<table>
<thead>
<tr>
<th>Field No.</th>
<th>Office No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-9167</td>
<td>T-9167</td>
</tr>
</tbody>
</table>

**LOCALITY**

State: FLORIDA  
General locality: EAST COAST  
Locality: PREVARD COUNTY

**1949**

CHIEF OF PARTY  
G.E. Morris, Jr., Chief of Field Party  
R.A. Gilmore, Tampa Photogrammetric Office

**DATE**  
April 17, 1951
DATA RECORD

T - 9167

Project No. (II): Ph-30(48)    Quadrangle Name (IV):

Field Office (II): Titusville, Florida    Chief of Party: George E. Morris, Jr.

Photogrammetric Office (III): Tampa, Florida    Officer-in-Charge: Ross A. Gilmore

Instructions dated (II) (III): The Director's Instructions, Project Ph-30(48), dated 13 July 1948

Copy filed in Division of Photogrammetry (IV)

Office Files

Method of Compilation (III): Graphic

Manuscript Scale (III): 1: 20,000    Stereoscopic Plotting Instrument Scale (III):

Scale Factor (III): none

Date received in Washington Office (IV); 10-25-49    Date reported to Nautical Chart Branch (IV): 11-1-49

Applied to Chart No.    Date:    Date registered (IV): 2-21-51

Publication Scale (IV): 1: 24,000    Publication date (IV):

Geographic Datum (III): N.A. 1927    Vertical Datum (III): MSL

Mean sea level except as follows:
Elevations shown as (25) refer to mean high water
Elevations shown as (2) refer to sounding datum
i.e., mean low water or mean lower low water

Reference Station (III): CACTUS 1940

Lat.: 28° 39' 58.788 (1809.8 m)    Long.: 80° 49' 27.960 (1592.7 m)

Plane Coordinates (IV): Transverse Mercator    State: Florida    Zone: East

Y = 1,574,941.68    X = 556,302.42

Roman numerals indicate whether the item is to be entered by (II) Field Party, (III) Photogrammetric Office,
or (IV) Washington Office.

When entering names of personnel on this record give the surname and initials, not initials only.
Areas contoured by various personnel
(Show name within area)

H - Contoured by Egmont Horn, Cartographic Survey Aid
G - * Warren M. Gotteslich, Cartographic Survey Aid
B - * Jack T. Beesher, Cartographic Survey Aid.
DATA RECORD

Field Inspection by (II): Egmont Horn, Cartographic Survey Aid  
   Cecil A. Navin, Topographic Engineer (Shoreline Inspection)

Date: 5 April, 1949

Planetable contouring by (II):
   Egmont Horn, Cartographic Survey Aid  
   Warren N. Gottschlich, Cartographic Survey Aid  
   Jack T. Beecher, Cartographic Survey Aid.

Completion Surveys by (III): James E. Hundley

Date: December 1949

Mean High Water Location (III) (State date and method of location):
   Aerial Photo Compilation
   Identified on photographs taken April 1948

Projection and Grids ruled by (IV): W.E.W. (W.O.)

Projection and Grids checked by (IV): W.E.W. (W.O.)

Control plotted by (III): B.F. Lampton

Date: Oct. 1948

Control checked by (III): R.R. Wagner

Date: Nov. 1948

Radial Plot (III): M.M. Slavney

Stereoscopic Instrument compilation (III):
   Planimetry
   Contours

Date: May 1949

Manuscript delineated by (III): J.C. Richter

Date: Aug. 1949

Photogrammetric Office Review by (III): J.A. Giles

Date: Aug. 1949

Elevations on Manuscript
   checked by (II) (III): R.R. Wagner (III)

Date: Aug. 1949
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<th>Number</th>
<th>Date</th>
<th>Time</th>
<th>Scale</th>
<th>Stage of Tide</th>
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<tr>
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<td>0855-0857</td>
<td>1: 20,000</td>
<td>No periodic tide</td>
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<tr>
<td>477-481</td>
<td>4-19-48</td>
<td>0912-0915</td>
<td>1: 20,000</td>
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</tr>
<tr>
<td>546-548</td>
<td>4-21-48</td>
<td>1349-1350</td>
<td>1: 20,000</td>
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<tr>
<td>677-680</td>
<td>4-22-48</td>
<td>1138-1140</td>
<td>1: 20,000</td>
<td></td>
</tr>
</tbody>
</table>

### Tide (III)

Reference Station:  
Subordinate Station:  
Subordinate Station:  

Washington Office Review by (IV): **Everett H. Ramey**

Date: 22 Nov 1950

Final Drafting by (IV):

Drafting verified for reproduction by (IV):

Proof Edit by (IV):

Land Area (Sq. Statute Miles) (III): 50.4
Shoreline (More than 200 meters to opposite shore) (III): 23.3 miles
Shoreline (Less than 200 meters to opposite shore) (III): 6.8 miles

Control Leveling - Miles (II): 36.0 Fourth order

Number of Triangulation Stations searched for (II): 52
Number of BMs searched for (II): 14
Number of Recoverable Photo Stations established (III): 32
Number of Temporary Photo Hydro Stations established (III): none

Remarks:
Summary to Accompany T-9167

Topographic map T-9167 is one of fourteen similar maps in project Ph-30(48) and is centrally located in the project. It covers a portion of the Indian River and adjacent land area.

This is a graphic compilation project. The field operations preceding compilation included complete field inspection, the establishment of some additional horizontal control, and the delineation of contours on the photographs by planetable methods.

The manuscript was compiled at a scale of 1:20,000 and covers 7½' in latitude by 7½' in longitude. The entire map was field edited. The map is to be published by the Geological Survey at a scale of 1:24,000 as a standard topographic quadrangle. Items registered under T-9167 will include a cloth-mounted color print at a scale of 1:24,000 and a cloth-mounted lithographic print of the manuscript at a scale of 1:20,000 and the descriptive report.
All phases of the field work were completed in accordance with The Director's Instructions, Project Ph-30(48), dated 13 July 1948, and applicable General Instructions, except for deviation noted in Paragraph 16.

All of the horizontal control recovery and shoreline inspection, along with the bulk of the vertical control recovery was performed by Cecil A. Bavin, Topographic Engineer. The remaining vertical control recovery was accomplished by sub-party chiefs in the adjoining quadrangles.

Sixty percent of the fourth order levels; contouring on photographs 48-J-454, 477(50%), 478, 479 and 480 was by Warren M. Gottschlich, Cartographic Survey Aid.

Seventy five percent of the contouring on photograph 48-J-546, and fifty percent on photograph 546 was by Jack T. Beecher, Cartographic Survey Aid.

All other field work was by the writer, Egmont Horn, Cartographic Survey Aid.

The necessity of extended leaves of absence from the field work by the writer was responsible for the use of the extra sub-party chiefs. Limits of contouring by the individual sub-party chiefs have been adequately labeled on the reverse of the contour photographs.

1. DESCRIPTION OF THE AREA

This quadrangle is located in the north central portion of Brevard County, Florida, and extends from the northern limits of Titusville to two miles south of Scottsmoor, and from Allenhurst to two miles west of Mims.

Indian River which runs the entire length of the quadrangle and South Lake in the southwest corner are the most prominent natural features. All land east of Indian River is below five feet, with exception of a small area near Haulover Canal, and is mostly seasonal marsh and pasture.

A ridge parallels Indian River on the west side, and attains a height of forty feet. The areas of greatest relief are east and northeast of South Lake, where peaks rise to over seventy feet.

Small ponds and intermittent ponds are scattered over the quadrangle, and are classified on the field inspection photographs.

All areas under cultivation are drained by small ditches, and spoil banks of these ditches form many of the roads.
The unincorporated towns of Mims and Allenhurst are the only villages in this quadrangle.

Haulover Canal is in the northeast corner of the quadrangle, joining Indian River and Indian River North (Mosquito Lagoon), and is a popular fishing spot.

This quadrangle is well traversed with improved roads, which includes U. S. Highway 1 and three paved Florida State Roads; and by two north-south single track railroads.

Livelihoods in the area come from several sources. Some of the main ones are the growing of citrus fruits, tourist trade, fishing, cattle ranching, truck farming and lumbering operations.

2. COMPLETENESS OF FIELD INSPECTION


(Field Editor see Paragraph 17.)

3. INTERPRETATION OF PHOTOGRAPHS

Most photographs were adequate. However, much difficulty was experienced in the southwest corner of the quadrangle in getting stereopsis because of a break in the flight line. This was somewhat troublesome in this particular area because of the relatively high relief.

4. HORIZONTAL CONTROL

Eighteen U.S.C.& G.S. stations were searched for, seventeen were recovered, and six were identified.

Fourteen U.S.E. stations were searched for, eleven were recovered, and four were identified.

Twenty Florida Geodetic Survey stations were searched for, thirteen were recovered, and two were identified.

All stations were identified by substitute point method with the exception of U.S.E. "SOUTH LAKE" which was located by intersection method from photographic detail point. This deviation from standard procedure was necessary because cloudy weather prevented using sun azimuth, and extensive cutting for chaining would have been necessary later if sun azimuth had been used.
7. **MEAN HIGH WATER LINE**

    Adequately shown on the field photographs.


8. **LOW WATER LINE**

    In general the low water line along both shores of Indian River is parallel and very close to the mean high water line as the water is practically non-tidal. No attempt was made to show the low water line.

9. **WHARVES AND SHORELINE STRUCTURES**

    All wharves and shoreline structures have been indicated on the field photographs.

10. **DETAILS OFFSHORE FROM THE HIGH WATER LINE**

    One abandoned bomb target has been identified on field photograph 48-J-455(1 of 2). See also Item 36.

11. **LANDMARKS AND AIDS TO NAVIGATION**

    The two previously charted landmarks are recommended for re-charting, and Form 567 is submitted. The one landmark, HOUSE, which is not triangulation, was identified on field photograph 48-J-679(2 of 2). See Forms 567 (copy) attached and Item 56.

    All aids to navigation were located by theodolite cuts, and Forms 567 and 24A are submitted.

12. **HYDROGRAPHIC CONTROL**

    No photo-hydro signals were required for this project. See Item 49.

13. **LANDING FIELDS AND AERONAUTICAL AIDS**

    There are no aeronautical aids within this quadrangle.

    A small portion of the Titusville Municipal Airport extends across the southern limits of the quadrangle. The airport has been covered in the report for quadrangle T-9169 and in the Special Report on Boundaries for the entire project. Both reports in General Files, Division of Photogrammetry.

    There is a small un-named, private air strip without definite boundaries, just north of Haulover Canal, and east of Florida State Road 3, used by county-owned mosquito control planes, that has been labeled on photograph 48-J-454 (2 of 2).
14. **ROAD CLASSIFICATION**

All roads were classified in accordance with Photogrammetry Instructions No.10, and Amendment dated 24 October 1947.

15. **BRIDGES**

A field investigation of the one bridge over navigable waters, Haulover Canal at Allenhurst, Florida, was made in accordance with Photogrammetry Instructions No.27, dated 7 September 1948, and the field data are tabulated below, along with published data from page 216 in the U. S. Engineers "List of Bridges over Navigable Waters of the U. S.", revised to 1 July 1941.

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<tr>
<th>Type of bridge</th>
<th>Field Data</th>
<th>Bridge Book Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing</td>
<td>Swing</td>
<td>Swing</td>
</tr>
<tr>
<td>South Draw</td>
<td></td>
<td>Right &amp; Left</td>
</tr>
<tr>
<td>Vertical Clearance</td>
<td>55</td>
<td>55 (R. &amp; L. Spans)</td>
</tr>
<tr>
<td>ft.</td>
<td>7.4</td>
<td>7.4</td>
</tr>
</tbody>
</table>

*The bridge book lists the vertical clearance as being 7.4 ft. above M.L.W. The field measurements were to the water level (estimated M.L.W.) at 11:00 A.M., EST., 26 March 1949. The vertical clearance above M.S.L., as determined by leveling from nearby U. S. Engineers BM-34, is 6.0 ft. See items 57 & 69.*

The discrepancy in the number of navigable spans as reported in the bridge book, has been reported by letter to the local District Engineer. A copy was forwarded to the Washington Office, and an additional copy of the letter is included with this report.

16. **BUILDINGS AND STRUCTURES**

Building inspection was in accordance with Photogrammetry Instructions No.29, dated 1 October 1948; except that all buildings to be mapped have been circled on the field inspection photographs in red ink.

17. **BOUNDARY MONUMENTS AND LINES**

Five section corners, three quarter section corners, and one point on a section line, were recovered, identified, and submitted on Form 524. In addition, one unmonumented section corner has been identified on a field photograph.

An old fence on the south line of the Segui Grant, Brevard County, has been identified on one of the field photographs. A point on the range line between R35E and R36E was located by the photo-station method and Form M-2226-12 has been submitted. These two points are not monumented, but were designated as being true points by the Brevard County Surveyor.

If additional section or grant line control is needed within this quadrangle, it is recommended that the field editor contact the Brevard County Surveyor. See items 58 & 67.
Other boundaries will be found in the Special Report on Boundaries for this project.

Section line information is shown on the following photographs: 48-J-457 (2 of 2), 48-J-679 (1 of 2), and 48-J-680 (1 of 2).

18. **GEOGRAPHIC NAMES**

This is the subject of a Special Report on Geographic Names by Lowell I. Bass, Cartographic Survey Aid. Filed in Geographic Names Section, Charts Division.

19. **TOPOGRAPHIC STATIONS**

One monumented topographic station was established in this quadrangle and Form 524 is submitted.

Five azimuth marks were identified for use as topographic stations, and Form 524 submitted for two that can be used with hydrographic surveys. Form M-2226-12's are submitted for the other three.

See items 49 and 68.

Submitted
15 April 1949

Ewmont Horn
Cartographic Survey Aid

Approved and forwarded
5 May 1949

George E. Morris, Jr.
Chief of Party
21. **AREA COVERED**

This report is on the photogrammetric plot for quadrangles T-9161, T-9162, T-9163, T-9164, T-9165, T-9166, T-9167 and T-9168 and completes Ph-30(48) (Florida).

The sketch on page 18 of this report shows the arrangement of the quadrangles, junction with other quadrangles of Ph-30(48), part of the project limits, the photograph centers, and the control stations used in this radial plot.

22. **METHOD**

This plot was laid utilizing hand template in the radial plot method.

The quadrangles in this radial plot, with the exception of T-9168, are 7° 30' in latitude and longitude. T-9168 is 7° 30' in latitude and 8° 30' in longitude. All are 1:20,000 scale with the 10,000-foot grid of the Florida East Mercator Grid System ruled on the projections.

The base grids, of vinylite, are ruled with 10,000-foot intervals at 1:20,000 scale. Sufficient grids were joined to encompass all the control identified for this radial plot and extend into the area covered by Radial Plot No. 1 of Ph-30(48).

All the horizontal control recovered or established by the field party was plotted on the map manuscripts and checked. Substitute stations identified for controlling the radial plot were plotted graphically unless the substitute station was more than 1,000 feet from the main station, or more than one instrument set-up was made. For substitute stations more than 1,000 feet from the main station and, or, more than one instrument set-up, position computations were made and the station plotted conventionally and checked.

Control to be used in the main radial plot was transferred from the map manuscripts to the base grid by matching the plane coordinate grid lines of the quadrangles with those of the base grid. Identified control that fell outside the map manuscript limits was plotted on the base grids in the conventional way and checked.
The photographs used in this plot were enlargements at 1: 20,000 scale from 1: 30,000 and 1: 40,000 negatives.

All of the photographs are printed on water repellent paper and no data was provided to give a check on paper or negative distortion. It is probably that small anomalies in the plot would have been resolved more quickly had it been possible to eliminate film and paper distortion from the templates.

The templates were vinylite.

This photogrammetric plot was continued north from that for T-9169 and T-9170. Development of the plot was conventional; templates rigidly fixed were laid first, then progressing through those with weaker fixes and finally bridging those with no control.

The prints from 1: 40,000 negatives were very helpful in areas where control was meager. The templates from these prints were used to extend control and sometimes were laid last to provide a check on the plot.

In the uncontrolled area of T-9161 and T-9163 the plot was laid several times, each successive laydown diminished triangles of error that appeared in intersections for passpoints in this area. On the final plot all control was held, coincidence of azimuths was maintained, and tight closures obtained on all pass points, including those outside the project limits.

Intersections for all points located by the plot were circled on the plot before transfer to the map manuscripts. The map manuscripts were superposed on the plot with the grid coordinate lines of the map manuscripts matching those of the base grids for transfer of the photogrammetric points and photograph centers. This transfer was checked.

A final check on the plot was made by putting each photograph in place under the map manuscripts. The dates of completion of the plot for the map manuscripts are:

T-9168 on May 20, 1949
T-9165 on May 26, 1949
T-9167 on May 31, 1949
T-9164 on June 3, 1949
T-9166 on June 16, 1949
T-9161, T-9162 and T-9163 on June 30, 1949
Photogrammetric points and centers of ratio prints from 1:30,000 scale negatives are on the map manuscripts in accordance with Photogrammetry Instructions No. 12 of March 17, 1947 and the centers of ratio prints from 1:40,000 scale negatives are shown on the map manuscripts as three concentric circles.

23. ADEQUACY OF CONTROL

The horizontal control provided for this plot complied with the project instructions and is believed to adequately fulfill the requirements for identification, location, and density. It would have been desirable to have a control station along the western limits of T-9161 in the vicinity of photograph 48J-584 but it is felt that the accuracy of the plot is within the specifications and the additional expense was not justified.

Of the ninety control stations provided for this plot all but three were held. These three were investigated, the discrepancies were resolved, stations finally held, and are discussed here.

1. A discrepancy in the feet and meter distance from J-6A, 1934 on T-9163 (control station No. 49 on the sketch) to Substitute Station J-6A and subsequent refusal to hold resulted in returning the identification card for this station to the field on April 4, 1949.

When returned after field investigation the same point for Substitute Station J-6A was used but the new location gave a distance of 100 feet further than originally from J-6A, 1934.

2. The Photogrammetric plot gave an intersection 0.7mm (14 meters) northeast of the field position for Substitute Station CAT, 1934 on the junction of T-9164 and T-9165 (control station No. 59 on the sketch). Examination of the field photograph revealed a clump of palmetto 0.7mm (14 meters) southwest of the clump identified as the substitute point. The station identification card and field photographs were returned to the field with a letter, May 31, 1949, suggesting that measurement was made to one palmetto clump and another was pricked.
Field investigation corroborated the office conclusion and on June 3, 1949, a new station identification card was transmitted giving the same distance but prickin the other clump of palmetto.

3. A discrepancy in the plot and geographic positions of Substitute Station SHORE (U.S.E.), 1930 on T-9167 (control station No. 67 on the sketch) was resolved as explained in the included copy of a letter to the Chief, Division of Photogrammetry, dated June 8, 1949, copy attached to this report. See Item 26.

This office was pleased with the control identification and location for this photogrammetric plot. Only two of the ninety control stations were discovered in error through location or identification, a considerably better average than heretofore, and selection of points for identification was generally very good.

24. SUPPLEMENTAL DATA

No graphic control surveys were used for control of the radial plot but 18 pages of U. S. Engineers 1945 plans of the Intracoastal Waterway were used. Filed in General Files Div. of Photogrammetry.

25. PHOTOGRAPHY

Photograph coverage generally conformed to specifications on this project. Exceptions to the specifications exist in slide lap between flights 48J-586 through 48J-596 and 48J-643 through 48J-655, where it sometimes is 10 per cent and never more than 25 per cent.

The photographs including the ratio prints from the 1:40,000 negatives were of good scale and definition. All the photographs were of good scale with little tilt observed.

26. DISCUSSION OF U. S. ENGINEERS TRIANGULATION

A considerable number of U. S. Engineers horizontal control stations were recovered on this project. The trouble encountered with Substitute Station SHORE (U.S.E.) 1930 (as discussed under 23. ADEQUACY OF CONTROL) alerted this office to possible further discrepancies in the U. S. Engineers control.
Investigation disclosed that recovery of some U.S. Engineers control did not fit the original descriptions and that the stations in this category were marked but the disks were not stamped. This office was informed some of the U.S. Engineers control had been moved under contract in 1945, and photostat copies of 18 pages of Intra-coastal Waterway plans with horizontal control and plane coordinate positions thereon were received here. These plans are dated September 22, 1945 and are being submitted as supplemental data.

* See item 24

On the basis of our results with SHORE (U.S.E.) 1930 and subsequent investigation we are showing all "unstamped" U.S. Engineers control as 1930, 1945 in year and listing them with the co-ordinate values off the 1945 plans.

To close this investigation a letter was sent to the U.S. Engineers, Jacksonville, District, to clarify all the questions about their control. A copy of this letter and their reply is included in this report.

Some of the original 1930 control was located by the Coast and Geodetic Survey in 1940. Where recovery cards indicate no change from the 1930 description, the 1940 U.S. C. & G.S. position is listed.

Respectfully submitted,

Milton M. Slavney

Approved and Forwarded:

Ross A. Gilmore,
Chief of Party.
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<th>STATION</th>
<th>SOURCE OF INFORMATION (INDEX)</th>
<th>LATITUDE OR Y-COORDINATE</th>
<th>LONGITUDE OR X-COORDINATE</th>
<th>DISTANCE FROM GRID IN FEET OR PROJECTION LINE IN METERS</th>
<th>DATUM CORRECTION</th>
<th>N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS</th>
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<td>J-4</td>
<td>F.G.S. Brevard 1</td>
<td>1,603,252.87</td>
<td>541,783.02</td>
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<td>991.5</td>
<td>(2056.5)</td>
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<td>&quot;</td>
<td>1,597,753.86</td>
<td>543,186.99</td>
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<td>2363.4</td>
<td>(684.6)</td>
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<td>1,594,634.01</td>
<td>4,834.01</td>
<td>14,124.8 (16356.2)</td>
<td>1140.6</td>
<td>(1907.4)</td>
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<td>1875 P.147</td>
<td>28</td>
<td>43</td>
<td>54.802</td>
<td>1687.1</td>
<td>(160.0)</td>
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<td>STATE</td>
<td>&quot;</td>
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<td>36.776</td>
<td>1321.2</td>
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<td>F.G.S. Brevard 2</td>
<td>1,590,817.62</td>
<td>544,088.07</td>
<td>3,817.62 (9,182.38)</td>
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<td>1,588,233.73</td>
<td>8,233.73</td>
<td>2509.6</td>
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<td>ACOSTA</td>
<td>1940 P.554</td>
<td>28</td>
<td>41</td>
<td>31.086</td>
<td>957.0</td>
<td>(890.1)</td>
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<td>F.G.S. Brevard 2</td>
<td>1,583,957.54</td>
<td>545,647.43</td>
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<td>1,582,149.82</td>
<td>546,408.30</td>
<td>2,149.82 (7,850.18)</td>
<td>655.3</td>
<td>(2392.7)</td>
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<td>N.U. (USE), 1940</td>
<td>P.557</td>
<td>28</td>
<td>41</td>
<td>14.106</td>
<td>434.3</td>
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<td>28</td>
<td>40</td>
<td>35.446</td>
<td>1091.2</td>
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1 FT = 0.3048006 METER

COMPUTED BY B.F. Lampton, Jr. DATE Sept. 29, 1948

CHECKED BY H.R. Wagner DATE Oct. 4, 1948
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<th>DISTANCE FROM GRID OR PROJECTION LINE IN METERS</th>
<th>DATUM CORRECTION</th>
<th>N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS</th>
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<tr>
<td>J-16, 1934</td>
<td>P.G.S. Brevard</td>
<td>N.A. 1927</td>
<td>1,577.543.31</td>
<td>7,543.31 (2,456.69)</td>
<td>2299.2 (748.8)</td>
<td>2544.2 (503.8)</td>
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<td>J-18, 1934</td>
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<td>1,573.733.19</td>
<td>3,733.19 (6,266.81)</td>
<td>1137.9 (910.1)</td>
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<td>J-19-2, 1934</td>
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<td>1,572.962.81</td>
<td>2,962.81 (7,037.79)</td>
<td>902.9 (2145.1)</td>
<td>2974.3 (73.7)</td>
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<td>J-20, 1934</td>
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<td>2,193.40 (7,806.60)</td>
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<td>G.P.S. B-553</td>
<td>28 39</td>
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1 FT = 30.48006 METER
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DATE: Sept. 29, 1948
CHECKED BY: R.R. Wagner
DATE: October 4, 1948
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1 Ft. = 0.3048006 Meter
COMPUTED BY: B.F. Lampton      DATE: Sept. 29, 1949
CHECKED BY: R.R. Wagner        DATE: October 4, 1949
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<th>LONGITUDE OR X-COORDINATE</th>
<th>DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS</th>
<th>DATUM CORRECTION</th>
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</tbody>
</table>
31. **DELINEATION**

The manuscript was delineated by graphic methods. The photographs and field inspection were adequate for the delineation of this manuscript.

32. **CONTROL**

The horizontal control was accurately identified and with good coverage for this manuscript. For discussion of control see the Photogrammetric Plot Report incorporated with this report.

33. **SUPPLEMENTAL DATA**

General Land Office Plats for Project Ph-30(48)

34. **CONTOURS AND DRAINAGE**

No difficulty was encountered in transferring contours. A few contours in the northwest corner of the manuscript were not delineated because of their placement inside the berm line of intermittent ponds. It is believed that when the ponds have sufficient water the contour would be below the water line.

Spoil banks north of Haulover Canal are believed to be of sufficient height to show spot elevation and some may have contours.

It is requested that a vertical accuracy test be run in the area east and northeast of South Lake. Stereoscopic examination indicates that the contours have been misplaced by going across saddles and valleys.  

35. **SHORELINE AND ALONG SHORE DETAIL**

All shoreline and alongshore detail were taken from the photographs. The field inspection was very good for delineation.

36. **OFFSHORE DETAIL**

Shoal areas along the channel of the Intracoastal Waterway were delineated from the photographs with reference to field inspection notes.

37. **LANDMARKS AND AIDS**

Two landmarks and nine non-floating aids with scaled positions are submitted herewith on Form 567.  

*See Item 56*
38. CONTROL FOR FUTURE SURVEYS

Twelve Forms 524, with scaled positions are being submitted here-with as part of this report and are as follows:

2  Topographic stations
2  Azimuth marks
5  Section corners
3  1/4 Section corners

One section monument on Form 524, 18, T21S, R35E, is shown on the map manuscript as an accepted corner due to the actual corner not being found. Form 524 is being submitted without the scaled position.

Forms 524 filed in General Files, Div. of Photogrammetry.

39. JUNCTIONS

A satisfactory junction has been made to the north with T-9164, on the west with T-9166, and from the east with T-9168. Contour junction on the south does not agree and has been referred to the field editor for correction.

See item 53.

40. HORIZONTAL AND VERTICAL CONTROL ACCURACY

No statement.

See item 53.

46. COMPARISON WITH EXISTING MAPS

Comparison was made with U.S. C. & G.S. Planimetric Map No. T-4531, scale 1:20,000, dated 1930, and found to be in good agreement except for changes in cultural detail. There are no topographic quadrangles available for this area.

See item 62.

47. COMPARISON WITH NAUTICAL CHARTS

Comparison has been made with U.S. C. & G.S. Nautical Chart No. 344, scale 1:40,000, published May 1942 (3rd edition) corrected to June 21, 1943, and found to be in good agreement. Planimetric Map T-4531 is the source of the Planimetry on chart No. 344, published May 1942.
ITEMS TO BE APPLIED TO NAUTICAL CHARTS IMMEDIATELY

An abandoned bomb target projecting 12 feet above water at latitude 28° 43' 35" and longitude 80° 47' 12" is not shown on the chart.

The spoil area between light 74 and Titusville bridge is not noted on the chart.

The spoil area northwest of Haulover Canal shows some small islands that are now awash at extreme low water.

ITEMS TO BE CARRIED FORWARD

None.

Respectfully submitted,

[Signature]

John C. Richter
Cartographic Draftsman

Approved and Forwarded

Ross A. Gilmore, 10/7/49
Chief of Party.
NOTES FOR THE HYDROGRAPHER

There follows a list of topographic stations appearing on this quadrangle pertaining to the hydrographer:

Two Topographic Stations, SLIM 1949 and HOUSE 1949 *

Two Azimuth Marks for triangulation stations HOOD 1934 and BLACK POINT 1934.

* "House" changed to "Chimney" by Field Editor. See item 56.
50. PHOTOGRAMMETRIC OFFICE REVIEW
T-9167


CONTROL STATIONS

5. Horizontal control stations of third-order or higher accuracy  6. Recoverable horizontal stations of less
than third-order accuracy (topographic stations)  7.  8. Bench marks

ALONGSHORE AREAS
(Nautical Chart Data)

to navigation  17. Landmarks  18. Other alongshore physical features  19. Other along-
shore cultural features

PHYSICAL FEATURES

features

CULTURAL FEATURES


BOUNDARIES

31. Boundary lines  32. Public land lines

MISCELLANEOUS

33. Geographic names  34. Junctions  35. Legibility of the manuscript  36. Discrepancy

40.  

Field Completion Additions and Corrections to the Manuscript

42. Additions and corrections furnished by the field completion survey have been applied to the manuscript. The
manuscript is now complete except as noted under item 43.

Compiler  Supervisor

43. Remarks:
51. METHODS

The field edit of this quadrangle was accomplished by traversing, via truck, all passable roads, and by walking to other areas in which the reviewer requested information, or for a general check on the adequacy of the map compilation.

Planimeter, hand level, sextant and tape methods were used to make corrections and additions.

All deletions have been noted on the field edit sheet. Additions and corrections in planimetry have been noted on the field edit sheet. Some corrections to contours and spot elevations have been shown on the field edit sheet, but the major corrections made in contouring have been shown on photograph 48J-54B, print 2 of 2. The reviewer's questions are answered on the discrepancy prints whenever possible. All work shown on the photographs is properly referenced on the discrepancy print on field edit sheet.

A legend appears on the field edit sheet indicating the different colored inks used for the various additions, corrections and deletions.

Field edit information appears on photograph 48J-54B, print 2 of 2.

52. ADEQUACY OF COMPIlATION

The map compilation is believed to be adequate and complete with the corrections added by the field editor.

53. MAP ACCURACY

The horizontal position of the map detail appears to be good.

One particular area of about 4.1 square miles of contouring between latitude 28° 37' 30" - 28° 40' 00" and longitude 80° 51' 00" - 80° 52' 30" was corrected. In general, the correcting of contours consisted of placing them in their proper horizontal position. A few elevations were erroneous. It appears that a very inexperienced field party was responsible for the deficiencies, including the inability to use the stereoscope.
54. **RECOMMENDATIONS**

Recommend at least four months training, under supervision of an experienced topographer, for all potential sub-party chiefs, before being given the responsibility of completing a topographic quadrangle.

55. **EXAMINATION OF PROOF COPY**

It is believed that Frank P. Schuster, County Engineer for Brevard County, Titusville, Florida is best qualified to examine a proof copy of this quadrangle.

56. **LANDMARKS**

Form 567 is submitted indicating corrections concerning landmarks recommended for charting. Copy attached to this report.

57. **BRIDGE CLEARANCES**

The vertical clearance of the swing bridge over Haulover Canal was measured and found to be 7.4 feet. There is no appreciable periodic tide in this vicinity, only the winds affect the rise and fall of water here.

58. **BOUNDARY MONUMENTS**

Four additional boundary monuments were recovered and identified. Forms 524 are submitted. Information concerning four other boundary monuments was taken from Florida State Road Plans recorded in County Engineer’s office, Titusville, Florida.

Approved and Forwarded:

Ross A. Gilmore, Chief of Party.
I recommend that the following objects which have been inspected from seaward to determine their value as landmarks be charted on the charts indicated. The positions given have been checked after listing by

J.C. Richter, Tampa Photogrammetric Office

George E. Morris, Jr. Chief of Party

<table>
<thead>
<tr>
<th>CHARTING NAME</th>
<th>DESCRIPTION</th>
<th>SIGNAL NAME</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>DATUM</th>
<th>METHOD OF LOCATION</th>
<th>DATE OF LOCATION</th>
<th>CHARTS AFFECTED</th>
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</table>

Positions in agreement with T-6822, 1941 (Stations TAR & PAS).

Notes: Structure descriptions as listed in 1948 Light List for Intracoastal Waterway adequate for above aids.

Also positioned by theodolite directions.

This form shall be prepared in accordance with Hydrographic Manual pages 800 to 804. Positions of charted landmarks and nonfloating aids to navigation, if redetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.
I recommend that the following objects which have been inspected from seaward to determine their value as landmarks be charted on the charts indicated.

The positions given have been checked after listing by

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<th>STATE</th>
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<tr>
<td>LONGITUDE</td>
<td>80 49 345</td>
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<td>DATE OF LOCATION</td>
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<td>Radial</td>
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<td>Plot 1949 x 844 1245</td>
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</table>

| CHARTING NAME | HOUSE |
| DESCRIPTION | White frame bungalow with red brick chimney atop center of pyramidal-shaped grey wood shingle roof, 25 feet high. |
| SIGNAL NAME | |
| LATITUDE | 28 40 1265 |
| LONGITUDE | 80 49 1009 |
| METHOD OF LOCATION AND SURVEY NO. | N.A. |
| DATE OF LOCATION | 1927 |
| APPRAISAL CHART | Radial |
| CHARTS AFFECTED | Plot 1949 x 844 1245 |

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and nonfloating aids to navigation, if reetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.
I recommend that the following objects which have been inspected from seaward to determine their value as landmarks be charted on the charts indicated.

The positions given have been checked after listing by

John C. Richter
Tampa Photogrammetric Office

Ross A. Gilmore
Chief of Party.

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<td>CHARTING NAME</td>
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<td>GABLE</td>
<td>South Gable of large I-shaped metal building, painted red, 46 feet above ground.</td>
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<tr>
<td>CHIMNEY</td>
<td>Red brick chimney, center of pyramidal shaped gray wood shingle roof of frame white house, west bank of Indian River, 25 feet above ground.</td>
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<p>| POSITION |</p>
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<td>T1.</td>
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<td>80 49</td>
<td>347.6</td>
<td>1927</td>
</tr>
<tr>
<td></td>
<td>28 40</td>
<td>1265</td>
<td>80 49</td>
<td>1009</td>
<td>1927</td>
</tr>
</tbody>
</table>

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and nonfloating aids to navigation, if reetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.
I recommend that the following objects which have (bold) been inspected from seaward to determine their value as landmarks be charted (deleted from) the charts indicated.

The positions given have been checked after listing by

<table>
<thead>
<tr>
<th>CHARTING NAME</th>
<th>DESCRIPTION</th>
<th>SIGNAL NAME</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>DATUM</th>
<th>METHOD OF LOCATION AND SURVEY NO.</th>
<th>DATE OF LOCATION</th>
<th>CHARTS AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CENTER OF IRON HIDE.</td>
<td>Center of 26-foot high, 150 feet long, metal roofed gable that is part of a larger &quot;L&quot; shaped metal building</td>
<td></td>
<td>28 38</td>
<td>1268</td>
<td>80 49</td>
<td>34.5</td>
<td>Radial Plot 79167</td>
<td>1949</td>
</tr>
<tr>
<td></td>
<td>(Chart position on gable 75 feet northerly along gable from triangulation station. Nevins' packing shed, south gable.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See new Form 567 for different landmark in this vicinity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOUSE</td>
<td>White frame bungalow with red brick chimney atop center of pyramidal shaped grey wood shingle roof 25 feet high.</td>
<td></td>
<td>28 40</td>
<td>1265</td>
<td>80 49</td>
<td>1009</td>
<td>Radial Plot 79167</td>
<td>1949</td>
</tr>
<tr>
<td></td>
<td>See Form 567 for change in charting name for this landmark.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and nonfloating aids to navigation, if redetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field sheets. Information under each column heading should be given.
To: District Engineer  
   Jacksonville District  
   Corps of Engineers  
   P. O. Box 4970  
   Jacksonville 1, Florida

Subject: Bridge Data, Haulover Canal Bridge

The Haulover Canal Bridge at Allenhurst was carefully measured on 28 March 1949 for nautical chart purposes and all data as listed on page 216 of the "List of Bridges over the Navigable Waters of the U.S.**, dated 1 July 1941, were found to be in good agreement except for the number of navigable spans.

Only the South Draw is used for navigation. The North Draw is approximately 20 ft., and is not a clear span when the bridge is open.

George B. Morris, Jr.  
Chief of Party

SJR/c  
ed: The Director
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Tampa Photogrammetric Office
Box 1689, Tampa, Fla.

June 8, 1949

Reference: Item 23

To: Chief, Division of Photogrammetry
U. S. Coast and Geodetic Survey
Washington 25, D.C.

Subject: Geographic Position of SHORE, 1930 (U.S.E.) on T-9167 Ph-30(48)

The main radial plot for T-9167 disclosed a control discrepancy which was finally resolved as the result of two different published positions for SHORE, 1930 (U.S.E.).

SHORE, 1930 (U.S.E.) was originally plotted on the projection for T-9167 using the position given on the photostat of the original "Horizontal Control Positions" card of the U.S. Engineers and Substitute Point SHORE was plotted conventionally.

The radial plot gave a position for Substitute Pt. SHORE that was 0.45mm. (9 meters) southwest of the position on T-9167. Field investigation disclosed no error in substitute station location. However, further investigation disclosed a plane coordinate position was available on a U.S. Engineer survey plan for station SHORE, 1930 (U.S.E.) and on conversion to geographic coordinates a difference of minus 0.285 seconds in latitude and plus 0.29 seconds in longitude was found to exist with their geographic position.

When SHORE, 1930 (U.S.E.) and Substitute Station SHORE were plotted on T-9167 using the plane coordinate position the difference with the radial plot position was not plottable; therefore, we are assuming that the plane coordinate position \( X = 578,619.05, Y = 1,597,037.20 \) is correct.

(s) Ross A. Gilmore
Lt. Comdr., USCGS
Officer in Charge
Tampa Photogrammetric Office

RAG/c
cc: Lt. Comdr. George
E. Morris, Jr.
U.S. Engineers
Corps of Engineers
575 Riverside Avenue
Jacksonville, Florida

Gentlemen: Att: Mr. G.D. Hardy

During the field and office work related to compilation of topographic quadrangles in the vicinity of Titusville we have run into some U.S. Engineer control anomalies that we hope you can help us on.

Lieut. Comdr. Morris' field parties recovered some U.S. Engineers' 1930 and 1931 stations "as described" and "marked." Other stations necessitated new descriptions and were not stamped; the field men informed us that some of your control had been moved or reestablished in 1945. The photostats of your 1945 plans listed all stations by name but did not indicate the date of the station.

When convenient, we would like to be furnished a list of all your horizontal control from latitude 29° 20' to 29° 00' along the Indian River that has been moved since 1930, 1931 along with the new descriptions and new positions.

Yours very truly,

(S) Ross A. Gilmore
Lieut. Comdr. USCGS
Officer in Charge
Tampa Photogrammetric Office
Lieut. Comdr. Ross A. Gilmore
Officer in Charge
U.S. Coast and Geodetic Survey
Tampa Photogrammetric Office
Box 1689
Tampa, Fla.

Dear Sir:

In response to your letter of 12 September 1949 relative to
the anomalies you have found in our control along Indian River, the follow-
ing information is furnished.

In 1945 a contract was let to a private engineering company to
establish the control and make the hydrographic surveys along the
Intracoastal Waterway from Melbourne to Haulover canal. This con-
tract was terminated due to shortage of project funds before it was
completed, thereby causing the conditions you have found.

The photostatic copies previously furnished you show the re-
sults of the control work accomplished. However, no descriptions
were ever made of the stations set, therefore it is impossible to
determine at the present time which are 1930-31 stations and which
are 1945 stations.

It is possible that some 1945 stations were set at approximately
the same location as the 1930-31 stations and given the same name,
and that stations set in 1930-31 but not properly marked were re-
named in 1945. It will be impossible for us to straighten out this
situation until additional funds are made available for the project
and we can recover, describe, mark, and check the stations now in
place.

This office realizes that the above information will not help
solve your problems, however, this does explain why the condition
you found exists.

If this office can be of further service or if you could have
one of your men bring the topographic sheets and other data you are
having trouble with to this office, we will be glad to get out all
the field books and other data we have and go over it with him.

Sincerely yours,

(\s\)

LEO L. BURNET
Chief, Engineering Division
Allenhurst
Black Point
Black Point Creek
Boggy Pond
Burenholm Road
Cow Pen Creek
Duckroost Cove
Duckroost Point
East Mims
Gator Creek
Granny Cove
Haulover Canal
Indian Mound
Indian River
Intracoastal Waterway
La Grange
Little Flounder Creek
Marsh Bay
Marsh Bay Creek
Marsh Bay Point
Mims
Mosquito Lagoon
Paces Landing
Puckett Creek
Reach Hole
South Lake
Turnhull
Turnhull Hammock
Wiley

On manuscript:
• Dummit Cove
• Cattfish Creek
• Jay Jay
• Old Dixie Highway
• Titusville Municipal Airport
• U.S. No. 1 - Fla. No. 5
• Fla. No. 3
• Fla. No. 46
• Fla. No. 40 L
• Florida East Coast
• Brevard County

State (west edge of sheet, 14T 28440)
(have no record of such a name. Is it existing station?)

Wm Garvin Grant
Domingo Acosta Grant
Bernardo Segui Grant
Brevard Co. Game Refuge

Names preceded by: are approved. 11-9-49

L. Heck

Names checked and approved 11-21-50

R. J. W.
62. Comparison with Registered Topographic Surveys.

<table>
<thead>
<tr>
<th>Survey Code</th>
<th>Scale</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-1415</td>
<td>1:5,000</td>
<td>1875</td>
</tr>
<tr>
<td>T-1422</td>
<td>1:20,000</td>
<td>1875-76</td>
</tr>
<tr>
<td>T-4531</td>
<td>1:20,000</td>
<td>1928</td>
</tr>
<tr>
<td>T-6821</td>
<td>1:10,000</td>
<td>1941</td>
</tr>
<tr>
<td>T-6822</td>
<td>1:10,000</td>
<td>1941</td>
</tr>
<tr>
<td>T-6823</td>
<td>1:10,000</td>
<td>1941</td>
</tr>
</tbody>
</table>

Survey T-9167 supersedes these prior surveys for nautical charting purposes.

63. Comparison with Maps of Other Agencies. - None

64. Comparison with Contemporary Hydrographic Surveys. - None

65. Comparison with Nautical Charts.

<table>
<thead>
<tr>
<th>Survey Code</th>
<th>Scale</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>844</td>
<td>1:40,000</td>
<td>3-15-48</td>
</tr>
</tbody>
</table>

66. Adequacy of Results and Future Surveys. - This map meets the National Standards of Map Accuracy and complies with project instructions.

67. Section and Grant Lines. - Most of the section lines in T21S, R34 & 35E, west of the Indian River were positioned by either recovered monuments or by well-defined lines of culture. Also there was general agreement between the mapped lines and the General Land Office plats.

In T20 & 21S, R35 & 36E, east of the Indian River, there was little recovery and the section lines were plotted using General Land Office measurements. The General Land Office plats are so generalized that they were of little value in checking the plotted lines.

The south line of the Bernardo Segui Grant was accurately positioned by holding to one recovered monument and lines of culture. This monument was believed by the field edit party to mark R34E / R35E but it does not plot on the range line as determined by extending accurately located segments of the line on either side of the monument.

Both the Domingo Acosta Grant and the William Garvin Grant had no recovery of lines or monuments on this map, but were plotted by General Land Office measurements. Section line 17, T20S, R35E was likewise positioned by plot measurements.
68. Topographic Stations. - Topographic survey T-6822, 1:10,000, 1941 shows several topographic stations which are located by this survey as located objects. The two surveys are in close agreement for the positions of these stations. But since the stations were not field inspected and since there is an adequate number of control stations in the area, these 1941 stations were not shown on the manuscript.

69. Bridges. - There is no appreciable periodic tide for this area of the Indian River but the water level is affected by local winds and by currents through the Hamlover Canal. This may account for the discrepancy in clearance. But since the bridge opens for larger vessels, the discrepancy in clearance between spirit leveling and direct measurement (Items 15 and 57) is of little consequence.

Reviewed by:

Everett H. Ramey

APPROVED

S. V. Sulliteh
Chief, Review Section
Division of Photogrammetry

W. Edmiston
Chief, Nautical Chart Branch
Division of Charts

O. S. Reading
Chief, Div. of Photogrammetry

Chief, Div. of Coastal Surveys
History of Hydrographic Information
T-9167, Florida

Hydrography was applied to the manuscript of this quadrangle in accordance with Division of Photogrammetry request of 12 December 1950, and with general specifications of 18 May 1949.

The depths are in feet at mean low water and originate with the following surveys and charts:

USC&GS Hydrographic Surveys
H-6676 (1941) 1:10,000
H-6727 (1941) 1:10,000

USC&GS Nautical Chart
844 (1949) 1:40,000

Bottom contours are shown at 6 feet.

The hydrography was compiled by R. E. Elkins and checked by G. F. Jordan.

R. E. Elkins
Nautical Chart Branch