

4849

Diag. Cht. No. 1207-2

Form 504
 DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY

State: Massachusetts

11-5613

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 1 **4849**

LOCALITY:

Cape Ann

Gloucester Harbor & Inner Harbor

Annisquam Canal & Little River

1928

CHIEF OF PARTY:

Raymond P. Eyma

4849

Descriptive Report
to accompany
Hydrographic Sheet No. 1.

(1) Authority.

The work on this Sheet was executed under instructions from the Director dated May 22, 1928 to Lt. R.P. Eyman, Chief of Party, Gloucester Shore Party.

(2) Limits and Scale.

The area on this Sheet covered by hydrography includes the upper part of Gloucester Harbor, the Inner Harbor, the southern part of Annisquam River, and Little River.

The scale of the projection is 1 to 5000.

(3) Survey Methods.

All signals on this Sheet were either transferred from Topographic Sheet A or were triangulation points.

The hydrography was executed in the usual manner from a small boat using a hand lead line and positions fixed by the usual sextant angles. All of the work in the Outer Harbor and much of the Inner Harbor was done from a 30 ft. power launch and the work in shoal areas, between slips etc. was carried on from a very small skiff or dinghy.

In the neighborhood of the docks and slips three point sextant fixes were obtained wherever possible but a large part of the work was done by measuring distances from previously determined points on the docks; these measurements were made by means of a long bamboo fishing pole marked off in meters. In general the work proceeded from a start at position "1 L" day off Fort Point in the skiff and thence working to the northward in and around the slips consecutively with the reference points bearing on the port hand of the boat. The work in the slips was greatly hindered by the numbers of fishing boats lying at berths, and at times, as much as five to six deep off the faces of the docks. The distances off the docks were preserved as much as possible by measurements at frequent intervals with the pole and in many cases the skiff had to be abandoned and the leadsman and "measurer" proceeded on foot climbing over boats and docks taking soundings at about 4 to 5 meter intervals (as measured with the pole); at the inner ends of slips, if impossible to proceed further, the "measurer" would be placed ashore and measure the distance to the head or outboard end of slip. This method made the taking of soundings occur at all sorts of time intervals, but the actual time of each sounding as taken was recorded and the distances between soundings should be spaced uniformly in as much as definite spacing was measured as far as possible.

Thruout the sheet little or no work was done with compass courses as practically all lines were run on ranges.

2

JTWalks

(4) Dangers.

✓ The ledges in the Outer Harbor, Field Rocks, and the ledge near buoy #5 were investigated.

✓ A 24 ft. spot was found in a general depth of 30 ft. about 663 meters W x S of Ten Pound Lt.

✓ In the area 538 meters W x S of Ten Pound Lt. a 26 ft. spot was searched for but nothing less than 32 ft. was found. On the blue print of the wire drag work in this area is a note that a 28 ft. drag passed this 26 ft. spot. Considerable time was spent drifting around and feeling for shoal indications in this vicinity but the general depth seemed to be about 33 ft.

✓ On Prairie Ledge 841 meters SW x W of Ten Pound Lt. a least depth of 26 ft. was found surrounded by 30 ft. The chart shows a 25 ft. spot near this but nothing less could be found.

✓ A 28 ft. spot was found as charted 949 meters S.W. of Ten Pound Lt., in fact two separate spots with deeper water between were found here.

✓ On the lower spot of Ten Pound Island Ledge a least depth of 21 ft. was found 724 meters S.W. of Ten Pound Lt.

✓ On the upper end of Ten Pound Id. Ledge a least depth of 18 ft. was found 603 meters S.W. of Ten Pound Lt.

✓ On the lower spot of Mayflower Ledge a least depth of 19 ft. was found 422 meters S.W. of Ten Pound Lt.

✓ On the upper spot of Mayflower Ledge a least depth of 21 ft. was found 214 meters S.W. of Ten Pound Lt.

On all the above shoal spots the launch was allowed to drift slowly about the shoal area with the lead almost constantly on the bottom, feeling for the shoal indications; after drifting across the shoal the engine would be used intermittently to work back across the shoal to windward; only comparatively few characteristic soundings and positions were recorded, except that as the least depth was obtained from time to time that sounding and position would be recorded

✓ A shoal spot with a least depth of 22 ft. surrounded by deeper water was found 175 meters N.x W. of Ten Pound Lt.

✓ A decided hole or pocket was found 421 meters N.W. of Ten Pound Lt. with a greatest depth of 43 ft. and surrounded by a general depth of about 29 ft.

✓ On Babson Ledge a least depth of 14 ft. was found 480 meters N.x W. of Ten Pound Lt.

The area westward of Prairie Ledge into Freshwater Cove contains a number of shoal indications in the vicinity of previously charted shoals. Lack of time did not permit an investigation of these as the instructions called for a development of the channel and above ledges before continuing work in the Outer Harbor if found possible.

In the vicinity of Field Rocks there are three prominent rocks as noted in the Descriptive Report for the Topographic Sheet. While sounding around this area several other rocks were noted as shown on the boat sheet - in fact the entire area in between the three prominent rocks appears to be foul.

(5) Channels.

A general depth of channel of about 28 ft. can be carried to a position off the entrance to the Inner Harbor and north of Ten Pound Island. From this point the depth decreases into the Inner Harbor and only about 14 ft. can be carried to the faces of the various docks, with shoaler water, as a rule, in the slips.

The channel thru the Annisquam River is a dredged cut on this sheet with a least depth of 6 ft. in several spots, one spot about 63 meters W. of beacon #7, another 125 meters N. of "Cat", and another area 125 meters W.N.W. of beacon #8. The channel is narrow with shoal areas on both sides.

A very narrow channel having a controlling depth of about 7 ft. can be carried into Little River to a point where the River makes a sharp bend to the south, from which point 6 ft. can be carried a further distance of about 250 meters. This channel is very narrow and unmarked and is best followed at extreme low tide when the banks on either side are then well defined.

(6) Anchorage.

Large vessels find good anchorage in the Outer Harbor in about 30 ft. of water, sticky bottom, about 400 meters to the eastward of Stage Head. Vessels of moderate draft find good anchorage in the Inner Harbor to the S.W. of Five Pound Island. Numbers of small boats and yachts anchor to the S., S.E., and E. of Five Pound Island, Smith Cove, and a few in the channel of Little River. Many small boats anchor in the upper end of Smith Cove and in the upper end of Little River, but almost all are grounded at low tide.

(7) Currents.

Tidal currents in the Outer and Inner Harbor are of very moderate strength. Currents thru the dredged cut into the Annisquam River are very strong and at times make rips near the highway bridge that are dangerous for small boats and make the manouvering of larger boats very difficult; these currents loose much of their strength by the time beacon #10 is reached. Near the end of the ebb tide very strong currents run out of the narrow channel in Little River.

(8) Tide Data.

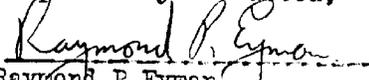
The work in the Outer and Inner Harbor and that part of the Annisquam River to beacon #10 was refered to a standard automatic tide gauge maintained at Ten Pound Island.

The rest of the Annisquam River and Little River work was refered to a plain staff gauge located at the base of Wolf Hill.

(9) Conclusion.

Accompanying this report is a table of statistics, a tide data sheet, a table of tide reducers, and a blue print showing soundings taken by the State in Harbor Cove.

Respectfully submitted,


Raymond P. Eyman,
Chief of Party.

Statistics Sheet #1
Gloucester Harbor.

Date	Day	Stat. mi.	Soundgs.	Positions.	*Boat	Vol.
1928.						
Oct. 3	a	16.0	302	90	L	1
4	b	17.7	572	163	L	1
5	c	8.5	729	245	L	1&2
6	d	6.5	321	77	L	2
9	e	12.0	569	132	L	2
10	f	17.7	691	180	L	2
11	g	6.2	623	128	D	2&3
12	h	10.0	651	157	D&L	3
13	j	1.0	172	30	D	3
18	k	3.0	334	76	D	3
20	l	1.8	425	120	D	4
24	m	4.3	836	179	D	4
29	n	2.9	243	67	L	4
Total	13	101.6	6468	1644		4

Area 1.6 sq. stat. mi.

* L is Launch

D is Dinghy or skiff.

Tide Data Sheet.

Ten Pound Island Tide Station.

Gauge Used: Standard automatic.

Location: Fisheries Dock, Ten Pound Id.

Levels.

B.M.	Elev. above 0 of 1928 staff
1	31.967
2	32.301
3	32.229
4a	36.214
5	33.856
6	29.545
7	20.050
8	34.425
9	38.134
10	34.005
11	38.670
12	30.046

Tide Planes.

Plane	Rdg. on 1928 staff.
Highest tide observed	16.86
M.H.W.	13.34
M.T.L.	9.00
M.L.W.	4.66
Lowest tide observed	1.36
Mn.	8.68

Wolf Hill Tide Station.

Gauge used: Plain staff

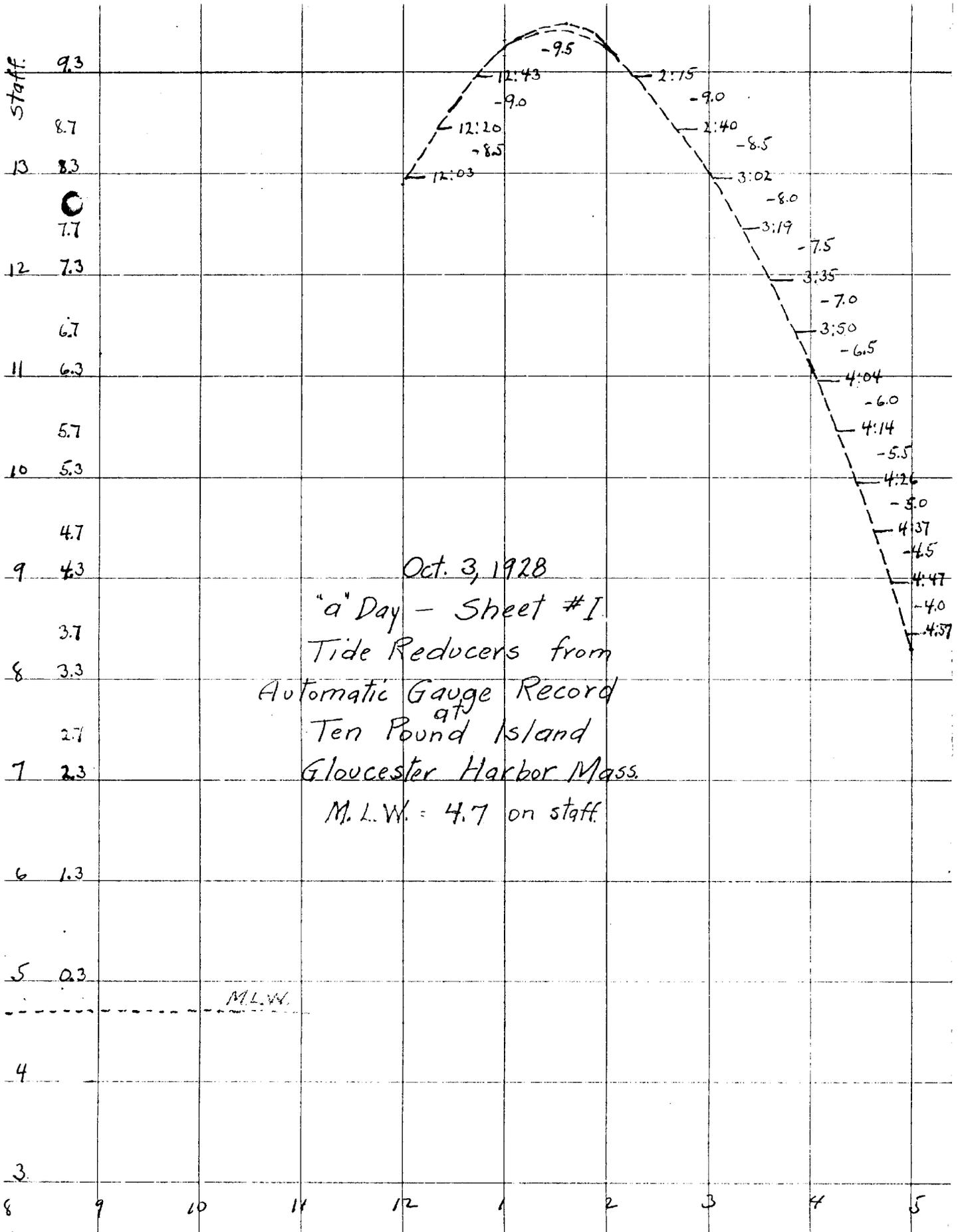
Location: Base of Wolf Hill, E. side of River.

Levels.

B.M.	1	2	3
Elev. above 0 of 1928 staff	18.279	14.801	19.531

Tide Planes.

Plane	Rdg. on 1928 staff.
Highest tide obs.	12.7
M.H.W.	11.09
M.T.L.	6.62
M.L.W.	2.15
Lowest tide obs.	1.0
Mn.	8.94

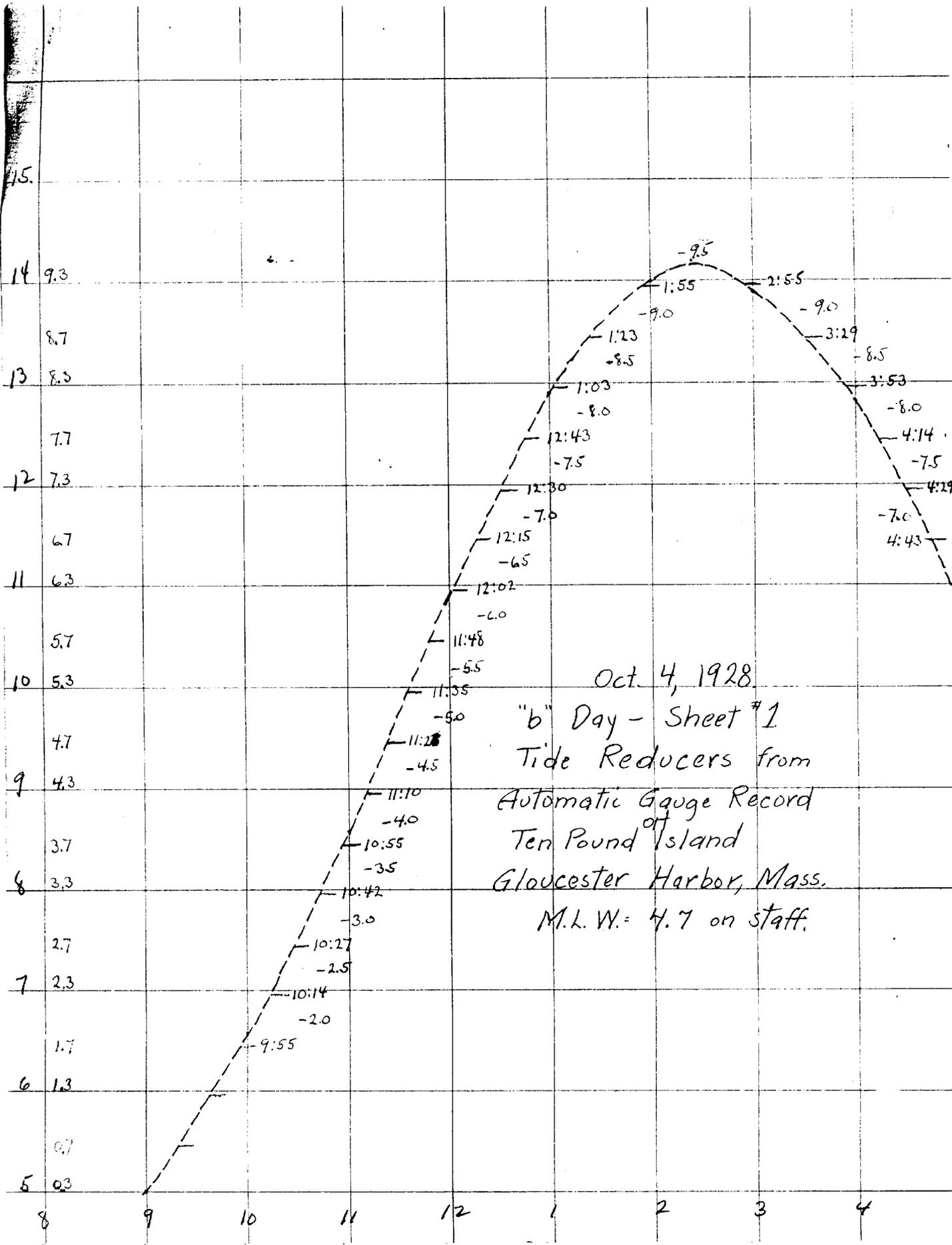


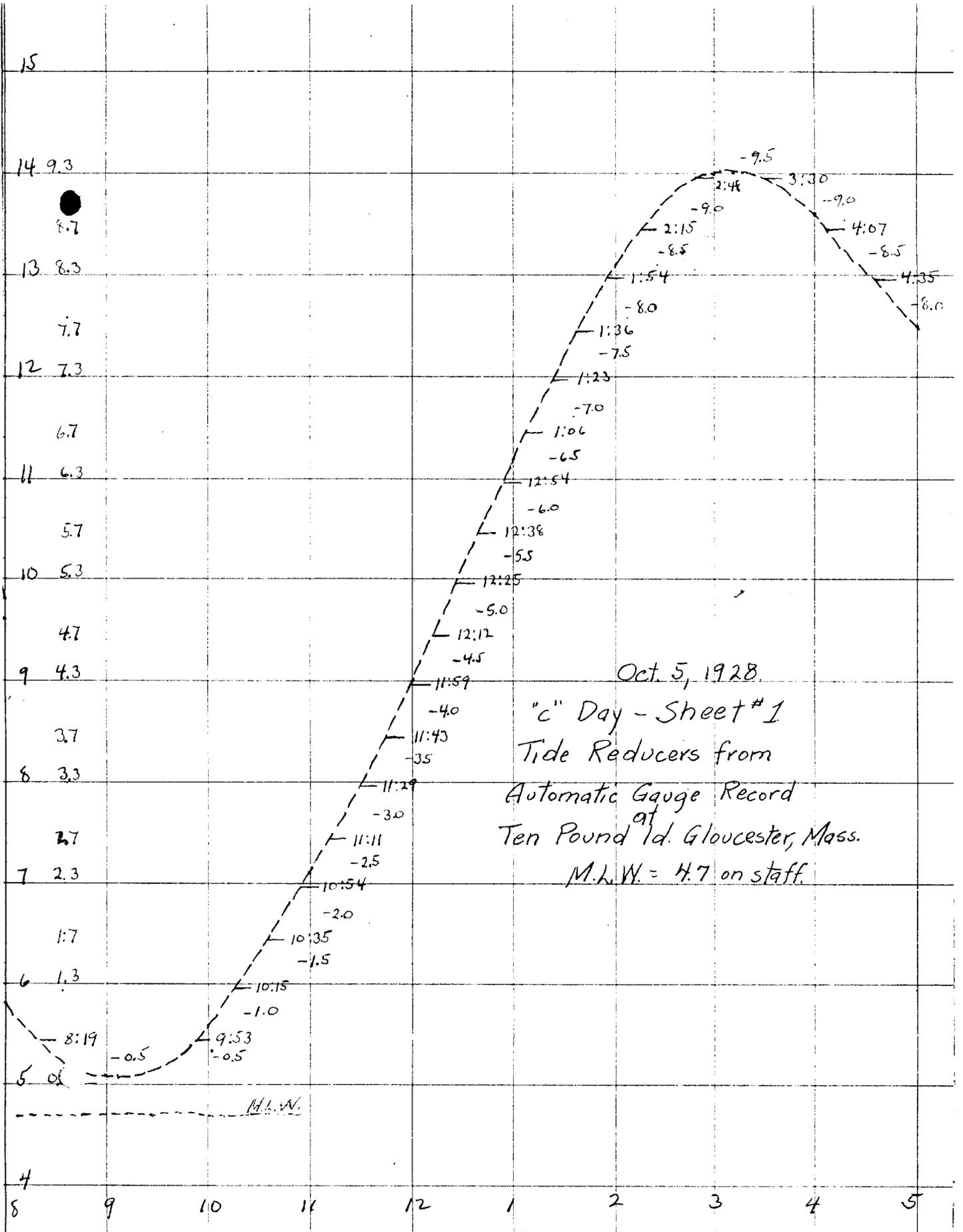
Oct. 3, 1928

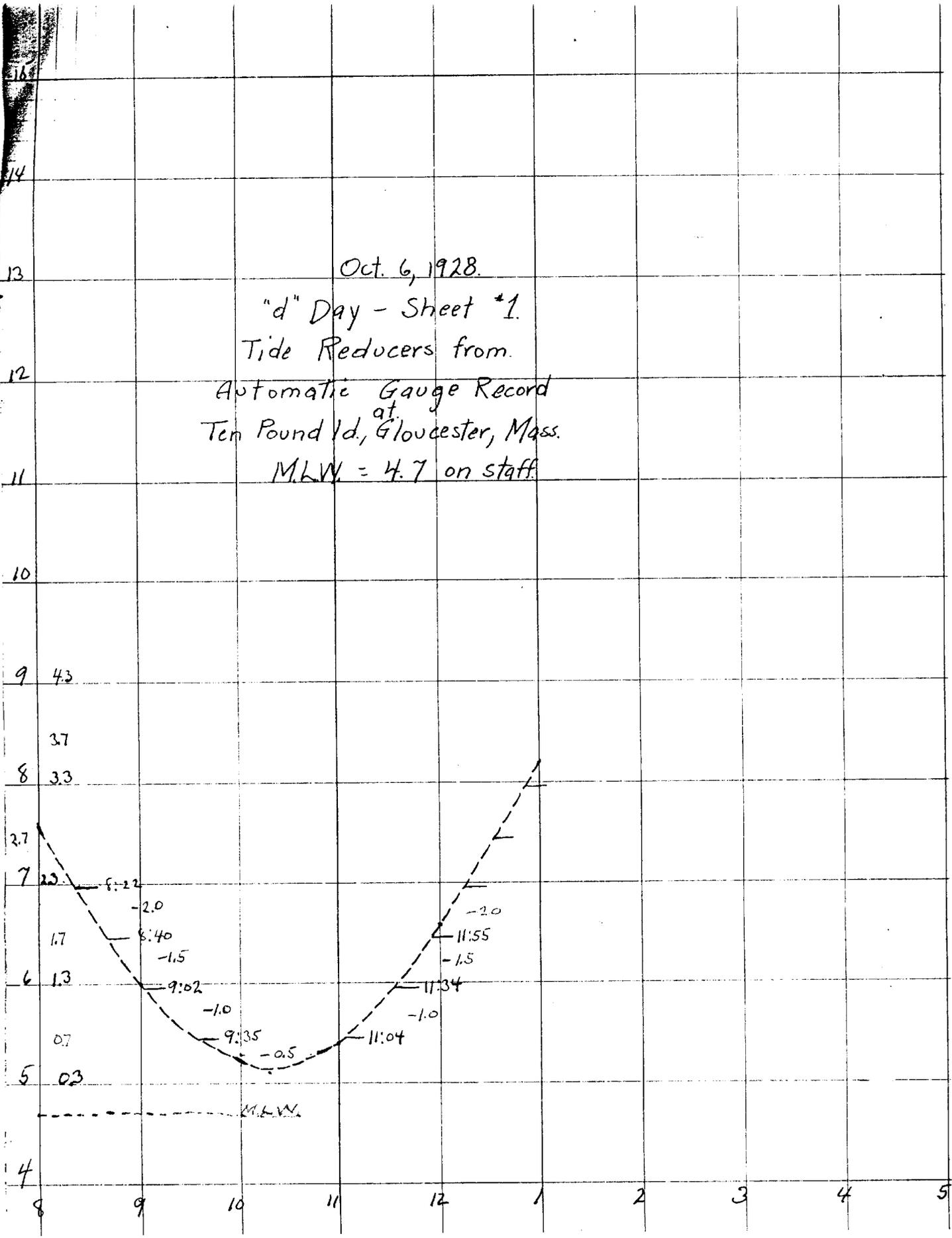
"a" Day - Sheet #I.
 Tide Reducers from
 Automatic Gauge Record
 at
 Ten Pound Island
 Gloucester Harbor Mass.

M. L. W. = 4.7 on staff.

M.L.W.

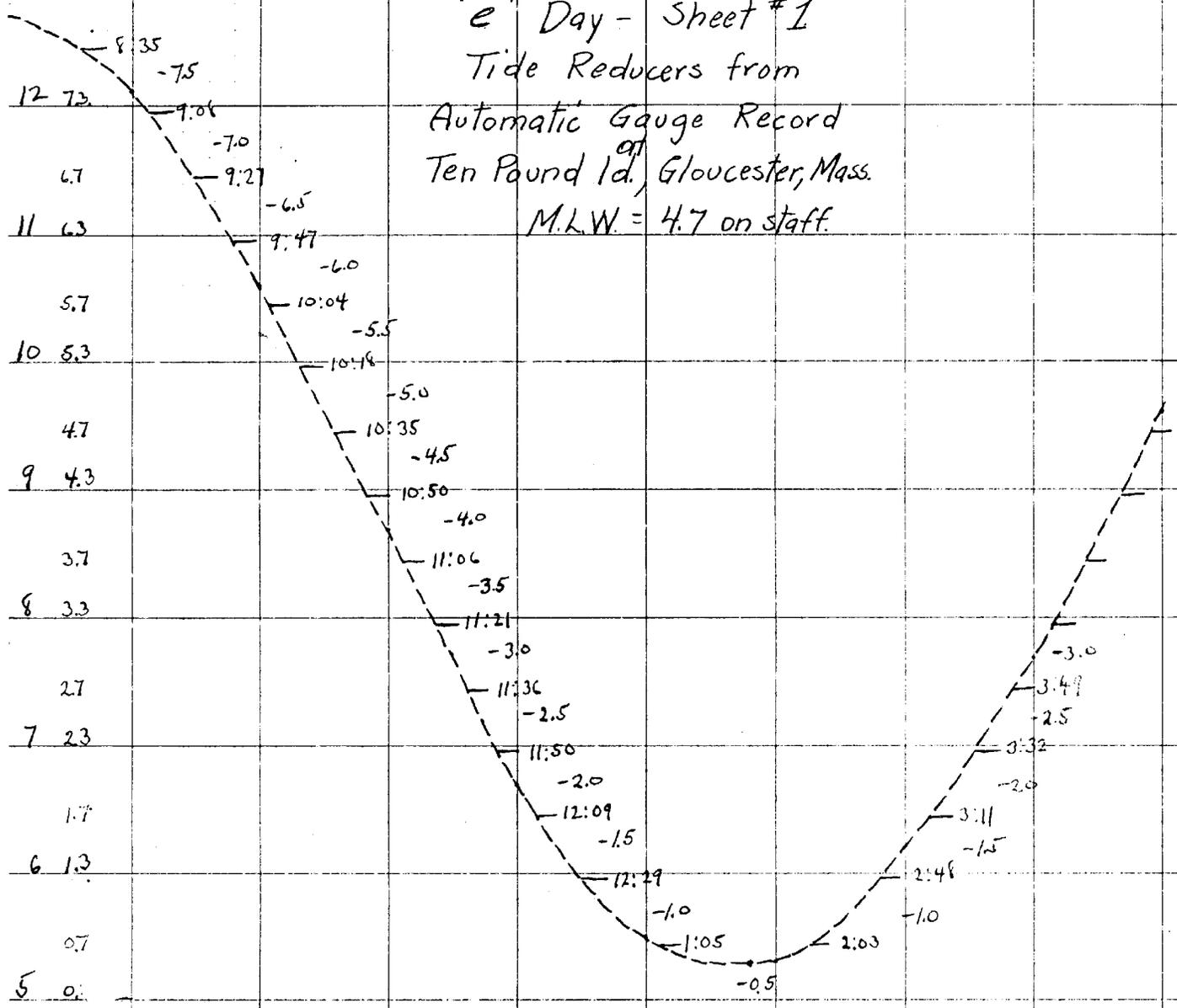




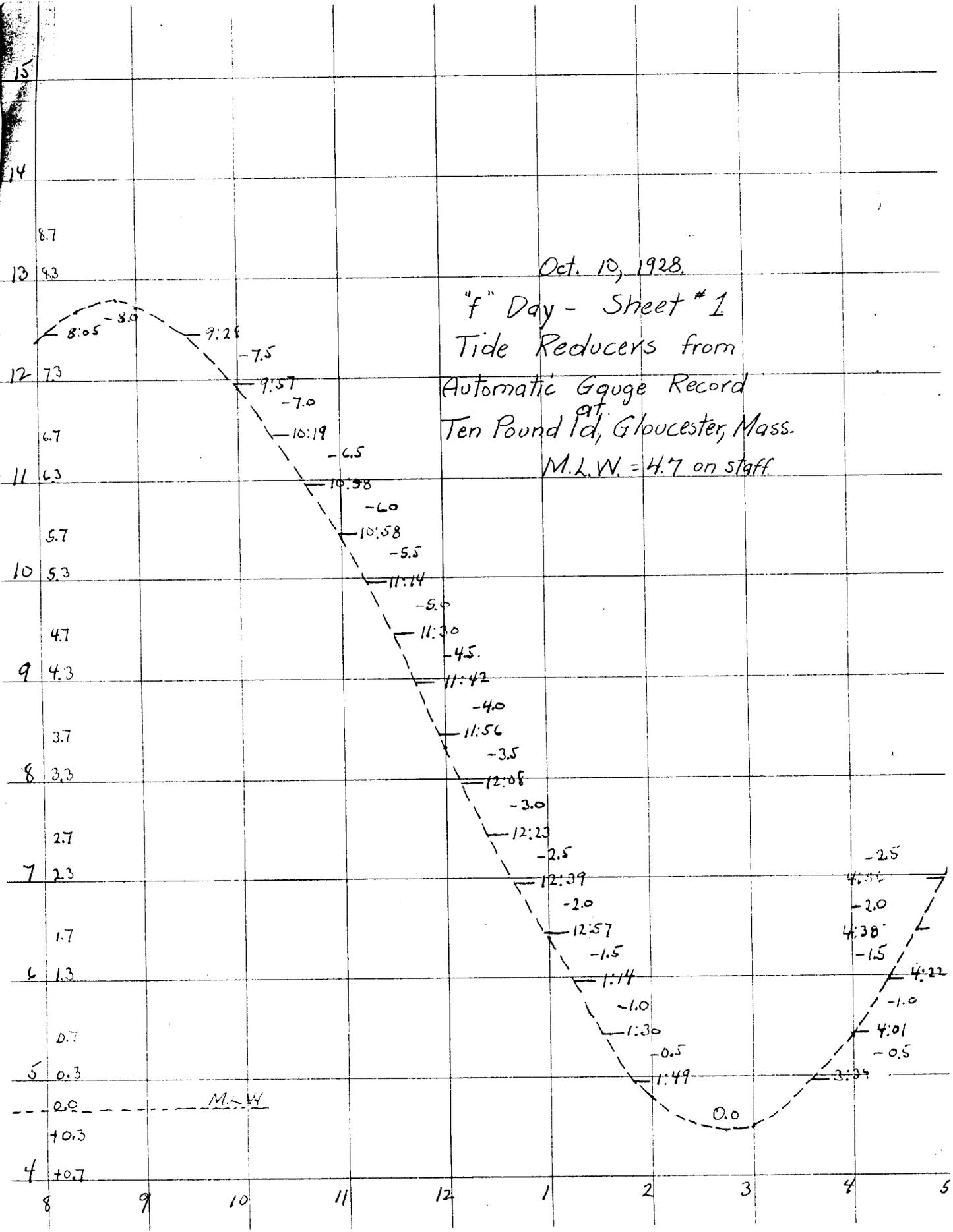


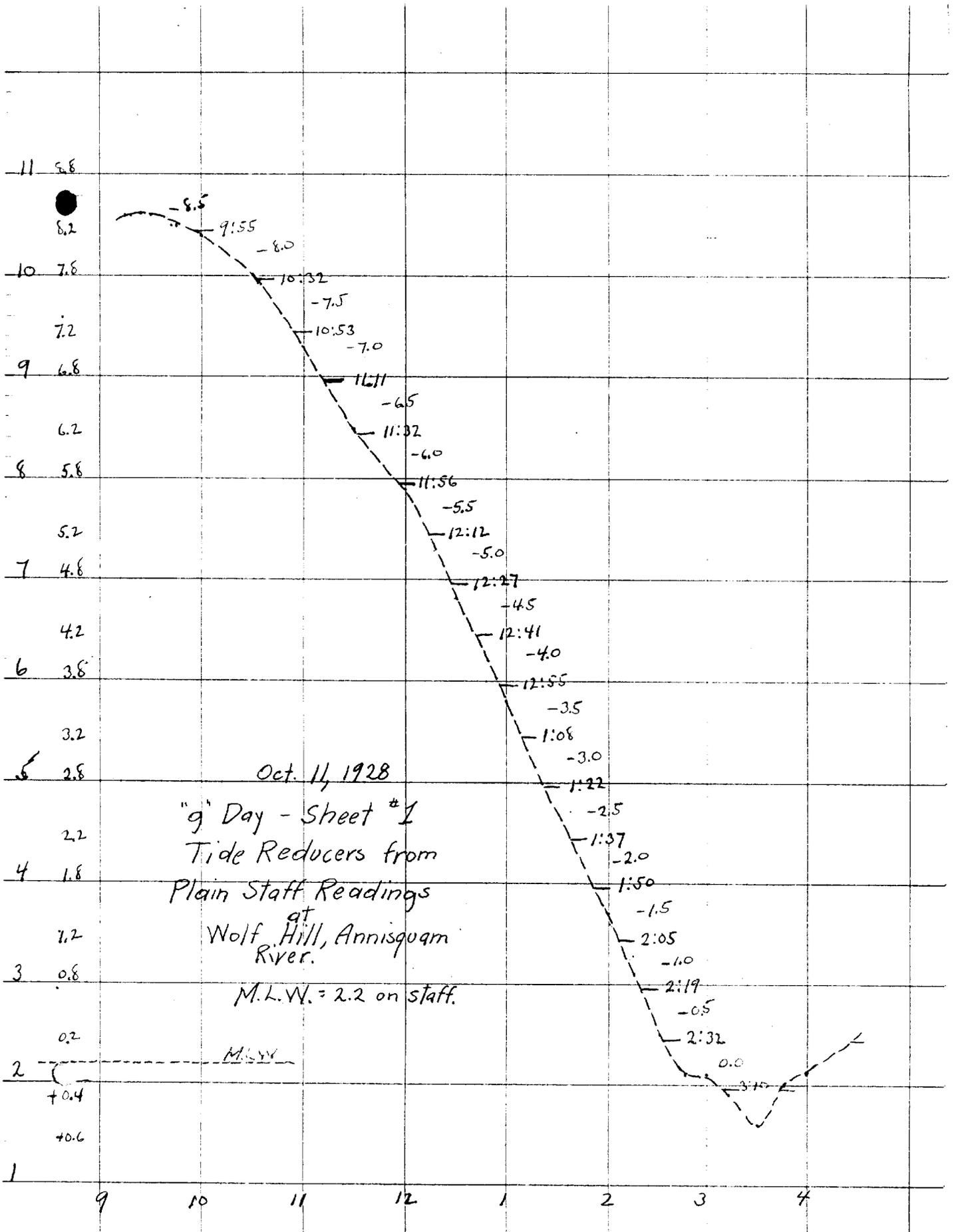
15
14
13 6.3
12 7.3
6.7
11 6.3
5.7
10 5.3
4.7
9 4.3
3.7
8 3.3
2.7
7 2.3
1.7
6 1.3
0.7
5 0.
4
8 9 10 11 12 1 2 3 4 5

Oct. 9, 1928.
"e" Day - Sheet #1
Tide Reducers from
Automatic Gauge Record
Ten Pound Id., Gloucester, Mass.
M.L.W. = 4.7 on staff.

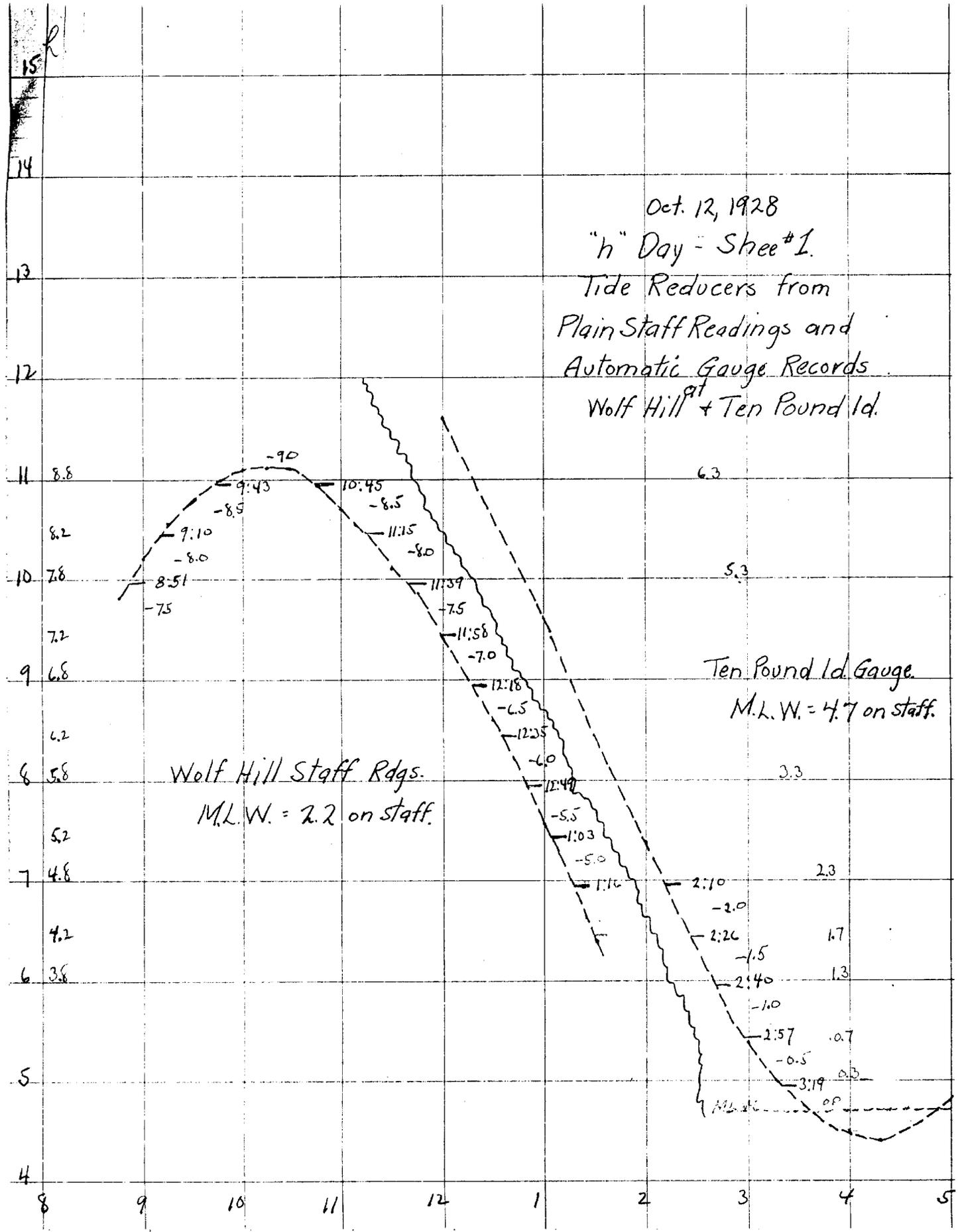


M.L.W.



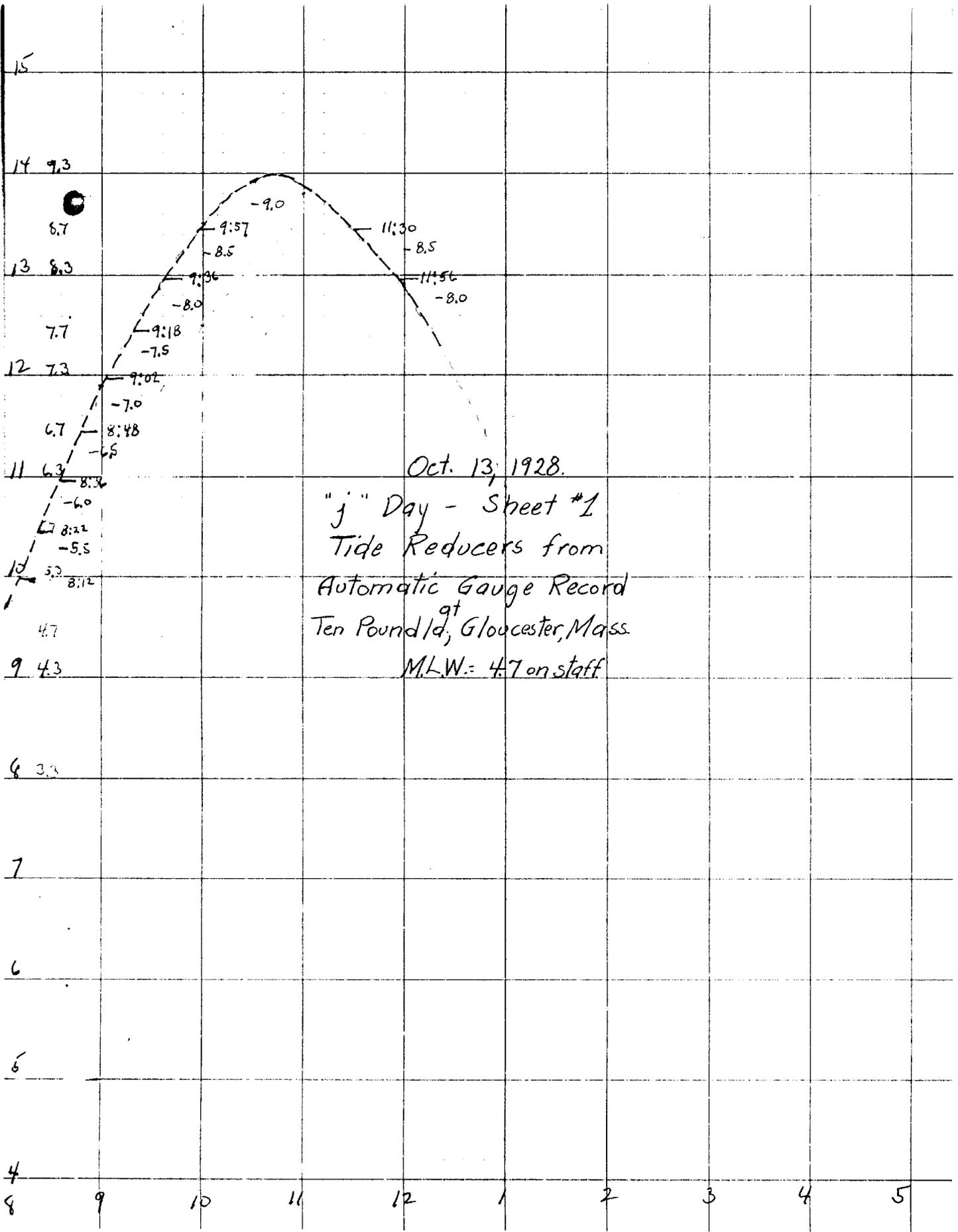


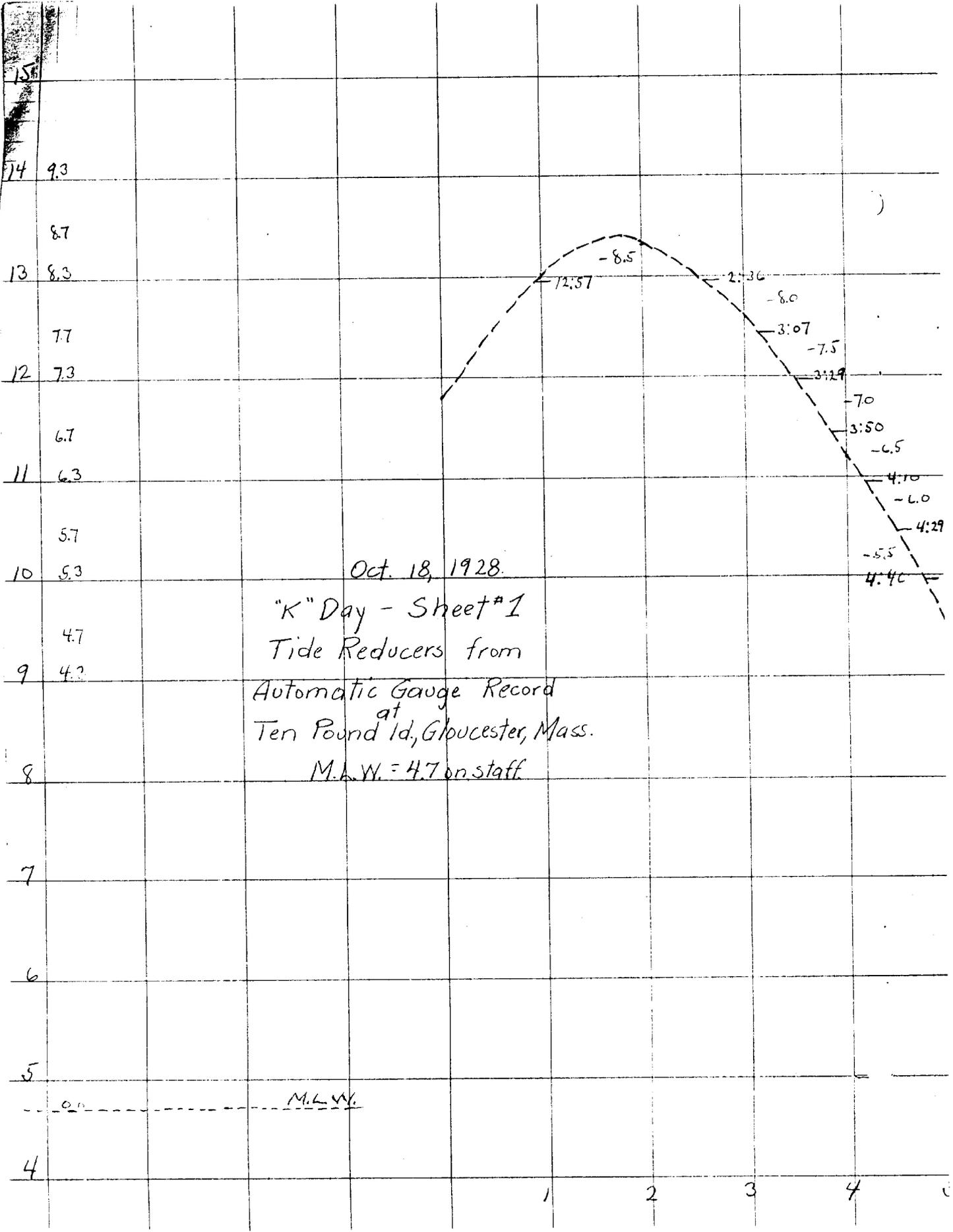
Oct. 12, 1928
 "h" Day - Shee #1
 Tide Reducers from
 Plain Staff Readings and
 Automatic Gauge Records
 Wolf Hill^{at} + Ten Pound Id.



Wolf Hill Staff Rdgs.
 M.L.W. = 2.2 on staff.

Ten Pound Id. Gauge.
 M.L.W. = 4.7 on staff.





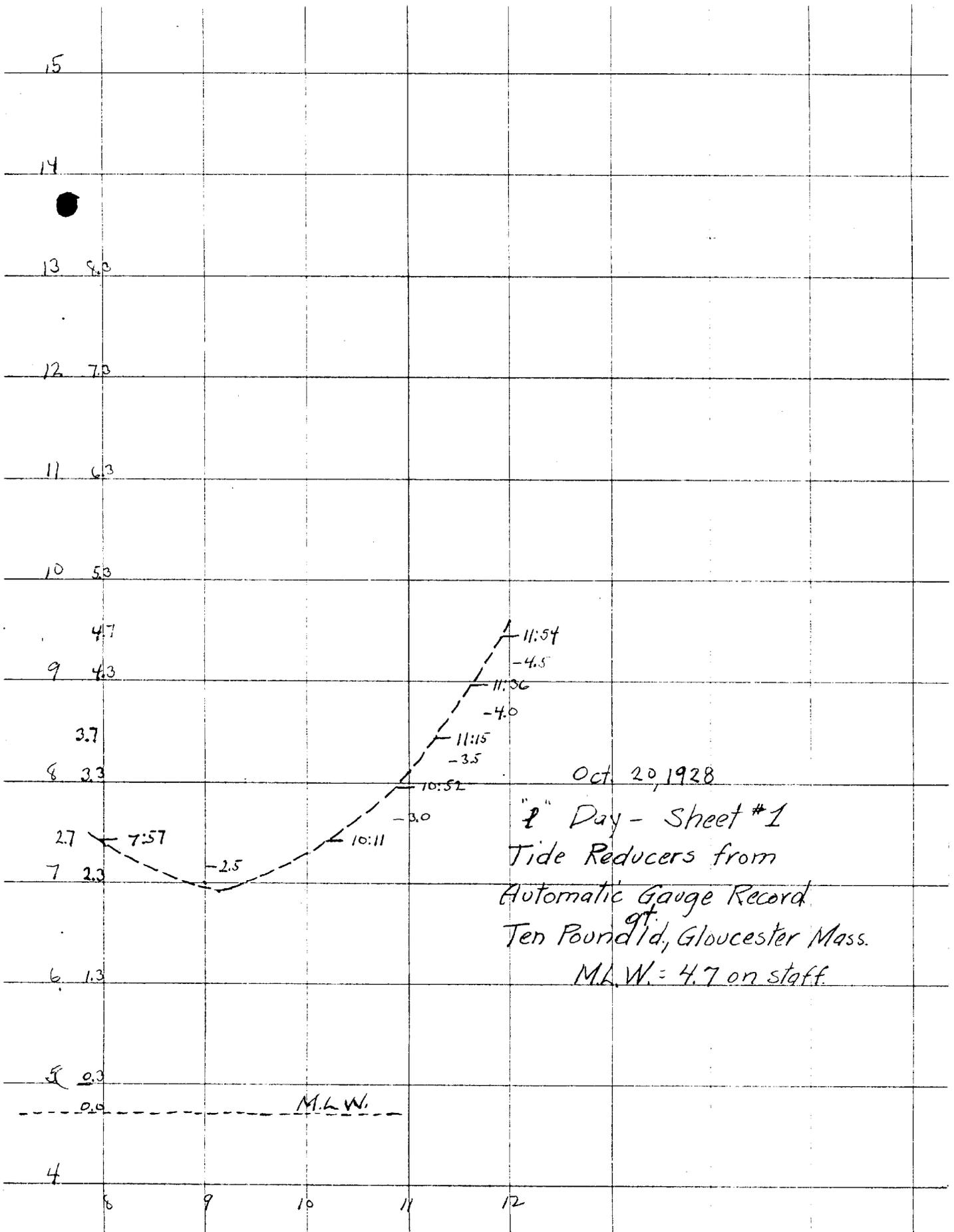
Oct. 18, 1928.

"K" Day - Sheet #1
Tide Reducers from

Automatic Gauge Record
at
Ten Pound Id, Gloucester, Mass.

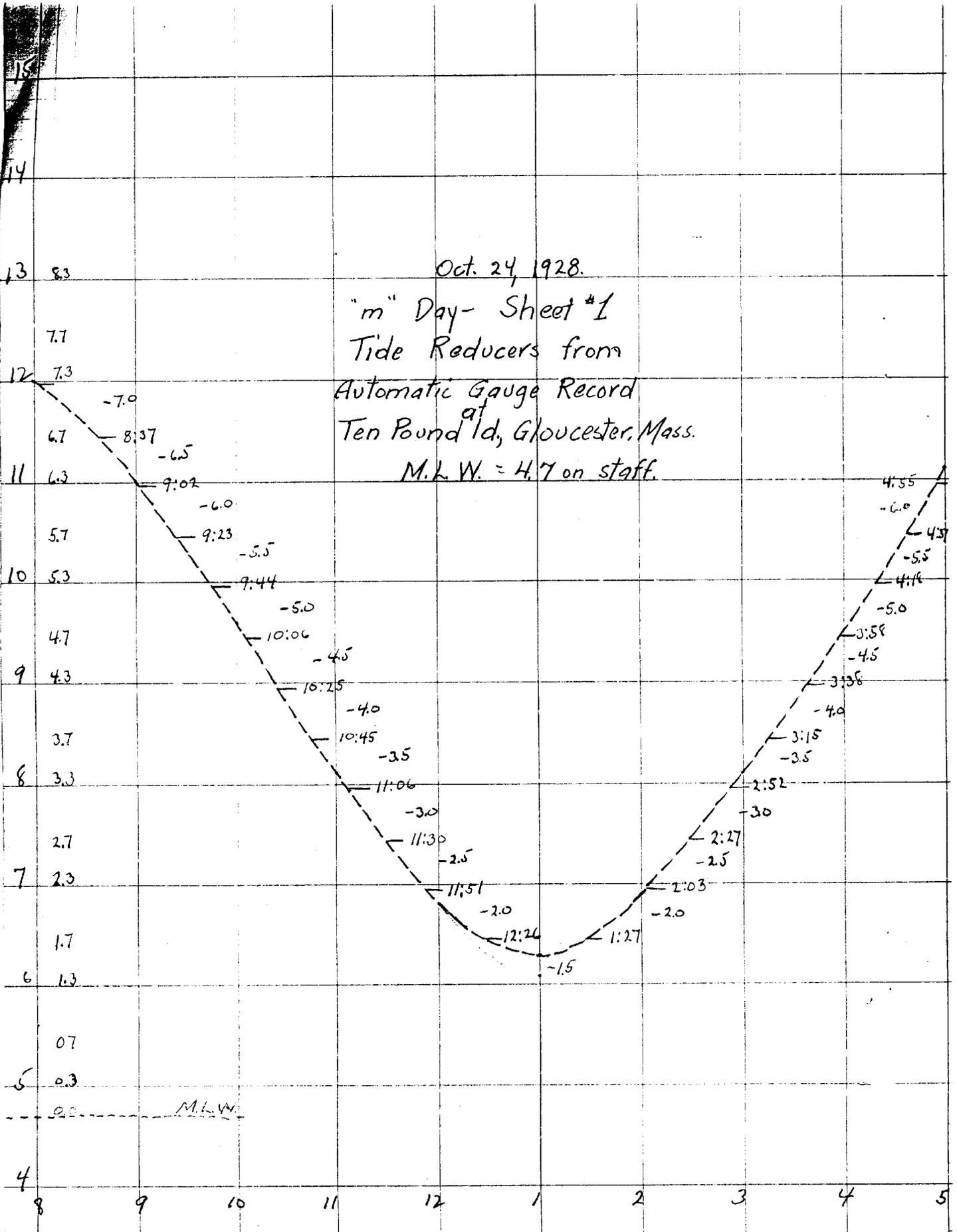
M.L.W. = 4.7 on staff

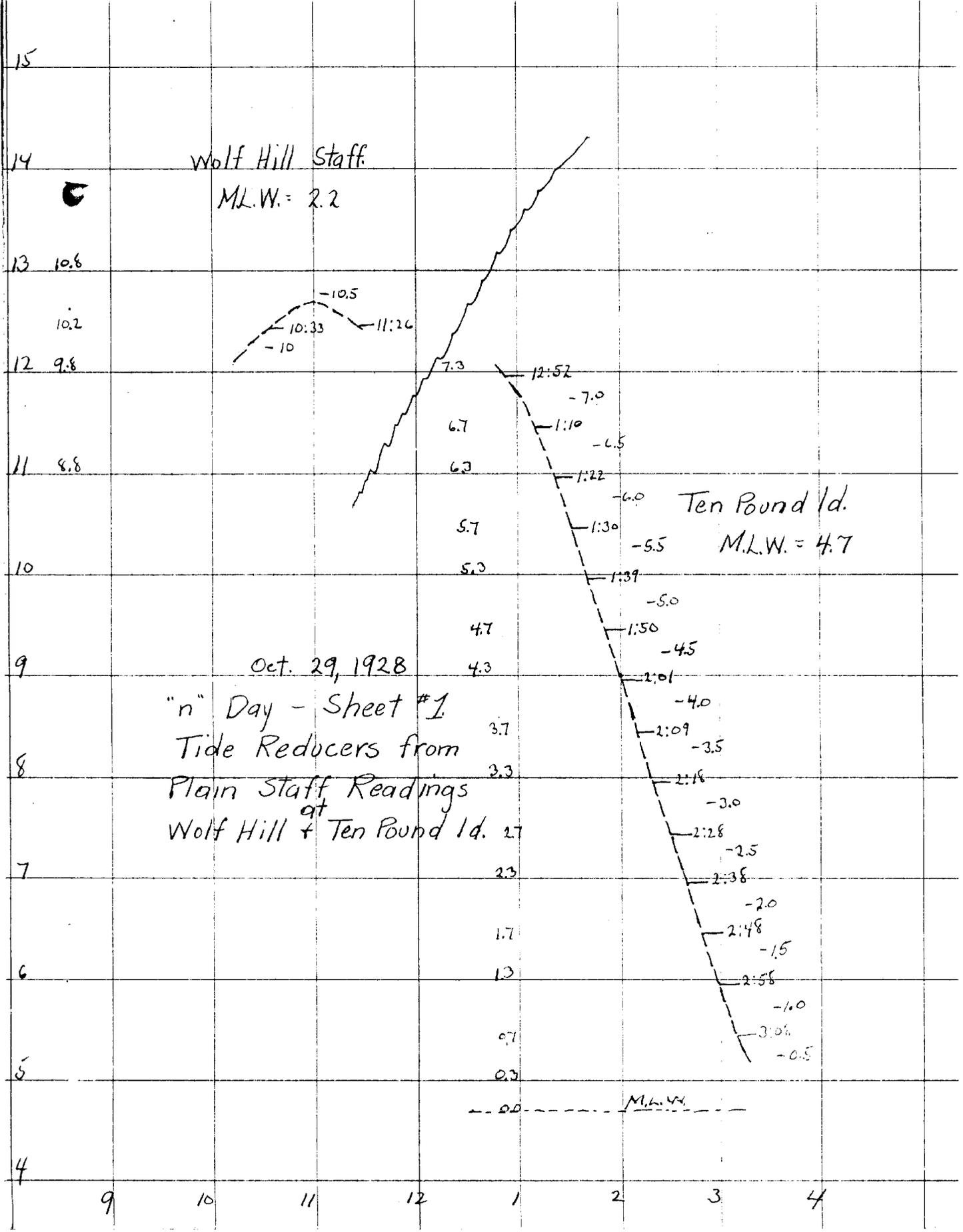
M.L.W.



Oct. 24, 1928.

"m" Day - Sheet #1
Tide Reducers from
Automatic Gauge Record
at
Ten Pound Id., Gloucester, Mass.
M.L.W. = 4.7 on staff.





Section of Field Records

Report on sheet 4849

Chief of Party R.P. Eymann

Protracted by R.P.E.

Verified & Inked by J. Walker

Surveyed in 1928

Surveyed by R.P.E. &
L.C. Johnson

Soundings plotted by R.P.E.

The sounding records were neat and complete. The protracting was very well done. In the 16 foot shoal S.W. of signal Ten, there were a number of positions plotted which had no numbers, making it necessary to reprotract the positions in order to determine the number.

The soundings were carefully plotted and the time intervals were adhered to — practically all the intervals were uniform. In most cases the field plotter used fractions on depths less than two feet. On critical depths the office verifier also plotted them in fractions and in some cases fractions were used when they affected the depth curve.

Most of the shoals and channels seemed to be sufficiently developed.

The sheet was clean and legible when received.

The drafting conformed to General Instructions.

Between pos 13 and 14 of the sounding line crosses a small island.

*a note in the records at position 31f gives a rock ten meters ahead, for which there is no other authority.

An eleven foot sounding between 8 and 9 d was rejected. A 14 foot sounding was rejected at 9d. An 8 foot sounding at 36e was rejected. These three soundings should be investigated by the final reviewer as some of them might be acceptable.

Reviewed by

Date

Respectfully submitted

J. Walker

4/13/29

* Capt Eymon says this rock is more than 10 m. It is probably one of the rocks already located and should not be plotted.

J.W.

Division of Hydrography and Topography:

Mar. 25, 1929.

Division of Charts:

Tide Reducers are approved in
4 volumes of sounding records for

HYDROGRAPHIC SHEET 4849

Locality: Gloucester Harbor and Annisquam R., Massachusetts.

Chief of Party: R. P. Eymann in 1928

Plane of reference is Mean low water, reading

4.6 ft. on tide staff at Ten Pound Island, Gloucester Harbor

~~XXXXXXXXXXXX~~

2.2 " " " " " Wolf Hill, Annisquam River

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

[Paul C. Whitney

Chief, Division of Tides and Currents.

Section of Field Records
Report on Hyd. Sheet No. 4849
Gloucester Harbor, Mass.
Surveyed in 1928

Instructions dated May 22, 1928 (Lieut R.P. Eymann)

Chief of Party - R. P. Eymann

Surveyed by - R. P. Eymann and L. C. Johnson

Protracted and plotted by R. P. Eymann

Verified and inked by J. T. Walker

1. The records conform to the requirements.
2. The plan and character of development conforms to the requirements of the General Instructions.
3. The plan and extent of the survey satisfies the specific instructions.
4. The sounding line crossings are satisfactory.
5. The information is sufficient for drawing the usual depth curves.

6. The junction with H. 4851 is satisfactory.

7. Comparison with old surveys.

a. The wire drag survey made in 1916, H. 3950, shows a number of soundings about two feet shallower than the depths obtained on this survey (H. 4849). These soundings should be retained on the chart as they are not disproved by this work. There is one sounding of 26 ft. on H. 3950, in Lat. $42^{\circ}-36.05'$, Long. $70^{\circ}-40.35'$, which was partially discredited at the time of the old survey, because it had been passed by a 28 ft drag without touching. A rather intensive development of this spot fails to show any depth under 32 ft. With this additional evidence, it was decided to drop the 26 ft. sounding from the chart, but the adjacent 30 ft. soundings will be retained.

b. In the absence of the wire drag, the four charted 18 ft spots between red spar buoy No 6 and Ten Pound Id, will be retained although the examinations on this sheet did not show a depth that shoal on three of these ledges.

* These shoals were verified from the records
of the old sheet (H. 2511) and in each case found
to be boulders surrounded by deeper depths

c. In the area between triangulation station Ham and black spar buoy No 3, there is a sharp disagreement between the hydrography on this sheet and the charted depths, which were taken from H. 2311. The charted shoal spots will be retained until a further examination can be made.

d. There are three rocks shown on chart #243, in Lat. $42^{\circ}-35.8'$, Long. $70^{\circ}-40.9'$. Only one of these is located on this sheet, by an estimated distance from a sounding line. These rocks are indicated on three of the old hydrographic surveys and should be retained in their present positions.

8. The usual amount of field plotting was well done by the field party. The questions mentioned in the verifier's report were investigated and settled.

9. Character and scope of surveying - Very good, except for the failure to note the differences mentioned in par. 7c

10. Additional work is necessary in the area between triangulation station Ham and black spar buoy No. 3. This area should be closely

developed in order to determine whether changes
have occurred since the old survey in 1897. (#2311)

Reviewed by R.L. Johnston

May 31, 1929.

Note: In 1932 a vessel struck an
uncharted rock in approaches to
Gloucester Harb.

The field party had an
indication of this rock
but apparently it was
not developed.

J.S.B.

Located by Corps of Engineers on
blueprint #25978, Feb. 1932.

L.C.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4849

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

Number of positions on sheet . 1644
Number of positions checked . 389
Number of positions revised . . . 3
Number of soundings recorded . 6468
Number of soundings revised . . ?!
Number of signals erroneously
plotted or transferred 0

Date: - April 13, 1929 - - - - -

Cartographer: - J. Walker - - - - -

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. 4849

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. 1

REGISTER NO. 4849

State Massachusetts

General locality Cape Ann

Locality Gloucester Inner and Outer Harbor

Scale 1:5000 Date of survey October 3-29, 1928

Vessel U.S.C. & G.S.L. #65

Chief of Party Raymond P. Eymann, H. & G. E.

Surveyed by R. P. Eymann and L. C. Johnson

Protracted by R. P. E.

Soundings penciled by R. P. E.

Soundings in ~~#####~~ feet

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated May 22, 1928

Remarks: Blue print showing soundings in Harbor Cove

accompanies sheet.