10965

Diag. Cht. No. 1.

Form 504

U. S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Topographic

Field No. Ph-40,000-895 Office No. T-10965

LOCALITY

State Idaho

General locality Clearwater County

Locality Orofino

1959

CHIEF OF PARTY

Victor E. Serena

LIBRARY & ARCHIVES

DATE July 1, 1962

USCOMM-DC 5087

10965

FORM 181
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT - DATA RECORD

T -10965

Project No. (II): 40,000-895 (PART I) Quadrangle Name (IV):

Field Office (II): Orofino, Idaho Chief of Party: Victor E. Serena (PHOTOGRAMMETRY) O.S. RISVOLD (GEODESY)

Photogrammetric Office (III): Baltimore, Maryland Officer-in-Charge: William F. Deane

Instructions dated (II) (III): 27 April 1959

REF. INSTRUCTIONS: 8 " 1959
15 " 1959
24 " 1959

Copy filed in Division of Photogrammetry (IV)

Method of Compilation (III): Kelsh Plotter

Manuscript Scale (III): 1:24,000 Stereoscopic Plotting Instrument Scale (III): 1:7200

Scale Factor (III): 1.000

Date received in Washington Office (IV): Date reported to Nautical Chart Branch (IV):

Applied to Chart No. Date: Date registered (IV):

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

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

Mean sea level ~~except as follows:~~
~~Elevations shown as (25) refer to mean high water~~
~~Elevations shown as (5) refer to sounding datum~~
~~i.e., mean low water or mean lower low water~~

Reference Station (III):

Lat.: Long.: Adjusted / Unadjusted

Plane Coordinates (IV): State: Zone:

Y= X=

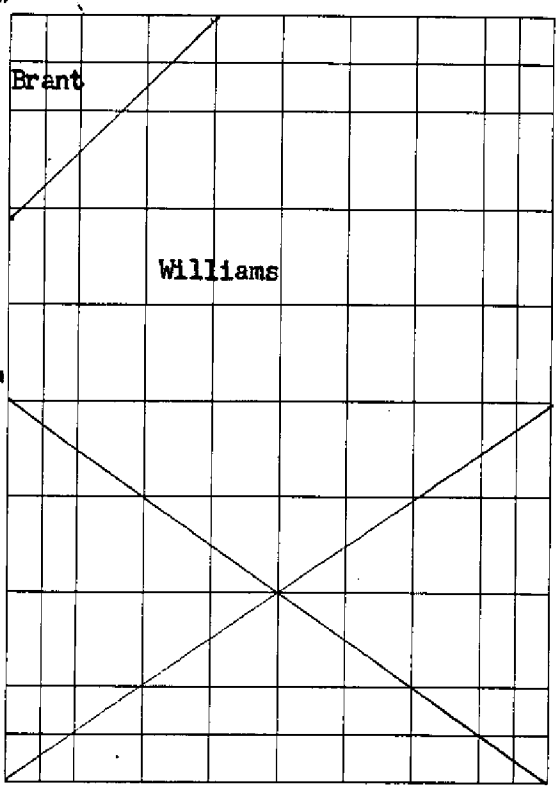
Roman numerals indicate whether the item is to be entered by (II) Field Party, (III) Photogrammetric Office, or (IV) Washington Office.

When entering names of personnel on this record give the surname and initials, not initials only.

115° 45' 00"

115° 33' 45"

46° 53' 15"



46° 48' 15"

Areas contoured by various personnel
(Show name within area)
(II) (III)

FORM 181b
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT - DATA RECORD

Field Inspection by (II): E.L. WILLIAMS
R.B. MELBY
Date: July 1959

Planetable contouring by (II):
Date:

Completion Surveys by (II):
Date:

Mean High Water Location (III) (State date and method of location):

Projection and Grids ruled by (IV): D. M. Brant
Date: 11/26/59

Projection and Grids checked by (IV): H. P. Eichert
Date: 11/26/59

Control plotted by (III): J. C. Richter
Date: 12/16/59

Control checked by (III): E. L. Williams
Date: 12/16/59

Radial Plot or Stereoscopic Control extension by (III): W. A. KUNCIS
Date: 9/1/59 to 11/30/59

Stereoscopic Instrument compilation (III): Planimetry, Contours: E. L. Williams
Date: 3/23/60

Manuscript delineated by (III):
Date:

Photogrammetric Office Review by (III):
Date:

Elevations on Manuscript checked by (II) (III): Washington Office Review Unit
Date:

COMM-DC-57842

FORM 181c
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT - DATA RECORD

Camera (kind or source) (III): C&GS Type "W" 6" focal length

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide
59-W-5462 thru 5467			1:36,000	
5511 " 5515			"	
5523			"	

Tide (III)

	Ratio of Ranges	Mean Range	Spring Range
Reference Station:			
Subordinate Station:			
Subordinate Station:			

Washington Office Review by (IV): S.G. BLANKENBAKER Date: PROJECT WORK SHEETS REVIEWED-JAN. THRU MAR. (1960)

Final Drafting by (IV): WASHINGTON OFFICE DRAFTING UNIT Date: PROJECT DRAFTING FEB THRU MAY (1960)

Drafting verified for reproduction by (IV): J. STREIFLER - HEYWOOD (A.K.) Date:

Proof Edit by (IV): A. HEYWOOD Date: PROJECT EDIT MAR. THRU MAY (1960)

Land Area (Sq. Statute Miles) (III): 54

Shoreline (More than 200 meters to opposite shore) (III):

Shoreline (Less than 200 meters to opposite shore) (III):

Control Leveling - Miles (II):

Number of Triangulation Stations searched for (II): Recovered: Identified: 3

Number of BMs searched for (II): Recovered: Identified: 9 *

Number of Recoverable Photo Stations established (III):

Number of Temporary Photo Hydro Stations established (III):

Remarks: THERE ARE TWO ADDITIONAL BENCH MARKS IN THE QUADRANGLE (D AND E-205). THEY ARE LOCATED IN DEEP TIMBER AND COULD NOT BE IDENTIFIED.

COMM-DC-57842

PROJECT PH-40,000-895

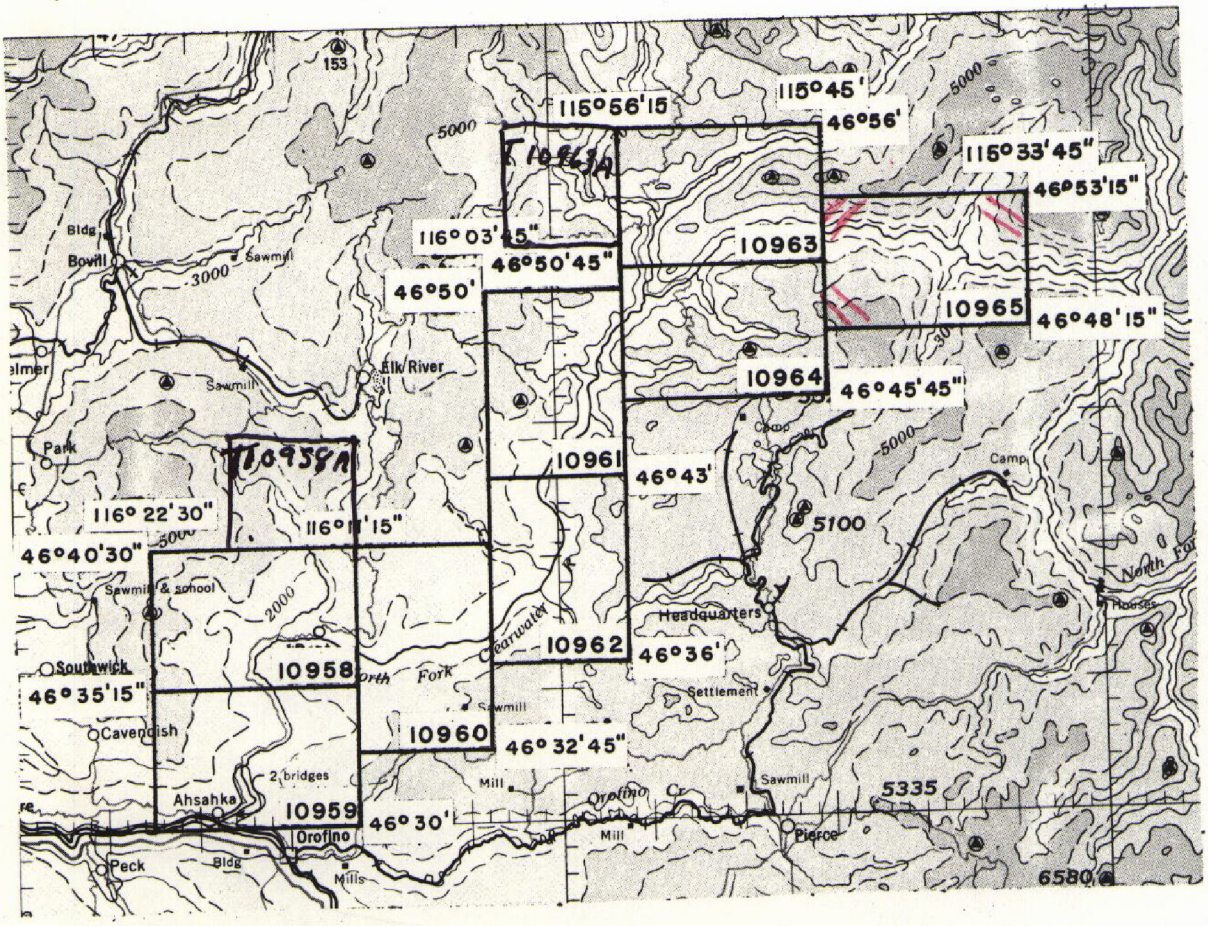
PART I

Topographic Mapping Scale 1:24,000

BRUCES EDDY DAM SITE

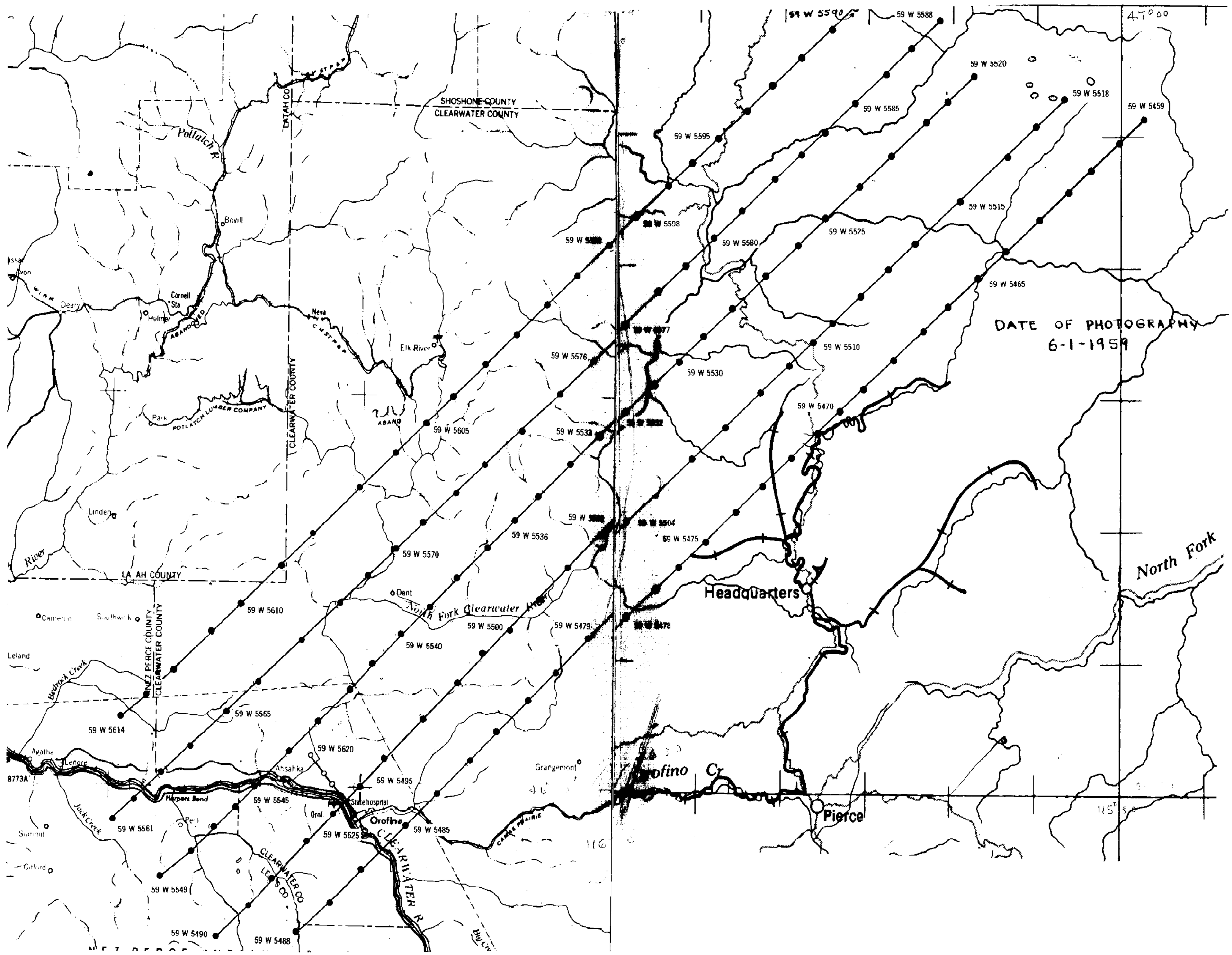
NORTH FORK CLEARWATER RIVER, IDAHO

See plot sketch. Two additional manuscripts added to the project.



Official Mileage For Cost Accounts

Sheet Number	Area Sq. Mi.
10958	54
10959	54
10960	54
10961	54
10962	54
10963	54
10964	54
10965	54
TOTAL	432 Sq. Mi. Area


DATE OF PHOTOGRAPHY
6-1-1959
47°00
115°30
North Fork
Headquarters
Pierce
Orofino Cr.
Grangemont
116
SHOSHONE COUNTY
CLEARWATER COUNTY
LATAH CO
CLEARWATER COUNTY
LATAH COUNTY
NEZ PERCE COUNTY
CLEARWATER COUNTY
CLEARWATER CO
LEWIS CO
Potlatch R
Bovill
Avon
Deary
Cornell Sta
Helmer
Nera
Elk River
Abano
Park
POTLATCH LUMBER COMPANY
Linden
River
Dent
North Fork Clearwater River
Cameron
Southwick
Leland
Bedrock Creek
Agatha
Lenore
8773A
Jack Creek
Summit
Gifford
Harpers Bend
Ahsahka
State hospital
Orofino
Oral
Peck
CLEARWATER R
Camas Prairie
Big Cr
59 W 5459
59 W 5518
59 W 5520
59 W 5588
59 W 5590
59 W 5585
59 W 5515
59 W 5595
59 W 5598
59 W 5580
59 W 5525
59 W 5465
59 W 5510
59 W 5576
59 W 5530
59 W 5470
59 W 5605
59 W 5533
59 W 5504
59 W 5475
59 W 5536
59 W 5570
59 W 5610
59 W 5500
59 W 5479
59 W 5478
59 W 5540
59 W 5614
59 W 5565
59 W 5620
59 W 5495
59 W 5561
59 W 5545
59 W 5625
59 W 5485
59 W 5549
59 W 5490
59 W 5488

6696

INTERSECTION STATIONS

7 OROFINO, RADIO STATION KLER, MAST
8 JERICHO LOOKOUT TOWER
9 DULL AXE LOOKOUT TOWER
10 TOWNSHIP BUTTE LOOKOUT TOWER
11 GOLD BUTTE LOOKOUT TOWER
12 ARMSTRONG LOOKOUT TOWER
13 EAGLE PT LOOKOUT TOWER
14 THOMPSON LOOKOUT TOWER
15 BOEHLS BUTTE LOOKOUT TOWER
16 MALLARD PK LOOKOUT HOUSE
17 SURVEYORS RIDGE LOOKOUT TOWER
18 POTLATCH (USGS)
19 P 364 (IDWP)
20 HUCKLEBERRY BUTTE LOOKOUT TOWER
21 LITTLE GREEN LOOKOUT TOWER
22 WHISKEY BUTTE LOOKOUT TOWER
23 MASON BUTTE LOOKOUT TOWER
24 BALD LOOKOUT TOWER, CENTER 1936
25 JOHN LEWIS LOOKOUT TOWER
26 BERTHA HILL LOOKOUT TOWER
27 ELK BUTTE LOOKOUT TOWER
28 BLACK MTN LOOKOUT HOUSE
29 GOAT RIDGE LOOKOUT HOUSE
30 STOCKING LOOKOUT TOWER

116 30 | 116 15 | 115 45 | 115 30

47 00

46 45

46 30

BLACKDOME (USGS) AZIMUTH MARK
BLACKDOME (USGS)
TT9
TT7
FOEHL
LARKINS
STOCKING (B.M.TIE)
GOAT RIDGE
RIDGE
DOG
BLACK MTN
TT10 (B.M.TIE)
Thompson Lookout Tower
BENTON
TT8
ELK (USGS) 1933
LOOP
BRACE
ELK RIVER (B.M.TIE)
BERTHA 1933
GOLD
LITTLE GREEN
Jericho Lookout Tower
BEAVER (B.M.TIE)
TT6
TT4
JOHN
FEARY
ALDERNAND
TT5
REEDS
ALDER
MASON
TOMHO
SNAKE (B.M.TIE)
TEA
TEAKEAN 1933
REGGEAR
WHISKEY
BALD (USGS) 1933 1959
TT3
MORRIS
DISH
TT1
PINE (USE)
HUCKLEBERRY
TT2
TT11
CLOW
AHSA
JEEP (USE)
G-364 (USE)
FINO
PECK (USE)
BRIDGE (B.M.TIE)
TT12
SLIM
OROFINO 1933
JIM

PART I

U. S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

H. ARNOLD KARO, DIRECTOR

PROGRESS SKETCH - PHASE II

SECOND-ORDER CLASS I AND II TRIANGULATION

TELLUROMETER TRAVERSE

BRUCES EDDY RESERVOIR SURVEYS

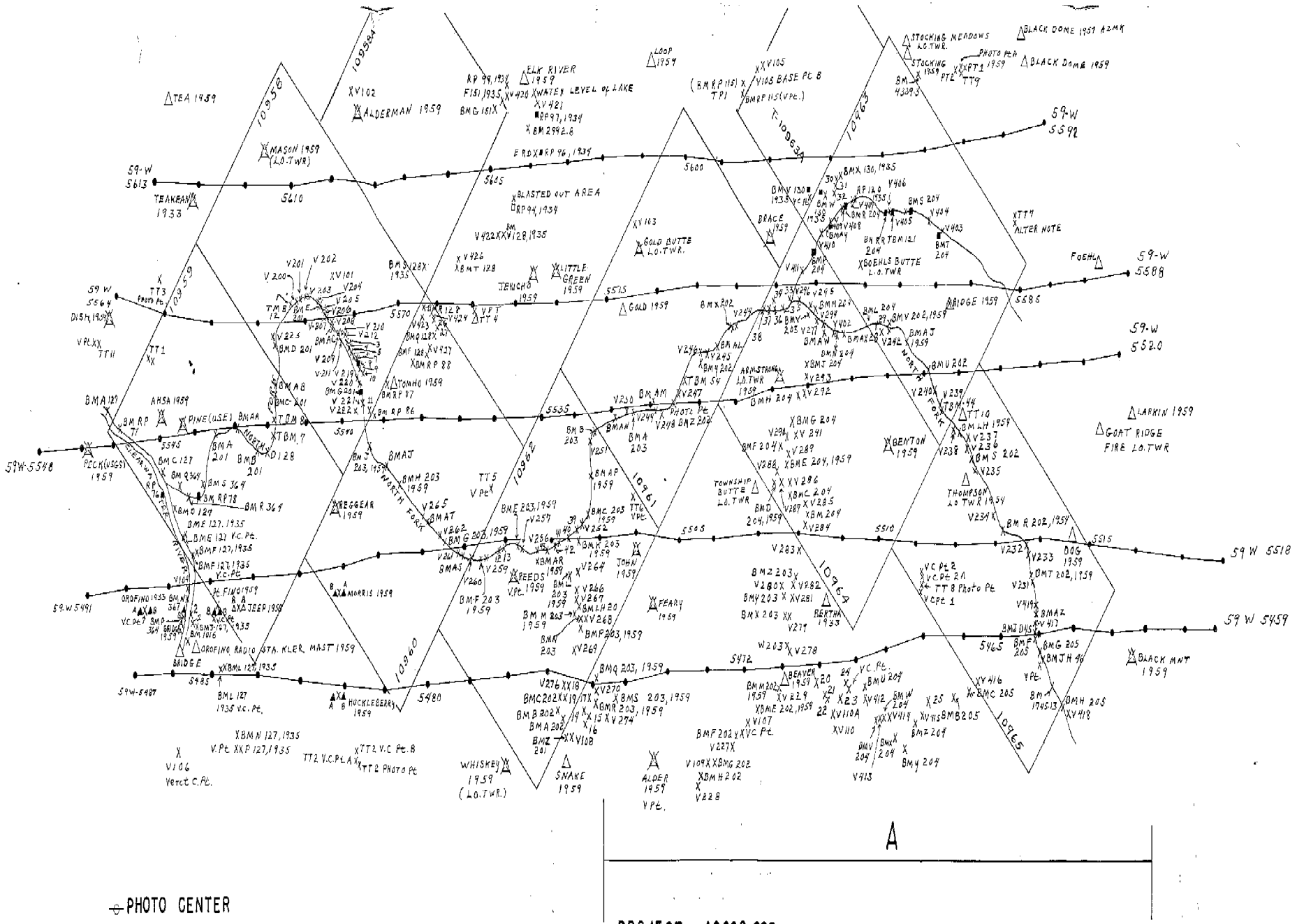
NORTH FORK CLEARWATER RIVER AREA

PROJECT 40000-895

7 JUNE 1959 - 15 AUGUST 1959

OSCAR S. RISVOLD, CHIEF OF PARTY

6691



PROJECT 40,000-895

BRUCES EDDY DAM SITE

NORTH FORK CLEARWATER RIVER

SUMMARY TO ACCOMPANY DESCRIPTIVE REPORTS
for

T-10958	T-10962
T-10959	T-10963
T-10960	T-10964
T-10961	T-10965

The* eight 1:24,000 scale, 40 ft. contour interval topographic maps covered by this Summary comprise Part I of Project 40,000-895. The project location is the site and vicinity of the proposed Bruces Eddy Dam and reservoir on the Clearwater River in Idaho. Part I (eastern section) covers a part of the North Fork of the Clearwater River and its drainage area. Part II (western section) extends along the Clearwater River from Lewiston to Ahsahka, Idaho and will consist of eleven 1:6,000 scale, 10 ft. contour interval topographic maps.

This is a combined photogrammetric mapping and geodetic control survey project undertaken by the Coast and Geodetic Survey as a specialized surveying service to the Corps of Engineers on a reimbursable basis.

The field workwas accomplished as a joint operation by the Divisions of Photogrammetry and Geodesy. Geodetic survey parties recovered and established horizontal and vertical control by conventional triangulation and leveling methods. Photogrammetrists were assigned to geodetic parties to assist in geodetic work and to perform the photogrammetric phases of the control work. Field inspection for interpretation of the photographs was accomplished by photogrammetrists. Photography for this section of the project was flown by the Coast and Geodetic Survey. It consists of 5 strips of "W" camera photographs at an approximate contact scale of 1:40,000.

The work provides horizontal and vertical control for future large scale mapping by the Corps of Engineers and topographic maps for use in preliminary planning for the proposed dam and reservoir. Coast and Geodetic Survey field work and mapping accomplished for this project will be used by the Forest Service for standard $7\frac{1}{2}$ minute quadrangle mapping in the area.

An "Index of Project Material on File" is a part of the Project Completion Report. Field photographs, field notebooks, control station identification cards, and copies of the IBM records were supplied the Corps of Engineers. Duplicate sets of CSI cards are on file in the Division of Photogrammetry. Duplicate sets of field photographs used in horizontal bridging (bridge points and horizontal control) are on file in the Division of Photogrammetry.

*Two supplemental manuscripts added to the project (Part I)
T-10958A {filed with T-10958}
T-10963A {filed with T-10963}
No descriptive Reports filed for these "small area" maps.

U. S. COAST & GEODETIC SURVEY

Bruces Eddy Dam Reservoir Project 40000-895

1959

Contents

Field Inspection Report

FIELD INSPECTION REPORT
BRUCES EDDY DAM RESERVOIR
Project 40000-895

2. Areal Field Inspection

The entire project area is mountainous. The mountains are notable for the complete absence of a common axis of orientation. According to Waldemar Lindgren, U.S. Geological Survey (paper 27, 1904, p. 59), it is part of a region described as a broad, deeply and maturely dissected plateau. The principal ridges, between streams, south of Canyon Creek, are broad and flat. Farther to the north they are dissected into sharp peaks and crests. The combined crest lines of all the peaks and ridges represent an undulating plain sloping gently but steadily from 3,000 feet near Orofino to 5,500 feet in the area of Smiths Ridge.

Glacial sculpturing of higher ridges in the north end of the working area has created sharp crests and glacial cirques. Many of the cirques, on north slopes, contain deep lakes that are ice-bound until mid July. Glacial erosion is evident in some valleys to elevations as low as 3,000 feet although most glaciers did not get lower than 5,000 feet. The glaciated mountains are characterized by exposed bedrock, boulders, and talus accumulations. Talus is also found at the foot of exposed, columnar basalt beds along principal drainage throughout the area.

Field photographs are too contrasty. There is a general lack of photographic detail in highly reflective surfaces such as roads, river bars, exposed earth areas, and grassy meadows. Opaque tree and brush shadows are easily mistaken for their counterparts. Control points of this kind are isolated to the extent there is no risk of confusion with similar, nearby objects.

The bridging section should feel free to move the indicated position of control points slightly to conform to field sketches and descriptions.

Most of the field inspection was conducted by helicopter. Additional information was gleaned from truck travel incidental to other field operations. A special effort was made to compile accurate and useful tree heights where office study indicated woodland densities might give the compiler trouble. (see Woodland Cover of this report)

3. Horizontal Control

(a) Horizontal control was established by the Division of Geodesy by conventional triangulation methods.

(b) No datum adjustments were made by the field party.

(c) All control to be used in bridging was established or connected to the Bureau net by the Triangulation Party.

(d) Horizontal control was established in full compliance with project instructions.

(e) The Reconnaissance Party recovered and reported on the status of all previously established stations.

(f) The quality of the identification of control points are noted on individual control station identification forms.

4. Vertical Control

(a,b) Bureau bench marks of second order accuracy form the basis for control leveling in the project area. Elevations were extended from the spirit level lines and carried through the triangulation net by reciprocal vertical angle observations. Additional elevations

were established using tellurometer derived distances and vertical angles. Closed trigonometric theodolite and short hand level loops were employed to make final connections to vertical control points.

Tellurometer distances were checked by making secondary, on-line measurements from points 10 feet or more from stations. Tellurometer stations were also identified on photographs (to an accuracy of about 10 feet) so that photogrammetric distances might be scaled and used as an additional check on tellurometer distances.

Weighted mean elevations of triangulation stations were computed in the field by the Geodetic Party. They made only consistency checks on the vertical angles involved in elevations to be determined with tellurometer distances.

A complete list of the vertical control is contained in the Index to Field Work.

(c) Inapplicable

(d) The number and placement of vertical control points is adequate for vertical bridging.

5. Contours and Drainage

No planetable contouring was done in the field. Contour maps of a portion of the survey area, compiled by other agencies, are being submitted with the field data. See Special Reports and Supplemental Data.

The north fork of the Clearwater River and its major tributary, the Little North Fork, flow south and west through the area. Lesser tributaries are numerous and, like the North Fork itself, their canyons are narrow and deeply incised. Steep grades leave little doubt as to the location of drainage in forested areas. Surprisingly, there is little erosion of steep canyon slopes and streams are small relative to the area they

Sediments in the larger streams run consistently to boulders. Occasional, abrupt stretches of coarse sand are too small to be of mapping significance.

6. Woodland Cover

Forest is common to much of the project. One of the largest stands of white pine in the country is located in the lower North Fork drainage around Headquarters. According to local authorities; tree distribution by specie is roughly 25% white pine, white fir and cedar, Douglas fir and larch, and 25% lodge pole pine, spruce, hemlock, and ponderosa pine.

Tree cover is probably the most formidable problem confronting the compiler in drawing accurate topographic maps of the area. Dense stands of timber are largely inaccessible. Even where it is practical to enter such areas, it is difficult to penetrate into them very deeply and to select and accurately measure average tree heights.

A system was devised using helicopter and lead line as measuring platform and yardstick for determining tree heights in the very heart of the forest.

Field measurements were made by hovering the helicopter and sounding tree heights with a lead line coded to read one half contour intervals. Interpolations were made to about five feet. Experience with early trials revealed that prevailing high air temperatures and low wind velocities made it difficult to hold aircraft in place long enough to recover the line. Throw away lines of wrapping cord, coded as before, proved more satisfactory but their preparation was very time consuming. Uncoded, weighted lines of standard length were adopted. The line was lowered to the ground and cut at tree height. Later the line remnant was measured and subtracted from the standard to determine the height of the tree. The height of some forty stands of timber were measured in this way.

7, 8. Inapplicable

9. Landmarks and Aids

The Triangulation Party has submitted a list of landmarks for the area.

10. Boundaries, Monuments, and Lines

The location of these items were not required.

11. Other Control

Inapplicable

12. Other Interior Features

Rail access to the area is by way of the Camas Prairie railroad. A branch line controlled by Northern Pacific and Union Pacific systems extends to Headquarters. Logging railroads radiate from Headquarters into the locality of Bertha Hill. The logging spurs are dismantled and moved according to the requirements of timber harvesting. The spurs have rather long term permanency and it is recommended they be charted by symbol.

State Routes 7 and 9 are the principal roads providing motor entree to the area. There are less than five miles of paved road in the mapping area itself. Aside for a short stretch of good gravel road along Whiskey Creek, and another along the North Fork from Ahsahka to Dent and Dent to Elk River, there are no all-weather roads in the area.

A vast network of logging, fire, and skid roads lace the woodland. Beginning about the middle of June, an intense program is undertaken to clear arterial

roads of the winter's accumulation of windfalls, and to repair soil erosion. The task is usually completed about the middle of July. These roads remain open until snowfall.

The sites of logging operations present a confusing and aimless complex of skid roads. These avenues are abandoned when logging is completed in their vicinity. The field inspector has indicated for charting only those roads with [illegible]ram and to" validity. It is recommended the skid roads be shown by note rather than by symbol, e.g. numerous logging roads.

All parts of the off-road areas are accessible by horse or on foot. Trails used for fire surveillance and suppression are no longer of prime importance and only a few of them are maintained any longer.

Two roads of mapping importance were under construction during the field season. The completed portions of the roads have been sketched on photographs by field inspection, the remainder has been detailed according to local information about construction plans.

There are only two notable centers of habitation in the vicinity of the project. Orofino, just south of mapping limits, is the largest. It is the seat of Clearwater County and the gateway to the great forested region to the north.

Three miles down the river, in the southeast corner of map 10959, is Ahsahka, the site of a Lewis and Clark camp in 1805. The town, built in the canyon at the junction of the Clearwater and North Fork Rivers, is confined on all sides by mountains except where the rivers enter and leave. Like Orofino, the bulk of its commerce is associated with the timber industry.

Logging operations are conducted from camps scattered throughout the woodland. Although their buildings are

built on skids, the camps have a certain permanency of location (5 to 15 years), and because of the undeveloped nature of the region, they have appreciable landmark value. The camps give meaning to otherwise aimless roads. It is recommended that the camps be charted and that the building symbol be amplified by the simple, limiting note, "logging camp."

13. Geographic Names

A separate report is being submitted on the subject.

14. Special Reports and Supplemental Data

The following supplemental material is being submitted with the field survey data:

(a) Study of the Bruces Eddy Dam project by the Corps of Engineers.

(b) Facility report and layout of two landing fields.

(c) One set of USGS maps of the plan and profile of the North Fork Clearwater River.

(d) One topographic map of the site of the Canyon Ranger station.

Respectfully submitted

Victor E. Serena
Coast & Geodetic Survey

INDEX TO FIELD WORK

HORIZONTAL CONTROL

Triangulation Stations

Name	Photo. No., 59W-
AHSA	5544, 5545
ALDER	5474, 5475
ALDERMAND	5609
BEAVER	5471, 5470
BENTON	5526
BERTHA, 1933	5470, 5471
BLACKDOME (USGS), 1933	5592
BLACKDOME (USGS) AZIMUTH MARK	5591
BLACK MTN.	5461, 5462
BRACE	5598, 5599
BRIDGE	5485
DISH	5563
DOG	5515
ELK RIVER	5603
FEARY	5474, 5475
FINO	5485, 5486
FOEHLE	5520, 5521
GOAT RIDGE	5520, 5521
GOLD	5532
HUCKLEBERRY	5482, 5483
JEEP (USE)	5494, 5495
JOHN	5503, 5504
LARKINS	5520
LITTLE GREEN	5574
LOOP	5600, 5601
MASON	5610, 5611
MORRIS	5481, 5482
OROFINO, 1933	5486, 5487
PECK (USGS)	5546
PINE (USE)	5544, 5545

Triangulation Stations (cont.)

Name	Photo. No., 59W-
REEDS	5478, 5479
REGGEAR	5540, 5541
RIDGE	5524, 5525
SNAKE	5477
STOCKING	5594, 5595
TEA	5612, 5613
TEAKEAN, 1933	5612, 5613
TOMHO	5539
WHISKEY	5477, 5478
TT-10	5524

Total - 40 stations

Traverse Stations

Name	Photo. No., 59W-
Black Mtn. Lookout House	5462
Goat Ridge Lookout House	5520
Huckleberry Butte Lookout Tower	5482
John Lewis Lookout Tower	5504
Little Green Lookout Tower	5574
Mason Butte Lookout Tower	5611
Stocking Lookout Tower	5594
Whiskey Butte Lookout Tower	5478

Total - 8 stations

Intersection Stations

Name	Photo. No., 59W-
Armstrong Lookout Tower	5528
Boehls Butte Lookout Tower	5582
Gold Butte Lookout Tower	5576
Orofino Radio Station KLER, Mast	5486
Thompson Lookout Tower	5512

Intersection Stations (cont.)

Name	Photo. No., 59W-
Township Butte Lookout Tower	5530
Jericho Lookout Tower	5573

Total - 7 stations

Triangulation Stations - off limits of mapping photos.

Name	Photo. No., AMS
BALD 2, 1933, 1959	19017
ELK, 1933	7494
JIM	10959

Total - 3 stations
Total horizontal control stations identified - 58 stations

VERTICAL CONTROL

The elevation of all horizontal control stations were determined. Direct spirit level connections were made to: BEAVER, BRIDGE, ELK RIVER, STOCKING, SNAKE, and TT-10. The elevation of all other horizontal control stations were determined by trigonometric means.

Vertical Control Stations

Name	Photo. No., 59W-	Name	Photo. No., 59W-
V 101	5569	~~V 105~~ Pt. B	~~5598~~
V 102	5609	V 106	5486
V 103	5576	V 107	5472
V 104	5486	V 108	5476
V 105	5598	V 109	5472
V 110	5470	V 203	5568
V 110A	5470	V 204	5568
V 200	5568	V 205	5568
V 201	5568	V 206	5568
V 202	5568	V 207	5568

Vertical Control Stations (cont.)

Name	Photo. No., 59W-	Name	Photo. No. 59W-
V 208	5568	V 213	5569
V 209	5569	V 214	5569
V 210	5569	V 215	5569
V 211	5569	V 216	5569
V 212	5569	V 217	5569
V 218	5569	V 223	5568
V 219	5569	V 226	5476
V 220	5569	V 227	5472
V 221	5569	V 228	5473
V 222	5569	V 229	5471
V 230	5469	V 235	5514
V 231	5513	V 236	5514
V 232	5514	V 237	5525
V 233	5513	V 238	5525
V 234	5513	V 239	5525
V 240	5524	V 246	5531
V 242	5525	V 247	5532
V 243	5578	V 248	5532
V 244	5531	V 249	5531
V 245	5531	V 250	5533
V 251	5533	V 256	5502
V 252	5502	V 257	5502
V 253	5502	V 258	5502
V 254	5502	V 259	5500
V 255	5502	V 260	5500
V 261	5500	V 266	5476
V 262	5500	V 267	5476
V 263	5499	V 268	5476
V 264	5476	V 269	5476
V 265	5499	V 270	5476
V 271	5476	V 276	5474
V 272	5476	V 277	5528
V 273	5476	V 278	5470
V 274	5475	V 279	5471
V 275	5475	V 280	5471

Vertical Control Stations (cont.)

Name	Photo. No., 59W-
V 281	5471
V 282	5471
V 283	5508
V 284	5508
V 285	5508
V 291	5528
V 292	5528
V 293	5528
V 294	5528
V 295	5529
V 404	5594
V 405	5594
V 406	5594
V 407	5595
V 408	5595
V 414	5468
V 415	5468
V 416	5465
V 418	5463
V 419	5463
V 425	5571
V 426	5571
V 427	5571
A 127, 1935	5546
C 127, 1935	5594
J 127, 1935	5486
L 127, 1935	5484
P 127, 1935	5485
D 128, 1935	5542
X 130, 1935	5596
RP 68, 1935	5571
RP 115, 1935	5598
RP 115 T.P. 1	5598
RP 119, 1934	5596
RP 120, 1934	5596

Name	Photo. No., 59W-
V 286	5508
V 287	5528
V 288	5528
V 289	5528
V 290	5528
V 296	5529
V 298	5529
V 299	5529
V 402	5528
V 403	5594
V 409	5597
V 410	5597
V 411	5580
V 412	5469
V 413	5469
V 420	5604
V 421	5604
V 422	5605
V 423	5571
V 424	5571
D 127, 1935	5545
E 127, 1935	5493
F 127, 1935	5493
G 127, 1935	5486
H 127, 1935	5486
G 151, 1935	5605
LH 20, 1934	5476
RP 78, 1935	5544
RP 86, 1935	5570
RP 87, 1935	5570
USGS 1016	5493
USGS 2992.8	5604
4.5 mi. E of Orofino	5484
AA	5542
AB	5542

Vertical Control Stations (cont.)

Name	Photo. No., 59W-
AJ	5525
AK	5580
TBM 7	5542
TBM 8	5542
TBM 12	5568
C 201	5542
D 201	5568
E 201	5568
F 201	5569
G 201	5569
R 203	5475
S 203	5476
Z 203	5470

Name	Photo. No., 59W-
Q 364 (USE)	5544
R 364 (USE)	5544
S 364 (USE)	5544
A 201	5544
B 201	5542
F 202	5472
N 202	5471
P 202	5470
Q 202	5469
N 203	5476

Total - 183 Vert. Cont. Pts.

Bench Marks - identified for location only

Name	Photo. No., 59W-
N 127, 1935	5484
S 128, 1935	5571
V 128, 1935	5579
W 130, 1935	5579
LH 48, 1934	5525
AC	5568
AD	5569
AK	5525
AL	5530
AM	5532
AT	5499
AU	5499
AV	5580
AW	5528
AX	5528
RP 97	5604
P127	5485
JD 45	5465

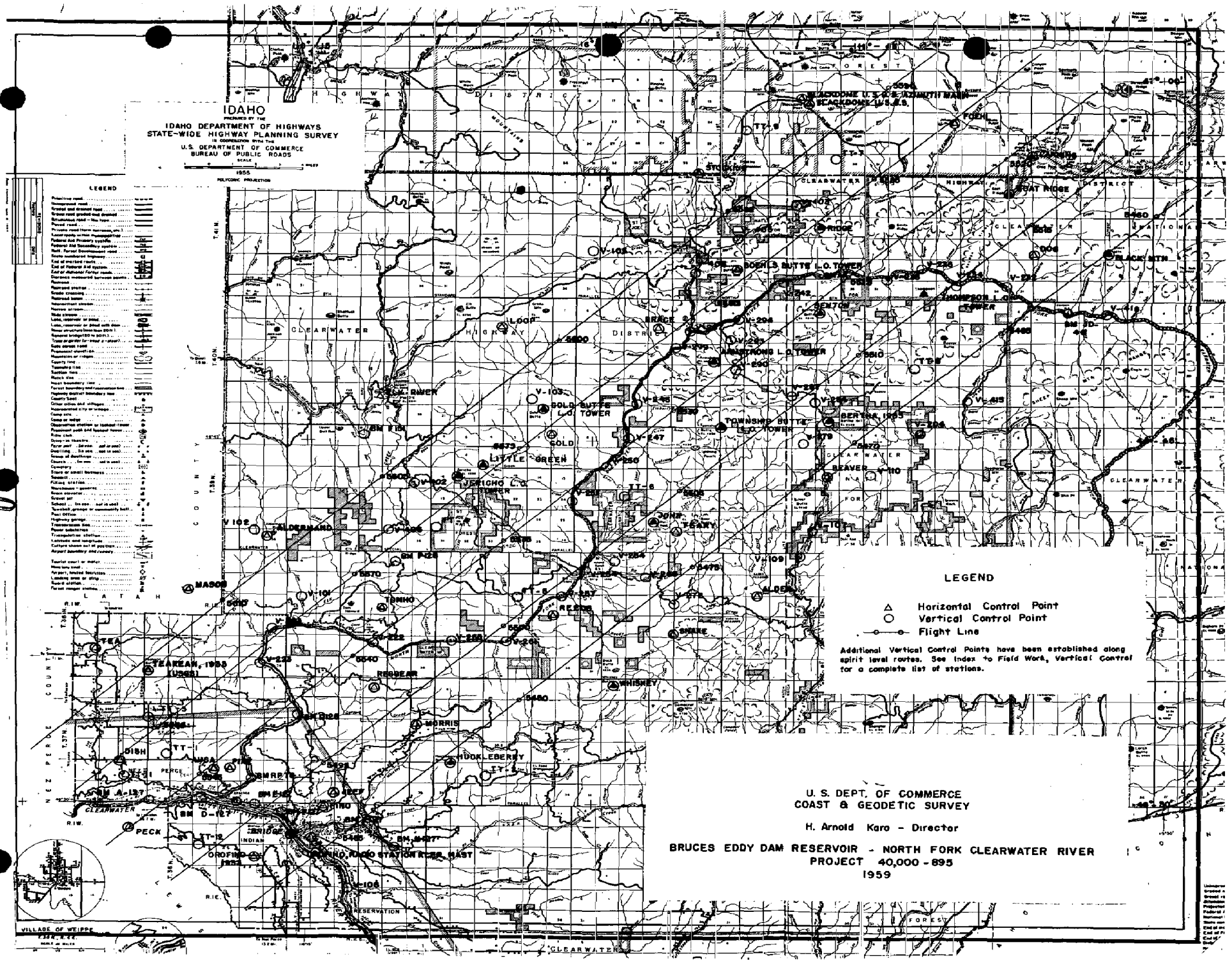
Name	Photo. No., 59W-
RP 76, 1935	5544
RP 77, 1935	5546
RP 94, 1934	5605
RP 96, 1934	5604
4339.3, 1935	5594
AN	5533
AP	5502
AQ	5502
AR	5502
AS	5499
AY	5597
AZ	5465
TBM 44	5526
TBM 54	5531
TBM 69	5500
Z 201	5476
S 202	5513
R 202	5513
T 202	5514
U 202	5525
V 202	5525

Bench Marks - identified for location only (cont.)

Name	Photo. No., 59W-	Name	Photo. No., 59W-
TBM 110	5529	C 202	5476
TBM 121	5594	D 202	5472
N 364 USE Second V104	5486	E 202	5472
A 202	5476	G 202	5472
B 202	5476	H 202	5473
M 202	5471	E 203	5502
A 203	5532	F 203	5500
B 203	5533	G 203	5499
C 203	5502	H 203	5499
D 203	5502	J 203	5498
K 203	5502	T 203	5476
L 203	5476	U 203	5476
M 203	5476	V 203	5528
P 203	5476	W 203	5471
Q 203	5476	X 203	5471
Y 203	5470	F 204	5528
B 204	5508	G 204	5528
C 204	5508	H 204	5528
D 204	5528	J 204	5528
E 204	5528	K 204	5529
L 204	5580	R 204	5595
M 204	5529	S 204	5594
N 204	5528	T 204	5594
P 204	5579	U 204	5469
RR 204	5594	V 204	5468
W 204	5468	B 205 Balto	5465
X 204	5468	C 205	5465
Y 204	5468	F 205	5463
Z 204	5468	G 205	5465
A 205	5468	H 205	5463

Total - 90 stations

X 202	5531
Z 202	5531
1745,13	5463



Reduce this dimension to 10 1/2 inches

BRUCES EDDY DAM RESERVOIR
PROJECT 40000-895

NOTES TO THE COMPILER

Capt Swanson, while visiting Orofino, informed the party that Mr. Claude Waggoner, Corps of Engineers, Walla Walla District, Walla Walla, Wash. should be furnished the position of all bench marks identified by the field party. He requested that these points be dropped as the strips are bridged.

Early control identification and planning was done on the 1953-54, 1:60,000 scale AMS photography supplied the field party. Use of the outdated photography was discontinued when 1959 pictures became available. Control identification was re-evaluated, and revised where necessary. No changes were made in the inking on 1953-54 photographs - they should not be used as a source of field data, no reflection of the quality of the field work should be construed from the existence of ambiguities between old and new photography.

It had been intended to abstract bench mark elevations and to determine the elevation of control points in the field office. The task was discontinued when errors were discovered in the field computation of elevations supplied by the level unit. Elevations already computed were deleted. The elevation of these control points should be computed when checked elevations of bench marks become available.

PHOTOGRAMMETRIC PLOT REPORT
NORTH FORK CLEARWATER RIVER, IDAHO
Bruces Eddy Dam Site
Project 40,000-895, Part I
November, 1959

21. AREA COVERED:

This project in west-central Idaho, Clearwater County covers the watershed of the North Fork Clearwater River and its tributaries. The area is heavily wooded (average tree height 170 ft.) and the ground elevation ranges from 900 to 5400 feet above sea level, with ground elevations from 900 to 2900 feet occuring within one stereo-model.

Eight Topographic Manuscripts (T-10958 through T-10965 at 1:24,000 scale, 40 foot contour interval) cover the project area. Two supplemental manuscripts (T-10958A and T-10963A) were added during compilation. These supplemental manuscripts did not require additional stereo-bridge work.

Refer to Project Index for layout of T-sheets, photographs and control points.

22. METHOD:

Five parallel strips of photography at 1:36,000 scale cover the project area. Extreme ranges of relief required end and side laps greater than the usual 60% and 30% respectively.

Strips 1, 3 and 5 were bridged to establish supplemental horizontal and vertical control to facilitate Kelsh compilation. During the bridging of these three strips, critically positioned tie-points were established. These tie-points were used to set Kelsh models of Strips 2 and 4. This method was sucessful in that it permitted bridging every other parallel strip.

In accordance with Corps of Engineers' request horizontal positions were established for every Bench Mark within the project limits.

Good distribution of horizontal control, at least one control point spaced every 3 to 5 models, resulted in good adjustments of the horizontal bridging. Vertical control consisting of a pair of vertical control points spaced every three models resulted in good adjustments of the vertical bridging.

23. ADEQUACY OF CONTROL:

Most of the horizontal and vertical control was established after the photographs had been taken. Therefore, the distribution and density of control (horizontal and vertical) was very good. The selecting of two or more sub-stations per horizontal control station also proved to be a good practice. In many instances one of the sub-stations could not be accurately located in the stereo-models. But, as there were two sub-stations the other or better one could be used in the bridge adjustments.

24. SUPPLEMENTAL DATA:

No supplemental data was used.

25. PHOTOGRAPHY:

Photographs at 1:36,000 scale were taken with the Wild RC-8 Camera (153.02 mm focal length). Coverage, overlap and definition qualities were good.

26. DISCUSSION OF EACH STRIP ADJUSTMENT:

A tabulation of the bridging results follow the discussion of the strips adjustments.

Strip 1 (photos 59-W-5591 through 5613)

A twenty two model bridge, approximately 45 miles, was adjusted horizontally using eight control stations. The adjustment was checked by four additional control stations. Vertical adjustment was accomplished using thirty control points and checking the adjustment with fifteen additional control points. All control (horizontal and vertical) was held within allowable tolerance.

Strip 3 (photos 59-W-5520 through 5548)

A twenty eight model bridge, approximately 57 miles, was adjusted horizontally using nine control stations.

This adjustment was checked by five additional horizontal control stations. Vertical adjustment was accomplished using twenty vertical control points. This adjustment was checked by approximately seventy additional vertical control points.

Three models (east end strip 3) could not be tied together within allowable limits. This difficulty was possibly due to camera vacuum failure. Therefore, nine models (east end strip 3) were rerun on the C-5 Stereoplanigraph and the new bridge adjustment gave approximately the same results as the original bridging done on the C-8 Stereoplanigraph. Final bridge adjustment was accomplished by holding only that portion of the bridge within the project limits. That area outside the project limits could not be adjusted and no further attempt was made to reconcile this discrepancy. Therefore, bridge points from models 59-W-5520 through 5523 and △FOEHL 1959, △GOAT RIDGE 1959 should be used with caution.

Strip 5 (photos 59-W-5459 through 5487)

A twenty-six model bridge, approximately 53 miles, was adjusted horizontally using eleven control stations. This adjustment was checked by five additional control stations.

Substitute station DOG 1959 was dropped from the final adjustment. The field party experienced difficulty in locating a good point and the object selected was not positively identified or located in the stereo-model.

Vertical adjustment was accomplished using twenty-one control points. Approximately sixty-seven additional control points checked the vertical adjustment.

HORIZONTAL BRIDGING

Strip No.	Models	Control Pts. in Adjstmnt	Control Pts. to Check Adjstmnt	Maximum Error(ft)	MSE(ft) on all pts.
1	22	8	4	19	12.9
3	28	9	5	26	16.2
5	26	11	5	24	12.8

VERTICAL BRIDGING

1	22	30	15	16	7.1
3	28	20	70	16	7.3
5	26	21	67	13	6.0

Submitted by:

Willard A. Kuncis 9-22-60

Approved:

Everett H. Ramey, Chief
Stereoscopic Mapping Unit

FORM 164
4-23-54)

U.S. DEPARTMENT OF COMMERCE
DESCRIPTIVE REPORT

COAST AND GEODETIC SURVEY
CONTROL RECORD

MAP T-..... PROJECT NO. 40,000-895 SCALE OF MAP 1:24,000 SCALE FACTOR .....

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE LONGITUDE OR x-COORDINATE	DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
BLACK DOME (USGS) 1959		N. A. 1927	483,804.58 1,938,064.79				
LOOP, 1959		"	416,589.23 1,880,905.20				
JEEP, 1959 (USE)		"	381,729.99 1,764,370.52				
JOHN, 1959		"	450,965.29 1,832,628.30				
MORRIS, 1959		"	399,103.20 1,781,926.46				
ORIFINO, 1933		"	364,174.78 1,749,154.71				
ORIFINO RADIO STATION KLER, MAST. 1959		"	375,836.50 1,754,195.17				
REEDS, 1959		"	431,318.26 1,809,114.29				
SNAKE, 1959		"	455,672.74 1,804,124.38				
WHISKEY, 1959		"	442,707.41 1,791,793.29				
BRIDGE, 1959		"	371,980.25 1,754,315.27				
FEARY, 1959		"	458,033.66 1,830,575.07				

1 FT. = .3048006 METER

COMPUTED BY LAMPTON, LEVINE, KELLER DATE Sept. 22, 1959

CHECKED BY: Lampton, Keller DATE Sept 29, 1959

COMM-DC-57843

ORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
DESCRIPTIVE REPORT

COAST AND GEODETIC SURVEY
CONTROL RECORD

MAP T- PROJECT NO. 40,000-895 SCALE OF MAP 1:24,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR x COORDINATE / LONGITUDE OR y COORDINATE	DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
TT-9, 1959		N.A. 1927	473,000.53 / 1,929,705.83	No check on this position			
TT-10, 1959		"	502,647.71 / 1,894,413.87				
TT-11, 1959		"	334,720.54 / 1,768,916.89	No check on this position			
TT-12, 1959		"	351,590.91 / 1,751,239.53.	"			
STOCKING, 1959		"	460,854.64 / 1,919,792.49				
STOCKING LOOKOUT TOWER 1959		"	460,853.56 / 1,919,801.61				
FOEHL, 1959		"	514,660.19 / 1,933,196.39				
JERICHO LOOKOUT TOWER, 1959		"	407,648.15 / 1,843,654.99				
LITTLE GREEN, 1959		"	413,992.64 / 1,847,080.85				
MASON, 1959		"	347,105.71 / 1,811,074.78				
TEA, 1959		"	328,072.84 / 1,800,716.86				
ELK RIVER, 1959		"	390,803.81 / 1,863,237.75				

1 FT. = .3048006 METER LAMPTON

COMPUTED BY: LEVINE KELLER | DATE: Sept. 22, 1959 | CHECKED BY: LAMPTON, KELLER | DATE: SEPT 29, 1959.

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
DESCRIPTIVE REPORT

COAST AND GEODETIC SURVEY
CONTROL RECORD

MAP T- PROJECT NO. 40,000-895 SCALE OF MAP 1:24,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR x-COORDINATE / LONGITUDE OR y-COORDINATE	DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
BOEHLS BUTTE LOOKOUT TOWER, 1959		N. A.	469,092.01				
		1927	1,896,201.24				
GOAT RIDGE, 1959		"	528,192.48				
			1,915,439.37				
GOLD, 1959		"	428,366.46				
			1,853,841.02				
LARKINS, 1959		"	532,845.74				
			1,925,269.11				
PECK, 1959		"	338,447.70	(FIELD COMPUTATION)			
			1,756,515.19				
TT-1, 1959		"	343,831.33	No check on this			
			1,774,604.49	position			
TT-2, 1959		"	416,637.27	"			
			1,769,528.82				
TT-3, 1959		"	339,721.92	"			
			1,783,884.09				
TT-5, 1959		"	418,203.79	"			
			1,816,286.35				
TT-6, 1959		"	445,788.75	"			
			1,837,530.00				
TT-7, 1959		"	490,095.90	"			
			1,924,910.10				
TT-8, 1959		"	506,782.04	"			
			1,873,640.41				

1 FT. = .3048006 METER LAMPTON

COMPUTED BY: LEVINE, KELLER DATE: Sept. 22, 1959

CHECKED BY: Lampton, Keller DATE: Sept 29, 1959

COMM-DC-57843

ORM 164
4-23-54)

U.S. DEPARTMENT OF COMMERCE
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CONTROL RECORD

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STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR ϕ-COORDINATE / LONGITUDE OR λ-COORDINATE (x / y)	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
AHSA, 1959		N.A. 1927	350,629.15 1,770,901.66				
ARMSTRONG LOOKOUT TOWER, 1959		"	463,895.10 1,872,702.87				
BENTON, 1959 (BENTON BUTTE L.O.T. 1959)		"	486,770.53 1,885,342.10				
DISH, 1959		"	333,748.66 1,773,355.69	(FIELD COMPUTATION)			
DOG, 1959		"	532,509.59 1,901,761.16				
PINE, 1959		"	355,334.97 1,772,660.09				
REGGEAR, 1959		"	389,466.04 1,790,137.75				
RIDGE, 1959		"	489,749.74 1,907,008.25				
THOMPSON L.O.T., 1959		"	509,826.02 1,890,209.09				
BRACE, 1959		"	451,153.39 1,882,458.09				
TOMHO, 1959		"	391,871.45 1,810,715.72				
TOWNSHIP BUTTE L.O.T.		"	465,134.42 1,856,872.26				

1 FT. = .3048006 METER

COMPUTED BY: LEVINE, KELLER DATE: SEPT 22, 1959

CHECKED BY: LAMPTON, KELLER DATE: SEPT 29, 1959

LAMPTON,

COMM-DC-57843

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FINO, 1959		N.A. 1927	377,960.80 1,761,355.62				
HUCKLEBERRY 1959		"	407,240.90 1,772,718.97				
ALDER, 1959		"	472,072.00 1,814,801.07				
ALDERMAND 1959		"	364,615.49 1,828,129.42				
BEAVER, 1959		"	488,777.93 1,844,908.09				
BERTHA, 1933		"	489,628.23 1,858,224.57				
BLACK MOUNTAIN, 1959		"	549,811.75 1,900,130.46				

1 FT. = .3048006 METER

COMPUTED BY: LAMPTON, LEVINE, KELLER | DATE SEPT. 22, 1959 | CHECKED BY: LAMPTON, LEVINE | DATE SEPT 29, 1959

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE — COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT — CONTROL RECORD

HORIZONTAL CONTROL - SUBSTITUTE STATION POSITIONS

MAP T-..... PROJECT NO. 40,000-895 SCALE OF MAP 1:24,000 SCALE FACTOR .....

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE LONGITUDE OR x-COORDINATE	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
FINO, 1959 SUB.STATION "B"		NA 1927	1,761,268.75 377,763.97				
HUCKLEBERRY, 1959 SUB.STATION "A" (R.M. 2)			1,772,806.85 407,264.59				
HUCKLEBERRY, 1959 SUB.STATION "B"			1,772,753.91 407,297.72				
ALDER, 1959 SUB.STATION "A"			1,814,772.16 471,944.42				
ALDER, 1959 SUB.STATION "B"			1,814,671.57 472,176.36				
BEAVER, 1959 SUB.STATION "A"			1,844,814.07 488,722.51				
BEAVER, 1959 SUB.STATION "B"			1,844,745.10 488,788.79				
BERTHA, 1933 SUB.STATION "A"			1,858,247.12 489,629.63				
BERTHA, 1933 SUB.STATION "B"			1,858,129.64 489,499.19				
BLACK MOUNTAIN, 1959 SUB.STATION "A" (BLACK MTN.L.O.HOUSE, 1959)	1959		1,900,133.53 549,839.19				
BLACK MOUNTAIN, 1959 SUB.STATION "B"	1959		1,900,118.18 549,799.11				
MASON, 1959 SUB.STATION			1,811,022.08 347,095.69				

1 FT. = .3048006 METER

COMPUTED BY:..... DATE..... CHECKED BY:..... DATE.....

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE — COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT — CONTROL RECORD

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STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE LONGITUDE OR x-COORDINATE	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
AHSA, 1959 SUB.STATION "A"		NA 1927	1,771,082.00 350,578.98				
AHSA, 1959 SUB.STATION "B"		"	1,770,780.69 350,704.83				
BENTON, 1959 SUB.STATION		"	1,885,463.14 486,629.44				
DISH, 1959 SUB.STATION "A"		"	1,772,673.73 333,484.88				
DISH, 1959 R.M. No. 2		"	1,773,397.89 333,600.71				
DOG, 1959 SUB.STATION		"	1,901,703.66 532,536.37				
PINE, 1958 SUB.STATION "A"		"	1,772,728.26 355,432.54				
PINE, 1958 SUB.STATION "B"		"	1,772,731.26 355,515.98				
REGGAR, 1959 SUB.STATION "A"		"	1,790,199.89 389,418.51				
REGGAR, 1959 SUB.STATION "B"		"	1,789,819.54 389,363.44				
RIDGE, 1959 SUB.STATION "A"		"	1,906,984.69 489,831.62				
RIDGE, 1959 SUB.STATION "B"		"	1,906,995.87 489,793.00				

1 FT. = .3048006 METER

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COMPUTED BY:..... DATE..... CHECKED BY:..... DATE.....

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
DESCRIPTIVE REPORT

COAST AND GEODETIC SURVEY
CONTROL RECORD

HORIZONTAL CONTROL - SUBSTITUTE STATION POSITIONS

MAP T-..... PROJECT NO. 40,000-895 SCALE OF MAP 1:24,000 SCALE FACTOR .....

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE LONGITUDE OR x-COORDINATE	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
TOMHO, 1959 SUB.STATION "A"		NA 1927	1,811,585.80 392,207.65				
TOMHO, 1959 SUB.STATION "B"		"	1,811,226.46 392,058.62				
TT-10, 1959 SUB.STATION "A"		"	1,894,445.79 502,649.82				
TT-10, 1959 SUB.STATION "B"		"	1,894,397.53 502,607.10				
GOAT RIDGE, 1959 SUB.STATION "A"		"	1,915,408.41 528,150.05				
GOAT RIDGE, 1959 SUB.STATION "B"		"	1,915,407.69 528,128.65				
GOLD, 1959 SUB. STATION		"	1,854,128.32 428,234.93				
LARKINS, 1959 SUB.STATION "A"		"	1,925,121.06 532,718.38				
LARKINS, 1959 SUB.STATION "B"		"	1,925,277.95 532,956.43				
PECK, 1959 SUB.STATION "A"		"	1,756,425.47 339,216.08				
PECK, 1959 SUB.STATION "B"		"	1,756,454.52 338,415.05				
STOCKING, 1959 SUB.STATION		"	1,919,844.1 460,708.5				

1 FT. = .3048006 METER

COMM-DC-57843

COMPUTED BY:..... DATE..... CHECKED BY:..... DATE.....

ORM 164
4-23-54)

U.S. DEPARTMENT OF COMMERCE — COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT — CONTROL RECORD

HORIZONTAL CONTROL - SUBSTITUTE STATION POSITIONS

MAP T- PROJECT NO. 40,000-895 SCALE OF MAP 1:24,000 SCALE FACTOR

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FOEHL, 1959 SUB.STATION "A"		NA 1927	1,933,191.25 514,685.47							
FOEHL, 1959 SUB.STATION		"	1,933,156.61 514,672.45							
JERICHO L.O.T., 1959 SUB.STATION		"	1,843,676.78 407,510.14							
LITTLE GREEN, 1959 SUB.STATION "B"		"	1,847,049.90 414,032.14							
LITTLE GREEN, 1959 SUB.STATION "C"		"	1,847,054.82 413,951.02							
JEEP, 1958 SUB.STATION "A"		"	1,764,307.12 381,910.85							
JEEP, 1958 SUB.STATION "B"		"	1,764,259.10 381,792.78							
JOHN, 1959 SUB.STATION "A"		"	1,832,625.79 450,918.74							
JOHN, 1959 SUB.STATION "B"		"	1,832,543.96 450,869.84							
MORRIS, 1959 SUB.STATION "A"		"	1,781,992.85 399,138.02							
MORRIS, 1959 SUB.STATION "B"		"	1,781,933.66 399,066.70							
OROFINO, 1933 SUB.STATION "A"		"	1,749,199.46 364,000.84							

1 FT. = .3048006 METER

COMPUTED BY: DATE CHECKED BY: DATE

COMM-DC-57843

ORM 164
4-23-54)

U.S. DEPARTMENT OF COMMERCE
DESCRIPTIVE REPORT

COAST AND GEODETIC SURVEY
CONTROL RECORD

HORIZONTAL CONTROL - SUBSTITUTE STATION POSITIONS

MAP T-..... PROJECT NO. 40,000-895 SCALE OF MAP 1:24,000 SCALE FACTOR .....

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE LONGITUDE OR x-COORDINATE	DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
ORIFINO, 1933		NA 1927	1,749,186.95				
SUB.STATION "B"			364,595.76				
REEDS, 1959		"	1,809,044.50				
SUB.STATION "A"			431,324.28				
REEDS, 1959		"	1,809,207.38				
SUB.STATION "B"			431,194.31				
SNAKE, 1959		"	1,804,200.76				
SUB.STATION "A"			455,664.75				
SNAKE, 1959		"	1,804,119.14				
SUB.STATION "B"			455,751.04				
WHISKEY, 1959		"	1,791,789.81				
SUB.STATION "A"			442,703.40				
WHISKEY BUTTE							
L.O.T., 1959		"	1,791,797.94				
WHISKEY, 1959			442,791.07				
SUB.STATION "B"							
BRIDGE, 1959		"	1,754,210.03				
SUB.STATION "A"			372,037.83				
BRIDGE, 1959		"	1,754,773.35				
SUB.STATION "B"			371,677.55				
FEARY, 1959		"	1,830,520.09				
SUB.STATION "A"			458,017.07				
FEARY, 1959		"	1,830,553.03				
SUB.STATION "B"			458,111.82				
FINO, 1959		"	1,761,260.89				
SUB.STATION "A"			378,149.52				

1 FT. = .3048006 METER

COMPUTED BY:..... DATE..... CHECKED BY:..... DATE.....

COMM-DC-57843

BRUCE'S EDDY DAM SITE
Project 40,000-895
Stereo-instrument Compilation Report

Standard topographic compilation with a contour interval of 40' was by Kelsh Plotter on mylar work sheets. These sheets were ruled with the state grid (2,000' interval) and plotted by the use of the Haag-Streit Coordinatograph. Horizontal and vertical pass points were furnished from the Stereoplanigraph bridging at the Washington Office. These points together with the field points controlled the models.

Horizontal and vertical control was for the most part adequate. There were several poor models where control did not hold well. These are discussed below. In several cases where the complete model was not needed, the discrepancy could be thrown outside the mapping limits. Difficulty was encountered in some models with reading points selected at the extreme limits of the photography. These are the areas of poorest lighting and definition. Throughout the project there were vertical points that had to be discarded. Many of these were on steep slopes where a small horizontal displacement meant a large vertical discrepancy. An occasional point which would not hold horizontally was rejected. Discrepancies were attributed to misidentification and inability to identify points accurately in the models.

Models that would scale within 0.5 mm and level within 10' were considered adequate. Most models were well within these limits. This includes models where some points were rejected as stated above. The following are models the solutions of which were considered below average:

Model 5537-38 (T-10960) - The working solution left this model with the south-east corner 20' low and the south-west corner about 40' high. Contouring was left short of this side of the model as the overlap in the flight to the south was more than adequate and the points were held.

Model 5578-79 (T-10961, T-10964) - The south side of the model was left about 20' high.

Model 5579- (T-10964) - The south side of this model was 15' to 20' low. The north-west edge was also about 15' low.

Points in the center portions of both the above models could be held. Inasmuch as the overlap between adjacent flights was generous, contouring was limited only to the center portions of the models.

It is believed that contours are of standard accuracy except in areas of heavy ground cover. In these areas expression is weak. The areas of most heavy ground cover were outlined on the contact photographs. The average tree heights as measured in the field and indicated on the photographs were of limited usefulness. The procedure followed in contouring was to "dig in" and depend on the general configuration of the terrain as revealed in the model, plus occasional openings in the trees. The tree heights were used as a check on the contours thus obtained.

This method resulted in smoother contours as compared with the remarkably jagged topography had the tops of the trees been followed using the field heights to make the necessary index correction. Although a complete study was not made, the following reasons could be advanced for this.

1. The tops of the trees did not present a uniform surface - the coniferous tree tops were jagged and at no point part way down did the branches intermesh to present such a surface.

2. Occasional areas were covered with trees varying significantly from the average tree height.

3. Tree heights in the valleys where most need in contouring, normally are higher than those on the ridges; it is understood that to measure tree heights in the valleys using the helicopter, as was done on this project, would be prohibitively hazardous.

The following is a list of Bench Marks located from photograph identification during compilation as requested:

BM AP	B 204
BM AQ	C 204
BM AT	BM AS, 1959
S 202	BM AU, 1959
C 203	B 203
D 203	B 205
G 203	RR 204
H 203	
K 203	

Respectfully submitted
22 June 1960

Henry P. Eichert
Super. Carto. (Photo.)

REVIEW REPORT
TOPOGRAPHIC SURVEYS
T-10958 through T-10965

Horizontal and vertical bridging was done by stereoplanigraph in the Washington Office. "Work Sheets" were compiled and inked in the Baltimore Office. The maps were scribed and printed in one color in the Washington Office. No field edit was accomplished on the project.

The "work sheets" and accompanying field and office data were reviewed in the Washington Office. Verification of drafting was accomplished prior to reproduction.

The maps comply with the National Horizontal Standards of Map Accuracy. Bridging problems on two strips are discussed in the Bridging Report. The questionable areas on two strips fall outside the project area.

Vertical bridging was satisfactory. The tree cover common to much of the project presented a problem in contouring. Although the heights of some timber stands were measured by helicopter, the accuracy of contours is questionable in areas of heavy growth.

Reviewed by

S. G. Blankenbaker
S. G. Blankenbaker

Approved by:

L C Lauda
Chief, Review and Drafting
Photogrammetry Division

H E Waugh
Chief, Photogrammetry
Division

48. GEOGRAPHIC NAMES LIST

Beaver Butte
Beaver Creek
Black Buttes
Broom Creek
Bruces Eddy (Title)
Butte Creek

Canyon Ranger Station

Dog Creek

Fern Creek
Fern Ridge

Goat Creek
Grasshopper Creek

Isabella Creek

Kauffman Saddle

Leuty Creek
Lost Pete Creek

Marquette Creek
Milk Creek

North Fork Clearwater River

Preception Point

Salmon Creek
Salmon Ridge
Sheep Creek
Sourdough Creek
Star Creek
Steep Creek
Swan Point
Syringa Creek

Thompson Butte
Thompson Creek
Trasher Creek

GEOGRAPHIC NAMES SECTION
6 JUNE 1960

SCOPE

This report summarizes the activities of the C&GS on reimbursable Project 40,000-895, Clearwater River, Idaho.

For convenience of reporting, the project is divided into two parts. Part I is designated as the area east of Orofino in the vicinity of the Bruces Eddy Dam site along the North Fork Clearwater River. Part II encompasses that area from Lewiston along the Clearwater River to Ahsahka, Idaho.

A project layout accompanies this report and may be referred to for these areas.

For clarity, each phase of the project is discussed under separate heading.

PROJECT 40,000-895
TOPOGRAPHIC MAPPING
Clearwater River, Idaho

General

On January 9, 1959, negotiations were initiated between Admiral Pierce of the C&GS and Mr. C. W. Waggoner of the Corps of Engineers, Walla Walla District. General specifications were outlined at that time. On January 27, 1959, Mr. Waggoner visited the Washington Office to discuss details of the project.

Negotiations were continued by an exchange of correspondence which resulted in the acceptance of the project on a reimbursable basis to be completed in the spring of 1960.

Purpose

The Army Engineers propose to build one of the world's larger dams located on the North Fork of the Clearwater River near Orofino, Idaho, designated as Bruces Eddy Dam Site.

Existing map coverage was limited to the 1:250,000 series. The dam site area (Part I) required the mapping of nine 1:24,000 surveys and eleven (Part II) 1:6,000 surveys.

The 1:24,000 series were to provide the Engineers with reconnaissance maps for preliminary planning. Field work was to provide monumented horizontal and vertical control for future larger scale mapping anddevelopment of the reservoir site.

Photography

The photography on Part I was flown by Photo Mission 702 of the C&GS. A flight map with five carefully oriented lines giving the most advantageous placement for stereoscopic bridging was furnished. Excellent adherence to these flight lines by the Photo Mission was obtained. Photography was of good quality taken with the 6" Wild Aviogon camera at 1:36,000 scale on August 25, 1959.

The photography on Part II was taken by Pacific Aerial Surveys under contract to the Corps of Engineers. Specifications as to altitude, endlap and camera were set by C&GS.

Photography continued

The first film was received and examined in August 1959. Some strips were rejected and subsequently rephotographed. The photography was of poor quality in one quadrant due to exhaust of aircraft. Tests proved that parallax could be cleared using this photography. Difficulty was encountered during the vertical bridging operations tying models together. (See side heading "Map Accuracy").

Project Diagram

Soil conservation photography taken 1954 at 1:60,000 scale was used to lay an uncontrolled mosaic for use as a project diagram. Nine sheets were laid out to conform to the drainage area. They do not conform to the standard 1:24,000 topographic series. Copies of this diagram were forwarded to Mr. Waggoner for approval.

Sheet Size

Manuscript dimensions on Part I were restricted to 21" x 25½" overall for use in a bound brochure to be assembled by Corps of Engineers. The scale was 1:24,000 and contained both polyconic and state grid.

Overall size on Part II was 29" x 42", the format taken from samples furnished by the Engineers. Grid ticks at 2500' intervals were scribed. No polyconic projection was shown. The sheets were skewed so that the Clearwater River tended to bisect each sheet.

Field Operations

During operational planning of this project, it became evident that field operations would be difficult due to dense woods (Part I), mountainous terrain (Parts I and II) and lack of access roads (Part I).

The use of helicopters was proposed to overcome these difficulties and later proved to be worthwhile.

Any interior areas serviced by roads were many times inaccessible during the initial phase of field operation, due to ruts and washouts caused by spring thaws or deadfalls caused by storms. Later, Forest Service personnel arrived to clear fire lanes permitting survey parties to enter some station sites.

Horizontal Control (Parts I and II)

All previously established stations within the project area were recovered by the reconnaisance party. Additional control needed for aero-triangulation was established by conventional triangulation methods. A sketch of the triangulation shheme is included with this report.

Control recovered or stations selected by the reconnaisance party prior to aerial photography were premarked whenever possible.

58 stations were identified by direct or substitute station methods in Part I and 34 in Part II.

Vertical Control (Part I)

Bureau bench marks of second-order accuracy were established along the river to form the basis for control leveling in the project area. Elevations were extended from these lines and carried through the triangulation net by reciprocal vertical angle observations. Additional elevations were achieved using tellurometer derived distances and vertical angles. Closed trigonometric theodolite and short hand level loops were employed to make final connections to vertical control points.

Vertical control points were identified in pairs normal to the flight line and spaced every third model. In addition, the elevation of any identifiable features existing along level lines which could be readily cut in from triangulation stations was also given.

In Part I, the elevations of 183 vertical control stations were determined and in Part II, 61 such stations were recorded. In addition, the heights of all triangulation stations within the project area were determined.

All vertical control was marked by the field party with copper weld or 1" iron pipe suitably stamped.

Field Inspection

Field inspection was complete within the limits of photography on PartyI and within the limits of the 1:16,000 scale photography on Part II. This included classification of roads, buildings, vegetation and drainage. Also included was the identification of all bench marks whether or not they were to be used as control for model points.

Office Operations

Part I

Alternate strips were bridged horizontally and vertically by the stereoplanigraph and adjusted analutically by IBM programming.

The density of horizontal control averages four to six stations per strip and sufficient vertical control was furnished by pairs of elevations normal to the flight line every third model.

Additional horizontal and vertical control was established during the aerotriangulation to enable each model to be delineated by Kelsh methods.

Original requests by the Army Engineers for a 50' interval was modified at the urging of the Geological Survey to 40'. These surveys could then be utilized by them for standard 7½' quadrangles.

Part II

The 1:30,000 scale photography was bridged by stereoplanigraph methods to establish supplemental horizontal control points sufficient in density to fix the position of each 1:16,000 scale photograph.

The 1:16,000 scale photographs were then bridged both horizontally and vertically providing enough control for individual models to be compiled by the Kelsh Plotter.

These Kelsh models were compiled on 1:6,000 scale work sheets with a contour interval of 10'. All data with the exception of a woods overlay was delineated on these work sheets.

Instructions limited the extent of contouring to approximately 400' above the river elevation.

Drafting and Edit

All work sheets were reviewed prior to scribing by the Review Section. The work sheets were then paneled into manuscripts and scribed after which the manuscirpt was edited prior to reproduction.

Map Accuracy

Every attempt was made throughout the project to maintain the standards of National Map Accuracy.

Field parties charged with the responsibility of selecting vertical control points were instructed to choose a site varying less than one foot in a fifteen foot radius. This in itself required diligent searching.

Instrument operators selecting additional vertical control whose elevations were to be determined by IBM adjustment chose as well defined points as possible. Six such elevations were furnished each Kelsh model, four near the outer edges and two near the physical centers, to insure that absolute orientation would be in the same plane.

Tree heights were determined by helicopter as an aid to the operator delineating contours.

Horizontal control was plentiful. A minimum of six stations appeared in each bridged strip of the 1:36,000 and 1:30,000 scale photography. Supplemental points established by stereoplanigraph to control the 1:16,000 scale photography was further refined by adjusting each strip by IBM methods.

Conclusions

Part I

In areas free of woods and in partially wooded areas (less than 50%) standard accuracy may be expected. In areas of dense woods, expressions may be weak with smoother contours as compared with open areas.

Using tree heights as guides, attempts were made to "dig in" with the floating mark utilizing the occasional openings in the trees to check the placement of the contour interval. These areas may be less than standard accuracy and cannot be verified except by extensive field edit.

Part II

The 1:16,000 scale photography as noted in a previous side heading was of generally poor quality. Approximately one-quarter of each exposure appeared to be out of focus and was apparent in the same quadrant on each photograph.

This inhibited the adjustment of the vertical bridging technique since the stereoptosy in these areas was "soft" the instrument elevations of selected images were hard to determine. Averages of many readings were used. When these instrument elevations were later adjusted in the IBM, the effect of the "softness" contributed to errors in the determined elevations.

In general, contours should be found to be of standard accuracy with isolated random areas in error of more than ½ contour interval.

Transmitted Data (Part I)

Field photographs (1:40,000):

59-W-5590 thru 59-W-5614
59-W-5561 thru 59-W-5588
59-W-5520 thru 59-W-5549
59-W-5490 thru 59-W-5518
59-W-5459 thru 59-W-5488

426 control station identification cards
4 Wye level books
6 Sketch books
3 IBM lists (showing instrument horizontal and vertical control, positions and elevations)
1 List bench mark positions by Kelsh Plotter Methods
5 Pages substitute station positions (Form 164)
1 Geographic Names report
1 Field Inspection report
1 Triangulation sketch (Phase 1 - 1959)
1 Triangulation sketch (Phase 2 - 1959)
1 Project diagram
Triangulation descriptions (1959 stations)
74 Pages adjusted horizontal control data (1959)
Descriptions and elevations vertical control data
Air photo index
1 Each cronar film positive (sheets 1 thru 8)
3 Each Ozalid prints (double weight) (sheets 1 thru 8)

Transmitted Data (Part II)

Field Photographs (1:30,000)

AG 100 2488 thru 2503
AG 100 2508 thru 2522

Transmitted Data (Part II) cont.

AG 100 2359 thru 2364
AG 100 2370 thru 2381
AG 100 2385 thru 2398
AG 100 2403 thru 2414
AG 100 2420 thru 2425

2 Each Cronar film positives (sheets 1 thru 11)
3 Each ozalid prints, double weight (sheets 1 thru 11)

Project Extension

On June 20, 1960, Mr. Waggoner telephone requesting additional compilation of small areas in the vicinity of Elk Creek and Breakfast Creek, designated as sheets 5A* and 7A respectively. These sheets were compiled in like manner and forwarded August 19, 1960.

8

Respectfully Submitted:

A. K. Heywood

Approved:

Charles Theurer
Chief, Cartographic Branch

L. W. Swanson
Chief, Photogrammetry Division

* T-10958A, T-10963A

The following are horizontal positions of bench marks obtained during Kelsh Plotter compilation. Positions of bench marks obtained during stereoplanigraph bridging are listed in the IBM bridging data.

STRIP	PHOTO NUMBER	STATION NAME	X	Y
4	5502	BM AP	435,982	1,834,213
4	5502	BM AQ	438,299	1,825,326
4	5499	BM AT	407,816	1,802,509
4	5513	S-202	509,740	1,896,060
4	5502	C-203	437,968	1,830,407
4	5502	D-203	435,147	1,820,460
4	5502	K-203	440,489	1,823,576
4	5499	G-203	412,704	1,802,859
[illegible]	5499	H-203	402,943	1,802,938
4	5508	B-204	480,740	1,862,157
4	5508	C-204	476,024	1,863,551
4	5499	BM AS, 1959	417,467	1,802,438
4	5499	BM AV, 1959	397,179	1,802,067
3	5533	B-203	433,323	1,837,858
3	5525	LH 48, 1934	502,408.46	1,894,485.76

This is computed position from published data (RM 2 of TT-10). Point held in Kelsh model.

5	5465	B-205	522,900	1,869,290
1	5594	RR-204	468,339	1,902,968

NAUTICAL CHARTS BRANCH

SURVEY NO. T-10965

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
			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
			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.