T-11993 thru 11997

Form 504

U. S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey: Shoreline and Mean-Low Water Line

Field No. / Office No.: T-11993 thru T-11997

LOCALITY

State: Louisiana

General locality: Gulf Coast

Locality: Atchafalaya Bay

19 60 - 1961

CHIEF OF PARTY

LIBRARY & ARCHIVES

DATE: SEP 23 1965

COMM-DC 61300

T-11993 thru 11997

T-11993 thru 11997

LOW-WATER LINE MAPPING--LOUISIANA COAST

In the period 1958 to 1961, the Coast and Geodetic Survey mapped the mean low-water line of the entire outer coast of Louisiana for the Bureau of Land Management and the State of Louisiana. This mapping was divided into three projects:

Project 20,000-808: This project comprised 41 maps covering all of the outer coast of Louisiana except the Mississippi Delta, and the Atchafalaya Bay and Marsh Island area.

Project 20,000-819, Part I: This project covered the outer coast of the Mississippi River Delta.

Project 20,000-819, Part II: This project covered the Atchafalaya Bay - Marsh Island area.

The records for these three projects are filed as follows:

PROJECT 20,000-808

The detailed report for this project is filled in the Coast and Geodetic Survey Archives under the title "Project Completion Report - Special Low-Water Line Maps - Louisiana Coast - Project 20,000-808."

The 41 maps were numbered for Coast Survey files: "RS634 to RS674." The compilation manuscripts and a set of the maps identical to those sent to the Bureau of Land Management are filed in the Federal Records Center under accession number 59A2429 - Box 152.

A very brief report on the compilation phase of this project is filed in the Photogrammetry Division general files which also probably contain one or more sets of maps RS634 to RS674.

PROJECT 20,000-819, PART I
MISSISSIPPI RIVER DELTA

The original report giving details of both the field and office phases of this project is filed in the Coast and Geodetic Survey Archives under the name "Special Report 1959, No. 101, - Aerial Photography and Field Inspection Report - Mississippi Delta, Louisiana," by Jones, Battley, and Shofnos.

A duplicate of the above mentioned report is filed in the Coast and Geodetic Survey map vault as "Descriptive Report No. T10944 to T10957."

A narrative account of this project by Jones and Shofnos was also published in the International Hydrographic Review of January 1961, volume 38, No. 1.

The field inspection photographs, listed in the above reports are filed in the Federal Records Center, under accession number 66A1888. (See Photogrammetry Division file section in order to draw these records from the Federal Records Center).

Map numbers T10944 to T10957 are filed in the Coast and Geodetic Survey map vault as original records. This set, however, does not contain the angle points and coordinates of angle points shown on the maps sent to the Bureau of Land Management. The manuscript drawings for these maps which do show the angle points and coordinates of angle points are filed in the Federal Records Center under accession number 64A1677 - Box 41 and Box 42. These accession numbers are recorded in the Photogrammetry Division file section under map numbers T10944 to T10957.

PROJECT 20,000-891, PART II
ATCHAFALAYA BAY AND MARSH ISLAND AREA

The original copy of the detailed report for this project that describes both the field and office work is filed in the Coast and Geodetic Survey Archives as "Special Report 1961, No. 2, - "Shoreline and Mean Low-Water Line Mapping, Atchafalaya Bay, Louisiana," by Wilson, Townsend, and Photogrammetry Division.

A duplicate of the report mentioned in the preceding paragraph is also filed in the Coast and Geodetic Survey map vault as "Descriptive Report T11993 through T11997."

The field records, that is field inspection photographs and notebooks mentioned in the report, are filed in the Federal Records Center under accession number 66A1888. This accession number is recorded in the file section, Photogrammetry Division and the field records can be drawn by application to that section.

One set of the maps on this project are filed in the Coast and Geodetic Survey map vault as original map records under numbers T11993 through T11997. This set of maps does not, however, show the angle points and coordinates of angle

points shown on the maps sent to the Bureau of Land Management. The original manuscripts showing these angle points are still in the Photogrammetry Division general files. These original manuscripts will be sent to the Federal Records Center and the accession number will be recorded in the Photogrammetry Division file section under the map numbers T11993 through T11997.

The field records that were formerly filed in the Office of the Chief, Photogrammetry Division, are the records now filed in the Federal Records Center, under accession number 66A1888.

November 5, 1965

Project 20,000-819, Part II

Mean-Low Water Line Mapping

Atchafalaya Bay, Louisiana

1960-61

The original report on this project including all of the references listed on the next page is filed in the Library as a special report under the name of the Chief of Party, Joseph K. Wilson, and under the date, 1960-61.

This descriptive report contains only references a and j of those listed on the next page.

April 12, 1961

Descriptive Report
Project 20,000-819 - Part II
Mean-Low Water and Shoreline Mapping, Atchafalaya Bay, La.

1. References: The following references are attached as appendices:

a. Project diagram

b. List of aerial photographs with tide stage at which these were taken

c. Tabulation of tide stages during aerial photography

d. Tabulation of staff readings for mean-high water and mean-low datum at each tide station.

e. Statement of area controlled by each of the eight tide stations

f. Tabulation of tide stages during inspection of mean-low water line

g. Tabulation of tide stages during inspection and levelling of mean-high water line

h. Tide predictions for November and December 1960

i. Project instructions

j. List of field records

k. Selected tide curves showing predicted and actual tides during aerial photography and field inspection

2. This is a narrative report to record information for office compilation and also to record details of this project that may be useful in planning future projects of this nature.

PURPOSE AND SCOPE

3. Project 20,000-819 is a cooperative project between the Coast and Geodetic Survey, the Federal Bureau of Land Management, and the State of Louisiana. The project will provide basic tidal data and new coastal maps showing the mean-high water line, the mean-low water line, and alongshore details. A special set of these maps will be prepared and printed for the State of Louisiana and the Bureau of Land Management showing turning points, or angle points, with coordinates, selected along the low-water line by the State of Louisiana and the Bureau of Land Management.

4. Part I of Project 20,000-819 covers the Mississippi Delta area. Field work for this was completed in 1959 and early 1960 and is the subject of a separate report. This report covers Part II of Project 20,000-819, Atchafalaya Bay, Louisiana and vicinity as shown on reference (a). Five 1:20,000 scale shoreline maps, Nos. T-11993 to T-11997 inclusive, will be made for this section, Part II.

OUTLINE OF PROCEDURES

5. This mapping includes the following consecutive operations:

a. Tide observations to determine datums

b. Control surveys

c. Aerial photography

d. Field examination of the low-water photography

e. Field examination and surveys of the mean-high water line

f. Aerotriangulation

g. Map compilation

h. Plotting and scaling of angle points

i. Reproduction and printing

TIDAL DATA

6. In order to establish the mean-high water and mean-low water datums a continuous series of tidal observations is being made at eight tide stations shown on reference (a). These stations are Lighthouse Point, South Point, Rabbit Island Pass, Well "11", Eugene Island*, Point Au Fer, Shell Island, and Point Chevreuil. The observations were started in April 1960 and will continue to June 1961. In order

*Eugene Island Station is a standard gauge that has been in operation since 1940.

6. continued

to determine preliminary values for the mean-high water and the mean-low water datums for aerial photography beginning in November 1960, the following was done:

7. Accepted values for mean-sea level were obtained by comparison with Galveston, Texas. Harmonic constants for each of the eight stations were obtained from a 29-day series and adjusted by comparison with harmonic constants from a 369-day series at Eugene Island.* The harmonic constants showed that the diurnal tide is dominent in this area and so the deductions were made on a diurnal basis. Mean-high water and mean-low water datums were determined through the regular harmonic constant reduction process. These datums, as determined in early November 1960 (using the tidal observations from April through October 1960) are listed in reference (d). These are the preliminary datums used for all aerial photography and all field work discussed in this report. The values listed in reference (d) will be corrected if different from the final values determined in July-August 1961 from the entire series of tide observations beginning April 1960 and to be concluded in June 1961.

8. The tidal surveys are being made by the party of LT Charles K. Townsend, using Launch 180 based at the Texas

*Eugene Island Station is a standard gauge that has been in operation since 1940.

8. continued

Company Horseshoe Bayou Camp. The Rabbit Island Pass and Eugene Island gauges are standard gauges; all others are portable gauges. Because of the distances involved for servicing gauges the gear ratios on the portable gauges were changed to provide for one revolution of the drum in 96 hours instead of the usual 48 hours. Launch 180 is slow and of rather deep draft for this area. This has been a handicap to the tide party and, when weather conditions permit, that party uses an "Orlando Clipper" skiff with two outboard motors that makes 15 knots or better.

9. The Texas Oil Company, through Mr. Martin Standard of New Orleans, has been extremely helpful to both the tide and photogrammetric parties in providing facilities at their Horseshoe Bayou camp and in tending the tide station at Lighthouse Point which would otherwise have required an extremely long run by our party.

10. Photogrammetric field survey party No. 720, under Mr. Joseph K. Wilson, moved into this area in September 1960 and will be there until early April 1961. During this period LTJG Townsend and Mr. Wilson have operated their parties as a unit and both have been involved in all phases of the work.

CONTROL SURVEYS

11. New control surveys were necessary for mapping, particularly for positioning the reefs across the Bay entrance where there is insufficient land detail for photogrammetric bridging. Reconnaissance in early September 1960 showed the old stations on Shell Keys, at Point Au Fer, and most of those along the north shore of the Bay to be lost. However, the old stations at Mound Point, South Point, Southwest Reef Lighthouse, and Eugene Island Light were still available. Therefore, a combination of triangulation and tellurometer traverse was run between South Point and Point Au Fer to provide the additional control stations shown on reference (a). This turned out to be extremely difficult and hard work because of the exposed nature of the area and the shallow water. This work was done with Launch 180, and with skiffs and outboards during good weather, except for use of a helicopter for building stands on Marsh Island. All boat runs were roundabout because the shoals make it impossible, in most cases, to run a straight line between any two points. However, by using up all of the daylight hours and most of the Saturdays and Sundays, this work, started in late September, was completed in early November. The selection of stations across the Bay entrance was such that no additional control had to be put in after taking the aerial photography and the photographs across the Bay entrance will be strongly fixed.

FACTORS PERTINENT TO THE PROJECT

12. Plans for mapping the mean-low water required that infrared aerial photography be taken within 0.1 ft. of mean-low water. This work requires a firm mean-low water datum at each station. Tide observations were started in April 1960 and will not be completed until June 1961. Consequently, the mean-low water mapping described in this report was done on mean-low water datums established after only five months of tide observations. These are fairly firm but might change by as much as 0.1 ft. when the entire series is completed and the data processed.

13. It was necessary to do the mean-low water photography between mid-November 1960 and mid-February 1961 or wait until the same period in 1961-62. This is because mean-low waters rarely occur in this area during photographic daylight except in the period mid-November to mid-February. To wait until 1961-62 would have been extremely expensive because of the maintenance of the tide stations for another seven months.

14. Because of the possibility of a slight change in datums, as mentioned above, the plan for this mapping called for infrared photography at 0.1 ft. intervals from 0.2 ft. below preliminary mean-low water datum to 0.2 ft. above preliminary mean-low water datum.

15. The time available for mean-low water photography on any one tide is usually very limited. There is a period at the bottom, or low point, of the tide of 1 to $1\frac{1}{2}$ hours when little or no vertical change occurs. However this period rarely occurs when the tide is exactly at mean-low water; usually the low point of the tide is either above or below the mean. Consequently, photographs at exactly mean-low water or within 0.1 ft. or 0.2 ft. of mean-low water have to be taken more often than not with the tide rising or falling at the rate of 0.4 ft. per hour or even faster.

16. Mean-low water infrared photography had to be controlled from each of eight tide stations for different parts of the project. Plans called for having five observers out at all times during photography.

17. No tide station on the project was suitable as a base of operations for controlling the photography. The Rabbit Island Pass standard gauge was remoted to the Texas Company Horseshoe Bayou Camp which was used as our base of operations for aerial photography and field inspection (see reference (a)). Coast Survey Launch 180, two chartered launches, and a skiff were used for tide observations. An observer could be put ashore at Eugene Island but each of the other stations had to be occupied from a boat. The area controlled by each tide station is listed in reference (e).

18. Radio communications were by walkie-talkie (frequency 34.98 mc). A 65-watt transmitter was installed at the base for this frequency and the aerial elevated to about 80 ft. above mean-sea level. Each aircraft and each tide observer was equipped with a handy-talkie radio. This system worked extremely well and the base station could communicate with all tide observers and with the aircraft at all times. Communication with the base station was also possible from the helicopter in flight.

19. In addition to the mean-low water infrared photography it was also necessary to take wide angle panchromatic control photography for bridging and for fixing the positions of the reefs across Line 5 (reference (a)). Consequently, two aircraft were used: Mission 702 in the Aero Commander did all the infrared photography and Mission 701 in the Coast Guard DC-4 aircraft did the control photography. Mission 701 is equipped to operate the nine-lens and two single-lens cameras simultaneously. Their photography included nine-lens panchromatic photography, RC-9 panchromatic photography (120 degrees single-lens), and color photography, all taken at an altitude of 6,800 ft. and also nine-lens and RC-9 photography taken at an altitude of 13,600 ft.

AERIAL PHOTOGRAPHY

20. Both aircraft were stationed at New Orleans. The crews could be contacted by telephone from the Horseshoe Bayou Base Station. Operations were started at the base station about 5:00 a.m. on days when mean-low water could be expected. The first item of business was to plot the tide curve for the preceding 8 or 10 hours and project this to decide whether the tide was going low enough for photography. The second step was to contact the Weather Bureau at New Orleans for a forecast and then, if conditions seemed at all favorable, to alert the air crews by 6:30 a.m. Once over the area the aircraft were directed by radio from the base station. We found this easier than having the aircraft talk directly to the tide observers. Tide observations were received at the base from the tide observers at about 15-minute intervals and the aircraft were informed as to what line to fly at what time.

21. The weather forecast proved to be of very little value; our conditions were too local. If, at 6:30 a.m., tide conditions looked good and a fair showing of stars could be seen through cloud breaks, we called Mission 702 for infrared photography. If the skies appeared a bit more clear, we called both missions. All photography was completed in this manner on November 19, 20, and 21 although on none of these days did the weather forecast indicate favorable conditions.

22. On November 19 the tides went barely to mean-low water, which gave us one and one-half hours to photograph, and the cumulus cloud coverage opened up pretty well over the Bay. Better than half of the infrared photography was done this first day. On November 20 the tides again stood at 0.0 ft. or close to that for some time but the cumulus cloud cover was heavier. Both missions were called on this day and the control photography was completed and infrared photography nearly completed. November 21 gave us a low tide (minus 0.9 ft.). Cumulus cloud cover was a little heavy but Mission 701 managed to pick holes enough to photograph on both the fall and rise of the tide and to complete the remainder of the infrared photography.

FIELD INSPECTION AT MEAN-LOW WATER

23. The infrared photography was field inspected at mean-low water to verify, in general, the accuracy of the mean-low water line pictured on these photographs and specifically:

a. To be sure that no small reef tops, bare at mean-low water, were missed, that is, not recorded on the 1:20,000 scale photography.

b. To "X" out (mark for omission) low-lying reefs just visible on the photography that might actually be slightly covered at mean-low water.

c. To get enough information on the elevations above water of low-lying reefs to be able to complete the mean-low water mapping regardless of a possible datum change of 0.1 or even 0.2 ft. which might be either plus or minus.

24. Infrared photographs were taken, as noted above, at mean-low water, at a slightly minus tide, and at a slightly plus tide. Careful stereoscopic comparison of the several sets of pictures on each line (reference (a)) eliminated certain areas as requiring little or no field inspection and pin pointed those places that required a detailed field inspection. For example, the higher reefs bare on both the zero tide photographs and the plus tide photographs required little attention, whereas low reefs just bare on zero tide

24. continued

photographs might cover if the datums were raised slightly. All of the area was gone over carefully and particular attention was paid to the low-lying points of reefs lying outside and south of the main reef line across Atchafalaya Bay.

25. Field inspection was done by helicopter with almost the same tidal control as described above for the aerial photography. The field inspecting unit knew at all times the exact stage of the tide in reference to mean-low water for the area being examined. Since the tide moves quite fast (0.1 ft. every 15 minutes) not all of the field examination could be done exactly at mean-low water. It was usually started on a minus tide (0.2 or 0.3 ft. below mean-low water) and continued through the mean-low water stage. On low-lying reef tops the height of the tops above the water surface was measured or estimated and later referred to the tide stage at the controlling tide station to determine the elevation above or below mean-low water. If the low-lying reef top was of particular importance, that is, lying off the main reefs, the helicopter was landed and the height of the top above the water surface was measured with a hand level. The height above the water surface of less important low-lying tops was estimated while hovering just above them in the helicopter.

26. The aerial photographs were processed in Washington and prints returned to the field party in time to begin the mean-low water inspection on November 30. Weather and tides permitted mean-low water inspection for four days during the series of lows from November 30 to December 6 and for about the same number during the series from December 15 to 23. All of the mean-low water inspection was completed during this period except for a few checkups that had to be made during the series of lows from January 9 to about January 15, 1961.

27. As mentioned previously, there are many detached small tops of reefs bare at low water and a careful program was worked out so as to be sure not to miss any of these. The color and panchromatic photography penetrated the water slightly in this area and all indications shown on those photographs were investigated. Further, all shoal indications on the nautical charts were investigated for possible bare spots. The mean-low water field inspected photographs are listed in reference (b) and also in reference (g). All notes made during field inspection have been inked directly on these photographs; notes were made in pencil during field work, and studied and inked immediately thereafter. These notes show the date and time of the field examination, staff readings at the controlling tide stations, heights of low-

27. continued

lying reef tops above the water surface as measured during the field inspection, and deletions of features covered at mean-low water and to be omitted from the maps. References (a), (d), (e), and (f) are particularly pertinent to the reduction of these field notes and to the mapping of the mean-low water line.

CHARACTER OF ATCHAFALAYA BAY REEFS

28. The field inspection covered the portions of the reefs that bare between about -0.3 ft. below mean-low water and mean-high water. These are generally covered with live oysters. These oysters provide a hard cohesive covering and the oysters stand on end, exposing their sharp edges. The reefs are mostly flat, irregular in shape, and almost all of them are covered at half tide. The covering of live oysters is doubtless underlain by mud and silt. Presumably, the hard covering of oysters prevents erosion of the reefs. Our work did not indicate whether these reefs tend to build up in height as the oysters develop or accumulate in numbers. The predominant color of the reefs is black or an extremely dark green. They tend to show white on infrared photography and dark on color and panchromatic photography. The dark color is probably due to an accumulation of silt on the shells. Reefs of this character exist along and off the south

28. continued

shore of Marsh Island, extending in the area of Mound Point southward to Shell Keys, across the Bay entrance between South Point and Eugene Island, and between Eugene Island and Point Au Fer. These reefs appear as islands at mean-low water. They are usually not connected to the mean-high water line but may lie close to it.

29. The mean-low water line along the south shore of Marsh Island consists mostly of mud and sand. In some places this connects at low water to shell reefs as described in paragraph 28.

The mean-low water line along the main shore from Point Chevreuil to the eastern limits of the project is also on mud and sand rather than on shell reefs as described in paragraph 28.

30. An exception to the description in paragraph 28 occurs where dead shell has been piled up on the reefs by dredging or by wave and storm action. This has occurred in small areas, or spots, off the south shore of Marsh Island and across the main reef line between South Point and Point Au Fer. These high points, or piles of dead shell, are loose on top, becoming progressively more compact farther below the surface where they become mixed with mud. Presumably, there are no live oysters under these. However, most of these piles of dead shell are immediately adjacent

30. continued

to lower reefs covered with live oysters. These higher points, or piles of dead shell, are subject to a certain amount of movement, both horizontally and vertically, as a result of wind and wave action. Their tops are higher than the shell reefs discussed in paragraph 28. Some are just above half tide, others are just below mean-high water, and a few bare at mean-high water.

31. The character of the reefs and higher piles of loose shell discussed in paragraphs 28 and 30 are shown in 35 mm photographs, numbers C-1, C-6, C-7, D-9, D-11, D-18, and F-6, that were taken during the field inspection.

MEAN-HIGH WATER LINE

32. This report has thus far been devoted primarily to the mean-low water line. However, the maps on the project will also show the mean-high water line and it was the intent of the project plan to map the mean-high water line of Marsh Island, Point Au Fer, Eugene Island, Shell Keys, and any islets existing across the entrance to Atchafalaya Bay with the same care and accuracy devoted to the mean-low water. This has been done and considerable time was devoted to inspecting and locating the mean-high water line on aerial photographs.

33. It was not practicable to take infrared photography at mean-high water at this time because mean-high water rarely occurs at this season during photographic daylight. Consequently, field operations were based on not having mean-high water photography.

34. Point Au Fer and Eugene Island: The mean-high water line is well defined and requires no unusual procedures. It will be carefully identified on the photographs. Photographs discussed in paragraph 43 illustrate the character of the shoreline on Eugene Island.

35. Marsh Island: A description of the Marsh Island shoreline (maps T-11993 and T-11994) is contained in Book 4 of the mean-high water records. Much of this shoreline was previously mapped as apparent; that is, mapped as edge of marsh. However, a detailed examination in December 1960 shows that this can be mapped as shoreline on land. The western section from Lighthouse Point to the vicinity of Diamond Reef is quite well defined and consists of shell and sand. From the vicinity of Diamond Reef eastward the shoreline falls into two classes:

a. Part of it is a low mud cliff, the top of which is above mean-high water.

b. The remainder is gently sloping and is covered with marsh and the mean-high water moves into the marsh grass slightly but only for 10 to 15 meters, a distance too small to show on 1:20,000 scale maps.

35. continued

Just back of this narrow marsh is usually an old beach ridge that is higher than mean-high water and is found just back of the shoreline. The land falls off again inshore from this beach ridge. The field party inspected this area closely by helicopter at a tide stage only a few tenths below mean-high water. Three or four of the lowest points were leveled to make certain that there were no places where mean-high water breaks through to the interior. In these cases leveling was carried from the water surface through the grass over the beach ridge into the low land on the inside of that ridge. These places are indicated on the mean-high water inspection photographs. Photographs mentioned in paragraph 43 show some of the shoreline on Marsh Island.

36. Shell Keys: These are low-lying and consist of loose shell without vegetation. Spirit levels were run from the water surface to points along the keys and referenced to the controlling tide station to identify the mean-high water line of these keys.

37. Shell Islets Not Previously Mapped: A careful and detailed inspection was made off the south shore of Marsh Island and across the Bay between South Point and Point Au Fer to detect any points on the reefs (see paragraph 30) that might be high enough to bare at mean-high water. This work was started on December 1, 1960 and, between December 1 and December 3 some 14 higher points of the

37. continued

reefs were noted for additional investigation. These 14 points are shown on reference (a). Another search of the entire area between South Point and Point Au Fer was made by helicopter at tide stages of 0.2 ft. to 0.3 ft. below mean-high water on February 10, 1961 to be sure that no small islets bare at high water had been missed by the first investigation. This last search of the area is recorded in field record book 4 of the mean-high water records. No additional high places were found.

An attempt will be made to take infrared photography at mean-high water across this area in May 1961. This photography is not essential for the mapping since the mean-high water surveys discussed here provide adequate information. However, it is thought that the photography will be of value in the future for record purposes and it will be taken if practicable.*

38. In reference to the preceding paragraph, separate levels were run on each of the 14 points from the water surface to the top of the shell reef and referenced to a tide staff to determine the elevation in reference to mean-high water. It was found that some of these were definitely bare at mean-high water. Others were only

* Photography taken May 9, 1961. See pages 21A and 21B

38. continued

slightly below mean-high water. These small islands or islets are composed of loose shell and are subject to change by storms (see paragraph 30). For this reason, temporary bench marks were established on most of them and they were leveled to and revisited subsequently to note the degree of change. This information is summarized in book 3 of the mean-high water records. Several of these points are bare at mean-high water and will be shown as small islands and labeled for identification. They are extremely small and when represented to scale will only be a half millimeter to a millimeter long on the maps.

39. The preceding paragraph discussed field work up to about December 23, 1960. It was later decided that some of these small shell islands might be extremely important in the future and, for that reason, more permanent bench marks were established on numbers 4, 6, 7, 9, and 10. Two such bench marks were also set on Shell Keys so that changes in the keys can be studied in the future. For these marks the field party drove copper-weld rods 20 to 30 ft. through the shells and the mud to reach firm bottom. A bench mark with a concrete collar was placed at the top of each and the elevation, in relation to mean-high water, determined by leveling from the water surface and referencing these levels to the controlling tide station. Descriptions of these marks and the leveling records are in mean-high water book 5.

ATCHAFALAYA BAY, LOUISIANA
Tide Stages During Aerial Photography
Referred to Mean-High Water

Date Time	South Point	Well 11	Rabbit Island Pass	Eugene Island
May 9, 1961				
09:51	-0.2	+0.1	0.0	0.0
10:02	-0.1	+0.2	+0.1	+0.1
10:06	0.0	+0.2	+0.1	+0.1
10:11	0.0	+0.2	+0.1	+0.1
10:30	+0.1	+0.2	+0.1	+0.2
11:03	0.0	+0.2	+0.2	+0.3
11:12	0.0	+0.1	+0.1	+0.4
11:16	-0.1	+0.1	+0.1	+0.4
11:20	-0.1	0.0	+0.1	+0.4
11:31	-0.1	0.0	0.0	+0.4
11:35	-0.2	0.0	0.0	+0.4

21 B

3

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
701 First Street
Franklin, La.

9 May 1961

To: Assistant Director for Oceanography
Coast and Geodetic Survey
Washington 25, D. C.

Subject: High-Water Aerial Photography for the Atchafalaya Bay

The high-water photographs for the Atchafalaya Bay area were taken on 9 May under good tidal and weather conditions. Because of unusually bad weather for the past ten days with strong south winds and cloudy skies, only one other attempt was made to take photographs previous to this and it was unsuccessful.

Photographs were taken at the following times on 9 May:

At 10,000 Feet		At 5,000 Feet	
* Line 1	1006 to 1011	Line 1	1116 to 1120
* Line 2	0951 to 1002	Line 2	1103 to 1112
* Line 3	1028 to 1030	Line 3	1131 to 1135

The following are staff readings at the Rabbit Island pass tide gage during the time of photography on 9 May: (Mean high water on staff is 4.80 feet)

Time	Feet	Continued Time	Feet
0945	4.53	1045	4.85
0950	4.64	1050	4.85
0955	4.75	1056	4.83
1000	4.80	1100	4.83
1005	4.81	1105	4.83
1010	4.75	1109	4.80
1015	4.75	1115	4.80
1021	4.75	1120	4.80
1025	4.75	1125	4.75
1030	4.75	1130	4.70
1032	4.80	1135	4.70
1035	4.85	1140	4.65
1040	4.85		

* Line 1 follows along original line 7 shown on ref(a); line 2 along original line 5; and line 3 along original line 4

Charles K. Townsend
LTJG, C&GS
Chief of Party

CC: Chief, Photogrammetry Division

See ~~attached~~ preceeding sheet for final datum Tide values for all stations involved.

40. The results of the investigation of the 14 higher points on the reefs are summarized in paragraph 42. One of the most important of these islets is No. 6, the farthest offshore in the area of the Bay and the most distant from South Point.

41. The piling up of the loose shell on some of the points listed in paragraph 42 may have been done by dredging and the deposit of spoil. Points 11 and 12 (the highest of the group) lie on either side of and close to an oil well. Point No. 10 is close to an oil well. Points 6 and 7, both of which are above high water, are not adjacent to wells.

STOCK NO. 38

42. Summary of elevations, referred to mean high water, of high points, or spots, discussed in paragraphs 37 through 40.

Reference No. (see ref. (a) for position)	Elevation in Feet *	How it will be shown on map. **
1	-0.6 to + 0.3	- Awash at MHW
2	-0.3 to +1.0	- Islet (0.3' above MHW
3	-0.1 to +0.4	Islet (0.2' above MHW)
4	-0.4 to +0.1	Awash at MHW
5	-0.8	Omit as regards MHW
6	+0.9 to +1.6	Islet(1.3' above MHW)
7	+1.0 to +1.8	Islet(1.5' above MHW)
8	-0.4 to +0.6	Awash at MHW
9	-0.9 to +0.6	Awash at MHW
10	-0.0 to +0.4	Awash at MHW
11	5.5	Islet(5.5' above MHW)
12	5.5	Islet(5.5' above MHW)
13	-0.0 to +0.2	Islet(0.1' above MHW)
14	-0.7	Omit as regards MHW

*Variation in elevation indicates the islet or spot changes and the elevation of top varied between these extremes as shown by leveling at 2 or more different dates.

**Elevation is the mean value of elevations determined from leveling on several different days between Dec. 4, 1960 and Feb. 2, 1961. Points shown as awash had mean value of -0.1 to 0.0.

PHOTOGRAPHS

43. A number of 35 mm photographs were taken during field work to show some of the field operations and to show the character of the shell reefs, particularly the high points bare at mean-high water. These photographs are referred to in the mean-high water record books and will be filed in one cahier with the project records.

CONTROL FOR PHOTOGRAMMETRIC MAPPING

44. Horizontal control has been identified throughout the project area for bridging and photogrammetric plotting prior to compilation:

a. Line 1 will be air triangulated using infrared photographs, probably strip (60-L-1120 to 1135). Required photographs on Line 2 can be radial plotted to this bridge to compile the offshore extensions of some of the reefs.

b. Line 3 will be controlled by a radial plot of photographs 60-M-430 to 435 between Δ Mound Point and Δ Bob and with additional control from the bridge on Line 1.

c. The compilation of details from infrared photographs on Lines 4, 5, 6, and 7 will be controlled by plotting high altitude Line C RC-9 photographs Nos. 60-M-455 to 463. Sufficient control has been located

44. continued

and identified to rectify and bring to scale each of these high altitude photographs (scale of the photography about 1:53,000). Pass points must then be selected between these photographs and the infrared photographs so as to control the delineation of details; that is, mean-low water line and mean-high water line.

d. Lines 8 and 9 will be controlled by aerotriangulating the infrared photographs insofar as this is possible. The existing planimetric maps which are of standard accuracy may have to be used to supply some of the control for mapping these lines.

MISCELLANEOUS

45. Air photographic crews and the field survey parties are to be commended for taking advantage of every break in weather and tides on this project. By doing so they have completed the field work sooner than we had anticipated. This early completion has also been possible because of the excellent communication facilities and the use of the tide recorder at the base camp. Photographing within one-tenth of a tidal datum is a rather tricky operation at best and it cannot be done without this adequate communication between the base of operations, the tide stations, and the aircraft.

46
~~47.~~ A compilation report will be added by the Cartographic Branch upon completion of the office work.

B.G. Jones
B. G. Jones, Tech. Asst. to
Chief, Photogrammetry Division

William Shofnos
William Shofnos, Asst. Chief
Marine Data Division

Approved:

L. W. Swanson (LFW)
L. W. Swanson, Chief
Photogrammetry Division

K. S. Ulm
K. S. Ulm, Chief
Marine Data Division

COMPILATION REPORT
ATCHAFALAYA BAY, LOUISIANA
MAPS T-11993 - T-11997

1. Marsh Island and Shell Keys - Maps T-11993 and T-11994: Compilation of the south shore of Marsh Island was controlled by stereoplanigraph aerotriangulation of 14 models (Line 1) (photos 60-L-1121 to 1134). This bridge was controlled by the following triangulation stations: Mound Point, 1955; Cove, 1933; La Croix, 1933; Channel, 1933, S.W. Pass Vermillion Bay Lt. 1, 1955. Maximum residual error at any control station after adjustment was 7.8 feet. Shoreline and alongshore details were compiled by Kelsh plotter.

2. Shell Keys and the reefs between Shell Keys and Mound Point were controlled by graphic radial plot.

3. Details west of Southwest Pass (western edge of map T-11993) were compiled by correcting map No. T-9113 of 1948 as a base.

4. Mean-low water line was compiled from the field inspection photographs on to the basic map compilation described above.

SOUTH POINT TO POINT AU FER

5. This section refers to the central part of the project shown on maps T-11994, T-11995 and T-11997 and covered by photographs on strips 4, 5, 6, and 7 (see reference "a").

6. Control for compilation of details in this section was provided by plotting the RC-9 photographs (Line 5) taken at a scale of approximately 1:47,000. The triangulation stations shown on reference "a" provided the control for fixing these photographs and provided sufficient information to make exact scale enlargements. Ratio prints of the photographs were made on cronapaque. The ground control stations were transferred from the field identification photographs to these prints and the RC-9 photographs (ratio prints) fixed in position by radial plot methods. There was sufficient ground control to fix the position of individual photographs in nearly every instance. A limited amount of radial plotting was done then to position points along the reefs. Actually, there is so little difference in elevation of features (1-2 ft.) and the ratio prints could be fixed and plotted so exactly to scale that these features could be traced into position in most instances and very little radial plotting was necessary.

7. The mean-low water line was stereoscopically transferred from the field inspection photographs to the plotting photographs mentioned above and then compiled onto the manuscripts. The stereoscopic transfer of the mean-low water line from the field inspection photographs to the plotting photographs also included a careful study of all of the photography in the area. (See also Paragraph 8 below.)

NORTH SHORE

8. Prior surveys Nos. T-9023 to T-9025 and T-9031 were used as bases for compiling the coastline from Shell Island to Rabbit Island. This shoreline and the alongshore features were corrected from the new photography. The low-water line was then compiled onto this base from the field inspection photographs.

GENERAL

9. Several sets of photographs were available for this project. These are listed in reference "b" and include nine-lens photography, color photography, RC-9 panchromatic photography, and infrared photography taken at several tide stages from about 0.2 feet below mean-low water to 0.2 feet above mean-low water. All of these photographs were used in studying and compiling the low water line. The field inspected photographs provided the primary information for delineating the mean-low water, particularly on the low lying spots that are just bare at mean-low water. However, to be sure that nothing was missed, all the sets of photographs were compared and studied stereoscopically. The water is muddy in most of the area; consequently, there was very little penetration of water by either the color or panchromatic photography.

10. Because of erosion of the shoreline, an exact junction could not be made at the eastern and western edges of this project with the maps (Nos. 1-41) made from 1954 photographs. Shoreline on this project at the east end and at the west end was compiled almost up to the first angle points shown on the 1954 maps and discontinued there. It does not overlap the old maps but does not join because of the change in the shoreline mentioned above.

11. These maps have been delivered to the Bureau of Land Management at this date. A separate set of negatives has been held in the Review Section for preparation of copies for our Archives. These copies will be made and registered as soon as the mean-low water information is released from its confidential classification by the committee representing the Bureau of Land Management and the State of Louisiana. The maps registered in our Archives will show exactly the same information except for the omission of angle points and the coordinates of angle points.

12. These maps were compiled, verified, and registered in the Compilation Section. The scaling, plotting, and lettering of angle points was done cooperatively between the Review and Edit and Compilation Sections.

K. N. Maki

K. N. Maki, Chief
Compilation Section

Approved by:

L. C. Lande, Chief
Review Section

~~L. E. Woodcock, Asst.~~ Chief
Photogrammetry Division

Chief, Nautical Chart Division

CHANNEL
LIGHT No. 1
LA CROIX
LIGHTHOUSE PT
MHW 13
MHW 12
MHW 11
I S L A N D
M A R S H
S H O A L
T-1993
29°30'
29°26'
I S L A N D
COTE BLANCHE
BAY
CONCRETE WATER CAMP
CUPOLA
COKE
PLATFORM
SCOTT SOUTH
SHELL WELL 9
REEF
(CR 127)
T-1994
RABBIT ISLAND
TEXACO DOCK
TEXACO WELL 10
TEXACO WELL 25
T-1995
BELLE ISLE TANK BATTERY
DYSON
T-1996
EUGENE ISLAND LIGHT ECC 1960
(FT. AUGER REEF LT. HOUSE)
T-1997
(1)
(2)
(3)
(4)
(5)
(6)
(7)
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Reg J.

RECORDS

1. Tide Books: 8 volumes - Records of tide staff readings during aerial photography and field inspection. CAHIER NO. 1 (Filed in Tides and Currents Branch)

✓2. Mean Low Water Field Inspection Photographs: ** Numbers listed on reference (b) and on transmitting letters following. CAHIER NO. 2 } Filed in locked file-chief Photogrammetry **

✓3. Mean High Water Field Inspection Photographs and Records:

Photo Nos: 60M-473, 436, 414 to 417, 394, 395,
60L-1147 and 1017
60L-879, 881, 882, 883, 885, 887, 888, 890, 892, 1238 and 1364
60L-955 to 967, 1039, 1416, 1418
60L-1372, 1373, 1374
60L-1148, Nine lens 61304

Record Books Nos. 1 to 5 inclusive (Book No 5 filed in Tides and Currents Branch)

CAHIER NO. 3

✓4. Misc. Photographs: Film and prints of hand held (35 mm) camera photographs showing various phases of field work but dealing particularly with character of small shell islets in Atchafalaya Bay.

CAHIER NO. 4

5. Control: Control Identification Cards
1 Record Book
Identification Photos:

60-L-1170, 1172, 1177, 1182
60-M-436, 60-M-408, 60-M-411
60-M-455, 456, 457, 458, 459, 461, 462, 463
60-L-979, 980, 1028, 1415

CAHIER NO. 5

6. Inspection of Structures:

Nine Lens No. 61307, 61310, 61311, 61312, 61324

CAHIER NO. 6

** Administratively restricted. Not to be shown or released to Public until released by Bureau Land Management.

B.G. Jones 6/10/63

Do not open hold for Mr. Jones

PCC 6913 Ref(J)

FORM 413 (7-18-58)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REFERENCE NO. 20

LETTER TRANSMITTING DATA

DATE Dec 28, 1960

TO: Chief, Division of Photogrammetry
Coast and Geodetic Survey
Dept of Commerce
Washington 25, D.C.

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

☐ ORDINARY MAIL ☐ AIR MAIL ☐ EXPRESS

☒ REGISTERED MAIL ☐ G.B.L. (Give number) _____

DATA WERE FORWARDED (Date) Dec 28, 1960

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

Project 20,000-819

MLW Inspection Photographs - Lines 1 through 9

60L-1171, 1173, 1197, 1175, 1195, 1176, 1129, 1144, 1178, 889, 891, 1131, 1125, 893, 917, 925, 927, 928, 1107, 869, 868, 867, 865, 863 861, 859, 857, 856, 853, 854, 952, 950, 952, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 1040, 1041, 1043, 1045, 1047, 1049, 1398, 1399, 1400, 1401, 1402, 1403, 1405, 1406, 1407

60M-431, 432, 434, 435, 437, 415, 403, 402, 399, 396

MHW Inspection Photographs (With attached hand-held photos)

60M-473, 436, 414 - 417, 394; 60L-1147, 1017; 3 record books, 1 envelop with misc. photos, 1 container of 35 mm film (3 strips)

Control

60L-1170,-1172, 1177, 1182; 60M-408, 411, 436, 455, 456, 457, 458, 459, 461, 462, 463
* 60M-455, 456, 457, 458, 459, 461, 462, 463
Form 152's (Control Identification Cards) and 1 record book

Miscellaneous: 8 tide books, 1 folder of misc. records, 2 sheets 1954 mosaics and 1 photo of the Texaco base.

H.F. Derrickson
(Signature)

* These photos shipped separately in mailing tube; balance shipped in box.

Photo Party 720
Division or Party

Franklin, La.
Location

RECEIVED THE ABOVE	NAME	TITLE

USCOMM-DC 27024

FORM 413
(7-15-58)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REFERENCE NO.
23

LETTER TRANSMITTING DATA

DATE
January 19, 1961

TO:
Chief, Division of Photogrammetry
Coast and Geodetic Survey
Dept of Commerce
Washington 25, D.C.

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

☐ ORDINARY MAIL ☐ AIR MAIL ☐ EXPRESS

☒ REGISTERED MAIL ☐ G.B.L. *(Give number)* _____

DATA WERE FORWARDED *(Date)*
January 19, 1961

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

Atchafalaya Bay Low Water Mapping Data
Project 20,000-819

3 single lens photographs 1:20,000 scale, Nos. 60-L 1132 thru 60-L 1134

Joseph K. Wilson
Joseph K. Wilson
(Signature)

Photo Party 720
Division or Party

Franklin, La.
Location

RECEIVED THE ABOVE

NAME	TITLE

USCOMM-DC 27024

FORM 413
(7-15-58)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REFERENCE NO.
24

LETTER TRANSMITTING DATA

DATE
January 24, 1961

TO:
Chief, Division of Photogrammetry
Coast & Geodetic Survey
Commerce Building
Washington 25, D.C.

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

☐ ORDINARY MAIL ☐ AIR MAIL ☐ EXPRESS

☒ REGISTERED MAIL ☐ G.B.L. (Give number) _____

DATA WERE FORWARDED (Date)
January 24, 1961

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

MHWL DATA OF MARSH ISLAND
ATCHAFALAYA BAY, LOUISIANA

11 - Single-lens photographs 1:20,000 scale Nos: 60-L-879, 881, 882, 883, 885, 887, 888, 890, 892, 1238, and 1364

Joseph K. Wilson
Joseph K. Wilson
(Signature)

Photo Party 720
Division or Party

Franklin, Louisiana
Location

RECEIVED THE ABOVE | NAME | TITLE

USCOMM-DC 27024

FORM 413
(7-1-8-58)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REFERENCE NO. 25

LETTER TRANSMITTING DATA

DATE 2-8-61

TO: The Director
Coast and Geodetic Survey
Washington 25, D.C.

ATTN: Mr. B.G. Jones; Div of Photo

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

- [ ] ORDINARY MAIL
- [ ] AIR MAIL
- [ ] EXPRESS
- [X] REGISTERED MAIL
- [ ] G.B.L. (Give number) _____

DATA WERE FORWARDED (Date): 2-8-61

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

SHORELINE AND CONTROL PHOTOS
Lines 8 and 9
Atchafalaya Bay, Louisiana

6 - Form 152

20 - Single-lens photographs, 1:20,000 scale
Nos: 60-L 955 thru 967, 979, 980, 1028, 1039, 1415, 1416, 1418

Joseph K. Wilson
Joseph K. Wilson
(Signature)

Photo Party 720
Division or Party

Franklin, La.
Location

RECEIVED THE ABOVE	NAME	TITLE

USCOMM-DC 27024

FORM 413
(7-18-58)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REFERENCE NO.
26

LETTER TRANSMITTING DATA

DATE
2-14-61

TO: Chief, Division of Photogrammetry
Coast and Geodetic Survey
Washington 25, D.C.

ATTN: Mr. B.G. Jones

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

☐ ORDINARY MAIL ☐ AIR MAIL ☐ EXPRESS

☒ REGISTERED MAIL ☐ G.B.L. (Give number) _____

DATA WERE FORWARDED (Date)
2-14-61

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

Atchafalaya Bay Low-Water Mapping
Project 20,000-819

RC-9 ratio prints, scale-1:20,000

60M 383 thru 393, 397, 398, 400, 401, 404 thru 407, 409, 410, 412, 413, 418 thru 430, 433, 441 thru 450

RC-9 Contact Prints, Scale - 1:25000

60M 383 thru 435, 437, 441 thru 476

Infra red Contact Prints

60L 841 thru 851, 855, 858, 860, 862, 864, 866, 870 thru 876, 878, 880, 884, 886, 894, 895, 897 thru 913, 915, 916, 918 thru 924, 926, 929 thru 933, 944 thru 949, 951, 953, 954, 968, 969, 971, 973, 975, 977, 981 thru 1016, 1018 thru 1027, 1029 thru 1038, 1042, 1044, 1046, 1048, 1050, 1060 thru 1064, 1068 thru 1101, 1103 thru 1106, 1108 thru 1118, 1120 thru 1124, 1126 thru 1128, 1130, 1135, 1137 thru 1143, 1145, 1146, 1149 thru 1153, 1155 thru 1159, 1161 thru 1166, 1168, 1169, 1174, 1179 thru 1181, 1183, 1184, 1186 thru 1191, 1193, 1194, 1196, 1198 thru 1202, 1204 thru 1236, 1239 thru 1255, 1281 thru 1361, 1365 thru 1370, 1375 thru 1397, 1404, 1408 thru 1414, 1417, 1419 thru 1430

No notes on these photos prior approval file

Joseph K. Wilson
Joseph K. Wilson
(Signature)

Photo Party 720
Division or Party

Franklin, La.
Location

RECEIVED THE ABOVE	NAME	TITLE

USCOMM-DC 27024

FORM 413
(7-18-58)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REFERENCE NO.
27

LETTER TRANSMITTING DATA

DATE
2-14-61

TO: Chief, Division of Photogrammetry
Coast and Geodetic Survey
Washington 25, D.C.

ATTN: Mr. B.G. Jones

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

☐ ORDINARY MAIL ☐ AIR MAIL ☐ EXPRESS

☒ REGISTERED MAIL ☐ G.B.L. (Give number) _____

DATA WERE FORWARDED (Date)
2-14-61

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

Atchafalaya Bay Low-Water Mapping
Project 20,000-819

RC-9 Ratio Prints, Scale-1:20,000

60M 395, 416, 451 thru 454, 460, 464 thru 466, 468, 470, 471, 474 61304

Nine lens Photos

61301 thru 61316, 61319 thru 61321, 61324 thru 61332

61307
61310
61311
61312
61324

InfraRed Contact Prints

60-L 1148, 1372 thru 1374

1 - Sketch Book (MHWL Notes)

1- Wye Leveling Book

1 - Tabulation of Levels

Note: those photographs circled have field notes and have been placed in file with field inspection records. All others are prints without notes and are go in general files

Joseph K. Wilson
Joseph K. Wilson
(Signature)

Photo Party 720
Division or Party

Franklin, La.
Location

RECEIVED THE ABOVE	NAME	TITLE

USCOMM-DC 27024