

FE77

WIRE DRAG

Diagram No. 1222-3 & 1227

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey ... Wire Drag
Field No. PBS-WD-4248
Office No. FE-77WD

LOCALITY

State Virginia
General Locality ... Approaches to Chesapeake Bay
Locality Off Virginia Beach North
..... to Cape Charles

19 48

CHIEF OF PARTY
A.C. Thorson

LIBRARY & ARCHIVES

DATE November 28, 1949

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

NOTE: A new system for registering Field Examinations (FE's) was established in 1980. All FE's are now consecutively numbered as shown hereon. The date shown in the new format is the actual date of survey. This material was previously registered as:

FE No.3 1949

FE77
WIRE DRAG

WIRE DRAG

FE No. 3

1949

(FE 77 W.P.)

Diag'd. on Diag. Ch. No. 1222-3 & 1227

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Wire Drag

Field No. PBS-WD-4248 Office No. F.E. No. 3, (1949)

LOCALITY

State Virginia

General locality Approaches to Chesapeake Bay

Locality Off Virginia Beach North to Cape Charles

194 8

CHIEF OF PARTY

A.C. Thorson

LIBRARY & ARCHIVES

DATE Nov. 28, 1949

B-1870-1 (1)

WIRE DRAG

FE No. 3 1949

2517

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER NO. H-7678 W.D

Field No. PBS-WD-4248

State Virginia

General locality Approaches to Chesapeake Bay

Locality Off Virginia Beach North to Cape Charles

Scale 1:40,000 Date of survey 12 May thru 17 August 1948

Instructions dated 5 March 1948

Vessel PARKER, BOWEN & STIRNI

Chief of party A.C. Thorson

Surveyed by A.C. Thorson

Soundings taken by ~~fathometer~~, graphic recorder, ~~hand lead, wire~~

Fathograms scaled by --

Fathograms checked by --

Protracted by Hugh L. Proffitt & Stanley M. Tarkenton

~~Drag strips inked by~~ Stanley M. Tarkenton

Soundings in ~~fathoms~~ feet at MLW ~~MLLW~~

REMARKS:

DESCRIPTIVE REPORT
TO ACCOMPANY

WIRE DRAG SURVEY FIELD SHEET NO. PBS-WD-4248

PARKER, BOWEN & STIRNI

Lt. Comdr. A.C. Thorson, Comdg.

AUTHORITY

This survey was executed in compliance with instructions for Project CS-326, dated 5 March 1948.

The re-survey of Item 15 (Kingston-Cellonite) was in compliance with Director's letter dated 6 May 1948.

The dragging in the vicinity of Lat. $36^{\circ} -56.3'$ and Long. $75^{\circ} -53.5'$ was executed at the request of the Supervisor S.E. District.

DATE OF SURVEY

Field work on this sheet commenced on 12 May 1948 and was completed on 17 August 1948.

SCOPE

This survey was made in order to locate and determine the least depths over Items 15, 16, 18, 19 and 26. Additional dragging was accomplished in the vicinity of Items 3 and 4 in order to cover a holiday (split) which appeared on Field Sheet PBS-4147. (H-6976WD)

CONTROL

The first four days work on this sheet was controlled by visual sextant fixes on objects ashore. The remainder of the survey was controlled by Shoran methods. The two Shoran shore stations, HEN and CAPE were established at Cape Henry Lighthouse and False Cape respectively. The location of the station at False Cape was accomplished by the Three Point Problem and the computations pertaining thereto are submitted under separate cover.

SURVEY METHODS

During the first four days of this survey the vessels were controlled by visual sextant fixes on objects ashore.

The Shoran receiving equipment^s installed on the Guide and End vessels and the Shoran shore stations HEN and CAPE were placed in operation on 9 June 1948 and there after Shoran control methods were employed.

Standard prescribed dual control methods were employed throughout this survey. When Shore control was initiated, azimuths to the NEAR and FAR buoys were determined by the Guide and End vessels respectively, by pelorus mounted on gyro-repeaters located on the flying bridges of the vessels.

Standard 100-foot lengths of ground wire were used for the towline and the distance from the pilot house to the end of the bridle was added in determining the total length of the towline. The distance from the pilot house to the towing end of bridle was approximately 60 feet. The following entries were made for length of towline:

<u>Length of Ground Wire Used</u>	<u>Length of Towline Entered in Meters</u>
300	120
400	150
500	180

Tests for lift were made by the tender using a graduated lead filled pipe attached to graduated airplane cord. This line was attached to a standard small buoy reel mounted on a float. A stray-line attached to the float facilitated picking up the tester. The pipe was coated with a mixture of white-lead and oil just prior to each test in order to accurately determine point of contact with ground wire.

The Ship PARKER was used as the Guide vessel, the Ship BOWEN as the End Vessel and the Ship STIRNI as the tender.

The lighted navigation buoys marking wrecks No. 274 and 282 were removed by the Coast Guard for one day enabling the party to completely cover the area in the vicinity of these two wrecks.

RECORDS

Tide reducers and lifts have been entered to the nearest 0.5 foot and checked. Effective depth diagrams for each drag strip have been drawn and checked for the indicated effective depth.

Drag settings were based on predicted tides for Hampton Roads, Virginia. The available time and height corrections for the area being dragged were applied to the predicted tides. Actual tides used in the completion of smooth records were furnished this party by the Washington Office. All references to effective depth unless otherwise specified are those indicated in the record books.

TIDES

Tide gages were not maintained by this party. Hourly heights scaled from the record obtained at the standard gage in Hampton Roads, Virginia, with corrections for the applicable area, were furnished this party by the Washington Office and were used to process the records.

OBSTRUCTIONS, CLEARANCES, DISCREPANCIES, ETC.

Special reports relative to this survey were submitted to the Director during the progress of this survey and duplicates of these reports were forwarded to the Supervisor, S.E. District. Copies of these reports are attached hereto and become a part of this report.

There is a discrepancy between Sheran and visual control in the work on the Kingston-Collonite. This may be due to a weak location of signal, Tank. At the northern limits of this sheet visual and Sheran fixes agreed very closely. *new position of O Bank on another sheet - plots at*

RECOMMENDATIONS

No additional work in this area is recommended. The charting depths are those listed on the Obstruction Data Sheet.

A.C. Therson
A.C. Therson, Lt. Comdr.
Comdg. PARKER, BOWEN & STIRNI

OBSTRUCTION DATA SHEET

LOCATION	GENERAL DEPTH FEET	MINIMUM HANG	POSITION NUMBER	MAXIMUM CLEARANCE FEET	POSITION NUMBER	CHARACTER OF OBSTRUCTION	REMARKS
Item 26 Lat. 36° - 56.2' Long. 75° - 48.7'	29	29	12-16.8D 36.8-37.2D	28	44-51 D	Shoal	* The Drag did not hang - bumped along bottom
Item 16 <i>not found, see review</i> Lat. 37° - 03.835 Long. 75° - 51.814	* 29 { * 27.88 for * 28.55	27	36-K	* 27	1-15-L 1-14 M & 15-25-M	Wreck - Shoal	* 27 ft clearance over 24 ft wreck - an object reported in 1924, not plotted as any until ca. 1940 Four more of 30-32 - 27 ft also considered to be on bottom
Holiday Lat. 36° - 56.80 Long. 75° - 53.48	30			30		Shoal	
Item 15 - <i>Kingston Cellonite</i> Lat. 36° - 49.83 Long. 75° - 52.908	49-53	45	7-C	43	1-19 J	Kingston-Cellonite	14/2 279
Item 18 - <i>SAVANE</i> Lat. 36° - 53.886 Long. 75° - 46.94	50	39	45-E 36.6 F	37	1-14 G	Wreck #274 - Santore	
Lat. 36° - 54.70 Long. 75° - 47.37	39-45			43	17-27 G	Shoal	
Item 19 - <i>TIGER</i> Lat. 36° - 45.91 Long. 75° - 46.82	54-60	41	47-H	39	20-32-J	Wreck #262 Tiger	

*with note
E 579 (09) p. 13 #4*

STATISTICS FOR SHEET NO. _____ (PBS-WD-4248)
 Ships PARKER, BOWEN & STIRNI Project CS-326

APPROACHES TO CHESAPEAKE BAY, VIRGINIA

<u>Date</u> 1948	<u>Day</u> <u>Letter</u>	<u>Stat. Miles</u> <u>Drag</u>	<u>Number</u> <u>Positions</u>	<u>No.</u> <u>H.L.</u>	<u>Soundings</u> <u>Fath.</u>
12 May	A	0.9	7	-	-
17 May	B	1.3	12	-	1
18 May	C	3.2	24	-	-
9 June	D	5.9	51	-	3
10 June	E	4.6	45	-	2
11 June	F	4.3	39	-	-
14 June	G	4.8	33	-	1
15 June	H	4.9	47	-	-
29 June	J	3.2	32	-	-
30 June	K	5.5	49	-	1
1 July	L	2.0	15	-	-
13 August	M	4.0	25	-	-
17 August	N	2.9	37	-	-
Totals		47.5	416	-	8

Total square statute miles area dragged 12.5

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODÉTIC SURVEY

22-sre
S-1-PK

POST-OFFICE ADDRESS: Washington, D.C.

TELEGRAPH ADDRESS:

6 May 1948

EXPRESS ADDRESS:

To: The Commanding Officer
U.S. C & G.S. Ships PARKER, BOWEN AND STIRNI
418 P.O. Building
Norfolk, Virginia

Subject: Additional Field Work - CS-326

References: Letter, 29 April 1948, Supervisor S.E. District
Letter, 6 May 1948, Director.

When weather conditions are suitable for wire-drag investigations outside Cape Henry, Virginia, priority shall be given to additional work required to establish the least depth on Wreck No. 279, Kingston Colonite, located at Latitude 36° 49.6', Longitude 75° 52.2'.

To facilitate the smooth plotting of the wire-drag work accomplished by the Ship SOSBEE on the 17th and 18th of June 1946 (with the drag hanging up at an effective depth of 44 feet) you will determine the least depth on wreck No. 279 and submit your findings to the Norfolk Processing Office immediately upon completion.

Before starting work on this item, you will confer with the Supervisor of the Southeastern District, as it is quite probable that he has more recent information on this wreck.

You will please acknowledge the receipt of these additional work instructions.

/S/ L.O. Colbert
Director

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS:

Norfolk, Virginia

TELEGRAPH ADDRESS:

29 April 1948

EXPRESS ADDRESS:

To: The Director
U.S. Coast & Geodetic Survey
Washington, 25, D.C.

Subject: Additional Work Required Wreck No. 279
(Item No.15) Kingston Celemito

In smooth plotting the wire drag at the Wreck Kingston Celemito accomplished by the Ship SOSBEE in June 1946, it has been determined that because of improvised equipment used the wire dragging accomplished at that time is not acceptable. (Item 15)

The Merritt-Chapman Co. did additional salvage work on this wreck in May 1946 and reported to the Navy that the wreck was demolished to 46 feet.

It is recommended that the Commanding Officer, Ships PARKER, BOWEN AND STIRNI be instructed to determine the least depth on the subject wreck.

/s/ George L. Anderson
Lt. Comdr. USC & GS
Supervisor S.E. District

cc:
Lt. Comdr. Thorsen

See # 507 (1948)

8

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS: 418 P.O. Building, Norfolk, Virginia

TELEGRAPH ADDRESS: 10 June 1948

EXPRESS ADDRESS:

To: The Director
Coast & Geodetic Survey,
Washington, D.C.

Subject: Special Report on Shoal

Ref: Paragraph 2 (Item 26), Supplemental
Instructions - Project CS-326
5 March 1948

A drag set to an effective depth of 29½
feet touched bottom.

A drag set to an effective depth of 29 feet
cleared this shoal.

It is recommended that the present charted
depth of 29 feet be retained.

It was noted during this operation that depth
in the vicinity of this shoal were slightly deeper than
those charted.

*Summarized on page 4
Item-26*

/s/ A.C. Thorsen
Lt. Comdr.
Comdg. Ships
PARKER, BOWEN & STIRNI

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS: 418 P.O. Building, Norfolk, Virginia

TELEGRAPH ADDRESS: 30 June 1948

EXPRESS ADDRESS:

To: The Director
Coast & Geodetic Survey
Washington, 25, D.C.

Subject: Special Report on Wreck No. 282

Reference: Paragraph 4, Supplemental Instructions
Project CS-326, 5 March 1948

The wreck of the Tiger was found in Lat. $36^{\circ}-45.90^{\circ}$
and Long. $75^{\circ}-46.29^{\circ}$ ₃₂

A drag set to an effective depth of $41\frac{1}{2}$ feet hung
the obstruction. A drag set to an effective depth of 40
feet cleared the obstruction.

Summarized on
page 4 - Item 19

Recommended charting ^{clearance} / ³⁹ depth 40 feet.

Investigation based on predicted tides. The survey
project was Sheran controlled.

/S/ A.C. Thorsen
Lt. Comdr. Comdg. Ships
PARKER, BOWEN & STIRNI

g/
cc Supervisor
S.E. District

See L. 500 (1948)

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS: 418 P.O. Building, Norfolk, Virginia
TELEGRAPH ADDRESS: 30 June 1948
EXPRESS ADDRESS:

To: The Director
U.S. Coast & Geodetic Survey
Washington, D.C.
From: Commanding Officer, PARKER, BOWEN & STIRNI
Subject: Special Report on Wreck - KINGSTON CELONITE
Reference: Letter from Director, Re 22-sre-S-1-PIC,
Subject: Additional Work - CS-326

The wreck of the KINGSTON CELONITE was in Lat. 36-49.68³'
and Long. 75-52.07¹'.

A drag set to an effective depth of 45¹/₂ feet hung the
obstruction.

A drag set to an effective depth of ~~44~~⁴³ feet cleared the
obstruction. This depth was based on the maximum lift
thruout the drag. Just prior to passing over the obstruction
the section that would pass over it was tested and a lift
of ¹/₈ foot less than the maximum was recorded. Consequently
the obstruction was cleared at ~~44~~⁴³ feet.

Summarized on
Page 4 - Item 15

Recommended charting/depth ^{clearance} ~~44~~⁴³ feet.

44 ft Charted (1222)
see Rev. Dec. Reg. H. 6976
W. D.

Survey based on predicted tides and Sheran control.

It is very probable that the depth of 45 feet claimed
by the salvage Contractor exists.

43' should be
Charted. See
EE #3 1949 p.4
(Not reviewed as of
this date 4-14-50)
W.D.

/s/ A.C. Thorsen, Lt. Comdr.
Comdg. PARKER, BOWEN & STIRNI

See L 507 (1948)

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS: 418 P.O. Building, Norfolk, Virginia
TELEGRAPH ADDRESS: 20 August 1948
EXPRESS ADDRESS:

To: The Director
U. S. Coast & Geodetic Survey
Washington, D.C.

Subject: Special Report on Wreck No. 274, SANTORE

Reference is made to Director's letter dated 8 July 1948, (83-bjm).

After actual tides were applied to drag depth over the SANTORE the following is applicable:

Drag set to effective depth of 37 feet cleared the wreck.

Drag set to an effective depth of $39\frac{1}{2}$ feet hung the wreck.

Drag set to an effective depth of $39\frac{1}{2}$ feet touched and cleared the wreck.

Regarding Lt. Comdr. Tryon's work while attached to the GENTIAN, their drag depths were based on predicted tides and estimated lifts. No actual tests of lift were made. Comdr. Tryon states that data in his possession estimates his clearing the wreck at 40 feet.

Summarized on page 4
Item 18

/S/ A.C. Thorsen
Lt. Comdr. Comdg. Ships
PARKER, BOWEN & STIRNI

See 2579 (1948)

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS: 418 P.O. Building, Norfolk, Virginia

TELEGRAPH ADDRESS: 30 June 1948

EXPRESS ADDRESS:

To: The Director
U.S. Coast & Geodetic Survey
Washington, D.C.

From: Commanding Officer, PARKER, BOWEN & STIRNI

Subject: Special Report on Wreck No. 274, SANTORE

The wreck of the SANTORE was found in Lat. 36-53.85' and Long. 75-46.92. A good sound contact was made on this wreck by the STIRNI using Sonar.

A drag set to an effective depth of 40 feet hung the obstruction.

A drag set to an effective depth of 40 feet (same as above) touched and cleared the obstruction.

A drag set to an effective depth of 38 feet cleared the obstruction.

Recommended charting depth 38 feet.

This survey was based on predicted tides.

The charted 39 foot sounding located in Lat. 36-54.7' and Long. 75-47.4' fell within the radius of this survey and was cleared with a drag set to an effective depth of 44 1/2 feet. It is recommended that the charted depth be changed accordingly.

*Superseded by
attached letter
of 20 Aug. 1948*

/S/ A.C. Therson, Lt. Comdr.
Comdg. Ships PARKER, BOWEN & STIRNI

See L 579 (1948)

SIGNALS USED SHEET H-7678

Triangulation Stations

- CHARLES - CAPE CHARLES NEW LIGHTHOUSE
- HEN - CAPE HENRY LIGHTHOUSE, 1887-1932
- CUP - CAVALIER HOTEL CUPOLA, 1939
- RANGE - RIFLE RANGE, TOWER A, U.S.E., 1925-39
- RADIO - VA. BEACH, E. RADIO MAST, 1932
- BUNK - VA. BEACH WATER TANK, (1909-31)

Topographic Stations

- TANK - See D.R.

ADDENDUM

To Accompany

FE. No. 3, 1949

WIRE DRAG SURVEY H-7678 (Field No. P.B.S.-4248)

GENERAL

In accordance with the Director's letter dated 10 October 1949, only those lines showing minimum hangs and maximum clearances were plotted on the wreck items. The other lines were plotted on overlays and are being submitted with the smooth sheet.

ITEM #16 Lat. 37°-03' Long. 75°-51'

With the exception of line l-25k, effective depths of drag lines on this item are greater than depths shown on hydrographic survey H-6595. These effective depths were not plotted on smooth sheet.

See Page 4, -Item 16

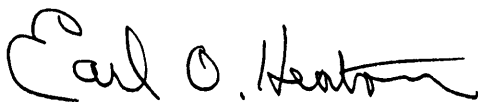
Respectfully submitted,



Hugh L. Proffitt
Cartographer

Norfolk, Virginia
16 November 1949

Approved and forwarded.



Earl O. Heaton
Supervisor, SE Dist.

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. F.E. No.3, W.D. (1949)

Records accompanying survey:

Boat sheets ².....; sounding vols. ¹.....; wire drag vols. ⁶.....;
bomb vols.; graphic recorder, rolls ¹envel.
special reports, etc. ¹ envel. Drag Strip Tracings
.....

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

Number of positions on sheet	.....	416
Number of positions checked	.....	7
Number of positions revised	.....
Number of soundings revised (refers to depth only)	.....
Number of soundings erroneously spaced	.....
Number of signals erroneously plotted or transferred	.....
Topographic details	Time	.....
Junctions	Time	.....
Verification of soundings from graphic record	Time	.....

Verification by *L. Evans* Total time *12 hrs.* Date *6 Oct. 50*

Reviewed by *G. Jordan* Time *10 hrs* Date *7 Nov 50*

REVIEW OF FIELD EXAMINATION NO. 3, 1949

This field examination was made to investigate four sunken wrecks and to obtain a clearance depth over a shoal. A split on H-6976(1945-47)W.D., was also covered.

The sunken wrecks were detected by Sonar and then wire dragged, using Shoran for control. The verified wrecks are listed on the obstruction data sheet items 15, 18 and 19 on page 4 of the Descriptive Report. The wreck in item 16 was not found.

The wire drag work was plotted on a large smooth sheet which has been cut into the five sections retained for filing with the Descriptive Report. Limits of some of the individual examinations are shown on H-6976(1945-47)W.D., and the Area and Depth sheet of that survey now includes present information falling within its limits.

The field examination was applied to Charts 1222(50-5/15) and 1227(50-4/24) before verification. No revision in the charted information is necessary except for the deletion of the 23-ft. clearance depth on Chart 1222, item 16, in lat. $37^{\circ} 03.35'$, long. $75^{\circ} 51.14'$. The wreck previously charted here from H. O. Notice to Mariners No. 16, 1924 ^{is considered} to be disproved by the present examination. The bottom wire on 26-ft. and 27-ft. strips scraped the bottom for a considerable distance in the vicinity of the reported wreck without hanging; the strips were not smooth-plotted because of the continuous grounding on the bottom. Another 27-ft. strip did hang, but this happened after the bottomwire was pulled along the bottom for some distance. H-6595(1940) shows 26- to 28-ft. depths here, and it is considered that there is no wreck within the limits of the examination. *claims wreck has been removed*

The position of the navigational buoy marking the wreck in lat. $36^{\circ} 45.95'$, long. $75^{\circ} 46.32'$, item 19, is in agreement with the charted position. The buoy marking the wreck in lat. $36^{\circ} 49.63'$, long. $75^{\circ} 52.15'$, was removed subsequent to the examination.

The Descriptive Report and attached correspondence adequately cover other matters pertaining to this examination. No further discussion is necessary.

G. F. Jordan

Inspected by: R. H. Carstens
November 7, 1950

839

RAC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

9 December 1949

~~Division of Hydrography and Topography:~~

Division of Charts: R. H. Carstens

Plane of reference approved in
7 volumes of sounding records for

HYDROGRAPHIC SHEET

FE No. 3 1948

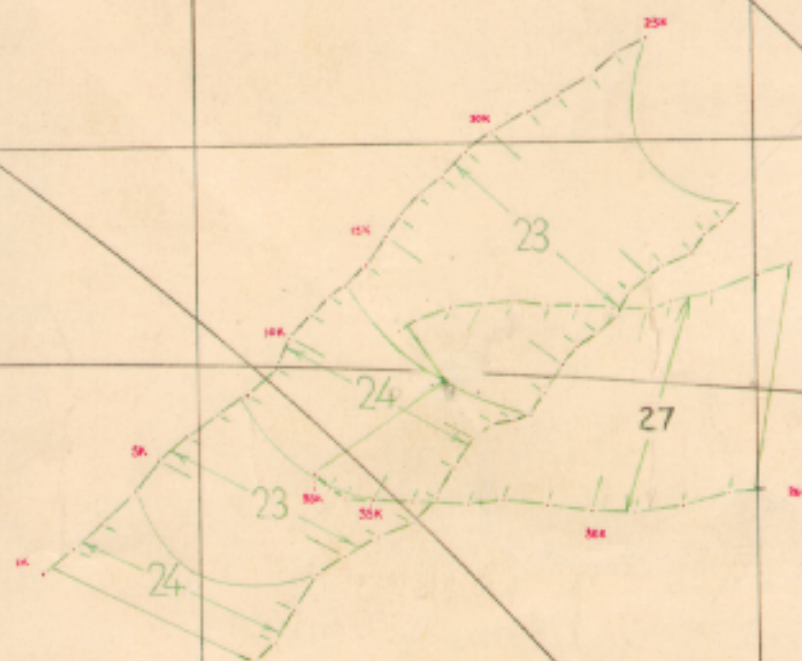
Locality Approaches to Chesapeake Bay, Atlantic Ocean

Chief of Party: A. C. Thorson in 1948
Plane of reference is mean low water, reading
3.6 ft. on tide staff at Hampton Roads (NOB)
13.4 ft. below B. M. 6 (1927)

Height of mean high water above plane of reference is 2.5 feet.

Condition of records satisfactory except as noted below:

E. C. McKay
Section
Chief, ~~Division~~ of Tides and Currents.



ITEM 16
(Wreck reported in 1924)

CAPE 32

HEN 14

F. E. No. 3, 1949.

Scale 1:40000

Sheet 1 of 5

10

12

30

34

37°02'

04'

52'

75° 50'

26

58'



24

24

56'

Covering split on H-6976 (1945-47)

HEN 8

CAPE 22

22

6

36° 54'

F. E. No. 3, 1949

Scale 1:40000

Sheet 2 of 5

20

54'

75° 52'

ITEM 26
SHOAL
Cleared by 28

WRECK NO. 274
Cleared by 37

Item 19
F. E. No. 3, 1949

Scale 1:40000

Sheet 3 of 5

CAPE 20

14 HEN

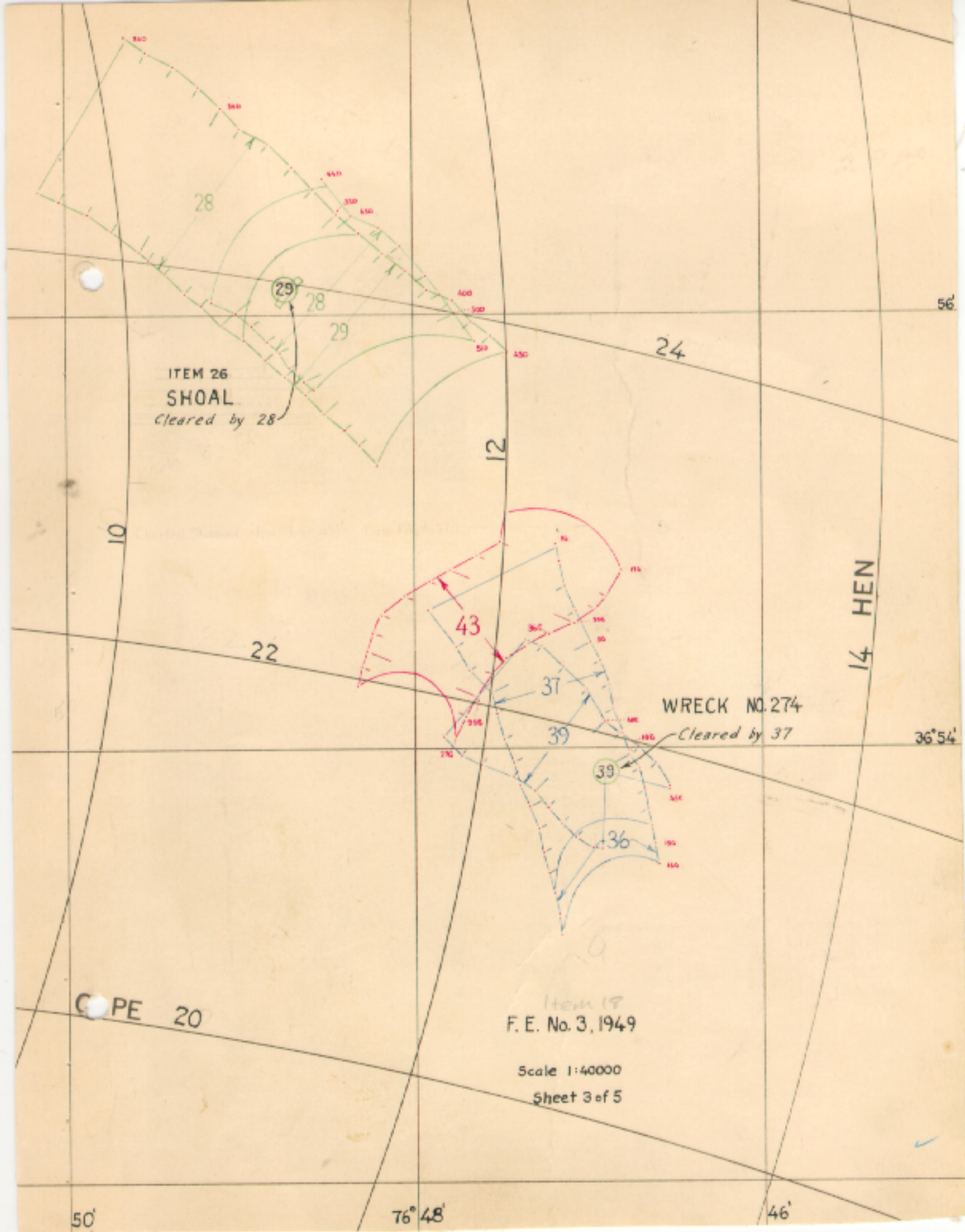
50'

76° 48'

46'

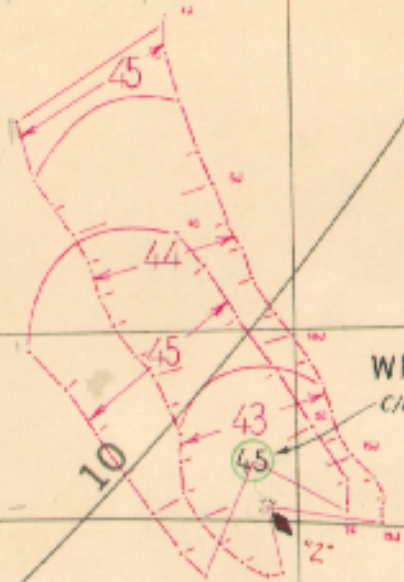
56'

36° 54'



8

18



WRECK No. 279
 Cleared by 43

10

16

36°50'

12 HEN

48°

14 CAPE

14

Item 15
 F. E. No 3, 1949

Scale 1:40000

Sheet 4 of 5

2

54'

52'

75°50'

46'

14

WRECK No. 282

Cleared by 39

36° 46'

16

12 CAPE

HEN 18

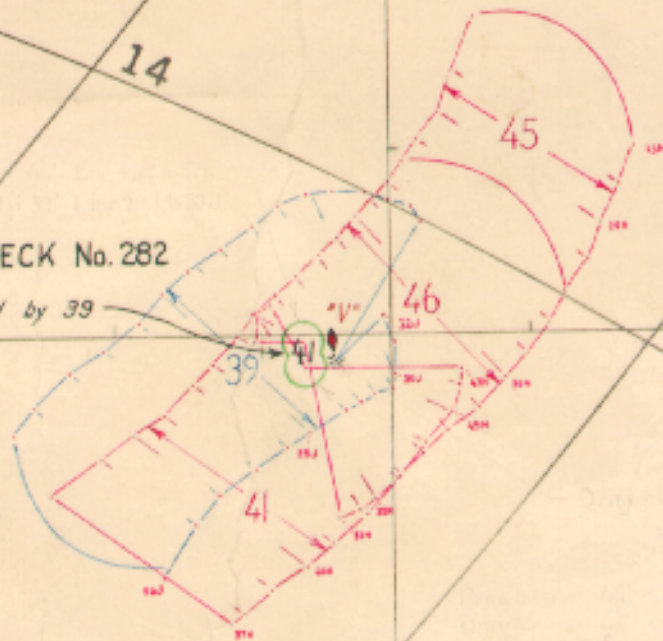
Item 19
F. E. No. 3, 1949

Scale 1:40,000

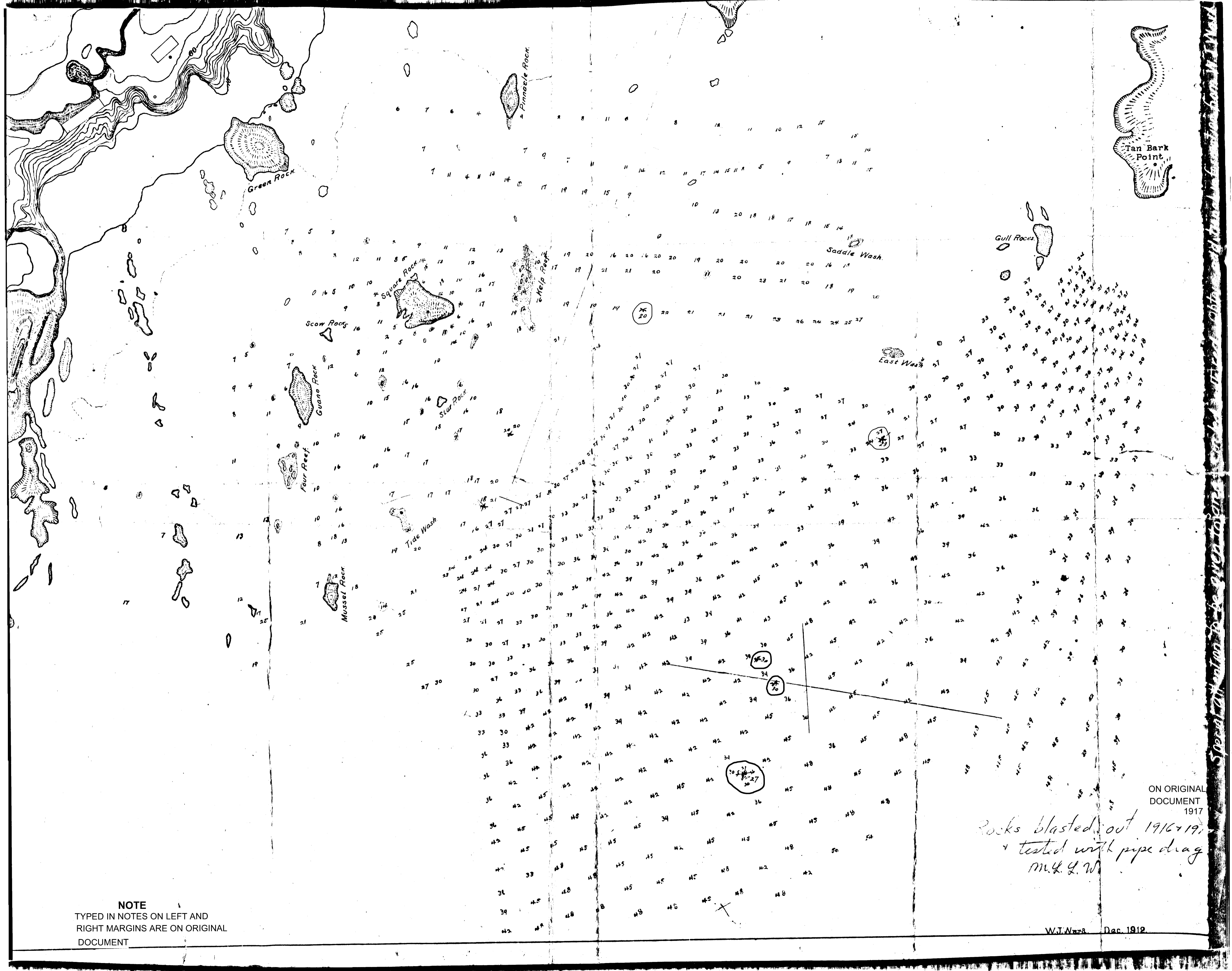
Sheet 5 of 5

10

20



If practicable locate sufficient points on this survey to apply it to chart. Are the small circles on "Tan Bark Point" and "Square rock" marked stations? If so locate them on wire drag survey sheet, also any other marked points shown on this survey.



NOTE
TYPED IN NOTES ON LEFT AND
RIGHT MARGINS ARE ON ORIGINAL
DOCUMENT

Rocks blasted out 1916-1917
& tested with pipe drag
m.y.g.w.

W.J. Ward Dec. 1912

Special attention to be given to 5 areas circled with red.

Special attention to be given to 5 areas circled with red.
Obtain additional information from W. J. Ward

