

FE256

WIRE DRAG

Diagram No. 1207-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey .. Wire Drag

Field No. R/H-5-1-81

Registry No. FE-256WD

LOCALITY

State Massachusetts

General Locality Boston Harbor--Salem Harbor

Sublocality President Roads and Salem

..... North Channel

19 81

CHIEF OF PARTY
CDR R.S. Moody

LIBRARY & ARCHIVES

DATE July 9, 1990

FE256
WIRE DRAG

☆U.S. GOV. PRINTING OFFICE: 1985-566-054

CP

13275
13270
13274B
13276

HYDROGRAPHIC TITLE SHEET

FE-256WD

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.

R/H-5-1-81

State Massachusetts

General locality Boston Harbor -- Salem Harbor

Locality President Roads and Salem North Channel

Scale 1:5,000 (plotted scale) Date of survey Aug. 8 through Nov. 13, 1981

Instructions dated May 14, 1981 Project No. OPR-A652-RU/HE-81

Vessel NOAA Launches 1275 & 2625

Chief of party R. S. Moody

Surveyed by R. C. Arnold, D. D. Winter, F. L. Collins, S. R. Barnum

Soundings taken by ~~echo sounder, hand lead, pole~~ wire drag, pneumatic depth gauge

Graphic record scaled by N/A

Graphic record checked by N/A

Protracted by Ship's Personnel Automated plot by N/A

Verification by ^{Limited & Modified} Evaluation & Analysis Team, Atlantic Hydrographic Section

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

REMARKS:

AWOIS/SUREV, 8/6/90 SJV

JWW 8/7/90

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** = Data removed from the Descriptive Report and filed with the field records.*

I.

A. Authority

This project was authorized under Hydrographic Project Instructions, OPR-A562-RU/HE-81, Wire Drag, East Coast Investigations, Massachusetts, dated 14 May 1981, and Change No. 1, dated 23 June 1981. ✓

B. Character and Limits of the Work

The purpose of this project was to confirm the status of selected items, provide a cleared depth for the area, or to locate and provide a least depth for the items. The items selected were judged to be resolvable and critical to safe navigation. ✓

The general area of operation was Boston Harbor, more specifically, President Roads Anchorage and Boston North Channel. An additional item was located in Salem Channel. ✓

While the assigned survey scale was 1:40,000, all field work was plotted on 1:5000 scale overlays. The assigned work of this project will be applicable to the following NOS Charts: 13274, 13275, 13276, 13267, 13270, 13271, 13272 and 13273. ✓

C. Control

All assigned work was electronically controlled using Del Norte electronic positioning equipment operating on a frequency of 9400 MHz. For each item investigated during the course of this project, the applicable control station geodetic information is presented below: ✓

Item 1

(R1) Marblehead Lighthouse, Salem, MA
Latitude 42°30'19.187"N
Longitude 70°53'27.336"W

(R2) Hospital Point Lighthouse, Beverly, MA
Latitude 42°32'47.026"N
Longitude 70°51'23.304"W

Items 2 & 3

(R1) Long Island Head Lighthouse Ecc., Boston Harbor
Latitude 42°19'48.470"N
Longitude 70°57'29.456"W

(R2) Spectacle Island Front Range, Boston Harbor
Latitude 42°19'40.704"N
Longitude 70°59'13.005"W

All horizontal control stations other than those used for Item 1 were not verified during modified processing.

Items 4, 5 & 6

(R1) Boston Lighthouse Ecc., Boston Harbor
Latitude 42°19'40.203"N
Longitude 70°53'26.343"W

Note: A handwritten field horizontal control report was included in the survey records.

(R2) Long Island Head Lighthouse Ecc., Boston Harbor
 Latitude $42^{\circ}19'48.470''\text{N}$
 Longitude $70^{\circ}57'29.456''\text{W}$

D. Calibration and Shore Signals

Calibrations were not verified during modified processing.

The initial baseline calibration was carried out between the following two horizontal control stations:

Strong 1934

Latitude $42^{\circ}19'48.440''\text{N}$
 Longitude $70^{\circ}57'25.267''\text{W}$

Penal 2, 1958

Latitude $42^{\circ}20'59.427''\text{N}$
 Longitude $70^{\circ}57'28.87''\text{W}$

The baseline between these two stations was almost entirely over water. An inverse was computed to be 2191.871 meters, using the HP9815 computer and the geodetic package tape (800630).

On 1 September 1981, due to DMU failure, it was necessary to recalibrate replacement equipment. At this time remote unit #78 was located at Boston Lighthouse ECC.. Due to the inaccessibility of this site under all but favorable conditions, it was decided to run a baseline calibration between this site and Penal 2, 1958. The computed distance between these two was 6054 meters.

It should be noted that throughout the project, the ships suffered from continual DMU failure. Whenever a DMU failed, it was necessary to return that piece of equipment to AMC for repairs, thus preventing a closing baseline calibration for that particular DMU and associated remote units. As a result of this, the only DMU's and remotes which have a closing baseline calibration are those which were in use at the very end of the project.

For daily opening and closing calibrations, the geodetic position was determined for a dolphin which was located within a short distance of Items 2, 3, 4 & 5. The geodetic position of the dolphin was found by resecting a point on shore and running a traverse to the dolphin. The computed GP of the dolphin is Latitude $42^{\circ}20'36.920''\text{N}$, Longitude $70^{\circ}57'23.753''\text{W}$. During each opening and closing calibration, the launch would be nosed between the legs of the dolphin and the rates observed. Calculations with the HP 9815 showed that the true rates at the calibration dolphin were:

<u>Distance</u>	<u>From</u>
5710 M	Boston Lighthouse ECC
1501 M	Long Island Head Lighthouse ECC
3044 M	Spectacle Island Front Range

On occasions, large ships anchored in President Roads Anchorage would block the signal from the Spectacle Island station and make use of the

calibration dolphin impossible. To overcome this, the launches would move closer to the Spectacle Island station and observe a three-point sextant fix. ✓

E. Dates of Survey

Work on this project began 8 August 1981 and ended on 13 November 1981. ✓

F. Tide Reducers

Smooth tides have been obtained & applied to the processed data.

Field reductions of each day's data were accomplished, using predicted tides for reference station Boston, Massachusetts. Correctors for the items are: ✓

<u>Item</u>	<u>High Water</u>	<u>Low Water</u>	<u>Height Ratio</u>
1	0 Min.	0 Min.	X 0.96
2,3,4,5	-4 Min.	0 Min.	X 0.98

G. Junctions and Splits

There were no junctions or splits during this survey. ✓

H. Incomplete Items

Under the amended project instructions, a total of 7 items were assigned. These were Items 1, 2, 3, 4, 5, 6 & 9. Item 9 is the wreck of the Argo Merchant on Nantucket Shoals. This item was left incomplete due to lack of medium range electronic control equipment available to the ships and a shortage of time. ✓

Item 6 is the only other incomplete item. This item is the entire Boston North Channel. Drags were attempted, but were hampered by lobster traps, thick kelp growth of the bottom and poor weather. ✓

I. Currents and Winds

Several days were lost due to high winds (greater than 20 knots), which made launch drag operations impossible. ✓

Item 5 was especially affected by high winds and currents due to its unprotected location near the confluence of three channels. Currents at this location were quite strong and variable. From observation of upright lifts, it was obvious that subsurface currents were flowing in different directions from surface currents. ✓

Items 2, 3 & 4 were not as affected by winds or currents as they were in the protected waters of President Roads Anchorage, which is afforded a lee by Deer Island. ✓

Boston North Channel was especially affected by winds. During strong northeasters, the wind would blow straight down the channel and create a heavy chop. ✓

Also, there were several days when, in a matter of 30 minutes or less, the wind speed would go from calm to over 20 knots, causing seas of 2 to 3 feet and a halt to launch operations. ✓

J. Equipment and Techniques

1. Survey Operations

The RUDE and HECK were not used for this project due primarily to lack of maneuvering room to set out ship drags in the vicinity of most of the items. Instead, the ships' two 20-foot Bristol launches were employed using constant tension wire drag techniques that were developed for the New York Harbor Project in 1980. Drags were controlled by steering Del Norte arcs rather than putting out range buoys and this method worked extremely well. ✓

2. Diving Operations

Dives were made on Items 1 and 5. On Item 5, a marker buoy was dropped to mark the center of the search area. Much to the pleasure of the divers, it was quickly discovered that the marker weight had been dropped directly on top of the item, making a search unnecessary. ✓

Divers had a much more difficult time obtaining a least depth on Item 1 in spite of the fact that its position was quite well known. Dives were made on three different days before a least depth was determined. ✓

3. Testing

Testing of the launch drags began as was done in New York in 1980, using a pneumatic depth gauge attached to one upright weight in addition to testing the drag near the center of the bight using standard techniques (skiff and testing pole apparatus). The testing program was modified somewhat at the end of the project (See Appendix "A" for details). ✓

K. Discrepancies and Comparisons With Recent Charts

Please refer to individual item, Findings and Recommendations.

L. Personnel

The officers participating in this survey were: CDR Richard S. Moody, LCDR Russell C. Arnold, LCDR Donald D. Winter, ENS Freddie L. Collins and ENS Steven R. Barnum. ✓

M. General Notes

A considerable volume of hydrographic and side scan sonar data was collected by the ships during the course of this project. While the ships made a considerable effort to properly record and annotate such data, the verifier should consider the data to have been reconnaissance in nature. ✓ ~~Concur~~
While this data may prove to be useful to the verifier, no attempt should be made to verify any of the submitted hydrographic or side scan data. ~~Concur~~

N. Approval

All records of this survey are hereby approved. The field work was personally supervised by the undersigned. The field sheets and records were inspected daily. This survey is considered complete and adequate for charting. ✓

for Russell C. Arnold
Richard S. Moody
Commanding Officer
NOAA Ships RUDE & HECK

III

- A. Item 1: Work was begun on 3 November 1981 and completed on 11 November 1981. The item was investigated using side scan sonar, a fathometer search and finally diving to obtain a least depth. Side scan sonar revealed a prominent rock outcrop protruding several feet above a relatively flat sandy bottom in the area charted "32-foot Rk." Divers obtained a least depth at that position of 3~~2~~⁴ feet. ✓

It is recommended that the item be considered verified on the chart pending final processing of the item investigation records. *See the Addendum* ✓

IV

- A. Item 2: Work was begun on September 14, 1981 and completed on October 22, 1981. The item was investigated using side scan sonar, hydrography and launch wire drag, all of which failed to detect an obstruction. ~~The entire 100-meter radius circle around the item was cleared to a depth of 40 feet except in the NW corner where a 39-foot depth was encountered. This 39-foot depth agrees with the charted depth in that area.~~ *Most of the 100 meter* ³⁶ *foot clearance* ✓

The item is considered disproved and should be deleted from the chart. *See the Addendum.* ✓

V

- A. Item 3: Work was begun on 25 September 1981 and completed on 2 November 1981. The item was investigated using side scan sonar, hydrography and launch wire drag. The entire 150³⁴-meter radius circle around the item was cleared to a minimum depth of ~~40~~ feet. No obstructions were encountered. ✓

It is recommended that the item be considered disproved. ~~The "35-Obstr" should be removed from the chart and replaced with a 40-foot sounding. do not concur - See the Addendum.~~ ✓

VI

- A. Item 4: Work was begun on August 19, 1981 and completed on August 26, 1981. The 100-meter radius circle around the item was cleared to a depth of 45 feet. ✓

The item is considered disproved and should be deleted from the chart. ~~A 45-foot sounding should be charted in its place. - do not concur - See the Addendum.~~ ✓

VII

- A. Item 5: Work was begun on August 13, 1981 and completed on October 20, 1981 with a diver search. The diver search confirmed a larger boiler type obstruction projecting off the bottom in the same location that was determined by the 1960 wire drag survey of the area, Latitude 42°20'09"N, Longitude 70°56'49"W. Least depth over the obstruction was 38 feet as determined by divers. *The survey records only state a least depth of 38.5 feet. No time of acquisition, no note of the method or instrument used, and no note of correctors applied were given. Therefore, the diver least depth has been rejected and instead the wire drag hang and clearance depths were computed.* ✓

The item is considered verified and should be retained on the chart. Until final processing of the item investigation records is complete, ~~it is recommended that the 36 foot sounding remain on the chart over the obstruction.~~ - do not concur - See the Addendum. ✓

VIII

- A. Item 6: The entire Boston North Channel was investigated with side scan sonar and hydrography. Launch wire drag attempts in the vicinity of Finns Ledge ended with the wire (nylon line) becoming fouled in heavy kelp and lobster pot floats. ✓

Evaluation of the side scan records and fathometer records proved to be inconclusive. There are certainly indications of numerous boulders within the channel. However, least depths over these boulders could not be determined. ✓

Further investigation of this item would probably require a ship wire drag operation to clear/cut away the kelp in the area. Additionally, all lobster pot floats would have to be removed from the channel. ✓

This item investigation should be considered incomplete, thus, no charting recommendations can be made. - Concur ✓

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 2, 1989

MARINE CENTER: Atlantic

OPR: A-652

HYDROGRAPHIC SHEET: FE-256WD

LOCALITY: Massachusetts Bay

TIME PERIOD: August 13- November 11, 1981

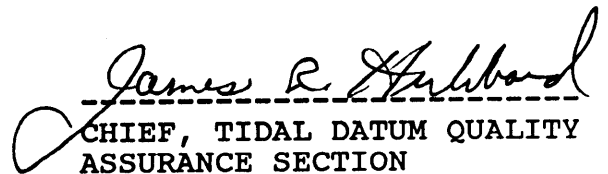
TIDE STATION USED: 844 3970 Boston, MA.

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 3.37 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 9.9 ft.

REMARKS: RECOMMENDED ZONING

For item 1 above 42 25'N apply a x0.92 range ratio to all heights, and for items 2,3,4,5, and 6 below 42 25'N, apply a x0.97 range ratio to all heights.



CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

N/CG244-42-90

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY (Check):

ORDINARY MAIL AIR MAIL

REGISTERED MAIL EXPRESS

GBL (Give number) _____

TO:

Chief, Data Control Section, N/CG243
Room 151, WSC-1
Hydrographic Surveys Branch
National Ocean Service
Rockville, MD 20852

DATE FORWARDED

26 June 1990

NUMBER OF PACKAGES

two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-256WD (R/H-5-1-81)

OPR-A652, MASSACHUSETTS, BOSTON HARBOR--SALEM HARBOR

Pkg. 1: (Box)

- 9 "WIRE DRAG" Volumes.
- 1 "SOUNDINGS" Volume.
- 1 Envelope containing Smooth Tides - Hourly Heights.
- 1 Envelope containing Smooth Tides at 1/2-foot Interval.
- 1 Envelope containing Smooth Tides at 2/10-foot Interval.
- 1 Envelope containing data removed from the Descriptive Report.
- 1 Envelope containing Sonargrams.
- 1 Envelope containing Miscellaneous Data.
- 1 Envelope containing Item #1 Position Computation and Computer Plot Data.
- 1 Accordion Folder containing data for Year Days 226, 230, 231, 232, 238, 239, 240, 243, 244, 253, 254, 268, 287, 288, 294, 295, 296, 301, 303, 306, 307, 315, & 316 and one NOAA Form 76-52 (Observations of Horizontal Directions).

DO NOT DISCARD ANY OF THIS DATA.

Page #1 of 2.

FROM: (Signature) *Maurice B. Hickson*
Maurice B. Hickson, III

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Atlantic Hydrographic Section
N/CG244
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

D. S. Clark
7/9/90

N/CG244-42-90

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU
BY (Check):

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) _____

TO:

Chief, Data Control Section, N/CG243
 Room 151, WSC-1
 Hydrographic Surveys Branch
 National Ocean Service
 Rockville, MD 20852

DATE FORWARDED

26 June 1990

NUMBER OF PACKAGES

two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-256WD (R/H-5-1-81)

OPR-A652, MASSACHUSETTS, BOSTON HARBOR--SALEM HARBOR

Pkg. 2: (Envelope)

1 Original Descriptive Report containing four (4) Smooth Sheets.

DO NOT DISCARD ANY OF THIS DATA.

Page #2 of 2.

FROM: (Signature)

Maurice B. Hickson, III

Maurice B. Hickson, III

RECEIVED THE ABOVE

(Name, Division, Date)

Return receipted copy to:

Chief, Atlantic Hydrographic Section
 N/CG244
 Atlantic Marine Center
 439 W. York Street
 Norfolk, VA 23510-1114

05/15/90

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-256WD

NUMBER OF CONTROL STATIONS	10
NUMBER OF POSITIONS	1000
NUMBER OF SOUNDINGS	1

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	0	/ /
VERIFICATION OF FIELD DATA	26	12/07/89
QUALITY CONTROL CHECKS	0	
EVALUATION AND ANALYSIS	122	05/15/90
FINAL INSPECTION	4	04/19/90
TOTAL TIME	152	
MARINE CENTER APPROVAL		5/29/90

ADDENDUM TO ACCOMPANY SURVEY FE-256WD

1. INTRODUCTION

a. In accordance with the memorandum from CDR Russell C. Arnold, Chief, Hydrographic Surveys Branch, N/CG24, dated December 27, 1988, a modified approach to marine center processing of this survey was undertaken. Processing was limited to:

1) The verification of the wire drag effective depth and position on the one item hung (Item #5) and the verification of the clearance depth over this hang.

2) The verification of the position and the least depth on the submerged rock (Item #1) found during this survey.

3) The verification of wire drag effective depths and positions of the wire drag strips covering the areas of investigations of Items #2, #3, and #4.

4) Charting recommendations based upon findings from the limited survey processing and a comparison with the latest largest scale charts of the area.

b. Some limited processing beyond the intent of the modified processing approach was done to provide verified wire drag clearance effective depths over the positions of the assigned obstructions common to this survey. For Items #2, #3, and #4, complete processing of all wire drag data common to each item investigated was accomplished in order to provide clearances for item disproval. The results of the additional processing of the wire drag strips on Items #2, #3, and #4 are addressed in this report and are portrayed on sheets 2 of 4 and 3 of 4 attached to this report.

c. Four smooth plots were generated during processing and are attached to this report. These four plots contain the least depth on Item #1, the area and depth clearances for Items #2, #3, and #4, and the one verified hang and clearance over Item #5. These plots are considered the final or smooth sheets for this survey.

d. The present survey was smooth plotted at the scale of 1:5,000. It is not intended that this data be accepted as meeting the accuracy standards of a 1:5,000 scale survey, rather the 1:5,000 plotting scale was used because the field processed and plotted the field data at that scale and it enables a better graphic presentation of the constant tension wire drag data.

2. CHARTING RECOMMENDATIONS FOR CHARTS:

13270, 50th Ed., Jan. 10, 1989
 13272, 39th Ed., Nov. 24, 1984
 13275, 23rd Ed., Aug. 16, 1986
 13276, 17th Ed., Jul. 28, 1984

These four charts cover the entire surveyed area. Some of the charted hydrography within the common area originates with prior surveys H-9046 (1968-69) and H-6643 (1940). The sources of the remainder of the charted hydrography within the area of this survey are not readily available, but may be U. S. Army Corps Of Engineers surveys.

The following are the items investigated on the present survey and the results of the investigations:

a. Item #1, a charted 32-foot sounding on a rock in Latitude $42^{\circ}32'32.5''N$, Longitude $70^{\circ}48'25.0''W$, originated with a report submitted by the NOAA Ship FERREL (Chart Letter 1467 of 1972). This item was found by the present survey in Latitude $42^{\circ}32'31.51''N$, Longitude $70^{\circ}48'21.36''W$ and is identified as a rock outcrop. A least depth of 34 feet (at MLLW) was obtained on this feature. The method of positioning this feature on the present survey is by visual fixes with check angles. The visual control stations used are third order or better geodetic control stations and have been office verified. Also these visual stations are charted as either fixed aids to navigation or landmarks. It is recommended that this submerged rock be charted with the revised present survey least depth of 34 feet. See sheet 1 of 4.

b. Items #2 and #3, hangs at an effective depth of 36 feet and 38 feet, respectively, with a clearance effective depth of 35 feet for both in Latitude $42^{\circ}20'14.0''N$, Longitude $70^{\circ}58'38.5''W$ and Latitude $42^{\circ}20'10.2''N$, Longitude $70^{\circ}58'26.0''W$, respectively, originate with FE-177WD (1960). These items were charted as a dangerous submerged obstructions but have been removed from the chart, presumably from advance information from the present survey. The required search areas of these items have been cleared by wire drag by a minimum effective depth of 36 feet for Item #2 and 39 feet for Item #3. Clearance depths within the assigned search areas range from 36 to 42 feet which are from 0 to 8 feet above the charted bottom. No hangs or groundings occurred during the investigations of these items. The wire drag within itself is not sufficient for disproval, but, the present wire drag coupled with the reconnaissance side scan sonar search and the fact that this area is an anchorage area that is maintained (surveyed and dredged as necessary) gives sufficient reason to consider disproval. These items are not presently charted and are not recommended to be charted. No additional field work is recommended on these items. See sheet 2 of 4.

34 RR
 13276
 13275
 13274
 13272 off
 13267 N/C
 13204 NE
 13209 CK
 13268 CK

VC
 IF OBSTAS
 NOT
 CHARTED
 AT THESE
 POSITIONS

c. Item #4, a hang at an effective depth of 40 feet with a clearance effective depth of 39 feet in Latitude 42°20'12.3"N, Longitude 70°57'34.5"W, originates with FE-177WD (1960). This item was charted as a dangerous submerged obstruction but has been removed from the chart, presumably from advance information from the present survey. The required search area of this item has been cleared by wire drag by a minimum effective depth of 45 feet. Clearance depths within the area investigated for this item range from 45 to 48 feet which are from 2 feet deeper to 15 feet shoaler than the charted bottom. No hangs or groundings occurred during the investigation of this item. The present survey is adequate to disprove the previous wire drag survey [FE-177WD (1960)] hang depth of 40 feet. This item is not presently charted and is not recommended to be charted. No additional field work is recommended on this item. See sheet 3 of 4.

d. Item #5, a hang at an effective depth of 37 feet (also at 38 feet) with a clearance effective depth of 36 feet in Latitude 42°20'09"N, Longitude 70°56'49"W, originates with H-7158WD (1946). This item is charted as a dangerous submerged obstruction cleared by 36 feet. This obstruction was hung by the present survey in Latitude 42°20'09.5"N, Longitude 70°56'49.1"W at an effective depth of 36 feet and was cleared by an effective depth of 35 feet. This hang is identified as an old boiler extending approximately 6 feet above the bottom. This item lies in prior (H-6643) depths of 43 to 47 feet. It is recommended that this item be charted in the position determined by the present survey as a cleared depth of 35 feet over an obstruction obtained by wire drag and shown with the clearance depth surrounded by a dotted danger curve, with blue tint No. 1., the proper label (Obstr), and a wire drag basket symbol outside the danger curve. Additional field work is not recommended on this item. See sheet 4 of 4.

e. Item #6 is incomplete on this survey. See section VIII. A. of the hydrographer's report.

This survey is considered adequate to supersede Chart Letter 1467 of 1972 and the items originating with prior wire drag surveys FE-177WD (1960) and H-7158WD (1946).

3. RECOMMENDATIONS FOR ADDITIONAL WORK

The minor conflict (Item #4) between charted hydrography and present survey effective depths is not considered significant. Additional hydrography is not recommended.

Verification and
Recommendations by,

Checked by,

Maurice B. Hickson III
Maurice B. Hickson, III
Cartographer
Evaluation & Analysis Team

R. D. Sanocki
R. D. Sanocki
Chief, Hydrographic
Processing Unit

APPROVAL SHEET
FE-256WD

Initial Approvals:

The completed wire drag survey has been examined with regards to presentation of survey results. The survey complies with National Ocean Service requirements except as noted in the Addendum to the Descriptive Report. This survey is not to be considered a basic hydrographic survey and is not approved as such. Only the data that has been verified, smooth plotted, and addressed in the Addendum to the Descriptive Report is approved for charting. There will be no digital file accompanying this survey.

R. D. Sanocki Date: 5-14-90
R. D. Sanocki
Chief, Hydrographic Processing Unit
Atlantic Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. The verified and smooth plotted data meet or exceed NOS requirements and standards for products in support of nautical charting except as noted in the Addendum to the Descriptive Report.

Christopher B. Lawrence Date: 5-29-90
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Final Approval:

Approved: *Wesley V. Hull* Date: 6/12/90
Wesley V. Hull
Rear Admiral, NOAA
Director, Charting and
Geodetic Services

70° 48' 45"

70° 48' 30"

70° 48' 15"

42° 32' 45"

42° 32' 45"



3-4 Rk

42° 32' 30"

42° 32' 30"

FE-256WD
MASSACHUSETTS
BOSTON HARBOR & SALEM SOUND
PRESIDENT ROADS & SALEM CHANNEL
8 AUG TO 13 NOV, 1981
SCALE = 1:5,000
N A 1927 DATUM
SOUNDING IN FEET AT MLLW
RESULTS OF THE INVESTIGATION OF ITEM 1
SHEET 1 OF 4

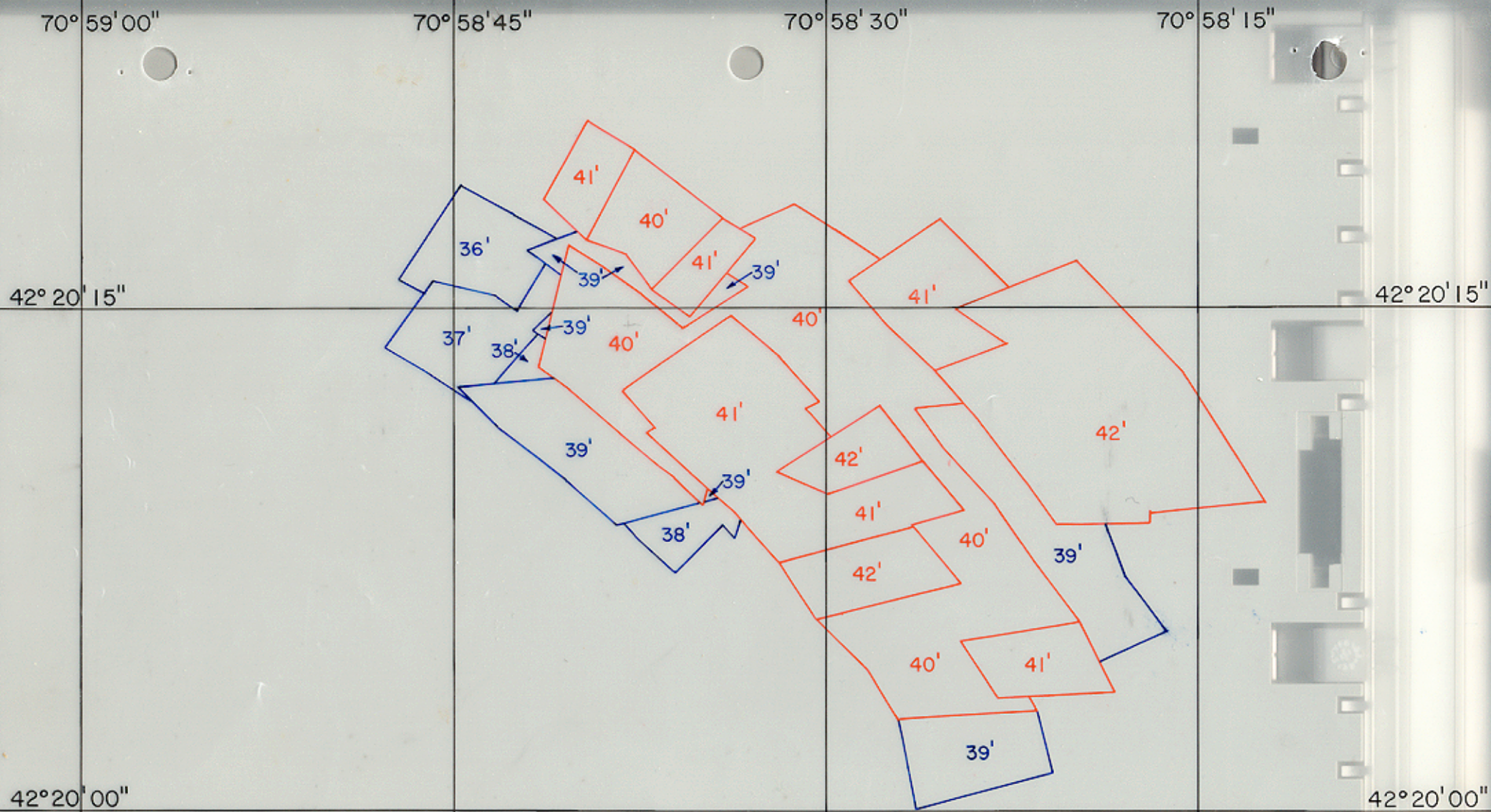
42° 32' 15"

42° 32' 15"

70° 48' 45"

70° 48' 30"

70° 48' 15"



FE-256WD
 MASSACHUSETTS
 BOSTON HARBOR & SALEM SOUND
 PRESIDENT ROADS & SALEM CHANNEL
 8 AUG TO 13 NOV, 1981
 SCALE = 1:5,000
 N A 1927 DATUM
 EFFECTIVE DEPTHS IN FEET AT MLLW
 RESULTS OF THE INVESTIGATION OF ITEMS 2 & 3
 SHEET 2 OF 4

70° 59' 00" 70° 58' 45" 70° 58' 30" 70° 58' 15"

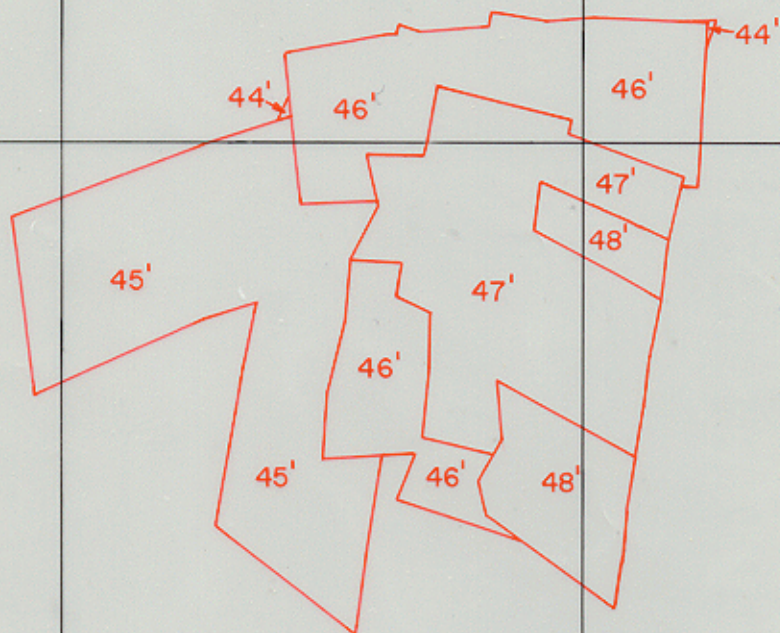
70° 57' 45"

70° 57' 30"

70° 57' 15"

42° 20' 15"

42° 20' 15"



42° 20' 00"

42° 20' 00"

FE-256WD
MASSACHUSETTS
BOSTON HARBOR & SALEM SOUND
PRESIDENT ROADS & SALEM CHANNEL
8 AUG TO 13 NOV, 1981
SCALE = 1:5,000
N A 1927 DATUM
EFFECTIVE DEPTHS IN FEET AT MLLW
RESULTS OF THE INVESTIGATION OF ITEM 4
SHEET 3 OF 4

42° 19' 45"

42° 19' 45"

70° 57' 45"

70° 57' 30"

70° 57' 15"

70°57'00"

70°56'45"

70°56'30"

42°20'15"

42°20'15"

36

Hang at 36 ft
Cleared by 35 ft
Old boiler extends approximately 6 ft off bottom

42°20'00"

42°20'00"

FE-256WD
MASSACHUSETTS
BOSTON HARBOR & SALEM SOUND
PRESIDENT ROADS & SALEM CHANNEL
8 AUG TO 13 NOV, 1981
SCALE = 1:5,000
N A 1927 DATUM
EFFECTIVE DEPTHS IN FEET AT MLLW
RESULTS OF THE INVESTIGATION OF ITEM 5
SHEET 4 OF 4

42°19'45"

42°19'45"

70°57'00"

70°56'45"

70°56'30"

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 62 R

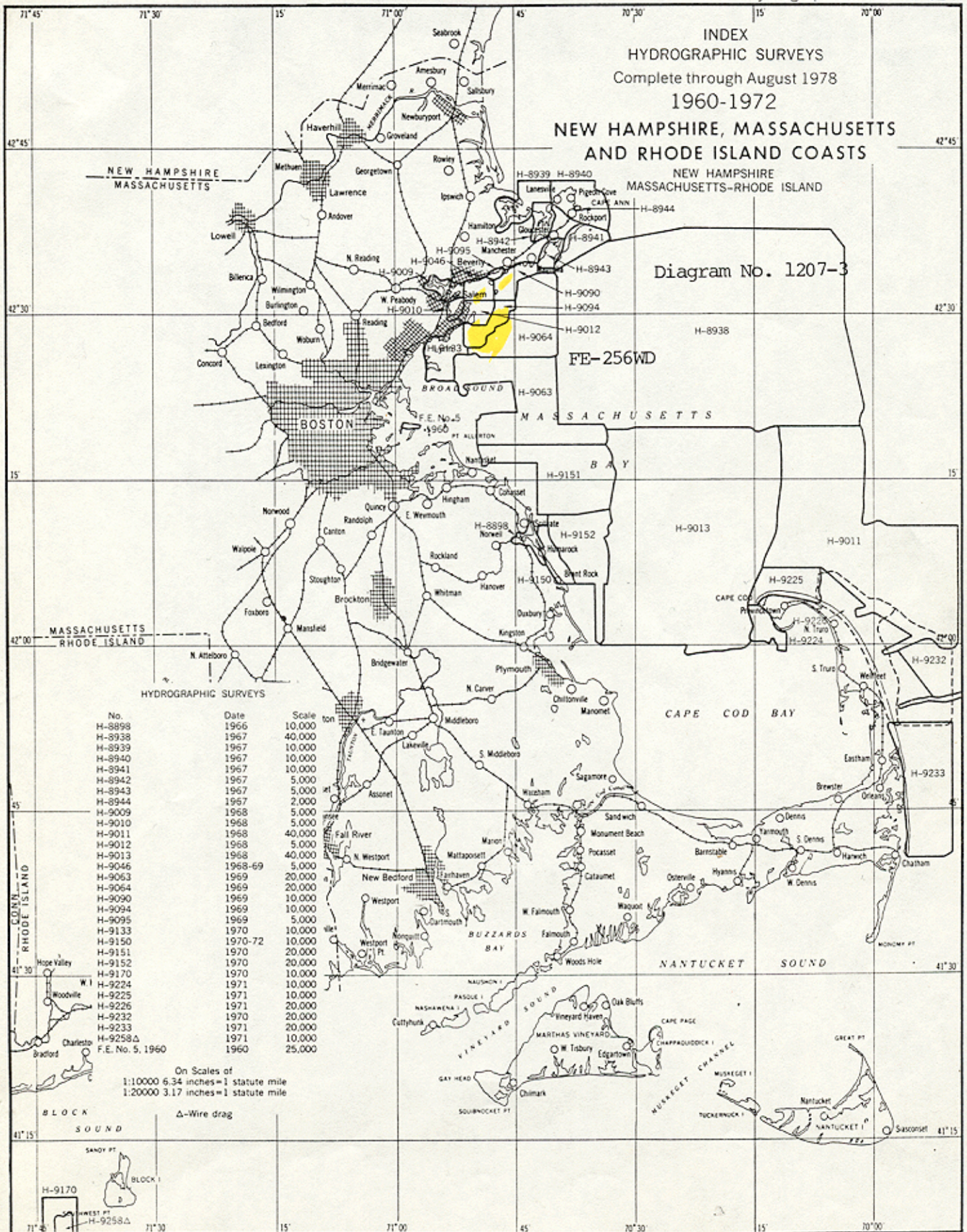
INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1960-1972

NEW HAMPSHIRE, MASSACHUSETTS
AND RHODE ISLAND COASTS

NEW HAMPSHIRE
MASSACHUSETTS-RHODE ISLAND

Diagram No. 1207-3

FE-256WD



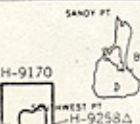
HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8898	1966	10,000
H-8938	1967	40,000
H-8939	1967	10,000
H-8940	1967	10,000
H-8941	1967	10,000
H-8942	1967	5,000
H-8943	1967	5,000
H-8944	1967	2,000
H-9009	1968	5,000
H-9010	1968	5,000
H-9011	1968	40,000
H-9012	1968	5,000
H-9013	1968	40,000
H-9046	1968-69	5,000
H-9063	1969	20,000
H-9064	1969	20,000
H-9090	1969	10,000
H-9094	1969	10,000
H-9095	1969	5,000
H-9133	1970	10,000
H-9150	1970-72	10,000
H-9151	1970	20,000
H-9152	1970	20,000
H-9170	1970	10,000
H-9224	1971	10,000
H-9225	1971	10,000
H-9226	1971	20,000
H-9232	1970	20,000
H-9233	1971	20,000
H-9258Δ	1971	10,000
H-9258Δ	1960	25,000

On Scales of
1:10000 6.34 inches=1 statute mile
1:20000 3.17 inches=1 statute mile

Δ-Wire drag

BLOCK
SOUND



MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
EXAMINED FOR NM
GDBU

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-256WD

John Brent Mack 8-28-90
Douglas C. Harrison
9-4-90

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
<i>13276</i>	<i>8-20-90</i>	<i>John Mack</i>	Full Part Before After Marine Center Approval Signed Via Drawing No.
<i>13275</i>	<i>8-25-90</i>	<i>John Mack</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. <i>34</i>
<i>13274</i>	<i>8-25-90</i>	<i>John Mack</i> <i>Oct 8-28-90</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. <i>18</i>
<i>13270</i>	<i>8-27-90</i>	<i>John Mack</i>	Full Part Before After Marine Center Approval Signed Via Drawing No.
<i>13267</i>	<i>8-28-90</i>	<i>John Mack</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. <i>44</i>
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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