline.....	6
I. Crosslines.....	6
J. Junctions.....	6
K. Comparison with Prior Surveys.....	6-7
L. Comparison with Chart.....	7
M. Adequacy of Survey.....	7
N. Aids to Navigation.....	7
O. Statistics.....	8
P. Miscellaneous.....	8
Q. Recommendations.....	8
R. Automated Data Processing.....	9
S. Reference to Reports.....	9
✓ Projection Parameters.....	10-11
Field Tide or Water Level Notes.....	12
Geographic Names List.....	None
✓ Abstract of Corrections to Echo Soundings/TC-TI.....	13- 15 <small>(Page 21-23 Removed)</small>
✓ Abstract of Corrections to Electronic Position Control.....	26-27
List of Stations (Signal List).....	28
✓ Abstract of Positions.....	29-31
✓ Bottom Samples (NOAA Form 75-44).....	32-34
Landmarks for Charts (NOAA Form 76-40).....	35
Approval Sheet.....	None

✓ = Misc. items have been removed and filed with the field records

Applied to stds 6/11/79
[Signature]

HYDROGRAPHIC TITLE SHEET

H-9537

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 10-3-74

State Ohio

General locality South Shore, Lake Erie (South Shore)

Locality Approaches
~~Mentor Harbor~~ to Fairport Harbor

Scale 1:10,000 (~~Inset 1:5,000~~) Date of survey 7/1 - 9/8 1974
~~7/22-8/18/74; 8/30 7/2/75~~

Instructions dated June 20, 1974 Project No. OPR-300-LA-74

Vessel NOAA Launch Laidly 1264 & Survey Boat 1638

Chief of party Teddy D. Kuchciak

Surveyed by Teddy D. Kuchciak & Ronald R. Bagalay

Soundings taken by echo sounder, hand lead, pole Raytheon 723-D

Graphic record scaled by LSC Hydrographic Section Personnel

Graphic record checked by J. M. Nahas

Protracted by AMC Xyrec plotter 1201
Automated plot by AMC Calcomp 618

Verification by AMC Verifications Branch

Soundings in fathoms feet at MLW MLLW LWD Lake Erie 568.6 feet IGLD (1955)

REMARKS: All times are Greenwich Civil Time, unless otherwise noted
as Eastern Standard Time.

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9537
(LA 10-3-74)

Scale : 1:10,000 (~~Inset at 1:5,000~~)
Vessel: NOAA Launch 1264 and SB 1638

Year: 1974/1975
OIC : Kuchciak

1:5000 sheet registered as H-9766 (1974)

A. PROJECT

Project OPR-300-LA-74 (Moss Point to eight miles east of Fairport Harbor, Ohio) is a combined total of four surveys. The survey described herein (third of four) was accomplished in accordance with Project Instructions, OPR-300-LA-74, dated June 20, 1974.

B. AREA SURVEYED

The survey was made in the inshore waters along the south shore of Lake Erie, extending from Mentor Harbor to Fairport Harbor, Ohio. The area surveyed extends from within the six-foot depth contour to beyond the forty-foot depth contour and is bounded by Longitudes $81^{\circ}20'0$ and $81^{\circ}13'9$. The survey was started on ~~June 22, 1974~~ ^{July 22}, 1974, and was completed September 10⁷, 1974. ~~Additional field work was accomplished June 30th to July 1st and on July 17, 1975.~~

C. SOUNDING VESSEL

The NOAA Launch LAIDLAY (1264) and Survey Boat 1638 were used exclusively to accomplish the survey. Regular or deeper sounding operations performed by the LAIDLAY involved Position Numbers 3934-4921 and Investigation Soundings 1-59, inclusive, (see P, MISCELLANEOUS, for Survey Boat 1638, position numbers).

D. SOUNDING EQUIPMENT

Sounding equipment used aboard the LAIDLAY (1264) was the Raytheon 723-D, digital depth recorder, SN 1278, during the entire 1974 period of this survey. Digital depth recorder, SN 2928, was used during the 1975 work. The digital depth recorder operated well for the entire survey.

Sounding equipment used aboard Survey Boat 1638, was the Raytheon 723-D, SN 2042, during the entire period of this survey. The Raytheon recorder and digitizer operated very well for the entire survey.

CORRECTIONS TO ECHO SOUNDINGS

1. Velocity of sound correctors were derived from the Direct Comparison Log, Column P, Corr. (C-N).
2. Deviations of the initial draft setting from the 0-foot line were noted on the fathogram during scanning and were taken into account when the sounding records were corrected.
3. Fathometer instrument error was determined from the Direct Comparison Log, Column Q, Instrument Error (J-PO). Instrument error was applied to the analog record during scanning of the digital and analog records. Corrections to the master tape were applied via the corrector tape.
4. 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 LAIDLAY (1264) and 1.5 feet for SB 1638 by conventionally approved methods.

5. Settlement and squat tests were made on VESNO 1264 in accordance with recommendations in Section 4.9.4 of the Provisional Hydrographic Manual. (See Page 20 for test results).

E. HYDROGRAPHIC SHEETS

DCU tapes containing depth and ranging data were generated by the data logger on board Survey Boat 1638. These data were plotted off line, using the hydroplot system located in the field office trailer after DCU (raw) tapes were merged with azimuth tapes producing range-azimuth master tapes. Corrector tapes, velocity tapes, and signal tapes were generated in the HSB office by Mr. Nahas. Raw data master tapes from the LAIDLAY (VESNO 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/TT tapes were generated in the HSB office by Mr. Nahas. Final verification of the smooth plot will be accomplished by the verification Branch (CAM31), AMC.

F. CONTROL STATIONS

Monumented 2nd order horizontal control station used for this survey is (011) FAIRPORT LSC, 1974.

Monumented 3rd order electronic control stations used for this survey are (006) Mentor HBR YC LSC, 1974; ~~(007) FAIRPORT W BKN LT. 1974~~, (008) CORDUROY LSC 1974; ~~(019) FAIRPORT WEST PIER LIGHT (FR), 1974~~; (021) HARDY LSC, 1974; (022) BACON LSC, 1974; (125) HEADLANDS LSC, 1974; (123) SEAGULL LSC, 1974 and (302) FAIRPORT, OLD FAIRPORT LIGHTHOUSE, 1974.

Unmonumented electronic control station (017) HYDRO - X was also used for control.

G. HYDROGRAPHIC POSITION CONTROL

A Del Norte SHF electronic positioning system was used in the range-range positioning mode to control limits of the survey for the launch LAIDL Y (1264) during hydrographic data acquisition on Sheet LA 10-3-74.

Survey Boat (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.

Electronic control, sounding associated hydroplot equipment aboard the Launch LAIDL Y (1264).

Del Norte SHF Electronic Positioning System

T/R Master Transponder with Omni 360° x 30° antenna	SN 246
DMU Trisponder 202A	SN 192
Parallel Buffer, 200-IPIA	SN 127

Hydroplot System

D.E.C. Hydroplot Controller	SN 76005941-0700004
D.E.C. Computer PDP8-E (8K-Memory)	SN PRO 308130
D.E.C. High Speed Reader/Punch	SN 0211123-0256239

Teletype ASR-33	SN 465065
Teletype ASR-33	SN 465202

Complot DP-3/5 Plotter	SN 5279
------------------------	---------

Sounding System

Raytheon 723D, Digital Depth Recorder	SN 1278
---------------------------------------	---------

Electronic control equipment comprising the shore stations.

Del Norte SHF Electronic Positioning System

Remote Transponder	A	SN 174
"	"	SN 244
"	"	SN 256
"	"	SN 264

Four directional antennas were marked A, B, C, and D and were used with corresponding remote transponders.

CALIBRATION FOR LAUNCH 1264 AND SURVEY BOAT 1638

Calibration of the LAIDL Y (VESNO 1264) was accomplished by the use of the sextant method (using RK 561 to compute the Del Norte corrections). Generally, at least four sets of

calibrations were taken in the morning and corrections entered into the Hydroplot Controller before starting hydro operations. At the end of the day, four more sets of calibrations were taken and meaned. The mean of the two series of calibrations usually checked within ± 2 meters. All series of calibrations from the same control network were meaned and applied to the corrector tape during the final field processing stage.

Calibration of the Survey Boat (1638) when running R/R hydro was accomplished by the use of the sextant method (using RK 561 to compute the Del Norte corrections).

Generally, at least four sets of calibrations were taken before and after hydro operations. The mean of the two series of calibrations usually checked within ± 2 meters. All series of calibrations from the same control network were meaned and applied to the corrector tape during the final field processing stage. During R/A hydro, baseline calibrations were made by placing the T/R over desired hydrographic control stations and values would be monitored (over a measured baseline) and recorded in the hydrographic Log (Form 275). The values would then be compared to the length of the baseline or the inverse distance between control points used and a \pm correction would be applied to the Del Norte range via the corrector tape and was applied during the final processing stage.

H. SHORELINE

Shoreline detail for this survey was transferred from shoreline manuscript T.P. 00947, 1977, Mentor Headlands 1:5000 scale.
~~Due to extensive beach erosion along the south shore of the Lake Erie, it is intended to photogrammetrically update the shoreline depiction in the near future. Shoreline will not be used on this survey, except for approximate shoreline that is from the U.S. Lake Survey Composite, (blue line) labeled Field Sheet 10 and dated 1948, (See recommendations).~~

I. CROSSLINES

Approximately 9 % of the hydrography data collected on LA 10-3-74 resulted from crosslines. The crossline agreement was very good and in most instances checked within one foot.

Regular lines acquired by Survey Boat 1638 junctioned with the main scheme lines run by the LAIDL. Excellent agreement was obtained with soundings checking one foot or less.

J. JUNCTIONS

LA 05-1-74 H-9766
Junction with Contemporary Survey LA 10-2-74, H-9536 and LA 10-4-74, H-9538 accomplished during the 1974 field season is very good.

K. COMPARISON WITH PRIOR SURVEYS

Comparison with U.S. Lake Survey, Field Sheet 10, composite of prior surveys (blue line) dated 1942, 1948 and current edition of the chart, dated November 23, 1974, shows good agreement below the twenty-foot contour with differences generally two feet or less. Depths shoaler than 24 feet had erratic comparisons. This was especially observable on the southwest portion of the field sheet where depths varied 2-8 feet.

The inconsistency in the shoaler water is very possibly attributable to the extensive erosion of the Lake Erie shoreline.

The much greater density of sounding coverage in the 1974 surveys provide a more detailed development of depth contour than do the prior surveys.

L. COMPARISON WITH THE CHART

Comparison with NOS Chart 14825 (formerly LS 34, dated November 5, 1971, ^{Chart 14825} 8/11/23/74 scale 1:80,000) shows very good agreement. Depths are generally within two feet.

M. ADEQUACY OF SURVEY

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

N. AIDS TO NAVIGATION

There are no aids to navigation within the survey area.

~~Three buoys, two cribs and one fixed aid marking a crib were located in 1975. These features were all located by transit intersection from shore control stations. Position computation print outs for these features are included in the separates following the text of this report.~~

~~Black Buoy #1 at Lat. $41^{\circ} 06.4''N$, Long. $81^{\circ} 15' 47.1''W$ serves to mark two cribs. This buoy is privately maintained and should remain charted.~~

~~A second buoy at Lat. $41^{\circ} 46' 05.1''N$, Long. $81^{\circ} 15' 47.3''W$ made from a bleach bottle closely marked the location of the submerged one of the two cribs mentioned above. This buoy is temporary, unmaintained and should remain uncharted.~~

~~One of the two cribs was located at Lat $41^{\circ} 46' 05.4''N$, Long. $81^{\circ} 15' 45.6''W$. A second crib was located at Lat. $41^{\circ} 46' 05.1''N$, Long. $81^{\circ} 15' 47.4''W$ and was noted to be submerged. No direct measurement of the height or depth of these two cribs was recorded in the field records but the Chief of Party did note in 1978 that both would have bared approximately 4 to 6 feet above lake datum. It is recommended that both cribs remain charted and that they be shown to bare above lake datum.~~

~~A third buoy located at Lat. $41^{\circ} 45' 40.9''N$ and Long. $81^{\circ} 16' 34.4''W$ also constructed from a bleach bottle was placed by divers inside Fairport harbor to mark the location of a submerged wreck of a schooner approximately 50 feet in length. The wreck is flat with the bottom. Since the buoy was temporary and since the wreck does not constitute a hazard to navigation it is recommended that neither the wreck nor the buoy be charted.~~

~~A fixed aid atop a third crib was located at Lat. $41^{\circ} 45' 39.2''N$ and Long. $81^{\circ} 15' 40.9''W$. Third order Class I survey methods were not used to locate the fixed aid. The height of this light (No. 560) from the USCG Light List Volume IV 1978 is 15 feet above the water. This elevation was not verified in the field. This light and crib should remain charted.~~

Items are contained on H-9766

O. STATISTICS

(S/V LAIDLY, VESNO 1264)

Number of positions	998
Nautical miles of sounding line	191
Square nautical miles	10
Nautical miles of crosslines	18
Number of bottom samples	32

(SURVEY BOAT 1638)

Number of positions	142B
Nautical miles of sounding lines	140
Square nautical miles	5
Nautical miles of crosslines	10
Number of bottom samples	0

TOTALS OF BOTH VESSELS

Positions	2426
Miles of sounding lines	331
Square miles	15
Miles of crosslines	28
Number of bottom samples	32

P. MISCELLANEOUS

1. LA 10-3-74 (H-9537) may at times be improperly referred to as "F.S.10" or "1-2340.40." This is due to the transition of the U.S. Lake Survey filing system into the NOS system.

2. LAIDLY position numbers started at 3934 on the 224 day rather than 0001.

3. Survey Boat 1638 position numbers are ~~not consecutive from one day to the next. Each days position numbers start at 0001, except for Julian Day 228 where the position numbers are consecutive with that of the 227 day.~~ ⁰⁰¹⁻¹²⁵

4. Bottom sample position numbers ~~23-54 are duplicated with hydrographic position numbers from Survey Boat 1638 on all hydro days excluding the 228 day.~~ ^{are 4932-4963}

5. ~~The Corps of Engineers has submitted the most recent soundings taken and dredging limits in the Fairport Harbor entrance and Fairport Channel project depth is that of 23 ft. dated 4/29/77.~~

Q. RECOMMENDATIONS

It is recommended that shoreline be obtained from recently completed Vermilion to Fairport, Ohio, Photogrammetric Survey (See Enclosure "2").

Has been Done

R. AUTOMATED DATA PROCESSING

<u>Program Name</u>	<u>Number</u>	<u>Version</u>
Range-range real time	RK 111	8/07/74
Grid signal & lattice plot	RK 201	4/18/75
Range-range non-real time	RK 211	1/15/76
Visual station table load	RK 212	4/01/74
Range-azimuth non-real time	RK 216	2/05/76
Utility computations	RK 300	2/05/76
Reformat & data check	RK 330	5/04/76
Geodetic inverse/direct comp.	RK 407	10/23/75
H/R geodetic calibration	RK 561	2/19/75
Elinore-line editor	RK 606	5/20/75

S. REFERENCE TO REPORTS

None

Respectively submitted,



Jerome M. Nahas

PARAMETER TAPE LIST

OPR 300
LA 10-3-74
H 9537

SHEET (A), SKEW=90,21,36
FEST=40000
CLAT=4603000
CMER=81/18/00
GRID=30
PLSCL=10000
PLAT=41/43/24
PLON=81/17/12
VESNO=1264
YR=74
ANDIST=00.0

SHEET (B), SKEW=90,21,36
FEST=40000
CLAT=4603000
CMER=81/18/00
GRID=30
PLSCL=10000
PLAT=41/43/24
PLON=81/13/55
VESNO=1264
YR=74
ANDIST=00.0

SHEET (C), SKEW= 90,21,36
FEST=40000
CLAT=4603000
CMER=81/18/00
GRID=15
PLSCL=5000
PLAT=41/44/03
PLON=81/16/35
VESNO=1638
YR=74
ANDIST=00.0

SHEET (D), SKEW= 90,21,36
FEST=40000
CLAT=4603000
CMER=81/18/00
GRID=15
PLSCL=5000
PLAT=41/44/03
PLON=81/14/55
VESNO=1638
YR=74
ANDIST=00.0

WATER LEVEL NOTE
H-~~9526~~ (LA 10-~~2~~-74)
9537 **3**

Field water level reductions of soundings are based on an average of hourly scaled water level elevations during the period the hydrography was collected; as computed from the Fairport Harbor gage. All times are EST, add five hours to get GMT.

Location - Fairport Harbor

Latitude - 41°45'36"
Longitude - 81°16'52"

Period

June 1, 1974 - September 11, 1974 102 days

Fairport Harbor

Stevens automatic gage (SN 39740-64) along with reference, zero electric tape gage (ZETG), was installed on June 1, 1974. Only 0.001 feet difference in three sets of common levels determined elevation of ZETG to be 578.901 feet (IGLD, 1955).

All water level data required for reduction of soundings on this survey are already on hand at AMC Processing Division; therefore, no letter requesting water level data from Rockville was drafted.

VELOCITY TABLE # 1 (RAYTHEON 723-D, SN 1278)

NOAA LAUNCH LAIDLAY 1264

FIELD #1A LA 10-2-74 LA 10-3-74

REGISTRY #1A H-9536 H-9537

DAY	10	15	20	25	30	35	40
207	+0.1	+0.1	+0.2	+0.3	+0.3	+0.3	+0.4
208	+0.1	+0.1	+0.3	+0.3	+0.3	+0.3	+0.3
208	+0.1	+0.1	+0.3	+0.3	+0.3	+0.3	+0.3
218	+0.1	+0.1	+0.1	+0.3	+0.4	+0.5	+0.5
219	0.0	+0.1	+0.2	+0.3	+0.3	+0.5	+0.5
220	-0.1	+0.1	+0.3	+0.3	+0.3	+0.5	+0.7
227	+0.1	+0.1	+0.3	+0.4	+0.4	+0.5	+0.5
228	+0.1	+0.3	+0.3	+0.3	+0.5	+0.7	+0.7
228	+0.2	+0.3	+0.3	+0.5	+0.5	+0.6	+0.8
Σ	+0.7	+1.3	+2.3	+3.0	+3.3	+4.2	+4.7
MEAN	+0.1	+0.1	+0.3	+0.3	+0.4	+0.5	+0.5

TRUE DEPTH - (P) = N

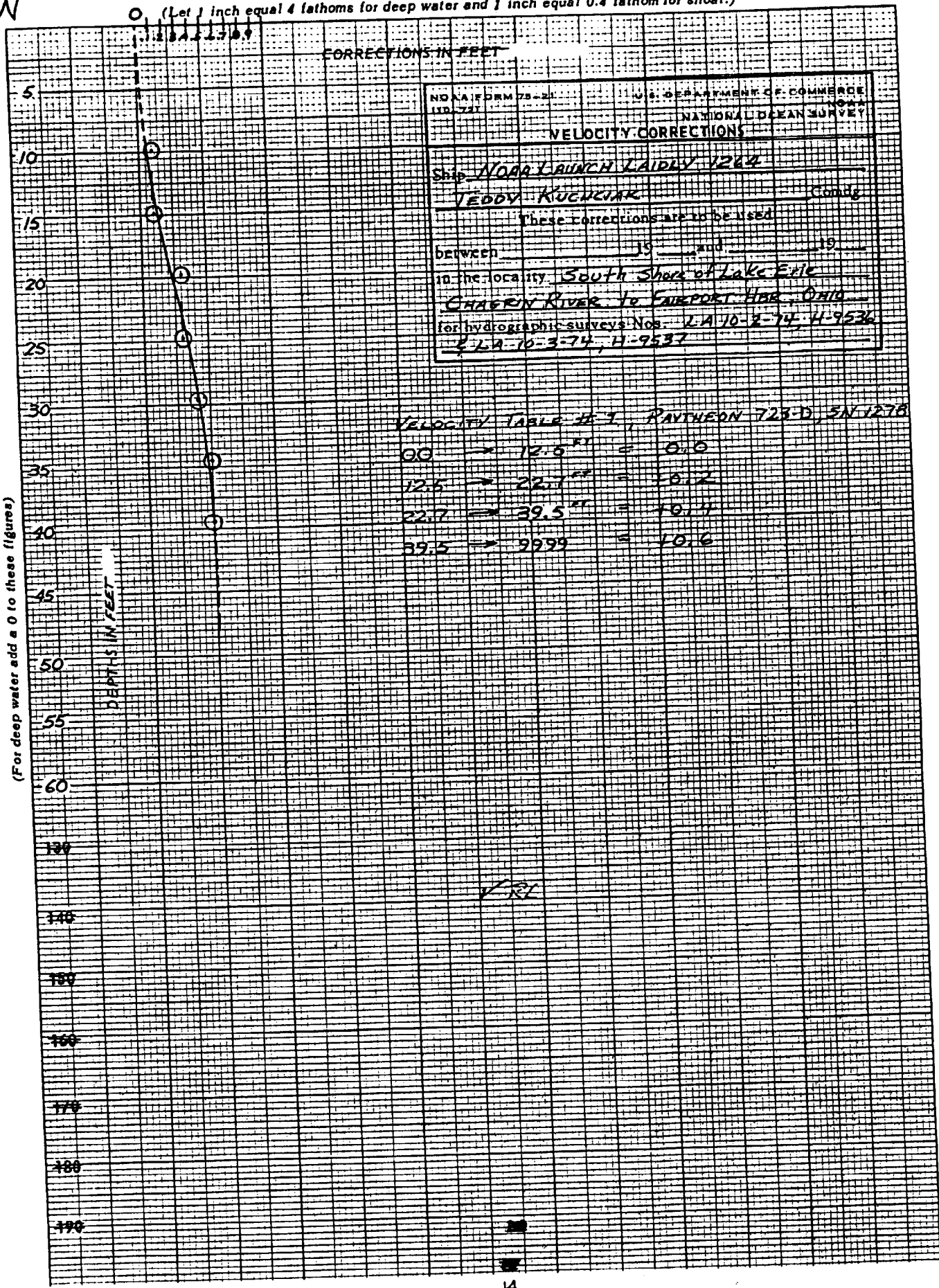
10	-	(+0.1) = 9.9
15	-	(+0.1) = 14.9
20	-	(+0.3) = 19.7
25	-	(+0.3) = 24.7
30	-	(+0.4) = 29.6
35	-	(+0.5) = 34.5
40	-	(+0.5) = 39.5

\sqrt{R}

JN

N

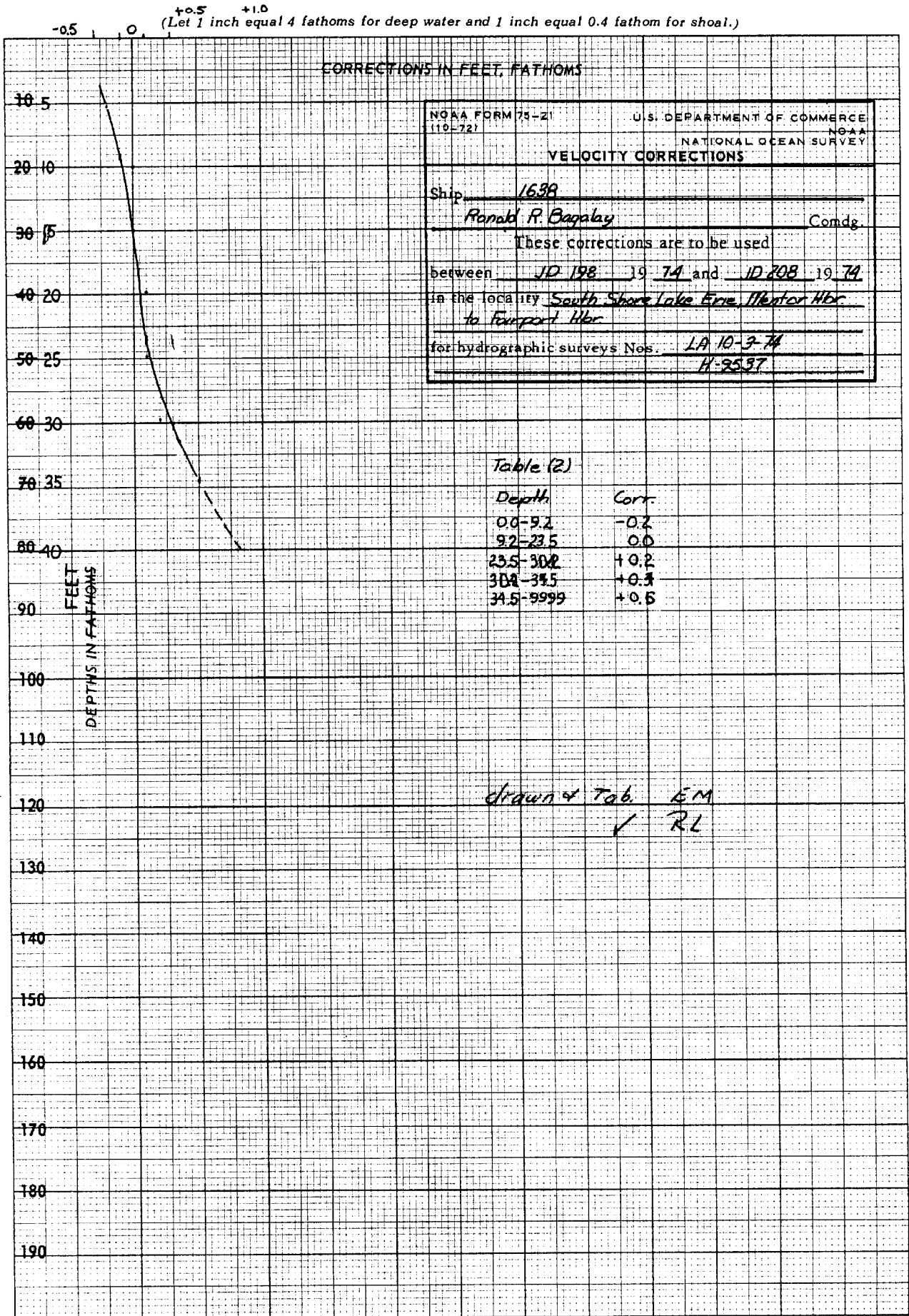
(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)



WORKSHEET

JULIAN DAY	5'	10'	15'	20'	25'	30'	35'		
198	-0.2	+0.1	+0.3	+0.3	+0.4	-	-		
198	-0.2	0.0	+0.1	+0.1	+0.1	+0.2	-		
205	-0.3	-0.1	-0.1	-0.1	-0.1	0.0	-		
206	-0.1	-0.1	-0.1	-0.1	0.0	0.0	-		
208	-0.3 ^R	-0.1 ^R	-0.1 ^R	+0.2 ^R	+0.3 ^R	+0.4 ^R	+0.3 ^R		
Σ	-0.6	-0.2	+0.1	+0.4	+0.7	+0.6	+1.0 ^R		
Mean	-0.2	+0.1	+0.0	+0.2	+0.2	+0.2	+1.0 ^R ₇₀		
					True Depth	(P)	(N)		
					5	-0.2	5.2		
					10	+0.1	10.0		
					15	+0.3	13.9		
					20	+0.4	19.8		
					25	+0.2	24.8		
					30	+0.22	29.78		
					35	+0.5	34.5		
					TABLE (2)				
					Velocity Corrector, T230-SN 2012				
					OPR 300				
					LA 10-3-74				
					H-9537				
					Vesno 1638				
					VEM				

(For deep water add a 0 to these figures)



drawn & Tab. EM
✓ RL

-0.5 ^{0.5} (Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET, FATHOMS

NOAA FORM 75-21
110-721

U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship NOAA Launch Lady 1264

Teddy Kuchciak Comdg.

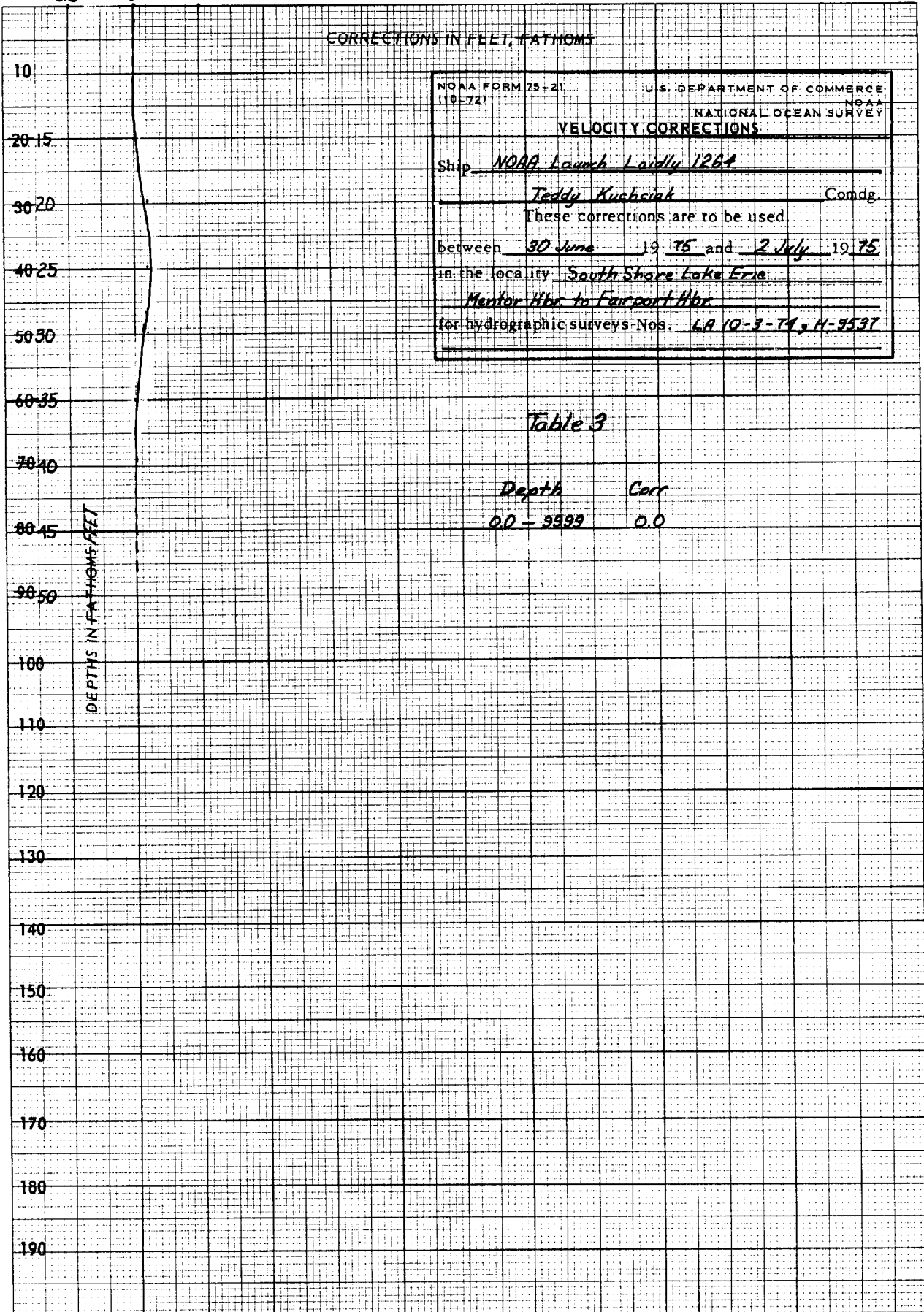
These corrections are to be used
between 30 June 19 75 and 2 July 19 75
in the locality South Shore Lake Erie
Mentor Hbr to Fairport Hbr
for hydrographic surveys Nos. LA 10-3-74, H-9537

Table 3

Depth	Corr
0.0 - 9999	0.0

(For deep water add a 0 to these figures)

DEPTHS IN FATHOMS/FEET



46 1240

20 X 20 TO 7" X 10" INCHES
KEUFFEL & F CO. MADE IN U.S.A.

VELOCITY TABLE

OPR 300

LA 10-3-74

H-9537

VESNO 1264 1/2 1638

TABLE 1

000125 0 0000 0001 000 126400 009 537
000227 0 0002
000395 0 0004
999999 0 0006

TABLE 2

000002 1 0002 0002 000 1633 00 009 537
000235 0 0000
000302 0 0002
000345 0 0004
999999 0 0006

TABLE 3 (for year 1975)

001000 0 0000 0003 000 126400 009 537
999999 0 0000

SETTLEMENT & SQUAT
Launch 1264 & SB 1638

Settlement and squat tests were made on the Launch LAIDLAY (1264) and Survey Boat 1638, on June 19th and 20th, 1974. 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 swells. Test procedures were in accordance with recommendations in section 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 on the LAIDLAY at the following speeds: 0, 1000, 1400, 1800, and 2000 rpm and on Survey Boat 1638 at the following speeds: 0, 500, 1000, 1500, 2000, 2500, and 2650 rpm.

LIDLAY SQUAT TEST, JUNE 19th 1974
(Conditions not ideal)

RPM	Level Rod Reading, Ft.	Corr. FT.	TRA-FT.
0	5.45	0	2.5 (draft)
1000	5.45	0	2.5
1500	5.60	+0.15	2.6
1800	5.35	-0.10	2.4
2000	5.05	-0.40	2.1

(Conditions ideal) Squat Test, June 20, 1974

0	5.35	0	2.5 (draft)
1000	5.50	+0.15	2.6
1400	5.57	+0.22	2.7
1800	5.27	-0.08	2.4
2000	4.95	-0.40	2.1

(See graphs on pages of this report) *→ Filed with field records*

SIGNAL LIST

OPR 300
 LA 10-3-74
 H 9537

005	7	41	42	24859	081	23	21912	139	0000	000000	Seminole LSC.	<i>Not on sheet</i>
006	7	41	43	39901	081	21	11985	250	0000	000000	Mentor Hbr. Y.C. LSC.	<i>Not on ss</i>
007	7	41	46	04178	081	16	52705	250	0015	000000	Fairport Hbr. W. Bkw. Lt.	
008	7	41	44	44440	081	18	47239	250	0000	000000	Corduroy LSC.	<i>on ss</i>
010	7	41	46	04162	081	16	44352	139	0000	000000	East Bkw. Lt.	
011	7	41	46	04138	081	16	52643	250	0000	000000	Fairport LSC.	
012	7	41	46	09130	081	16	52927	139	0000	000000	Fairport W.Bkw.Ext. Lt.	
013	7	41	46	03116	081	15	21977	139	0000	000000	East Bkw. Lt.	
014	7	41	45	41634	081	16	48136	139	0000	000000	East Pier Lt.	
017	7	41	45	40960	081	16	52330	254	0000	000000	Hydro X	<i>on ss</i>
018	7	41	45	40930	081	16	52411	139	0000	000000	West Pier Lt.	
021	7	41	45	24758	081	16	39021	139	0000	000000	Hardy LSC.	<i>Same as 802</i>
022	7	41	46	37151	081	12	25671	250	0000	000000	Bacon LSC.	
123	7	41	44	01104	081	20	18839	250	0000	000000	Seagull LSC.	
125	7	41	45	16893	081	17	41704	250	0000	000000	Headlands LSC.	
302	7	41	45	24758	081	16	39021	250	0000	000000	Old Lighthouse	

APPROVAL SHEET

SURVEY H-9537 (LA-10-3-74)

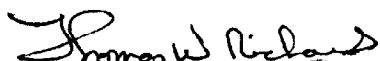
The hydrographic records transmitted with this report are complete and adequate.

No direct supervision was given by me during field work.

This survey is complete and adequate with no additional field work recommended.

Unorthodox techniques and data formats used during this survey result from 1974 being the first field season that Lake Survey personnel conducted surveys using NOS hydrographic survey procedures.

APPROVED AND FORWARDED,


Thomas W. Richards
LCDR., NOAA
Chief, HSB

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: CAM3

Hourly heights are approved for

Water Level Station Used: Fairport Harbor, Ohio 906-3050

Period: July 1 - September 7, 1974

HYDROGRAPHIC SHEET: H-9537

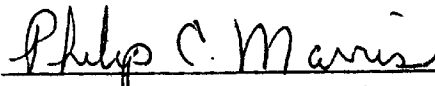
OPR-300-LA-74

Locality: Lake Erie

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

Remarks:

Zoning Not Required



Chief, Water Level Branch

GEOGRAPHIC NAMES

H-9537

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
	<small> 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 MENALLY ATLAS H U.S. LIGHT LIST K </small>											
FAIRPORT HARBOR												1
LAKE ERIE												2
MENTOR HEADLANDS												3
												4
												5
												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

Chas. E. Harrington

Chief Geographer - C3x5

5 APRIL 1979

HYDROGRAPHIC SURVEY STATISTICS

H-9537

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS & PRELIMINARY OVERLAYS		14	
DESCRIPTIVE REPORT		1	SMOOTH OVERLAYS: POS. ARC. EXCESS		2	
DESCRIP- TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						1- misc. data.
CAHIERS	1- with printouts					
VOLUMES	2					5- lake vols.
BOXES			1- Smooth			

T-SHEET PRINTS (List)

SPECIAL REPORTS (List) 1-Cm. 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			1025
POSITIONS CHECKED		150	
POSITIONS REVISED		10	
SOUNDINGS REVISED		82	
SOUNDINGS ERRONEOUSLY SPACED		0	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)			
VERIFICATION OF CONTROL		4	
VERIFICATION OF POSITIONS		56	
VERIFICATION OF SOUNDINGS	4	62	
COMPILATION OF SMOOTH SHEET		13	
APPLICATION OF TOPOGRAPHY		1	
APPLICATION OF PHOTOBATHYMETRY		0	
JUNCTIONS		14	
COMPARISON WITH PRIOR SURVEYS & CHARTS		21	
VERIFIER'S REPORT		9	
OTHER		35	
TOTALS	4	215	219

Pre-Verification by M. Holloway	Beginning Date 06/28/78	Ending Date 06/28/78
Verification by R. Keene, F. Saunders, D. Mason	Beginning Date 09/19/78	Ending Date 02/12/79
Verification Check by B.J. Stephenson	Time (Hours) 3	Date 02/13/79
Marine Center Inspection by Hydrographic Inspection Team (AMC)	Time (Hours) 8	Date 03/14/79
Quality Control Inspection by <i>R.W. Wellman</i>	Time (Hours) 43	Date 4-5-79
Requirements Evaluation by <i>J. Bonney</i>	Time (Hours) 2	Date 5/15/79

CONSTERS 7/27/79

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-9537

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 10-13-52 TIME REQUIRED _____ INITIALS JAC

REMARKS:

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9537

FIELD NO. LA-10-3-74

Ohio, South Shore Lake Erie, Offshore Fairport Harbor

SURVEYED: July 1, 1974 through September 7, 1974

SCALE: 1:10,000

PROJECT NO.: OPR-300

SOUNDINGS: Raytheon 723-D
Echo Sounder

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

Chief of Party T. Kuchciak
Surveyed by R. Bagalay
..... J. Nahas
..... B. Meinert
..... T. Davis
..... P. Nichols
..... D. Hoot
..... G. Fortune
..... J. Polskoy
..... J. Servaic
Automated Plot by XYNETICS-1201
Verified and Inked by D. V. Mason
February 9, 1979

1. Introduction

a. An instrument error of +.2 of a foot, in 5 feet of water, to +1 foot in 40 ^{feet} of water is applied to Vessel No. 1264 analog survey data. The digital readout is correct and the above corrections have been applied during scanning.

b. Survey H-9537 ^{was} ~~which~~ originally ~~was~~ presented as a single survey covering the approaches to Fairport Harbor at 1:10,000 scale and the Fairport Harbor area as a 1:5,000 scale inset. This survey was separated at the Marine Center into two smooth sheets with the 1:5,000 scale Fairport Harbor portion being assigned by Headquarters, Rockville, Md. registry number H-9766. The Descriptive Report was modified to reflect the separation of survey data. This separation permitted the presentation of survey data on 36 inch wide smooth sheets and allowed for a comprehensive presentation of survey results at appropriate scales.

2. Control and Shoreline

a. The source of control is adequately described under Sections F. and G. of the Descriptive Report. (See Q.C. Report-item 1)

b. The shoreline originates with class III (reviewed) photogrammetric manuscript TP-00947 from photography of 1975, Field Edit Date has been postponed. The high water line shown on this manuscript is based upon the lake level, measured at the Cleveland gage, was 3.9 feet above the Lake Erie Low-Water Datum. (See Q.C. Report-item 2)

3. Hydrography

a. Depths at crossings are in good agreement.

b. The standard depth curves are adequately delineated. Several dashed curves and a 36' foot supplemental curve, were added to emphasize certain important bottom features. The 36' foot curve indicates a shoal area at latitude 41°47'39", longitude 81°16'46".

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 to conform to the requirements of the Hydrographic Manual, with the following exceptions:

a. This survey was turned into Verification 3 years and 9 months after completion of the survey.

b. The sounding volumes were not properly annotated. ✓

c. Fathograms were not correctly annotated. ~~There are no sounding marks between fixes on Julian days 228 & 207.~~

d. The shoal areas were not investigated in accordance with Sections 4.5.9.2 of the Hydrographic Manual. ✓

e. The wreck charted at latitude 41°46'28"N, longitude 81°17'16"W was not investigated in accordance with Sections 4.5.11 of the Hydrographic Manual.

5. Junctions

Adequate junctions were effected with the following surveys:

H-9766	(1974)	to the east and south (This survey is not presently available)
H-9536	(1974)	to the west
H-9538	(1974)	to the west east

(See Q.C. Report-item 3)

There is no contemporary survey to the north.

6. Comparison with Prior Surveys

1-1712	(1937)	1:10,000	< 1-1791 (1940) 1:20,000
1-1815	(1942)	1:40,000	
1-1849A	(1947)	1:10,000	
1-2034	(1960)	1:80,000	
1-2037	(1960)	1:80,000	

These surveys, taken together, cover the area of the present survey. Generally, a comparison ^{between} of the above prior surveys and the present survey reveals only minor differences of 1 to 2³ ft. These differences can be attributed to differences in survey equipment, methods, and control improvements.

In the alongshore area in the vicinity of latitude 41°45', longitude 81°19' differences between the present and prior survey of up to + 6 feet exist along with changes in bottom configuration features. These differences are attributed to natural processes. Retention of prior survey depths in this area is not recommended.

(See Q.C. Report-item 4)

The wreck charted at latitude 41°46'28"N, longitude 81°17'16"W, depth of 23 ft, was brought forwarded to the present survey from 1-1712 (1937). With addition of the 23 ft. wreck from 1-1712 (1937) the present survey is adequate to supersede the prior surveys in the common area.

*Prev. chart
to 30 ft*

7. Comparison With Chart #14825 (18th Edition, December 7, 1974) #14837 (20th Edition, November 23, 1974)

(See Q.C. Report-item 5)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys ^{which} and requires no further consideration, ^{supplemented by miscellaneous} sources which are not readily ascertainable.

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

b. Aids to Navigation

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

8. Compliance With Instructions

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

9. Additional Field Work

This is considered a good basic survey and no additional field work is recommended. During ~~future~~ field work in the area, however the charted wreck discussed in Sections 4 & 6 should be investigated and verified or disproved.

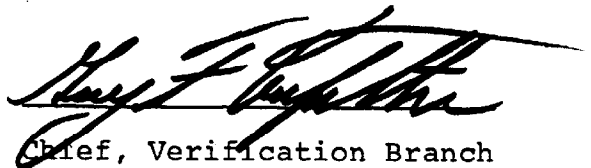
APPROVAL SHEET
FOR
SURVEY H-9537

- 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:

3/15/79

Signed:



Title:

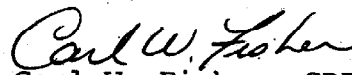
Chief, Verification Branch


Inspection Report
H-9537


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.

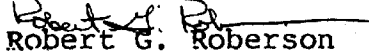
Examined and Approved:
Hydrographic Inspection Team
Date: March 13, 1979


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

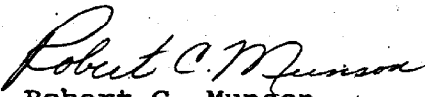

Carl W. Fisher, CDR, NOAA
Chief, Operations Division


R. D. Sanocki
Technical Assistant
Processing Division


Maureen R. Kenny, LTJ NOAA
Chief, Electronic Data
Processing Branch


Robert G. Roberson
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

OA/C352:KWW

April 5, 1979

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

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman *K. W. Wellman*
Quality Evaluator

SUBJECT: Quality Control Report for H-9537 (1974), Ohio, Lake Erie
(South Shore), Approaches to Fairport Harbor

A quality control inspection of H-9537 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, decisions and actions by the verifier, 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 status of the control stations symbolized as triangulation stations on the smooth sheet could not be substantiated by the National Geodetic Survey. Appropriate comments should be included in the Verifier's Report whenever such unadjusted triangulation stations are used.

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

Several control stations are symbolized as triangulation stations and identified as having been established in 1974. Formal documentation of acceptance of such stations as official triangulation stations by the National Geodetic Survey is not presently available. It is assumed, however, that specifications for triangulation stations have been complied with and that the necessary records and computations will eventually be submitted to the National Geodetic Survey. Ultimately, therefore, it is expected that the triangulation station status of the referenced stations will be validated.

2. The shoreline on the smooth sheet was displaced as much as 20 meters from the source document position. It appears that the reduced image of



the shoreline on TP-00947 was aligned with the smooth sheet in the vicinity of latitude $41^{\circ}44'28''$, longitude $81^{\circ}19'30''$. The smooth sheet is within acceptable agreement with TP-00947 in the referenced area. The shoreline displacement gradually progressed to the northeast with maximum displacement noted in the vicinity of latitude $41^{\circ}45'06''$, longitude $81^{\circ}18'00''$. Further, four descriptive notes pertaining to topographic features were in error and/or improperly oriented during verification; i.e., shown in slanted rather than vertical lettering. During quality control inspection, the topographic detail and notes on the smooth sheet were revised to agree with TP-00947.

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

The topographic detail shown on the present survey is shown for reference purposes only. The true position is shown on TP-00947.

3. Reference section 5 of the Verifier's Report:

An adequate junction between the present survey and H-9536 on the west was not effected during verification. The depth curves were not brought into coincidence and several anomalous soundings were found to have been originally scanned in error. Further, the junction between the present survey and H-9538 required additional work. It was necessary to add the junctional note on H-9538 and to reconcile the depth curves within the common area. Necessary revisions of soundings and depth curves were effected during the quality control inspection. Such necessary additional work should have been discussed in the referenced section of the Verifier's Report. (See the memorandums dated March 21, 1977, and November 16, 1978, from the Office of Marine Surveys and Maps respectively entitled "Verifier's Report Format" and "Accuracy Standard for Junctional Curves.")

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

Prior survey 1-1791 was omitted from the prior survey comparisons effected during verification. Further, the referenced section of the Verifier's Report does not include any comments pertaining to the swept areas shown on prior surveys 1-1712 and 1-1791.

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

There are no conflicts between present depths and swept areas shown on prior surveys 1-1712 and 1-1791.

5. Reference section L of the Descriptive Report and section 7 of the Verifier's Report:

The largest scale chart (chart 14837) covering a portion of the survey area was not used by the hydrographer. In addition, during verification,

the survey was compared with editions of the charts dated subsequent to the time of the present survey field work. This is in contravention of the requirement that the survey be compared with ". . . the latest edition of the largest scale chart of the area . . ." current at the time of the survey. (See sections 5.3.4(L) and 6.3.10 of the Hydrographic Manual--Fourth Edition.) Further, the copy of chart 14837 used during verification was not forwarded with the field records. (See sections 6.3.10 and 8.3(12) of the Hydrographic Manual--Fourth Edition.)

Section 4 of the Verifier's Report is supplemented by the following:

f. The hydrographer failed to use the largest scale chart (chart 14837--formerly L.S. 346) which covers a portion of the area of the present survey.

6. The graticule shown on the smooth sheet is drawn with a rather light line. Such a lightly inked line hampers the ready orientation of other overlaid smooth sheets and/or overlays and may be marginally suitable for reproduction purposes.

7. The automated title block on hydrographic surveys of the various Great Lakes should include a reference to the IGLD (International Great Lakes Datum) of 1955 followed by the reference elevation for the particular lake. The sounding datum section of the title block for surveys of Lake Erie should read as follows:

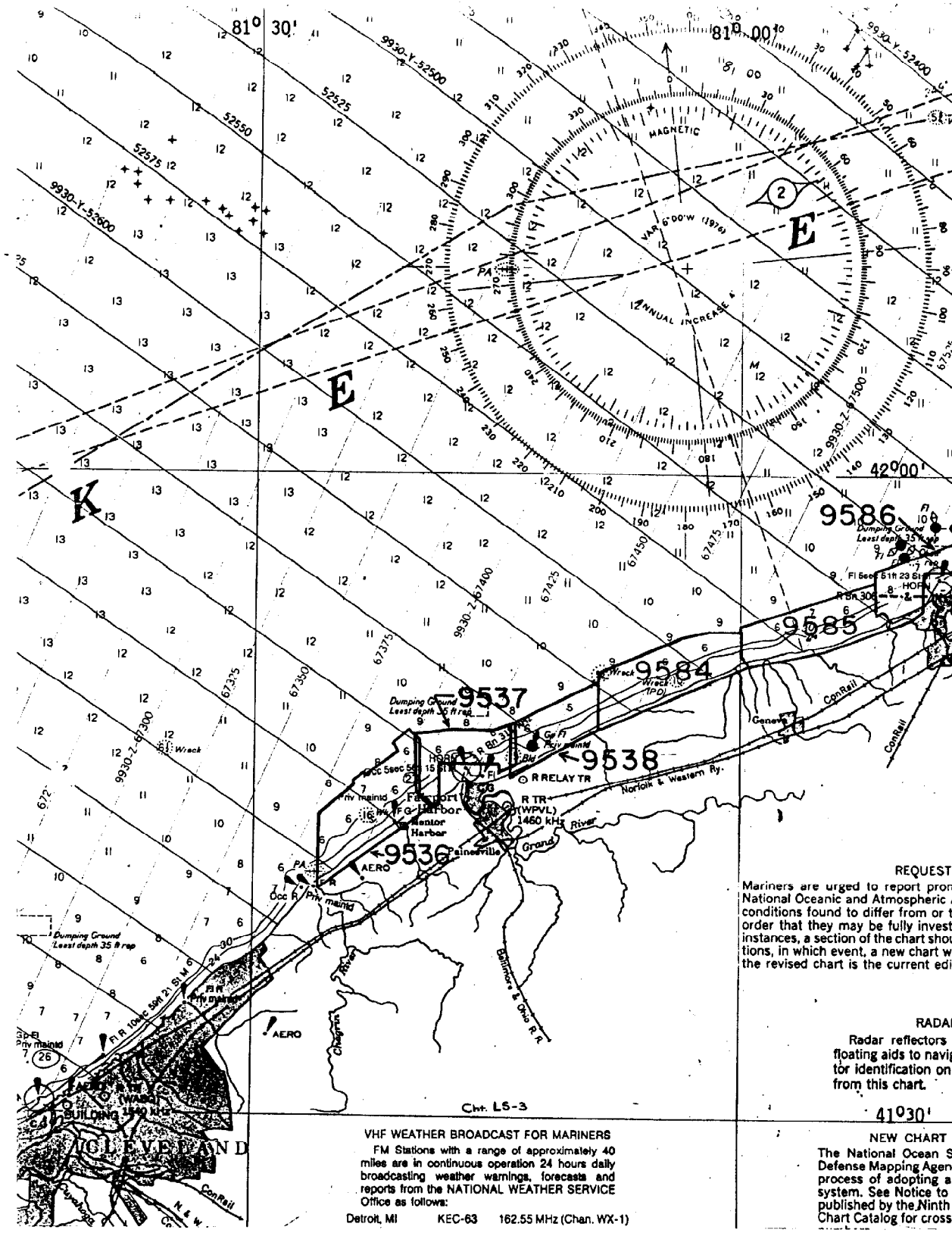
Low Water Datum* (IGLD 1955 : 568.6 feet)

The present smooth sheet title block was appropriately revised during the quality control inspection. *(See section 1.5.4.1 of the Hydrographic Manual--Fourth Edition.)

8. The formal Water Level Approval Note was not included in the Descriptive Report during verification. It was therefore necessary to request the approval note during quality control inspection. (See section 6.6.5 of the Hydrographic Manual--Fourth Edition.)

9. The title of the survey, as shown in the title block on the smooth sheet, is not shown in accordance with the preferred format. The automated title block should be revised to provide sufficient space to show the survey title on three separate lines.

cc:
OA/C35
OA/C351



REQUEST
 Mariners are urged to report *pro* National Oceanic and Atmospheric / conditions found to differ from or *to* order that they may be fully invest instances, a section of the chart sho tions, in which event, a new chart w the revised chart is the current edi

RADAI
 Radar reflectors floating aids to navig for identification on from this chart.

41030'

NEW CHART
 The National Ocean S Defense Mapping Agen process of adopting a system. See Notice to published by the Ninth Chart Catalog for cross

VHF WEATHER BROADCAST FOR MARINERS
 FM Stations with a range of approximately 40 miles are in continuous operation 24 hours daily broadcasting weather warnings, forecasts and reports from the NATIONAL WEATHER SERVICE Office as follows:
 Detroit, MI KEC-63 162.55 MHz (Chan. WX-1)

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9537

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
14837 1	10-30-79	Ralph B. Rose	Full Part Before After Verification Review Inspection <u>Signed Via</u> Drawing No. #3
14825	7-28-81	Eli N. Badoninas	Full Part Before After Verification Review Inspection Signed Via Drawing No. 2 Part direct part thru 14837
14820	11-27-81	C. Stannard	Full Part Before After Verification Review Inspection Signed Via Drawing No. 5 applied thru chart 14825.
14820M	4-12-82	Myron R. Vini	Full Part Before After Verification Review Inspection Signed Via Drawing No. 5 Revised (1) send
			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.
			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.
			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.
			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.