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Diag. Cht. No. 6157 (Insert)

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. LR-10248, LR-10348, LR-10448 *Office No.* H-7684, H-7685, H-7686

LOCALITY

State Washington

General locality Franklin D. Roosevelt Lake

Locality Hellgate Island to Spokane River Arm

1948-'49

CHIEF OF PARTY

J.T.Jarman

LIBRARY & ARCHIVES

DATE 3 APRIL 1950

8-1870-1 (1)

Form 537
(Ed. June 1940)

REG. NO. H-7684

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H-7684

Field No. LK-10248

State Washington

General locality Franklin D. Roosevelt Lake

Locality Hellgate Island to Moonshine Bay

Scale 1:10,000 Date of survey May-June 1948; June 20, 1949

Instructions dated 20 June 1947

Vessel LCVP

Chief of party J.T.Jarman

Surveyed by G.W.Moore - H.A.Marchant

Soundings taken by fathometer, graphic recorder, hand lead, wire Graphic Recorder

Fathograms scaled by R.S.Powell - R.Waterhouse

Fathograms checked by D.M.Whipp - H.Aaneson

Protracted by D.W.Congdon

Soundings penciled by E.K.Loop - J.C.Couch

Soundings in ~~fathoms~~ feet at ~~XXXXXXXXXXX~~ Soundings in feet at lake level datum of 1288.6 ft. above mean sea level (or 1290 ft. USBR, 1937). Elevations are in feet above lake level datum.

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 777032

Form 537
(Ed. June 1946)

REG. NO. H-7685

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H-7685

Field No. LR-10348

State Washington

General locality Franklin D. Roosevelt Lake

Locality Halverson Canyon to Lincoln Mill

Scale 1:10,000 Date of survey June-July 1948-June 1949

Instructions dated 20 June 1947

Vessel LCVP

Chief of party J.T.Jarman

Surveyed by D.M.Whipp, C.W.Moore, H.A.Marchant

Soundings taken by fathometer, graphic recorder, hand lead, wire Graphic Recorder

Fathograms scaled by R.S.Powell, R.Waterhouse

Fathograms checked by L.E.Evart, H.Aaneson

Protracted by C.N.Hillman

Soundings penciled by C.N.Hillman

Soundings in ~~fathoms~~ feet at ~~MLLWXXXMXXXX~~ Soundings in feet at lake level datum of 1288.6 ft. above mean sea level (or 1290 ft. USBR, 1937). Elevations are in feet above lake level datum.

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 777032

MAR 6 1950

Form 537
(Ed. June 1946)

REG. NO. H-7686

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H 7686

Field No. LR 10448

State Washington

General locality Franklin D. Roosevelt Lake

Locality Lincoln Mills to Spokane River Arm

Scale 1/10 000 Date of survey June-July 1948 - June 1949

Instructions dated 20 June 1947

Vessel Launch 98 and LCVP

Chief of party J.T.Jarman

Surveyed by Glenn W. Moore, J.T.Jarman, Hal. A. Marchat

Soundings taken by ~~fathometer~~, graphic recorder, ~~hand lead wire~~ Graphic recorder

Fathograms scaled by Henry Aanenson, R.S.Powell, James Robbins

Fathograms checked by L.E.Evart, Jr., Richard Waterhouse

Protracted by John C. Couch

Soundings penciled by John C. Couch

Soundings in ~~fathoms~~ feet at ~~MLW~~ 1288.575 Ft. MSL USC&GS or 1290.0 Ft. USBR datum of 1937

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 603019

Descriptive Report
To Accompany
Hydrographic Survey H-7684, Field No. LR 10248
Hydrographic Survey H-7685, Field No. LR 10348
Hydrographic Survey H-7686, Field No. LR 10448

In addition to providing a basic hydrographic survey of Franklin D. Roosevelt Lake, the party has attempted to obtain sufficient information by hydrographic methods from which the Bureau of Reclamation can delineate 10 foot bottom contours. Therefore, the survey is somewhat more detailed than would ordinarilly be the case.

A. INSTRUCTIONS

1. The hydrographic survey of Franklin D. Roosevelt Lake has been desiginated Project CS-332. This is in accordance with original INSTRUCTIONS, No. 22/MEK FP-Jarman dated 20 June 1947.

B. SURVEY LIMITS AND DATES

1. Sheet H-7684 LR 10248 extends from a point about 1 mile west of Hellgate Island to Halverson Cove. Work began on the sheet May 12, 1948, and ended June 2, 1948.

2. Sheet H-7685 LR 10348 extends from Halverson Cove to Lincoln Mills; work began on the sheet June 4, 1948, and ~~ended~~ July 6, 1948. & June 1949

3. Sheet H-7686 LR 10448 extends from ~~Lincoln Mills~~ Hawk Cr. Hbr. to a point 1.3 miles north of the Spokane River arm of the reservoir. Work began on the sheet June 7, 1948 and ended July 9, 1948.

4. Some developement and feeling with a lead line was accomplished during a short field season in 1949.

5. An index map has been prepared for each sheet to show the limits and field numbers of contemporary planimetric shoreline surveys and control sheets; they are attached to this report.

C. VESSELS AND EQUIPMENT

1. A navy type landing craft, vehicle and personnel, hereinafter referred to as launch LCVP was used for hydrographic surveying. It was leased, and a boat operator was furnished by the owner, for $590.00 per month. The launch gave satisfactory results. The turning radius of the launch at sounding speed was approximately 25 meters. A squat and settlement test on the launch gave negligible results. This launch used an outboard fish set at 2 feet.

2. A gasoline powered sounding launch, desiginated launch No. 98, was furnished the party by the USC&GS Ship SURVEYOR. It used an inboard fish set at 1.5 feet below the surface; turning radius was 20 meters.

3. A large houseboat (camp barge type) which served as a base of operations, provided the necessary living accomodations and storage space for supplies such as instruments and other important equipment. Fuel, generating equipment, and battery chargers were maintained on a small auxilliary barge. Signal building supplies and heavier items of a nature that would be harmed by the weather were stored on a large open barge which was generally kept ahead of the main operations.

4. The LCVP accomplished all of the work on sheet LR 10248 (H-7684) from a base camp at Keller Ferry, Washington. The bulk of the work on sheet LR 10348 (H-7685(1947)) was accomplished by the LCVP, but launch No. 98 was used 2 days. The bulk of the work on sheet LR 10448 (H-7686(1947)) was accomplished by the launch 98, but the LCVP was used on several days. The base camp was located at Hawk Creek while engaged on the latter two sheets.

5. Portable depth recorders of the 808 type were used on all of these sheets, No. 67 being used exclusively on sheet LR 10248 (H-7684), Nos. 67, 115, and 122 being used on sheet LR 10348 (H-7685), and Nos. 115 and 122 being used on LR 10448 (H-7686). An NK 7 type depth recorder was used on sheet LR 10448 for two days during the 1949 Season.

6. A lead line was used for feeling and obtaining soundings on submerged rocks.

7. A hand sounding machine and calibrated sheave mounted on the LCVP was used for comparisons in deep water, and for obtaining deep water temperatures and salinities. The calibration of the sheave was checked on two occasions and found to be correct. The bulk of the temperature and salinity observations on these sheets were obtained by the LCVP. When possible, the launch 98 obtained temperature and salinity observations, using a lead line to support the apparatus.

D. TIDE AND CURRENT STATIONS

1. Tidal notes for the three sheets under discussion are attached to this report. Paragraphs 1, 2, 3, 5, and 6 under this same heading, Descriptive Report for Sheets LR 10147 and LR 10247, apply to htse sheets also. (H-7681(1947), H-7682(1947))

2. Soundings on sheets LR 10248 (H-7684) and LR 10348 (H-7685) were reduced by data obtained from Keller Ferry Gage No. 2 (so designated to distinguish it from the 1947 gage in approximately the same location). Soundings on sheet LR 10448 (H-7686) were reduced by data obtained from the Miles Gage, staff No. 1. Work accomplished on these three sheets during the short 1949 Season was reduced by data from the Coulee Dam Gage which is in continuous operation. For further information, see the Report, "Water Surface Elevations, Season 1948, Project CS-332", and the cahier " Water Surface Elevations, Season 1949, ProjectCS-332".

E. SMOOTH SHEET

1. The smooth sheets have not been plotted. It is expected that remarks under this heading will be inserted in the final Descriptive Report by the Processing office. 3/3 plotted by Norfolk & Seattle Proc. Offices.

H-7685 plotted by Seattle Proc. Office
H-7685- " " " "

F. CONTROL STATIONS

1. Horizontal control for this project is second and third order triangulation executed by the USBR from 1934 to 1940. For a complete treatment of the main source of the horizontal control refer to the "Special Report on Boundary Reservoir Points, Project Ph-2(45)" previously submitted to the Washington Office. Acc. No. G-7380

2. The foregoing control was supplemented by Photo-hydro and topographic stations established by the photogrammetric parties on Project Ph-2(45). The registry numbers of the planimetric or shoreline survey sheets common to sheet LR 10248 are T-8851 and T-8853; those common to sheet LR 10348 are T-8853, T8854 and T-8855; those common to sheet LR 10448 are T-8855 and T-8856. H-7684 of 1946-47 of 1946-47 H-7685 H-7686 T-8854 of 1946-47

3. Additional hydrographic stations were established by planetable methods to replace several photogrammetric points which were marked doubtful, or could not be identified. In some instances, the photogrammetric points were situated so that they were not visible over a wide portion of the lake. Such stations were supplemented by establishing new stations. The locations of these new additional stations are shown on graphic control sheets. Those control sheets common to sheet LR 10248 ~~are LR B 47 (T-10290)~~ and LR B 48 (T-10291); those control sheets common to sheet LR 10348 are LR B 48 (T-10291), LR C 48 (T-10292) and LR D 48 (T-10293); those control sheets common to sheet LR 10448 are LR C 48 (T-10292) and LR D 48 (T-10293). H-7684 H-7685 H-7686 and T-10302

Photo-Hydro stations in green are of some accuracy as red topo stations.

Graphic Control sheets applied to Hydro surveys and then were destroyed.

4. The graphic control sheets which accompany the hydrography give the final accepted locations for the hydrographic control; where discrepancies exist, if any, the control sheet locations should be accepted. Locations of photo-hydro stations from shoreline survey sheets which were accepted have been shown on the graphic control sheets with green circles. Locations of additional signals plus the locations of photo-hydro stations found to be in error have been shown by red circles. Except in minor isolated instances, the photo-hydro stations used for hydrographic control were checked with a planetable. The exception is Control Sheet LR D 48 which is contemporary to boat sheet LR 10448. (H-7686) When hydrographic work began on the latter sheet, the graphic control party was engaged on control sheet LR C 48. Rather than delay hydrography, the hydrographic party began using the photogrammetric locations of photo-hydro points without checking them. During the course of the hydrography, no serious discrepancies were observed. Therefore, the graphic control party only located signals in coves, inserted new signals where needed, and checked shoreline where errors were indicated.

See note above concerning green stations.

G. SHORELINE AND TOPOGRAPHY

1. The planimetry shoreline was transferred to the boat sheet from ozalid prints furnished by the Portland Photogrammetric Office. Topographic stations were transferred to the boat sheets from applicable Graphic Control Sheets. During the course of the hydrographic survey, some discrepancies were detected and corrected in the shoreline location. The Corrections to shoreline are shown in red on the smooth sheets.

corrected shoreline is shown in red ink on the control sheets (T-10292 and T-10293); the discussion of these discrepancies will be found in Descriptive Report accompanying Control Sheets T-10291, T-10292, and T-10293. Attached to this Descriptive Report

H. SOUNDINGS

1. Soundings on these sheets were obtained with an 808 type portable depth recorder, manufactured by the Submarine Signal Company.

2. The general procedure was as follows: In the case of the LCVP, the oscillator depth was maintained at 2 feet. The initial of the fathometer was adjusted to read 2 feet when the fathometer was operating in feet. This initial adjustment was not changed when the machine was operating in fathoms, and under such conditions, the initial in fathoms was found to be 1.6 fathoms (average). The error in the initial reading in fathoms was absorbed in the velocity correction curve. Instructions were given to take bar checks daily. The fathograms were scanned for variations from the standard initial of 2 feet in feet and 1.6 fathoms in fathoms, and such variations were applied in the record books as an index correction. The bar checks and vertical cast comparisons were used to obtain a check on the computed velocity corrections, but the computed velocity corrections were actually used for correcting the soundings. In the case of the launch 98, the initial was adjusted to read 1.5 feet when the fathometer was operating in feet. Otherwise, the procedure was the same on this launch as on the LCVP. The average fathom initial on launch 98 was 1.32 fathoms. H-7681(1947)

3. Procedure discussed in the foregoing paragraph was varied during the short 1949 Season. In general, the procedure outlined in paragraph 2, sub-head H of Descriptive Report for Sheets LR 10147(H7681, 1947) and LR 10247 was followed. On days when soundings were to be obtained in both feet and fathoms, the initial was set in feet to a known depth; when the depth unit of fathoms only was to be used, the initial was set in fathoms to a known depth. It was expected that this procedure would eliminate the "Bar Check Residual" discussed in the next paragraph.

4. During the winter months between the 1948 and the 1949 Seasons, a study was made of the bar check data. It was found that a fairly constant residual existed after velocity corrections had been applied to the bar check soundings. Since the residuals were so nearly constant for the various depths of the bar check, it was indicated that it was an initial correction. When the above was discovered, the fathograms had already been scanned and initial corrections entered as described in paragraph 2 above. Therefore, the average residual for each days bar check was determined and applied algebraically to the scanned initial. See " Cahier of Bar Check Residuals" to be submitted with 1948 Season's data. Filed with H-7681

5. The boat sheets covered by this report have been plotted in fathoms since the majority of the soundings were obtained in that unit. The Washington Office has specified that the depth unit for smooth plotting will be feet.

I. CONTROL OF HYDROGRAPHY

1. The control of the sounding launch was entirely on board the sounding vessel using the standard three point fix method of position finding. A few exceptions occur in coves and bights where the method outlined in paragraph 3352 of the Hydrographic Manual was used. The latter cases have been covered by notes in the position data column of the sounding records.

2. It should be noted that the records of the launch 98 contain a large number of recorded soundings at the ends of lines with the abbreviation "TC" opposite them. (TC means time and course) These soundings should be saved and plotted, using the established time and spacing on the line to forward plot them; otherwise, there will be a gap between the end of the line and the beach. The launch 98 is low powered, V-bottom boat which could not safely run lines at full speed all the way into the beach. Therefore, the fix was obtained at a safe distance offshore, but the vessel continued on course without slackening speed and sheered off from the beach at the last possible moment. The LCVP used this procedure in only a few instances.

J. ADEQUACY OF SURVEY

1. It is believed that all three of these sheets are complete. Boat sheet junctions between these sheets and contemporary sheets appear to be satisfactory. Depth curves can be completely drawn.

2. Between Lat. 47° 49.4', Longitude 118° 25.34' and Lat. 47° 49.5', Long. 118° 25.3', sheet LR 16348, there is a log storage area along the shoreline maintained by the Lincoln Lumber Company. The Manager of the Lumber Company was uncooperative and refused to move the log booms so that the area could be sounded. Therefore, several small holidays exist along the beach in this area. The LCVP was jumped over the booms and sounded the areas inside the booms which were clear of logs. An attempt was made to obtain isolated soundings with a lead line through the logs, but it was abandoned because of the danger involved to the personnel. The resulting holidays do not seriously affect the adequacy of the survey, particularly from a charting syandpoint.

K. CROSSLINES

1. Crosslines obtained on these sheets exceed the minimum 8% specified in the Instructions. The crosslines check the normal system of developement within the limits specified in the Hydrographic Manual.

L. COMPARISON WITH PRIOR SURVEYS

1. Prior surveys of this type do not exist in the area.

M. COMPARISON WITH CHART

1. There is no existing chart of Franklin D. Roosevelt Lake.

N. DANGERS AND SHOALS

1. Sheet LR 10248 (H-7684)

(a) There are no mid-channel dangers to navigation on this sheet. There is an 18.1 fathom spot on the east side of what used to be Hellgate Canyon, Lat. 47° 38.5', Long. 118° 36.3', bottom , rocky. Since it is well below the lowest expected drawdown, it cannot be considered a danger.

(b) There is a pinnacle rock on the west side of Moonshine Bay at its entrance, Lat. 47° 52.6', Long. 118° 32.3' with a least depth of 7.8 feet and surrounded by 90 foot depths.

(c) Landings should be made with caution in areas where above water terrain abounds with rock ledges, rock outcrop, and boulders. It is possible that the hydrographic party may have missed some of the inshore features of this type.

2. Sheet LR 10348 (H-7685)

(a) Caution should be used in approaching the shoreline in areas where the above water terrain is rocky. The northern shoreline between Longitudes 118° 27' and 118° 30' is particularly hazardous due to submerged rocks and ledges. ~~Between~~ West of Lat. 47° 51.5' on the western shore there are several rocky foul areas which should be approached with caution.

(b) The existence of the log storage area along the south shore in the Lincoln Mills area creates a navigational hazard during the hours of darkness since no lights are maintained on the outer limits of the booms. The booms shift with the wind and sometimes extend out near the center of the lake.

(c) There are no mid-channel dangers on this sheet. Below are listed some dangers near the shoreline which should be avoided when navigating close inshore:

1. Submerged rock with least depth of 2 fathoms; Lat. 47° 51.8', Long. 118° 27.6'; Position 81c.
2. Submerged rock with least depth of 14 feet; Lat. 47° 51.8', Long. 118° 27.6'; Position 85c.
3. Submerged rock with least depth of 2 feet; Lat. 47° 53.0' Long. 118° 28.2'; Position 48f.

Rock awash at lake level datum.

4. ~~Submerged rock with least depth of 2 feet~~; Lat. 47° 53.01', Long. 118° 27.65'; Position 66f.

0 ft standing in depths of -

5. Submerged rock with least depth of 34.8 feet; Lat. 47° 53.01', Long. 118° 27.42'; Position 72f.

6. Submerged rock with least depth of ~~0~~ feet; Lat. 47° 52.72', Long. 118° 30.01'; Position 125g.

zero on the rock - 6ft. beside the rock

7. Submerged rock with ~~least~~ depth of ~~20~~ feet; Lat. 47° 52.72', Long. 118° 29.92; Position 127g.

Zero ft on the rock - 16ft beside rock - 86

8. ~~Submerged~~ rock with ~~least depth of~~ 2 feet; Lat. 47° 53.18', Long. 118° 27.91'; Position 23k.

Rock awash at lake level datum

9. ~~Submerged~~ rock with ~~least depth of~~ 2 feet; Lat. 47° 52.75', Long. 118° 27.27'; Position 75m.

10. Submerged rock with least depth of ~~36~~ 26 feet; Lat. 47° 52.28', Long. 118° 30.25'; Position 75p.

(26) - 142-143k

11. Submerged rock with least depth of ~~40~~ 37 feet; Lat. 47° 52.[illegible]', Long. 118° 27.[illegible]'; Position 62q.

12. Pinnacle rock with least depth of ~~18~~ 14 feet; Lat. 47° 51.85', Long. 118° 27.54'; Position 75q.

13. Rocky pinnacle with least depth of 6 fathoms; Lat. 47° 52.25', Long. 118° 29.35'.

No 6 fm pinnacle here. Probably same as item 10 above

14. Rocky pinnacle with least depth of ~~3.5~~ 23ft fathoms; Lat. 47° 52.75', Long. 118° 29.35'.

62-63 dgr. 415 ft.

15. Least depth of ~~7.3 fathoms~~ in rocky area; Lat. 47° 50.33', Long. 118° 26.[illegible]'.

125 (blue) dgr.

Smooth sheet variations noted & num. by Process. Off. Sheet

3. Sheet LR 10448 (H-7685)

(a) There are no important dangers to navigation on this sheet. The following inshore dangers are listed:

A shoal covered with ~~3~~ 22ft ~~fathoms~~ was found ~~75~~ 100 meters offshore, Lat. 47° 49.23', Long. 118° 22.25'. It is surrounded by 10 and 11 fathom depths.

123

Between Rock Island and the beach, Lat. 47° 51.58', Long. 118° 21.97', least depths of 0.~~4~~ 4ft ~~fathoms~~ and ~~2.0~~ 11 ft fathoms were found, surrounded by approximately 5 fathoms of water. Small boats passing between Rock Island and the beach should pass very close to Rock Island to avoid the 0.7 Fathom spot.

A least depth of ~~5.3~~ 26ft fathoms surrounded by 10 fathoms was found about 75 meters offshore, Lat. 47° 54.02', Long. 118° 21.[illegible]', Position 112m.

A least depth of ~~28~~ 168 ft fathoms was obtained in Lat. 47° 53.~~75~~ 80', Long. 118° 19.45', surrounded by depths of approximately 37 fathoms. This sounding is in the old channel of the Spokane River and is probably from the top of a girder of an old bridge which is still in place though submerged.

See fathogram Pts 60-69 m/(red). Very interesting.

0. COAST PILOT INFORMATION

1. For a complete discussion of Coast Pilot Information, refer to "Coast Pilot Report, Franklin D. Roosevelt Lake, Project Ph-2(45)" which has already been submitted to the Washington Office.

Filed in Coast Pilot Section

2. The best anchorages surveyed are the numerous coves and bights. A good indication of the character of the bottom may be had by observing the existing above water terrain in the vicinity. Where adjacent land is rolling and sandy, good holding ground may be expected; if the adjacent land is rocky, the same characteristics may be expected to exist under the water.

3. The lake is subject to strong breezes which follow the axis of the channel. They often come up quickly, and sometimes, disappear just as quickly. We observed several instances of breezes of force 3 to 5 which lasted for several days. Breezes of gale force were observed on several occasions which came up suddenly and disappeared after about 3 hours. Breezes of the latter type are generally accompanied by dust storms on land.

4. The visibility at lake level is generally good. Old timers on the lake consider a fog at certain times of the year a strong possibility, but this party encountered none. Fog at a slightly higher elevation than the lake was fairly common.

5. There are no currents on the lake within the area covered by this report of sufficient strength to affect navigation except wind currents which are variable and erratic.

6. During the Spring flood season in May and June of each year the lake is full of driftwood which is a menace to navigation.

7. There follows some notes turned in by the Hydrographers relative to Coast Pilot Information:

Sheet LR 10248 (H-7684)

Good holding ground in 10 to 15 fathoms of water may be had along the south shore between CP-47 and CP-49, an extensive flat. The flat at Lat. 47° 55.9', Long. 118° 32.6' provides a 15 to 20 fathom anchorage with good holding ground. A flat at the south end of the sheet along the north shore, Lat. 47° 52.75', Long. 118° 31.6' provides an anchorage in 10 fathoms with good holding ground. None of the foregoing offer protection from the wind. The best anchorages are the coves and bights of which there are several on the sheet suitable for anchorages; the best one is at Lat. 47° 55.5', Long. 118° 35.0'.

Sheet LR 10348 (H-7685)

The coves most frequently used by local navigators for shelter are Halverson Canyon, Lat. 47° 52.1', Long. 118° 29.8' with depth range of 2 to 10 fathoms and good holding ground; Welsh Creek Cove at Lat. 47° 49.9', Long. 118° 25.5' with depth range of 2 to 10 fathoms and good holding ground.

During the course of the survey in the narrow constricted areas of the channel a current was noticeable. This is probably a seasonable occurance since sounding operations were in progress at the peak of the 1948 Spring flood. The inflow reached a peak of better than 600,000 second feet, this volume being the highest recorded since the completion of the Grand Coulee Dam. Current observations were not made, but estimates

obtained by observing drifting logs and debris put the maximum at 3/4 knots and the minimum at 1/4 knots.

Sheet LR 10448 (H-7686)

There are a number of coves on this sheet with good protection and holding ground for anchorages; the best of such anchorages is at Hawk Creek, in depths of 2 to 30 fathoms, excellent protection and holding ground. The flat at Lat. 47° 51.0', Long. 118° 22.0' gives some protection from westerly winds in depth of 5 to 18 fathoms with good holding ground. There is good holding ground on a flat at Lat. 47° 52.7', Long. 118° 21.5'. Flat in the Spokane River, Lat. 47° 54.0', Long. 118° 19.8' affords protection from northerly winds in 8 fathoms with good holding ground.

P. AIDS TO NAVIGATION

1. Form 567 lists all fixed Aids to Navigation, and is attached to this report. The aids listed are the same that the Photogrammetric party, Project Ph-2(45) submitted, but the topographer on this project obtained a slightly different position of the following lights:

Upper Hell Gate Day Beacon 14
Whitestone Creek 15 Lt.
Moonshine Bay 16 Lt.
Halverson Canyon 17 Lt.
Goat Pasture 18 Lt.

Form 567 attached gives the corrected position for the aforementioned lights. The other aids not listed above have the same position as listed by Project Ph-2(45). There are no floating aids to navigation within the limits of these sheets.

Q. LANDMARKS FOR CHARTS

1. Data relative to landmarks for charts are shown on form 567 which is attached. These are the same objects submitted by the Photogrammetric party and have the same positions.

R. GEOGRAPHIC NAMES

1. For a complete treatment of Geographic Names, refer to "Special Report, Geographic Names, Sheets 8849 to 8859 inclusive, Project Ph-2(45)" previously submitted to Washington. Filed in Geo. Name Sect.

2. No additional names were obtained by the hydrographic party on sheets LR 10248 (H-7684) and LR 10348 (H-7685).

3. Additional information was obtained by the hydrographic party on sheet LR 10448 (H-7686) from Mr. E.N. Renshaw, age 45, farmer, and Mr. Fred Jerome, age 50, farmer. These men have resided in the general vicinity of Miles, Washington for the past 20 years. They state that the names listed below are in undisputed local usuage.

Name	Latitude	Longitude
Abraham Cove	47° 55.1'	118° 20.5'
Humes Road	47° 52.4'	118° 20.4'
Kirby Draw	47° 50.7'	118° 23.3'
Lamb Draw	47° 53.8'	118° 21.2'
Louie Creek	47° 54.5'	118° 21.5'
Moore Draw	47° 51.1'	118° 22.4'
Rattlesnake Draw	47° 50.8'	118° 22.9'
Sallie Draw	47° 55.2'	118° 21.5'
George Creek	47° 51.6'	118° 22.1'

The foregoing names will be found on the boat sheet in blue ink opposite the feature to which they apply.

S. SILTED AREAS

1. No silted areas were detected from an inspection of the fathograms.

T. BY-PRODUCT INFORMATION

1. None.

U. MISCELLANEOUS

1. No comments.

V. REFERENCES

1. The following listed reports will be of help and interest in connection with this survey:

Descriptive Report to Accompany Hydrographic Survey Nos. H-7681 and H-7682, Field Nos. LR 10147 and LR 10247.
Coast Pilot Report, Franklin D. Roosevelt Lake, Project Ph-2(45).
Special Report, Investigation of Geographic Names, Sheets T-8849 to T-8859, Project Ph-2(45).
Special Report on Reservoir Boundary Control Points, Project Ph-2(45).
Field Inspection Report, Area of the Second Radial Plot, Project Ph-2(45).
Season's Report, Project CS-332, Franklin D. Roosevelt Lake, 1948.
Season's Report, Project CS-332, Franklin D. Roosevelt Lake, 1947.
Season's Report, Project CS-332, Franklin D. Roosevelt Lake, 1949.
Water surface elevations (Tides), Season 1948, Project CS-332.
Water Surface elevations (Tides), Season 1949, Project CS-332.
Cahier "Copies of Correspondence and Related Information Applicable to Ptoject CS-332, Lake Roosevelt."
Cahier "BarCheck Residual Study".
Report of Preliminary Investigation of Lake Roosevelt by John C. Ellerbe dated 27 September 1945.

X. TABULATION OF APPLICABLE DATA

1. The following data is being submitted for Sheet LR 10248: H-7684

Sounding Volumes (275)	7 Vol.
Fathograms	4 rolls
Boat Sheet (LR 10248)	1 ea.
Control Sheet (LR B 47 and LR B 48)	2 ea. subsequently destroyed
Shoreline Survey Sheets (T-8851 and T-8853)	2 ea.
Velocity Correction Computations, 28 April to 2 June, 1948	1 cahier filed with H-7681
Descriptive Report	

2. The following data is being submitted for sheet LR 10348: H-7685

Sounding Volumes (275)	10 Vol.
Fathograms	8 rolls
Boat Sheet (LR 10348)	1 ea.
Control Sheets (LR B 48, LR C 48 and LR D 48)	3 ea. subsequently destroyed
Shoreline Survey Sheets (T-8853, T-8854 and T-8855)	3 ea.
Descriptive Report.	

3. The following data is being submitted for sheet LR 10448: H-7686

Sounding Volumes (275)	14 Vol.
Fathograms	7 rolls
Boat Sheet (LR 10448)	1 ea.
Control Sheets (LR C 48 and LR D 48)	2 ea.
Shoreline Survey Sheets (T-8855 and T-8856)	2 ea.
Descriptive Report	

4. The following data is applicable to all sheets covered by the report except item No. 1 which applies only to Sheets LR 10348 and LR 10448: H-7685 H-7686

1.	Velocity Corrections, June 4 to August 13, 1948	1 cahier H-7681
2.	Velocity Corrections, 1949 Season	1 cahier H-7681
3.	Water Surface Elevations (Tides), 1948 Season	1 cahier
4.	Water Surface Elevations (Tides), 1949 Season	1 cahier
5.	Cahier of Bar Check Residuals	1 cahier H-7681
6.	Cahier of Correspondence and Related Information	1 cahier H-7681
7.	Tide data and Marigrams for all Gages	
8.	Level Records for all Tide Stations.	
9.	Recoveries and Notes, Triangulation	
10.	Bench Mark Descriptions and Recovery Notes.	

5. The following work has been accomplished on the records and data of these sheets:

All fathograms have been scaled and checked.
Velocity corrections have been entered in the records and checked.
Tide reducers have been entered in the records and checked.
Fathogram index corrections have been entered in the records and checked.
Soundings have been reduced and checked in all volumes, Sheet LR 10248 (H-7684) except volume No. 10, 1949 Season.

There remains to be accomplished the following work on the records and data of these sheets:

H-7684
Sheet LR 10248: Reduce and check soundings, Volume No. 10- plot smooth sheet.

H-7685
Sheet LR 10348: Reduce and check soundings, all volumes- plot smooth sheet.

H-7686
Sheet LR 10448: Reduce and check soundings, all volumes- plot smooth sheet.

W. REMARKS

1. This report has been compiled from notes submitted by Lt. Comdr. Glenn W. Moore, Lt. D.M. Whipp and Mr. Hal A. Marchant.

Respectfully submitted,

J.T. Jarman
Chief of Party

Encls.
Statistics
Hydrographic Title Sheets
Lists of hydrographic sugnals
Landmarks for charts
Aids to Navigation (fixed)
Index sheets
Abstract of Velocity Corrections
Approval sheet

H 7684 (LR 10248)

Lake Roosevelt, Washington.

Processing Office Notes.

Smooth sheet.

The projection was ruled on the machine in Washington. Shoreline is from T 8851 and T 8853. Signals are from the same sheets and from T 10291 and T 10292. of 1948. Graphic Control surveys applied to Smooth sheets and then destroyed.

Fathogram speed.

The fathograms were checked for speed several times on each days profile. The template used was based on a paper feed at thhe rate of 1.92 inches per minute on the foot scale when using a tachometer rated for fresh water at 64.5 vibrations per second. See Report on Velocity Corrections. Filed with H-7681

Sounding Unit.

Boatsheet depths are in fathoms. Soundings were recorded in this unit. The reducers are in fathoms. After the soundings were reduced they were converted to feet. Soundings on the smooth sheet are in feet.

Names

The Processing Office does not have a copy of the Report on Geographic Names. It is suggested that the applicable names be taken from the report in Washington. Filed in Geographic Name Section.

Other subjects have been covered by the report of the field party.

Edgar T. Smith
Cart. Engr. 10/20/49

Form 567
April 1945

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

NONFLOATING AIDS ~~OR LANDMARKS FOR CHARTS~~

TO BE CHARTED
~~TO BE DELETED~~ } STRIKE OUT ONE

Coulee Dam, Wash. August 10, 1949

I recommend that the following objects which have ~~(have not)~~ been inspected from seaward to determine their value as landmarks be charted on ~~(deleted from)~~ the charts indicated.

The positions given have been checked after listing by J.T. Jarman

J.T. Jarman
Chief of Party.

STATE: Washington- Franklin D. Roosevelt Lake

CHARTING NAME	DESCRIPTION	SIGNAL NAME	LATITUDE ° '	LATITUDE D.M. METERS	LONGITUDE ° '	LONGITUDE D.P. METERS	DATUM	METHOD OF LOCATION AND SURVEY No.	DATE OF LOCATION	HARBOR CHART	INSHORE CHART	OFFSHORE CHART	CHARTS AFFECTED
	T-8853 H-7684 Hells Gate Island 13 Lt.	HEL	47 55	(261.5) 1591.6	118 36	(68.0) 1177.5	NA 1927	Radial Plot	1947				Area not chart
	T-10291 H-7684 Upper Hells Gate Day Bn. 14 **	UPP	47 55	(1798.0) 55.0	118 32	(168.0) 1078.0	"	Plane-table	1948				"
	T-10291 H-7684 Whitestone Creek 15 Lt. **	HEP	47 56	(1672.0) 181.0	118 32	(446.0) 800.0	"	"	"				"
	T-10291 H-7684 Moonshine Canyon 16 Lt. **	TON	47 52	(998.0) 855.0	118 32	(1129.0) 118.0	"	"	"				"
	T-10292 H-7685 Halverson Canyon 17 Lt. **	ZAG	47 52	(430.1) 1423.0	118 27	(337.0) 910.0	"	"	"				"
	T-10292 H-7685 Goat Pasture 18 Lt. **	ARM	47 50	(1024.1) 829.0	118 26	(281.0) 966.8	"	"	"				"
	T-8855 H-7686 Hawk Creek 20 Lt.		47 49	(624.8) 1228.3	118 21	(57.4) 1190.5	"	Radial Plot	1947				"
	T-8855 H-7686 Rock Island Day Bn. 19	DAY	47 51	(804.7) 1048.4	118 21	(165.6) 1081.5	"	"	"				"
	T-8856 H-7686 Spokane River 22 Lt.	LIT	47 53	(101.1) 1752.0	118 20	(1209.4) 36.8	"	"	"				"

** Note that the position for these objects is slightly different from that ~~submitted by Photogrammetric party, Project Ph-2(45) in 1947.~~ It is recommended that the positions listed above be accepted.

This form shall be prepared in accordance with Hydrographic Manual pages 800 to 804. Positions of charted landmarks ...

H 7686
LR 10448

Lake Roosevelt, Wash.

Processing Office Notes.

Projection. The projection and grid, Washington State North, were ruled on the machine in Washington. Shoreline and topography are from T 8855 and T 8856. Signals are from T 8855, T 8856 and from the graphic control sheets T 10292 and T 10293. The latter two sheets also show some corrections to shore line. Coordinated points are from the control data for Proj. Ph-2(45) Sheets T 8855 and T 8856.

Fathometer speed. All profiles were checked for speed at random intervals on each days work by testing with templates suitable to the calibration of the fathometers used. In Vol.9 P 58 Pos. 72 mtd end of day the paper feed was found to be too fast, enough so that the cancellation of the fathometer corrections which had been applied would give good results. After this was done good crossings were obtained.

"Water spots." On G,H & J days there were spots on the fathograms which looked as if the paper had been wetted. Thru some fault in the paper the record was not clear, and in some cases the first part of the return recorded so badly that it was mis-read. Discrepancies noted in plotting soundings lead back to these "water spots" or "grease marks". Rescanning resulted in more consistent soundings.

The plotting has proceeded under the supervision of the chief of party. Other subjects are covered by the report of the field party.

Edgar E. Smith
Cart. Engr.
Seattle Processing Office

6

H 7685
(LR 16348)

Lake Roosevelt, Washington.

Processing Office Notes.

Smooth sheet.

The projection was ruled on the machine at Washington, brand of paper not stated. Shoreline is from T 8853 and T 8854 (1946-47). Signals were transferred from T-10292 (1948) and T 10293, T 8853 and T 8854 (1946-47). Coordinates for USBR triangulation points were found in the photogrammetric control data for T 8853 and T 8854.

T-10292 & Data from T-10293 applied to smooth sheets and then destroyed.

Depth curves.

It is understood that the USBR desires to use these Lake Roosevelt sheets to draw depth curves at ten foot intervals. The curves which we have drawn are without knowledge of the topography before the lake was filled. If there are reliable topographic sheets of this area made before the water level was raised which show contours it is recommended that they be examined as depth curves are drawn. It is especially recommended that the lines of ridges on the sides of ravines which cut the old canyon walls and the old river banks be located as an aid to drawing these contours. For drawing ten foot contour intervals, it is further suggested that 1/5000 scale copies of all Lake Roosevelt sheets be made after the soundings are inked but before the conventional depth curves have been inked in colors on the smooth sheet.

Standard depth curves are shown on smooth sheet. Copy of smooth sheet sent to Bureau of Reclamation.

Other subjects have been covered by the report prepared by the field party. The fathograms have been checked for speed at several periods during each sounding day using templates prepared for the type of fathometer and the tachometer in use that day. The information for making these templates were found in the Report on Experiments to Determine the Calibration Constants of Fathometers Of 4 February 1948 by David M Whipp and Harley D. Nygrén, of this party. This is being done on all Lake Roosevelt sheets.

Filed with H-7681

Edgar E. Smith

Edgar E. Smith
Cart.Engr. 31 Oct.1949

Form 567
April 1945

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

COPY

~~NONFLOATING AIDS OR~~ LANDMARKS FOR CHARTS

TO BE CHARTED / ~~TO BE DELETED~~ } STRIKE OUT ONE

Coulee Dam, Wash. July, 1947

I recommend that the following objects which have ~~(have not)~~ been inspected from seaward to determine their value as landmarks be charted on ~~(deleted from)~~ the charts indicated.

The positions given have been checked after listing by J.W. Deal

J.T. Jarman
Chief of Party.

STATE	Washington-Franklin D. Roosevelt Lake		POSITION					METHOD OF LOCATION AND SURVEY No.	DATE OF LOCATION	HARBOR CHART	INSHORE CHART	OFFSHORE CHART	CHARTS AFFECTED
			LATITUDE		LONGITUDE		DATUM						
CHARTING NAME	DESCRIPTION	SIGNAL NAME	° ′	D.M. METERS	° ′	D.P. METERS							
HOUSE	T-8853 H-7684 HOUSE, South Gable	LAX	47 56	(1422.9) 430.3	118 32	(347.7) 920.6	NA 1927	Radial Plot	1947				Area not charted
STACK	T-8854 H-7685 STACK, black (145 ft. high)	TAL	47 49	(303.0) 1550.1	118 24	(517.6) 730.3	"	"	"				"
TANK	T-8854 H-7685 TANK, wooden (40 ft. high)	TANK	47 49	(323.8) 1529.3	118 24	(439.2) 808.7	"	"	"				"

SHEET LR 10248
Register No. H-7684

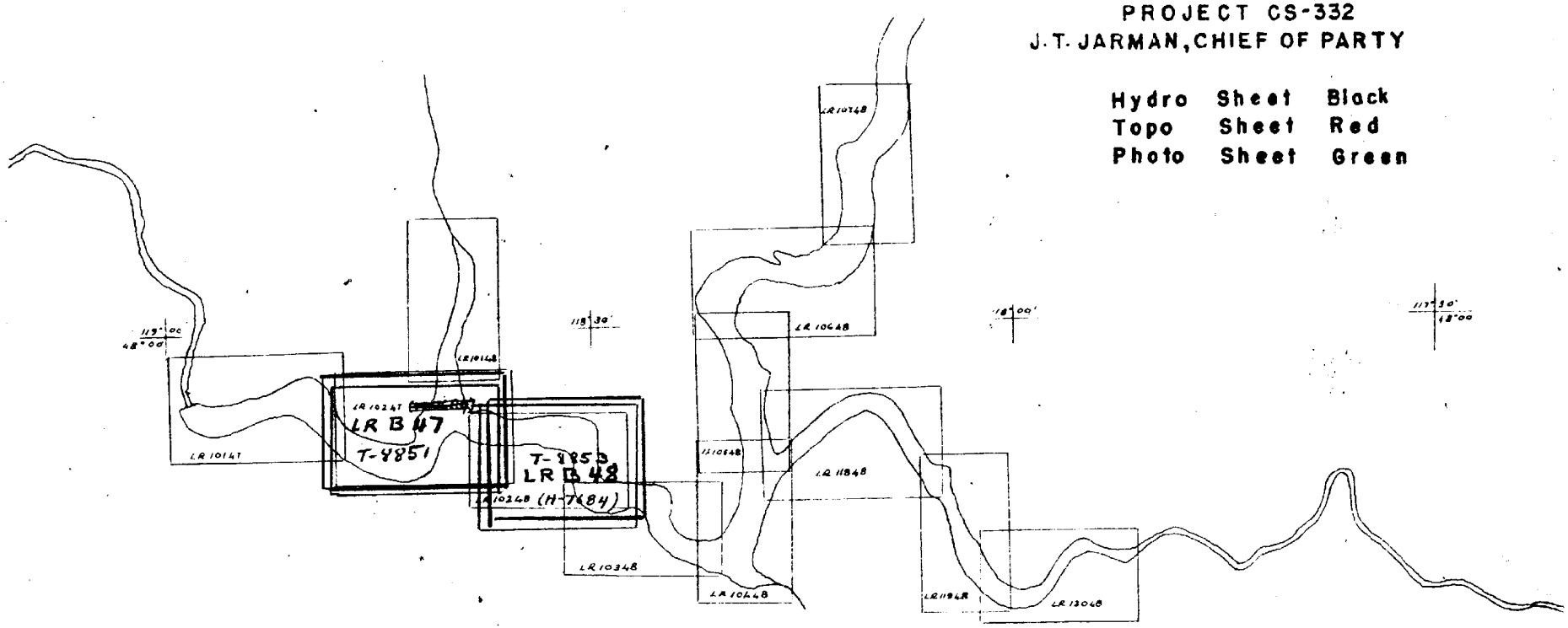
Applicable data such as

Statistics
Velocity Corrections
Tide Reducers
Tide Note
Title Sheet
Index Sheet

H-7684
Field No. LR-10248

SHEET INDEX
FRANKLIN D. ROOSEVELT LAKE
PROJECT CS-332
J. T. JARMAN, CHIEF OF PARTY

Hydro	Sheet	Black
Topo	Sheet	Red
Photo	Sheet	Green



LIST OF SIGNALS LR 10248 H-7684

ABE	FAR	MAG	UPP
ACE	FED	MAL	USE
ACT	FLY	MAX	
ADD	FOG	MES	
AGO	FOO	MOR	VET
AHA	FORK		VIA
AIM	FORT		VIM
ALP	FUN	NAP	
AMY		NIX	
ANN		NOW	WALL
ANT	GAG		WAX
APT	GAIN		WAY
ASK	GET	ODD	WET
	GUM	OLD	
	GUS	OVER	
BAH			YAM
BANK			YES
BAR	HAM	PAN	
BAT	HEL	PEG	
BED	HEP	PIL	ZIG
BET	HEX	PIN	ZOO
BIG	HOG	POP	
BIB	HULL	PUT	
BUC	HUT		
BUD			
BUS		RAG	
	IDA	RED	
	IVY	REX	
CAN			
CAR			
CAT	JAR	SAT	
COP	JAW	SAW	
COW	JIM	SIR	
	JON	SIS	
	JUG	SOB	
DIK		SOD	
DIM		SOON	
DIX	KEN	SPY	
DOE	KID		
DUO	KEY		
	KITE	TEN	
		TIM	
EAR		TOM	
EEL	LAP	TOY	
EGG	LAX	TRI	
END	LET	TUB	
	LIM		
	LOG		
	LUX		

H-7684

Velocity Corrections
Sheet LR-10248 Lake Roosevelt
Fathometer 808-67
Season 1948

Feet

To Depth	Correction
50 ft.	0
123 "	- 0.2
Below 123 ft.	- 0.4

Fathoms

To Depth	Correction
20 fms.	-1.3
52 "	-1.4
Below 52 fms.	-1.5

No corrections have been applied for B and C scale other than the velocity corrections listed above. See text of Velocity Report.

No. 40
Observed by: .....
Verified by: .....
Computed by: D.M.W.
Checked by: .....

VELOCITY CORRECTIONS
Season 1949-Lake Roosevelt
Project CS-332

Sheet LR 10348	"s" day	June 19, 1949
Sheet LR 10248	"n" "	June 20, 1949

808-1228 Fathometer, Fresh water reed
All soundings in fathoms
Curve No. 10

Reducers in Fathoms

0.0	to 5.2 fms.
+ 0.1	to 15.5 "
+ 0.2	to 25.2 "
+ 0.3	to 36.2 "
+ 0.4	to 47.0 "
+ 0.5	after 47 fms.

Sheet LR-10248 H-7684

BAR CHECK RESIDUALS
(To be applied algebraically to scanned Index Correction)

7-186
(July 1935)

Date 1948	Bar Check Residual		Fath.	Launch	Remarks
	Feet	Fms.			
May					
12	-0.1	0.0	808-67	LCVP	
13	-0.1	-0.1	-67	LCVP	
17	-0.5	-0.1	-67	LCVP	
18	-0.2	0.0	-67	LCVP	
19	-0.5	+0.1	-67	LCVP	
20	-0.3	+0.2	-67	LCVP	
21	-0.1	-0.1	-67	LCVP	
25	-0.1	-0.1	-67	LCVP	
26	-0.7	-0.1	-67	LCVP	
28	-0.9	-0.1	-67	LCVP	
June					
1	-0.4	-0.1	-67	LCVP	
2	-0.1	0.0	-67	LCVP	

TIDE REDUCERS- SHEET LR 10248
Register No. H-7684
Season 1948

7-186
(July 1935)

Refer to Keller Ferry Gage (Gaps filled in by Coulee Dam Gage)

Date 1948	Feet	Fms.
May 12	0.0	0.0
" 13	0.0 to 10:35 0.5 after 10:35	0.0 to 11:00 0.1 after 11:00
" 17	0.0 to 14:30 0.5 after 14:30	0.0
" 18	0.0	0.0
" 19	0.0	0.0
" 20	0.0	0.0
" 21	0.0	0.0
" 25	0.0	0.0
" 26	0.0	0.0
" 28	0.5 to 12:30 0.0 after 12:30	0.0
June 1	0.0	0.0
2	0.0	0.0

Comp. D.M.W.

Checked R.S.P.

Season 1949, Tide Reducers

Sheet LR 10248
H-7684

Refer to Coulee Dam Gage

	Feet	Fms.
June 20	0.0 All day	0.0 fms. all dat

H-7685
Field No. LR-10348

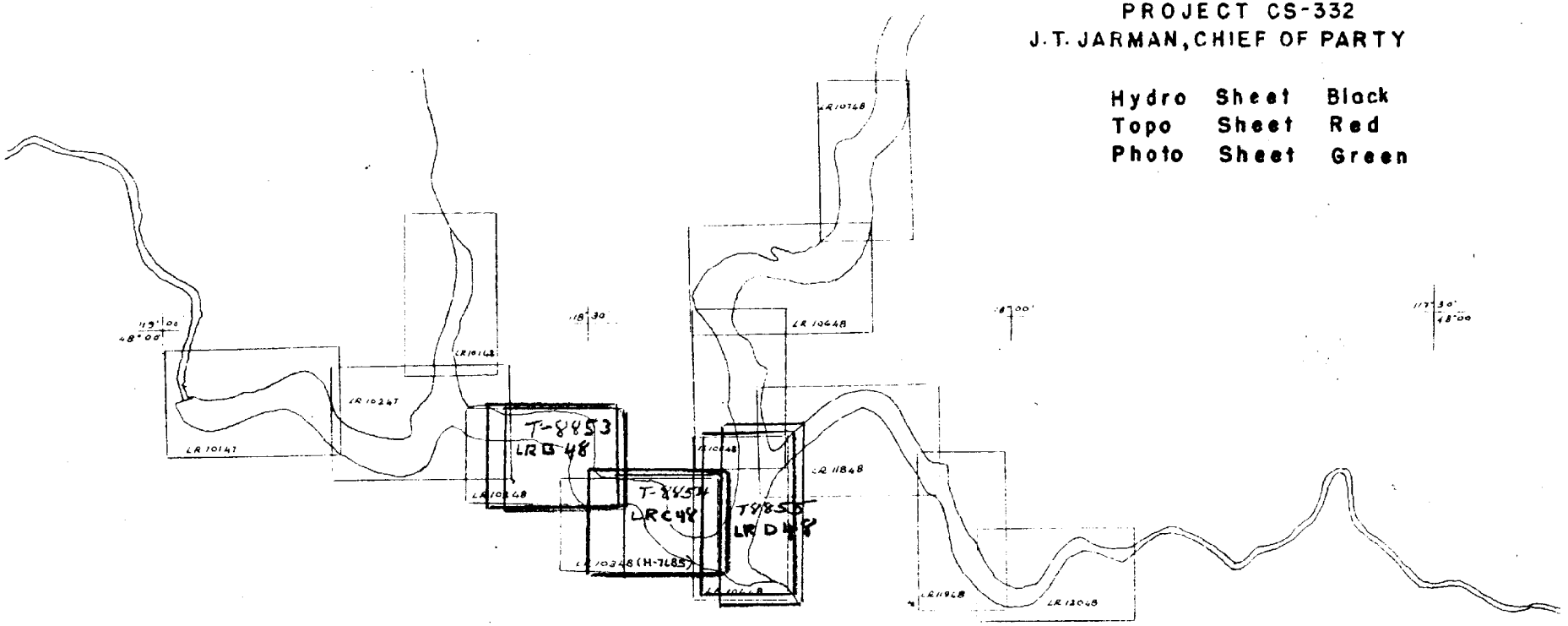
Applicable data such as

Index Sheet
Tide Reducers
Velocity Corrections
Tide Note
Title Sheet
Statistics

H-7685
Field No. LR-10348

SHEET INDEX
FRANKLIN D. ROOSEVELT LAKE
PROJECT CS-332
J. T. JARMAN, CHIEF OF PARTY

Hydro	Sheet	Black
Topo	Sheet	Red
Photo	Sheet	Green



Hydrographic Signals
Sheet LR-10348
H-7685

Name	Origin
Abe	T-8854
Ace	Planetable LR-C-48
Aid	" (")
Arm	" "
Art	" "
Ann	T-8854
Axe	T-8854
Bah	T-8853
Bea	Planetable (LR-C-48)
Bed	T-8853
Box	Planetable (LR-C-48)
Bum	" "
Ben	" "
Cuz	T-8854
Cat	Planetable (LR-C-48)
Cow	" "
Dab	Planetable (LR-C-48)
Deb	" "
Den	T-8855
Dip	Planetable (LR-C-48)
Dix	" "
Dog	" "
Don	" "
Drip	Triangulation
Fed	T-8853
Fly	Planetable (LR-C-48)
Fod	T-8854
Gerk	Triangulation
Get	T-8853
Gun	T-8853
Haw	T-8855
How	T-8853
Ida	T-8853
Joy	T-8854
Key	T-8854
Kid	T-8854
Lad	Planetable (LR-C-48)
Lind	Triangulation
Met	Planetable (LR-C-48)
Mud	" "
Mum	" "

Name	Origin
Ned	T-8854
New	T-8854
Par	Planetable (LR-C-48)
Pen	" "
Pig	" "
Pot	T-8854
Pup	Planetable (LR-C-48)
Rag	" "
Rat	T-8854
Ree	Planetable (LR-C-48)
Rev	" "
Rose	Triangulation
Sax	T-8854
Sis	Planetable (LR-C-48)
Sky	T-8854
Snake	Triangulation
Sod	T-8854
Sox	T-8854
Sue	T-8853
Tal	T-8854
Ted	Planetable (LR-C-48)
Tee	" "
Tic	" "
The	" "
Tom	T-8855
Top	Planetable (LR-C-48)
Tree	T-8855
Two	Planetable (LR-C-48)
Uno	T-8855
Wag	T--8854
Yak	T-8854
Zag	Planetable (LR-C-48)
Zig	T-8854
One	Planetable (LR-C-48)
Over	Triangulation

TIDE REDUCERS- SHEET LR 10348
Register No. H-7685
Season 1948

7-186
(July 1935)

Refer to Keller Ferry Gage (with gaps filled in by Coulee Dam Gage)

Date 1948	Feet	Fms,
June 4	0.0	0.0
" 8	0.0	0.0
" 9	0.0	0.0
" 10	0.0	0.0
" 14	0.0	0.0
" 15	0.0	0.0
" 16	0.0	0.0
" 17	0.0	0.0
" 21	0.0	0.0
" 22	0.0	0.0
" 23	0.0	0.0
" 25	0.0	0.0
" 28	0.0	0.0
" 29	0.0	0.0
July 1	0.0	0.0
6	0.0	0.0
7	0.0	0.0

Season 1949, Tide Reducers

Sheet LR 10348 H-7685

Refer to Coulee Dam Gage

	Feet		Fms.	
June 19	0.2	All day	0.0 fms.	all day

Sheet LR-10348
H-7685

BAR CHECK RESIDUALS
(To be applied algebraically to the scanned Index Correction)

7-186
(July 1935)

Date	Bar Check Residual		Fath.	Launch	Remarks
	Feet	Fms.			
June					
4	-0.7	0.0	808-67	LCVP	
8	-0.7	0.0	67	LCVP	
9	-1.1	0.0	122	98	
10	-0.5	0.0	115	LCVP	
10	-0.4	-0.1	122	98	
14	-0.8	0.2	67	LCVP	
15	-0.8	0.1	67	LCVP	To 10:00
15	-1.3	-0.1	115	LCVP	After 10:00
16	0.4	0.6	115	LCVP	To 10:40
16	0.1	0.3	60	LCVP	After 10:40
17	-0.5	0.1	67	LCVP	
21	-0.2	0.1	67	LCVP	To 10:13
21	-0.5	-0.1	115	LCVP	After 10:13
22	-0.7	0.0	115	LCVP	
23	-0.9	-0.1	115	LCVP	
25	-0.3	0.1	115	LCVP	
28	-0.2	0.0	115	LCVP	
29	-0.5	0.2	115	LCVP	
July					
1	-0.1	0.1	115	LCVP	
6	0.0	0.1	115	LCVP	
7	-0.1	0.1	115	LCVP	

H-7686
Field No. LR 10448

Applicable data such as

Tide Reducers
Velocity Corrections
Tide Note
Title Sheet
Index Sheet
Statistics

LIST OF HYDROGRAPHIC SIGNALS USED ON SHEET LR 10448 H-7686

Ace	Bed	Cap	Dan	Ear	Fast CP#87	Gag
Ann	Ben	Car	Day	East	Fill Stz"	Girl CP#91
Ant	CP#81 Bend	Cot	Den	Eel	Fog	Gun
Azo	Bob		Dig	Egg		Gus
	CP#97 Born		Doe			
	Box		Dud			
			Dun			
Hag	Ice	Jar	Kay	Lantern	Mal	Name CP#77
Him	Ida	Jig	Ken	Lap	Man	
Hog	Ivy		Key	Lit	Mat	
How			Kid	Log	Max	
Hut				Love CP#75	Miles	
					Mow	
					Mud	
Owl	Pal	Ram	Same	Tab	Vet	Wax
	Peg	Rate CP#85	Sat	Tal		
	Pet	Rex	Saw	Tic		
	Pie	Run	Sis	Tim		
	Pop	CP#88	Slow	Tom		
	Put	CP#89	Star	Top		
	Pot			Too		
				Toy		
				Tree		
	Yam	Zag				
	Yes	Zig				
		Zoo				

VELOCITY CORRECTIONS
Season 1949-Lake Roosevelt
Project CS-332

Sheet LR 10448

June 9, 1949
"f" day
NK 7 Fathometer
Curve No. 6
(both ft. & Fms.)

Reducers in Feet

0.0	to 22.2	ft.
-0.2	to 45.4	"
-0.4	to 65.5	"
-0.6	to 84.3	"
-0.8	to 103.0	"
-1.0	to 121.5	"
-1.2	to 140.0	"
-1.4	to 158.5	"
-1.6	to 177.0	"
-1.8	to 195.7	"
-2.0	after 195.7	ft.

Reducers in Fms.

-0.9	to 8.8	Fms.
-1.0	to 18.0	"
-1.1	to 27.5	"
-1.2	to 37.0	"
-1.3	to 46.0	"
-1.4	after 46.0	fms.

June 10, 1949
"g" day
808-1158 Fathometer
Entire day except last 4
positions which were obtained
with NK-7 Fathometer
All soundings in Fms. Curve No. 7

Reducers in Fathoms

-0.2 fms. entire period

June 10, 1949
Last 4 positions, "g" day
NK 7 Fathometer
Curve No. 8

Reducers in Fms.

-0.7	to 6.5	fms.
-0.8	to 20.0	"
-0.9	to 31.0	"
-1.0	to 41.8	"
-1.1	to 52.2	fms.

TIDE REDUCERS-SHEET LR 10448
Register No. H-7686
Season 1948

7-186
(July 1933)

Refer to Miles Gage (with gaps filled in by Coulee Dam Gage)

Miles Gage to June 17, 1948
Coulee Dam Gage June 17 to June 21, 1948
Miles Gage remainder of period.

Date 1948	Feet	Fms.
June 7	0.0	0.0
" 11	0.0	0.0
" 14	0.0	0.0
" 15	0.0	0.0
" 16	0.0	0.0
" 17	0.0	0.0
" 18	0.0	0.0
" 21	0.0	0.0
" 22	0.0	0.0
" 23	0.0	0.0
" 25	0.0	0.0
" 28	0.0	0.0
" 29	0.0	0.0
" 30	0.0	0.0
July 6	0.0	0.0
" 7	0.0	0.0
" 8	0.0	0.0
" 9	0.0	0.0

Season 1949, Tide Reducers

Sheet LR 10448 H-7686

Refer to Coulee Dam Gage

	Feet		Fms.
June 9	0.0	All day	0.0 fms. all day
June 10	0.0	" "	0.0. fms. all day

Sheet LR-10448 H-7686

BAR CHECK RESIDUALS

(To be applied algebraically to scanned Index correction)

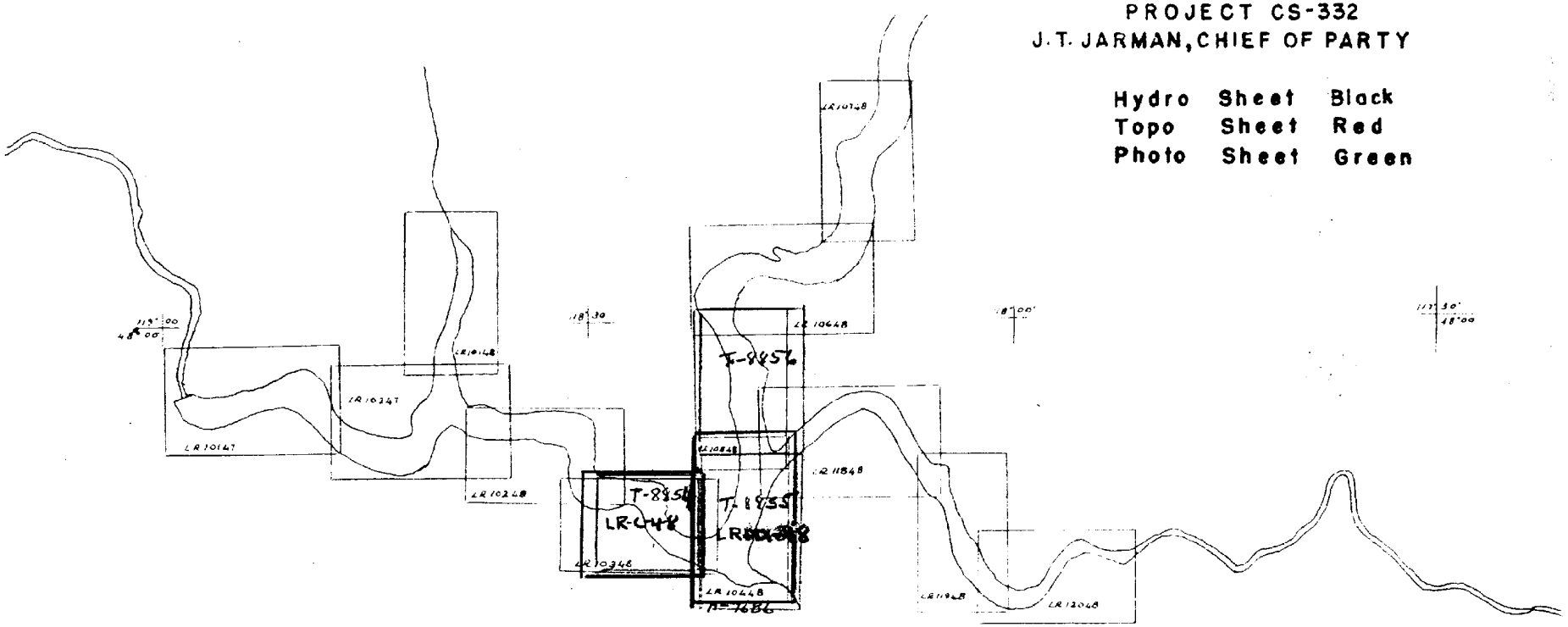
7-186
(July 1935)

Date	Bar Check Residual Feet	Fms.	Fath.	Launch	Remarks
June					
7	-0.9	-0.1	808-67	LCVP	
11	-1.3	0.0	122	98	
14	-0.9	0.0	122	98	
15	-0.7	0.0	122	98	
16	-0.9	-0.2	122	98	
17	-1.0	-0.2	122	98	
18	-1.2	-0.2	122	98	
21	-0.7	-0.1	122	98	
22	-0.9	-0.2	122	98	
23	-0.7	-0.1	122	98	
25	-0.6	-0.2	122	98	
28	-0.7	-0.1	122	98	
29	-0.8	-0.1	122	98	
30	-0.2	0.0	122	98	
July					
6	-0.4	-0.1	122	98	
7	-0.7	0.0	122	98	
8	-0.9	0.1	115	LCVP	
9	-0.9	-0.1	115	LCVP	
July 7	-0.1	0.4	115	LCVP	

H-7686
Field No. LR-10448

SHEET INDEX
FRANKLIN D. ROOSEVELT LAKE
PROJECT CS-332
J.T. JARMAN, CHIEF OF PARTY

Hydro Sheet Black
Topo Sheet Red
Photo Sheet Green



H 7684
LR 10248

Lake Roosevelt, Wash.
List of geographic names
penciled on smooth sheet.

Lake Roosevelt

Washington State

Ferry County

Lincoln County

As the Seattle Processing Office was not furnished with a copy of the report on geographic names it is suggested that suitable names be taken from the report in Washington.

H 7685
LR 10348

Lake Roosevelt, Washington.

List of geographic names
penciled on smooth sheet.

Washington

Lake Roosevelt

Ferry County

Lincoln County

See Special Report on Geographic Names,
Sheets T 8849 to T 8859, Inclusive
Project Ph-2 (45), by J.T.Jarman.

A copy of this report was not supplied to the Seattle Processing Office. It is suggested that suitable names be lettered on the sheet from this report.

H 7686
LR 10448

Lake Roosevelt, Washington.

List of geographic names penciled on smooth sheet.

Franklin D. Roosevelt Lake

Washington

Stevens County

Ferry County

Lincoln County

Colville Indian Reservation

Spokane River

Abraham Cove

Sally Draw

Louie Creek

Lamb Draw

George Creek

Moore Draw

Rattlesnake Draw

Kirby Draw

Hawk Creek Harbor

Humes Rodd

STATISTICS FOR HYDROGRAPHIC SURVEY H-7684, FIELD NO. LR 10248

LCVP (1948 Season)

Vol. No.	Day Letter	Date	HL Snd. Wire	Positions	Statute Miles
1	a (blue)	May 12	1	196	46.4
1& 2	b "	" 13	1	135	21.1
2	c "	" 17	1	161	34.5
3	d "	" 18	1	182	43.8
3 & 4	e "	" 19	1	173	27.2
4	f "	" 20	1	165	25.1
5	g "	" 21	0	119	19.7
5	h "	" 25	1	101	16.0
6	j "	" 26	1	49	4.4
6	K "	" 28	1	94	15.4
6	l "	June 1	1	49	5.0
6	m "	" 2	1	49	5.6
		(LCVP 1949 Season)			
7	n "	June 20	10	69	5.6
	Totals		21	1542	269.8

AREA SQUARE STATUTE MILES: 7.9

STATISTICS FOR HYDROGRAPHIC SURVEY H-7685
Field No. LR 10348

Vol. No.	Day Letter	Positions	Statute Miles	Date
		LCVP (Season 1948)		
1	a (blue)	149	10.7	June 4
1	b "	172	20.7	" 8
2	c "	149	10.5	" 10
2	d "	7	1.2	" 14
2	e "	109	11.4	" 15
3	f "	134	12.5	" 16
3	g "	184	26.3	" 17
4	h "	114	10.3	" 21
4	j "	176	21.2	" 22
5	k "	207	36.8	" 23
6	l "	164	17.9	" 25
6	m "	125	13.3	" 28
7	n "	108	12.4	" 29
7	p "	139	20.6	July 1
8	q "	87	9.8	" 6
8	r "	70	6.6	" 7
		LAUNCH 98 (Season 1948)		
9	a (red)	21	5.4	June 9
9	b "	42	10.7	" 10
		LCVP (Season 1949)		
10	s (blue)	12	0.0	June 19
	Totals	2169	358.3	

AREA SQUARE STATUTE MILES: 7.3
Handlead Soundings : 31

STATISTICS

Hydrographic Survey H-7686, Field No. LR 10448

Vol. No.	Day Letter	Date	HL Snd. Wire	Positions	Statute Miles
		Launch No. 98 (1948)			
1	a (red)	June 11	0	58	13.3
1	b "	" 14	0	141	31.4
2	c "	" 15	0	177	42.1
3	d "	" 16	0	186	33.4
4	e "	" 17	1	174	33.6
5	f "	" 18	0	152	33.8
6	g "	" 21	0	90	16.2
6	h "	" 22	0	132	14.0
7	j "	" 23	0	115	21.1
8	k "	" 25	1	137	24.3
9	l "	" 28	0	143	19.7
9	m "	" 29	6	134	14.6
10	n "	" 30	153	76	6.6
11	p "	July 6	1	68	5.4
11	q "	" 7	0	81	6.6
		LCVP (1948)			
12	a (blue)	June 7	1	127	17.7
13	c "	July 7	0	16	0.9
13	d "	" 8	1	77	6.0
13	e "	" 9	2	99	7.4
		LCVP (1949)			
14	f "	June 9	0	37	2.5
14	g "	" 10	0	71	10.1
	Totals		166	2291	361.6

AREA: Square Statute Miles- 10.3

Note:
There is no blue day letter "b".

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

Division of Hydrography and Topography:

Division of Charts:

Plane of reference approved in
volumes of sounding records for

HYDROGRAPHIC SHEET H-7684, Field No. LR 10248

Locality Franklin D. Roosevelt Lake
State of Washington
Project CS-332

Chief of Party: J.T. Jarman
Plane of reference is 1290 feet USBR 1937 Independent Datum, or 1288.575 feet M.S.L.
10.067 ft. on tide staff at Keller Ferry (staff No. 2)
8.411 ft. below B. M. ℄ 284
Above data applicable to 1948 Season data

The 1949 Season data are to be reduced by the gage at Grand Coulee Dam, see below.

Plane of Reference: Same as above
which is 10.0 feet on tide staff at Coulee Dam, Wash.
and 21.8 feet below B.M. Section 8 (USBR)

Refer to:
Water Surface Elevations (Tides) Season 1948
Water Surface Elevations (Tides) Season 1949
Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 756675

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

Division of Hydrography and Topography:

Division of Charts:

Plane of reference approved in
volumes of sounding records for

HYDROGRAPHIC SHEET H-7685, Field No. LR 10348

Locality Franklin D. Roosevelt Lake
State of Washington
Project CS-332

Chief of Party: J.T. Jarman
Plane of reference is 1290 feet USBR 1937 Independent Datum, or 1288.575 feet
10.067 ft. on tide staff at Keller Ferry (staff No. 2) M.S.L.
8.411 ft. below B. M. Q 284
Above data applicable to 1948 Season records

The 1949 Season's records are to be reduced by data from the Grand Coulee Dam, see below:

Plane of Reference: Same as above
which is 10.0 feet on tide staff at Coulee Dam, Wash.
and 21.8 feet below B.M. Section 8 (USBR)

Rfere to:
Water Surface Elevations (Tides) Season 1948
Water Surface Elevations (Tides) Season 1949
Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 756675

RHC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography~~ 13 March 1950

Division of Charts: R. H. Carstens

Plane of reference approved in
14 volumes of sounding records for

HYDROGRAPHIC SHEET 7686

Locality Hawk Creek, Lake Roosevelt, Washington

Chief of Party: J. T. Jarman in 1948-49
Plane of reference is
~~xxxxxxxxxxxxxxxxxx~~ 1290 feet (USBR 1937 Datum of Leveling)
~~xxxxxxxxxxxxxxxxx~~ or 1288.6 feet (Sea-Level datum of 1929)

3.4 ft. on tide staff No. 1 at Miles
138.0 ft. below B. M. OB 37

-1.4 ft. on tide staff at Coulee Dam
166.2 ft. above B. M. OSBORNE 2

Condition of records satisfactory except as noted below:

E. C. McKay
Section
Chief, ~~Division~~ of Tides ~~and Currents.~~

U. S. GOVERNMENT PRINTING OFFICE 756675

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

Division of Hydrography and Topography:

Division of Charts:

Plane of reference approved in
volumes of sounding records for

HYDROGRAPHIC SHEET H-7686, Field No. LR 10448

Locality Franklin D. Roosevelt Lake
State of Washington
Project CS-332

Chief of Party: J.T. Jarman
Plane of reference is 1290 feet USBR 1937 Independent Datum, or 1288.575 feet
3.4 ft. on tide staff at Miles (staff No. 1) above mean sea level
138.2 ft. below B. M. OB 37
Above data applicable to 1948 Season data

The 1949 Season data are to be reduced by the data listed below:

Plane of Reference: Same as above
which is 10.0 feet on tide staff at Coulee Dam, Wash.
and 21.8 feet below B.M. Section 8 (USBR)

Refer to :
Water Surface Elevations (Tides) Season 1948
Water Surface Elevations (Tides) Season 1949

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 756675

SEP 15 1950

FORM 537a (9-24-47)

DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REGISTER NO. ~~T- 10291~~ Destroyed

TOPOGRAPHIC TITLE SHEET

FIELD NO. LR-B-48

Each Planetable and Graphic Control Sheet should be accompanied by this form, completed so far as practicable, when forwarded to the Washington Office.

STATE: Washington

GENERAL LOCALITY: Franklin D. Roosevelt Lake

LOCALITY: Hells Gate Island to Halverson Canyon

SCALE: 1: 10,000

DATE OF SURVEY: May, 1948

VESSEL: Field Party

CHIEF OF PARTY: J.T. Jarman

SURVEYED BY: J.T. Jarman

INKED BY: R.G. Ramos

HEIGHTS IN FEET ABOVE MHW OR 1288.6 ft. ☐ TO GROUND ☐ TO TOPS OF TREES

CONTOUR APPROXIMATE CONTOUR FORM LINE INTERVAL _____ FEET

PROJECT NUMBER: CS-332

REMARKS

The plane of Reference for this sheet is 1290 feet, USBR 1937 Independent Datum, or 1288.575 feet, M.S.L.

After graphic control signals were applied to H-7684, LR-B-48 was destroyed.

Magnetic declination at:
△ CP47 (USBR), 1934, at 1710 on 6/20/49 was 22°45'E (scaled)
△ CP48 (USBR), 1934, at 1410 on 6/20/49 was 22°05'E (scaled)
△ CP54 (USBR), 1934, at 1010 on 6/10/49 was 22°10'E (scaled)

12136

FEB 15 1950

FORM 537a (9-24-47)

DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REGISTER NO. ~~I - 10292~~ Destroyed

TOPOGRAPHIC TITLE SHEET

FIELD NO. LR-C-48

Each Planetable and Graphic Control Sheet should be accompanied by this form, completed so far as practicable, when forwarded to the Washington Office.

STATE: Washington

GENERAL LOCALITY: Franklin D. Roosevelt Lake

LOCALITY: Halverson Canyon to Lincoln Mills

SCALE: 1: 10,000

DATE OF SURVEY: May, 1948

VESSEL: Field Party

CHIEF OF PARTY: J.T. Jarman

SURVEYED BY: Phillip A. Rabideau

INKED BY: Hal A. Marchant

HEIGHTS IN FEET ABOVE ~~MHW~~ OR 1288.6 ft. ☐ TO GROUND ☐ TO TOPS OF TREES

CONTOUR: APPROXIMATE CONTOUR FORM LINE INTERVAL _____ FEET

PROJECT NUMBER: CS-332

REMARKS

The plane of Reference for this sheet is 1290 feet, USBR 1937 Independent Datum, or 1288.575 feet, M.S.L.

After graphic control signals and shoreline changes were applied to H-7686 and H-7685, LR-C-48 was destroyed.

The magnetic declinations at

Δ CP-64 (USBR), 1934, on 6/19/49 at 1510, was 21°41'E. (scaled)

Δ CP-54 (USBR), 1934, on 6/28/48 at 1340, was 21°43'E (scaled).

12136

FEb 1 5 1950

FORM 537a (9-24-47) DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY

REGISTER NO. ~~T - 10293~~ Destroyed

TOPOGRAPHIC TITLE SHEET

FIELD NO. LR-D-48

Each Planetable and Graphic Control Sheet should be accompanied by this form, completed so far as practicable, when forwarded to the Washington Office.

STATE: Washington

GENERAL LOCALITY: Franklin D. Roosevelt Lake

LOCALITY: Lincoln Mills to Spokane River

SCALE: 1; 10,000

DATE OF SURVEY: June 1948, 19____

VESSEL: Field Party

CHIEF OF PARTY: J.T. Jarman

SURVEYED BY: P.A. Rabideau

INKED BY: hal A. Marchant

HEIGHTS IN FEET ABOVE ~~MHW~~ OR 1288.6 ft. ☐ TO GROUND ☐ TO TOPS OF TREES

CONTOUR APPROXIMATE CONTOUR FORM LINE INTERVAL _____ FEET

PROJECT NUMBER: CS-332

REMARKS

The plane of Reference for this sheet is 1290 feet, USBR 1937 Independent Datum, or 1288.575 feet, M.S.L.

After graphic control signals and shoreline changes were applied to H-7686, graphic control survey LR-D-48 was destroyed

Magnetic declinations at

△ CP-87 (USBR) 1937 on June 19, 1948 at 1115, was 21°40'E (scaled)

⊙ Lantzy (USBR) 1937 on July 8, 1948 at 1000, was 21°46'E (scaled)

12136

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS: Box 337, Coulee Dam, Wash.

TELEGRAPH ADDRESS:

EXPRESS ADDRESS:

August 6, 1949

Officer in Charge
Seattle Processing Office
U.S. Coast and Geodetic Survey
Seattle, Wash.

Dear Mr. Smith:

On control sheet, Field No. LR C 48, Register No. T-10292, one of my Filipino cadets has shown Hawk Creek 20 Light with a red circle. The location of this light as shown on the foregoing sheet is incorrect. The correct location is as follows:

		(624.8)	
Lat.	47°	49' 1228.3 meters	
		(57.4)	(as shown on LR D 48)
Long.	118°	21' 1190.5 meters	

The light should be shown with a green circle and the nomenclature lettered in green. On all CS-332 control sheets, the use of red ink means a new location by planetable methods. The use of green ink means that the locations as furnished by phootgrammetric methods, Project Ph-2(45) has been accepted. In the majority of cases, all photogrammetric locations have been checked by the planetable. It is requested that you correct Control sheet LR C 48 (T-10292) to agree with the above for me.

I am enclosing a tracing of some recently rerun shoreline which falls on the San poil control sheet. You will note on the control sheet that I have a note in pencil stating that the shoreline is in error and that it will be rerun. I found that the shoreline as transferred on the control sheet was incorrect, but that the rerun shoreline agreed very closely with that shown on the ozalid from Ph-2(45) compilation. However, there were some slight differences, and it is requested that you transfer the new shoreline to the control sheet and show it with red ink.

Best Regards,

J.T. Jarman

GUL

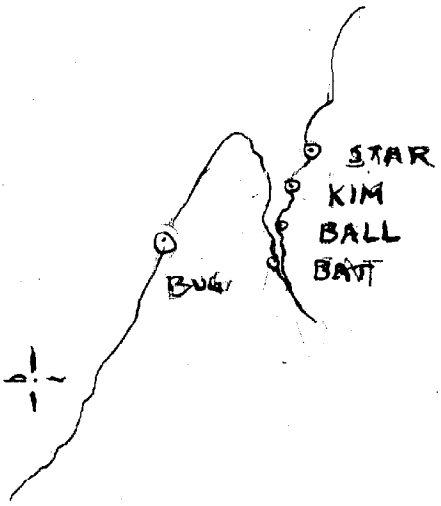
UGGH

TUB

BATT

CP-CP-12

RAG



Cove on Sanpoil where shoreline has been rerun - new shoreline shown in red.

It is requested that this shoreline be transferred to and shown on the control sheet in red.

There is note on control sheet in pencil calling attention to missing shoreline.

Fallson H-7683

118° 40'

48° 90'

Descriptive Report
To Accompany
Topographic Control Survey T-10291, Field No. LR-B-48
Topographic Control Survey T-10292, Field No. LR-C-48
Topographic Control Survey T-10293, Field No. LR-D-48

These surveys are a by-product of Projects Ph-2(45), and CS-332. Project Ph-2(45) furnished shoreline and photo-hydro locations for the survey of Franklin D. Roosevelt Lake. Project CS-332 is a hydrographic survey of the lake. The control sheets were used to locate additional hydrographic stations by planetable methods, as well as to verify, in several instances, the compilation of the shoreline, and the location of some of the photo-hydro stations.

INSTRUCTIONS

1. These surveys are not covered by specific Instructions. In general, Instructions for Project CS-332 cover the surveys. The latter instructions suggest that additional hydrographic stations be located by sextant cuts plotted on the boat sheets. Due to the large number of additional statipns necessary, the suggestion was not practical, and separate control sheets were adopted.

SURVEY LIMITS AND DATES

1. These surveys extend from Hells Gate Island to the Spokane River. They were executed during the months of May and June, 1948.

LR-B-48 extends from Hells Gate Island to Halverson Canyon; work began May 2, 1948 and it was completed on May 6, 1948. It supplements shoreline survey sheet T-8853.

LR-C-48 extends from Halverson Canyon to Lincoln Mills; work began May 12, 1948 and was finished May 18, 1948. It supplements shoreline survey sheet T-8854.

LR-D-48 extends from Lincoln Mills to the Spokane River; work began June 6, 1948 and ended on June 13, 1948. It supplements T-8855 and T-8856.

CONTROL

1. Horizontal control for these surveys is second and third order triangulation executed by the Bureau of Reclamation from 1934 to 1940. For a complete treatment of the main source of the horizontal control, refer to the "Special Report on Reservoir Boundary Points, Project Ph-2(45)" previously submitted to the Washington Office. Refer also to the Descriptive Report accompanying Hydrographic Sheets LR 10147 (H-7681) and LR 10247 (H-7682), side heading "F".

2. The USBR third order triangulation within this area is listed in plane coordinates based on a local USBR plane coordinate system with triangulation station ALPHA as the origin. The geographic coordinates of ALPHA are Lat. 47° 58' 00.844", Long. 118° 58' 29.827"; its plane coordimates are 100,000 feet north and 100,000 feet east. All USBR third order points used on these surveys were converted to geographic coordinates by computations.

3.. Descriptive Report to accompany T-7108 a&b under the heading "Control", paragraphs 3 and 4, contain a discussion of USBR third order points which intimates that the triangulation is not exactly relative. This discussion will apply also to the third order control used on these surveys, but in general, the control encountered within the limits of these sheets is much better than that encountered on the Sanpoil River.

METHODS

1. Standard planetable methods were used throughout the survey. In a few instances, the planetable method of signal location was supplemented by theodolite cuts which were protracted.

2. Elevations of rocks and islands are referred to the "1290 foot datum plane" which is based on the 1937 USBR Independent Datum of Leveling. The "1290 Foot Plane" is the normal lake level and the maximum height to which the water rises in the lake. This plane is equivalent to 1288.575 feet above mean sea level. For additional treatment of this subject, refer to Descriptive Report to accompany Hydrographic Sheets LR 10147 (H-7681) and LR 10247 (H-7682).

3. Recovery notes are being submitted for all triangulation stations visited during the course of the survey. In some instances, USBR Second Order triangulations were used for orientation purposes, but the station was not visited. The original tripod placed by the USBR when the triangulation was executed, was still standing and used for the sighting point.

4. Location of photo-hydro stations which were accepted from shoreline survey sheets T-8853 through T-8856 have been shown on the control sheets with green circles. Locations of additional stations plus the locations of those photo-hydro stations found to be in error have been shown with red circles. Most of the photo-hydro stations accepted were checked with the planetable. An exception occurs on sheet LR D 48 which is contemporary to boat sheet LR 10448. Hydrographic work began on this sheet using the photo-hydro stations without checking them since the control unit was engaged elsewhere. During the course of the hydrography, no serious discrepancies were uncovered. Therefore, the graphic control party only located signals in coves, inserted new signals and checked shoreline on this sheet. In general, the photo-hydro stations were located with a high degree of accuracy by the radial plot method.

5. These control sheets contain the final accepted location for all hydrographic control, and where discrepancies exist, if any, the control sheet location should be accepted.

SHORELINE AND TOPOGRAPHY

1. The shoreline shown in pencil on these sheets came from shoreline survey sheets T-8853 to T-8856 inclusive. The following checks, or shoreline changes were ascertained by planetable methods:

(a) No errors were detected and no investigation was made of the shoreline shown on T-8853.

(b) A revision of shoreline is shown in red ink, sheet LR-C-48 between signals BOX and DIP on the south shore; caused by slides.

(c) A revision of the shoreline is shown in red ink, sheet LR-C-48 near signal BOX, Lat. 47° 52.4', Long. 118° 29.0'; caused by a slide.

(d) Revision of shoreline is shown in red ink, sheet LR-C-48 between signals TAL and DEN, south shore; caused by slides.

(e) Revision of shoreline immediately west of signal TOP, Lat. 47° 50.45', Long. 118° 24.2', shown in red ink on sheet LR-C-48; ozalid of T-8854 shows a small island in this area which does not exist.

(f) Revision of shoreline shown in red ink, sheet LR-C-48, between signals GERK and MUD, north shore; Caused by slides.

(g) At Lat. 47° 51.15', Long. 118° 27.45', a small cove exists which was not shown on T-8854. This shoreline was sketched from notes recorded in Vo. No. 2, Position 56c, sheet LR-10348.

(h) The shoreline as shown on T-8855 was found to be in error in the locations listed below. It has been shown correctly in red ink on control sheet LR-D-48. In each case the discrepancy was caused by slides which took place after the field inspection, Project Ph-2(45).

Latitude	Longitude
47° 50.6'	118° 20.9'
47° 50.8'	118° 20.7'
47° 54.05'	118° 19.4'

COAST PILOT INFORMATION

1. For a complete discussion of Coast Pilot Information refer to "Coast Pilot Report, Franklin D. Roosevelt Lake, Project Ph-2(45)" which has already been submitted to the Washington Office. Also refer to Descriptive Report to accompany hysrographic sheets H-7684, H-7685 and H-7686, headings "n" and "O" for additional information.

AIDS TO NAVIGATION

1. Form 567 lists all fixed Aids to Navigation, and is attached to this report. The aids listed are the same that the Photogrammetric

party, Project Ph-2(45) submitted, but the topographer on this project obtained a slightly different position of the following lights:

H-7685
Upper HELLS GATE DAY BEACON 14
WHITESTONE CREEK 15 LT.
MOONSHINE BAY 16 LT.
HALVERSON CANYON 17 LT.
GOAT PASTURE 18 LT.

Form 567 attached gives the correct position for the aforementioned lights and day beacons. The other aids not listed above have the same position as listed by Project Ph-2(45). There are no floating aids to navigation within the limits of these sheets.

LANDMARKS FOR CHARTS

1. Data relative to landmarks to charts are shown on form 567, a copy of which is attached. These are the same objects submitted by Project Ph-2(45), and are the same locations.

GEOGRAPHIC NAMES

1. For a complete treatment of Geographic Names, refer to "Special Report, Geographic Names, Sheets 8849 to 8859 inclusive, Project Ph-2(45)" previously submitted to Washington. Filed in Geographic Name Sect.

2. No additional information was obtained by the topographer during the course of these surveys. However, the hydrographer on sheet LR-10448 (H-7686) obtained some information which will apply to graphic control sheet LR-D-48. See descriptive Report to accompany hydrographic sheets H-76884, H-7685 and H-7686, side heading "R", paragraph 3.

3. It is known that the National Park Service is contacting the Bureau of Reclamation, the Indian Service and various residents along the lake in an endeavor to provide suitable names for the large number of unnamed features adjacent to the lake. This information is not yet available.

Respectfully submitted,

J.T. Jarman

J.T. Jarman
Chief of Party

GEOGRAPHIC NAMES

Survey No. H-7684

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Washington									USGB	1
Franklin D. Roosevelt Lake									4	2
Ferry County			(North of lake)							3
Lincoln County			(South of lake)							4
										5
Moonshine Bay										6
Lundstrom Bay										7
Whitestone Creek										8
Hellgate Canyon										9
Hellgate Island										10
Penix Canyon										11
Spiegle Canyon										12
				Names underlined in red are approved. 4-14-50. L. Heck						13
										14
										15
										16
										17
Keller Ferry		(location of tide gage)								18
										19
										20
										21
										22
										23
										24
										25
										26

GEOGRAPHIC NAMES

Survey No. H-7685

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Washington									USGB	1
Franklin D. Roosevelt Lake									USGB	2
Lincoln County			(South of lake)							3
Ferry County			(north of lake)							4
Lincoln Mill			(not Mills)							5
Welch Creek			(not Welsh)							6
Welch Creek Cove										7
Halverson Canyon										8
										9
										10
				Names underlined in red are approved. 4-14-50. L. Heck						11
										12
										13
										14
Keller Ferry			(location of tide gage)							15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27

GEOGRAPHIC NAMES

Survey No. H-7686

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Washington									USrB	1
Stevens County										2
Ferry County										3
Lincoln County										4
Colville Indian Reservation										5
Spokane Indian Reservation				(area E. of lake, N. of Spokane River Arm)						6
Spokane River Arm										7
Franklin D. Roosevelt Lake									USrB	8
Sallie Draw										9
Abraham Cove										10
Lodie Creek										11
George Creek										12
Moore Draw										13
Rattlesnake Draw										14
Kirby Draw										15
Hawk Creek Harbor										16
Hawk Creek										17
Lincoln Mill										18
Lamb Draw										19
										20
					Names underlined in red are approved 3-9-50. L. Neck					21
										22
										23

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7684

Records accompanying survey:

Boat sheets 1; sounding vols. 7; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls 2 envel.

special reports, etc. .....

.....

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

Number of positions on sheet		1545.
Number of positions checked		115.
Number of positions revised		12.
Number of soundings revised (refers to depth only)		113.
Number of soundings erroneously spaced		10.
Number of signals erroneously plotted or transferred		———
Topographic details	Time	1.
Junctions	Time	0
Verification of soundings from graphic record	Time	10.

Verification by D.A. Buzzell Total time 183 hr. Date 2-2-50

Reviewed by [signature] Time 15 Date 4-14-50

M-2232-1

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7685

Records accompanying survey:

Boat sheets 1; sounding vols. 10; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls 4 envel.

special reports, etc. .....

.....

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

Number of positions on sheet		2169
Number of positions checked		77
Number of positions revised		3
Number of soundings revised (refers to depth only)		66
Number of soundings erroneously spaced		5
Number of signals erroneously plotted or transferred		0
Topographic details	Time	16
Junctions	Time	5
Verification of soundings from graphic record	Time	70

Verification by Robert C. Richards. Total time 308 Date 3/17/50

Reviewed by Lucy Jackson Time 41/8 Date 4/14/50

M-2232-1

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7686...

Records accompanying survey:

Boat sheets ..1..; sounding vols. 14...; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls 4 envel.

special reports, etc. ....

....

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

Number of positions on sheet		2291
Number of positions checked		97
Number of positions revised		18
Number of soundings revised (refers to depth only)		157
Number of soundings erroneously spaced		11
Number of signals erroneously plotted or transferred		—
Topographic details (incl. topo ⊘)	Time	5
Junctions	Time	5
Verification of soundings from graphic record	Time	40

Verification by J. W. Evans III .... Total time 210.. Date 19 July 1950

Reviewed by L. M. Beskind .... Time 13 ...... Date July 21, 1950

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY REGISTRY NO. H-7684

FIELD NO. LR-10248

Washington, Franklin D. Roosevelt Lake, Moonshine Bay to Hellgate Island
Surveyed in May - June 1948 & June 1949 Scale 1:10,000
Project No. CS-332

Soundings:

Fathometer
Hand lead

Control:

Sextant fixes on shore signals

Chief of Party - J. T. Jarman
Surveyed by - C. W. Moore, H. A. Marchant
Protracted by - D. W. Congdon
Soundings plotted by - E. K. Loop, J. C. Couch
Verified and inked by - D. A. Buzzell
Reviewed by - I. M. Zeskind, 14 April 1950
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline for this survey originates with air-photographic surveys T-8851 and T-8853 of 1944-47.

The origin of the control is adequately described in the Descriptive Report.

2. Sounding Line Crossings

Depths at crossings are in adequate agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves were adequately delineated.

This is a survey of a portion of Franklin D. Roosevelt Lake which was formed by the impoundment of water upstream from the Grand Coulee Dam. The bottom is irregular and slopes abruptly from shore to depths of over 60 ft. Depths along the axis of the lake range from about 285 ft. to 335 ft.

4. Junctions with Contemporary Surveys

An adequate junction was effected with H-7685 (1948-49) on the east. The junction with H-7682 (1947) on the west will be considered in the review of that survey.

5. Comparison with Prior Surveys

No prior surveys of the area have been made by this Bureau.

6. Comparison with Charts

A. Hydrography

There are no charts of the area by this Bureau.

B. Aids to Navigation

There are no floating aids to navigation within the limits of the present survey. Fixed aids adequately mark the features intended.

7. Condition of Survey

a. The sounding records and Descriptive Report are complete and comprehensive.

b. The field plotting was accurately done.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work Recommended

This is an excellent basic survey and no additional field work is recommended.

Examined and approved:

H. R. Edmonston
Chief, Nautical Chart Branch

R. W. Knox
Chief, Division of Charts

L. S. Hubbard
Chief, Section of Hydrography

W. M. Scaife
Chief, Division of Coastal Surveys

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY — REGISTRY NO. H-7685

FIELD NO. LR-10348

Washington, Franklin D. Roosevelt Lake, Halverson Canyon to Lincoln Mill
Surveyed in June - July, 1948, June 1949 Scale 1:10,000
Project No. CS-332

Soundings:

Fathometer
Hand lead

Control:

Sextant fixes on shore signals

Chief of Party - J. T. Jarman
Surveyed by - D. M. Whipp, G. W. Moore, H. A. Marchant
Protracted by - C. N. Hillman
Soundings plotted by - C. N. Hillman
Verified and inked by - R. C. Richard
Reviewed by - I. M. Zeskind, 17 April 1950
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline for this survey originates with air-photographic surveys T-8553, T-8554 and T-8555 of 1946-47. Shoreline revisions shown in red are from the present survey.

The origin of the control is adequately described in the Descriptive Report.

2. Sounding Line Crossings

Depths at crossings are in adequate agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves were adequately delineated.

This is a survey of that portion of the Franklin D. Roosevelt Lake which is located in the Columbia River Valley between Halverson Canyon and Lincoln Mill. It was formed by the impoundment of water upstream from the Grand Coulee Dam. The bottom slopes sharply from shore to the natural channel and contains numerous irregularities. Depths along the axis of the lake range from 278 ft. to 340 ft.

4. Junctions with Contemporary Surveys

An adequate junction was effected with H-7684 (1948-49) on the west. The junction with H-7686 (1948-49) on the east will be considered in the review of that survey.

5. Comparison with Prior Surveys

No prior surveys of the area have been made by this Bureau.

6. Comparison with Charts

A. Hydrography

There are no charts of the area by this Bureau.

B. Aids to Navigation

There are no floating aids to navigation within the limits of the present survey. The fixed aids shown on the present survey adequately mark the features intended.

7. Condition of Survey

a. The sounding records and Descriptive Report are complete and comprehensive.

b. The field plotting was accurately done.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work Recommended

This is an excellent basic survey and no additional field work is recommended.

H. R. Edmonston
Chief, Nautical Chart Branch

Examined and approved:
R. W. Knox
Chief, Division of Charts

L. S. Hubbard
Chief, Section of Hydrography

W. M. Scaife
Chief, Division of Coastal Surveys

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY — REGISTRY NO. H-7686

FIELD NO. LR-10448

Washington, Franklin D. Roosevelt Lake, Lincoln Mill to Spokane River Arm
Surveyed in June - July 1948, June 1949 Scale 1:10,000
Project No. CS-332

Soundings:

808 Fathometer
NK-7 Fathometer

Control:

Sextant fixes on shore signals

Chief of Party - J. T. Jarman
Surveyed by - J. T. Jarman, G. W. Moore, H. A. Marchant
Protracted by - J. C. Couch
Soundings plotted by - J. C. Couch
Verified and inked by - L. V. Evans
Reviewed by - I. M. Zeskind, 21 July 1950
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline of this survey originates with air-photographic surveys T-8854, T-8855 and T-8856 of 1946-47. The shoreline revisions in red are from graphic control surveys LR-C-48 and LR-D-48 (field numbers) which were subsequently destroyed.

The control is adequately described in the Descriptive Report.

2. Sounding Line Crossings

Depths at crossings are in adequate agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated.

This is a portion of the Franklin D. Roosevelt Lake formed by the impoundment of the Columbia River upstream from the Grand Coulee Dam. The bottom is fairly irregular and generally slopes abruptly at the shore to depths of 25 to 100 ft. Offshore to the natural channel the general slope of the bottom is less abrupt. There are submerged knolls, depressions and ravines in this area. Depths along the axis of the natural channel range from 248 to 300 ft.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7685 (1948-49) on the southwest, H-7700 (1948-49) on the northeast and H-7687 (1948-49) on the north.

5. Comparison with Prior Surveys

No prior surveys of the area have been made by this Bureau.

6. Comparison with Charts

There are no charts of the area by this Bureau.

7. Condition of Survey

a. The sounding records and Descriptive Report are complete and comprehensive.

b. The field plotting was accurately done.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

Examined and approved:

H. R. Edmonston
Chief, Nautical Chart Branch

R. W. Knox
Chief, Division of Charts

L. S. Hubbard
Chief, Section of Hydrography

W. M. Scaife
Chief, Division of Coastal Surveys

NAUTICAL CHARTS BRANCH

SURVEY NO. H-7684

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
4-30-57	6168	GJE	~~Before~~ After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

NAUTICAL CHARTS BRANCH

SURVEY NO. H-7685

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
4-30-57	6168	GHE	~~Before~~ After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

NAUTICAL CHARTS BRANCH

SURVEY NO. H-7686

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
4/30/51	6168	Everett	~~Before~~ After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.