No doubt some may think that this method is impracticable, and that too many things may go wrong with the apparatus. The proof of the pudding is in the eating, however, in spite of the skepticism of various members of the party it did work and its use is recommended. After a season's experience the writer believes that a considerable saving in time, labor and material can be effected in the whitewashing of rock or earth signals, and that a much whiter signal is obtained due to more complete coverage of the ground by means of this method than by the ordinary brush method.

Where signals were whitewashed on dirt bluffs and it was believed that they would be needed the following season, they were marked by galvanized iron pipes driven into the bluffs. This method of marking them temporarily was considered satisfactory as the pipes could be easily found the following season.

It is recommended that each whitewash party, using the equipment described, carry several spare piston cup type washers, a screw-driver and a pair of pliers. The valve at the bottom of the pump should be examined from time to time. With these simple precautions, there should be no difficulty in keeping the spray gun in first-class working order at all times.

# CALIBRATION OF TAUT-WIRE APPARATUS

by

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U.S. COAST AND GEODETIC SURVEY.

*(Reprinted from « Field Engineers Bulletin » N° 12, Washington D. C., December* 1938, *page* 84.)

The accompanying illustration shows the method used in calibrating the registering sheave of the Ship *Hydrographer's* taut-wire apparatus in 1937 ; a method which is believed to be the most accurate and satisfactory of any heretofore used. The previous calibration of the sheave was made in 1935, over the one-mile speed course in the Gulf of Mexico near the Southwest Pass of the Mississippi River. Since that period, about 1,000 miles of wire had been used in measuring taut-wire traverses and the 1937 calibration was undertaken to ascertain if this extensive use of the registering sheave had changed the conversion factor.

The proximity of the *Hydrographer's* working grounds during the 1937 field season to the Houston Ship Channel was particularly fortunate in that a section of this Channel, marked by four pairs of firmly built beacons, provided a straight course of four miles and simulated the actual conditions of a taut-wire traverse between two or more survey buoys.

The four beacons Nos. 1, 3, 5 and 7, located on the east side of the channel, were used as reference points. Since their positions had been determined by second order triangulation in 1933, the distances between adjacent beacons, as well as the distance between the two end beacons, were obtained by inverse position computations. The latter distance was checked by solving the quadrilateral Grain-Moore-Beacon 1 — Beacon 7 from the adjusted triangles, as shown on the sketch.

In the operations for calibration, the wire, secured to a 75- pound weight, was lowered to the bottom about 3/4 mile from the first beacon, and the engines started. Speed was uniformly increased so that standard sounding speed was obtained prior to passing abeam of the first beacon. This speed was maintained throughout the test while a tension of 38 to 40 pounds, as indicated on the dynamometer of the apparatus, was kept on the wire and the ship conned carefully on a straight course.

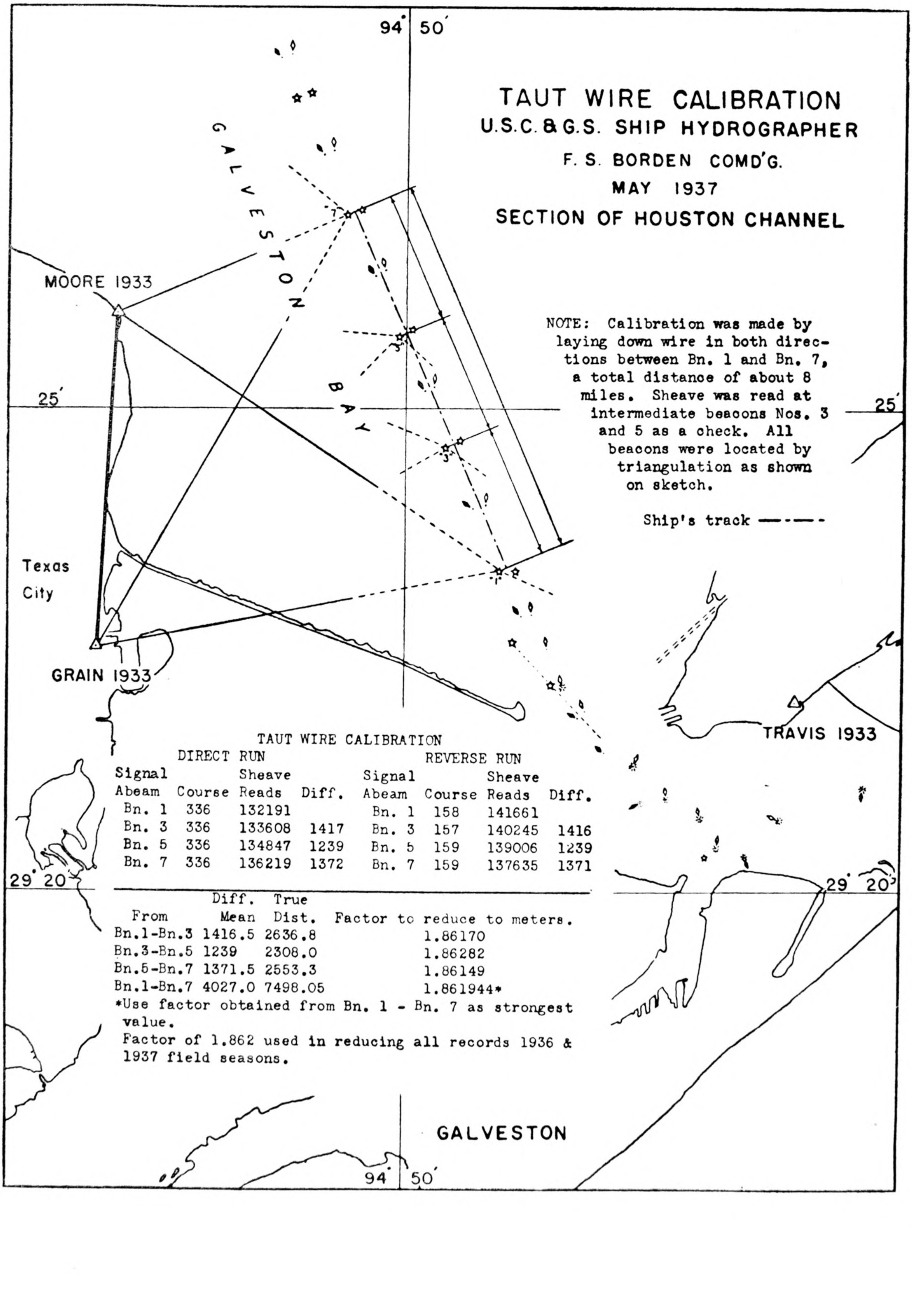
# TAUT WIRE CALIBRATION

## U.S.C.& G.S. SHIP HYDROGRAPHER

F. S. BORDEN COMD'G.

MAY 1937

SECTION OF HOUSTON CHANNEL




NOTE: Calibration was made by laying down wire in both directions between Bn. 1 and Bn. 7, a total distance of about 8 miles. Sheave was read at intermediate beacons Nos. 3 and 5 as a check. All beacons were located by triangulation as shown on sketch.

Ship's track ---·---

TAUT WIRE CALIBRATION

| DIRECT RUN | | | | REVERSE RUN | | | |
|---|---|---|---|---|---|---|---|
| Signal Abeam | Course | Sheave Reads | Diff. | Signal Abeam | Course | Sheave Reads | Diff. |
| Bn. 1 | 336 | 132191 | | Bn. 1 | 158 | 141661 | |
| Bn. 3 | 336 | 133608 | 1417 | Bn. 3 | 157 | 140245 | 1416 |
| Bn. 5 | 336 | 134847 | 1239 | Bn. 5 | 159 | 139006 | 1239 |
| Bn. 7 | 336 | 136219 | 1372 | Bn. 7 | 159 | 137635 | 1371 |

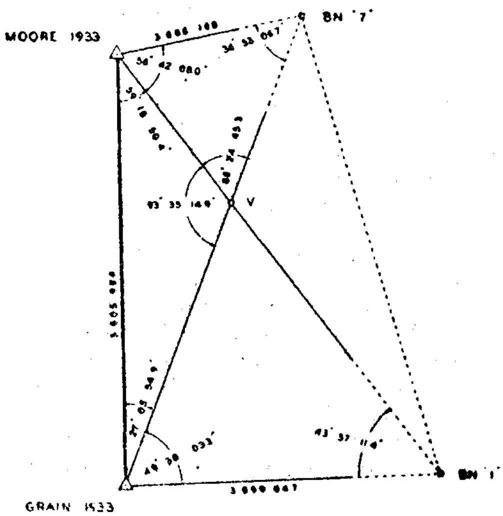
| From | Diff. Mean | True Dist. | Factor to reduce to meters. |
|---|---|---|---|
| Bn.1-Bn.3 | 1416.5 | 2636.8 | 1.86170 |
| Bn.3-Bn.5 | 1239 | 2308.0 | 1.86282 |
| Bn.5-Bn.7 | 1371.5 | 2553.3 | 1.86149 |
| Bn.1-Bn.7 | 4027.0 | 7498.05 | 1.861944* |

*Use factor obtained from Bn. 1 - Bn. 7 as strongest value.

Factor of 1.862 used in reducing all records 1936 & 1937 field seasons.

When each beacon was abeam of the taut-wire apparatus, the registering sheave was read and recorded. A run was made in each direction and the total distance of each run of four miles agreed, in terms of the sheave readings, within two revolutions or approximately 3.6 meters in 7,500 which is better than one part in 2,000.

SKETCH SHOWING DATA OBTAINED FROM ADJUSTED TRIANGULATION




V {IMAGINARY PT AT INTERSECTION OF DIAGONALS

These readings between the end beacons were used in computing the conversion factor, the readings on the intermediate beacons serving only as checks.

It is interesting to note, in the result, the slight difference between the 1935 and the 1937 calibrations, the factors being 1.86163 and 1.86194 respectively. Since the factor is used to the third decimal only, 1.862 serves for both calibrations. However, the method used in 1937 is considered the more accurate and is recommended whenever similar control is available.

# CREATING A HORIZON

by

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(Article printed on the back of U.S. Hydrographic Office Chart N° 2600, *Pilot Chart of the South Atlantic Ocean,* for June, July and August 1939, and published by permission of the U.S. Naval Institute.)

The modern navigator is so indoctrinated with the use of the sea horizon, that it becomes difficult to persuade him that there are other methods of bringing down a heavenly body so as to obtain a true altitude. In the good old days it was not an infrequent occurrence to see a ship's captain make use of a soup plate of molasses in taking his time sight. And this is still a good practice, especially when one takes full advantage of the use of gimbals by placing the plate of molasses atop his pelorus.