

6123 abc

U. S. COAST & GEODETIC SURVEY
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Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. 1, 1a, 1b.
Hydrographic }

State Connecticut

LOCALITY

Long Island Sound

~~Saugatuck River to Black Rock Harbor~~

a = Black Rock Harbor to Saugatuck River Harbor

b = Mill River

c = Black Rock Harbor

Project. H.I.T. -150

1934

CHIEF OF PARTY

G.C. Mattison

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

U. S. COAST & GEODETIC SURVEY
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REG. NO.

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.

Field No. ^{a, b, c}
1, 1a, 1b

REGISTER NO H6123^{a,b,c}

State Connecticut

General locality Long Island Sound

Locality ~~Saugatuck River~~ ^{a =} Black Rock Harbor to Saugatuck River

No. 1 - 1/10,000 ^{b = Mill River}
Scale 1a&b, 1/5,000 ^{c = Black Rock Harbor} Date of survey 19 33-4

~~Nessel~~ Shore Party No. 16

Chief of Party G.C. Mattison

Surveyed by W.N. Martin, D.O., and M.O. Nelson, Surveyor

Protracted by B. Jacoby, E.W. Hamilton

Soundings penciled by E.W. Hamilton

Soundings in fathoms feet

Plane of reference M.L.W.

Subdivision of wire dragged areas by E.W. Hamilton

Inked by J. A. Mc Cormick

Verified by J. A. Mc Cormick

Instructions dated August 10, 19 33

Remarks: Wire drag plotted on tracing cloth.

Ten additional overlays showing development of shoals.

DESCRIPTIVE REPORT

To Accompany

HYDROGRAPHIC SHEET #1 - 1:10,000 (SAUGATUCK RIVER TO BLACK ROCK HARBOR)

HYDROGRAPHIC SHEET #1a - 1:5,000 MILL RIVER (SOUTHPORT HARBOR)

HYDROGRAPHIC SHEET #1b - 1:5,000 BLACK ROCK HARBOR

Date of Instructions

Letter of instructions dated August 10th, 1933.

Survey Methods

The instructions dated August 10th, 1933 regarding hydrographic work specified that the photo-compilation in the immediate vicinity should be well advanced before starting hydrography. Although hydrography did not start until the middle of September, 1933, the photo-compilation work was not so far advanced as could be desired. Further delay was inadvisable owing to the time of year. The hydrographer found the photographs quite useful as an aid in channel work and the delineation of the low water line and used them as a check on his sounding work.

The work in 1933 was limited to Sheet No. 5223 and consisted of extension of previous work by Lieutenant S. B. Grenell and the verification of several doubtful rocks and soundings.

Owing to the nature of the work, the unfavorable weather conditions delayed progress, and it was not until December 5th that it was finally decided to close work for the season due to unfavorable weather.

At this time the sheet was practically completed and very little additional work had to be done after the smooth sheet had been plotted and examined.

A chartered launch was used for the hydrography and considerable difficulty was experienced in locating a suitable boat, but toward the end of the season the launch "Noble" was leased and proved very satisfactory.

The owner was well acquainted with the shoals in the vicinity and proved of great value in locating some of the rocks.

A special boat sheet was prepared and furnished by the Washington Office as per the instruction sheet for project H. T. #150.

This sheet outlined all special areas to be investigated and was the basic guide for all hydrographic work.

Standard methods of organization and operation for lead line soundings were used, including launches, pull boats, and a limited amount of small portable drag line work was included in the development of the areas covered.

Measurement apparatus was checked daily or oftener as required and boat sheet records kept up with daily progress.

One hydrographic unit was organized and in charge of Mr. M. O. Nelson, Surveyor, from the starting date September 23, 1933 until November 21, 1933 on which date the work was taken over by Mr. W. N. Martin, Deck Officer, who carried on to the completion date in October, 1934.

Location of Signals. Signal locations were plotted from triangulation data, planetable surveys, aerial photo compilations or occasionally as necessary by sextant fixes during the progress of the work.

Rocks, Bars, Shoals, Etc. Rocks shown on the boat sheet from the 1850 Survey were visited at extreme low water at Black Rock Harbor Entrance, Penfield Reef and Flat Island.

All rocks visible at these times were located by sextant fixes and check was made for all the rocks shown. Rocks not found are non-existent or were inaccurately plotted.

Fairfield Bar. This bar reaching from Shoal Point to the Cows is clearly delineated on the smooth sheet and was obtained from air photo compilation Sheet No. 5262, the photos for which were taken at low water. The bar was visited at low water and the photos verified.

Diagonal sounding lines were run over the bar and the soundings checked very well with the photos.

The Sheet ^{7 chart} 220 outline agrees quite well with our delineation, but the bottom characteristics as recorded by our sounding crew are "rocky" well inshore beyond signal "Reef" as located on the smooth sheet.

The chart would indicate sand only the full extent of the bar.

Otherwise there seems to have been very little change since the 1883 Survey. Add'l details noted in Rev.

Flat Island Bar. The bar at Flat Island was visited at low water and sextant fixes were taken at intervals along the edge to delineate extent and shape. This was also verified on Sheet T-5262.

Sounding lines were run at the entrance to Pine Creek to delineate low water as the sand bars in this area change from year to year due to heavy winter storms.

Discrepancies

No important discrepancies were found in the field work and such as did appear have been specifically noted and corrected in the field book note column. Minor differences in soundings occurred mainly at points on the edges of dredged channels where there were abrupt changes in depth and the time spacings were usually the cause of the differences. There are no unadjusted discrepancies.

Dangers

Hanford Rock. The least sounding obtained at this location was at Position 13 "CS" day where 4' sounding was obtained. This rock is located north of Cockeoe Island in approximately latitude 41° 05' 855 m, longitude 73° 21' 542 m. *Overlay 6 3/2 transferred from H-5221 a sub b (1132-33) 7/24/44.*

6' Sounding Southeast of Cedar Point. This 6' sounding was located as positions 101 and 125 "y" day and again between positions 154 and 155 "x" day (Overlay #8). Location is not indicated on the new chart #221 and scales approximately latitude 41° 06' 32 m, longitude 73° 21' 82.5 m.

12-1/2' Sounding South Southeast of Cedar Point. This 12-1/2' shoal spot was developed at positions 72 and 81 "v" day as shown on overlay #7 and several 13-1/2' soundings are shown on overlay #6, also several 14' positions on overlay #8. The new chart indicates 14' at this location.

Cockeoe Reef. Although this area was not included in the work called for on the boat sheet, Mr. M. O. Nelson gave positions on rocks near the east end of reef and noted on sheet as Positions 18 "u" day to 30 "u" day. Most of these locations do not check with rocks indicated on the latest chart although they are mostly in a general group with them. *Previous work here generalized & superseded. See Rev., par. 6 d. 7/24/44.*

Cockeoe Shoal. Soundings shown on overlay #5 developed a 4-1/2' sounding between Positions 99 and 100 "q" day and 16 "q" day, also 5' at 86 "q" and 93 "q", also 5-1/2' at 57 "q" and 80 "q" and 98 "q", also 6' at 64 "q" and 69 "q". These locations check very closely with the new chart 4' and 5' depths in this area.

George Rock and Vicinity. This area was well developed on the smooth sheet and overlays Nos. 3, 4, 5 and 6.

Soundings at the rock proper were 2-1/2' on positions 1, 2, 3 and 4 "u" day. Rock location approximately latitude 41° 05' 87.5 m, longitude 73° 19' 1045.0 m. This position plots approximately 25 meters west of location shown on the new charts.

Another 2-1/2' sounding positions 12, 14, 15 "u" day, is located approximately 367 meters west of George Rock in latitude 41° 05' 128 m, longitude 73° 20' 10 m. This depth is indicated somewhat further west on the new chart.

Two 5' depth locations west of George Rock, positions 101 "CS" day overlay #6 and 28 "K" day overlay #2 check with positions shown on chart. *"K" #6*

Note: Information on overlays has been transferred to smooth sheet in office

Shoal North and Northwest of George Rock. This area was developed on smooth sheet and overlays #4 and #5 and least depths of 8-1/2' at position 43 "N" checks O.K. Position 150 "V" checks very close to the 10 depth as located on chart.

12' Spot South of Sherwood Point. This spot as indicated on the boat sheet plots on the new chart outside the 3 fathom line and our numerous soundings around this spot were recorded in the 20'-24' range.

A small portable drag equipment was used over this area as indicated on the tracing cloth overlay which covers all drag work and all buoy locations.

The drag wire was set for 16' effective depth and encountered no obstructions within the area indicated from positions 30 to 36 "CP" day.

From these observations Mr. Martin is of the opinion that this spot is non-existent. *See Rev. 7d(2) for add'l details.*

15-1/4' Spot South Southeast of Sherwood Point. This area was thoroughly developed by sounding lines as indicated on smooth sheet and overlays #1, #2 and #3 and depths indicated at this point were in the 22'-25' range.

Area was also run over with drag line equipment on 4 different runs as indicated by positions 37 "CP" to 56 "CP" day. The effective depth of drag wire being from 16' to 19' during the work.
15 fath. (out within limit of drag), 15 retained, see Rev. for further details.

As no interference was noted and no shoal soundings were recorded, Mr. Martin is of the opinion that this spot is non-existent. *Retained - See Rev.*

29' Spot 1 Mile South by East of Frost Point. This area was thoroughly covered by lines at slow sounding speed.

No shoal soundings were found and as the spot is soft it could easily have changed during the severe winter storms. Mr. Martin believes this spot to be non-existent. *Accepted, See Rev. 7d(3) for further details*

9' Spot West Southwest of Penfield Lighthouse. This area was covered by slow speed sounding lines as shown on sheet and overlay #9 and depths as indicated approximate 14' at this location.

A drag was also made over this area and from all results, Mr. Martin believes spot to be non-existent. *Accepted, See Rev.*

Channels

Saugatuck River Entrance. Channel buoys into Saugatuck River and a wreck on the beach positions 24 "CM" day are located on tracing cloth overlay but no soundings were taken in this area except along Hall Island Beach and Compo Basin Entrance.

Compo Yacht Basin Entrance Channel. Channel buoys for basin

Note: Information on overlay has been transferred to smooth sheet in office.

entrance are all shown on overlay and the beach and entrance channel fully developed on the smooth sheet.

We have also shown a 1:5,000 sub-plan of the basin proper in order to detail the entrance depths and the basin soundings.

The controlling depth at the entrance buoy is 10' and this also applies for the basin proper adjacent to the yacht landing.

sdgs on smooth sheet indicate 7' in channel proper although it is possible that deeper water exists.

This channel and basin is used mostly by yachts with from 3' to 8' draft.

Mill River Entrance Channel. Channel buoys for Mill River entrance are plotted on overlay and numerous sounding lines developing entrance channel and deep hole adjacent to entrance are shown on smooth sheet and overlay #10.

Buoys transferred to smooth sheet in office. Important soundings also transferred.

The channel development is shown in detail on the 1:5,000 sheet #1a for Mill River. (H-6123b).

The controlling depth at the Outer Beacon was 7' and the least depth in the harbor channel is 6½'. (H-6123a)

This channel is used almost entirely by small fishing boats and yachts with drafts not over 6'. Occasionally larger yachts belonging to local summer residents anchor at the entrance.

Black Rock Harbor Entrance Channel. Channel buoys for Black Rock Harbor entrance are plotted on the buoy overlay and the harbor channel buoys on the 1:5,000 Black Rock Harbor Sheet #1b.

transferred to smooth sheet

The controlling depth in this channel is 17'.

This channel is used extensively by oil tankers, freight and lumber vessels with drafts probably not exceeding 15'.

Comparison With Previous Surveys

Subject matter under this heading has been written heretofore under the following headings:

Fairfield Bar
 Flat Island Bar
 Hanford Rock
 6' Sounding Southeast of Cedar Point
 12-1/2' Sounding South Southeast of Cedar Point
 Cockenoe Shoal
 12' Spot South of Sherwood Point
 15-1/4' Spot South Southeast of Sherwood Point
 29' Spot 1 Mile South by East of Frost Point
 9' Spot West Southwest of Penfield Lighthouse

Wire Drag Groundings

There were none recorded.

Record of drags carried out is shown on tracing cloth overlay.

Geographic Names

Items that would come under this heading have been described in the topographic reports for these areas. ✓

MILL RIVER SHEET #1a H-6123b

Survey Methods

Survey methods were similar to those used on Sheet #1. ✓

Cross channel contour soundings were taken with pull boats and 3 longitudinal lines were run with the launch. ✓

Discrepancies

There were no discrepancies of note and no unadjusted discrepancies remain, except as noted in the review, pars. 4, 6, + 8a. *sum.* ✓

Dangers

There are no special dangers at this locality except a rather narrow entrance channel, which is adequately buoyed for safe navigation. on H-6123a. ✓

Channels

The entrance channel has been described under this heading under Sheet #1. (H-6123a) ✓

The harbor channel is clearly delineated by the soundings plot. ✓

The controlling depth to the Pequot Yacht Club Basin adjacent to station "Pole" is ^{7 1/2} 7' to 8'. The basin however affords 13' to 24' depths for anchorage. ₆₂ ✓

Anchorage

At the basin, due to the excessive number of Yacht Club boats moored and the resultant traffic and tidal conditions, anchorage bow and stern is practically compulsory. ✓

It is our understanding that a large appropriation for dredging and improvements of this entrance and harbor has been made. ✓

Comparison With Previous Surveys

The 1931 ^{chart} sheet #220 of this area shows a controlling depth of 9' and a depth of 29' in the basin. ✓

These depths were not confirmed by this survey. ✓

BLACK ROCK HARBOR SHEET NO. #1b (H-6123c)

Survey Methods

Survey methods were similar to those used on Sheet No. 1.

Cross channel contour soundings were taken with pull boats and launches as conditions warranted and longitudinal lines were run with the launch.

Discrepancies

Signals used were practically all temporary and subject to damage by vandals necessitating some relocations. This resulted in slight differences between observations and plotting, especially at the start and finish of the cross channel lines. In some cases, these plotted slightly inshore and we relocated positions on the line in the water adjacent to bulkheads or shore as the case might be.

This was sometimes due to the change in the boat speed and the inability to take fixes sufficiently fast at these points. Also low water conditions hid the signals at times. These discrepancies were adjusted immediately as far as possible.

This trouble was mentioned specifically by Mr. Martin and signals "Paul" and "Joe" were relocated by topography after which lines checked O. K.

Signals were located by triangulation, planetable, air photo compilation and a few by sextant fixes.

All buoys shown either on the tracing cloth overlay or on the smooth sheet were located by sextant fixes. *All buoys on overlays transferred to smooth sheet in office. J.M.M.*

Rocks on both sides of the entrance were visited at low water and located by sextant fixes and by sextant outs on two locations.

Dangers

There are no submerged dangers in the harbor except the shoal spots adjacent to buoys C5 and C7 which have been a source of considerable grounding on the part of visiting yachts.

The harbor affords little or no protection in heavy southeasterly weather and with the rocky lee shores, is the scene of numerous small boat disasters at such times.

Penfield Reef Light House being a flashing red light with a 5 second flash, has been confused with red advertising signs in Black Rock and several small boats and some commercial vessels have been misled at this point and grounded on the bar.

The chart reads visible 12 miles but we have had difficulty in picking up this lighthouse from the middle of the sound even with fairly good glasses in moderately hazy weather.

*Referenced
to L.H's
by Carter
1910*

Channels

The main channel is well buoyed from the outer beacon south of Black Rock Tower although there is no black can C1 buoy at the channel entrance as described in the Coast Pilot. *Handwritten initials*

The controlling depth of the entrance channel is 18', this spot being located adjacent to Position 16 "BS" day northeast of the inner beacon and on line with the N8 buoy. *16' spot shown 100m. NE of Bn, However 18' may be carried to westward with local knowledge*

Four lines were drifted over it on "BS" day.

The usual draft of vessels using this channel does not exceed 15'.

The small channel up Burr Creek was found to have silted up to a controlling depth of 3' which gradually shoals to 1'.

Channels in the right and left arms of Cedar Creek have a controlling depth of 18' and 18' respectively. *in mid-channel only.*

A small channel delineated by lines from Positions 17 to 25 "BS" day was covered leading from main channel to the Black Rock Yacht Club southeast of signal "Gun".

Comparison With Previous Surveys

On chart No. 220 the area marked Cedar Creek has been filled in by the suction dredge work done in 1932-33 and this land reclaimed for park purposes by the City of Bridgeport. Since the abandonment of the Black Rock Light House the city has acquired the so-called Fayerweather Island and will convert this for park purposes.

Statistics

Statistics for the 3 sheets included under the title sheet No. 1 are as follows:

Total Number of Positions	4,735
Total Number of Soundings	25,276
Statute Miles of Lines Plotted	223.5 Statute Mi.
Square Miles Covered	4.5 Sq. Statute Mi.

Prepared by
E.W.Hamilton under
close supervision of the
chief of party.

G.C. Mattison
G.C. Mattison.

Supplemental Notes by Chief of Party.

There were several factors entering into the completion of this sheet in field and office that affected it adversely. The nature of the instructions was such that only the most painstaking and careful work could hope to check up and prove or disprove previous surveys. Inexperienced personnel, combined with weather conditions usually unfavorable for this exacting work, necessitated considerable duplication of effort, slow progress, and a resulting burden on the office force in interpreting records and plotting the sheet. Two different chiefs of the sub-party were in charge of the work, and neither one was available while the smooth plotting was being done for their particular part of the sheet.

It was originally intended to include Mill River and Black Rock Harbor on the smooth sheet on a scale of 1:10,000, but a study of the boat sheets, scale 1:5,000, indicated that sub-plans on the 1:5,000 scale were advisable. Lacking room on the main sheet, two sub-sheets were constructed.

The chief of party supervised the smooth plotting closely and made a careful review of the sheet and records, and is of the opinion that the final results are of a high order, considering the circumstances under which the work was performed.

G.C. Mattison
G.C. Mattison,
Lieut. Comdr., C. & G. S.

LIST OF SIGNALS

Hyd. Sheet #1, Scale 1/10,000.
Sub Sheet #1a, " 1/5,000.
" " #1b, " 1/5,000.

LEGEND

**

T= Theodolite Fix.
A= Air Photo Compilation.
P= Plane table location.
S= Sextant Location.

NAME	DESCRIPTION	SHEET#	METHOD
ABE	Shack	1	S T-5262
ABLE	Flag Pole	1	T T-5261
ADI	Cupola	1	A T-5262
AIR	Flagpole	1b	P
ALP	Miniature Windmill	1b	P
AZURE	Blue Shack	1	A T-5262
BACK	Base Ball Back		
	Stop	1b	P
BALL	Large Flag Pole	1	A T-5262
			S
BAT	Lone Cedar Tree	1	S
BATH	Flag Staff	1	A T-5262 ✓
BEAK	Black Rock Harbor		
	#1-1933	1, 1b	← Lighted Sn # 3
BIG	Westerly Chimney	1	P
BIT	Temporary Signal	1b	P
BITE	Temporary Signal	1	P
BLAK	Black Rock Beacon		
	1932	1	
BOAT	Cloth on Garage	1a	A T-5262
BOY	Temporary Signal	1b	P
BRUN	Gable on House	1	A T-5262
BUD	Bollard in Dock	1b	P
BUN	Temporary Signal	1a	T
CAL	Temporary Signal	1b	P
CAN	Easterly Sign	1	P
CANAL	Pole on Building	1	A T-5261
CAT	Cloth on Pier	1b	P
CHI	Chimney	1b	P
CHIM	Flag Staff	1	P
CLOT	Temporary Cloth	1a	S
COB	Temporary Signal	1b	P
COCK	Cockenoes Is. 2, 1933	1	
COMP	Flag Staff	1	S
			A T-5261
CON	Corner of Bridge		
	Approach	1a	A T-5262
COP	Southport Epis. Ch.		
	Spire 1933	1	
CROS	White Flag Pole	1b	P
COR	Corner of Bulkhead	1b	P
COS	Temporary Signal	1b	P
DAN	Apex of Roof	1	P

NAME	DESCRIPTION	SHEET#	METHOD
DARK	Telephone Pole		P A T-5262
DAY	Jointed Flag Pole	1	S A T-5262
DEN	Temporary Signal	1	P
DOCK	Three Dolphins	1a	A T-5262
DOLL	Corner of Dock	1a	A T-5262
DOT	Boat House Red Roof 1933	1	
DRIF	Tree Stump	1	P
DUB	Temporary Signal	1	S
EBAG	Van on Boathouse	1	S A T-5262
EDAM	Temporary Signal	1	S
EDGE	Temporary Signal	1	
ELLO	Telephone Pole	1	S
EXY	Light Standard	1	P (P) T-5262 A T-5262
FAIR	Cupola	1	P (P) T-5262 A T-5262
FENS	End of Iron Fence	1	A T-5262
FIN	Corner of Wire "	1b	P
FLAG	Flag Pole	1	S A T-5261
FLAT	Flag Pole	1	P
FLIK	Temporary Signal	1a	S
FLOT	Center of Raft	1a	P
FROST	Temporary Signal	1	T
FOP	Temporary Signal	1	S
FUR	End of Fence	1b	P
FUSS	Gable of Garage	1a	A
GAL	Corner of Dock	1b	P
GAR	East Gable	1a	A T-5262
GAS	Pile	1b	P
GILD	Gilded Cupola	1a	A T-5262
GIT	Warning Sign	1	A
GREEN	Green	1	P
GUN	Flag Pole	1	P T-6491 1b A T-5262
HALL	Temporary Signal	1	S
HARD	End of Stone Wall	1a	A T-5262
HEM	Stack	1b	P
HERB	Pile	1b	P
HILL	Compo Hill 1933	1	
HONK	Road Sign	1	P A T-5262
HOP	Temporary Signal	1b	P
HOUS	Gable of Boat Shed	1a	A T-5262
HUNK	End of Pier	1	A T-5262
HY	Cloth on Tree	1a	A
INN	Southport Break- water Light	1	T
IRON	Iron Pole	1	P A T-5262
JET	End of Stone Jetty	1b	P
JOE	Temporary Signal	1b	P

NAME	DESCRIPTION	SHEET#	METHOD
JUN	Temporary Signal	1b	P
LAP	Temporary Signal	1b	P
LAT	Tall Chimney	1	A T-5262
			P
LAW	Temporary Signal	1b	P
LED	Corner of Dock	1b	P
LEFT	South Gable	1	A T-5262
LICK	Temporary Signal	1	S
LIT	Pole	1	S
LITE	Temporary Signal	1	S
LOB	Stake	1	S
LONG	Observation Tower	1	A T-5261
LOOK	Cupola	1	P
			A T-5262
LOW	Flag Pole	1	A T-5262
			A T-5262
LUCK	Park Sign	1	P
LUG	Temporary Signal	1	S
LYTE	Black Rock (1933)		T
	Lighthouse	1	
MAY	Temporary Signal	1b	P
MET	Temporary Signal	1b	P
MID	Pole	1	S
MIL	Windmill 1933	1	
MUD	Flag Pole	1	P
			A T-5262
MUFF	Temporary Signal	1a	A
MUTT	Stone Monument	1	A T-5262
MUS	Corner of Dock	1b	P
NEAR	Temporary Signal	1	P
NELL	Flag Staff	1	S
			A T-5261
NOB	Temporary Signal	1	S
NUT	Center of Small		
	House	1	A T-5262
OHM	Temporary Signal	1	A
OIL	Flag Pole	1	T
			A T-5262
OKIE	Temporary Signal	1b	P
OUT	Outer Beacon South-		
	port Harbor En-		
	trance	1	T
			A T-5262
PAL	Temporary Signal	1b	P
PAR	Temporary Signal	1b	P
PAT	Temporary Signal	1	P
PAUL	Temporary Signal	1b	P
PAY	Green Flag Pole	1	A T-5262
PECK	Pecks Ledge L.H.		
	1932	1	
PEN	Penfield Reef L.H.		
	1933	1	
PIER	End of Pier	1	A T-5262
PIG	Iron Stake	1	A
PILE	Lone Pile	1a	S
PILL	Pile Cluster	1b	P
PINK	East Gable	1	A T-5261

NAME	DESCRIPTION	SHEET#	METHOD
PIPE	Iron Stake	1	
PIT	End of Jetty	1	A T-5262
			T
POK	Light Standard	1b	P
POLE	Flag Pole	1a	A T-5262
POR	N.W. Corner of Porch	1a	A T-5262
PORT	Southport Cong. Ch. Spire 1933	1	
POT	Temporary Signal	1b	P
RAF	Shed Roof	1	P
			A T-5262
RAG	Temporary Signal	1a	S
RAIL	Corner of Dock	1b	P
RED	Red Range Light	1	P T-4902
RED	Black Rock Spire #1	1, 1b	T
REEF	Temporary Signal	1	S
ROCK	Rock 1932	1, 1b	T
RUN	Temporary Signal	1b	P
RUT	Dolphin	1b	P
SAT	Lone Pile	1b	P
SEY	Temporary Signal	1	S
SHER	Sherwood 1933	1	
SHIN	Flag Staff	1a	A T-5262
SID	Temporary Signal	1b	P
SIG	Small Pole	1a	A
SIP	Post of Golf Tee	1a	A
SOCK	Temporary Signal	1b	P
SPIT	Temporary Signal	1	S
SPUR	Spire	1b	P
STAN	Light Standard	1A7 - (P)	T-5262
STEP	Telephone Pole	1	P
			A T-5261
STEV	Gilded Cupola	1b	P
STIK	End of Groin	1	S
STON	Gable of Garage	1a	A
SUE	Temporary Signal	1b	P
SWIM	Bath House	1	A T-5262
SYN	Temporary Signal	1a	A
TAG	Stone Chimney	1	A T-5262
TAT	Temporary Signal	1b	P
TAV	Stairwell	1a	A
TEN	Southwesterly Tree	1a	P
TELO	Telephone Pole	1	A T-5262
TEW	Temporary Signal	1	S
TEX	Corner of Dock	1b	P
TIP	South Gable	1	A T-5262
TIR	Temporary Signal	1b	P
TOM	Lone Pile	1b	P
TOP	Cupola	1a	A T-5262
TOT	Toilet Building	1b	P
TRIN	Gilded Spire	1b	P

NAME	DESCRIPTION	SHEET#	METHOD
TREE	Temporary Cloth	1a	A
TRY	Temporary Cloth		A
TRYE	Boat House		A T-5262
WALL	Temporary Signal	1b	P
WAVE	Flag Pole	1	A T-5262
WET	Gable of Green House	1	A T-5262 S
WHIT	Spire	1b	P
WILL	Temporary Signal	1b	P
WIN	Black Windmill 1932	1	
WOOD	Temporary	1a	S
WOP	Vane	1	T
WYTE	White Spire Green Farms 1933	1	
YAR	Westerly Chimney	1	A T-5261
YEAH	Sign Post	1	A
YEL	South Gable	1	A T-5262
YELL	Gable	1	A T-5262
ZIG	East Gable	1	A T-5262

GEOGRAPHIC NAMES

Survey No. H6123abc

Name on Survey

A

B

C

D

E

F

G

H

K

220
On Chart

No. 221
1213

7282
On U. S. S. quadrangle

No. 75262
Maps

From local information

Original Maps

P. O. Guide or Map

Rand McNally Atlas

U. S. Light List

* USCP
H6123a

Name on Survey	A	B	C	D	E	F	G	H	K		
H6123a											1
<u>Compo Yacht Basin</u> ✓											* 2
George Rock ✓	*	-	-							✓	3
<u>Cockenoe Shoal</u> ✓	*									✓	4
<u>Cockenoe Reef</u> ✓	*										5
<u>Cockenoe Island</u> ✓	*	✓		✓			✓	✓		✓	6
<u>Cedar Point</u> ✓	*	-		✓						✓	7
<u>Sherwood Point</u> ✓	-	*	-	✓	✓						8
<u>Black Rock Harbor</u> ✓	*		✓	✓	✓			✓		✓	9
<u>Saugatuck River</u> ✓	*		✓		✓					✓	10
<u>Frost Point</u> ✓	*		✓		✓					✓	11
<u>Penfield Reef</u> ✓	*		-	✓	✓			✓		✓	12
<u>Flat Island</u> ✓							✓			-	* 13
<u>Pine Creek Point</u> ✓	*		-	✓	✓			✓		✓	14
<u>Shoal Point</u> ✓	*		-	✓							15
<u>The Cows</u> ✓	*		✓							✓	16
<u>The Little Cows</u> ✓	*		✓							✓	17
<u>Fairfield Bar</u> ✓	*		✓	✓						✓	18
<u>Middle River</u> ✓	*		-	✓						✓	19
<u>Long Island Sound</u> H6123c	-	-	*	✓	✓		✓	-	-	✓	20
<u>Cedar Creek</u> ✓	*			✓						✓	21
<u>Burr Creek</u> ✓	*			✓						✓	22
											23
											24
											25
											26
											27
											M 234

Names underlined in red approved
by P. R. J. on 7/16/36

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
 DESCRIPTIVE REPORT
~~PHOTOSTAT OF~~

No. H6123_{a,b,c.}
 No. ~~T~~

received JUN 11 1936
 registered JUN 22 1936
 verified
 reviewed
 approved

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE	Initial	Attention called to
20		
22		
24		
✓ 25	<i>[initials]</i>	"Dangui" page 7, 6, 3 - <i>J. R.</i>
26		
30		
40		
62		
63		
82		
83		
88		
90		

RETURN TO

82	
----	--

C. W. Green

HYDROGRAPHIC SURVEY NO. H6123abc

Smooth Sheets 3

Boat Sheets 5

Sounding Records 15 Vols. _____

Descriptive Report yes

Title Sheet yes

List of Signals Vol 1

Landmarks for Charts (Form 567) none

Statistics yes

Approved by Chief of Party yes

Recoverable Station Cards (Form 524) none

Special Chart for Lighthouse Service
(Circular Nov. 30, 1933) yes

Remarks I Station extension sheet and 10 overlay tracings

are filed in the D.R.

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. **H6123 a, b, c.**

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

Number of positions on sheet ⁴⁷³⁵
Number of positions checked ⁶⁰
Number of positions revised [✓]
Number of soundings recorded ^{25,276}
Number of soundings revised [?]
Number of signals erroneously plotted or transferred ⁰

Date: *Nov. 2, 1936*

Verification by *J. A. McCormick*

Review by *Harold W. Murray*

Ver. Corrections by "*"*
(Including transfer of 7 junctions)
P. J. Christman

Time: *10 4 hrs.* } *H-6123a*
Time: *90 1/2 "* } *H-6123b*
" : *54 "* } *H-6123c*
17 1/2 "

*Partial Verification Only
(See Verifier's Report)*

Verifier's Reports on H-6123 a, b and c.

Records:

Sounding records are indexed only for hydrographic signals. Other objects such as rocks and buoys were not indexed.

Soundings for the three sheets are scattered indiscriminately through the fifteen volumes. No attempt was made to segregate the soundings for the different sheets. ^{accepted. See explanation in D.R. (page 4) X-rays, also mentioned in Rev.}

Drafting:

The drafting was terrible. The sheets were difficult enough due to the development but the dirty condition of the sheets when received and the illegibility of the penciled soundings made them veritable nightmares. It can be said, however, that the protracting was good.

No system was used in distinguishing between hydrographic signals, topographic signals or air photo signals. It appears that the field draftsman had a bottle of red ink and a bottle of blue ink and used whichever suited his fancy at the moment. It was thought at first that red circles and blue names were used to indicate air photo signals. This assumption was found to be erroneous. Red circles and red names do not always indicate topographic locations either. Capt. Ellis suggested that they be left as they were.

Some of these were corrected by reviewer

Control:

Control is from T-5261, T-5262 and T-5263, all air photo compilations. Additional topographic control is from T-4902 and T-6491. T-5262 seems to be the only authority for topographic signals between Black Rock Harbor and the eastern extremity of T-4902. A celluloid overlay is included with these sheets. It shows the signals whose positions were determined by radial plot - for H-6123 b.

Junctions:

H-5223 covers much of the same area covered by H-6123a. H-5221 joins H-6123a on the west. H-3936 and H-3937 join H-6123a on the south. H-6124a joins on the east. ~~Just~~ Overlaps have been made only between the a, b and c sheets. The other junctions were left for action of the reviewing section.
Seven other junctions made by Reviewer.

Remarks:

Commander Colbert's instructions were to make as many soundings as could be made out and to make no attempt to verify them from the records. This was done. The records were then gone through and all notes in the remarks column were verified. In some cases soundings were looked up where least depths or channels were involved.

Verifier plotted only the Lighthouse Service buoys on the smooth sheets. Private buoys are shown on an overlay. (transferred to sheet by ~~verifier~~ Reviewer)

Where rays is shown on an overlay. No shoals were found.

In these three sheets are without a doubt the worst I have encountered as a verifier. Commander Colbert said that the system of handling these sheets might permit errors to creep in but that those errors, if there be any, shall be charged to the Chief of Party.

Nov. 2, 1936.

Submitted,
J. A. Mc Cormick

Remarks

Decisions

1		
2		
3	U.S.G.B decision: Georges Rock	
4		
5		
6		
7		
8		
9	also H 61235	
10		
11		
12		
13		
14		
15		
16		
17	Penfield	
18	Per USGB revision 5/6/41: Reef extends 1 mile S.E.ward from Shoal Pt	
19	also on H 61238	
20	also for H 61238 & c	
21		
22		
23		
24		
25		
26		
27		

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6123a (1933-34) FIELD NO. 1

Black Rock Harbor to Saugatuck River, Long Island Sound, Conn.

Surveyed in 1933-34 Scale 1-10,000

Instructions dated April 18, 1932 (S. B. Grenell), March 23, 1933 (H. A. Cotton) and Aug. 10, 1933 (G. C. Mattison)

Hand Lead Soundings.

3 Point fixes on shore signals.

Supplemental Wire Drag.

Chief of Party - G. C. Mattison.

Surveyed by - W. N. Martin, D. O. Nelson and M. O. Nelson.

Protracted by - B. Jacoby and E. W. Hamilton.

Soundings plotted by - E. W. Hamilton.

Verified and inked by - J. A. McCormick.

1. Condition of Records.

The records conform to the requirements of the Hydrographic Manual except as follows:

- a. The smooth sheet is one of three, the records for which are grouped as one set. Where the layout of a sheet is changed as in this instance, the records also should be segregated (see par. 57 of H. M.). When this is not feasible, a list showing the days or parts of days plotted on each sheet should be prepared by the draftsman plotting the smooth sheet. In this connection, Mill River and Black Rock Harbor were surveyed on scales of 1-5,000. (See Descriptive Report, page 9, par. 2.)
- b. The name of the geographic datum was not indicated on the smooth sheet. This was added in the office.
- c. The usual stamp or form stating that the signals were "Plotted by --" and "Checked by --" was not shown on the smooth sheet. Evidence that the plotting of signals had been checked was therefore lacking. Inasmuch as a number of the signal positions as plotted on the smooth sheet are the mean of two or more determinations (see par. 7g (1), this review), the field plotting has been accepted.
- d. The smooth sheet as received from the field was unusually dirty and correspondingly illegible, indicating that the sheet was not adequately protected while plotting in the field. The condition of the sheet and records made it impossible to verify the work in the usual way without replotting almost the entire sheet. By direction of the Chief of the Field Records Section, only the shoalest soundings were verified from the records, other soundings being inked as penciled by the field party to show the extent of the development. The sheet was cleaned in the office.
- e. A number of topographic and hydrographic signals falling outside the high water line did not show the features on which they were located. These were added in the office.

TP 1

- f. Aids to navigation and other special information were, with several exceptions, not indexed on the second page of the sounding records. (Par. 60.)
- g. Signal symbols were shown on the smooth sheet in either red or blue colors, no consistent color distinction indicating the origin of the signals being observed. The accepted practice is to use red for signals of triangulation or topographic origin, blue for sextant, and green for air photo. (Par. 23.)
- h. The boat sheet shows a number of rocks awash falling just offshore of the southern portion of Cockenoe Island, that are not substantiated by remarks in the records. Several of these rocks, however, were definitely located on prior surveys covering this area. These old rocks only, have been added to the smooth sheet and are noted as originating with their respective sources. (See pars. 7e and 7h (4) of this review.)

The "Descriptive Report" is clear and comprehensive and satisfactorily covers all matters of importance.

The listing of signals showing the origin and especially the character of each is particularly commendable.

2. Compliance with Instructions for the Project.

In several areas the development consisted of as many as four separate systems of closely spaced lines. Not more than two such systems with a subsequent examination by drifting and feeling for the least depth on the shoal spots, together with a proper coverage with the portable drag, would have been ample. Since only the critical depths need be recorded in drift soundings, much congestion in the records and in the plotting could have been eliminated.

The time elapsed since the last day of sounding (Oct. 15, 1934) and receipt of the survey in the office (June 6, 1936) is considerably longer than the average.

3. Shoreline and signals.

- a. The shoreline is from the air photo compilations: T-5261 (1933), T-5262 (1933) and T-5263 (1934).
- b. The signals are from the above air photo sheets and graphic control sheets: T-4902 (1934) and T-6491 (1933-34). Several hydrographic signals were also used and the sextant or theodolite cuts are listed in the index of the sounding volumes.

4. Sounding Line Crossings.

Agreement of soundings on cross lines that were run or those that result from the normal development is satisfactory. Some differences, however, are noted in the work of ce and eg days. These are discussed in detail in par. 8a of this review.

5. Depth Curves.

Within the area covered, the usual depth curves may be satisfactorily drawn. However, in the vicinity of lat. $41^{\circ} 07.1'$, long. $73^{\circ} 13.1'$ the development (mostly transferred from other surveys) is not sufficiently close to accurately define the 12 foot curve.

6. Junctions with Contemporary Surveys.

- a. The junction with H-6123b(1933-34) at the mouth of Mill River is satisfactory except that in lat. $41^{\circ} 07.5'$, long. $73^{\circ} 17.3'$, a 10 and 11 foot sounding (line 1 to 2 CL day) on the adjoining survey vary 2 to 3 feet shoaler than the surrounding depths on both surveys. This line was run approximately 11 months later than the surrounding development and therefore indicates that changes have occurred. This is also borne out by the close agreement of the line with the Engineer's survey of 1934 (Bp.27869) which was made about 8 months later than the earlier work in this area. (See par. 8a for discussion and charting value of the Engineer's survey).
- b. The junctions on the northeast with H-6123c(1933-34), on the east with H-6124a(1934), and on the south and southeast with H-6125(1934) are satisfactory.
- c. The junction on the east and south with H-3936(1916), and on the south with H-3937(1916) and H-1751a(1914) as prescribed in the instructions for the project is generally satisfactory. Differences of 1 to 2 feet occur in several spots but will cause no particular difficulties in charting. The disposition of several important soundings noted on these surveys is as follows:
 - (1). A 9 foot sounding (not charted) shown on H-3936(1916) in lat. $41^{\circ} 06.9'$, long. $73^{\circ} 13.8'$ falls in depths of 14 feet on the present survey. The 9 is a single sounding obtained on line (pos. 100 to 101k, blue). The hydrographer of the present survey spent over 2 day's time searching for this sounding using slow speed sounding lines, a wire sweep dragging on the bottom at all times and an improvised rope drag suspended about 1 foot off the bottom. (See tracing

No. 12 attached to Descriptive Report for extent of drag work.) No evidence of a shoal spot could be found. The 9 is probably a leadsman's error of 1 fathom and should be disregarded in future chartings. (See Descriptive Report, page 4).

- 11 6 c
- (2). The 18 foot sounding (on Chart 221, actually 18.4 feet) originating with H-3937(1916) in lat. $41^{\circ} 04.8'$, long. $73^{\circ} 20.0'$ falls just southwest of a 19 on the present survey. The 18 was obtained on line, which line varies 1 to 2 feet shoaler than the surrounding depths on the 1916 survey. There are also other evidences of changes and the 19 on the present survey is considered sufficient for charting purposes in this area.
- d. The junction on the west with H-5221a and b(1932-33) is satisfactory except at the eastern end of Cockenoe Reef. The hydrographer of the present survey located a number of rocks awash here during tides of 1 to 2 feet which differ in position and character from those (charted, Chart 221) of the 1932-33 work, the latter showing rocks both awash and sunken. The 1932-33 delineation is a generalized representation of a rocky area originating with the Boat Sheet and is not substantiated by remarks in the sounding records (see review of H-5221, par. 1d and letter from Chief of Party dated November 18, 1935 attached to Descriptive Report of that survey). The definite delineation on the present survey should completely supersede the 1932-33 information in future charting.

7. Comparison with Prior Surveys.

- a. H-18(1835), H-19(1835), H-20(1835), H-23(1837) and H-24(1837).

These sparsely covered sheets are on scales of 1 to 10,000 except H-24(1837) which is 1 to 20,000 and constitute but one survey of the area covered by the present survey. Each sheet, however, contains a large overlap from some of the others but as plotted appears as though all the work on each was original with it. Considering the time elapsed between these surveys and the present one and the fact that they were among the first executed by this Bureau when methods and equipment were in the developmental stage, they are in fair agreement with the present survey. Several discrepancies noted on these surveys are:

- (1). A number of rocks, bare and sunken (not charted) are shown on the surveys of 1835, some of which have been carried forward in blue to the 1885 surveys of the same area. These are generalized representations of rocky shoal areas and do not represent rocks specifically located. Inasmuch as these areas have been more fully developed on surveys subsequent to the

1885 surveys, they should be disregarded in future chartings.

- (2). Two bare rocks are shown on H-19(1835) in lat. $41^{\circ} 04.8'$, long. $73^{\circ} 21.5'$. The southernmost rock agrees closely in position with Haycock Rock (charted as awash and shown on the present survey as bare 2 feet at M. L. W.). The second (not charted) falls midway between Haycock Rock and another rock awash shown on the present survey about 80 m. northwestward and bearing 2 feet at M. L. W. Inasmuch as the second 1835 rock agrees in direction with the second rock on the present survey which is not shown on the old survey, the 1835 rock is probably an incorrect location of the second rock shown on the present survey. These 1835 rocks should be superseded by the location and designation shown on the present survey.
- (3). A 12 foot sounding (not charted) on H-19(1835) in lat. $41^{\circ} 05.4'$, long. $73^{\circ} 19.9'$ falls in depths of 21 feet but 120 m. west of similar depths on the present survey. The 12 as plotted is one of three obtained on a line run in a W x N direction. When considered with other nearby depths as well as those on H-18 (1835), the 12 represents the northern limit of a shoal area approximately 150 m. long extending in a N-S direction, the southern portion agreeing closely in position and depth with the present survey. A thorough search including a wire drag development to an effective depth of 16 feet (see Descriptive Report, page 4, par. 2, also tracing No. 13 attached to Descriptive Report for extent of drag work) failed to show any indication of the 12. It is further noted that the depths on line to the east of the 12 do not show any evidence of the shoal depths shown in this locality on the present survey. It is evident from the foregoing that the northern limit of the shoal area on the 1835 surveys is displaced in position and the 12 foot soundings should be disregarded in future chartings.

b. H-1575(1883).

This 1 to 5,000 scale sheet covers the area north and eastward of Black Rock Harbor. Depths generally agree within one foot except in the channel in Black Rock Harbor, where depths on the present survey vary 5 to 8 feet deeper. A least depth of 1 foot was formerly carried into the small creek on the north, the present survey shows this closed off at M. L. W. The larger differences noted above are due to dredging operations subsequent to the 1883 survey. The disposition of several rocks noted on the 1883 survey is as follows:

P 78

- (1). Doubt existed as to whether one or two rocks existed in the vicinity of lat. $41^{\circ} 07.1'$, long. $73^{\circ} 13.7'$ and both were referred to the field party for verification. But one rock (bare, not charted) is plotted on the 1883 survey and this agrees very closely in position with a rock awash located on the present survey at zero tide. The plotting of this 1883 rock agrees with a reference "rock 100 yards east" noted on line 9 to 10d, red run at a $\frac{1}{2}$ foot tide. However, a reference "passed large rock awash" recorded on line 29 to 30d, blue which also passed directly over the first rock during a 2.2 feet tide would place another rock about 60 m. SE of the former. A note on the Boat Sheet of the present survey states that a rock at the latter position was "not found at extreme low water". It is evident from the foregoing that the latter reference is incorrectly recorded with respect to time and that but one rock exists here, this being located on the present survey.
- (2). A number of bare rocks (charted as rocks awash, Chart 220) most of which are generalized in character and originate with T-1527 (1883), are shown on this survey to the south and westward of the point in lat. $41^{\circ} 08.6'$, long. $73^{\circ} 13.7'$. These were more carefully located on both the present survey and the contemporary adjoining survey, H-6123c(1933-34). The 1933-34 delineation should supersede the 1883 work for charting purposes.

c. H-1731(1886).

A few soundings from this 1 to 40,000 scale survey fall within the limits of the present survey in the vicinity of lat. $41^{\circ} 05'$, long. $73^{\circ} 20'$. These are generally in good agreement.

The 16 and 17 foot soundings (not charted, actually 16.5 and 17.5 feet respectively) shown in lat. $41^{\circ} 05.4'$, long. $73^{\circ} 19.7'$ are single soundings obtained on line and as plotted represent a small detached shoal area. They fall close to depths of 17 feet on the present survey but just outside the 18 foot curve encircling an extensive shoal area. Comparison of surrounding depths with other surveys covering this area indicates that small changes have occurred. The delineation on the present survey is sufficient for charting purposes in this area.

d. H-1750(1885 and 1893).

This 1 to 10,000 scale survey covers the entire area of the present survey except the portion NE of Fairfield Bar and Penfield Reef. The 1893 work consists of several sounding lines run at the mouth of Mill River. The depths

shown here as well as those on the 1885 work vary 1 to 15 feet shoaler than those on the present survey. These excessive differences are mainly due to dredging operations subsequent to the old surveys. The general agreement of depths on the 1885 work except as just noted, is within 1 foot. Larger differences, however, are noted in several areas but are usually small in extent such as the area approximately 350 m. off Pine Creek Point which has shoaled 1 to 5 feet. In the vicinity of Compo Yacht Basin, considerable changes in shoreline and in depths, in the basin and leading to it are noted. These are mainly of artificial character. Among the more important discrepancies noted are:

TP 7 d

- (1). The two 29 foot soundings (one charted, Chart 220) in lat. $41^{\circ} 06.0'$, long. $73^{\circ} 18.4'$ fall in a closely developed area with depths of 31 feet, even bottom on the present survey. The 29's are two successive soundings obtained on the same line (pos. 30 to 31R, red). These soundings were searched for on the present survey and not found. They were furthermore, cleared by wire drag to an effective depth ranging from 28 to 29 feet on H-5219 W. D. (1932) and no groundings observed. The 29's are probably soft shoal spots which have been slightly worn down. They should be disregarded in future charting. (See Descriptive Report, page 4).
- (2). Soundings of line 31 to $32\frac{1}{2}$ x, blue in lat. $41^{\circ} 06.7'$, long. $73^{\circ} 19.3'$ and line 35 to 36x, blue in lat. $41^{\circ} 06.9'$, long. $73^{\circ} 18.7'$ (no soundings charted except 5 foot spot in lat. $41^{\circ} 06.8'$, long. $73^{\circ} 18.7'$ consistently vary 1 to 6 feet shoaler than surrounding depths on both the 1885 and the present survey. No solution for these discrepancies can be advanced other than the fact that the fix at position $35\frac{1}{2}$ x was questioned in the field. These shoal lines should be disregarded in future charting.
- (3). No authority other than several rocky bottom characteristics could be found in the records of the 1885 survey for the sunken rock (charted) off the point in lat. $41^{\circ} 06.5'$, long. $73^{\circ} 19.8'$ which falls in depths of about 6 feet on the present survey. The hydrographer of the present survey searched in this area at a $\frac{1}{2}$ foot tide and found two rocks awash at M. L. W. which were not noted on the old survey, the one being approximately 35 m. SW of the sunken rock and the other 60 m. WNW. The representation on the present survey should be accepted for charting purposes in this area.

P 7 d

- (4). An unplotted rock awash was found in the records of the 1885 survey which falls 40 m. north of a rock awash (one of two) located on the present survey at a 1 foot tide and baring 2 feet at M. L. W. (actually $2\frac{1}{2}$ feet) in lat. $41^{\circ} 06.9'$, long. $73^{\circ} 15.6'$. The 1885 rock was noted on a passing line (pos. 10 to 11r, blue) run at a 0.8' tide as being "5 m. on starboard beam and 2 feet out of water". This rock was added to the 1885 survey as a rock awash. However, the present survey location determined under similar tidal conditions and controlled by 3-point fix, is undoubtedly a more accurate location of the same rock. The 1885 rock has not been carried forward and should be disregarded in charting.
- (5). No authority could be found in the records for the feature (not charted) about 25 m. WNW of Haycock Rock which might be interpreted as a rock awash. Falling as this feature does at the junction with the contemporary survey, H-1751(1885) and the records for which are contained in the same set of volumes, it is possible that the feature is a double plotting, though inaccurate, of Haycock Rock. It should be disregarded in future charting.
- (6). The $5\frac{3}{4}$ foot sounding (5 on Chart 221) in lat. $41^{\circ} 05.0'$, long. $73^{\circ} 20.6'$ falls between two sounding lines spaced 65 m. apart and in general depths of about 11 feet on the present survey. The charted 5 (actually 5.8 feet) is a single sounding obtained on line (pos. 56 to 57A, red). It is the only shoal sounding of prior surveys covering this area which indicates the northwest limits of the small shoal area shown here on the present survey and has therefore been carried forward as 6 feet and should be so charted.
- (7). A 15 foot sounding (charted) in lat. $41^{\circ} 05.8'$, long. $73^{\circ} 19.4'$ falls in depths of 23 feet on the present survey. The 15 is a single sounding obtained on line and is accompanied by the characteristic "Rocky". The line was run in a general E-W direction, a 25 foot sounding being shown just eastward and a 20 on the west. Several drag strips (see Descriptive Report, page 4) were run in this vicinity on the present survey but are actually concentrated in the area of the four 19's shown about 65 m. SE. (See tracing No. 13 attached to Descriptive Report for extent of drag work). Only one drag strip with an effective depth of $17\frac{1}{2}$ feet includes the 15 and this extends but a few meters beyond in a WNW direction. The bottom here is lumpy and rocky and while the 15 may conceivably be a leadman's error, the drag development is not considered sufficiently extensive to disprove the 15. It has therefore been carried forward on the present survey.

P 7 d

- (8). The 18 foot sounding (charted) in lat. $41^{\circ} 05.7'$ long. $73^{\circ} 19.4'$ falls in depths of 21 to 22 feet and at the edge of the hand lead development on the present survey. It is a single sounding obtained on line with depths of 21 feet (not plotted) being obtained just NW and SE. Inasmuch as the 18 was not specifically investigated and no appreciable changes in bottom are noted, the sounding has been carried forward on the present survey.
- (9) No authority could be found in the records for the $29\frac{1}{2}$ foot sounding (not charted) shown in lat. $41^{\circ} 05.7'$, long. $73^{\circ} 19.4'$ which falls in depths of 20 feet on the present survey. The sounding is evidently an erroneous plotting of a depth of 19.9 feet obtained on this spot on line 66 to 67x, blue. It should be disregarded in future charting.
- (10). The sunken rock (not charted) in lat. $41^{\circ} 04.9'$, long. $73^{\circ} 21.6'$ falls in depths of 1 foot on the present survey but within the low water line and just 10 m. south of the high water line on T-4696 (1932). The rock was seen at a 7 foot tide and originates with a note "large rock p. b. 2m." recorded at position 34y, blue. The hydrographers and topographers of other surveys who were in the vicinity at tides less than 7 feet make no mention of any particular rock. The rock is probably very close to and almost integral with the high water line. It should be disregarded in future chartings.
- (11). Two small detached rocky areas (accentuated dots, not charted) spaced about 80 m. apart in lat. $41^{\circ} 07.0'$, long. $73^{\circ} 15.7'$ fall in rocky bottom and just inside the low water line on the present survey. The outline originates with T-1527 (1883) but as shown on this survey is represented as ledges. Although one sounding line was run directly over the easternmost feature and another at the edge of the other, no authority for such representation was found in the sounding records other than several soundings indicating a slowly rising bottom. This delineation is generally borne out by the present survey which should supersede the old hydrographic and topographic information in future charting.
- (12). The 4 foot sounding (on chart 221) in lat. $41^{\circ} 04.9'$, long. $73^{\circ} 20.5'$ falls in depths of 13 feet and 65 m. westward of a shoal with least depth of 5 feet on the present survey. The 4 is a single sounding (bottom characteristic of "rocky") obtained on a line (on

pos. 4A', red) run in a westerly direction. Other soundings on the same line preceding the 4 show no indication of the easterly shoal area although the existence of that area is evidenced by soundings on other lines run in the immediate vicinity. The 4 is probably out in position and should be disregarded in future charting.

P 7
e. H-1751 (1885).

A few soundings from this 1 to 10,000 scale survey fall within the western limits of the present survey. Depths generally agree within 1 foot or less.

Several rocks (one awash, others sunken; none charted) running offshore from the SW point of Cockenoe Island are not shown on the present survey. (See par. 1h of this review). The outermost rock awash was located during a 0.9 foot tide at position 2c; blue, and is accompanied by the note "Locating rock awash - Rocks out of water extend NE to shore." The outermost rock awash has been carried forward on the present survey. The inshore rocks not being definitely located, the best representation would be the notation "foul". This has been shown on the present survey and should be so charted.

f. H-5219 W D (1932).

A portion of this 1 to 20,000 wire drag survey covers the outermost development in the area eastward of long. $73^{\circ} 21'$ and in particular, the detached developments in the vicinity of lat. $41^{\circ} 06'$, long. $73^{\circ} 19'$. Depths on the present survey do not conflict with the effective drag depths, however, four soundings were carried forward in the vicinity of the detached developments.

g. H-5223 (1932).

This 1 to 10,000 scale survey covers most of the present survey in the inshore area eastward of long. $73^{\circ} 20.7'$. It is very sparsely covered and contains little or none of the detail shown on the present survey. General differences of 1 and sometimes 2 feet in depths are noted, good agreement existing in only a few spots. These discrepancies are mainly due to:

- (1). The control for the 1932 survey (including all rock detail) is from the 1 to 20,000 scale plane table survey, T-4695 (1932) and comparison with the air photo compilation, T-5262 (1933) reveals discrepancies of 7 to 15 m. in the position of the signals and 4 to 30 m. in shoreline (see rev. of T-5262 (1933) for further details). A portion of the control on the present survey is from the same source but the hydrographer noted several discrepancies in the field and

corrected them wherever possible.

- P 7 9
- (2). Tide reducers on the 1932 survey were entered in whole feet, those on the present survey being in half-feet. In applying half-foot reducers to the 1932 work, it was found that approximately 1/3 of the soundings would be increased 1 foot in depth and thereby improve the agreement with the present survey.

Important depths falling within the limits of the present survey as well as all depths falling outside the limits (for convenience in charting) except those falling on the adjoining sheet, H-6123c (1933-34) have been carried forward to the present survey. Such soundings, however, that would be increased one foot by the new tide reducers, were corrected. All future chartings from the 1932 work should therefore be taken from the present survey which with the indicated additions supersedes the 1932 work. In this connection, the rock detail shown off Frost Point and originating with T-4695 (1932) is somewhat generalized. It should be superseded by the larger scale development accomplished at low tide on the present survey.

h. T-1527 (1883) and T-1537 (1884).

Several discrepancies noted between these 1 to 10,000 scale surveys and the present survey which cannot be adequately disposed of in the review of the contemporary topographic surveys are as follows:

- (1). The bare rock detail (no chartings from this survey) shown on T-1527 (1883) in lat. $41^{\circ} 06.9'$, long. $73^{\circ} 18.4'$ and lat. $41^{\circ} 07.4'$, long. $73^{\circ} 13.1'$ is evidently out in position, the hydrographer of the present survey having obtained similar details at low tide in positions differing 20 to 60 m. from the old locations. The delineation on the present survey should supersede the 1883 work for charting purposes.
- (2). A spot or feature shown on T-1527 (1883) which might be interpreted as a bare rock (not charted) in lat. $41^{\circ} 07.3'$, long. $73^{\circ} 12.9'$ falls just outside the limits of the present survey and in depths of 30 feet. No rock nor depths indicating the existence of a rock are noted here on prior hydrographic surveys. This is especially true on H-1575 (1883) where a 3-point fix on line was obtained directly over the feature, a 30 foot sounding at a $\frac{1}{2}$ foot tide being recorded. The feature is probably an ink blotch and should be disregarded in future charting.

P 7h

- (3). A bare rock (not charted) shown on T-1527 (1883) in lat. $41^{\circ} 07.1'$, long. $73^{\circ} 13.5'$ falls in depths of 5 feet and between sounding lines spaced 100 m. apart on the present survey. No rock is shown here nor was any search made for one on any of the hydrographic surveys covering this area although the hydrographer of the present survey was in the vicinity at low tide and makes no mention of it. It is, however, shown on H-1750 (1885) as a sunken rock but is not noted in the records although one line passed close by the rock at a 6 foot tide. It is barely possible that this feature is an ink blotch but in view of the rocky character of the area and the absence of any specific development which would furnish evidence for its disproval; it has been carried forward as a sunken rock and should be so charted.
- (4). The northwesterly of the three bare rocks (not charted) shown on T-1537 (1884) just south of Cockenoe Island falls in depths of 4 feet and is not shown on the present survey (see par. 1h of this review). In view of the close agreement existing between the two southeasterly rocks and the two rocks awash shown here on the present survey it is possible that the other rock exists also. However, since this rock was not observed by any of the hydrographic parties covering this area, a sunken rock symbol is considered the best interpretation of this feature and it has been so carried forward.
- (5). Numerous bare rocks (charted as bare rocks, Chart 221 and as rocks awash, Chart 220) shown along the fore-shore on these 1883-84 surveys fall inside the low water line on the present survey. These are interpreted as a generalized rocky area, the more prominent rocks being definitely located on the present survey at or near low tide. The delineation on the present survey should supersede this topographic work in future chartings.

8. Comparison with Charts 220 (New Print dated July 14, 1936) and 221 (New Print dated June 16, 1936).

a. Hydrography.

Hydrography shown on the charts originates with surveys discussed in preceding paragraphs of this review as well as U. S. Engineer surveys of 1932 (Bp. 25426) and 1934 (Bp. 27869). Bp. 25426 covers a small part of Black Rock Harbor and depths are in close agreement. It should be superseded by the present survey in future charting. Bp. 27869 is a closely developed 1 to 2,400 scale survey covering the entrance to Mill River. It was surveyed in June-July 1934 which is approximately 7 months later than

R 5(a) the present survey. The depths are in good agreement with the present survey in the area east and southward of the outer beacon but vary 1 foot shoaler in the area just northeast of the outer beacon and 2 to 3 feet shoaler in the area just south and southwest of the breakwater. In this connection, the work of ce and cg days on the present survey (major portions also shown separately on overlay tracing No. 10 attached to Descriptive Report) in the area southward of the breakwater was surveyed in September 1934 and is approximately $2\frac{1}{2}$ months later than the Engineer's work. These later depths vary 1 foot or less deeper than the charted Engineer's work, and should supersede that work in future charting.

The Engineer's survey of May 1935 and Feb. 1936 (Bps. 30090 and 30091), and May 1936 (Bp. 29718) respectively cover Black Rock Harbor and the entrance to Mill River. These are subsequent to the present survey.

R 8 b. Controlling Depths in Channels.

- (1). The charted controlling depth in Saugatuck River is $2\frac{1}{2}$ feet as of June 1923. The present survey covers the mouth of the river only and shows a controlling depth of 8 feet in that area.
- (2). No effort was made to fully develop the channel in Black Rock Harbor but the present survey indicates a controlling depth of 17 feet. The charted controlling depth is 17 feet as of June 1935 and is subsequent to the present survey.
- (3). No controlling depth is charted at the entrance to Mill River; however, the Engineer's report, Chart Letter 523 (1936) states that the controlling depth as determined in 1936 is near 11 feet (not full width). This information is subsequent to and exceeds the 7 foot depth shown on the present survey.

c. Aids to Navigation.

- (1). Buoy C1 near George Rock, buoy N4 and the two lighted beacons in Mill River, the Bell buoy off Pine Creek Point, the lighted and unlighted beacons near Penfield Reef, buoy N2 and the two lighted beacons in Black Rock Harbor were located in substantially the same positions as charted and satisfactorily mark the features intended.
- (2). In Saugatuck River; buoys N2, C3, N4, C5, N6, C7, N8 and N10 (all except N2 and C3 falling outside limits of hydrography; see tracing attached to Descriptive Report for positions of N8 and N10) were located in

positions varying 25 to 230 m. from those charted. The present survey locations are approximately 6 months later than the charted positions (L. H. N. to M. 16 dated April 1934). The Lighthouse positions are based on distances and bearings from Pecks Ledge Lighthouse. Changes in the remaining aids in this vicinity were made by the Lighthouse Bureau and post-date the present survey information. Buoys C"1B", N2, N"2A" and lighted buoy "1" have been added whereas the two vertical striped buoys have been removed. Buoy C1 has been shifted 115 m. WSW and its number changed to C"1A". (Auth.: N. to M. 16, 1934; 32, 1935; and 36, 1936).

At the entrance to Mill River; buoys C1, N2 and N6 were located in positions varying approximately 100 m. from those charted (L. H. N. to M. 21 and 32, 1925). Buoys C3, C5 and C8 were located in positions varying 30 to 50 m. from those charted. The first two charted positions originate from L. H. N. to M., 19, 1936 and the latter from L. H. N. to M. 17, 1934. These post-date the present survey information.

In Black Rock Harbor; buoys N4 and N6 were located approximately 55 m. NNW and S respectively of their charted positions. The present survey locations are subsequent to the charted positions which originated from L. H. N. to M. 37, 1932 and were based on distances and bearings from Black Rock Lighthouse.

Generally speaking, the differences noted above are parallel to the channel and the older positions are not menacing. However, the later positions including that of buoy N8 in Mill River marking the outermost edge of the shoal making out from the breakwater which also agrees closely with that shown on the Engineer's survey of 1934 (Bp. 27869, see par. 8a above) more adequately mark the features intended.

- 71 8 c
- (3). The present survey shows 5 red and green buoys marking the channel leading into the Compo Yacht Basin and other single buoys in lat. $41^{\circ} 06.0'$, long. $73^{\circ} 18.7'$; lat. $41^{\circ} 06.6'$, long. $73^{\circ} 18.5'$; and lat. $41^{\circ} 06.9'$, long. $73^{\circ} 17.4'$. These are not charted nor listed in the 1936 Local Light and Buoy List. They are probably privately maintained.

d. Miscellaneous.

No authority could be found for the rock awash charted about 210 m. south of Frost Point. The rock falls in depths of 6 feet on the present survey and was just charted on the 1st Edition of Chart 220 and 1919. In view of the fact that the hydrographer of the present survey and also that of H-3937 (1916) were in the vicinity at low tides and have

located several other rocks awash here, it is reasonable to assume that they would have seen the rock if it existed. This charted rock should be disregarded in future charting.

9. Field Plotting.

Field protracting and plotting appeared to be accurate and conform to the requirements of the Hydrographic Manual but it was impracticable to give the sheet a thorough check an account of the condition of the smooth sheet and records as received from the field. (See par. 1a and 1d of this review.)

10. Additional Field Work Recommended.

This survey is complete and no additional work is required at this time. However, when work is continued in this locality definite dispositions should be made of the two 15's and one 18 foot sounding carried forward in lat. $41^{\circ} 05.8'$, long. $73^{\circ} 19.4'$ as well as the rock awash in lat. $41^{\circ} 07.1'$, long. $73^{\circ} 13.5'$. These with the exception of the westerly 15 have been discussed in paragraphs 7d(7), 7d(8) and 7h(3).

11. Note to Compiler.

The compiler's attention is particularly called to the following:

- a. The treatment of H-5223 (1932) discussed in paragraph 7g of this review. For convenience in identification the soundings that were corrected for the 1 foot change in tide reducer before transfer to the present survey are shown on a special tracing (No. 11) attached to the Descriptive Report.
- b. The charted rock awash which should be removed from the chart discussed in par. 8d of this review.
- c. The status of the Engineer's surveys discussed in paragraph 8a of this review. Bp. 27869 (1934) is in part subsequent to the present survey and is already applied to the chart. The others are all subsequent to the present survey and have not been applied.
- d. The status of the various Aids to Navigation discussed in paragraph 8c of this review.
- e. Field Examination No. 3 (1935) covering the entrance to and also Mill River is an advance tracing of the present survey forwarded to this office. No information from it has been applied to the chart and it should therefore be disregarded.

12. Superseding Previous Surveys.

Within the area covered, the present survey with the indicated additions from previous surveys supersedes the following surveys

for charting purposes:

H-18 (1835)	In part.
H-19 (1835)	" "
H-20 (1835)	" "
H-23 (1837)	" "
H-24 (1837)	" "
H-1575 (1883)	" "
H-1731 (1886)	" "
H-1750 (1885 & 1893)	" "
H-1751 (1885)	" "
H-5223 (1932)	" "

13. Reviewed by Harold W. Murray

December 11, 1936.

Inspected by - R. J. Christman.

Examined and approved:

C. K. Green, *C. K. Green*
Chief, Section of Field Records.

L. O. Robert
Chief, Division of Charts.

Fred. L. Peasels
Chief, Section of Field Work.

G. W. Wade
Chief, Division of H. & T.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6123b (1933-34) FIELD NO. 1-a.

Mill River, Long Island Sound, Conn.
Surveyed in 1933-34, Scale, 1:5,000
Instructions dated:
Apr. 18, 1932 (S. B. Grenell)
Mar. 23, 1933 (H. A. Cotton)
Aug. 10, 1933 (G. C. Mattison)

Hand Lead Soundings.

3 Point fixes on shore signals.

Chief of Party - G. C. Mattison
Surveyed by - W. N. Martin, D. O. Nelson and M. O. Nelson
Protracted by - B. Jacoby and E. W. Hamilton
Soundings plotted by - E. W. Hamilton
Verified and inked by - J. A. McCormick

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except that signal symbols originating with air photo compilations were faintly shown in green, and were barely distinguishable from the blue used for hydrographic signals. Also, the names of these signals were shown in blue. The standard practice is to use the same color for the names as is used for the symbols. These were changed in the office.

The Descriptive Report is clear and comprehensive and satisfactorily covers all matters of importance. The listing of signals showing the origin and especially the character of each is particularly commendable.

2. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the instructions for the project.

3. Shoreline and Signals.

The shoreline is from the air photo compilation: T-5262 (1933).

The signals have been spotted from the photographs of T-5262 (1933). Several hydrographic signals were also used. These were located by sextant cuts and are recorded in the sounding records.

4. Sounding Line Crossings.

Agreement of sounding line crossings is satisfactory. Some differences however, are noted in the work of ed and CL days. These are discussed in more detail in paragraph 8a of this review.

5. Depth Curves.

The usual depth curves may be satisfactorily drawn including the major portions of the low water line.

6. Junctions with Contemporary Surveys.

The junctions with H-6123a (1933-34) at the mouth of Mill River is satisfactory except that in lat. $41^{\circ}07.5$, long $73^{\circ}17.3'$, a 10 and 11 foot sounding (line 1 to 2 CL) on the present survey vary 2 to 3 feet shoaler than the surrounding depths. This line was run approximately 11 months later than the surrounding development and therefore indicates that changes have occurred. This is also confirmed by the close agreement of the line with the Engineer's survey (Bp. 27869 (1934)) which was made about 7 months later than the earlier work on the present survey. (See paragraph 8a of this review for discussion and charting value of the Engineer's Survey.)

7. Comparison with Prior Survey.

H-1750 (1885 and 1893).

This 1 to 10,000 scale survey covers the entire area of the present survey. Considerable differences in shoreline and hydrography are noted. The shoreline differences are mainly due to land reclamation and in particular, on the eastern side of the river. The small tidal flat which is now shown entirely cut off from the river was formerly open to the river. Northward of lat. $41^{\circ}08'$, depths on both surveys show little if any changes. Southward of this point the present survey shows considerable deeper and wider water, a single sounding line (in general) on the old survey showing maximum depths of 7 feet whereas the present survey shows depths ranging from $6\frac{1}{2}$ to 24 feet.

8. Comparison with Chart 220 (New Print dated July 14, 1936).a. Hydrography.

- (1) The present charted hydrography originates with a closely developed (scale 1 to 2,400) Engineer's survey made in June-July, 1934 (Bp 27869) which is on an average about 7 months later than the present survey. With the exception of two day's work, CL and cd days, which were ^{run} in September and October 1934, respectively, and are about 3 months later than the Engineer's survey, the work on the present survey was accomplished during October and November 1933. Depths are generally in good agreement except near the mouth of the river where the earlier depths on the present survey vary 1 to 2 feet deeper. The work of CL and cd days, however, is in close agreement. In lat. $41^{\circ}07.62$, long $73^{\circ}17.25$; the earlier work on the present survey shows a line of 6 foot soundings (line 62 to 63hh) extending offshoreward into depths of 10 to

15 feet. This feature is not shown on the Engineer's survey although two parallel sounding lines were run close to it, one on either side.

With the exception of some inshore detail such as rocky ledges or piling which is not shown on the Engineer's survey the latter adequately covers the area of the present survey on a larger scale and at a later date and except for this inshore detail no chartings from the present survey is necessary.

- (2) The Engineer's Surveys of 1935 (Bp. 30090) and 1936 (Bps. 30091 and 30092) cover most of Mill River. These are subsequent to the present survey.

b. Aids to Navigation.

- (1) The beacon located at the south end of the breakwater agrees with the charted position and satisfactorily marks the feature intended.
- (2) Red buoy N "8" located at the mouth of the river is approximately 30 m. south of the charted position. The charted position originates with L. H. N to M. No. 17 (dated April 1934) and is previous to the present survey location (dated Sept. 25, 1934). The present survey location also agrees closely with that shown on the Engineer's Survey (Bp. 27869 (1934), see par. a, above) which is also subsequent to the charted information. The position located on the present survey or on the Engineer's survey more safely marks the shoal area making off from the breakwater and shown in detail on the Engineer's survey.

9. Field Plotting.

Field protracting and plotting were accurate and conform to the requirements of the Hydrographic Manual.

10. Additional Field Work Recommended.

This survey is complete and no additional field work is required.

11. Note to Compiler.

The compiler's attention is called to the following:

- a. The treatment of the present survey and also several Engineer's surveys in future charting discussed in paragraph 8a of this review.
- b. Field Examination No. 3 (1935) covering the entrance to and also Mill River is an advance tracing of the present survey forwarded

to this Bureau. No information has been applied to the chart and it should therefore be disregarded.

12. Superseding Previous Surveys.

Within the area covered, the present survey supersedes the following survey for charting purposes:

H-1750 (1885 and 1893) In part.

13. Reviewed by - Harold W. Murray, Nov. 9, 1936.

Inspected by - A. L. Shalowitz

Examined and approved:

C. K. Green, *C. K. Green*
Chief, Section of Field Records.

Fred. L. Peacock
Chief, Section of Field Work.

L. O. Robert
Chief, Division of Charts

G. Wade
Chief, Division of H. & T.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6123c (1933-34) FIELD NO. 1-b

Black Rock Harbor, Long Island Sound, Conn.

Surveyed in 1933-34, Scale 1:5,000

Instructions dated:

Apr. 18, 1932 (S. B. Grenell)

Mar. 23, 1933 (H. A. Cotton)

Aug. 10, 1933 (G. C. Mattison)

Hand Lead Soundings.

3 Point fixes on shore signals.

Chief of Party - G. C. Mattison

Surveyed by - W. N. Martin, D. O. Nelson and M. O. Nelson

Protracted by - B. Jacoby and E. W. Hamilton

Soundings plotted by - E. W. Hamilton

Verified and inked by - J. A. McCormick

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except that the names of topographic signals transferred to the hydrographic sheet were inked in blue instead of in red as directed by par. 23 of the Hydrographic Manual. The names, however, have not been changed in the office.

The Descriptive Report is unusually clear and comprehensive and satisfactorily covers all items of importance. The listing of signals showing the origin and especially the character of the signal is particularly commendable.

2. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the instructions for the project.

3. Shoreline and Signals.

The shoreline is from air-photo compilations: T-5262 (1933) and T-5263 (1934).

The signals are from the graphic control sheet: T-6491 (1933-34) and the air photo compilation T-5262 (1933).

4. Sounding Line Crossings.

Agreement of sounding line crossings is satisfactory.

5. Junctions with Contemporary Surveys.

The junctions on the south with H-6123a (1933-34) and H-6124a (1934) are satisfactory.

6. Depth Curves.

The usual depth curves including most of the low water curve can be satisfactorily drawn.

7. Comparison with Prior Surveys.a. H-18 (1835) and H-20 (1835).

These 1 to 10,000 scale surveys cover the area southward of lat. $41^{\circ}09.2'$. At first glance these sheets appear to be two separate surveys covering the same area. In reality they are but one survey, the detail shown being identical. In view of the lapse of time since the 1835 surveys were made and the changes noted (mostly artificial), a detailed comparison will serve no useful cartographic purpose. The present survey adequately covers the area in greater detail and should supersede these surveys for charting purposes.

b. H-1575 (1883).

This 1 to 5,000 scale survey covers the entire area of the present survey. Depths are generally in good agreement with the present survey, except in mid-channel where dredging operations subsequent to the 1883 survey have materially altered the character of the harbor. In lat. $41^{\circ}09.3'$, long. $73^{\circ}12.7'$; the present survey shows a continuous high water line in a place that was formerly open to the sea. Upstream from this point, a number of changes in topography incidental to improved commercial facilities are noted. Two clusters of accentuated ink dots (not charted) in lat. $41^{\circ}08.6'$, long. $73^{\circ}13.1'$ fall in depths of 4 feet on the present survey. A note in the records of the old survey (pos. 15a, red) states that these are old wharf piles. The hydrographer of the present survey searched this area at extreme low tide (see note on boat sheet) and found no evidence of the old piling. The piling has probably disintegrated and should be disregarded in future charting.

c. H-3936 (1916).

A few soundings from this 1 to 10,000 scale survey fall within the limits of the present survey in the area southward of lat. $41^{\circ}08.9'$. General agreement of soundings is within 1 foot or less, except in mid-channel where depths on the present survey vary 6 to 9 feet deeper, due to dredging operations subsequent to the 1916 survey.

d. H-5223 (1932).

A few soundings from this 1 to 10,000 scale survey fall within the limits of the present survey in Black Rock Harbor. The depths are generally in good agreement except in the channel where a few depths on the present survey vary 2 feet deeper. In this comparison, consideration was given to the 1 foot change

in the tide reducer on the 1932 survey which is discussed in detail in the review of H-6123a (1933-34). The present survey with its larger scale and greater development should supersede the 1932 survey in future charting.

8. Comparison with Chart 220 (New Print dated July 14, 1936).

a. Hydrography.

Hydrography shown on the chart originates with surveys discussed in previous paragraphs of this review as well as several U. S. Engineer's surveys, the more important being surveys of 1929 and 1932 (Bps. 23246 and 25426 respectively). Only a few soundings are charted from the Engineer's survey, these being in general, just outside the dredged channel and in good agreement with the present survey. They should be superseded by the present survey in future charting.

The Engineer's survey of 1936 (Bps. 29718 and 29719) which covers the main channel and also extends a short distance on either side in Black Rock Harbor and Cedar Creek is subsequent to the present survey. This has not as yet been applied to the chart.

b. Controlling Depths in Channels.

- (1) The present survey shows a controlling depth of around 18 feet in Black Rock Harbor and Cedar Creek.

The charted controlling depth in Black Rock Harbor is 17 feet as of June 1935 and that in Cedar Creek is 16 and 16½ feet respectively as of May 1936. This information is subsequent to the present survey.

- (2) The charted controlling depth in Burr Creek is 3½ feet as of June 1928. While no effort was made to develop the channel on the present survey, this depth is generally borne out up to a point in lat. 41°09.55'. Upstream from this point, the channel changes its course frequently and gradually shoals to a depth of 1 foot.

c. Aids to Navigation.

Buoys and beacons located on the present survey are in substantially the same positions as charted and satisfactorily mark the features intended although buoys N6, C9 and N4 were located in positions varying 25 to 45 m. from those charted. Buoy C5, however, was located approximately 110 m. further upstream. The charted positions originate with L. H. N. to M. 37 (1932) and were established about 1 1/4 years previous to the present survey

locations. The differences just noted are all parallel to the edge of the dredged channel and the aids in either positions satisfactorily mark the features intended. Red buoy N12 was located on the present survey approximately 40 m. further upstream. The charted position, however, originates with L. H. N. to M. 19 (1936) and is subsequent to the present survey. This charted position is in range with the channel leading into Burr Creek and more adequately marks the features intended.

9. Field Plotting.

Field protracting and plotting were accurate and conform to the requirements of the Hydrographic Manual.

10. Additional Field Work Recommended.

This survey is complete and no additional field work is required.

11. Note to Compiler.

The compiler's attention is called to the following:

- a. The Engineer's survey of 1936 (Bps. 29718 and 29719) which is discussed in par. 8a of this review and is subsequent to the present survey.
- b. The status of the charted red buoy N12 discussed in paragraph 8c of this review.

12. Superseding Previous Surveys.

Within the area covered, the present survey supersedes the following surveys for charting purposes:

H- 18 (1835)	In part
H- 20 (1835)	"
H-1575 (1883)	"
H-3936 (1916)	"
H-5223 (1932)	"

13. Reviewed by Harold W. Murray Nov. 12, 1936.

Inspected by R. J. Christman Dec. 16, 1936.

Examined and approved:

C. K. Green, *C. K. Green*
Chief, Section of Field Records.

Fred. L. Peacock
Chief, Section of Field Work

L. O. Robert
Chief, Division of Charts.

G. W. de
Chief, Division of H. & T.

August 14, 1936.

TIDE NOTE FOR HYDROGRAPHIC SHEET

Division of Hydrography and Topography:

✓ Division of Charts: Attention: Mr. E. P. Ellis

Tide Reducers are approved in
15 volumes of sounding records for

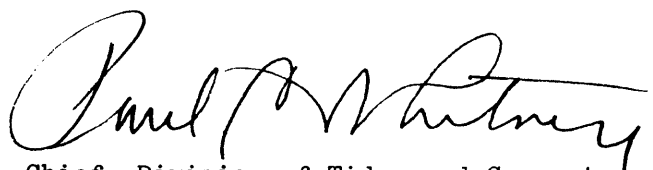
HYDROGRAPHIC SHEET 6123 a-b-c

Locality Black Rock Harbor to Saugatuck River, Mill River, Black
Rock Harbor, Conn.

Chief of Party: G. C. Mattison in 1933-34
Plane of reference is mean low water reading
2.8 ft. on tide staff at Bridgeport
13.4 ft. below B.M. 1

Height of mean high water above plane of reference is 6.8 feet.

Condition of records satisfactory except as noted below:


Chief, Division of Tides and Currents

08' 30"

Zig

Fair

Bath

1° 08'

14' 30"

BLACK ROCK HARBOR SHEET
STATION EXTENSION.

1/5000

73° 14'

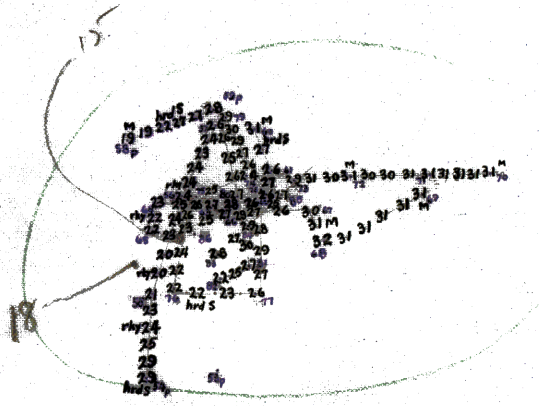
6123c

U. S. COAST & GEODETIC SURVEY
LIBRARY & ARCHIVES
JUN 6 1936
Acc. No. _____

JUN 6 1936

75° 19'

41° 06'



*Applied to smooth
sheet.
J. C. M.*

CORALAY No 1
SHEET No. 1
Vol. No 3. - "P" DAY

POSITIONS 54 - 85

41° 05'

#1

20'

75° 19'

73 20

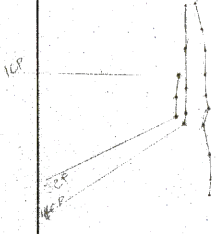
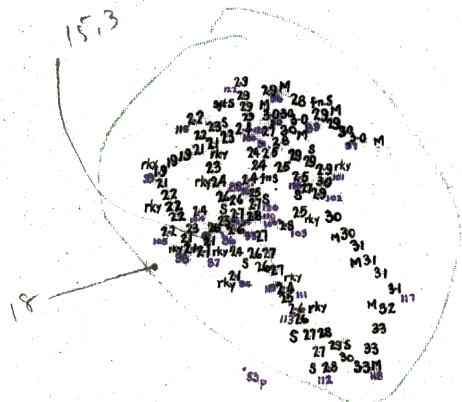
Applied to sunsh. sheet
J. C. M.

19'



41° 06'

06



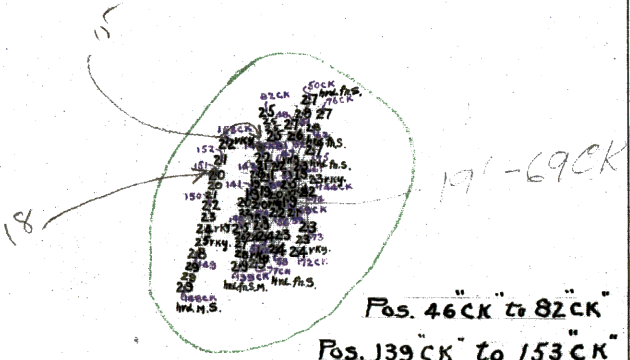
OVERLAY No 2
 SHEET No. 1
 Vol. No. 3
 'P' DAY

POSITIONS 86-122

41° 05'

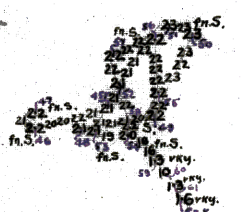
73 20'

2



Pos. 46"CK" to 82"CK"
 Pos. 139"CK" to 153"CK"

applied to smooth sheet
J. C. M.



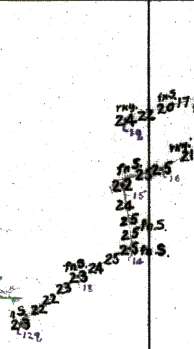
Pos. 45"r" to 62"r"



Pos. 72"r" to 78"r"
 Pos. 79"r" to 89"r"

41'05"

8'-9'g'



Pos. 19"q" to 209"q"

Overlay-#3
 SHEET-NO. 1 - VOL. #
 "CK" - "r" - "DMS."

73'20"

19'

No. 3

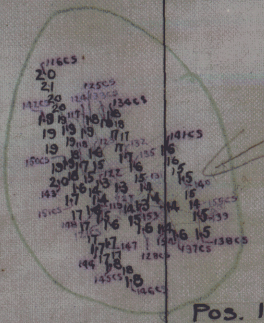
41° 06'

06'

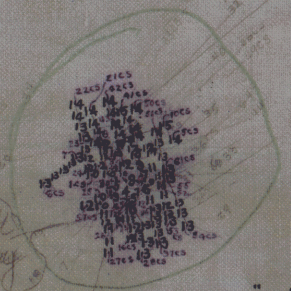
41° 06'

Shoalest sounding 13 1/2 fD.

Shoalest sounding 13 1/2 fD. on several different positions



Pos. 116-155 "CS"

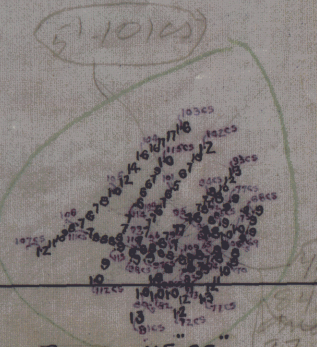


Pos. 1-61 "CS"

Lead depth 4'-13' today

#6123

OVERLAY - No. 6
SHEET - No. 1 VOL. No
"CS" DAY



Pos. 62-115 CS

41° 05'

22'

21'

73° 20'

No. 6

24
2011

06

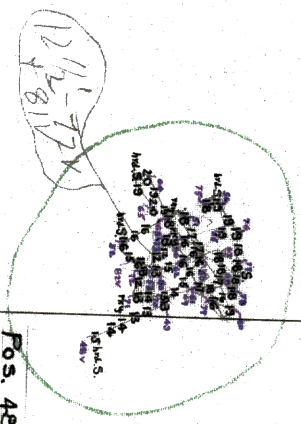
Applied to smooth sheet.

J. C. M. [unclear]
[unclear]
[unclear]

[unclear]

OVERLAY - No. 7
SHEET - No. 1. Vol.
V. DRY

*applied to smooth sheet
J. C. M.*



Fos. 48-82 V"

730 1/2

7

41' 05"

22'

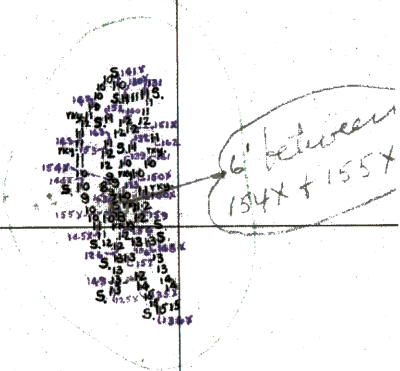
73-21

No. 7

HOLE

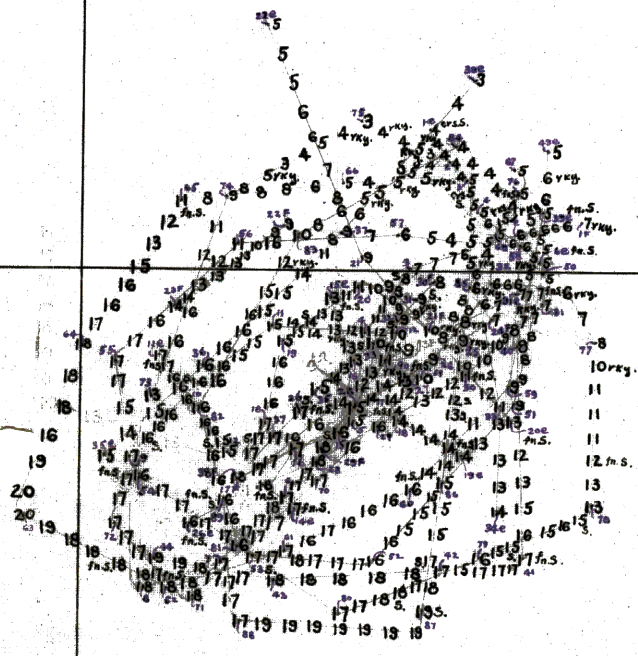
41006'

73° 22'



Applied to
smooth sheet
J. C. M.

Overlay - No. 9
Sheet - No. 1 - Vol. No
"e" - "F" DRYs



- Pos. 1 - 6"e"
- 11-14"e"
- 15-19"e"
- 20-22"e"
- 26-37"e"
- 35-38"e"
- 39-48"e"
- 49-91"e"
- 1F-21F"
- 22F-23F"
- 24-29F"
- 30F-36F"

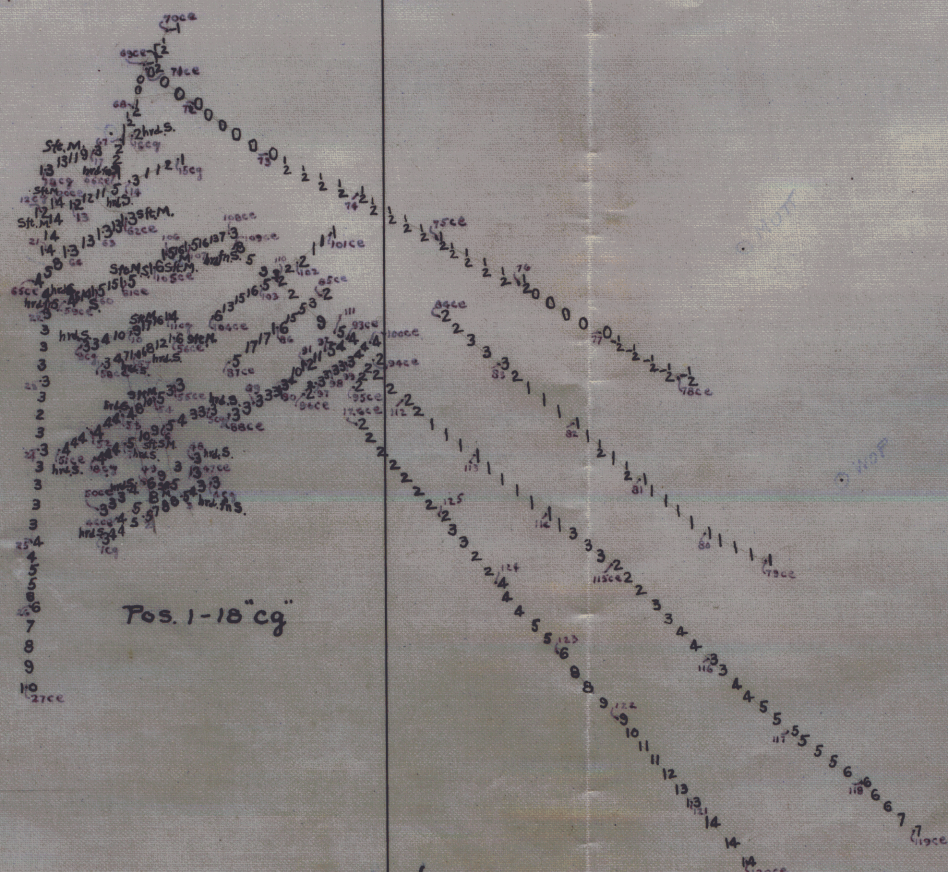
41° 07'

73° 14'

73° 17'

41° 08'

Handwritten in red:
Lumber Laminar at [unclear]
M.S.L



Pos. 1-18 "cg"

Pos. 20-126 "ce"

Pos. 127-200 "cg"

OVERLAY - No. 10
SHEET - No. 1 - Vol. No.
"ce" - "cg" DAYS.

Handwritten in red:
H-6123

41° 07'

No. 10

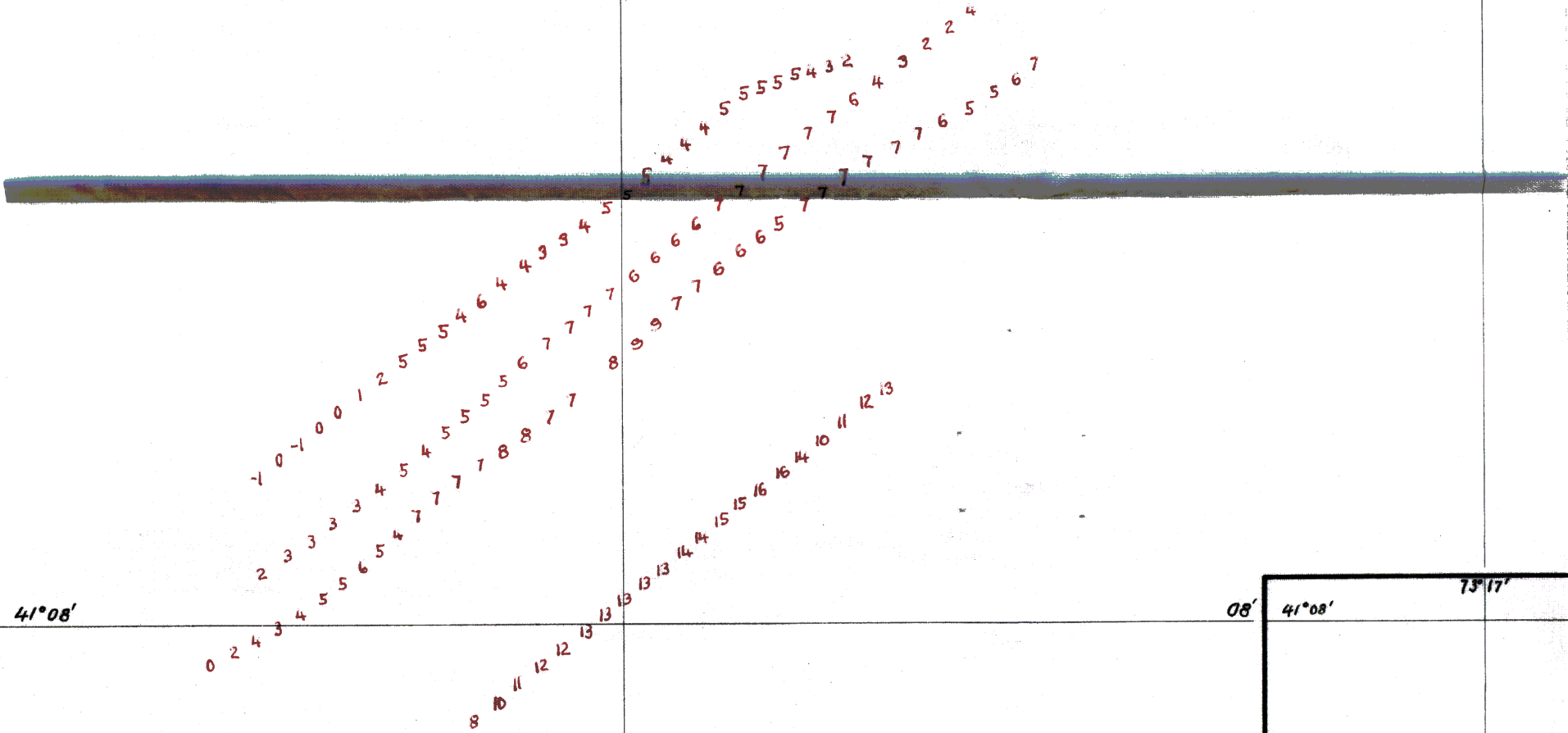
10-14

Applied to smooth sheet
J.C.M.

10-15

10-16

Note: Depths shown in red originate from H-5223 (1932) and have been corrected for a 1 foot change in tide reducer. These have been transferred to H-6123a (1933-34). (See Review of H-6123a (1933-34) for discussion).



41°08'

08' 41°08'

73°17'

-2 -2 0 1 1 1 1 2 2 2 2 2

H-6123

GRK

0 1 1 1 2 2 2 2 2 2

9 11 12 14 13 10

07'

73°14'

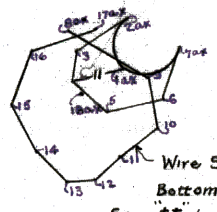
11.01

07'

73°

WIRE DRAG
 H-6123 a (1933-34)
 Scale 1-10,000

07'



Wire Sweep Dragging on
 Bottom - Pcs. 8 to 17.
 See "T" day for drag investigation data.

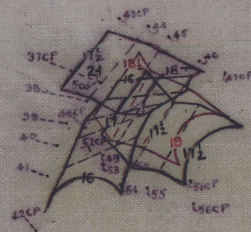
41°08'

73° 20'

19'

WIRE DRAG
 H-6123a (1933-34)
 Scale 1-10,000

41° 06'



Handwritten notes in blue ink, possibly a list of points or coordinates, including numbers like 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.



05'

73° 20'

No. 13

19'

23'

73° 22'

07'

located and
TRACING OF BUOYS, FALLING OUTSIDE
WESTERN LIMITS OF H-6123 a (1933-34)

Scale 1:10,000

10 N 10°
E 20 M

14 N 3°
E 20 M

41° 06'

23'

No. 14

73° 22'

Applied to chart 220 J.M.A. May 1937
" " " 1213 J.M.A. Apr. 1938