9849

Diagram No. LS-5

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. PE-20-2-79

Office No. H-9849

LOCALITY

State Michigan

General Locality Lake Huron

Locality Thunder Bay Island

1979

CHIEF OF PARTY
CDR C.D. North

LIBRARY & ARCHIVES

DATE July 19, 1984

☆U.S. GOV. PRINTING OFFICE: 1980—766-230

9849

NOAA FORM 77-28 (11-72) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTER NO. H-9849

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. PE-20-2-79

State Michigan

General locality Great Lakes, Lake Huron

Locality Thunder Bay Island

Scale 1:20,000 Date of survey 5 September - 6 October 1979

Instructions dated 2 March 1979 Project No. OPR-X115-PE/HSB-79

Vessel NOAA Ship PEIRCE, Launch Vesno. 2838, Launch Vesno. 2839

Chief of party Commander C. Dale North, JR.

Surveyed by LT Chelgren, LTJG McCann, LTJG DaSilva, ST Morris

Soundings taken by echo sounder, hand lead, pole Ross 5000 Fineline

Graphic record scaled by Ship's Personnel

Graphic record checked by LT Chelgren, LTJG DaSilva

Protracted by Program RK 201, PDP 8/E Hydroplot Automated plot by Complot DP5

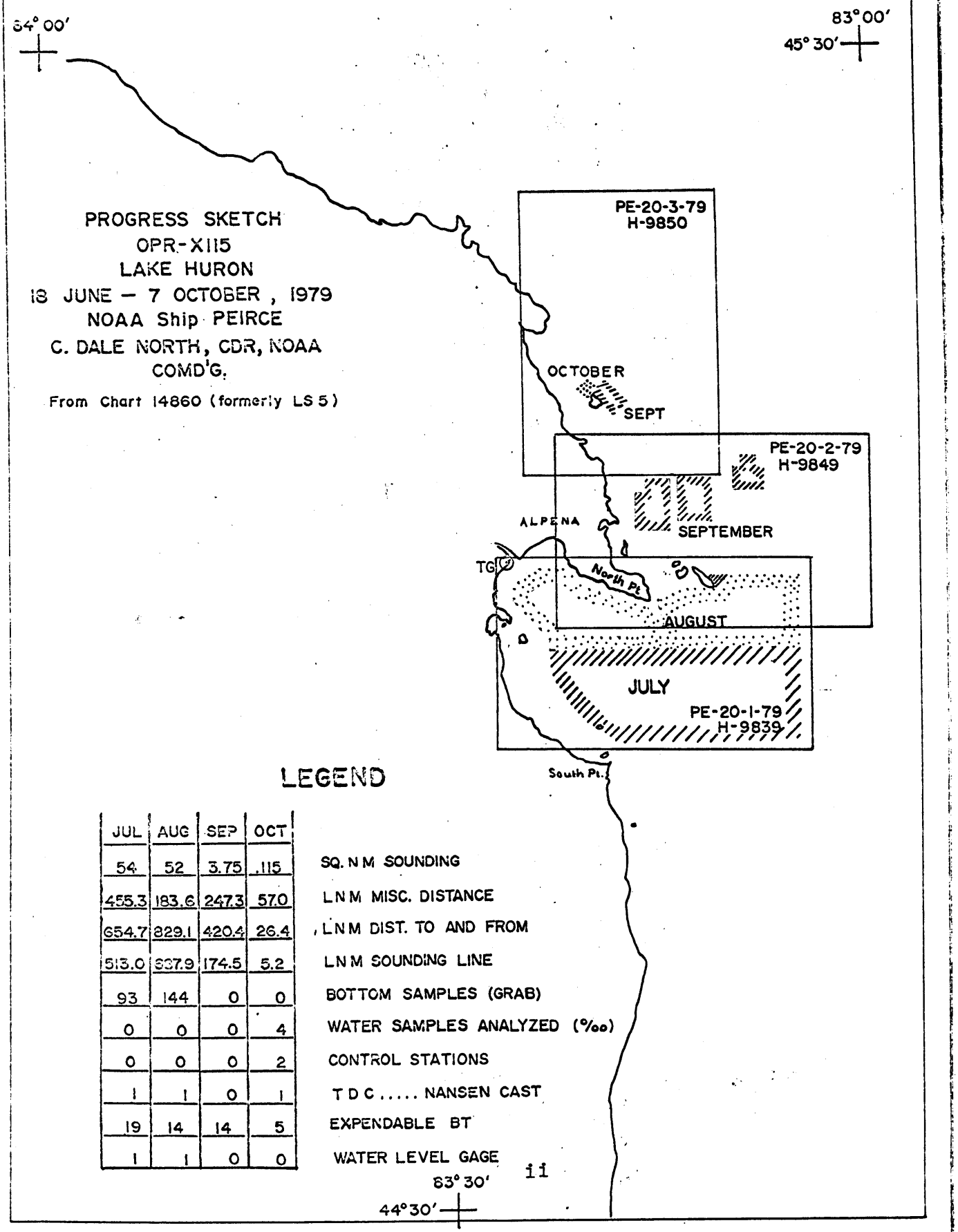
Verification by LT Chelgren, LTJG DaSilva, SAT Thompson

Soundings in ~~fathoms~~ feet at ~~MLW~~ ~~MLLW~~ IGLD,1955

REMARKS: All times throughout are Greenwich Mean Time. All depths are reduced for predicted water levels, draft and velocity corrections.

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

☆ U.S. G.P.O. 1972-769-565/519 REG.#6



JUL	AUG	SEP	OCT	
54	52	3.75	.115	SQ. N M SOUNDING
455.3	183.6	247.3	57.0	L N M MISC. DISTANCE
654.7	829.1	420.4	26.4	L N M DIST. TO AND FROM
513.0	837.9	174.5	5.2	L N M SOUNDING LINE
93	144	0	0	BOTTOM SAMPLES (GRAB)
0	0	0	4	WATER SAMPLES ANALYZED (‰)
0	0	0	2	CONTROL STATIONS
1	1	0	1	T D C ..... NANSEN CAST
19	14	14	5	EXPENDABLE BT
1	1	0	0	WATER LEVEL GAGE

DESCRIPTIVE REPORT

TO ACCOMPANY

HYDROGRAPHIC SURVEY H-9849

FIELD NO. PE-20-2-79

SCALE 1:20,000

SURVEYED SEPTEMBER TO OCTOBER, 1979

BY THE NOAA SHIP PEIRCE

CDR C. DALE NORTH, COMMANDING

CONTENTS

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9849
FIELD NUMBER PE-20-2-79

A. PROJECT

This survey is part of the Lake Huron Project (OPR-X115-PE/HSB-79). It was conducted according to project instructions dated March 2, 1979 from the Associate Director, Marine Surveys and Maps. The survey was conducted primarily in support of the National Ocean Survey Charting Program.

B. AREA SURVEYED

The survey H-9849 covers the inshore area just north of Thunder Bay Island located near Alpena, Michigan on the west shore of Lake Huron. The western limit is 2 n.m. east of Alpena and the sheet continues east to 8 n.m. offshore of Thunder Bay Island. The southern limit is 1.5 n.m. south of North Point and extends north to 1.5 n.m. above South Nine Mile Point.

The sheet boundaries are as follows:

North	45°10.0'N
South	45°00.0'N
East	83°00.0'N
West	83°22.0'W

The only areas surveyed on this sheet were two PSR Items (Items 8 and 9) and three developments (Developments A, B, & C). These areas were chosen by the PEIRCE because of their difficulty and the diving operations required. It is anticipated that the high speed Launch 1255 will run the mainscheme and complete the survey in 1980. All five areas lie on the north street, the centers of which are as follows:

ITEM	LATITUDE	LONGITUDE	SCALE
PSR #8	45°08.2'N	83°09.6'W	1:10,000
PSR #9	45°06.2'N	83°13.2'W	1:7,500
DEV "A"	45°07.1'N	83°16.2'W	1:10,000
DEV "B"	45°06.4'N	83°16.9'W	1:10,000
DEV "C"	45°05.7'N	83°16.8'W	1:7,500

A sketch of the work area is included in the report. Hydrography commenced on September 5, 1979 and was completed on October 6, 1979.

C. SOUNDING VESSEL

All hydrography was performed by the PEIRCE's Type I aluminum survey Launch 1008 (VESNO 2838) equipped with Hydroplot Systems and a Ross Digital Echo Sounder (Model 5000). Launch 1009 (VESNO 2839) was used for one day (JD 255) to obtain a XBT measurement.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings were taken using the Ross Digital Echo Sounder Model 5000 or calibrated leadlines. The following equipment was used:

LAUNCH	VESNO	ROSS S/N	JULIAN DAY	DEPTH RANGE
1008	2838	1078	248-279	13' - 50'

No other sounding instruments were used.

Corrections to soundings were calculated for the following factors:

1. Corrections for velocity of sound in lake water were computed graphically using expendable bathythermographs (XBTs) and bar check data. The PEIRCE's XBT system is a Sippican Model R603D, S/N 781209 modified to a 200 meter depth scale. The XBT data was compared to a Martex temperature, depth and conductivity meter (S/N 477) borrowed from Launch 1255. Two comparisons were made (July 26 and August 27, 1979) both comparing within the allowable tolerance.

On 8 October 1979 a Nansen cast was taken and temperatures agreed well with the XBT except for depths over 130 feet. Not enough samples were taken at this depth to properly delineate the temperature versus depth curve.

Salinities, as determined by the Beckman Salinometer were .28 PPT or less and its affect was found negligible in determining sound velocities. This was proven by comparing the table output of RK530 (Layer Corrections for Velocity) with a salinity input of 00.00 vs. 00.28 PPT for the first 8 meters and 00.13 PPT for the remaining depths. The resulting velocity corrections for the same depths differed by less than 0.2%, which allowed the use of XBT data alone as input for RK530.

A list of positions for the XBT and Nansen Cast is as follows:

NANSEN CAST	XBT NO.	LATITUDE	LONGITUDE	JD	REMARKS
	1	45°09.0'N	83°08.4'W	249	
	2	45°09.8'N	83°11.7'W	253	
	3	45°09.8'N	83°10.4'W	255	
	4	45°09.7'N	83°09.6'W	258	REJECTED
	5	45°09.7'N	83°09.6'W	258	REJECTED
	6	45°08.4'N	83°08.7'W	259	
	7	45°08.4'N	83°08.7'W	259	
	8	45°07.7'N	83°08.2'W	261	
	9	45°11.7'N	83°17.8'W	264	
	10	45°12.0'N	83°18.0'W	271	
	11	45°08.0'N	83°09.2'W	271	
	12	45°08.1'N	83°09.0'W	276	
	13	45°08.1'N	83°09.0'W	276	
	14	45°11.3'N	83°17.0'W	279	
1	A	44°54.2'N	83°06.4'W	281	
	B	44°54.2'N	83°06.4'W	281	

The fourteen XBTs taken during this survey were grouped by chronological order into six velocity tables. Velocity curves for individual XBTs were grouped together if they differed by less than the allowable tolerance (Section 4.9.5, Hydrographic Manual). Bar check and leadline comparisons were available for only velocity tables 4, 5, and 6. These comparisons followed the general outline of the velocity curves but were displaced to the right by approximately 0.2 feet. A draft correction of +0.2 feet was applied to all bar check and leadline curves, according to Section 4.9.5.3 of the Hydrographic Manual, to compensate for this difference. This correction was accounted for on the TC/TI tape.

A list of velocity tables follows:

TABLE	XBT	JULIAN DAY
1	1	248-249
2	2	253
3	3	256
4	6, 7	258-259
5	8, 9	261-262
6	10-14	270-278

2. The Ross fathometer was maintained at a zero initial. Routine phase checks were performed and no problems were encountered. Hydrography run on Julian Days 261 and 270 was rejected due to excessive sea action on the fathogram.

3. Settlement and squat corrections were determined in Alpena, Michigan on June 21, 1979. Speed changes were noted in the TRA correction abstract (appended) where settlement and squat corrections are also tabulated.

E. HYDROGRPAHIC SHEETS

The field sheet was plotted aboard the PEIRCE by the ship's PDP 8/e computer and complot roll-bed plotter. All field data is presented on six blow-ups, the boundries of which are outlined on the 1,20:000 scale field sheet. No hydrography was plotted on this sheet. Its intended purpose is to orient the areas surveyed. Upon the completion of the entire survey, the smooth sheet (36" x 60", Scale 1:20,000) will be produced by the Atlantic Marine Center. All field records will be transmitted there for verification. Project parameters are appended to this report.

F. CONTROL STATIONS

Three electronic stations were used to control this survey. They are as follows:

SIGNAL NUMBER	NAME	REFERENCE
20	H-11-MI-77	AMC
21	H-12-MI-77	AMC
22	MISERY, 1977	AMC (AMC POSITION) ON A USLS DISK)

The datum is North American 1927. Stations used were established by AMC, Operations Division and USLS. All positions were obtained from AMC, Operations Division and meet third order criteria. All electronic control stations were erected and maintained by ship's personnel. A list of geographic positions for each station is included in the appended signal list. Copies of field descriptions are also appended.

G. HYDROGRAPHIC POSITION CONTROL

Sounding line position control used was Del Norte in the range-range mode. The following electronic positioning and related equipment was used during this survey:

EQUIPMENT	S/N	VESNO
Digital PDP 8/e Computer	0309219	2838
Hydroplot Controller	0700003	2838
Ross Echo Sounder Model 5000	1078	2838
DMU/Master	190/1066	2838

The DMU's were Model RO3C. The master and remote trisponders were Model 217C. A listing of the shore station Del Norte codes is as follows:

EQUIPMENT	S/N	SIGNAL NUMBER	JULIAN DAYS
Remote 72	1320	21	248-263 A.M. 273-278
Remote 74	1317	22	248-266 A.M. 270-278
Remote 76	188	20	253-263 A.M. 270-278

Baseline calibrations for the DMU's were carried out over distances measured by Laser Geodimeter (AGA-76) as described in Appendix A, Section 5.1.3 of the Hydrographic Manual. The DMU's were adjusted to read the true baseline distance if they differed from it by more than 4 meters. The following calibrations were performed:

DATE	JULIAN DAY	DISTANCE
1 September 1979	244	2014
7 October 1979	280	2003

Copies of the calibration abstract are included in the field records. Daily calibrations were taken alongisde a calibration pipe approximately 400m east of South Nine Mile Point. The pipe was cut in by third order techniques (Spur-Point Off H-11-MI-77) on 12 September 1979 before any hydrography was run. The pipe was again located (by Intersection) at the end of the field season on 5 October 1979. The inverse between the two positions was .65 meters. Records and computations were submitted with PE-20-3-79, H-9850. The maximum daily corrector was a -61 meters on JD 248. This occurred because the Del Norte shore station remote being used (Code 74, S/N 1317) was a spare and the DMU was calibration to another remote (Code 74).

Due to the close proximity of the calibration pipe to the survey area, the calibration data is considered adequate for this survey.

The South Nine Mile Point Calibration Rates are as follows:

STATION NO.	STATION NAME	CODE	CALIBRATION RATE
20	H-11-MI-77	76	3035
21	H-12-MI-77	72	395
22	Misery, 1977	74	6373

The calibration pipe was located as follows:

DATE	POSITION
12 September 1979	45/08/43.76 N 83/19/01.96 W
5 October 1979	45/08/43.74 N 83/19/01.96 W

There were no problems encountered with the position control equipment that affected the quality of the survey. All soundings were checked for time and course validity. A signal list and Abstract of Electronic Correctors is appended.

H. SHORELINE

Shoreline on the field smooth sheet was traced from an enlargement of Chart 14864 and is for orientation purposes only. No shoreline was included within the survey limits.

I. CROSSLINES

No crosslines were run because of the small size of the areas surveyed.

J. JUNCTIONS

There were no contemporary surveys available for comparison within the limits of the survey.

K. COMPARISON WITH PRIOR SURVEYS

The following presurvey review items (dated 20 March 1978) were investigated in this survey:

PSR #8 VISIBLE WRECKS, CHARTED AT $45^{o}08.1'N$, $83^{o}09.5'W$.

M/V NORDMEER - JD 258 (343-351) and JD 259 (438-446) - This is a 500' steel freighter with the deckhouse extending approximately 40' above the water. The bow section is broken off from the main deck. The bow and center decks are above water, only the stern section is submerged completely. This wreck is in good shape but has been extensively salvaged. The Thunder Bay Shipwreck Survey, Wreck #24, gives additional information. A copy is included in this report. The midships position of the wreck, taken from position number 442 (JD 259), is $45^{o}08'10"N$, $83^{o}09'32"W$. It is recommended that this wreck remain as charted.

SALVAGE BARGE - (JD 277, Pos. 827) - This wreck is a 150-foot steel barge. It lays intact about 40 feet off the starboard (north) side of the NORDMEER between the bow and pilot house. A least depth of 18.4 feet was obtained on a high strut on the port (south) side of the barge at 45°08'10"N, 83°09'32"W. The crane was salvaged by local people and is not on the barge anymore. It is recommended that this wreck be charted.

PSR #9, A wooden shipwreck charted at 45°06.3'N, 83°13.2'W. The only remains are a left rib, planking, and one anchor and chain sticking less than 3 feet off the bottom. The Thunder Bay Shipwreck Survey (Shipwreck #23) gives additional information. A copy is included. A least depth of 19.9 feet was obtained at 45°06'19"N, 83°13'05"W (JD 277, Pos. 828). It is recommended that the least depth be changed to 20 feet.

UNNUMBERED DASHED-CIRCLED ITEM, 27' and 28' SHOAL (Development "A"). A diver least depth of 25.0 feet (JD 278, Pos. 830) was obtained on a stone at 45°07'16"N, 83°16'03"W. The bottom was featureless. It is recommended that this least depth be charted.

Two least depths were obtained from launch hydrography. A 28.4 foot sounding (JD 249, Pos. 213 + 1½, 175318 GMT) was obtained at 45°07'25"N, 83°16'07"W. This plots over a 27-foot charted sounding. It is recommended that the charted sounding be retained. A 27.1 foot sounding (JD 249, Pos. 173 + 4½, 171002 GMT) was obtained at 45°07'07"N, 83°16'12"W. A 28-foot charted sounding lies at this position. It is recommended that this least depth replace the 28-foot charted sounding.

UNNUMBERED DASHED-CIRCLED ITEM, 27' and 27' SHOAL (Development "B"). Two least depths were obtained from launch hydrography. A 24.8 foot sounding (JD 253, Pos. 241 + 2½, 163009 GMT) was obtained at 45°06'38"N, 83°16'44"W. It is recommended that this least depth replace the 27-foot charted sounding at the same location.

A 27.4-foot sounding (JD 256, Pos. 271 + 2½, 141748 GMT) was obtained at 45°06'24"N, 83°17'00"W. A 27-foot charted sounding is currently at this position. It is recommended that this charted sounding remain.

L. COMPARISON WITH THE CHART

This survey was compared to Chart 14869, Presque Isle and Stoneport Harbors, 21st Edition, 25 November 1978. Agreement was very good, usually one to three feet on all items with the following exceptions on PSR #8:

CHART SOUNDING	SURVEY SOUNDING	CHARTED LAT/LONG
27'	39'	45°08.0'N 83°09.8'W

It is recommended that the charted 27-foot sounding remain until sufficiently disproved by further development. Also the least depth of the wreck on PSR #9 (22 ft.) is two feet above the surveyed 20-foot as discussed in Section K.

A large number of stray soundings were encountered during the survey. Evaluation of these strays was complicated by sea action due to weather conditions at the time this survey was run. Only the most significant strays were investigated due to the lack of time available. Strays were indexed from S1 to S22 and labeled on the daily fathograms. The stray sounding logs (included in supplemental data) lists the strays along with their associated position numbers. A brief breakdown for each items follows:

ITEM	STRAYS
PSR #8	S1 - S16
PSR #9	S20 - S22
DEV "B"	S17 - S18
DEV "C"	S19

A stray investigation using the Ross fathometer was carried out on JD 274 (Pos. 562-826) searching for strays S1-S5, S13, S15, S16. A grid of lines 5 meters apart was run over the strays for approximately 30 minutes. No evidence of these strays was found but another unidentified stray, with a good solid trace, was found. It lies between positions 574 and 575. A new position number (Pos. 832) was assigned and this stray was plotted up as a D.P. with a least depth of 23.7 feet. All other positions from this day were rejected. All fathoms, printouts, and tapes from this day have been included in the survey to be used at the discretion of the verifier. The lack of success in relocating the strays further supported the belief of the hydrographer that they were not hazards to navigation but the results of fish or electronic noise. None of these strays were plotted. Two strays were dove on during JD 277 and 278.

S16 (JD 278, Pos. 831). This stray was discovered to be a volcanic rock with a least depth of 31.2 feet at 45°07'54"N, 83°09'21"W. Due to Del Norte problems, a fix could not be obtained. On the recommendation of the boat OIC, the previous rates (obtained on JD 258, pos. 368 + 2) were used. These rates were used to relocate the rock for the dive.

S20, S21, S22 (JD 277, Pos. 828). These strays were found to be the wooden shipwreck in PSR #9. See Section K for further information.

A least depth investigation, using divers, was carried out on JD's 277 and 278. Six soundings were chosen from the hydrography run for possible least depth determination. These consisted of least depths on possible wrecks and shoals.

LEAST DEPTH ITEM NO.	BETWEEN POSITIONS	REMARKS
1	173 - 174	Not Investigated
2	213 - 214	DEV "A", Least Depth (Pos. 830)
3	200 - 201	Not Investigated
4	241 - 242	Not Investigated
5	271 - 272	Not Investigated
6	45 - 46	DEV "C", Least Depth (Pos. 829)

Further information on the dive for DEV "A" is contained in Section K.

13-Foot Shoal, (Development "C"), charted at 45°05.7'N, 83°16.7'W. This shoal was developed (Pos. 001-056) because of its close proximity to the sheet limits. A diver least depth of 8.0 feet was obtained on a small boulder at 45°05'38"N, 83°16'41"W (JD 277, Pos. 829). This is the same location as the charted 13-foot sounding. There were no significant features on the shoal. It is recommended that the surveyed least depth of 8 feet replace the charted 13 feet.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supercede the presently charted soundings except as noted in Section I. This survey is deficient in bottom samples as none were taken.

N. AIDS TO NAVIGATION

One lighted buoy was located during this survey, the NORDMEER Wreck Bell Buoy "WR1". Although the Great Lakes Light List (Volume IV, 1979) describes the buoy (L.L No. 1314) as having a red reflector, it was found to have a green one. All other information was correct except the light characteristic. It was not observed because the buoy was D.P.ed during the day.

The buoy adequately serves the purpose of marking the wreck. Comparison of the charted versus surveyed position is as follows:

SURVEYED POSITION	CHARTED POSITION	LIGHT LIST POSITION
45°08'15"N 83°09'17"W	45°08.1'N 83°09.2'W	45°08.1'N 83°09.3'W

O. STATISTICS

CATEGORY	VESNO 2838	VESNO 2839	VESNO 2830	TOTAL
Position Numbers	832	0	0	832
Nautical Miles of Sounding Lines	114.4	0	0	114.4
Sq. Nautical Miles of Sounding Lines	2.40	0	0	2.40
Nansen Casts	0	0	1	1
XBT's	13	1	2	16
Water Level Stations				3
Bottom Samples	0	0	0	0

P. MISCELLANEOUS

The report, "Thunder Bay Shipwreck Survey Study Report," written by Brian Bailey, was used by the PEIRCE to obtain additional information on the wrecks in PSR #8 and PSR #9.

Inspection of the fathograms for PSR #8 shows a very jagged bottom trace. Some of this can be attributed to sea action, but only to a limited extent. Much of this is believed to be debris from the NORDMEER. A plot of the strays for this item indicate that most fall within .25 nm of the wreck. The concentration of strays is higher near the wreck supporting this theory.

Two soundings were changed on the corrector tape for JD 262 after PSR #8 was plotted. A 37.5 foot sounding (225204 GMT) was changed to 36.5 feet (225159 GMT). Also the time (225209 GMT) for a 31.7 foot sounding was changed to 225204 GMT. These changes were due to scanning errors.

Q. RECOMMENDATIONS

It is recommended that the vessel completing this sheet run crosslines over the areas surveyed.

It is recommended that the least depth soundings over the wrecks in PSR #8 and #9 and over the shoals in Developments A, B, and C be changed as discussed in Sections K and L.

R. AUTOMATED DATA PROCESSING

The following programs were used during the survey:

PROGRAM NO.	PROGRAM NAME	VERSION
RK111	Range-Range Real Time Hydroplot	1/30/76
RK201	Grid, Signal & Lattice Plot	4/18/75
RK211	Range-Range Non-Real Time Plot	1/15/76
RK300	Utility Computations	2/05/76
RK330	Reformat & Data Check	5/04/76
PM360	Electronic Corrector Abstract	2/02/76
AM401	Transverse Mercator State Plane Coordinates - Forward & Inverse	4/01/73
AM405	Plane Coordinate Utility	7/01/69
AM406	Intersection Position Computation for Plane Coordinates	4/06/71
RK407	Geodetic Inverse/Direct Computation	9/25/78
RK530	Layer Corrections for Velocity	5/10/76
AM602	Elinore-Extended Line Oriented Editor	5/20/75

S. REFERREL TO REPORTS

All field computations for the calibration pipe were submitted with PE-20-3-79, H-9850.

Respectfully submitted for approval,

Gregory Da Silva

Gregory A. DaSilva
LTJG, NOAA

Shipwreck #23: Unknown Steamer

Type of Craft: Steamer
Hull Material: Wood
Length: Estimated 200'+
Width: Estimated 30'
Gross Tonnage: Unknown
Cargo: Coal
Type of Disaster: Fire

Location: 045° 06' 20" LAT
083° 13' 08" LONG

Location given on NOAA Great Lake Navigation Maps - E 3 3/8 miles off shore from FLW station on shore between North Point and Rock Port.

Bottom Depth: 25'
Bottom Surface: Sand

Condition of Wreck:
Broke up - rudder and one anchor is on shore at Stoney Croft Point.

General Observations for Reserve/Park Use:
Shallow water dive with good visibility.

Shipwreck #24: Nordmeer

Type of Craft: Oceangoing West German Freighter
Hull Material: ~~Wood~~ Steel
Length: Estimated 500'+
Width: Estimated 56'
Gross Tonnage: Unknown
Cargo: Rolled Steel
Type of Disaster: Ran aground
Date: 1966

Location: (Visible from shore)

045° 08' 20" LAT
083° 09' 25" LONG

On NOAA Great Lake Navigation Maps - 7 1/2 miles NNE of FLW located on shore between North Point and Rock Port. 79° MAG. heading.

Bottom Depth: 30' Bow / 50' Stern
Bottom Surface: Sand - medium stone.

Condition of Wreck:
Excellent - bow section broke off from main deck. Bow, center decks above water. Can get into decks that are above water.

General Observations for Reserve/Park Use:
Probably the best all-around wreck to dive, covered by this survey. An extremely large vessel - easy to find - alot to see above and below water.

△ Shipwreck #25: W. A. Young (constructed 1883)
Type of Craft: Schooner
Hull Material: Wood
Length: 165'
Width: 30'
Gross Tonnage: 434
Cargo: Coal
Type of Disaster: Foundered
Date: November 17, 1911

Estimated Location: 045° 08' 50" LAT
083° 14' 40" LONG

Estimated 3 1/2 miles east of nine mile point.

Bottom Depth: 40'
Bottom Surface: Sand

Condition of Wreck:
Unknown

General Observations for Reserve/Park Use:
This vessel has been spotted on several occasions by air and appears to be intact. Would be a good medium depth dive.

△ Shipwreck #26: New Orleans (constructed 1885)
Type of Craft: Steamer
Hull Material: Wood
Length: 231'
Width: 38'
Depth: 13'
Gross Tonnage: 1457
Cargo: Coal
Type of Disaster: Collision
Date: June 30, 1906

PE-20-2-79
H-9849

PARAMETER TAPE LISTING
SKEW 0,21,59

```
FEST=120000
CLAT=4928000
CMER=83/15/00
GRID=01/00
PLSCL=20000
PLAT=45/05/00
PLON=83/22/00
VESNO=2838
YR=79
ANDIST=000
```

PARAMETER TAPE LISTINGS

DEVELOPMENT " A "
27 - 28 FT SHOAL

SKEW 0,7.8,10.3

FEST=120000

CLAT=4928000

CMER=83/15/00

GRID=00/15

PLSCL=10000

PLAT=45/06/41

PLON=83/17/10

VESNO=2838

YR=79

ANDIST=000

DEVELOPMENT " B "
27 - 27 FT SHOAL

SKEW 90,7.8,10.3

FEST=120000

CLAT=4928000

CMER=83/15/00

GRID=00/15

PLSCL=10000

PLAT=45/05/45

PLON=83/16/13

VESNO=2838

YR=79

ANDIST=000

PARAMETER TAPE LISTINGS

DEVELOPMENT " C "
13 FT SHOAL

SKEW 90,7.8,10.3

FEST=120000

CLAT=4928000

CMER=83/15/00

GRID=00/15

PLSCL=7500

PLAT=45/05/13

PLON=83/16/13

VESNO=2838

YR=79

ANDIST=000

PSR # 9
22 FT WRECK

SKEW 90,7.8,10.3

FEST=120000

CLAT=4928000

CMER=83/15/00

GRID=00/15

PLSCL=7500

PLAT=45/05/48

PLON=83/12/37

VESNO=2838

YR=79

ANDIST=000

PARAMETER TAPE LISTINGS

PSR #8
NORDMEER WRECK HYDRO

SKEW 90,7.8,10.3

FEST=120000

CLAT=4928000

CMER=83/15/00

GRID=00/15

PLSCL=10000

PLAT=45/07/34

PLON=83/08/58

VESNO=2838

YR=79

ANDIST=000

PSR #8
NORDMEER WRECK D.P.'S

SKEW 90,7.8,10.3

FEST=120000

CLAT=4928000

CMER=83/15/00

GRID=00/05

PLSCL=1000

PLAT=45/08/05

PLON=83/09/27.6

VESNO=2838

YR=79

ANDIST=000

PE-20-2-79
H-9849

FIELD WATER LEVEL NOTE

Field water level reduction of sounding was based on predicted water levels for the Lake Huron Survey Area A. Times of predicted water levels are GMT. Times of recorded water levels are EST (60 W or +4 hours).

Two temporary Fischer-Porter ADR Gages controlled this survey during the specified period.

SITE	LOCATION	PERIOD
Alpena	Lat. 45 03' 32" N	5 September -
	Long. 83 25' 48" W	6 October 1979
Presque Isle Harbor	Lat. 45 20' 35" N	5 September -
	Long. 83 29' 10" W	6 October 1979

One permanent Stevens A - 35 Gage controlled this survey during the specified period.

SITE	LOCATION	PERIOD
Harrisville	Lat. 44 39' 34" N	5 September -
	Long. 83 17' 11" W	6 October 1979

ALPENA

Gage and staff were installed on 18 June by the NOAA Ship PEIRCE and levelled out and removed on 7 October. On 1 September the gage and staff were moved from the NW to SW corner of Krueger's Marina Dock.

PRESQUE ISLE HARBOR

Gage and staff were installed by HSB in May. The NOAA Ship PEIRCE

levelled out and removed the gage on 6 October.

HARRISVILLE

On 29 June the NOAA Ship PEIRCE inspected the gage and staff. It was found to be in good working order. The observer was also contacted and verified the observations. On 24 July the Tides and Water Levels Branch of the Atlantic Marine Center inspected the station.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY

NOAA Ship PEIRCE
439 West York Street
Norfolk, Virginia 23510

17 October 1979

To: Chief, Water Levels Branch (C234)

From: C. Dale North, CDR, NOAA
Commanding Officer
NOAA Ship PEIRCE

Suject: Request for Verified Hourly Water Levels
Boat Sheet H-9849, PE-20-2-79

Please provide hourly water levles from the water level gage for the period of hydrography:

Period of Hydrography:	172415 GMT 5 September 1979 through 210000 GMT 5 October 1979
Control Station:	Alpena, Michigan (907-5065)
Supplementary Stations:	Harrisville, Michigan (907-5059) Presque Isle Harbor, Michigan (907-5069)

Please forward the requested information directly to the Atlantic Marine Center, ATTN: CAM 33.

Attachment: Progress Sketch

cc: CAM 1
CAM 3

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES (field)

SURVEY NUMBER

H-9849

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	
Lake Huron										1
South Nine Mile Pt										2
Potter Pt.										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
			19							24
										25

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

OPR X115

SOUNDING CORRECTION ABSTRACT

Draft of 1.6 correction entered via corrector tape. Draft is 1.6 + 0.2 1166

VESSEL Launch 1008 Vesno. 2838

FIELD NO. PE-20-2-79

REGISTRY NO. H- 9849

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/fm	Remarks
248	172415	183956	1	+0.2	0.0	0.0	+0.2	+0.4	2500 RPM
249	141449	180106	1	+0.2	0.0	0.0	+0.2	+0.4	2500 RPM
249	183654	183654		+0.2	0.0	0.0	0.0	+0.2	0 RPM
253	145732	145732		+0.2	0.0	0.0	0.0	+0.2	0 RPM
253	155001	165002	2	+0.2	0.0	0.0	+0.2	+0.4	2500 RPM
256	140203	163709	3	+0.2	0.0	0.0	+0.2	+0.4	2500 RPM
258	140205	145329		+0.2	0.0	0.0	0.0	+0.2	0 RPM
258	154629	164045	4	+0.2	0.0	0.0	-0.2	0.0	1500 RPM
258	164315	164315		+0.2	0.0	0.0	0.0	+0.2	0 RPM
258	171855	180101	4	+0.2	0.0	0.0	+0.2	+0.4	2500 RPM
259	150511	155032	4	+0.2	0.0	0.0	-0.2	0.0	1500 RPM
259	171604	173753		+0.2	0.0	0.0	0.0	+0.2	0 RPM
259	182909	190604	4	+0.2	0.0	0.0	-0.2	0.0	1500 RPM
261	143143	143143		+0.2	0.0	0.0	0.0	+0.2	0 RPM

OPR X115

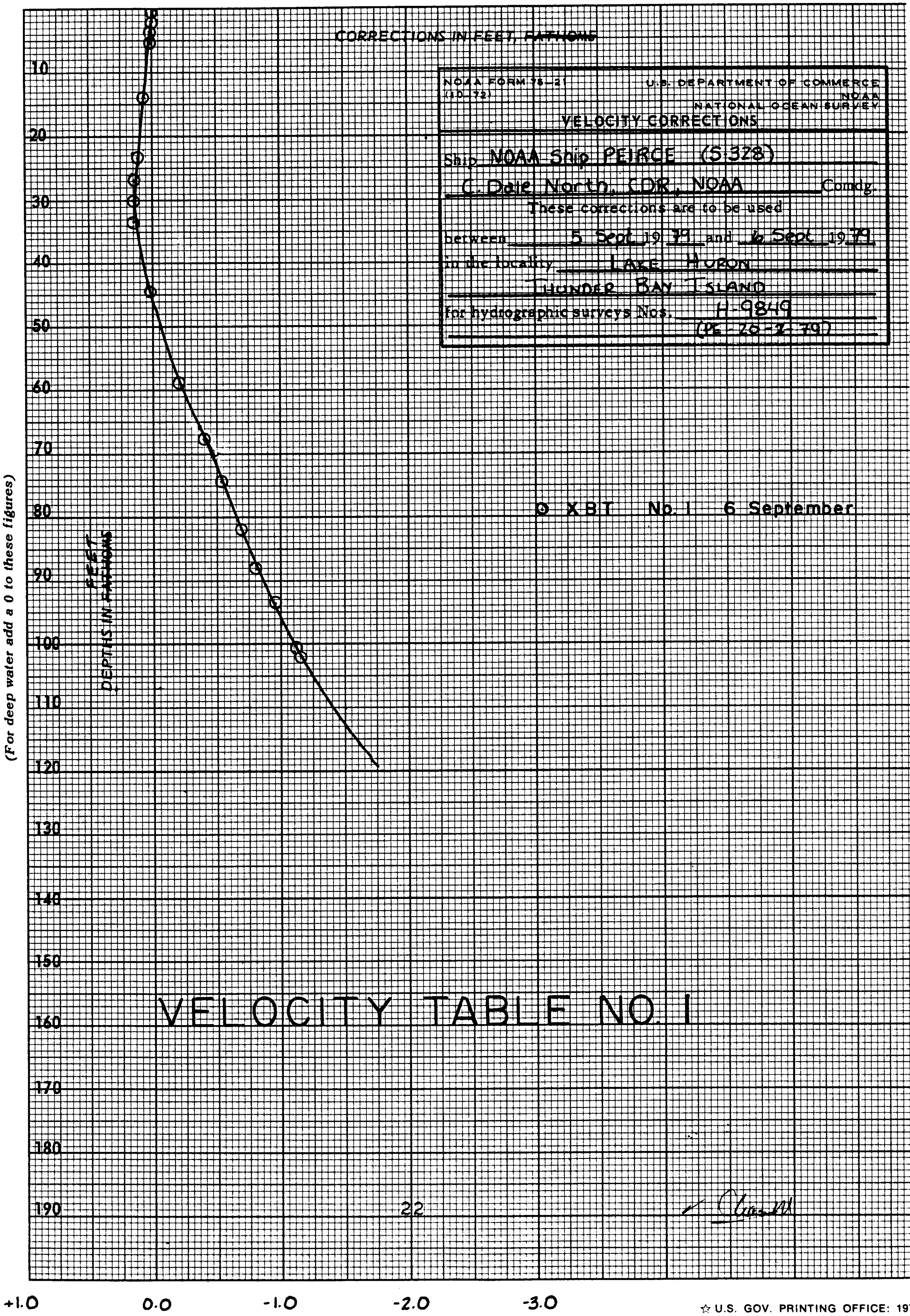
SOUNDING CORRECTION ABSTRACT

VESSEL Launch 1008 Vesno 2838

FIELD NO. PE-20-2-79

REGISTRY NO. H- 9849

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/fm	Remarks
262	221641	224116	5	+0.2	0.0	0.0	-0.2	0.0	2000 RPM
262	224542	231028	5	+0.2	0.0	0.0	+0.2	+0.4	2500 RPM
273	180729	190704	6	+0.2	0.0	0.0	-0.2	0.0	1500 RPM
274	135553	200206	6	+0.2	0.0	0.0	-0.2	0.0	1500 RPM
277	153000	183000		0.0	0.0	0.0	0.0	0.0	0 RPM
278	185000	204500		0.0	0.0	0.0	0.0	0.0	0 RPM

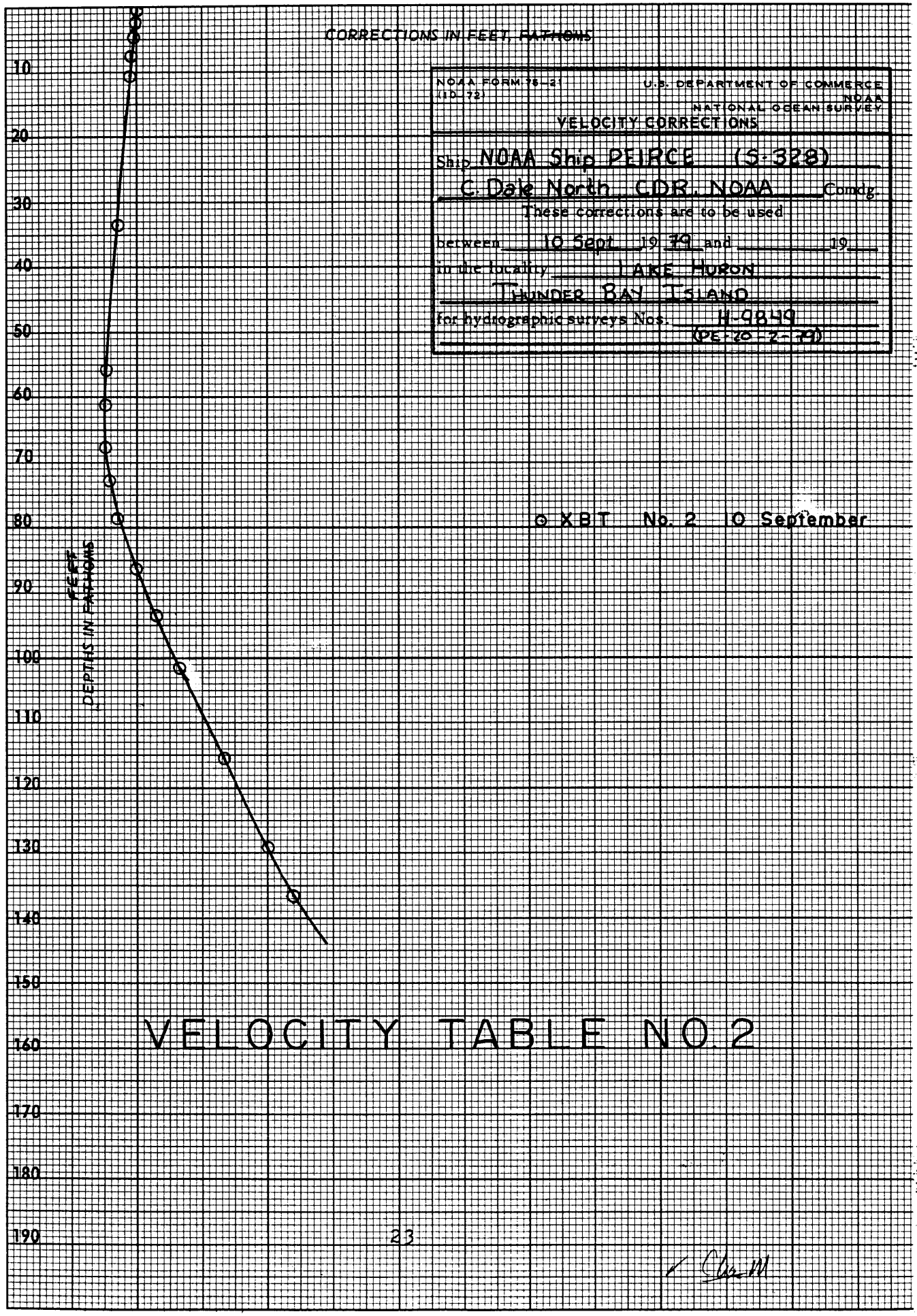

CORRECTIONS IN FEET, FATHOMS
NOAA FORM 75-21 (10-72)
U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL OCEAN SURVEY
VELOCITY CORRECTIONS
Ship NOAA Ship PEIRCE (S 328)
C. Dale North, CDR, NOAA Comdg.
These corrections are to be used
between 5 Sept 1979 and 6 Sept 1979
in the locality LAKE HURON
THUNDER BAY ISLAND
for hydrographic surveys Nos. H-9849
(PE-20-2-79)
XBT No. 1 6 September
(For deep water add a 0 to these figures)
DEPTHS IN FEET
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
+1.0
0.0
-1.0
-2.0
-3.0
VELOCITY TABLE NO. 1

22

46 1240

K+E 20 X 20 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

☆ U.S. GOV. PRINTING OFFICE: 197



(For deep water add a 0 to these figures)

46 1240

K+E 20 X 20 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

CORRECTIONS IN FEET, FATHOMS

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

VELOCITY CORRECTIONS

Ship NOAA Ship PEIRCE (S-328)

C. Dale North, CDR, NOAA Comdg.

These corrections are to be used

between 13 Sept 19 79 and _____ 19___

in the locality LAKE HURON

THUNDER BAY ISLAND

for hydrographic surveys Nos. H-9849

(PE: 20-2-79)

10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190

DEPTHS IN FEET

(For deep water add a 0 to these figures)

o XBT No. 3 12 September

VELOCITY TABLE NO. 3

+1.0 0.0 -1.0 -2.0 -3.0

24

46 1240

K&E 20 X 20 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

☆ U.S. GOV. PRINTING OFFICE: 197

CORRECTIONS IN FEET, ~~FATHOMS~~

NOAA FORM 76-31 (10-72) U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship NOAA Ship PEIRCE (S-328)

C. Dale North, CDR, NOAA Comdg.

These corrections are to be used

between 15 Sept. 1976 and 16 Sept. 1979

in the locality LAKE HURON

THUNDER BAY ISLAND

for hydrographic surveys Nos. H-9849

(PE-20-Z-79)

△ VESNO. 2838 Bar Check
□ VESNO. 2838 Leadline

⊙ XBT's No. 6 16 September
No. 7 16 September

DEPTHS IN FEET

(For deep water add a 0 to these figures)

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

VELOCITY TABLE NO. 4

+1.0 0.0 -1.0 -2.0

CORRECTIONS IN FEET, ~~FATHOMS~~

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

VELOCITY CORRECTIONS

Ship NOAA Ship PEIRCE (S-328)

C. Dale North COR, NOAA Comdg.

These corrections are to be used

between 18 Sept 19 79 and 19 Sept 19 79

in the locality LAKE HURON

THUNDER BAY ISLAND

for hydrographic surveys Nos. H-9849

(PE-20-2-79)

△ VESNO. 2838 Bar Check
□ VESNO. 2838 Leadline

○ XBT's No. 8 18 September
No. 9 21 September

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

DEPTHS IN FATHOMS FEET

(For deep water add a 0 to these figures)

VELOCITY TABLE NO. 5

+1.0 0.0 -1.0 -2.0 -3.0

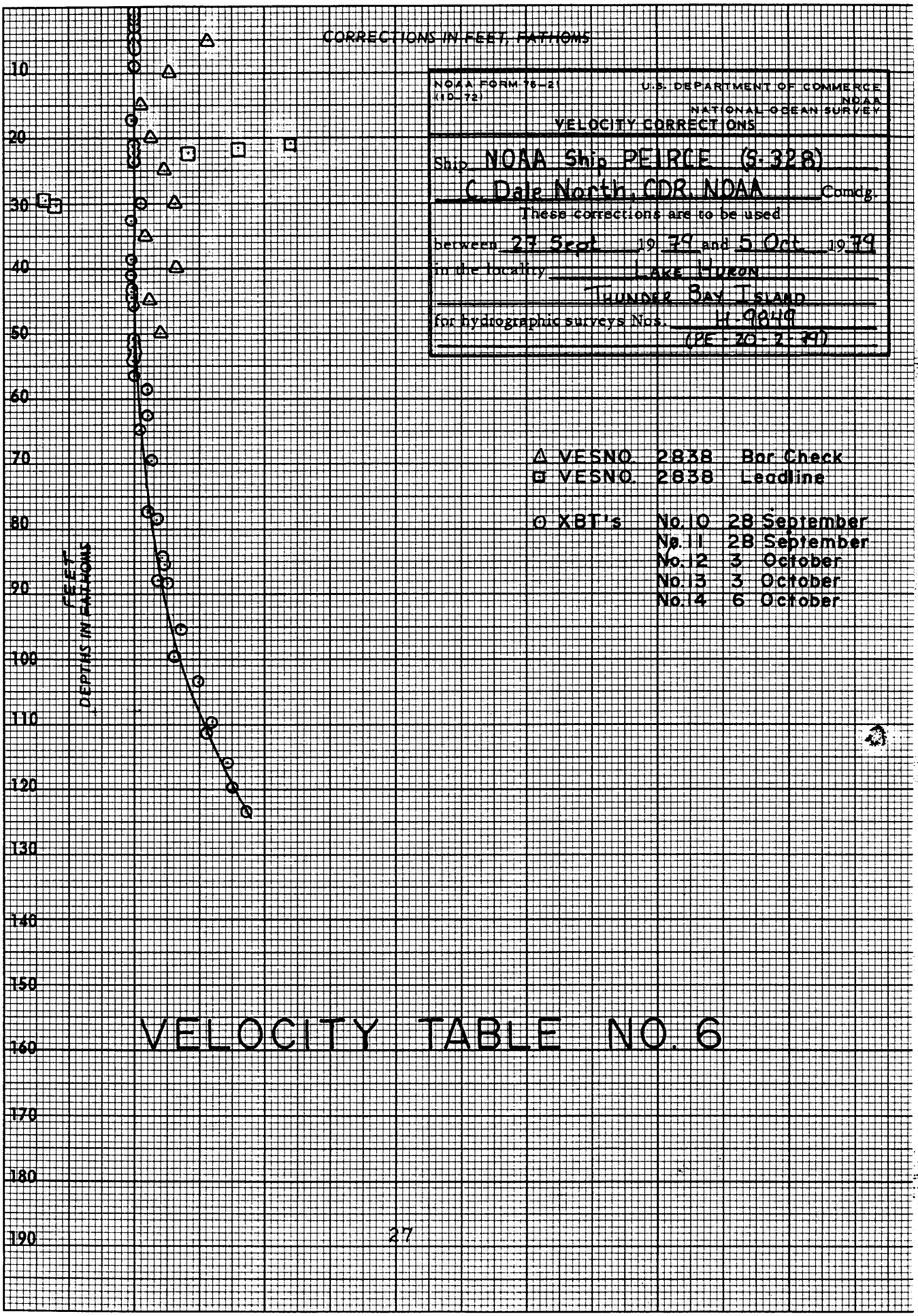
26

CM

46 1240

K+E 20 X 20 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

☆ U.S. GOV. PRINTING OFFICE: 197



NOAA FORM 76-21 (10-72)

U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship NOAA Ship PEIRCE (S-328)

C. Dale North, CDR, NOAA Comdg.

These corrections are to be used

between 27 Sept 1979 and 5 Oct 1979

in the locality LAKE HURON
THUNDER BAY ISLAND

for hydrographic surveys Nos. H-9849
(PE-70-2-79)

△ VESNO. 2838 Bar Check
□ VESNO. 2838 Leadline

○ XBT's No.10 28 September
No.11 28 September
No.12 3 October
No.13 3 October
No.14 6 October

VELOCITY TABLE NO. 6

VELOCITY CORRECTION TABLE LISTINGS

TABLE #1 VESNO: 2838

```
000206 0 0000 0001 000 283800 020279
000368 0 0002
000524 0 0000
000628 1 0002
000720 1 0004
999999 0 0000
```

TABLE #2 VESNO: 2838

```
000216 0 0000 0002 000 283800 020279
000804 0 0002
999999 0 0000
```

TABLE #3 VESNO: 2838

```
000668 0 0000 0003 000 283900 020279
000758 1 0002
999999 0 0000
```

VELOCITY CORRECTION TABLE LISTINGS

TABLE #4 VESNO: 2838

000470 0 0000 0004 000 283800 020279
000800 0 0002
999999 0 0000

TABLE #5 VESNO: 2838

001000 0 0000 0005 000 283800 020279
999999 0 0000

TABLE #6 VESNO: 2838

000732 0 0000 0006 000 283800 020279
000965 1 0002
001082 1 0004
001169 1 0006
999999 0 0000

TC/TI TAPE LISTING

		TRA	Vel Table			
172415	0	0004	0001	248	283800	001979
183654	0	0002	0000	249	283800	001979
155001	0	0004	0002	253	283800	001979
140203	0	0004	0003	256	283800	001979
140205	0	0002	0000	258	283800	001979
154629	0	0000	0004	258	283800	001979
164315	0	0002	0000	258	283800	001979
171855	0	0004	0004	258	283800	001979
150511	0	0000	0004	259	283800	001979
171604	0	0002	0000	259	283800	001979
182909	0	0000	0004	259	283800	001979
143143	0	0002	0000	261	283800	001979
221641	0	0000	0005	262	283800	001979
224542	0	0004				
180729	0	0000	0006	273	283800	001979
153000	0	0000	0000	277	283800	001979
235959	0	0000	0000	278	283800	001979

ELECTRONIC CORRECTOP ABSTRACT

VESSEL : 2838 SHEET : PE-20-2-79

TIME	DAY	PATTERN 1	PATTERN 2
172415	248	-00061	-00003
141449	249	-00060	-00004
* 145732	253	-00058	-00001
155001		-00058	-00002
140203	256	-00058	-00005
140205	258	-00057	-00003
150511	259	-00059	-00005
143143	261	-00059	-00004
221641	262	-00053	+00000
180729	273	-00059	-00003
140703	274	-00056	-00003
153000	277	-00058	-00001
185000	278	-00054	-00001
204500		-00054	-00003

PE-20-2-79
H-9849

SIGNAL TAPE LISTING

020	3	45 09 40925	083 20 55022	250	0000	000000	H-11-MI-77, 1977, AMC
021	3	45 08 31220	083 18 58489	250	0000	000000	H-12-MI-77, 1977, AMC
022	3	45 05 23044	083 17 53719	250	0000	000000	MISERY, 1977 USLS
028	3	45 02 14167	083 11 39325	139	0018	000000	THUNDER BAY IS. LT. HSE, 1956, NGS

C&GS FORM 525
(10-69)

U. S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

QUAD 450832

DESCRIPTION OF TRIANGULATION STATION
TRAVERSE

NAME OF STATION: H-12-MI-77 STATE: Michigan COUNTY: Alpena

CHIEF OF PARTY: J.D. Shea YEAR: 1977 DESCRIBED BY: J.D.S.

NOTE.* HEIGHT OF TELESCOPE ABOVE STATION MARK METERS,† HEIGHT OF LIGHT ABOVE STATION MARK METERS.

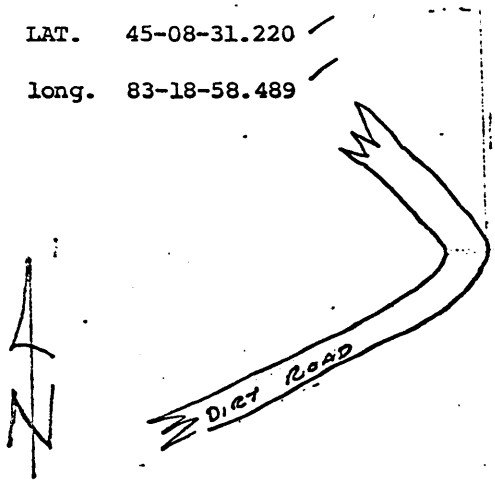
SURFACE-STATION MARK, UNDERGROUND-STATION MARK	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION			
OBJECT	BEARING	DISTANCE		DIRECTION‡
		FEET	METERS	° ' "

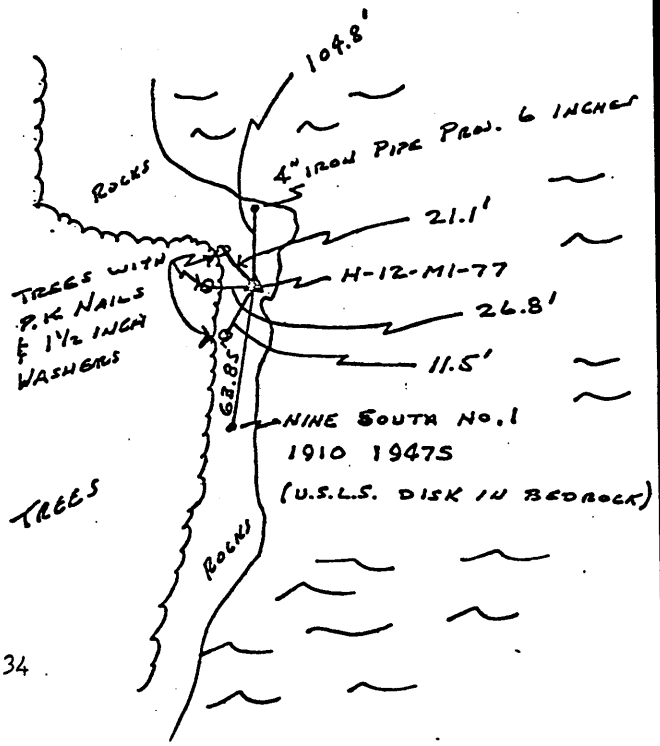
Detailed description

This station is located on South Ninemile Point on the west shore of Lake Huron. To reach the station from the junction of U.S. Highway 23 and Bloom Road which is located about 5 miles north of Alpena, go 5.1 miles east on Bloom Road to a "T" intersection, turn left and go north on North Point Road for 0.1 mile, turn right on a dirt road and go easterly for 1.5 miles to a sharp curve. From this point, walk about 300 ft. to the shore then follow the shoreline southerly for about 400 ft. to the station. The station is a N.O.S. Disk stamped H-12-MI-77 1977. The disk is epoxied in a drill hole in a rock ledge.

LAT. 45-08-31.220

long. 83-18-58.489





*Refers to notes in manuals of triangulation and state publications of triangulation. ‡Direction-angle measured clockwise, referred to initial station.
†To nearest meter only, when no trigonometric leveling is being done.

C&GS FORM 525
10-69)

U. S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

QUAD 450832

DESCRIPTION OF TRIANGULATION STATION
TRAVERSE

E OF STATION: MISERY (USLS) STATE: Michigan COUNTY: Alpena

CHIEF OF PARTY: J.D. Shea YEAR: 1977 DESCRIBED BY: J.D.S.

NOTE.* HEIGHT OF TELESCOPE ABOVE STATION MARK METERS,† HEIGHT OF LIGHT ABOVE STATION MARK METERS.

SURFACE-STATION MARK, UNDERGROUND-STATION MARK	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION			
OBJECT	BEARING	DISTANCE		DIRECTION‡
		FEET	METERS	
				° ' "

Detailed description:

This station is located on Potters Point on the west shore of Lake Huron. To reach the station from the Second Ave. bridge across Thunder Bay in Alpena, go NE on Second Ave. for 0.7 miles, turn right on Hueber St. and go 0.2 miles SE, turn left on Ford Ave. (this turns into North Point Road), passing the Portland Cement Co., for 3.7 miles to a "T" junction, turn left and go north for 1.0 miles to the junction of Indian Road, turn right on Indian Road and go 1.0 mile to a sharp curve. At this point walk for about 0.2 mile east along a fence, then walk southeast along the shore for about 0.3 mile to Potters Point and the station. The station is about 400 ft. north of the south end of Potters Point, 345 ft. north of the northwest corner of the concrete foundation of the remains of a cement cottage, and about 10 ft. west of the high water line. The station is a U.S. Lake Survey 2 inch bronze disk stamped MISERY 1907 1944S set in top of a concrete post that is about 1 ft. below the surface of the ground. Reference mark 1 is 47.32 ft. north of the station, it is a U.S. Lake Survey disk stamped MISERY NO 1 1907 1940S set in top of an 8 inch concrete monument that projects 3 inches. Reference mark 2 is 44.55 ft. south of the station., it is a U.S. Lake Survey Disk stamped MISERY NO 2 1907 1940S set in top of an 8 inch concrete monument projecting 3 inches.

LAT. 45°-05'-23.0440" /

LONG. 83°-17'-53.7190" /

*Refers to notes in manuals of triangulation and state publications of triangulation. ‡Direction-angle measured clockwise, referred to initial station.
†To nearest meter only, when no trigonometric leveling is being done.

JUNE 1960
PUBLISHED AND PRINTED BY:
U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
WASHINGTON D.C.

HORIZONTAL CONTROL DATA

by the
Coast and Geodetic Survey
NORTH AMERICAN 1927 DATUM

QUAD 450832 STATION 1019, 1020
MICH
LATITUDE 45°00' TO 45°30'
LONGITUDE 83°00' TO 83°30'
DIAGRAM NL 17-7 ALPENA

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PRESQUE ISLE LIGHTHOUSE YEAR: 1956

STATE: Michigan LOCALITY: Petoskey-Rogers City Area

Third -ORDER Triangulation SOURCE: G-11571 FIELD SKETCH: MICH 13-I

GRID DATA	COORDINATES (Feet)	PLANE AZIMUTH θ (OR Δα) ANGLE	MARK
STATE: Mich ZONE: E CODE: 2101	x 544,816.94 y 1,405,659.02	+ 0°07'26"	
STATE: Mich ZONE: C CODE: 2112	x 2,216,198.53 y 744,799.83	+ 0 35 39	

GEODETIC DATA	POSITION	SECONDS IN METERS	ELEVATION
	LATITUDE: 45°21'23".359 NORTH LONGITUDE: 83 29 32.378 WEST		METERS FEET

TO STATION	GEODETIC AZIMUTH (From south)	DISTANCE LOGARITHM (Meters)	DISTANCE METERS
	THIRD-ORDER		
GRAND	(59°01'29".4)	3.592 956	3,917.0
MAY	(79 44 02.8)	4.131 563	13,538.3
PRESQUE ISLE	(348 16 42.5)	3.773 984	5,942.7

DEPARTMENT OF COMMERCE U.S. COAST AND GEODETIC SURVEY Form 888 b

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Presque Isle Lighthouse

CHIEF OF PARTY: W.N. Martin YEAR: 1956 STATE: Michigan COUNTY: Presque Isle

Description, including sketch of object: The station is about 20 miles north of Alpena, 16 miles east-southeast of Rogers City on the north end of Presque Isle. The point intersected was the center of the top of the lighthouse. The station is a white conical tower, dwelling attached with a fixed white light at the top of the tower. The light above low water is 123 feet.

The station is listed as Number 811 Presque Isle in the Great Lakes Light List manual CG-159.

Described by J.A. Nelson

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: THUNDER BAY ISLAND LIGHTHOUSE YEAR: 1956

STATE: Michigan LOCALITY: Petoskey-Rogers City Area

Third -ORDER Triangulation SOURCE: G-11571 FIELD SKETCH: MICH 13-I

GRID DATA	COORDINATES (Feet)	PLANE AZIMUTH θ (OR Δα) ANGLE	MARK
STATE: Mich ZONE: E CODE: 2101	x 622,121.90 y 1,289,581.10	+ 0°20'03"	
STATE: Mich ZONE: C CODE: 2112	x 2,294,453.94 y 629,358.74	+ 0 48 17	

GEODETIC DATA	POSITION	SECONDS IN METERS	ELEVATION
	LATITUDE: 45°02'14".167 NORTH LONGITUDE: 83 11 39.325 WEST		METERS FEET

TO STATION	GEODETIC AZIMUTH (From south)	DISTANCE LOGARITHM (Meters)	DISTANCE METERS
	THIRD-ORDER		
PRECORE	(71°09'51".7)	4.433 186	27,113.5
NORTH POINT USLS	(71 48 26.7)	3.769 079	5,876.0
ALPENA	(97 37 30.7)	4.271 747	18,695.9
CAMEL	(120 21 02.2)	4.214 632	16,392.0

DEPARTMENT OF COMMERCE U.S. COAST AND GEODETIC SURVEY Form 888 b

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Thunder Bay Island Lighthouse

CHIEF OF PARTY: W.N. Martin YEAR: 1956 STATE: Michigan COUNTY: Alpena

Description, including sketch of object: The station is about 12 miles east of Alpena on the east shore of Thunder Bay Island. The point intersected was the center of the top of the lighthouse. It is a gray conical tower, dwelling attached with a flashing white light at the top of the tower. The light above low water is 63 feet.

The station is listed as Number 805 Thunder Bay Island in the Great Lakes Light List manual CG-159.

Described by J.A. Nelson

PE-20-2-79
H-9849

ABSTRACT OF POSITIONS

VESNO. 2838

DAY	POSITIONS	CTRL	S1	M	S2	REMARKS
248	0001-0056	04	022	0	021	Hydro Dev. "C"
249	0057-0220	04	022	0	021	Hydro PSR #9, Dev. "A"
	0221					Rejected XBT D.P.
253	0222	04	022	0	020	D.P. XBT
	0223-0258	04	022	0	021	Hydro Dev. "B"
256	0259-0277	04	022	0	021	Hydro Dev. "B"
	0278					Rejected Dev. "B"
	0279					Hydro Dev. "B"
	0280					Rejected Dev. "B"
	0281-0341					Hydro Dev. "B"
258	0342-0347	04	022	0	020	D.P.'s PSR #8
	0348					Rejected PSR #8
	0349-0351					D.P.'s PSR #8
	0352-0378					Hydro PSR #8
	0379					Rejected PSR #8
	0380-0403	04	022	0	021	Hydro Dev. "B"
	0404					Rejected Dev. "B"
	0405-0413					Hydro Dev. "B"
259	0414-0433	04	022	0	020	Hydro PSR #8
	0434					Rejected PSR #8
	0435-0437					Hydro PSR #8

PE-20-2-79
H-9849

ABSTRACT OF POSITIONS

VESNO: 2838

DAY	POSITIONS	CTRL	S1	M	S2	REMARKS
259	0438	04	022	0	020	D.P. PSR #8
	0439					Rejected PSR #8
	0440-0442					D.P.'s PSR #8
	0443-0444					Rejected PSR #8
	0445-0446					D.P.'s PSR #8
	0447-0463					Hydro PSR #8
261	0464	04	022	0	020	D.P. Buoy
	0465-0495					Rejected PSR#8
262	0465-0506	04	022	0	020	Hydro PSR #8
270	0507-0534	04	022	0	020	Rejected PSR #8
273	0535-0561	04	022	0	020	Hydro PSR #8
274	0562-0574	04	022	0	020	Rejected PSR #8
	0832					D.P. PSR #8
	0575-0826					Rejected PSR #8
277	0827	04	022	0	020	D.P. PSR #8
	0828-0829	04	022	0	021	D.P.'s PSR #9, Dev. "C"
278	0830	04	022	0	021	D.P. Dev. "A"
	0831	04	022	0	020	D.P. PSR #8

CONTROL CODES

04 Range/Range

S1 Left Del Norte Station
S2 Right Del Norte Station

SOUNDINGS REDUCED FOR:

1. PREDICTED/~~WATER LEVELS~~ ARE/~~NOT~~ APPLIED
2. DRAFT CORRECTION IS/~~NOT~~ APPLIED
3. SETTLEMENT & SQUAT CORRECTION IS/NOT APPLIED
4. INSTRUMENT CORRECTION IS/~~NOT~~ APPLIED
5. VELOCITY CORRECTION IS/~~NOT~~ APPLIED

DEVELOPMENT "A"

27-28 foot shoal

No. 42 HYDROGRAPHIC SURVEY

Field No. PE-20-2-79 Reg. No. H-9849

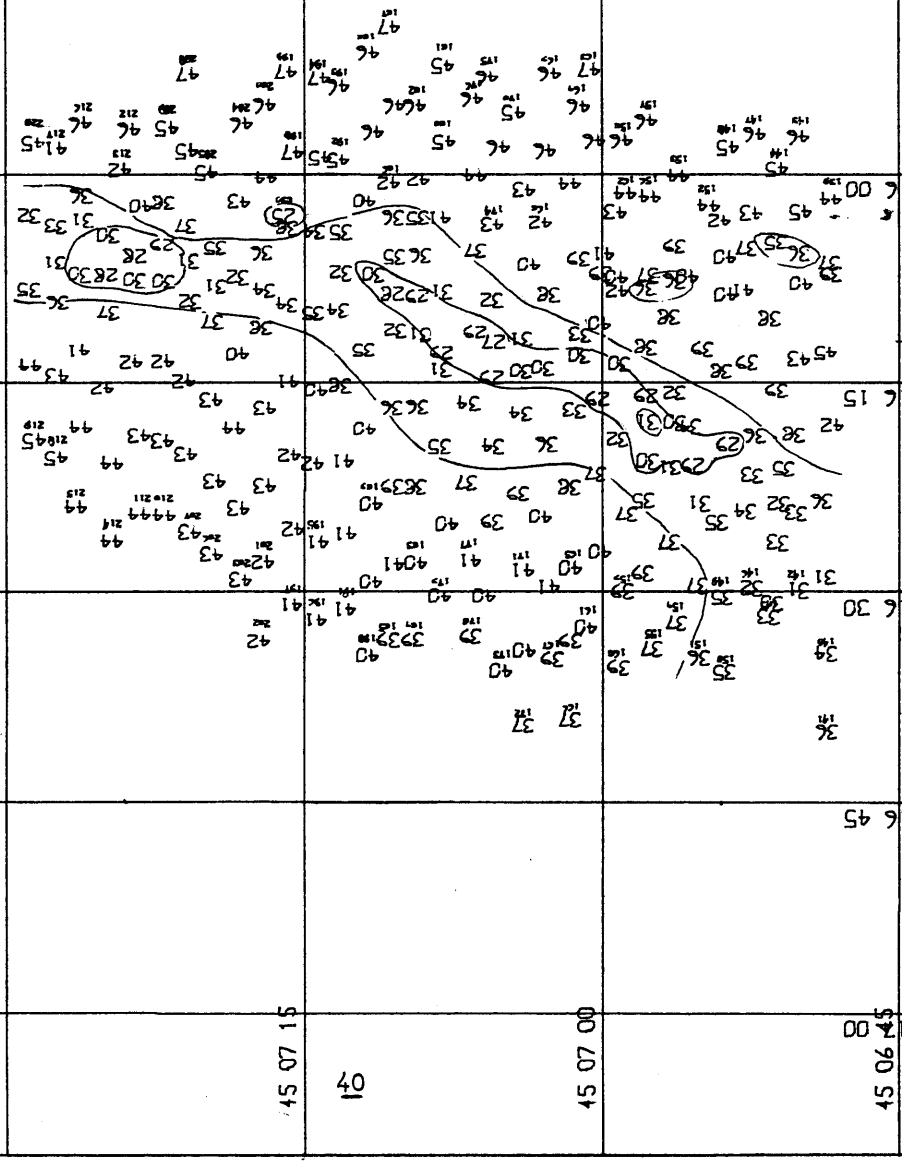
Scale 1: 10,000 Plotted ___ Verified ___

Datum IGLD, 1955

Ref. Sta., origin

Lat. 46/06/41 m. Adj.

Long 83/17/10 m. Uncorr.



083 15 15

083 15 30

083 15 45

083 16 00

083 16 15

083 16 30

083 16 45

083 17 00

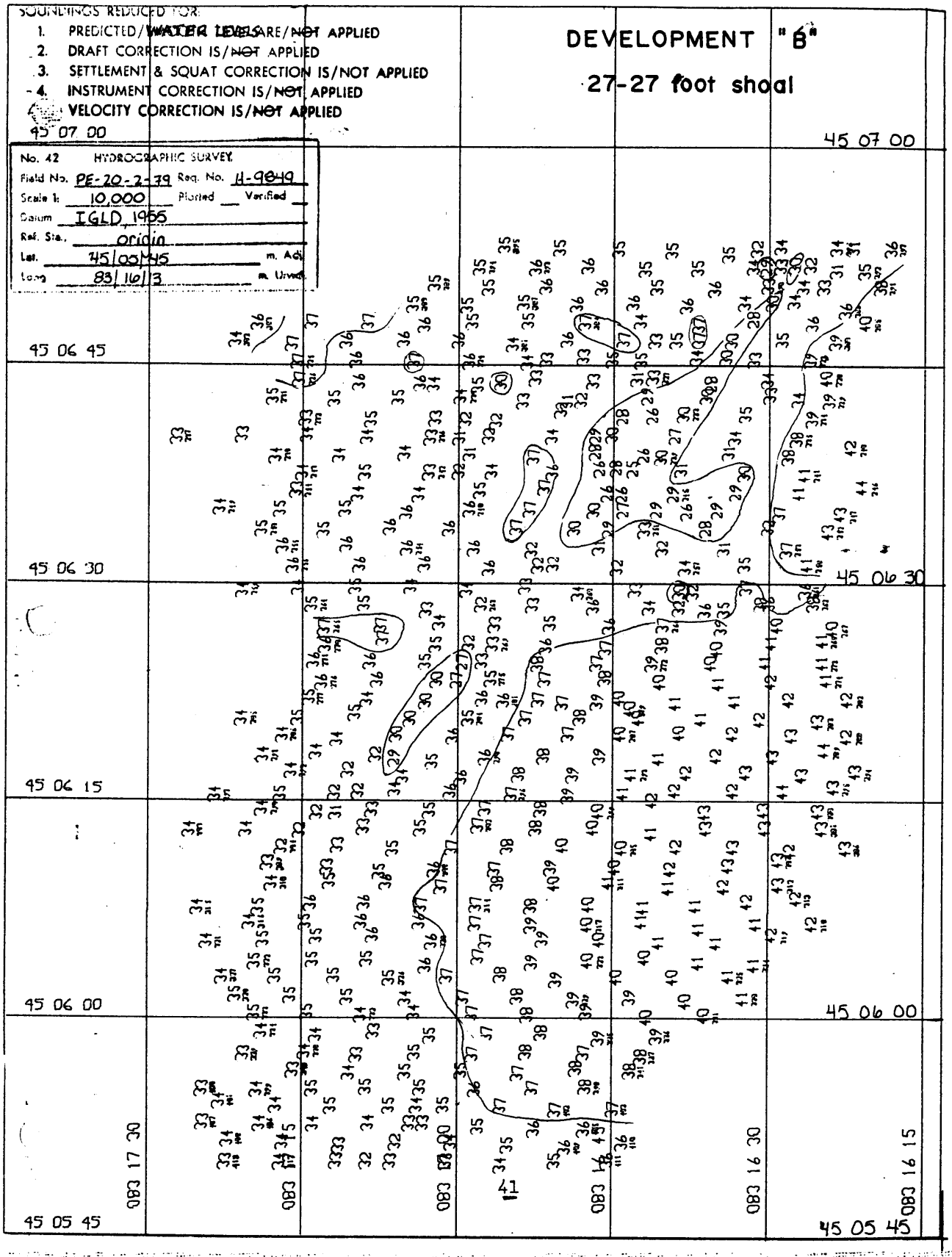
45 07 30

45 07 15

40

45 07 00

45 06 45


SOUNDINGS REDUCED FOR:
1. PREDICTED/WATER LEVELS ARE/NOT APPLIED
2. DRAFT CORRECTION IS/NOT APPLIED
3. SETTLEMENT & SQUAT CORRECTION IS/NOT APPLIED
4. INSTRUMENT CORRECTION IS/NOT APPLIED
5. VELOCITY CORRECTION IS/NOT APPLIED
DEVELOPMENT "B"
27-27 foot shoal
No. 42 HYDROGRAPHIC SURVEY
Field No. PE-20-2-79 Reg. No. H-9849
Scale 1: 10,000 Plotted Verified
Datum IGLD, 1955
Ref. Sta., origin
Lat. 45/05/45 m. Adj.
Long 83/16/3 m. Unadj.
45 07 00
45 06 45
45 06 30
45 06 15
45 06 00
45 05 45
083 17 30
083 16 30
083 16 15

DEVELOPMENT "C"

13 foot shoal

SOUNDINGS REDUCED FOR:
1. PREDICTED/~~WATER LEVELS~~ ARE/~~NOT~~ APPLIED
2. DRAFT CORRECTION IS/~~NOT~~ APPLIED
3. SETTLEMENT & SQUAT CORRECTION IS/NOT APPLIED
4. INSTRUMENT CORRECTION IS/~~NOT~~ APPLIED
5. VELOCITY CORRECTION IS/~~NOT~~ APPLIED

No. 42	HYDROGRAPHIC SURVEY
Field No.	PE-20-2-79 Reg. No. H-9849
Scale 1:	7500 Plotted ___ Verified ___
Datum	IGLD, 1955
Ref. Sta.,	origin
Lat.	45/03/13 m Adj.
Long	83/16/13 n. Unadj.

45 06 15
45 06 00
45 05 45
45 05 30
45 05 15
083 17 15
083 17 00
083 16 45
083 16 30
083 16 15
42

SOUNDINGS REDUCED
1. PREDICTED/WATER LEVELS ~~ARE/NOT~~ APPLIED
2. DRAFT CORRECTION IS/~~NOT~~ APPLIED
3. SETTLEMENT & SQUAT CORRECTION IS/~~NOT~~ APPLIED
4. INSTRUMENT CORRECTION IS/~~NOT~~ APPLIED
5. VELOCITY CORRECTION IS/~~NOT~~ APPLIED

PSR #9

DEVELOPMENT of 22 foot wreck

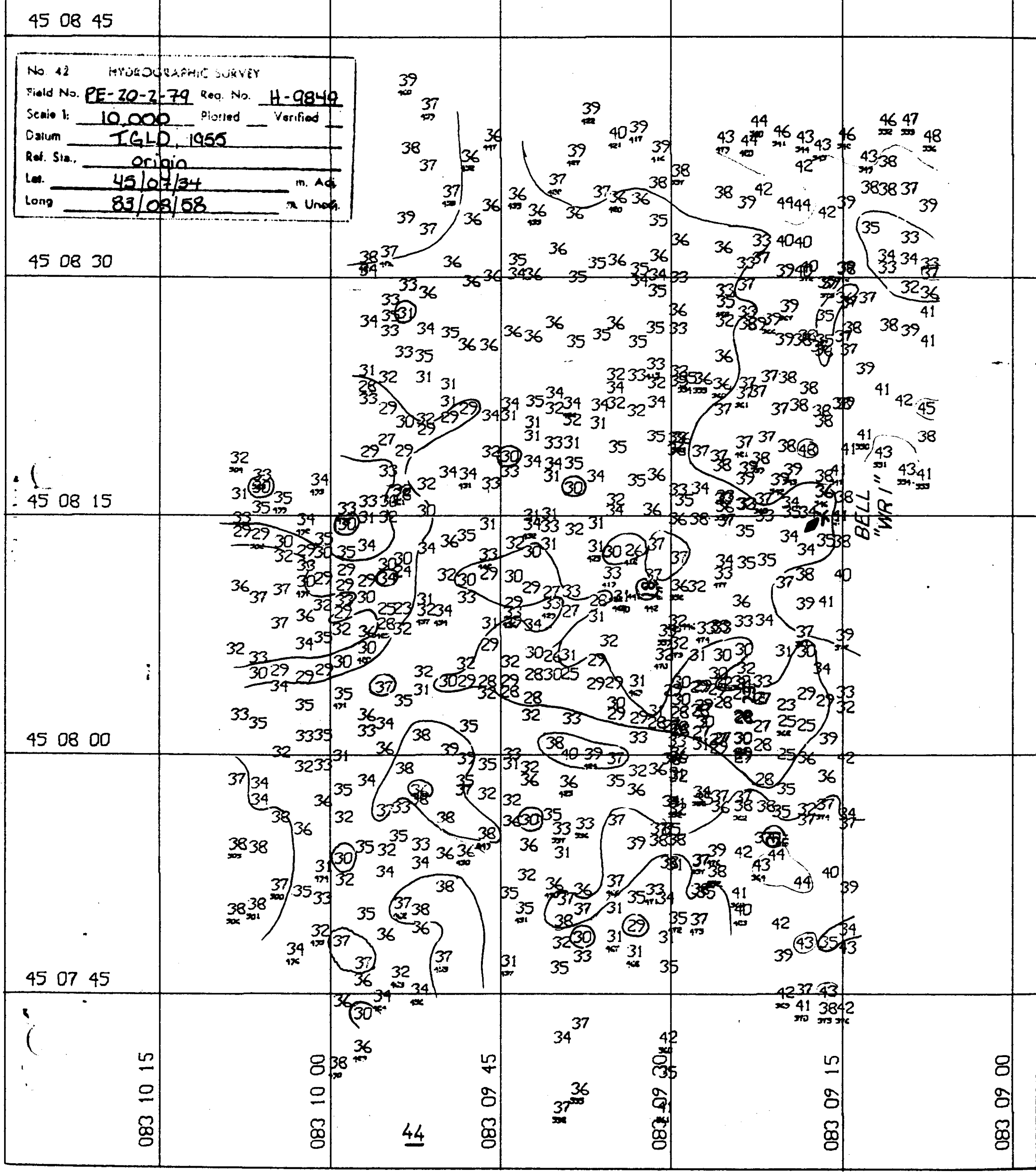
Form 42 HYDROGRAPHIC SURVEY
Field No. PE-20-2-79 Reg. No. H-9849
Scale 1: 7500 Plotted __ Verified __
Datum IGLD, 1955
Ref. Sta., origin
Lat. 46/05/48 m. Adj.
Long 83/12/37 m. Uncrk.

45 06 45
45 06 30
45 06 15
45 06 00
083 13 30
083 13 15
083 13 00
083 12 45
43

SOUNDINGS REDUCED FOR:

1. PREDICTED/~~WATER LEVELS~~ ARE/~~NOT~~ APPLIED
2. DRAFT CORRECTION IS/~~NOT~~ APPLIED
3. SETTLEMENT & SQUAT CORRECTION IS/NOT APPLIED
4. INSTRUMENT CORRECTION IS/~~NOT~~ APPLIED
5. VELOCITY CORRECTION IS/~~NOT~~ APPLIED

PSR #8 Hydro
NORDMEER WRECK

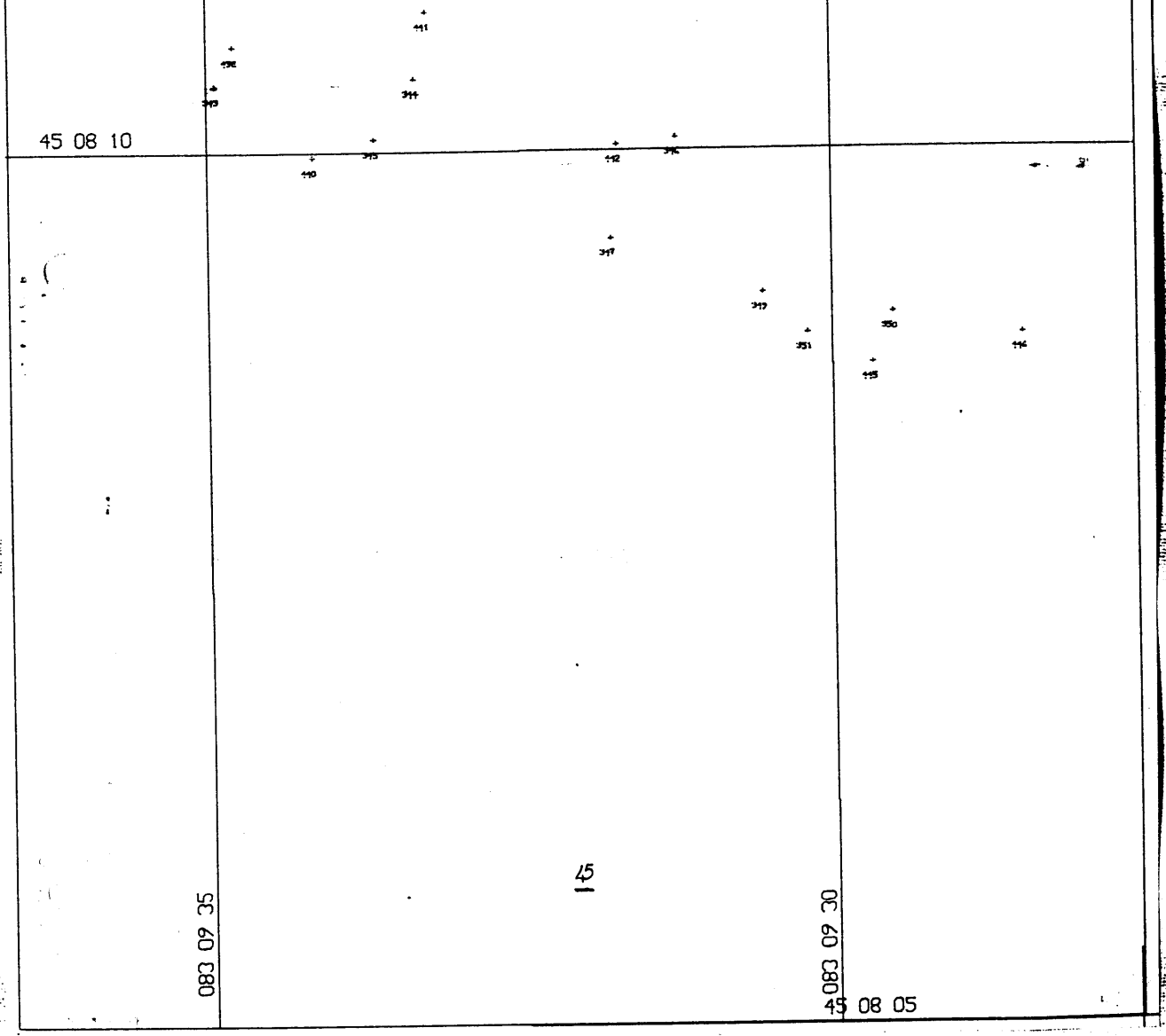


SOUNDINGS REDUCED FOR:

1. PREDICTED/~~SVERAGE~~ TIDES ARE/~~NOT~~ APPLIED
2. DRAFT CORRECTION IS/~~NOT~~ APPLIED
3. SETTLEMENT & SQUAT CORRECTION IS/NOT APPLIED
4. INSTRUMENT CORRECTION IS/~~NOT~~ APPLIED
5. VELOCITY CORRECTION IS/~~NOT~~ APPLIED

No. 42 HYDROGRAPHIC SURVEY
Field No. PE-70-2-79 Reg. No. H-9849
Scale 1: 1000 Plotted ___ Verified ___
Datum IGLD, 1955
Ref. Sta., origin
Lat. 45|08|05 m. Adj.
Long. 83|09|27.6e m. Unadj.

PSR 8 D.P.'s
NORDMEER WRECK
Pos'ns 343-351
438-446



APPROVAL SHEET
PE-20-2-79
H-9849

The field work on this hydrographic survey was conducted under routine supervision. The boat sheet and records have been reviewed and approved by me. The survey is complete and adequate for the area investigated with the exception of details mentioned to the contrary in Sections I and M. See Section Q for recommendations.

C. Dale North, Jr.
CDR, NOAA
Commanding Officer
NOAA Ship PEIRCE S-328

INDEX

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-9849

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.

PE-20-2-79

State Michigan

General locality Lake Huron

Locality Vicinity of Thunder Bay Island

September 30, 1980

Scale 1:20,000 Date of survey Aug 25 - Oct 13, 1981

Instructions dated February 2, 1981* Project No. OPR-X115-HSB-81

Vessel NOAA Launch 1255 - HFP-4

Chief of party Lt. Cdr. George W.Jamerson, NOAA

Surveyed by Lt(jg) Samuel P. De Bow, Jr., NOAA

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

Graphic record scaled by SPD, EM, DP, SH, FS, DB

Graphic record checked by SPD, EM, DP, SH, FS

Protracted by N/A Automated plot by Field PDP8/e Hydroplot Xynetics 1200

Verification by Verification Branch - AMC

Soundings in ~~fathoms~~ feet at ~~MKW~~ MLLW IGLD-LWD-576.8 feet

REMARKS: * Change No. 1 - April 3, 1981

Project was not completed due to mechanical problems with main engine.

SPD - Samuel P. De Bow

EM - Edwin Martin

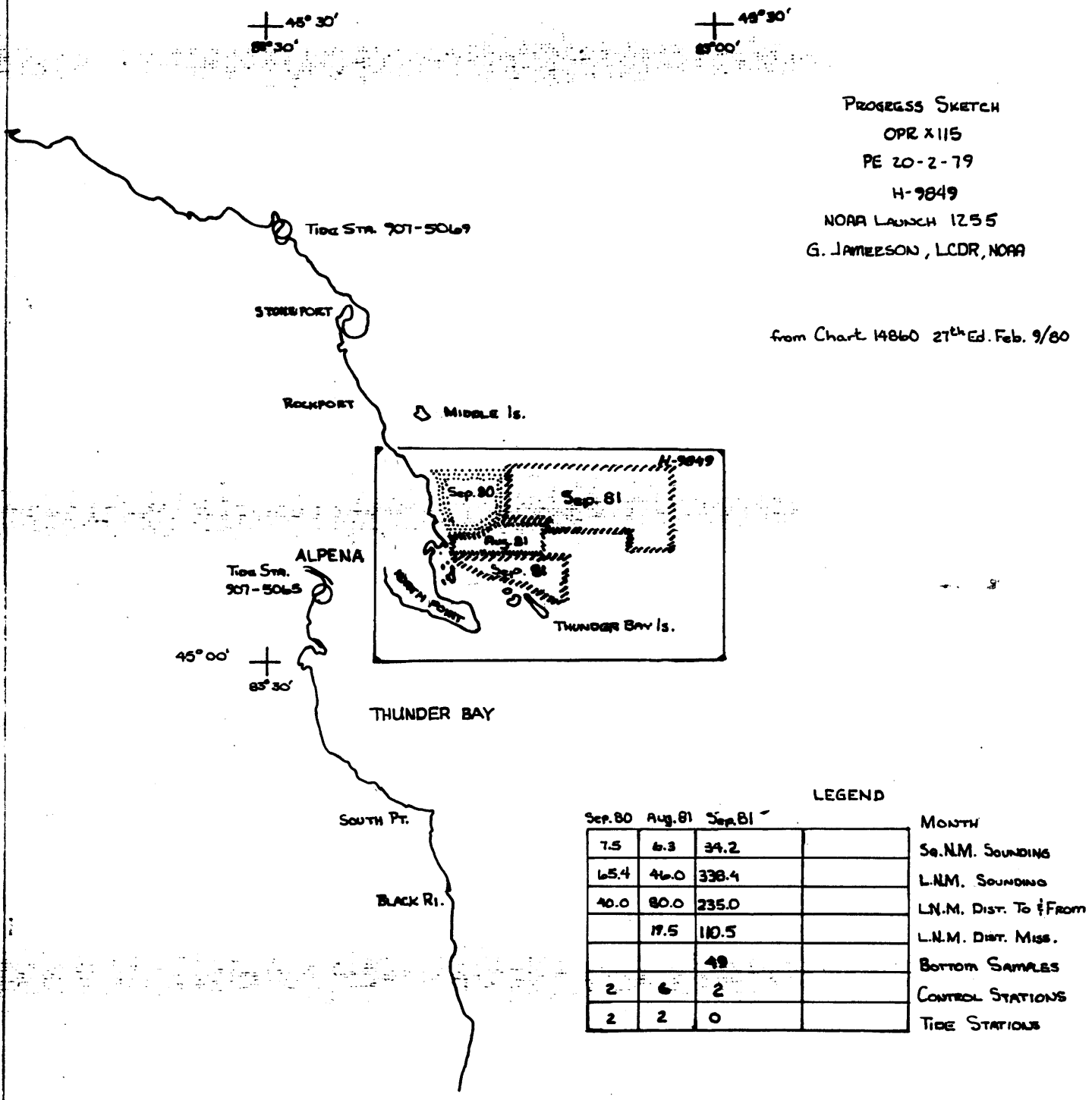
DP - Dennis Parris

SH - Henry I. Hickman

FS - Franklin Saunders

DB - Danny Bryant

☆ U.S. GPO: 1974-0-768-081/1207



PROGRESS SKETCH
OPR X115
PE 20-2-79
H-9849
NOAA LAUNCH 1255
G. JAMIESON, LCDR, NOAA

from Chart 14860 27th Ed. Feb. 9/80

LEGEND

Sep. 80	Aug. 81	Sep. 81		
7.5	6.3	34.2		Sq. N.M. Sounding
65.4	46.0	338.4		L.N.M. Sounding
40.0	80.0	235.0		L.N.M. Dist. To & From
	17.5	110.5		L.N.M. Dist. Miss.
		49		Bottom Samples
2	6	2		Control Stations
2	2	0		Tide Stations

Month

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9849
PE-20-2-79

Scale: 1:20,000
Chief of Party: Lt. Cdr. George W. Jamerson
Officer-in-Charge: Lt(jg) Samuel P. De Bow
Hydrographic Surveys Branch - Hydrographic Field Party #4
Launch 1255

A. PROJECT

This project was begun by the NOAA Ship PEIRCE in 1979 under Project Instructions OPR-X115-HSB-79. An additional day of hydrography was done in 1980 by this unit under OPR-X115-HSB-80.

Authority for this survey was granted by Project Instruction OPR-X115-HSB-81 dated February 2, 1981 and amended by Change No. 1 dated April 3, 1981.

B. AREA SURVEYED

The survey area for this project was located between Thunder Bay Island and Middle Island, near Alpena, Michigan on the west shore of Lake Huron.

The sheet boundaries are:

North:	45°10.0'N
South:	45°00.0'N
East :	83°00.0'W
West :	83°22.0'W

The survey ran from August 25, 1981 (JD 237) to October 13, 1981 (JD 286). One day was run on September 30, 1980 (JD274).

C. SOUNDING VESSEL

All soundings obtained on this survey were obtained from NOAA Launch 1255 (EDP # 1255). All survey records are annotated with the vessel number 1255.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings were taken using the following equipment:

Recorder	Model	# DE-723D
	Serial	# 37018
ECU	Model	# DE-723D
	Serial	# 2132
Digitizer	Model	# DDM
	Serial	# 1907

The fathometer was continuously monitored while sounding, with A-F checks made at the end of each line. A digital phase check was made at the beginning and end of the survey.

An inherent problem was observed with the fathogram traces during the project. Distinctive "paired spikes" at somewhat regular intervals were observed on the fathograms, especially at deeper depths (D-F scales). This problem was not detected until the final check scan was made by the OIC. The same problem was observed on deep soundings last year on this project and is addressed accordingly in the Descriptive Report for H-9850. All of the fathograms were rescanned and an attempt was made to reject any inserts which were miscalled as "peaks" (JD 258). However many were left in due to the ambiguity which arose by "What is a spike and what is not a spike?". This problem is believed to be caused by shipboard interference and has been brought to the attention of the Electronics Engineering Division at AMC so that it can be remedied.

Settlement and squat tests were run on Launch 1255 at Harbor Beach, Michigan on July 3, 1981. A graphic display is attached with this report of the results. Corrections for settlement and squat were not applied in the field and will be applied via the TC/TI tape while smooth plotting at the Atlantic Marine Center.

Velocity corrections were determined by TDC casts taken once a week. TDC casts were taken at the following locations:

JD	LATITUDE	LONGITUDE
245	45°10.5'N	83°14.6'W
252	45°10.4'N	83°14.3'W
254	45°09.7'N	83°13.2'W
257	45°09.8'N	83°13.1'W

Velocity corrections from these casts were determined with the aid of program RK530 and plotted accordingly. Supporting velocity correction printouts are included in the survey records. The velocity correction curves and printouts are appended to this report.

The days of hydrography were grouped with velocity data in the following manner:

TDC	DAYS OF HYDRO
JD 245	JD 237, 245, 246
JD 252	JD 252
JD 254	JD 254
JD 257	JD 257, 258

A TDC cast was supposedly taken last year by this unit on JD274 (September 30, 1980) for the one day of hydrography that was run. Results of the cast were forwarded with the master tapes and printouts for Survey H-9850. Copies of the TDC data and velocity curves are included with this report.

Barchecks were taken twice daily, whenever possible. All of the barchecks were abstracted and meaned for the entire survey. A curve of the mean barchecks was then compared to the TDC curves. A displacement of -.2 feet was observed and will be applied via the TC/TI tape during smooth plotting at AMC.

The length of the chain used for the barchecks was measured before and after the survey and a zero correction throughout the length was observed. A Martek Model 101-10, Serial #477, was used for all TDC casts. See letters in appendix pertaining to the random spikes appearing on the anolog fathogram.

E. HYDROGRAPHIC SHEETS

The field sheets were prepared in the field using a PDP8/e computer and DP-3 complot plotter. Work sheets, semi-smooth sheets, smooth field sheets, and overlay sheets are included with this survey. Mainscheme hydrography and crosslines are plotted on the smooth field sheets while developments, splits, bottom samples, prior survey soundings, junctions soundings, charted soundings, presurvey review items, and aids to navigation are shown on various overlay sheets. Projection parameter tape listing for the field sheets is included in the appendix to this report. The final smooth sheet and verification of this survey will be accomplished at AMC on the Harris/7 computer and the Xynetics 1201 plotter.

F. CONTROL STATIONS

Control stations for the survey were either existing control published by NGS or were established by the Hydrographic Surveys Branch Support Section or Operations Division, AMC, to third-order standards or better. All stations are referred to the North American 1927 datum. A list of control stations used during the survey is included in the appendix.

G. HYDROGRAPHIC POSITION CONTROL

Sounding line position control was with a Del Norte Trisponder in the range/range mode. The following equipment was used for this survey: NOAA Launch 1255

JD 274 (1980)	DMU 179, Master 1070 Remote 245 and 667, Buffer 123
JD 237 - 252	DMU, Serial #179 Master, Serial #1070 Parallel Buffer, Serial #111
JD 254 - 258	DMU, Serial #298 Master, Serial #1060

Shore Stations

Remote Code 72 Serial #245
Remote Code 74 Serial #927
Remote Code 78 Serial #253

The master aboard Launch 1255 was installed atop a galvanized steel pipe about 20 feet above the water line. Shore stations were

mounted atop a 10 foot Raydist tower section or secured on the two lighthouses within the survey limits. Shore stations were powered by two 12-volt auto batteries which were changed frequently.

During the first few days of hydro, it was noticed that both rates on the DMU were not updating simultaneously, thus causing a number of "T&C's". This problem was first thought to be caused by "null" or "skip" zones in the area. Changing the position of the remote units on the shore did not seem to change the zones. Consequently, the DMU and master pairs were changed on JD 254. This decreased the number of T&C's for the remainder of the project.

The Del Norte units were calibrated by twice daily sextant fixes, visibility permitting, using program RK 561. Only those fixes which had an inverse of less than five meters were used. Four fixes each were averaged each morning and afternoon to obtain the daily correctors. Correctors obtained in this fashion were NOT applied to the corrector tape for field smooth plotting. The correctors obtained on JD274(1980) were applied to the field sheet positions.

Each Del Norte Remote unit was baseline calibrated for each DMU/Master pair on August 19, 1981 (JD 231), between stations H-10-MI-77 (1979) and H-11-MI-77 (1979), a distance of 5,255 meters. Data on this calibration is contained in the file folder submitted with this report.

H. SHORELINE

There was no shoreline delineated within the limits of this survey.

I. CROSSLINES

Crosslines constitute 10% of the mainscheme hydrography. One hundred percent (100%) of the crossings agree to within one (1) foot on both the north and south field sheets.

J. JUNCTIONS

The following surveys were available in the field for junctional purposes:

REGISTRY NUMBER	SCALE	YEAR
LS-1850	1:10,000	1947
LS-1851	1:10,000	1947
H-9690	1:50,000	1977
H-9709	1:50,000	1977
H-9839	1:20,000	1979
H-9849	1:20,000	1979
H-9850	1:20,000	1979-80
H-9907	1:20,000	1980

Survey H-9690, H-9709, and H-9839 were transferred to the overlay sheets, but due to the early termination of the project there were no comparisons to be made with these surveys.

Since predicted water levels were not available in the field, a minus 2-3 foot correction must be applied to all soundings before comparisons can be accurately made.

On LS-1850 (1947), 96% of the soundings compared agreed to within one foot, while the remainder agreed to within three feet. Of the 23 soundings compared on LS-1851 (1947), 83% agreed to within one foot, with no sounding in disagreement by more than three feet.

The NOAA Ship PEIRCE began H-9849 in 1979, investigating two PSR items and running three developments. Of the 276 soundings compared, 94% agree to within 0-1 foot, while the remainder agree to within three feet.

Due to the differences in line spacing of the present survey and that run by the NOAA Ship MT MITCHELL, H-9709, only 23 soundings could be compared. Ninety-six percent of these soundings were in agreement to one foot. In general the soundings on the present survery from 60 feet to 180 feet agreed to within three feet of H-9709. From 180 feet to the offshore limits of the lines, the soundings agree from 4-8 feet. The variance between the surveys could be attributed to the fact that the lines did not fall on top of one another and the steep bottom topography of the deeper depths.

The hydrographer recommends that in the junction areas, the soundings from the present survey be charted.

K. COMPARISON WITH PRIOR SURVEYS

As was the case for the junctional comparison, a 2-3 foot assumed water level above IGLWD must be applied to the soundings of the present survey for accurate comparisons to be made.

All of the Presurvey Review items which fell within the survey limits were investigated by the NOAA Ship PEIRCE in 1979 and recommendations for charting action on these items can be found in the Descriptive Report for that project, attached with this report.

Reference can be made to the Presurvey Review issued on May 10, 1977, and updated through April 3, 1981 by OPR-X115-HSB-81, Change One.

The area surveyed was covered by the following prior surveys:

REGISTRY NUMBER	SCALE	YEAR
LS-1190	1:20,000	1910
LS-1845	1:20,000	1946

On LS-1190, of 709 soundings compared, 84% agreed to within one foot, and the remainder varied from 3-5 feet. This difference, however slight, can be attributed to the survey methods used in 1910 as opposed to the present.

Due to the unusual scale (1:120,000) and line spacing on LS-1845, agreement between compared soundings was not as good. Only 52% of the soundings agreed to within one foot, while the rest varied from 3-5 feet.

When discrepancies exist, it is recommended that the soundings from the present survey supercede the prior survey's soundings.

L. COMPARISON WITH CHART

Soundings from the present survey were compared to Chart 14864, 21st Edition, May 3, 1980, scale 1:120,000 enlarged to 1:20,000. Overall the comparison was very good when the distorition of the enlarging process is taken into account. Of the 96 soundings compared, 72% agree to within 0-1 foot, when an assumed lake level of 2-3 feet above low water datum is applied to the present soundings. Ninety-two percent of the soundings agree to within 1-3 feet with no sounding in disagreement by more than five feet. The following changes in the chart were detected: NOTE - The items below were not rectified in the field due to the early termination of the project. "Splits" and other developments were planned for the area in question at the completion of mainscheme hydrography.

13-foot Shoal - Charted at 45°05.7'N, 83°16.7'W, was investigated by the NOAA Ship PERICE in 1979 and found to have a diver least depth of 8.0 feet. A corrected sounding of 12 feet was observed at 45°05'39"N, 83°17'39"W (JD 237, POS 315 +¼, 175912). It is recommended that the eight foot least depth replace the present charted sounding.

Two 29-foot Soundings - Charted at 45°07.35'N, 83°09.55'W and 45°07.75'N, 83°09.6'W lie just south of the NORDMEER wreck within the 30-foot contour line. A line was run over each of these soundings and corrected depths of 36 and 41-43 feet, respectively, were found. It is recommended that the planned additional splits be run over the area before charting action is made.

49-foot Sounding - Charted 45°07.32'N, 83°16.75'W. A sounding of 42 feet (corrected for +3 feet of water level above IGLWD) was recorded in the surrounding area. Additional lines were planned to be run in the vicinity to better define the area. It is recommended that the present charted sounding remain until further investigation of the area is made.

48-foot Sounding - Charted at 45°08.68"N, 83°13.1'W. Soundings of 34-35 feet were recorded over the charted position of the sounding. It is recommended that additional splits be run in the area to better define the bottom contours and resolve this discrepancy.

44-foot Sounding - Charted at 45°08.7'N, 83°12.1'W. A corrected for water level sounding of 37 feet was recorded at this position. As is the case with the previous discrepancies, additional sounding lines in the area is recommended before charting action is taken.

M. ADEQUACY OF SURVEY

The survey was terminated early due to mechanical problems onboard Launch 1255 and is approximately 60% complete. The data obtained thus far is sufficiently complete and adequate to supercede prior surveys for charting purposes.

N. AIDS TO NAVIGATION

There was only one floating aid to navigation within the survey limits. This aid was the NORDMEER Wreck Lighted Bell Buoy "WR1" (Great Lakes Light List #1314) located at Latitude 45°08.1'N, Longitude 83°09.3'W. A detached position was obtained on the buoy in 1979 by the NOAA Ship PEIRCE and found to be adequate. Reference is made to page eight in the Descriptive Report for H-9849, attached with this report.

Fixed aids to navigation are reported on NOAA Form 76-40, included in the appendix.

O. STATISTICS

Number of Positions	1615
Nautical Miles - Mainscheme	412
Nautical Miles - Crossline	40
Total Miles of Hydrography	452
Number of Bottom Samples	49
Number of Barchecks	9
Number of TDC Casts	4

P. MISCELLANEOUS

Due to the rough terrain of the area, accessability to the control stations was an arduous task. In order to finish the project, control must be placed on top of both Middle Island Lighthouse and Thunder Bay Island Lighthouse. Access to both islands can only be made with a shallow draft craft due to the extensive shoal surrounding the area. Middle Island Lighthouse is totally automated and run on batteries, therefore no power is available. Thunder Bay Island Lighthouse is also automated, but power can be supplied by contacting: Officer-in-Charge, Aids to Navigation Team, 606 Water Street, Cheybogan, Michigan, 49721 (Telephone Number 616-627-5555).

Contact was made with Local Coast Guard Auxiliary personnel responsible for the Co-Operative Charting Program. A suggestion was made that the chartlet insert of Alpena Harbor on Chart 14864 be enlarged to include the waterway from Bare Point to Partrige Point, to the southeast of the present chartlet. Numerous craft transit the area with little navigational information to go by. Contact can be made with Captain John Bunting, SO/OPNS XVI, 130 Prentiss Street, Alpena, Michigan, 49707 (Telephone Number 517-356-1900).

In addition a recent copy of a Coast Pilot report made by Mr. Bunting is attached with this report.

Q. RECOMMENDATIONS

In addition to running the remaining Mainscheme required to complete the survey, it is recommended that "splits" be run over the shoal to the south and southwest of the NORDMEER wreck to better define the depth contours in the area.

It is also recommended that this survey supercede all prior surveys in this area and after verification and smooth plotting be applied to Chart 14860 and 14864.

R. AUTOMATED DATA PROCESSING

The following Hydroplot system programs were used during this survey:

PROGRAM	VERSION	
RK111	Range/Range Real Time Plot	1/30/76
RK201	Grid, Signal and Lattice Plot	5/18/76
RK211	Range/Range Non-Real Time Plot	1/15/76
RK300	Utility Computations	2/05/76
RK330	Data Reformat and Check	5/04/76
PM360	Electronic Corrector Abstract	2/02/81
RK530	Layer Corrections for Velocity	5/10/76
RK561	H/R Geodetic Calibration	2/19/75
AM602	Extended Line Oriented Editor	5/20/75

S. REFERRAL TO REPORTS

Horizontal Control Report, OPR-X115-HFP-80
Descriptive Report PE-20-2-79, H-9849, OPR-X115-PE/HSB-79
Descriptive Report PE-20-3-79, H-9850, OPR-X115-WH/HSB-80

Respectfully submitted,

Robert Lewis

Samuel P. De Bow
Lt(jg), NOAA
OIC, HFP-4

PRAMETER TAPE

OPR X-115

PE 20-2-79

H-9849

SKEW 0,21,60 NORTH SHEET

VESNO 1255

LAKE HURON,MICHIGAN

FEST=48000

CLAT=4938000

CMER=83/25/00

GRID=60

PLSCL=20000

PLAT=45/05/12

PLONG=83/22/18

VESNO=1255

YR=81

ANDIST=0

PRAMETER TAPE

OPR X-115

PE 20-2-79

H-9849

SKEW 0,21,60 SOUTH SHEET

VESNO 1255

LAKE HURON, MICHIGAN

FEST=48000

CLAT=4938000

CMER=83/25/00

GRID=60

PLSCL=20000

PLAT=45/00/35

PLONG=83/22/18

VESNO=1255

YR=81

ANDIST=0

FIELD WATER LEVEL NOTE H-9848 PE-20-2-79

Predicted or actual water level reductions were not applied to the field sheets. Times of recorded levels are Eastern Standard Time (+4 hours).

Two temporary Fischer-Porter ADR gages controlled this survey during the specified period.

SITE	LOCATION	PERIOD
Alpena 907-5065	Lat. 45°03'36"N Long. 83°25'48"W	10 Aug - 9 Oct
Presque Isle Harbor 907-5069	Lat. 45°20'35"N Long. 83°29'10"W	11 Aug - 9 Oct

One permanent Stevens A-35 gage controlled this survey during the time period specified.

SITE	LOCATION	PERIOD
Harrisville 907-5059	Lat. 44°39'34"N Long. 83°17'11"W	11 Aug - 9 Oct

ALPENA

Gage and staff were installed on August 10, 1981 by field party personnel and leveled out and removed on October 9, 1981. The gage/staff readings were taken daily by field party personnel. All records have been forwarded to Tides and Water Levels Division, OA/C234.

PRESQUE ISLE HARBOR

Gage and staff were installed on August 11, 1981 by field party personnel and leveled out and removed on October 9, 1981. A contract observer was hired to monitor the gage during this time period. No problems were encountered, and the observer was contacted weekly. All records have been forwarded to OA/C234.

HARRISVILLE

On August 12, 1981 a shore party was sent to inspect and level the permanent gage at Harrisville, Michigan. It was found to be in good working order and the observer notified us that people from the Tides and Water Levels Branch at the Atlantic Marine Center had leveled out the gage two weeks previously. No other leveling was performed by this field party.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
HYDROGRAPHIC SURVEYS BRANCH

February 4, 1982 OA/CAM11/RL

TO: OA/C234 - Water Levels Branch

FROM: OA/CAM11 - George W. Jamerson

SUBJECT: Request for Water Level Data

Please furnish smooth water level correctors and zoning information to AMC Processing Division (OA/CAM3) for Survey H-9849 (PE-20-2-79), OPR-X115-HSB-81, Lake Huron for the following dates and times:

1980	Hydro Begins (GMT)	Hydro Ends (GMT)
274	1200	2200
1981		
237	1500	2200
245	1200	2400
246	1400	2300
252	1200	2300
254	1200	2300
257	1300	2300
258	1200	2300

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES (FIELD)

SURVEY NUMBER

H-9849

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	
GULL ISLAND	14864									1
POTTER POINT	14864									2
ROUND ISLAND	14864									3
SOUTH NINE MILE PT	14864									4
THUNDER BAY ISLAND	14864									5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

(Let 1 inch = 4 fathoms for deep water and 1 inch equal (athom for shoal.)

#8

-30 -20 -10 0 +10

CORRECTIONS IN FEET FATHOMS

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

DEPTHS IN FATHOMS

(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: NOAA LAUNCH 1255

LT DAVID A. WALTZ Comdg.

These corrections are to be used

between _____ 19___ and _____ 19___

in the locality

for hydrographic surveys Nos. _____

TIDE CAST JD 274

30 SEPTEMBER 1980

V DAW

K&E 20 X 20 TO THE INCH 46 1240
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER

[redacted] (15.)

☆ U. S. GOVERNMENT PRINTING OFFICE: 1972-761-12

1980

#8

H-9849 (PE-20-2-79)

Vel. Tab. #8

```
000200 0 0000 0008 000 125500 020279
000460 1 0002
000720 1 0004
001030 1 0006
001360 1 0008
001620 1 0010
001950 1 0012
005000 1 0014
999999 0 0000
```

#8

VESSEL =1255

DATE =9-30-30 JD 274 -1980

TIME =1645

LATITUDE = 045/07/00.00

LONGITUDE = 033/17/00.00

TYPE OF OBSERVATION =TDC CAST

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	12.00	00.00	1455.33
0002.0	12.00	-00.00	1455.36
0004.0	12.00	-00.00	1455.39
0006.0	11.30	00.00	1454.66
0008.0	11.70	00.00	1454.30
0010.0	11.60	00.00	1453.95
0012.0	11.60	00.00	1453.93
0014.0	11.60	00.00	1454.01
0015.0	11.60	00.00	1454.02

#8

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 2.6

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0003.23	-0000.00
0009.33	-0002.04
0016.43	-0000.07
0023.03	-0000.11
0029.63	-0000.15
0036.23	-0000.19
0042.33	-0000.23
0047.33	-0000.26
0051.13	-0000.23

SD 252

#5

VESSEL =1255

DATE =3 SEPT 80

TIME =163000

LATITUDE = 045/15/00.00

LONGITUDE = 033/19/00.00

TYPE OF OBSERVATION =TDC CAST

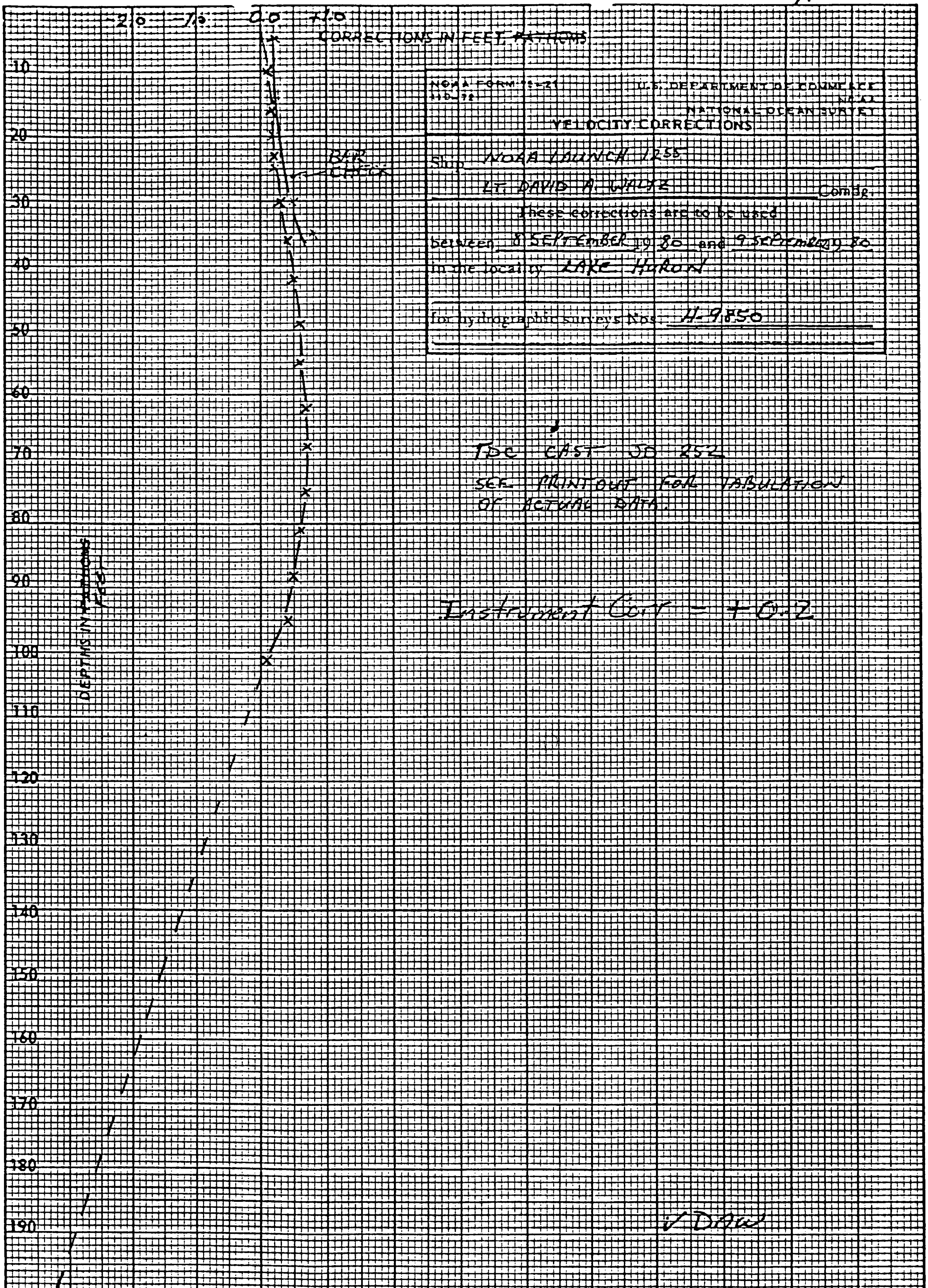
CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	19.50	00.00	1431.56
0002.0	19.10	-00.00	1430.31
0004.0	19.10	-00.00	1430.34
0006.0	19.10	-00.00	1430.37
0003.0	19.10	-00.00	1430.40
0010.0	19.10	-00.00	1430.44
0012.0	13.90	-00.00	1479.33
0014.0	13.90	-00.00	1479.36
0016.0	13.90	-00.00	1479.39
0013.0	16.90	-00.01	1473.31
0022.0	15.30	-00.01	1467.30
0022.0	13.10	-00.00	1459.34
0024.0	09.50	00.02	1445.34
0026.0	07.10	00.05	1435.35
0023.0	06.70	00.06	1434.16
0030.0	05.70	00.03	1429.32

#5

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 02.60

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0003.27	0000.01
0009.76	0000.09
0016.24	0000.16
0022.72	0000.24
0029.21	0000.32
0035.69	0000.40
0042.13	0000.47
0043.66	0000.55
0055.15	0000.62
0061.67	0000.67
0063.21	0000.69
0074.73	0000.63
0031.42	0000.60
0033.10	0000.43
0094.30	0000.35
0101.51	0000.20

(Let 1 inc ual 4 fathoms for deep water and 1 inch equal fathom for shoal.) #3



NOAA FORM 75-21 (11-72) — U.S. DEPARTMENT OF COMMERCE, NOAA, NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship NOAA LAUNCH 1255

LT. DAVID A. WALTZ Comdg.

These corrections are to be used between 8 SEPTEMBER 19 80 and 9 SEPTEMBER 19 80 in the locality LAKE HURON

for hydrographic surveys Nos. H-9850

TDC CAST JD 252
SEE PRINTOUT FOR TABULATION OF ACTUAL DATA.

Instrument Corr = +0.2

✓DAW

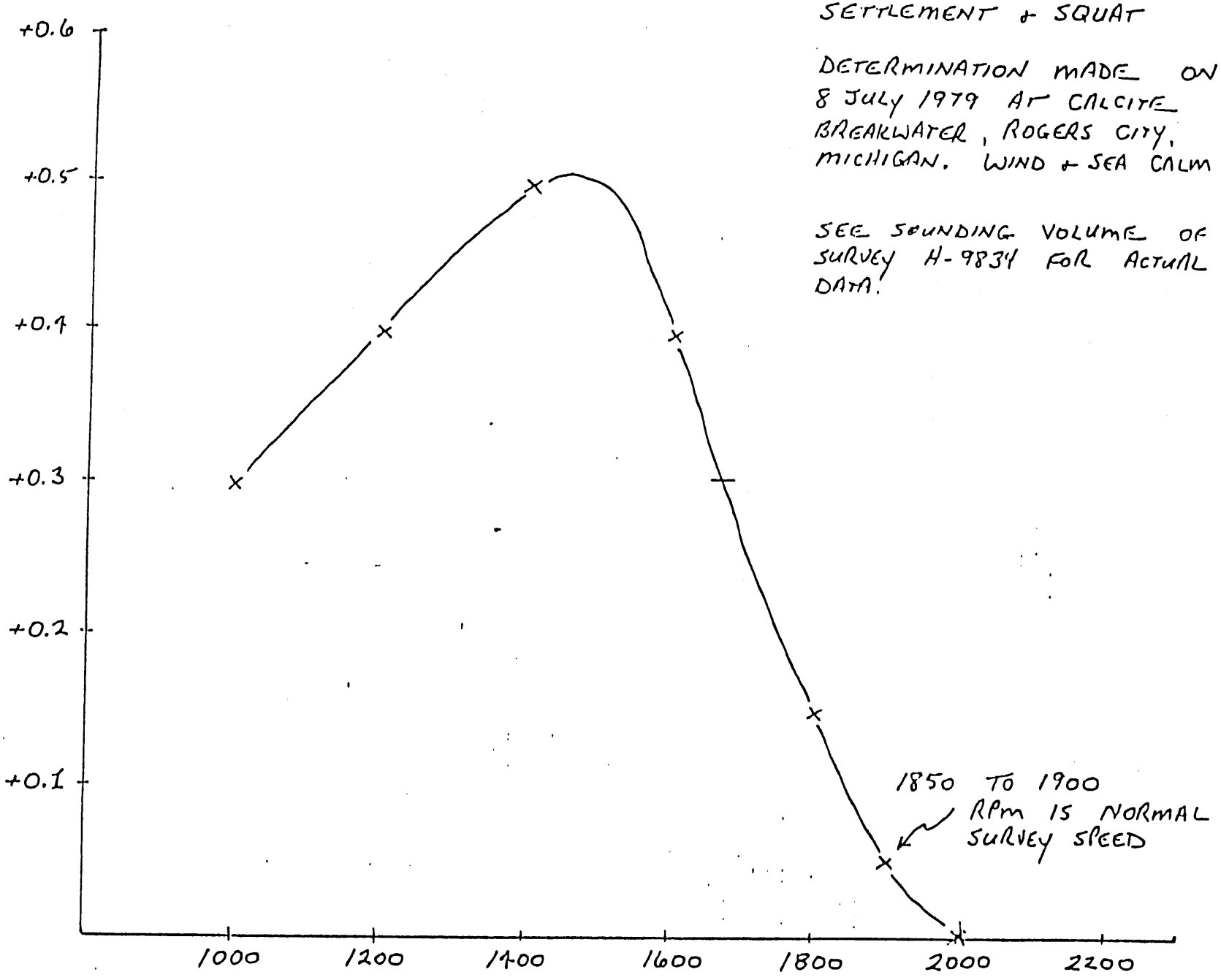
(For deep water add a 0 to these figures)

K+E 20 X 20 TO THE INCH 46 1240 — 7 X 10 INCHES — KEUFFEL & ESSER CO. MADE IN U.S.A.

NOAA 1255
SETTLEMENT & SQUAT

DETERMINATION MADE ON 8 JULY 1979 AT CALCITE BREAKWATER, ROGERS CITY, MICHIGAN. WIND & SEA CALM

SEE SOUNDING VOLUME OF SURVEY H-9834 FOR ACTUAL DATA.



(22)

OPR-X115

SOUNDING CORRECTION ABSTRACT

VESSEL 1255

**** -2.6 ft. draft corrector applied via the Corrector Tape

FIELD NO. PE-20-2-79

REGISTRY NO. H- 9849

1980 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/fm	Remarks
274	144338		8	0	+0.2	0	+0.1	+0.3	1900 RPM
365	235959		0	0	+0.0	0	+0.0	+0.0	

FIGURE 5-7.—Sounding Correction Abstract

(23.)

OPR-X115-HSB-81

PE-20-2-79

H-9849

TC/TI (1980)

144338 0 0003 0008 274 125500 001980

235959 0 0000 0000 365 125500 001980

VXRD.

-.7 -.6 -.5 -.4 -.3 -.2 -.1 0 .1 .2 .3 .4 .5 .6

Table # 11

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

CORRECTIONS IN FEET, FATHOMS

10 5 Bar check JD 245 →

20 10

30 15

40 20

50 25 ← E →

60 30

70 35

80 40

90 45

100 50

110 55

120 60

130 65

140 70

150 75

160 80

170 85

180 90

190 95

DEPTHS IN FATHOMS FEET

(For deep water add a 0 to these figures)

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

VELOCITY CORRECTIONS

Ship LAUNCH 1255

Sam DeBow LTJG Comdg.

These corrections are to be used between AUGUST 25 19 81 and SEPT. 3 19 81 in the locality LAKE HOROO

for hydrographic surveys Nos. H-9849

JD 245

DEPTH	CORR.
00 - 36.1	0.0
36.2 - 54.5	-0.2
54.6 - 70.6	-0.4
70.7 - 85.0	-0.6
85.1 - 9999	-0.8

E = instrument corr. (-0.2)

APD

20 X 20 TO THE INCH 46 1240
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER

☆ U. S. GOVERNMENT PRINTING OFFICE: 1972-761-123

H-9849 (PE-20-2-79)

Velocity TAble 11

```
000361 0 0000 0011 000 125500 020279
000545 1 0002
000706 1 0004
000850 1 0006
005000 1 0008
999999 1 0008
```

#11

VESSEL =1255

DATE =JD 245

TIME =1400

LATITUDE = 045/10/15.00

LONGITUDE = 083/14/18.00

TYPE OF OBSERVATION =TDC

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	16.50	00.00	1471.67
0002.0	16.30	00.00	1471.01
0004.0	13.50	00.00	1461.05
0006.0	12.20	00.00	1456.19
0008.0	11.20	00.00	1452.36
0010.0	10.70	00.00	1450.42
0012.0	10.20	00.00	1448.46
0014.0	10.00	00.00	1447.68
0016.0	09.70	00.00	1446.50
0018.0	09.20	00.00	1444.49
0020.0	09.00	00.00	1443.70
0022.0	08.70	00.00	1442.49
0024.0	08.70	00.00	1442.52
0026.0	07.70	00.00	1438.35

#11

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0000.00	1471.67	0001.00
0002.00	1471.01	0002.00
0004.00	1461.05	0002.00
0006.00	1456.19	0002.00
0008.00	1452.36	0002.00
0010.00	1450.42	0002.00
0012.00	1448.46	0002.00
0014.00	1447.68	0002.00
0016.00	1446.50	0002.00
0018.00	1444.49	0002.00
0020.00	1443.70	0002.00
0022.00	1442.49	0002.00
0024.00	1442.52	0002.00
0026.00	1438.35	0002.00

#11

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 2.6

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0003.28	0000.00
0009.80	0000.04
0016.37	0000.03
0022.97	0000.00
0029.58	-0000.05
0036.19	-0000.10
0042.82	-0000.17
0049.45	-0000.24
0056.09	-0000.31
0062.73	-0000.40
0069.38	-0000.48
0076.03	-0000.57
0082.69	-0000.67
0089.36	-0000.78

√Spd.

-.7 -.6 -.5 -.4 -.3 -.2 -.1 0 .1 .2 .3 .4 .5 .6 .7 .8 .9 Table #2

(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	45
100	50
110	55
120	60
130	65
140	70
150	75
160	80
170	85
180	90
190	95

DEPTHS IN FATHOMS

(For deep water add a 0 to these figures)

NOAA FORM 76-21 (10-73) U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship Launch 1255

Sam De Bow 4759 Comdg.

These corrections are to be used

between Sept. 9 19 81 and _____ 19____

in the locality Cape Horn

for hydrographic surveys Nos. H 9849

JD 252

Depth	Corr
0.0 - 14.5	0.0
14.6 - 38.6	0.2
38.7 - 62.9	0.4
63.0 - 87.1	0.6
87.2 - 9999	0.8

16 1240

K+E 20 X 20 TO THE IN 7 X 10 INCHES
KEUFFEL & ESSER CO MADE IN U.S.A.

☆ U.S. GOV. PRINTING OFFICE: 1977—767-21

H-9849
PE-20-2-79
Velocity Table 12

```
000145 0 0000 0012 000 125500 020279
000386 0 0002
000629 0 0004
000871 0 0006
005000 0 0008
999999 0 0008
```

Table #2

VESSEL =1255

DATE =JD 252

TIME =1345

LATITUDE = 045/10/18.00

LONGITUDE = 083/14/12.00

TYPE OF OBSERVATION =TLC

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	17.50	00.00	1475.05
0002.0	17.50	00.00	1475.08
0004.0	17.50	00.00	1475.11
0006.0	17.50	00.00	1475.14
0008.0	17.50	00.00	1475.18
0010.0	17.50	00.00	1475.21
0012.0	17.50	00.00	1475.24
0014.0	17.40	00.00	1474.94
0016.0	17.40	00.00	1474.97
0018.0	17.30	00.00	1474.66
0020.0	17.30	00.00	1474.69
0022.0	17.30	00.00	1474.73
0024.0	17.30	00.00	1474.76
0026.0	17.30	00.00	1474.79

Table #12

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0000.00	1475.05	0001.00
0002.00	1475.08	0002.00
0004.00	1475.11	0002.00
0006.00	1475.14	0002.00
0008.00	1475.18	0002.00
0010.00	1475.21	0002.00
0012.00	1475.24	0002.00
0014.00	1474.94	0002.00
0016.00	1474.97	0002.00
0018.00	1474.66	0002.00
0020.00	1474.69	0002.00
0022.00	1474.73	0002.00
0024.00	1474.76	0002.00
0026.00	1474.79	0002.00

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 2.6

Table #2

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0003.28	0000.01
0009.78	0000.06
0016.29	0000.11
0022.80	0000.17
0029.31	0000.22
0035.81	0000.28
0042.32	0000.33
0048.83	0000.39
0055.34	0000.44
0061.85	0000.49
0068.35	0000.54
0074.86	0000.60
0081.37	0000.65
0087.88	0000.70

✓ SPD.

-.7 -.6 -.5 -.4 -.3 -.2 -.1 0 .1 .2 .3 .4 .5 .6 .7 Table "D"

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

CORRECTIONS IN FEET, FATHOMS

DEPTHS IN FATHOMS	FEET
10	5
20	10
30	15
40	20
50	25
60	30
70	35
80	40
90	45
100	50
110	55
120	60
130	65
140	70
150	75
160	80
170	85
180	90
190	95

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

VELOCITY CORRECTIONS

Ship Launch 1255

Sam DuBois LTJG Comdg.

These corrections are to be used

between Sept. 11 19 81 and _____ 19____

in the locality Lower Huron

for hydrographic surveys Nos. H 9849

JD 254

Depth	Corr
0.0 - 11.8	0.0
11.9 - 31.3	0.2
31.4 - 51.1	0.4
51.2 - 72.0	0.6
72.1 - 97.6	0.8
97.7 - 9999	0.6

(For deep water add a 0 to these figures)

(35.)

H9849 (PE-20-2-79)

Velocity Table 13

000118 0 0000 0013 000 125500 020279

000313 0 0002

000511 0 0004

000720 0 0006

000976 0 0008

005000 0 0006

999999 0 0006

VESSEL =1255

DATE =254

TIME =2100

LATITUDE = 045/09/42.00

LONGITUDE = 083/13/12.00

TYPE OF OBSERVATION =TDC

Table #3

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	18.50	00.00	1478.35
0002.0	18.50	00.00	1478.38
0004.0	18.50	00.00	1478.41
0006.0	18.50	00.00	1478.44
0008.0	18.30	00.00	1477.82
0010.0	18.30	00.00	1477.85
0012.0	18.10	00.00	1477.23
0014.0	18.10	00.00	1477.26
0016.0	18.00	00.00	1476.96
0020.0	18.00	00.00	1477.02
0022.0	17.80	00.00	1476.39
0024.0	17.00	00.00	1473.75
0026.0	15.50	00.00	1468.60
0028.0	11.50	00.00	1453.84
0030.0	08.30	00.00	1440.95

Table #13

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0000.00	1478.35	0001.00
0002.00	1478.38	0002.00
0004.00	1478.41	0002.00
0006.00	1478.44	0002.00
0008.00	1477.82	0002.00
0010.00	1477.85	0002.00
0012.00	1477.23	0002.00
0014.00	1477.26	0002.00
0016.00	1476.96	0003.00
0020.00	1477.02	0003.00
0022.00	1476.39	0002.00
0024.00	1473.75	0002.00
0026.00	1468.60	0002.00
0028.00	1453.84	0002.00
0030.00	1440.95	0002.00

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 2.6

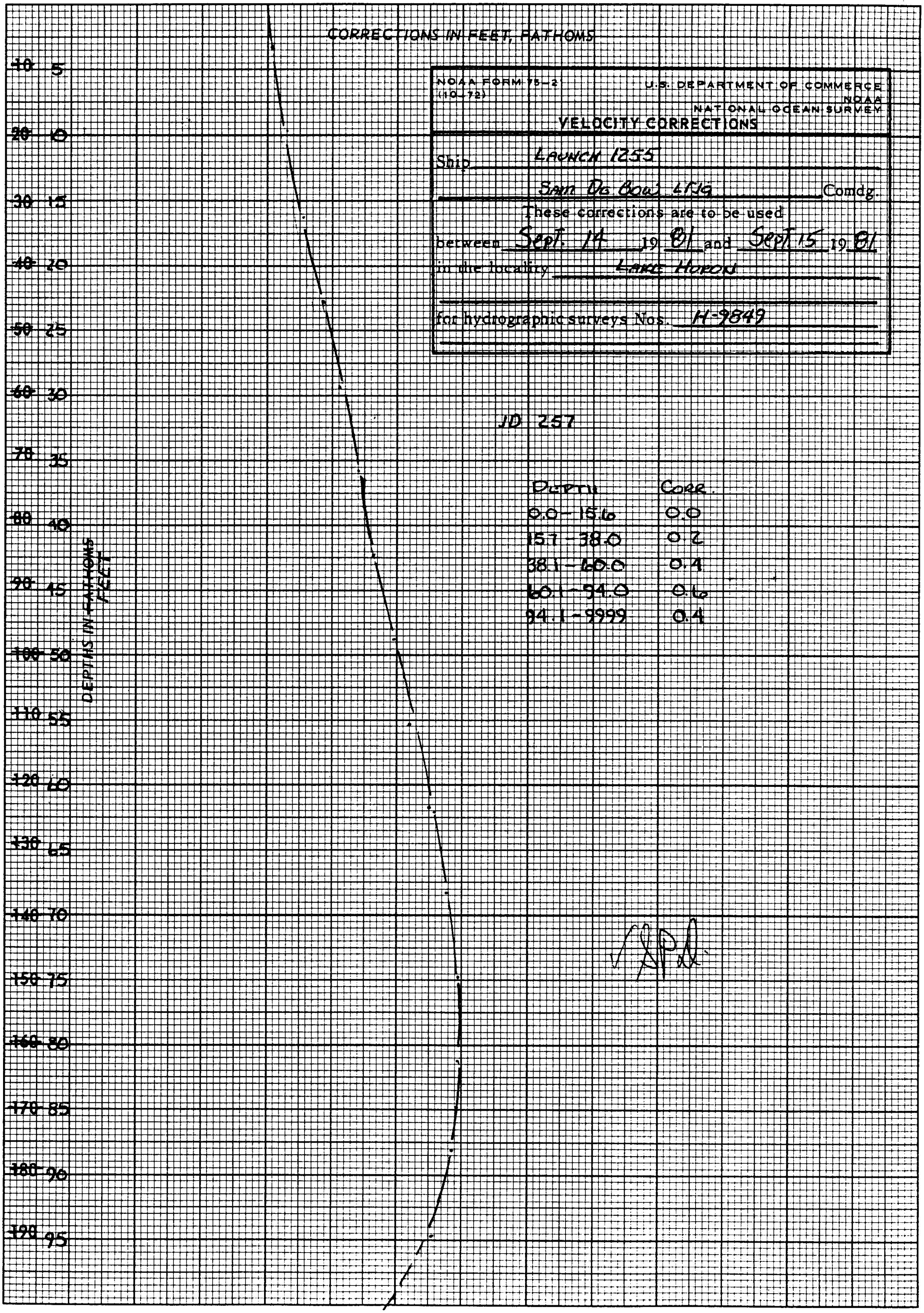
Table #3

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0003.27	0000.01
0009.77	0000.08
0016.26	0000.14
0022.75	0000.21
0029.25	0000.28
0035.74	0000.35
0042.24	0000.41
0048.74	0000.47
0058.49	0000.57
0068.24	0000.66
0074.74	0000.72
0081.25	0000.77
0087.79	0000.79
0094.39	0000.75
0101.05	0000.65

√ & Pd.

Table #4

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



NOAA FORM 75-2 (10-72) U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship LAUNCH 1255

SAM DE BOW LTJG Comdg.

These corrections are to be used

between Sept. 14 19 81 and Sept 15 19 81

in the locality LAKE HURON

for hydrographic surveys Nos. H-9849

JD 257

DEPTH	CORR.
0.0 - 15.6	0.0
15.7 - 38.0	0.2
38.1 - 60.0	0.4
60.1 - 94.0	0.6
94.1 - 9999	0.4

16 1240

K+E 20 X 20 TO THE INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

[X] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
	NOAA Ship PEIRCE	Michigan	Alpena	Sept 79

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-X115-PE/ HSB-79	N.A.	H-9849	North American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Stoneycroft Point Light	Reflective Red Triangle on Red Skeleton Tower L.L. No. 1313.51	45 06	.4'	83 18	.5'		V-Vis 9/79	14869 14864
								39

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

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

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

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

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

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

FIELD (Cont'd)

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

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

II. TRIANGULATION STATION RECOVERED

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

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1030 Region 6

H-9849 (PE-20-2-79)

Velocity Table 14

```
000156 0 0000 0014 000 125500 020279
000380 0 0002
000600 0 0004
000940 0 0006
005000 0 0004
999999 0 0004
```

VESSEL =1255

DATE =JD 257

TIME =1430

#14

LATITUDE = 045/09/48.00

LONGITUDE = 083/13/06.00

TYPE OF OBSERVATION =TDC

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	17.50	00.00	1475.05
0002.0	17.50	00.00	1475.08
0004.0	17.50	00.00	1475.11
0006.0	17.50	00.00	1475.14
0008.0	17.50	00.00	1475.18
0010.0	17.50	00.00	1475.21
0012.0	17.50	00.00	1475.24
0014.0	17.50	00.00	1475.27
0016.0	17.50	00.00	1475.30
0018.0	17.50	00.00	1475.33
0020.0	17.50	00.00	1475.36
0022.0	16.50	00.00	1472.01
0024.0	14.00	00.00	1463.20
0026.0	12.50	00.00	1457.64
0028.0	10.30	00.00	1449.11

#14

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0000.00	1475.05	0001.00
0002.00	1475.08	0002.00
0004.00	1475.11	0002.00
0006.00	1475.14	0002.00
0008.00	1475.18	0002.00
0010.00	1475.21	0002.00
0012.00	1475.24	0002.00
0014.00	1475.27	0002.00
0016.00	1475.30	0002.00
0018.00	1475.33	0002.00
0020.00	1475.36	0002.00
0022.00	1472.01	0002.00
0024.00	1463.20	0002.00
0026.00	1457.64	0002.00
0028.00	1449.11	0002.00

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 2.6

#14

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0003.28	0000.01
0009.78	0000.06
0016.29	0000.11
0022.80	0000.17
0029.31	0000.22
0035.81	0000.28
0042.32	0000.33
0048.83	0000.39
0055.33	0000.44
0061.84	0000.50
0068.35	0000.55
0074.87	0000.59
0081.43	0000.59
0088.01	0000.57
0094.64	0000.51

√ & Pd.

FORM CD-26
(12-11-46)

U.S. DEPARTMENT OF COMMERCE

WORKSHEET

OPR X115
PE 20-2-79
H-9849
VESHO 1255

BARCHECK ABSTRACT

JULIAN DAY	5'	10'	15'	20'	25'	30'	35'	40'	A 45' B
274 (80)	0.1	0.1	0.2	0.1	0	0.1	-0.2	0	
237 (81)	0	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2 0.2
	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4 0.4
245	-0.2	-0.2	-0.3	-0.3	-0.2	-0.2	-0.4	-0.2	-0.2 -0.3
246	0	0	-0.1	0	-0.2	-0.2	-0.2	-0.3	-0.3 -0.3
	0	0	0.1	0	0	0	-0.1	-0.3	0 -0.1
254	-0.1	0	0.1	0.2	0.1	0.4	0.4	0.2	0.4 0.4
257	0	-0.1	0.2	-0.1	0.B	0.2	0B		
258	-0.2	0	0	0	0.1	0			
	-0.1	0	0.2	0	0	0.1	0.4	0.2	0.2
Σ	-0.3	0.2	0.6	0.3	0.3	0.9	0.4	0.2	0.7 0.3
MEAN	0	0	0.1	0	0	0.1	0	0	0.1 0

TRUE DEPTH		(P)	(N)
	5	0	5.0
	10	0	10.0
	15	0.1	14.9
	20	0	20.0
	25	0	25.0
	30	0.1	29.9
	35	0	35.0
	40	0	40.0
	45	0.1	44.9
B SCALE	45	0	45.0

(45.)

☆ U. S. GOVERNMENT PRINTING OFFICE: 1977—760-753

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

-2 -1 0 1 2 3 4

CORRECTIONS IN FEET, [redacted]

NOAA FORM 76-2 (10-72) U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship Launch 1255 Sam De Baun Ltjg Comdg

These corrections are to be used between Aug 25 19 81 and Sept 15 19 81 in the locality Lake Huron

for hydrographic surveys Nos. H-9849

E = Instrument corr. (-0.2)

5 10 15 20 25 30 35 40 45 50 120 130 140 150 160 170 180 190

DEPTHS IN [redacted] (FEET)

(For deep water add a 0 to these figures)

Aug. TDC #12,13,14

Bar check Aug.

USPD

16 1240

20 X 20 TO THE IN
KEUFFEL & ESSER C
7 X 10 INCHES
DE IN U.S.A.

K•E

(46.)

U.S. GOV. PRINTING OFFICE: 1977

10 Squares to the Inch

(184)

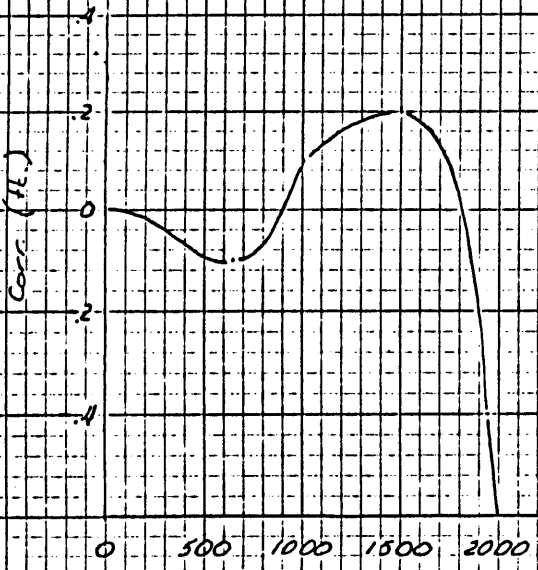
NOAA LAUNCH 1255
SETTLEMENT & SQUAT

Determined off Harbor Beach Bkw, Harbor Beach, MI.
on 31 July 1981 by the Level Method.

original data located in H9944 Survey Records
H9963

RPM	Mean	Corr (ft)
0	9.0	0
650	8.9	-.1
1000	9.1	+.1
1500	9.2	+.2
1950	8.6	-.4

(1950 RPM Normal Survey Speed)



OPR X115

SOUNDING CORRECTION ABSTRACT

FIELD NO. PC-20-2-79

VESSEL 1255 -2.6 FT. DRAFT APPLIED VIA CORRECTOR TAPE REGISTRY NO. H- 9849

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/fm	Remarks
237	170546		11	0	-0.2	0	-0.4	-0.6	1950 RPM
246	174709		11	0	-0.2	0	0	-0.2	BOTTOM SAMPLE
252	141528		12	0	-0.2	0	-0.4	-0.6	1950 RPM
252	184642		12	0	-0.2	0	0	-0.2	BOTTOM SAMPLE
254	145211		13	0	-0.2	0	0	-0.2	BOTTOM SAMPLE
254	164401		13	0	-0.2	0	-0.4	-0.6	1950 RPM
257	150801		14	0	-0.2	0	-0.4	-0.6	1950 RPM
365	235959		0	0	0	0	0	0	

FIGURE 5–7.—Sounding Correction Abstract

APD.

(488.)

H-9849 (PE-20-2-79)

TC/TI LCH 1255 (1981)

```
170546 0 1006 0011 237 125500 001981
174709 0 1002 0011 246 125500 001981
141528 0 1006 0012 252 125500 001981
184642 0 1002
145211 0 1002 0013 254 125500 001981
164401 0 1006
150801 0 1006 0014 257 125500 001981
235959 0 0000 0000 365 125500 001981
```

FORM CD-26 (12.11.46) DEL NORTE U.S. DEPARTMENT OF COMMERCE OPR - X115-HSB-81

ELECTRONIC CORRECTOR ABSTRACT PE-20-2-79

WORKSHEET H-9849

	PATTERN 1					PATTERN 2			
J.D.	AM	PM	MEAN			AM	PM	MEAN	
1980									
274	-2 (72)		+2			-20 (78)		-20	
	The Correctors for this day were applied via the Corrector Tape.								
	The following correctors were NOT applied via the Corrector Tape								
1981									
237	+1 (78)		+1			-4 (72)		-4	
245	-4 (74)	-4	-4			-4 (72)	-2	-3	
246	-3 "		-3			+9 "		+9	
252	-5 "	-8	-7			-4 "	-8	-6	
254	-9 "		-9			-11 "		-11	
257	-2 "	-6	-4			-6 "	-6	-6	
258	-3 "	-4	-4			+1 "	0	+1	
	The results of the baseline calibration are contained in the survey records.								

H-9849 (PE-20-2-79)

SIGNAL LIST

1980-1981

VESNO 1255

	561	7	45	12	11233	083	22	47974	139	0000	000000	H-10-MI-77 1979**
(*)	562	7	45	09	40915	083	20	55020	139	0000	000000	H-11-MI-77 1979**
(*)	563	7	45	08	31208	083	18	58487	139	0000	000000	H-12-MI-77 1979**
	568	7	45	02	14211	083	11	39289	139	0000	000000	Thunder Bay Lt (ECC) 1979**
(*)	569	7	45	02	14167	083	11	39325	139	0000	000000	Thunder Bay LH 1956***
	566	7	45	01	14660	083	15	54284	139	0000	000000	North Point USLS 1956***
	567	7	45	01	14725	083	15	54007	139	0000	000000	North Point PTA 1980*
(*)	564	7	45	05	23034	083	17	53720	250	0000	000000	Misery USLS 1956***
	572	7	45	11	35470	083	19	15701	250	0000	000000	Middle Is.Light House 1979**
	571	7	45	11	35521	083	19	15625	139	0000	000000	Middle IS. Light House (ECC) 1979**
	580	7	45	04	18740	083	24	20757	139	0000	000000	~~Alpena Huron Portland~~ ~~Alnur Port St.~~ Cement Co 1956***
	570	7	45	08	30955	083	18	58465	250	0000	000000	H-12 PTA 1980*
	800	7	45	08	31010	083	18	58310	139	0000	000000	Nine South 1947*****
	801	7	45	06	24343	083	18	31392	139	0000	000000	Stony Croft Point Lt. 1981*

* Located by Hydrographic Surveys Branch Support Section.
** Control located by AMC Operations Division.
*** NGS published.

All G.P.s may be verified at HSB or Operations Division.

(*) Different signal numbers were used by PIERCE in 1979. G.Ps. are slightly different for 3 of the stations probably due to PIERCE using unadjusted positions.

***** LSC located (Not in NGS file)

FORM CD-26
(12-11-46)

U.S. DEPARTMENT OF COMMERCE

WORKSHEET

OPR X115
PE 20-2-79
H 9849
VESNO 125J

Position Abstract

JD(YR)	From Pos	To Pos	CTR	S1	M	S2	Remarks
274 (80)	001	107	R/R	564	000	570	MAINSCHEME (NORTH SHEET)
		108					REJECTED
	109	171					MAINSCHEME
	172	176					REJECTED
	177	188					MAINSCHEME
		189					REJECTED
	190	226					MAINSCHEME
		227					REJECTED
	228	267					MAINSCHEME
237 (81)	268	340		564	000	572	MAINSCHEME (NORTH SHEET)
		341					REJECTED
	342	379					MAINSCHEME
	380	411					REJECTED
245	412	445					MAINSCHEME
		446					REJECTED
	447	525					MAINSCHEME
	526	527					REJECTED
	528	593					MAINSCHEME
	594	644					MAINSCHEME (SOUTH SHEET)
		645					REJECTED
	646	656					MAINSCHEME
		657					REJECTED
	658	742					MAINSCHEME
246	743	748					BOTTOM SAMPLES (NORTH SHEET)
		749					REJECTED
	750	754					BOTTOM SAMPLES
		755					REJECTED
	756	768					BOTTOM SAMPLES
252	~~796~~ 69	790					CROSSLINE (NORTH SHEET)
		791					REJECTED
	792	802					CROSSLINE
	803	815					CROSSLINE (SOUTH SHEET)
		816					REJECTED
	817	824	* Pos. 1-831 are duplicated				CROSSLINE
	825	831	numbers with the work				MAINSCHEME
		832	completed by PIERCE.				REJECTED
	833	861					MAINSCHEME
	862	863					REJECTED
	864	906					MAINSCHEME
		907					REJECTED
	908	945					MAINSCHEME
		946					REJECTED
	947	956					MAINSCHEME
	957	958					REJECTED

FORM CD-26
(12-11-46)

U.S. DEPARTMENT OF COMMERCE

WORKSHEET

OPR X115
PE-20-Z-79
H 9849
VESNO 1255

Position Abstract

JD (ye)	From Pos	To Pos	Ctr	S_1	M	S_2	Remarks
252	959	966	R/R	564	000	572	MAINSCHEME (SOUTH SHEET)
	967	972					BOTTOM SAMPLES
	973	980					BOTTOM SAMPLES (NORTH SHEET)
		981					REJECTED
		982					BOTTOM SAMPLE
	983	986					BOTTOM SAMPLES (SOUTH SHEET)
		987					REJECTED
		988					BOTTOM SAMPLE
254	989	993					BOTTOM SAMPLES
	994	1121					MAINSCHEME (NORTH SHEET)
		1122					REJECTED
	1123	1196					MAINSCHEME
257	1197	1258					MAINSCHEME
		1259					REJECTED
	1260	1334					MAINSCHEME
		1335					REJECTED
	1336	1411					MAINSCHEME
[illegible]9	1412	1482					CROSSLINE
	1483	1484					REJECTED
	1485	1489					MAINSCHEME
		1490					REJECTED
	1491	1542					MAINSCHEME
		1543					REJECTED
	1544	1562					MAINSCHEME
		1563					REJECTED
	1564	1615					MAINSCHEME

NOAA FORM ..-44
(11-72)

U.S. DEPARTMENT OF C... RCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
1255	H-9849	1981	OPR-X115-PE-20-2-79-H-9849	S.H.	9-4-81

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH FEET (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
743	9/3/81	45/08/41	83/16/45	49.8	20Lb.	2in.	—	gy	hrd.gy cl		
744		45/08/04	83/16/44	50.9			-	br	FNE br s		
745		45/07/23	83/16/46	45.4			-	br	FNE br S, P		
746		45/06/46	83/16/46	38.5			-	br	FNE brs, P, Cl, Grs		
747		45/06/08	83/16/46	43.4			-	br	FNE br S, Grs		
748		45/05/26	83/16/47	39.4			-	br	FNE brs, P		
750		45/05/34	83/15/51	46.0			-	br	hrd br Cl, P		
751		45/06/10	83/15/53	50.7			-	br	hrd br Cl		
752		45/06/50	83/15/52	49.5			-	br	FNE br S, Cl		
753		45/07/27	83/15/55	48.4			-	br	FNE brs, Cl		
754		45/08/03	83/15/46	52.7			-	br	FNE brs		
756		45/08/41	83/15/49	43.4			-	br	FNE brs		
757		45/08/48	83/14/54	40.4			-	br	FNE brs		
758		45/08/03	83/14/56	31.7			-	br	FNE brs, Sl c		
759		45/07/25	83/14/54	30.5			-	br	FNE br S, P		
760		45/06/46	83/14/57	52.7			-	br	FNE br S		
761	↓	45/06/07	83/14/57	49.5	↓	↓	-	br	FNE brs		

(54)

Use more than one line per sample if necessary.

☆ U.S. G.P.O. 1972-769-565/530 REG.#6

NOAA FORM ...-44
(11-72)

U.S. DEPARTMENT OF C...RCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
1255	H-9849	1981	OPR-X115-PE-20-2-79-H-9849	S.H.	9-4-81

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
762	9/3/81	45/05/29	83/14/57	48.1	20Lb.	2 in.	-	br	FNE brs, P		
763		45/05/29	83/14/06	49.6			-	br	FNE brs		
764		45/06/09	83/14/04	43.6			-	br	FNE brs		
765		45/06/47	83/14/03	29.5			-	br	FNE brs, P		
766		45/07/28	83/14/03	29.6			-	br	FNE brs		
767		45/08/03	83/14/02	30.5			-	br	FNE brs		
768	↓	45/08/45	83/14/01	37.4	↓	↓	-	br	FNE brs		
967	9/9/81	45/03/39	83/11/20	50.7				br.	FNE. br. S		
968		45/04/13	83/11/17	43.9				br.	FNE. br. S		
969		45/04/54	83/11/15	44.0				br.	hrd. br. CL.		
970		45/05/26	83/11/13	51.4				br.	FNE. br. S, br.		
971		45/05/29	83/12/18	32.1				br.	FNE. br. S, P		
972		45/05/29	83/13/07	35.0				br.	FNE. br. S		
973		45/08/47	83/13/14	42.1				br.	FNE. br. S.		
974		45/08/05	83/13/02	32.3				BR.	FNE. br. S, P		
975		45/07/26	83/13/03	30.6				-	P		
976	↓	45/06/50	83/13/07	28.4	↓	↓		br.	FNE br. S		

(55)

Use more than one line per sample if necessary.

☆ U.S. G.P.O. 1972-769-565/530 REG. #6

NOAA FORM 3-44
(11-72)

U.S. DEPARTMENT OF C[illegible]RCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
1255	H-9899	1981	OPR-X115-PE-20-3-79-H-9849	S.H.	9-17-81

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
977	9/9/81	45/06/09	83/13/10	28.7	20LB.	2in	-	Gr.	FNE Gr. S		
978		45/06/10	83/12/12	29.5			-	Gr.	FNE Gr. S		
979		45/06/49	83/12/10	29.6			-	-	P		
980		45/07/28	83/12/11	33.7			-	-	P		
982	↓	45/08/08	83/12/13	34.9		↓	-	Gr	FNE Gr. S, P		
983		45/04/48	83/12/13	41.0			-	Gr.	FNE Gr. S, P		
984		45/04/47	83/13/10	44.4			-	Gr.	FNE Gr. S, P		
985		45/04/53	83/13/59	44.6			-	Gr.	FNE Gr. S		
986		45/04/48	83/15/01	46.0			-	-	P,		
988	↓	45/04/56	83/15/50	36.8	↓	↓	-	-	P		
989	9/11/81	45/04/13	83/14/58	28.4			-	-	P		
990		45/04/12	83/13/59	36.5			-	GR	FNE GR S, CL		
991		45/04/08 ~~45/04/08~~	83/13/07	38.1			-	-	P		
992		45/04/12	83/12/09	41.5			-	GR	FNE GR S, P		
993	↓	45/03/35	83/12/06	43.0			-	GY	GY CL		
					↓	↓					

(96)

Use more than one line per sample if necessary.

☆ U.S. G.P.O. 1972-769-565/530 REG. #6

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

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

(See reverse for responsible personnel)

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

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HFP- #4 LAUNCH 1255	MICHIGAN	LAKE HURON, ALPENA	10/10/81

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
X115-HSB-81	PE 20-2-79	H9849	North American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	Sig. 569 THUNDER BAY ISLAND LIGHTHOUSE	45 02	14.167	83 11	39.325		F-1-6-V 1979	14860 14864
LIGHT	Sig. 572 MIDDLE ISLAND LIGHTHOUSE	45 11	35.470	83 19	15.701		F-1-6-V 1979	14860 14864
LIGHT	Sig. 801 STONEYCROFT POINT LIGHT (LL # 1313.15)	45 06	24.3427	83 18	31.3922		F-2-6-L 9/29/81	14860 14864
	NOTE: The nonfloating aids listed on this form ~~are those~~ in the ~~vicinity~~ of Survey H-9849. A complete listing of all nonfloating aids and landmarks for Project OPR-X115 from North Point to Cordwood Point have been transmitted to Photogrammetry Division C3421.							

(57)

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	LT(jg) Samuel P. De Bow, NOAA OIC - HFP- 4 LAUNCH 1255	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

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

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

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

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

FIELD (Cont'd)

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

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

II. TRIANGULATION STATION RECOVERED

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

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1030 Region 6

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Atlantic Marine Center
439 West York Street
Norfolk, VA 23510

December 14, 1981

CAM61/023
1703-04-9674

TO: George W. Jamerson, CAM11
Chief, Hydrographic Surveys Branch

FROM: Gerald L. Bloom, CAM61
Chief, Acoustic & Instrumentation Systems Branch

SUBJECT: Survey Sounding System, Launch 1255

The following is in response to a request by your office to document our investigation of 1255's phantom spikes.

An inspection of the Raytheon DE-723D survey sounder onboard 1255 was performed to attempt to identify "spikes" which occured during the Pamlico Sound (N.C.) survey of 1980. These "spikes" appear on the DE-723D's recorder analog chart as a decreasing then increasing depth change. The digital output to the Hydroplot system did not reflect these analog depth changes and remained constant (over the "flat" sound bottom).

The only symptom noticable during the occuring of these "spikes" was the recorder's stylus motor speed change (slowed then resumed normal speed). Since the stylus motor speed is controlled by the frequency of the AC power input it was determined that a launch power problem existed and was external to the DE-723D sounding system. An exchange of system units (recorder, ECU,DOM) installed onboard (launch has two systems - one survey and one navigation) did not correct the problem. The occurance of these "spikes" was limited to operation on launch power since they did not appear on shore power.

The system was tested for proper operation and calibrated for all scales (A to F) and the system was considered to be operational.

It is CAM61's opinion that an electrical problem caused the analog record "spikes" and that the momentary starting of an electrical motor or pump onboard could be causing the launch power to vary.

Replacement of the existing DE-723D with the new DSF-6000 should be considered.

CC: CAM611

ATLANTIC MARINE CENTER

January 6, 1982 OA/CAM11

TO: OA/CAM4 - Clarence Tignor

FROM: OA/CAM11 - George Jamerson

SUBJECT: Possible Electrical Problem aboard Launch 1255

Request is hereby made for MED to investigate the electrical system aboard Launch 1255 for a possible electrical problem which could affect the analog trace of the DE-723D fathometer. Refer to the attached memo from CAM61 to CAM11 concerning this subject. Findings of your investigation are requested to this office before the shipyard repair period.

Your assistance in this problem is appreciated.

cc:
CAM42 Lt. Marriner

DEPARTMENT OF TRANSPORTATION U. S. COAST GUARD CG-3883 (Rev. 5-77)	RAPIDRAFT LETTER	MAY BE TYPED OR HANDWRITTEN

INSTRUCTIONS

ORIGINATOR – Use for routine correspondence not requiring action, review, or comment by officers in the chain of command. Send original and blue copy to addressee. Retain yellow copy for file.

ADDRESSEE – Reply hereon, returning original to originator. Retain blue copy for file.

TO:

Lt. Sam DuBow, Commanding Officer,
NOAA Survey Party,
c/o Federal Building, Water Street,
Alpena, Michigan

STAFF SYMBOL/SSIC NO.

DATE

24 Sept 1981

Dear Lt. DuBow:

Enclosed are copies of my letter to NOAA concerning suggested upgrading of certain descriptions in the Coast Pilot #6 of the area of the mouth of Devil River, Warnicke's Marina, and the bay between Partridge and Bare Points and of BOAA Form 77-5 which I submitted.

I will try to stop by early next week to go over such observations in detail if you wish.

Sincerely,

John W. Bunting (Alpena)

John W. Bunting

FROM:

John W. Bunting, SO/Opns XVI
130 Prentiss Street,
Alpena, Michigan 49707

Phone 6-1900

DO NOT USE FOR CLASSIFIED CORRESPONDENCE

PREVIOUS EDITIONS ARE OBSOLETE
SN-7530-00-FO1-5310

61

DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD AUXILIARY

(AUTHORIZED BY CONGRESS 1939)

THE CIVILIAN COMPONENT OF THE U.S. COAST GUARD

24 September 1981

Nat'l Oceanic and Atmospheric Adm.,
U. S. Department of Commerce,
Washington, D. C.

via: C. G. Auxiliary Chart Updating Officer, District 9(CR)

Gentlemen:

It is recommended that consideration be given to make the following changes and additions to the U. S. Coast Pilot No. 6 (Great Lakes) in reference to page 267 (Chart No. 14864) where descriptions are given of the shoreline from Harrisvill north to and including Thunder Bay:

1) Col. 1, Line 29 -- the described "prominent" shore facilities for storing petroleum products, etc., are not on the shore but are up along the highway U.S. 23, more distant than the rear range light (being about 1,100 feet from the shore) and they are not practically obscured by intervening trees and undergrowth.

2) Col. 2, Line 24 -- Ossineke, at the mouth of Devil River is partially protected by a steel breakwater running northwesterly from the northeasterly edge of the river's mouth. A small pier is 1,000 feet up river with fuel services for small craft; there is much shoaling in the river and at its mouth with depths of four feet and less. Entry should be made only with local knowledge.

3) Col. 2, Line 3 -- Beginning "A marina basin" etc., should be changed to show parallel rubble mound breakwaters extending in northeasterly direction, 60 feet apart, a vertical pole marking the end of the most easterly breakwater. Shifting sand off the breakwaters allow a draft of 3½ to 4 feet for five hundred feet from their ends.

   Following the above paragraph should be added the information that from the ends of the marina breakwaters, northerly, water is very foul and shallow in the bay between Partridge Point and Bare Point there being an area of 1½ feet over a rocky hump.

A copy of this letter will be given to Lt. Sam DuBow, commander of the NOAA Charting Crew working in this area and the matter will be discussed with him in detail.

Yours truly,
John W. Bunting
John W. Bunting, Cdns Offc Div XVI

"Th[illegible]rt is authorized by law (33 U.S.C. 883b. Reorg. Plan No. 2 of 1965, 79 Stat. 1318, Re[illegible] No. 4 of 1974, 84 Stat. 2090). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate and timely."

Form Approved: OMB No. 41-R2621
Expires: 12-31-81

NOAA FORM 77-5
1-78)

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

USCG AUX.-NOS COOPERATIVE CHART UPDATING PROGRAM

RECOMMENDED CHANGE OR CORRECTION REPORT

See detailed INSTRUCTIONS on reverse side of Copy 4.

SECTION I — OBSERVER'S IDENTIFICATION DATA

MEMBER NUMBER (1-10)	TRANS. CODE (11-13)	LAST NAME (14-25)	DO NOT KEYPUNCH
Ø 9 C L Ø 4 Ø Ø 6	Ø 6 E	B U H T I N G	FIRST NAME AND INITIAL

REPORT SUBMITTED TO: (Enter appropriate number) (26)	DATE OBSERVED (27-32) M M D D Y Y	CREDITS (33-34)	TELEPHONE NUMBER
1. NOAA – NOS 3. ARMY – COE X 2. NOAA – LAKE SURVEY 4. USCG (ATON)	Ø9 24 81		

OBSERVER'S MAILING ADDRESS

NUMBER AND STREET	CITY	STATE	ZIP CODE
130 Prentiss St.	Alpena	Michigan	49707

SECTION II — ITEM BEING REPORTED

1. DATE OF INVESTIGATION	2. TIME	3. CHART NUMBER	4. EDITION	5. REVISION DATE
Existing knowledge; last observation 09/22/81				

6. POSITION			7. MARKED PORTION OF CHART INCLUDED
LATITUDE	LONGITUDE	MILE MARKER (If any)	YES ☐ NO ☐

SECTION III — POSITION DETERMINED BY

1. COMPASS BEARINGS	2. ESTIMATED BEARINGS	3. SEXTANT ANGLES	4. SURVEY

5. SCALING CHART *(For location of any charted feature)*
Chart 14864

OTHER *(Explain)*
Coast Pilot #6 (Great Lakes)

SECTION IV — REASON CHANGE OR CORRECTION IS RECOMMENDED

See attached letter concerning suggested changes in wordings of descriptions.

SECTION V — SIGNATURE OF OBSERVER

NAME
63.

DATE REPORT SUBMITTED
24 Sept 81

NOAA FORM 77-5 (4-78)

OBSERVER COPY 4

INSTRUCTIONS FOR PREPARATION AND SUBMITTAL OF NOAA FORM 77-5 FOR USCG AUX–NOS COOPERATIVE CHARTING PROGRAM

The reporting Auxiliarist should immediately complete this form in triplicate, retain one copy, and send the original and one copy direct to his ADSO–OPU. The ADSO–OPU should immediately review the form, correct any obvious mistakes, retain one copy, and forward the original without delay to the appropriate Charting Agency. CU accomplishments will be reported into AUXMIS by the Charting Agency on a monthly basis.

I. HOW TO REPORT

1. WHEN REPORTING DEPTHS Use the most accurate means available to you (lead line, setting pole, depth sounder,) Always include the exact time and date of the sounding so that it can be corrected for lake stage, tide level, effect of current, etc. Do not try to correct it yourself. When using a depth sounder, be sure to make the proper allowance for the distance between the transducer and the water line. State on the report that you have done this. Report the fact that object may be visible at low water but submerged at high water.

2. WHEN LOCATING AND REPORTING POSITIONS Accuracy in reporting positions is vital. Use the best method available to you. If you need help locating a position, seek help from your Flotilla Commander. When plotting positions based on bearings, state clearly whether they are True or Magnetic, allowing for deviation if Magnetic, or deviation and variation if True. Locations determined by crossed bearings are good. Three bearings are better. A combination of a bearing and a distance (even if the distance is estimated) can be used. Always show your method of obtaining the position on your report.

3. PLOTTING POSITIONS Plot your information on the largest scale chart of the area. Where possible, cut out the pertinent section of the chart to letter size (8½" x) or fold it accordingly. Include the chart number, edition, and correction dates. Plot your changes clearly and accurately. Show all bearing lines and plotting information. Place explanatory notes or sketches in unused areas of the chart. IF YOU SUPPLY A SECTION OF A LATE EDITION CHART, YOU WILL RECEIVE A REPLACEMENT CHART FREE FROM THE CHARTING AGENCY.

II. WHAT TO REPORT

1. SUBMERGED OBJECTS -- Report uncharted rocks, submerged obstructions, unmarked or shifted shoals, wrecks, underwater cables and pipelines. Report even the simple fact that you know or think there has been a change.

2. OBSTRUCTIONS -- Report pilings, weirs, overhead cables, piers, new or misrepresented bridges. Include a sketch if you cannot explain it properly. When reporting the non-existence of an obstruction, state when and by whom it was removed, if known.

3. CHANNELS -- Report new channels and changes to existing channels by local interests. Include controlling depths, widths, and location of channel markers. (This information usually obtainable from party who contracted for dredging of new channel.)

4. LANDMARKS (Objects sufficiently prominent to be of help to the navigator) -- Report tall distinctive smokestacks, towers, spires, tanks. Also you may report an isolated building on a hill or promontory, a distinctive clump of woods or outcropping of rock, an isolated strip of sandy beach or other easily distinguishable feature. Less prominent landmarks may be reported around small unbuoyed or poorly buoyed harbors and anchorages. Include sketches if possible. It is equally important to report charted landmarks that no longer exist.

5. MARINE FACILITIES -- Report new boatyards and marinas not on current small-craft charts; also discontinued boatyards that are on the charts. Report any glaring discrepancies in listed facilities at a location.

6. PRIVATE AIDS -- Report unlisted day beacons, privately-maintained markers, privately-maintained lights if not shown on charts.

III. IMPORTANT REMINDERS

1. AIDS TO NAVIGATION -- IF YOU DETECT A BUOY OFF STATION OR MISSING, OR A LIGHT NOT OPERATING, REPORT THIS IMMEDIATELY TO THE NEAREST U.S. COAST GUARD FACILITY, AND SEND A COPY OF YOUR REPORT TO THE CHARTING AGENCY FOR CREDIT ON COOPERATIVE CHARTING AWARDS THROUGH YOUR FLOTILLA COMMANDER.

2. ERRORS IN PILOTS -- Report errors and inconsistencies in latest issues of NOS Coast Pilots. Vital changes will be published in Notice to Mariners.

C&GS FORM 525
10-69)

U. S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

QUAD 450832

DESCRIPTION OF TRIANGULATION STATION

TRAVERSE

NAME OF STATION: H-11-MI-77

STATE: Michigan

COUNTY: Alpena

CHIEF OF PARTY: J.D. Shea

YEAR: 1977

DESCRIBED BY U.S.

NOTE.*	HEIGHT OF TELESCOPE ABOVE STATION MARK METERS.†	HEIGHT OF LIGHT ABOVE STATION MARK METERS.

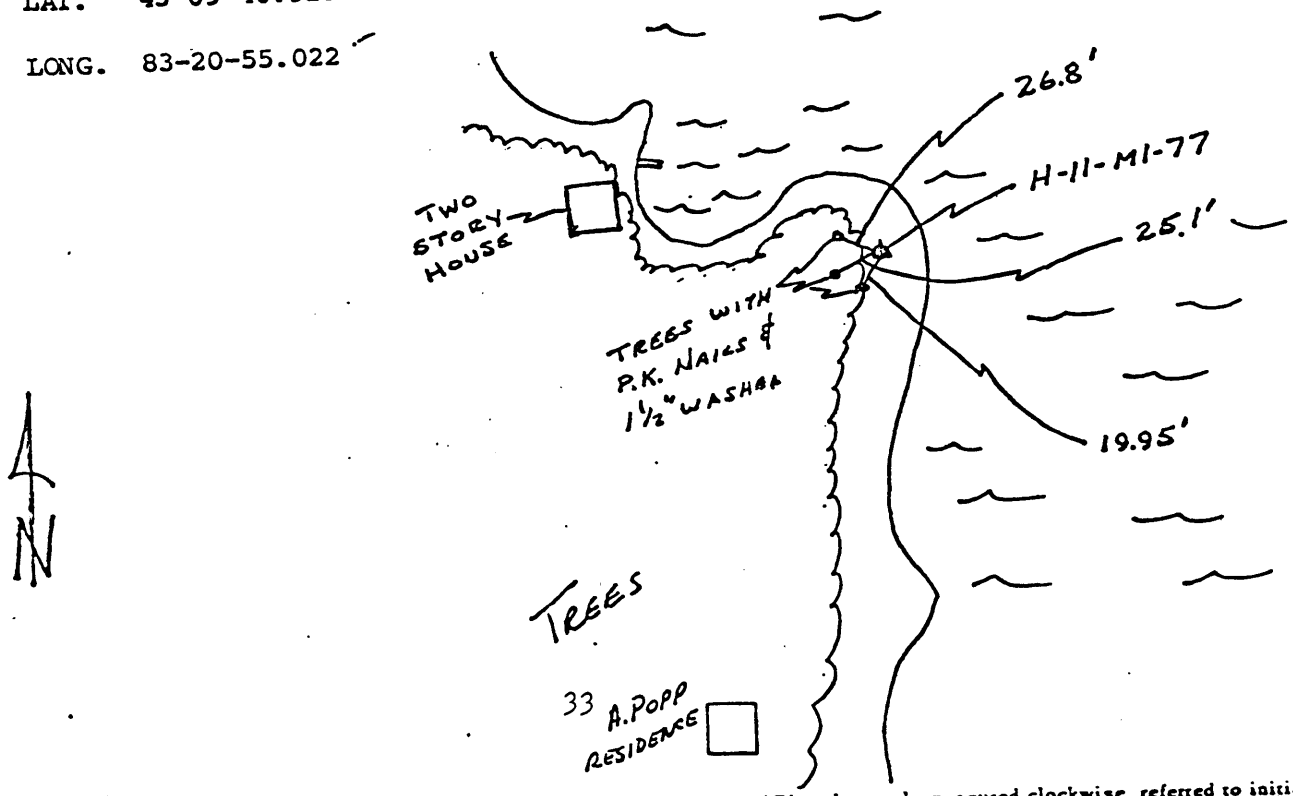
SURFACE-STATION MARK, UNDERGROUND-STATION MARK	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION			
OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION‡ ° ' "

Detailed description:

This station is on the west shore of Lake Huron, about 1 mile south of Monaghan Point. To reach the station from the junction of U.S. Highway 23 and Monaghan Point Road which is about 7.5 miles north of Alpena, go 3.2 miles east on Monaghan Point Roadto a fork in the road just after passing a green one car garage, continue straight (east) on a track road for 0.3 mile to a "Y" junction and a gate on the left, continue straight for 0.3 mile to a sign "A. POPP" and # 6974 on a four ft. post, turn sharp left and go 0.1 mile to Mr. Popp's house. From this point walk east to the shoreline and pack north about 1200 ft. to a large boulder on the shore and the station. The station is a standard NOS disk stamped H-11-MI-77 1977 epoxied in a drill hole in top of 5X6 boulder that projects about 3 ft..

LAT. 45-09-40.925

LONG. 83-20-55.022



*Refers to notes in manuals of triangulation and state publications of triangulation. ‡Direction-angle measured clockwise, referred to initial station

†To nearest meter only, when no trigonometric leveling is being done.

APPROVAL SHEET

SURVEY H-9849 (PE-20-2-79)

The hydrographic records hereby submitted are for an incomplete survey. The areas surveyed were "squared off" therefore data submitted for these areas is complete and adequate. Due to time restrictions caused by adverse weather conditions and the fact that there is no schedule for returning to Lake Huron in the near future, this sheet is submitted incomplete.

Approved and forwarded,

Geo. W. Jamerson

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

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. ____________

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
			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.
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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