

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NORTH PACIFIC DISTRICT

ADDRESS REPLY TO
DISTRICT FORESTER
AND REFER TO

POST OFFICE BUILDING
PORTLAND, OREGON

S D-6
Timber Surveys-Umatilla
Hilgard Project.

December 18, 1926.

The Forester,

Washington, D.C.

Dear Sir:

I am enclosing, herewith, a copy of the descriptive and cost report of this project for your information.

Very truly yours,
C. M. GRANGER,
District Forester.

Enclosure.

By Acting.

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

S D-6
Timber Surveys, Umatilla
Hilgard Project

December 18, 1926

DESCRIPTIVE REPORT

Hilgard Timber Survey Project

Umatilla National Forest

District 6

1925



Fred A. Matz,
Chief of Timber Survey.

S
Timber Surveys, Umatilla
Hilgard Project.

Portland, Oregon
June 14, 1926

DESCRIPTIVE REPORT
Hilgard Timber Survey Project,

Umatilla National Forest. ¹

1925.

Fred A. Matz,
Chief of Timber Surveys.

¹ This document was transcribed from a photocopy of the original, which is located in the Supervisor's Office Silviculture Library Archives. To the greatest extent possible, this version is an exact duplicate of the original text.

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T.1 N.

T.1 S.

T.2 S.

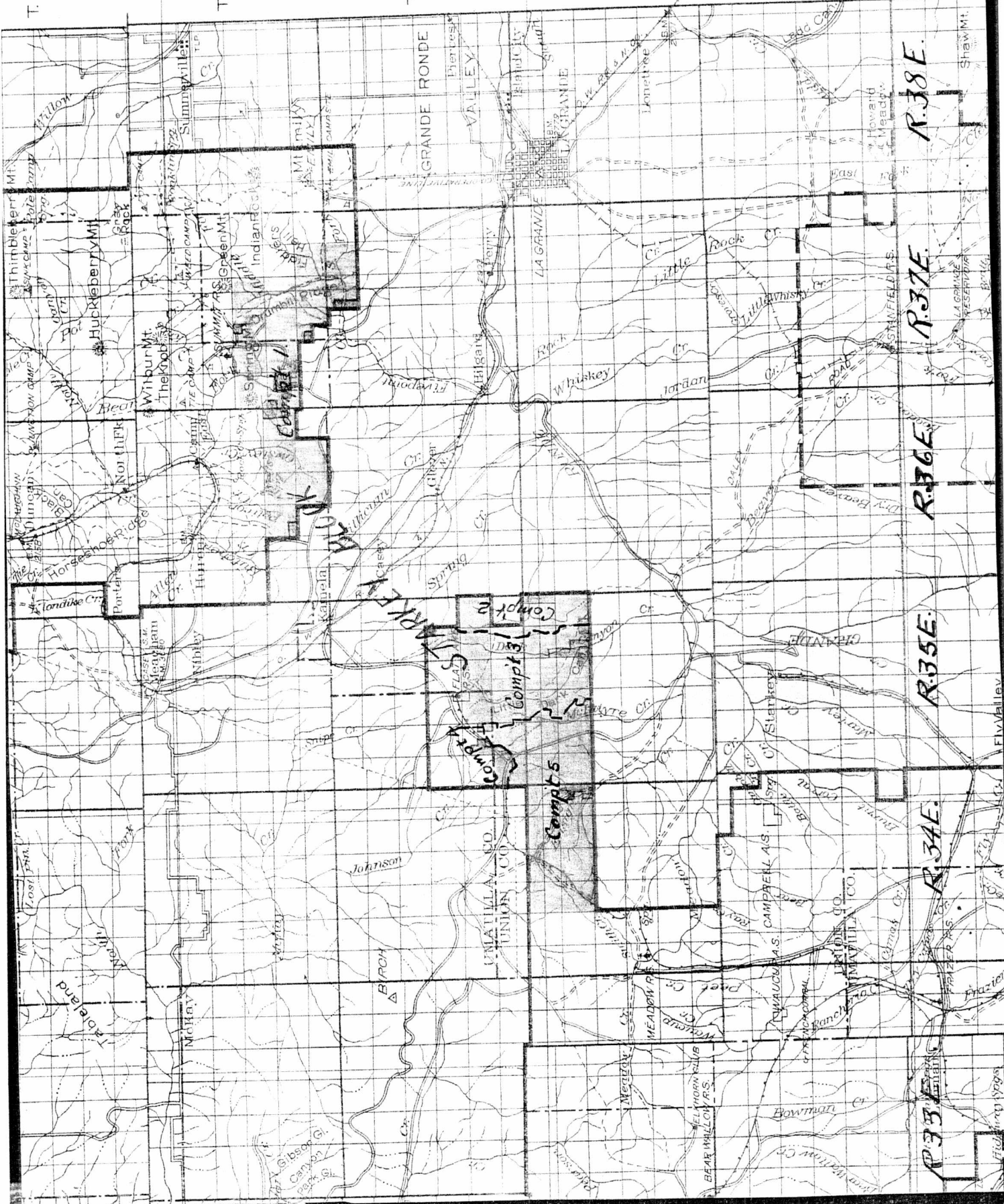
T.3 S.

T.4 S.

30'

20'

10'



R.38 E.

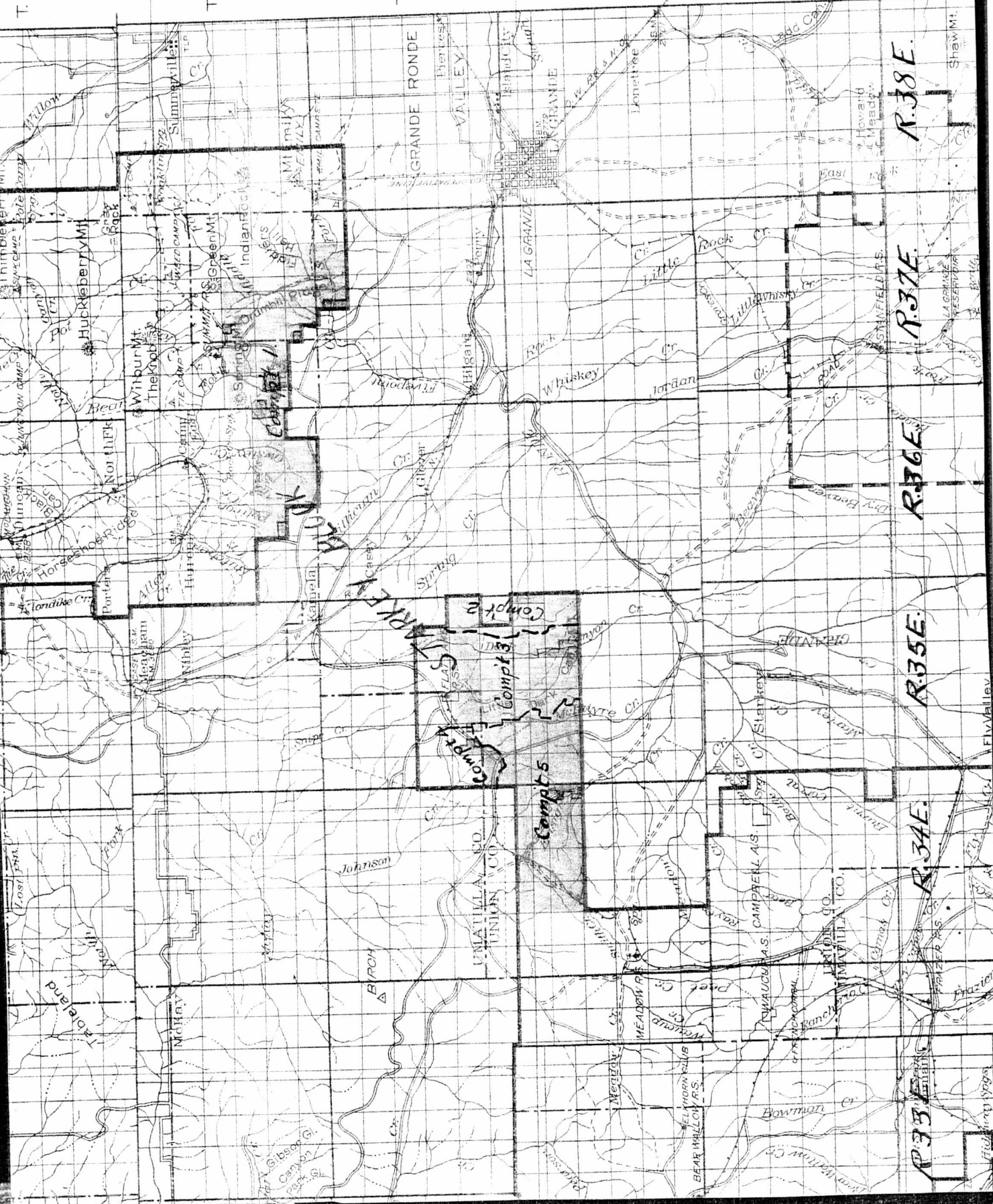
R.37 E.

R.36 E.

R.35 E.

R.34 E.

R.33 E.



R.38 E.

R.37 E.

R.36 E.

R.35 E.

R.34 E.

R.33 E.

DESCRIPTIVE REPORT

I. Introduction

Map

The project area and its division into blocks and compartments is show on the ¼ -inch to the mile scale map at the front of this report.

History of Project

The Mt. Emily Lumber Company, having its office and mill at La Grande, Oregon, made application in February, 1925, for the purchase of Government timber at the head of Five Point and Owsley Creeks in that portion of the Forest directly north of Hilgard, Oregon. It was to obtain the information necessary for an intelligent consideration of this application that the timber survey was authorized. The timber survey crew went into the field on May 1, and this unit of the project was completed by the end of that month. The appraisal of this unit was made by Logging Engineer Drake while the party was still in the field, and it was necessary to compute the timber volume and compile the maps for his use before leaving the area. This was done, and as a result he prepared his Report on Appraisal of Five Point Creek, dated June 22, 1925. This report recommended the sale of timber on 6,000 acres to be logged via Five Point Creek up which the Mr. Emily Lumber Company had already extended a logging railroad. This area was, later sold to the company.

The same company had also made tentative application for the timber in that portion of the Forest directly west of La Grande in T. 2.S., R. 35 E., and T. 3 S., Rgs. 34 and 35 E. Accordingly, as soon as the timber survey party completed work on Unit L, first mentioned, it was moved to Flat Creek Ranger Station and work started there. The crew finished here on June 30, and on the following day traveled to Bend, Oregon, for similar work on the Deschutes Forest.

Personnel

The party worked under the direction of Fred A. Matz, Chief of Timber Surveys. Junior Forester E. J. Schlatter was assigned to the party as assistant chief.

The services of James Frankland, principal surveyor, were contributed by the Office of Engineering for a period of about three weeks while establishing the control for the area.

Geo. E. Nichols, who had worked for us the past summer, served in the capacity of cook, and was paid at the rate of \$100 per month and subsistence.

The field assistants who served on the party and the rate of pay, which included subsistence, are given following. All were students in forestry at the various schools named.

Hein, H. C., Jr. -	Iowa State College -\$90 per Month Compassman.
Jackson, R. M. -	Iowa State College -\$80 per Month Compassman
Cory, Floyd W. -	U. of Michigan -\$80 per Month Estimator & Compassman
Cook, Oliver M. -	U. of Minnesota -\$70 per Month Estimator
Obert, Don D. -	U. of Minnesota -\$70 per Month Estimator
Weaver, Harold -	Oregon Ag. College - \$70 per Month Estimator

Location and Area

Area: The total area mapped consists of 30,901 acres, of which 30,606 acres are National Forest land, the remaining 295 acres being in private ownership.

Location: The project lies in the Starkey Block of the Umatilla National Forest, and is principally in the Grande Ronde River watershed. Kamela, Oregon, a small village on O.W.R. & N. is the nearest post office and trading point. The O.W.R. & N. main line passes between the two units of the Forest on which the project was conducted. La Grande is a thriving lumbering town situated on the main line and about seven miles southeast of Compartment 1, and about 12 miles east of Compartment 2 in the other unit of the Forest. It is the logical milling point for all the timber in the Grande Ronde valley.

The project may be more definitely described as covering portions of the following townships, viz:

- T. 1 S., Range 36 and 37 E.
- T. 2 S., Range 35 and 36 E.
- T. 3 S., Range 34 and 35 E.

Unit Divisions

The project is all within the Starkey Block. Compartment 1 is, confined to that unit of the Forest lying northwest of La Grande. Compartments 2 to 5 inclusive are in that unit of the Forest directly west of Hilgard and La Grande. The acreages involved in each of these compartments are as follows:

- Compartment 1 – N.F. Acreage – 11,519 acres
- Compartment 2 – N.F. Acreage - 2,381 acres
- Compartment 3 – N.F. Acreage - 6,894 acres
- Compartment 4 – N.F. Acreage - 871 acres
- Compartment 5 – N.F. Acreage - 8,941 acres

Total 30,606 acres

Of the above compartment No. 2 is the only one which is completed in this project.

Status and Ownership

Following is a summary of status of ownership of the lands within the project boundaries, by townships:

Description Of Township	Government Land Acres	Alienated Land Acres	Total Acres
T 1 S., R 36 E	3640.00	200.00	3840.00
T 1 S., R.37 E	6756.07	337.97	7094.04
T 2 S., R.35 E	7000.00	40.00	7040.00
T 2 S., R.37 E	1122.93	136.14	1259.07
T 3 S., R.34 E	4894.86	240.00	6134.86
T.3 S., R.35 E.	7192.20	480.00	7672.20
Totals	30606.06	1434.11	32040.17

Practically all of the above alienated acreage was acquired under the Timber and Stone Act.

II. Field Work and Computations

Field Work

Control Methods, Special Instructions for the control and mapping of this project were prepared by the Office of Engineering, and the result of the fieldwork in accordance therewith is covered in Mr. Frankland's report of January 6, 1926.

Cruising Methods: The strip method of cruising, using a two-man crew, and tallying of all the timber on a strip one chain in width was employed throughout the project. Areas carrying a stand of pine sufficient to justify logging operations were covered by a 10 per cent cruise, making two strips across each forty. Timbered areas of doubtful merchantability were covered by a 5 per cent single-run cruise, and a small acreage of patented land was covered even less intensively to connect the map work.

The government acreage cruised is divided into the different percentages of cruise, as follows:

10 per cent cruise – 21,591 acres

5 per cent cruise - 9,015 acres

Of the 295 acres of alienated lands mapped in addition to the above acreage, only 98 acres were cruised. These cruised alienated lands are described as follows: All in T. 1 S., R. 37 E., Section 21. NE1/4 NW1/4, 10% cruise, 40 acres: Section 30, Lot 1, 5% cruise, 57.97 acres. The timber volume for this alienated land is not carried into the summaries forming a part of the report.

Check Cruises: Some time was consumed at the first camp in giving general instructions to men inexperienced in the work and considerable time was spend in supervision after the strip crews were organized.

The check cruising was done by the writer well toward the close of the project, and the area checked over is about 3 per cent of the area cruised.

The results of the check cruising are given below:

Check Cruise by F. A. Matz against Oliver M. Cook

	Check Cruise	Original Cruise	Difference	
Number of trees, Mature YP	150	159	Plus	9
Number of trees, Immature YP volume of	136	121	Minus	15
Number of trees, Douglas fir	80	71	Minus	9
Number of trees, Western larch	4	29	Plus	25
Number of trees, Engelmann spruce	<u>0</u>	<u>4</u>	Plus	<u>4</u>
Number of trees, all species	370	384	Plus	14
Volume of mature Y. feet B. M.	94,190	113,880	Plus	19,690
Volume of immature Y. feet B. M.	27,120	16,770	Minus	10,350
Volume of Douglas fir	43,530	37,950	Minus	5,580
Volume of WL, feet B. M.	2,220	10,960	Plus	8,740
Volume of E S, feet B. M.	<u>0</u>	<u>500</u>	Plus	<u>500</u>
Volume of all species, feet B. M.	167,060	180,060	Plus	13,000

The percent of difference for the entire volume is 7.8

Check Cruise by F. A. Matz against Harold Weaver

	Check Cruise	Original Cruise	Difference	
Number of trees, mature Y	27	45	plus	18
Number of trees, immature Y	14	13	minus	1
Number of trees, Douglas fir	89	52	minus	37
Number of trees, Western larch	35	36	plus	1
Number of trees, White fir	36	30	minus	6
Number of trees, Lodgepole pine	15	4	minus	11
Number of trees, Engelmann spruce	<u>0</u>	<u>4</u>	plus	<u>4</u>
Number of trees, all species	216	184	minus	32
Volume of mature Y, Feet B. M.	22,830	29,020	plus	6190
Volume of immature Y, Feet B.M.	2,820	1,440	minus	1380
Volume of D F Feet B. M.	42,760	24,610	minus	18150
Volume of W L Feet B. M.	11,800	7,970	minus	3830
Volume of L P Feet B. M.	1,920	520	minus	1400
Volume of W F Feet B. M.	9,120	7,170	minus	1950
Volume of E S Feet B. M.	<u>0</u>	<u>1,300</u>	Plus	<u>1300</u>
Volume of all species Feet B. M.	91,250	72,030	Minus	19,220

The difference in total volume is 21 per cent. After this check cruise was run it was learned that the original strip diverged a distance of 2 ½ chains off from the true course through the 11/2 miles tallied and because of varying composition of the timber. This will probably account for the big discrepancies indicated.

Check Cruise by F. A. Matz against Don D. Obert

	Check Cruise	Original Cruise	Difference	
Number of trees, Mature YP	95	95		0
Number of trees, Immature YP	61	74	Plus	13
Number of trees, Douglas fir	116	116		0
Number of trees, Western larch	24	30	Plus	6
Number of trees, White fir	10	9	Minus	1
Number of trees, Lodgepole pine	<u>0</u>	<u>1</u>	Plus	<u>1</u>
Number of trees, All species	306	325	Plus	19
Volume of Mature Y, feet B.M	56,250	64,960	Plus	8,710
Volume of Immature Y, feet B.M	13,200	9,740	Minus	3,640
Volume of Y, D.F. feet B.M	34,930	37,290	Minus	3,640
Volume of Y, W.L. feet B.M	10,280	8,430	Minus	1,850
Volume of Y, W.F. feet B.M	1,400	1,240	Minus	670
Volume of Y, L.P. feet B.M	<u>0</u>	<u>100</u>	Plus	<u>100</u>
Volume of Y, All species feet B.M	116,060	115,760	Minus	300

The per cent of difference in total volume is 0.3

Based on all the volume obtained on the check cruises, 374 M, compared to the corresponding figures for the originals, 368 M, done by the three estimators, the difference is 6 M or 0.17 per cent for the crew.

Office Computations

Volume Tables: Diameter measurements in inches were at breast height. Western yellow pine saw timber was, tallied by 2-inch diameter classes, and by height classes according to the number of 16-foot logs in each tree.

All species other than yellow pine were tallied by two-inch diameter classes, and the volumes for each species computed from special volume tables prepared from standard volume tables adjusted to height measurements taken on the project. All yellow pine volumes, both for mature and immature timber, were computed from the Blue Mountain volume table for western yellow pine. The volume used in the computations in feet B. M. for single trees of each species found on the tract, other than yellow pine, is indicated in the following Table No. 1. Volumes for white fir were computed from the Douglas fir table, and all diameters 26 inches and over discarded. Trees of this size in this species are usually not merchantable, and the number of these large trees has been compiled and carried into the timber summary.

TABLE NO. 1
Volume Tables Used

Diameters B.H. (Inches)	Feet Board Measure			
	Douglas Fir	Western Larch	Engelmann Spruce	Lodgepole pine
12	70	110	50	100
14	90	160	100	160
16	140	240	160	220
18	270	310	240	280
20	410	400	340	350
22	550	500	460	440
24	690	610	620	540
26	860	740	860	
28	1010	900	1130	
30	1180	1100	1410	
32	1350	1320		
34	1560	1600		
36	1750	1900		
38	1940	2200		
40	2140	2500		
42	2340	2900		
44	2500			
46	2700			
48	2900			
50	3100			

Defect in the pine is confined to a small amount of stump rot, fire scars and spike tops. The smaller sizes of white fir are sound and thrifty, but trees of 26 inches D.B.H. and over are inclined to be conky and even though there may be no outward indications of the disease they are considered of doubtful merchantability. Consequently, the volume of trees of this size and over was not computed.

Engelmann spruce is, found along the watercourses, and edges of meadows where the loss due to breakage will be small. The trees are sound and thrifty.

Lodgepole pine is sound and thrifty.

Douglas fir is short and rough, but it has very little noticeable defect. It is, anticipated there will be a slight loss because of stump rot and shake.

Western larch does not attain large diameter sizes in this project. Although is, considered quite sound. The defect allowances were, chiefly because of probable shake.

The range of the allowances for both defect and breakage, and the factor most used in the computations are as follows:

Western yellow pine	-- 2% to 10% - most used 5%
Douglas fir	-- 5% to 20% - most used 15%
Western larch	-- 5% to 15% - most used 10%
Engelmann spruce and Lodgepole pine	-- 5% to 15% - most used 10%
White fir	-- 5% to 20% - most used 10%

III. Silvicultural Description

Forest Types

The following types and age classes of each are represented on the area:

(a) Yellow pine type

This is found in four age classes, namely

Mature, symbol used in field Y⁴

Immature, symbol used in field Y³

Poles, symbol used in field Y²

Saplings and seedlings, symbol used Y¹

(b) White fir-larch-Douglas fir type.

This is found in the following three age classes:

Mature, symbol used in field FL³

Immature, symbol used in field FL²

Saplings and seedlings, symbols used in field FL¹

(c) Lodgepole pine type.

Two age classes are present.

Mature, symbol used in field LP²

Immature, symbol used in field LP¹

(d) Four non-timbered types were found, namely, brush, grass, sagebrush and barren. The brush and barren types occur in comparatively small patches here and there throughout the project, but the grass type occupies large connected areas usually on the ridge summits, and ranks third in acreage for the project as a whole. It is interesting to note from the acreages given in the following tabulation that there is less than 100 acres difference in total area for the pine type and white fir-larch-Douglas fir type. The acreages of each type and age class are given by section, township and compartment in the following tables, 2 to 6 inclusive.

Table No. 2.
Acreage Summary of Forest Types
STARKEY BLOCK
Compartment 1.

Section Number	Yellow pine				W. Fir-Larch-D. fir			Lodgepole pine			Grass Acres	Barren Acres	Total Acres
	Mature Acres	Imm. Acres	Poles Acres	Saplings Acres	Mature Acres	Imm. Acres	Saplings acres	Mature Acres	Imm. Acres	Brush acres			
T.1 S., R. 36 E., W. M.													
25	127.00	50	2	2	69	3	37				230		520.00
26	49.00				242		80				269		640.00
27	125.00	3	1		347		13	5	52		94		640.00
28	92.00	4	2		398		10	8	46				560.00
34	202.00	2	2	3	284		32		40		75		640.00
35	132.00	18	6	5	380		23				76		640.00
Twp. totals	727.00	77	13	10	1720	3	195	13	138		744		3640.00
T. 1 S., R. 37 E., W. M.													
19	52.36				475		79		30		74	5	715.36
20	305.00	7		18	164		6			5	132	3	640.00
21	254.00	10	6	10	230		31				59		600.00
22	171.00	2		6	284		44			35	98		640.00
26	50.00										16		66.00
27	305.00	4		2	229		3	13	12		72		640.00
28	369.00	11		4	153		2		3		98		640.00
29	126.00	2			270		99		109		33	1	640.00
30	93.71		3	32	179		18		48		81		454.71
33	123.00	176	20	1	62		2				56		440.00
34	292.00				217	8					123		640.00
35	245.00			3	244		19		18		111		64.000
Twp. totals	2386.07	212	29	76	2507	8	303	13	220	40	953	9	6756.07
T.2 S., R. 37 E., W. M.													
2	186.99	14	3	20	248				9		110		621.99
3	107.94	55	4	2	171		31				161		500.94
Twp. totals	294.93	69	7	22	419		31		9		271		1122.93
All townships					Compartment 1 totals								
Totals	3408.00	358	49	108	4646	11	529	26	367	40	1968	9	11519.00

Table No. 3
Acreage of Forest Types
STARKEY BLOCK
Compartment 2

Section Number	Yellow Pine				Fir-Larch-D. Fir			Lodgepole P.		Brush acres	Grass Acres	Barren Acres	Total Acres
	Mature Acres	Immat. Acres	Poles Acres	Saplings Acres	Mature Acres	Immat. Acres	Saplings Acres	Mature Acres	Immat. Acres				
T. 2 S., R. 35 E., W. M.													
23	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00
25	429.00	8	-	2	130	-	-	-	-	-	71	-	640.00
26	100.00	2	-	2	51	-	-	-	10	-	3	-	168.00
35	<u>127.00</u>	-	-	<u>12</u>	<u>104</u>	-	-	-	-	-	<u>47</u>	-	<u>290.00</u>
Twp. Totals	657.00	10	-	16	285	-	-	-	10	-	121	-	1099.00
T. 3 S., R. 35 E., W. M													
1	248.00	-	-	-	194	-	6	-	-	-	32	-	480.00
2	29.59	-	-	-	136	-	-	-	-	-	17	-	182.59
11	5.00	-	-	-	6	-	-	-	-	-	9	-	20.00
12	<u>322.00</u>	-	-	-	<u>180</u>	-	-	-	<u>24</u>	-	<u>74</u>	-	<u>600.00</u>
Twp. Totals	604.59	-	-	-	516	-	6	-	24	-	132	-	1282.59
All townships					Compartment 2 totals								
Totals	1261.59	10	-	16	801	-	6	-	34	-	253	-	2381.59

Table No. 4
Acreage of Forest Types
STARKEY BLOCK
Compartment 3

Section Number	Lodgepole Pine				W. Fir-Larch-D. fir			Lodgepole pine		Brush Acres	Grass Acres	Barren Acres	Total Acres
	Mature Acres	Immat. Acres	Poles Acres	Saplings Acres	Mature Acres	Immat. Acres	Saplings Acres	Mature Acres	Immat. Acres				
T. 2 S., R. 35 E., W. M.													
23	62.00	-	-	2	288	-	6	-	200	-	41	-	599.00
26	78.00	-	-	-	282	-	10	-	75	-	27	-	472.00
27	55.00	2	3	2	301	-	49	-	158	-	70	-	640.00
28	42.00	12	-	-	144	-	-	40	336	-	66	-	640.00
29	-	-	-	-	7	-	-	-	52	-	1	-	60.00
32	2.00	-	-	-	7	-	12	-	7	-	1	-	29.00
33	110.00	-	-	-	220	-	-	11	227	-	62	-	630.00
34	179.00	-	4	2	215	-	31	-	160	-	49	-	640.00
35	105.00	-	-	-	186	-	-	30	-	-	29	-	350.00
Portion of Twp.	633.00	14	7	6	1650	-	108	81	1215	-	346	-	4,060.00
T. 3 S., R. 35 E., W. M.													
2	234.00	-	-	16	96	-	-	-	-	-	71	-	417.00
3	374.82	2	-	30	144	-	11	-	2	-	75	-	638.82
4	103.84	3	-	5	270	-	7	-	59	-	33	-	480.84
9	105.00	1	-	20	46	-	17	-	51	-	37	-	277.00
10	324.00	2	-	28	158	-	14	5	30	-	79	-	640.00
11	257.00	-	-	7	32	-	-	-	-	-	84	-	380.00
Portion of Twp.	1398.66	8	-	106	749	-	49	5	142	-	379	-	2833.66
Above townships portions					Compartment 3 totals								
Totals	2031.66	22	7	112	2396		157	86	1357		725		6893.66

Table No. 5
 Acreage Summary of Forest Types
 STARKEY BLOCK
 Compartment 4.

Section Number	Yellow Pine				W. Fir- Larch-D. Fir			Lodgepole Pine		Brush Acres	Grass Acres	Barren Acres	Totals
	Mature Acres	Immat. Acres	Poles Acres	Saplings Acres	Mature Acres	Immat. Acres	Saplings Acres	Mature Acres	Immat. Acres				
T. 2 S., R. 35 E., W. M.													
29	75.00	6	-	11	135	-	2	-	193	-	63	3	488.00
31	21.00		-		206	-	84	-		-	12	-	323.00
32	4.00		-		50	-		-	6	-	-	-	60.00
Compartment Totals	100.00	6	-	11	391	-	86	-	199	-	75	3	871.00

Table No. 6
Acreage Summary of Forest Types
STARKEY BLOCK
Compartment 5

Section Number	Yellow Pine				W. Fir-Larch-D. Fir			Lodgepole Pine		Brush Acres	Grass Acres	Barren Acres	Sage-Brush Acres	Total Acres
	Mature Acres	Immat. Acres	Poles Acres	Saplings Acres	Mature Acres	Immat. Acres	Saplings Acres	Mature Acres	Immat. Acres					
<u>T. 2. S., R. 35 E., W. M.</u>														
29					4				88					92.00
31	98.00			3	174		14		6		22			317.00
32	62.00				241		8	6	183		51			551.00
33									10					10.00
Portion of Twp.	160.00			3	419		22	6	287		73			970.00
<u>T. 3 S., R. 34 E., W. M.</u>														
1	403.00			23	96		20		3		98			643.00
2	322.00	2		32	122			29	51		87			645.00
3	177.90	1		13	281			16	87		67			642.00
4	236.96	18		92	224		11		9		48			643.00
9	242.00	11	5	56	248			9	26		48			640.00
10	317.00	2		74	107			14	15		111			640.00
11	206.00			10	315		5	6	10		88			640.00
12	131.00				185		6		6		72			400.00
Portion Of Twp.	2035.86	34	5	300	1578		42	74	207		619			4894.86
<u>T. 3 S., R. 35 E., W. M.</u>														
4	84.00	4		10	26		3	2	18		11			158.00
5	153.17	14	2	7	372		1	8	28		54			639.17
6	330.22	1		16	167		2				121			637.22
7	318.56	3		68	77						156		16	638.56
8	377.00	4		72	111						70	6		640.00
9	198.00			83	36						44	2		363.00
Portion Of Twp. All townships	1460.95	26	2	256	789		6	10	46		456	8	16	3075.95
Compartment 5 Totals														
Totals	3656.81	60	7	559	2786		70	90	540		1148	8	16	8940.81
PROJECT SUMMARY														
All Compartments Totals	10,458.06	456	63	806	11,020		11	848	202		2497	40	16	3,606.06

Description of Types

Yellow Pine Type

In this type the mature and immature trees were quite uniformly distributed, but the two other age classes are in more or less grouped composition. The stand of timber is usually quite open, and averages about 30% thrifty, 60% mature and 10% decadent. It is chiefly all of Site IV, but small areas on scabby ridge summits are classes as Site V.

The yellow pine sawtimber will average about five logs per M. The average tree in pine is about 800 feet B. M. Frequently trees of six log lengths were tallied, rarely do they exceed this length, and those most commonly found on the area are of four and five log lengths. Logging Engineer Drake estimated the quality at 24% No. 2 shop and better for the area appraised by him, and it is believed this figure can be used safely for the entire tract. The better grade of timber is found where the stand is of mixed composition.

White Fir-Larch-Douglas Fir Type

This type is found on the north slopes and flat portions of the area, where the soil is cool and moist. Occasionally yellow pine trees are to be found in this type, but it is largely composed of the three species forming the type title, and commonly carries in addition Engelmann spruce and lodgepole pine.

Douglas fir and white fir trees do not here attain the real large diameter sizes as found commonly in the Blue Mountain region and, therefore, are looked upon with more favor by the lumbermen. This is also true in the case of the western larch, where the lack of large worthless trees of this species is readily noticeable.

Mistletoe has taken quite a strong hold in the Douglas fir, although it is not so pronounced in this type as it is in single scattered trees this species growing in the yellow pine type.

Engelmann spruce is found along the cool stream beds or around swampy areas. It is always in mixture with other species common to the WF-L-DF type, and not in pure stands. It is of good sound thrifty appearance, and will cut out desirable small sawlogs.

Lodgepole Pine Type

Much of the area mapped in this type is composed of a pure stand of lodgepole pine. Very few of the trees in this type are of merchantable size for sawtimber, although this species does attain that size frequently in the other timber types. When of large enough size the trees will cut out small logs which are readily taken by an operator. Because of the small number of merchantable size trees in this type, exploitation for lumber purposes is not expected, and this type now has its chief value for watershed protection.

Brush, Grass and Barren Types

As implied in the names, these types were classified according to the vegetation now existing on the area so mapped. The acreages in each are indicated in the foregoing tables.

Silvicultural Management

The selection form of cutting, stressing the removal of mature and decadent trees should be practiced. The stand is of such varying composition that no fast drawn rules can be applied and good judgment on the part of the marker is necessary. In some portions where there is a high percentage of mature timber, the cutting will be quite heavy and it will be necessary to depend largely upon the pole and sapling reproduction for the reserve stand. Other areas are composed largely of immature timber (Y³) and here cutting should be as light as possible and wholly restricted unless it is necessary that the logging operations must cross them to make possible the economic and feasible logging of the remainder of the area adjacent to them.

All inferior species should be cut in the yellow pine type wherever there is reasonable assurance that sufficient stocking will take place from the reserved trees and reproduction of pine.

Reproduction

The reproduction on the tract averages about two-thirds stocked possibly a little less. If the present stand of reproduction can be saved after cutting, it would probably be sufficient to insure a good future crop, but it is believed we may expect good subsequent reproduction on the area. This belief is based on the excellent stand of Y² type, which has resulted from old cuttings done about 30 years ago in the region adjacent to the Forest boundary along Five Point Creek. At the time of this logging the operator apparently paid no heed to any approved system of cutting or brush disposal, yet the present crop in the area is of the finest the writer has seen. It is evident that a large portion of the logged-off area was never burned after logging, and many trees then considered of not merchantable size were left. The result is that these trees take the place of what we expect from trees left in reserve and the area having escaped disastrous fires, condition for growth have been all that may be expected from our present cutting plans.

Injurious Factors

Beetles: Some damage has been done in the pine by bark beetles, but not to an alarming extent. At no part of the area does the damage indicate there is more than the normal amount to be expected in pine regions.

Mistletoe: Mistletoe is very common in the Douglas fir and is also present to a small extent in the yellow pine. Many dead tops noticed in the Douglas fir trees are probably the result of this parasite. Few of the fir trees growing in the yellow pine type have escaped the mistletoe, and the large drooping witch brooms are quite in evidence. Cutting of these affected trees should be as heavy as possible with the idea in mind to cause the effectual eradication of the parasite.

Growth and Yield Data

No increment borings were taken on the project. Immature sawtimber in the yellow pine was tallied and computed separately from the mature timber. All trees of pole size were tallied in two diameter classes for each species, and the number of each carried into the final compilations. Another feature brought out in the summaries in this report is the tabulation of the number of immature merchantable size trees, as it is believed this information may be of some use in determining to some extent the distribution of the trees.

IV. Logging Data

That portion of the project in Compartment 1 is about seven miles north of Hilgard, which is on the main line of the O.W.R. & N. The Mt. Emily Lumber Company were already completing their logging railroad along Five Point Creek to the boundary of this unit, when the cruising was being done.

The other portion of the project is accessible to a logging railroad along the Grande Ronde River over which the timber outside the Forest will be moved.

The topography of the country is very steep in places, and the stand there being usually pretty light will tend somewhat to restrict the logging operations to the more favorable areas. Ground skidding with horses and tractors are believed the most practical for logging the area. Underbrush and windfall are about average for the yellow pine region.

As compared to Compartment 1, on a portion of which the Mt. Emily Lumber Company sale was made, the remainder of the area covered is of much easier topography, the slopes being not so steep and high. The first logging on this portion will probably be at the head of Spring Creek in Compartment 2, adjacent to which is a body of privately-owned timber. The Mt. Emily Lumber Company purchased the holdings of the Grande Ronde Lumber Company in the Grande Ronde Valley, and it is to be expected they will desire to purchase more of the Government timber whenever their operations are extended into the region. There is a considerable acreage of good yellow pine timber in the Forest to the west and south of the project covered, which should be covered soon in order that the information may be on hand whenever an application is made. All the National Forest timber in the Grande Ronde watershed is so

situated that a consideration of a proposed sale should be based upon an examination of the entire area. This would involve the cruising of about 40,000 acres additional to the area already covered.

V. Statistical Summary

Timber Stand

Table 7 to 11, inclusive indicate the volume of timber in feet B.M for each species, and the numbers of unmerchantable large white fir trees and snags.

Immature Trees

Tables 12 to 16, inclusive, indicate the number of yellow pine trees in the immature age class. The B.M. volume of this class of timber is given under tables 7 to 11, inclusive.

Poles

The poles were tallied in two size classes, namely, 4" to 7" and 8" to 11", for each species. The compilation of this information is given in tables 17 to 21, inclusive, at the close of this report.

TABLE NO. 7
SUMMARY OF TIMBER STAND
STARKEY BLOCK
Compartment no. 1

Section No.	Acreage	M. Feet B. M. for Species										No. of Large Un-merch.			No. of Snags	
		Yellow pine			DF	WL	WF	LP	ES	BC	TOTAL	White	Fir	D.B.H	12"-20"	22"-30"
		Mature	Immat.	Total								26"-30"	32"-42"	Total		
T. 1 S., R. 36 E. W. M.																
25	520.00	1840	292	2132	648	257	30	3	-	-	3088	50	-	50	289	195
26	640.00	462	82	544	890	185	155	38	-	-	1812	125	-	125	211	240
27	640.00	988	424	1412	1533	276	468	99	92	-	3880	153	-	153	1393	713
28	560.00	1486	165	1051	1616	943	392	182	89	-	4873	20	20	40	1914	306
34	640.00	1658	348	2006	1217	257	334	35	60	-	4109	30	9	39	1141	818
35	640.00	<u>1286</u>	<u>327</u>	<u>1613</u>	<u>1449</u>	<u>732</u>	<u>648</u>	<u>59</u>	-	-	<u>4501</u>	<u>180</u>	<u>48</u>	<u>228</u>	<u>1044</u>	<u>623</u>
Twp. Totals	3640.00	7720	1638	9358	7353	2868	2027	416	241	-	22263	558	77	635	5992	2895
T. 1 S., R. 37 E., W. M.																
19	715.36	948	61	1009	1192	755	547	113	149	-	3765	130	15	145	630	558
20	640.00	2224	377	2601	993	237	332	40	40	-	4246	60	-	60	310	333
21	600.00	1977	195	2172	1091	496	356	10	125	-	4250	196	34	230	274	260
22	640.00	1781	135	1916	1086	367	568	15	93	-	4045	276	93	369	442	737
26	66.00	189	49	238	110	23	3	-	-	-	374	-	-	-	110	10
27	640.00	1728	480	2208	1417	550	233	15	72	89	4584	71	50	121	1287	1069
28	640.00	2348	684	3032	1655	338	440	37	48	-	5550	216	50	266	1302	1006
29	640.00	1225	216	1441	1378	972	491	185	194	-	4661	150	50	200	3604	799
30	454.71	1422	143	1565	961	400	411	92	27	3	3459	106	60	166	758	521
33	440.00	2096	254	2350	651	308	68	16	-	-	3393	9	-	9	150	298
34	640.00	2441	490	2931	1358	624	152	18	110	130	5323	30	30	60	890	640
35	640.00	<u>1633</u>	<u>543</u>	<u>2176</u>	<u>1307</u>	<u>398</u>	<u>185</u>	<u>4</u>	<u>157</u>	<u>29</u>	<u>4256</u>	<u>148</u>	<u>75</u>	<u>223</u>	<u>630</u>	<u>666</u>
Twp. Totals	6756.07	20012	3627	23639	13199	5468	3786	548	1015	251	47906	1392	457	1849	10393	6897
T. 2 S., R. 37 E., W. M.																
2	621.99	1927	111	2038	653	624	118	9	23	-	3465	31	--	31	585	348
3	500.94	<u>1211</u>	<u>201</u>	<u>1412</u>	<u>497</u>	<u>400</u>	<u>55</u>	<u>5</u>	<u>65</u>	-	<u>2434</u>	-	<u>9</u>	<u>9</u>	<u>320</u>	<u>214</u>
Twp. Totals	1122.93	3138	312	3450	1150	1024	173	14	88	-	5899	31	9	40	907	562
Compartment No. 1 totals																
All townships																
Total	11519.00	30870	5577	36447	21702	9360	5986	978	1344	251	76068	1981	543	2524	17268	10354

TABLE No. 8
SUMMARY OF PAPER STARD
STANDARD-BIDOX
Department No. 3

Yellow Paper		H. Post D. M. for Specials		No. of Lines Unchecked		No. of Lines Checked		No. of Lines (by D. J. H. Classes)	
Line No.	Length	Yd.	Wt.	Wt.	Wt.	Yd.	Wt.	Yd.	Wt.
R. 35 T. W. M.									
2140:	364:	2804:	57:	48:	19:	3:	-	137:	-
570:	184:	594:	1190:	599:	173:	7:	6:	4266:	10:
1508:	79:	1882:	301:	100:	5:	2:	-	1328:	-
			311:	191:	66:	-	-	1785:	46:
3315:	860:	4481:	1767:	658:	364:	18:	6:	7168:	50:
R. 25 T. W. M.									
2852:	178:	2470:	804:	768:	43:	30:	9:	4118:	30:
948:	32:	390:	148:	74:	34:	-	-	838:	11:
55:	8:	62:	20:	1:	5:	-	-	87:	-
2879:	385:	3804:	969:	715:	148:	15:	-	3048:	202:
5674:	843:	6017:	1941:	1483:	217:	35:	9:	9790:	133:
Compartments No. 2 Totals.									
5269:	1109:	10498:	3703:	2190:	481:	47:	14:	18939:	185:
									61:
									344:
									8936:
									910:
									81:
									3987

TABLE NO. 9.
SUMMARY OF TIMBER STAND
STARKEY BLOCK
Compartment No.3

Section No.	Acreage	Yellow Pine			M. feet B. M for Species						Total
		Mature	Immat.	Total	DF	WL	WF	LP	ES	BC	
<u>T. 2 S., R. 35 E., W. M.</u>											
23	599.00	503	39	542	862	334	70	117	6	-	1931
26	472.00	786	81	867	1257	771	60	13	30	-	2998
27	640.00	62	214	835	1061	597	194	16	15	-	2718
28	640.00	329	262	590	627	291	21	113	93	-	1735
29	60.00	-	-	-	-	-	-	-	-	-	-
32	29.00	7	1	8	89	30	4	6	--	-	137
33	630.00	809	94	903	1721	885	159	53	-	-	3721
34	640.00	1831	111	1942	1014	347	420	-	20	-	3743
35	350.00	917	81	998	878	283	36	20	129	-	2344
Portion of Twp.	4060.00	5802	883	6685	7509	3538	964	338	293	-	19327
<u>T. 3 S., R. 35 E., W. M</u>											
2	417.00	2152	259	2411	711	479	22	17	63	-	3703
3	638.82	3065	283	3348	766	288	88	6	1	-	4497
4	480.84	1308	171	1479	829	810	184	28	10	-	3340
9	277.00	1289	72	1361	435	215	11	6	-	-	2028
10	640.00	2217	145	2362	977	393	48	6	32	-	3818
11	380.00	1313	289	1602	428	132	4	4	-	-	2170
Portion of Twp.	2833.66	11344	1219	12563	4146	2317	357	67	106	-	19556
<u>Above Township Portions</u>		<u>Compartment No.3 Totals</u>									
Totals	6893.66	17146	2102	19248	11655	5855	1321	405	399	-	38883

TABLE NO. 9
SUMMARY OF TIMBER STAND
STARKEY BLOCK
Compartment No. 3 **Continued**

Section No.	No. of large Un-merchantable			No. of snags (by D. B. H. Classes)				
	W. F. by D.B. H. lasses			12"-20"	22"-30"	32"-40"	42+	Total
T.2 S., R. 35 E., W.M	26"-30"	32"-42"	Total	12"-20"	22"-30"	32"-40"	42+	Total
23	10	22	32	767	295	-	-	1064
26	10	-	10	1055	270	10	-	1335
27	25	32	57	1030	308	115	23	1476
28	36	36	72	181	207	90	-	478
29	-	-	-	-	-	-	-	-
32	5	5	5	159	5	6	-	170
33	77	77	190	1046	277	16	-	1339
34	20	20	145	1738	226	10	-	1974
35	-	-	-	359	219	41	-	619
Portion of Twp.	319	192	511	6335	1809	288	23	8455
<u>T.3 S., R. 35 E., W.M</u>								
2	-	-	-	246	207	72	-	525
3	8	-	8	480	406	57	-	943
4	65	60	125	1178	337	84	-	1599
9	-	-	-	106	85	19	-	208
10	16	-	16	395	273	31	-	697
11	-	-	-	82	65	5	-	152
Portion of Twp.	89	60	149	2485	1371	268	-	4124
<u>Above Township Portions</u>								
Totals	408	252	660	8820	3180	556	23	12579

TABLE NO.10
SUMMARY OF TIMBER STAND
STARKEY BLOCK
Compartment No.4

Section No.	Acreage	Yellow pine			M. feet B.H. for Species							No. of Large Un-merch.			No. of Snags (by D.B.H. Classes)											
		Mature	Immat.	Total	DF	WL	WF	LP	ES	BC	Total	WF (by D.B.H. Classes)			12"-20"	22"-30"	32"-40"	42+	Totals							
												26"-30"	32"-42"	Total												
<u>T.2 S., R. 35 E.W.M.</u>																										
29	488.00	269	132	451	397	256	24	9	-	-	1137	29	-	29	64	31	8	-	103							
31	323.00	222	14	236	759	233	258	14	-	-	1500	159	58	197	663	335	-	-	998							
32	60.00	75	12	87	277	69	78	3	1	-	515	9	17	26	57	88	-	-	145							
Complete Totals	871.00	566	208	774	1433	558	360	26	1	-	3152	197	55	252	784	454	8	-	1246							
Totals	871.00	566	208	774	Compartment No. 4 totals							1433	558	360	26	1	-	3152	197	55	252	784	454	8	-	1246

TABLE NO. 11
SUMMARY OF TIMBER STAND
STARKEY BLOCK
Compartment No.5

Section No.	Acreage	Yellow Pine			M. Feet B.M. for Species							No. of Large Unmerch. W.F.(by D.B.F. Classes)			No. of Snags (By D.B.H. Classes)				
		Mature	Immat.	Total	DF	WL	WF	LP	ES	BC	Total	26"-30"	38"-42"	Total	12"-20"	22"-30"	32"-40"	42+	Total
T. 2 S., R. 35 E., W. M.																			
29	92.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	317.00	930	147	1077	719	133	46	-	-	-	1975	59	-	59	614	121	-	-	735
32	551.00	329	78	407	1154	557	141	31	11	-	2301	53	31	84	1297	316	6	-	1619
33	10.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portion Twp. Totals	970.00	1259	225	1484	1873	690	187	31	11	-	4276	112	31	143	1911	437	6	-	2354
T. 3 S., R. 34 E., W. M.																			
1	643.00	2908	561	3569	1145	322	100	5	-	-	5141	20	10	30	859	486	60	-	1405
2	645.00	2520	533	3053	939	573	12	28	-	-	4605	-	-	-	70	183	64	-	317
3	642.90	1352	341	1693	1374	850	49	53	-	-	4019	21	21	42	209	75	48	-	332
4	643.96	2350	239	2589	1325	562	308	14	-	-	4796	162	136	298	920	252	22	-	1194
9	640.00	1506	172	1678	1562	697	198	13	6	-	4154	76	40	116	1172	447	31	-	1650
10	640.00	1619	443	2062	1150	444	45	14	-	-	3715	20	22	42	115	92	10	-	217
11	640.00	1383	200	1583	1343	904	41	12	-	-	3883	10	10	20	722	453	32	-	1207
12	400.00	1114	223	1237	653	736	1	10	-	-	2737	-	-	-	417	297	32	-	746
Portion Twp. Totals	4894.86	14752	2812	17564	9489	5088	754	149	6	-	33050	309	239	548	4484	2285	299	-	7068
T. 3 S., R. 35 E., W. M.																			
4	158.00	677	66	743	287	162	6	9	-	-	1207	10	10	20	329	145	11	-	485
5	639.17	1478	227	1705	815	1039	232	101	-	-	3829	272	20	292	1266	295	43	-	1604
6	637.22	2108	349	2537	846	355	197	7	9	-	3951	20	18	38	664	261	36	-	961
7	638.56	2594	230	2824	826	309	71	6	-	-	4036	10	-	338	188	20	20	-	546
8	640.00	2941	250	3146	1238	540	103	6	-	-	5033	30	20	50	360	222	31	-	613
9	363.00	1431	169	1600	528	216	8	1	2	-	2355	-	-	-	73	102	10	-	188
Portion Twp. Totals	3075.95	11304	1246	12555	4540	2621	617	130	11	-	20474	342	68	410	3030	1213	151	-	4394
All townships Totals																			
8940.81		27320	4283	31608	15902	8399	1558	310	29	-	57800	763	338	1101	9426	3935	456	-	13016
All Compartments Totals																			
30606.06		85291	13279	98570	54400	26362	9706	1766	1786	251	192841	3532	1249	4781	39253	18833	2532	63	60681

TABLE NO. 12
SUMMARY OF NUMBER OF IMMATURE YP TREES
STARKEY BLOCK
Compartment 1

Section Number	Number of Immature Yellow Pine Trees by 2-inch Diameter Classes													Total
	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"	
T. 1 S., R. 36 E. W. M.														
25	307	313	234	286	146	43	26	15	45	-				1,415
26	40	147	114	114	48	17	17	17	-	-				514
27	347	423	448	191	231	280	201	-	-	-				2,121
28	151	114	119	80	109	79	20	19	-	-				691
34	365	440	432	116	204	118	54	38	10	8				1,785
35	471	458	378	198	169	129	109	30	9	-				1,951
Twp. Totals	1,681	1,895	1,725	985	907	666	427	119	64	8				8,477
T. 1 S., R. 37 E. W. M.														
19	90	50	60	-	40	-	-	-	-	-	-	-	-	240
20	750	560	220	130	220	140	180	30	20	10	-	-	-	2,260
21	330	290	80	60	100	40	150	30	-	-	-	-	-	1,080
22	260	240	80	20	80	70	10	-	-	-	-	-	-	760
26	30	70	50	30	10	10	30	10	-	-	-	-	-	240
27	530	460	430	140	210	90	220	50	70	20	-	-	-	2,220
28	720	750	530	180	280	270	170	120	80	20	10	-	-	3,120
29	250	220	220	120	230	50	60	20	-	-	-	-	-	1,170
30	220	240	130	100	40	40	10	20	20	10	-	-	-	830
33	950	450	430	170	80	80	20	-	-	-	-	-	10	2,190
34	710	460	370	140	220	220	150	110	10	20	-	-	-	2,410
35	500	480	440	120	180	290	230	100	-	10	10	10	-	2,370
Twp. Totals	5,340	4,270	3,040	1,210	1,690	1,300	1,230	490	200	90	20	10	10	18,900
T. 2 S., R. 37 E. W. M.														
2	295	151	91	134	72		23							787
3	433	389	239	189	142	10	40	21	10					1,452
Twp. Totals	728	540	330	323	214	10	63	21	10					2,239
Compartment Totals No. 1														
All Townships Totals	7,749	6,705	5,095	2,518	2,811	1,976	1,720	630	274	98	20	10	10	29,616

TABLE NO 13
SUMMARY OF NUMBER OF IMMATURE Y P TREES
STARKEY BLOCK
HILGARD PROJECT
Compartment No. 2

Section Number	Number of Immature Yellow Pine by 2 inch diameter classes													Total
	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"	
<u>T. 2 S., R. 35 E., W. M.</u>														
22														
25	820	559	786	422	198	55	10							2850
26	493	300	401	101	101	93	10	20						1538
35	243	95	157	36	36									626
Twp. Totals	1556	954	1344	637	335	148	20	20						5014
<u>T. 3 S., R. 35 E., W.M.</u>														
1	656	41	286	192	30	30	50							1285
2	50	80	22	80	26	5	10			2				275
11	22	22	17	17										78
12	978	694	537	196	114	111	81	19						2730
Twp. Totals	1706	837	862	485	170	146	141	19		2				4368
<u>Compartment No. 2 Totals</u>														
<u>All Townships Totals</u>	3262	1791	2206	1122	505	294	161	39		2				9302

TABLE NO. 14
SUMMARY OF NUMBER OF IMMATURE Y P TREES
STARKEY BLOCK
Compartment No. 3

Section Number	Number of Immature Yellow Pine Trees by 2 inch Diameter Classes														Total
	12'	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"		
<u>T. 2 S., R. 35 E., W. M.</u>															
23	51	20	50	92	10	10	-	-	-	-	-	-	-	-	233
26	438	160	201	30	21	33	-	20	-	-	-	-	-	-	903
27	260	237	163	160	288	54	-	28	28	-	-	-	-	-	1218
28	159	154	344	240	182	75	23	43	23	23	-	-	-	-	1266
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	5	-	-	-	-	-	-	-	-	-	-	-	5
33	123	32	116	36	165	18	15	18	-	-	-	-	-	-	523
34	278	177	231	102	103	-	-	-	-	-	-	-	-	-	891
35	205	52	75	143	51	25	-	-	-	-	-	-	-	-	551
Portion of Twp.	1514	832	1185	803	820	215	38	109	51	23					5590
<u>T. 3 S., R. 35 E., W. M.</u>															
2	478	388	401	384	119	65	44	-	-	10	-	-	-	-	1889
3	491	479	467	475	187	-	-	-	-	-	-	-	-	-	2099
4	334	334	256	361	37	-	-	-	-	-	-	-	-	-	1322
9	177	124	89	102	44	18	8	-	-	-	-	-	-	-	562
10	531	332	215	240	12	-	-	-	-	-	-	-	-	-	1330
11	626	572	374	245	89	79	47	10	19	-	-	-	-	9	2070
Portion of Twp.	2637	2229	1802	1807	488	162	99	10	19	10	-	-	-	9	9272
Compartment No. 3 totals															
<u>Above Townships Portions</u>															
Totals	4151	3061	2987	2610	1308	377	137	119	70	33	-	-	-	9	14862

TABLE NO. 15.
SUMMARY OF NUMBER OF IMMATURE Y P TREES
STARKEY BLOCK
Compartment No. 4

Section Number	Number of Immature Yellow Pine Trees by 2 inch Diameter Classes													Total
	12'	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"	
T. 2 S., R. 25 E., W. M														
29	27	72	238	63	98	107	27	35		22	13			702
31	10	28	10	35	15									98
32														40
Compt. Totals	37	100	248	98	153	107	27	35		22	13			840

TABLE NO. 16
SUMMARY OF NUMBER OF IMMATURE Y P TREES
STARKEY BLOCK
Compartment No. 5

Section Number	Number of Immature Yellow Pine Trees by 2 inch Diameter Classes													Total *
	12'	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"	
<u>T. 2 S., R. 35 E., W. M.</u>														
29														
31														105
32	171	204	306	183	119	69								37
33	32	18	153	46	52	39	39							
Portion Of Twp.	203	222	459	229	171	108	39							143
<u>T. 3 S., R. 34 E., W. M.</u>														
1	625	653	689	680	545	240	50	10	10					350
2	724	452	590	808	458	85	50	9	10					318
3	236	139	279	206	145	126	115	11	10					126
4	192	165	391	391	164	54	32							138
9	359	200	339	217	50	9	10	10	10					120
10	394	338	495	399	232	43	143	42	20	12				211
11	343	277	362	294	101	30		10						141
12	238	171	232	410	214	67								133
Portion of Twp.	3111	2395	3377	3405	1909	654	400	92	60	12				15,41
<u>T. 3 S., R. 35 E., W.M.</u>														
4	84	151	134	83	47									49
5	550	540	248	467	94									189
6	605	611	612	590	169									258
7	553	401	366	306	93	20	46		9					179
8	562	333	280	218	79	30	40							154
9	369	196	226	188	121	18	18	11						114
Portion of Twp.	2723	2232	1866	1852	603	68	104	11	9					946
Compartment 5 total s														
All Townships Totals	6037	4849	5702	5486	2683	830	543	103	69	12				26,31
Project Summary														
All Compartments Totals	21,236	16,506	16,238	11,834	7460	3584	2588	926	413	167	33	10	19	81,01

* Last digit not visible in photo copy of this table.

TABLE No. 17
Summary of Poles
STARKEY BLOCK
Compartment 1.

Section Number	Number of Poles by Diameter Classes (D.B.H. Inches)															
	Yellow Pine		Douglas Fir		West. Larch		White Fir		Lodgepole Pine		Engel. Spruce		Bl. Cottonwood		Totals	
	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"
<u>T. 1 S., R. 36 E., W. M.</u>																
25	582	550	1,295	1,567	325	383	568	163	655	76					3,425	2,739
26	779	150	3,879	791	927	277	1,278	352	1,640	229					8,503	1,799
27	1,201	766	3,779	1,378	2,157	726	3,191	962	3,746	558	688	200			14,762	4,590
28	180	367	1,621	2,747	986	2,016	1,705	2,629	4,616	3,853	679	1,172			9,787	12,784
34	1,788	856	2,393	1,246	1,415	623	3,245	1,022	3,878	407	670	284			13,389	4,438
35	2,336	1,002	4,352	1,370	1,968	1,093	5,048	1,463	1,904	364	40				15,648	5,292
Twp. Totals	6,866	3,691	17,319	9,099	7,778	5,118	15,036	6,591	16,439	5,487	2,077	1,656			65,514	31,642
<u>T. 1 S., R. 37 E., W.M.</u>																
19	630	368	1,024	1,140	1,851	1,406	2,755	2,968	2,338	930	361	300			8,959	7,112
20	1,286	1,495	532	987	172	277	984	1,019	288	399	167	288			3,369	4,465
21	570	510	254	425	55	40	644	1,573	118	20	100	236			1,741	2,804
22	304	461	372	628	80	190	766	1,092	20	70	60	80			1,602	2,521
26	130	90	210	100	-	20	50	-	30	-	-	-			420	210
27	2,651	1,212	2,906	1,371	702	465	3,913	815	1,650	350	364	162			12,186	4,375
28	4,416	1,926	2,480	996	538	220	3,108	722	626	188	480	140			11,648	4,192
29	1,349	293	2,051	759	690	867	6,004	1,700	4,408	1,036	2,356	991			16,858	5,646
30	1,796	499	655	495	1,084	514	1,901	1,490	3,257	1,585	467	299		35	9,160	4,917
33	1,793	2,355	820	1,189	274	610	271	411	313	551	20	20			3,491	5,136
34	3,670	1,600	5,480	2,860	1,380	1,400	3,180	820	600	160	310	130	10		14,630	6,970
35	2,222	1,279	3,117	1,888	1,091	868	2,766	923	597	145	395	71			10,188	5,174
Twp. Totals	20,817	12,088	19,901	12,838	7,917	6,877	26,342	13,538	14,185	5,434	5,080	2,717	10	35	94,252	53,522
<u>T. 2 S. R. 37 E. W. M.</u>																
2	406	466	474	886	603	903	771	664	293	302	212	271			2,761	3,492
3	746	1,276	779	1,067	188	376	264	246	40	50	48	112			2,065	3,127
Twp. Totals	1,152	1,742	1,253	1,953	793	1,279	1,035	910	333	352	260	383			4,826	6,619
Compartment No. 1 Totals																
All Townships Totals	28,835	17,521	38,473	23,890	16,488	13,274	42,412	21,034	30,957	11,273	7,417	4,756	10	35	164,592	91,783

TABLE NO. 18
Summary of Poles
STARKEY BLOCK
Compartment 2

Section Number	Number of Poles by Diameter Classes (D.B.H. Inches)															
	Yellow Pine		Douglas Fir		Western Larch		White Fir		Lodgepole Pine		Engel. Spruce		Bl. Cottonwood		Totals	
	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"
<u>T. 2 S., R. 35 E., W. M.</u>																
23			60	180		200	320	200	1,000	40					1,380	620
25	2,513	2,889	1,218	1,941	1,347	1,178	1,782	723	1,117	273	30	80			8,007	7,094
26	1,035	940	280	540	400	140	240	20	1,000	80					2,955	1,720
35	1,107	756	274	572	531	953	219	303	559	116					2,690	2,700
Twp Totals	4,655	4,585	1,832	3,233	2,278	2,471	2,561	1,246	3,676	509	30	80			15,032	12,124
<u>T. 3 S., R. 35 E., W. M.</u>																
1	795	960	561	914	507	883	173	184	419	305	24	59			2,479	3,305
2	26	29	87	251	106	169	142	110	46	44					407	603
11	58	47		20	5	20	10	20		15					73	122
12	1,480	1,330	811	1,116	749	1,167	462	297	1,040	947					4,542	4,857
Twp Totals	2,359	2,366	1,459	2,301	1,367	2,239	787	611	1,505	1,311	24	59			7,501	8,887
<u>Compartment No.2 Totals</u>																
All townships Totals	7,014	6,951	3,291	5,534	3,645	4,710	3,348	1,857	5,181	1,820	54	139			22,533	21,011

TABLE NO.19
Summary of Poles
STARKEY BLOCK
Compartment 3

Section Number	Number of Poles by Diameter Classes (D.B.H. Inches)															
	Yellow Pine		Douglas Fir		Western Larch		White Fir		Lodgepole Pine		Engel. Spruce		Bl. Cottonwood		Totals	
	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"
<u>T. 2 S., R 35 E., W. M.</u>																
25	499	357	1,673	1,646	426	773	3,103	1,434	6,875	1,991	20	155			12,596	6,357
26	491	610	1,362	1,308	1,202	1,307	1,688	800	9,120	2,066	177	278			14,060	6,369
27	528	387	816	1,608	477	412	1,341	886	2,479	1,047	168	100			5,809	4,440
28	667	588	1,285	1,316	458	409	379	379	8,161	5,021		36			10,950	7,749
29																
32	29		87	61	60	36	12	6	439						627	103
33	528	1,353	1,966	1,868	1,792	1,242	1,832	640	4,705	2,018	80	20			9,871	6,141
34	1,484	1,049	2,763	2,989	1,214	1,534	3,062	1,539	10,607	731					19,122	7,842
35	929	1,028	1,107	855	766	466	617	198	5,793	1,390	242	158			9,454	4,095
Portion Of Twp	5,155	4,372	11,019	11,651	5,395	6,179	12,034	5,882	48,189	14,264	687	748			82,479	43,096
<u>T. 3 S., R 35 E., W.M.</u>																
2	893	911	1,084	855	436	622	198	98	915	390	250	170			3,776	3,046
3	705	1,263	1,324	1,402	531	399	226	177	569	124	10	10			3,365	3,375
4	489	746	1,420	2,349	580	1,682	157	71	2,224	746	12				4,782	5,594
9	648	510	924	817	445	429	144	101	484	97					2,645	1,954
10	845	1,273	1,650	1,941	953	773	67	71	1,237	431	11	33			4,763	4,522
11	756	787	388	370	275	527	153	41	20	56					1,592	1,781
Portion Of Twp	4,336	5,490	6,790	7,734	3,220	4,432	945	559	5,349	1,844	283	213			20,923	20,272
<u>Compartment No. 3 totals</u>																
Above Township portions																
Totals	9,491	9,862	17809	19,385	8,615	10,611	12,979	6,441	53,538	16,108	970	961			103,402	63,368

TABLE NO. 20
 Summary of Poles
 STARKEY BLOCK
 Compartment 4

Section Number	Number of Poles by Diameter Classes (D.B.H. Inches)														Total	
	Yellow Pine		Douglas Fir		Western Larch		White Fir		Lodgepole Pine		Engel. Spruce		Bl. Cottonwood			
	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"
<u>T. 2 S., R 35 E., W.M.</u>																
29	189	302	270	520	216	456	297	246	359	125					1,331	1,649
31	45	45	251	331	88	157	594	534	367	248					1,345	1,315
32	20	8	325	486	69	65	396	134	274	228					1,084	921
Comp't. Totals	254	355	846	1,337	373	678	1,287	914	1,000	601					3,760	3,885
Totals	254	355	846	1,337	373	Compartment No. 4 totals		678	1,287	914	1,000	601			3,760	3,885

TABLE NO. 21
Summary of Poles
STARKEY BLOCK
Compartment 5

Section Number	Number of Poles by Diameter Classes (D.B.H. Inches)														Totals	
	Yellow Pine		Douglas Fir		Western Larch		White Fir		Lodgepole Pine		Engelmann Spruce		Black Cottonwood			
	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"	4"-7"	8"-11"
T.2 S., R 35 E., W.M.																
29																
31	943	771	902	902	916	376	664	280	1,503	239					5,235	2,582
32	244	355	1,538	1,538	1,367	956	1352	454	8,296	1,958					12,141	5,070
33									133						133	
Portion of Twp.	1,187	1,106	2,440	2,283	1,934	1,332	2,016	734	9,932	2,197					17,509	7,652
T.3 S., R 34 E., W.M.																
1	1,644	1,342	1,170	1,098	1,059	561	846	339	1,039	478	10				5,768	3,818
2	877	873	656	485	207	318	70	50	2,520	1,827					4,330	3,553
3	599	559	1,197	1,321	1,047	801	402	282	4,667	2,578					7,912	5,541
4	1,372	669	3,024	1,629	1,623	910	1,511	565	2,059	403					9,589	4,176
9	1,540	832	2,868	1,897	2,147	1,541	1,201	439	3,594	902	220	109			11,570	5,720
10	981	811	915	965	1,007	993	161	161	1,591	935					4,655	3,865
11	634	627	895	957	1,023	1,028	619	101	2,065	1,134					5,236	3,847
12	410	469	484	474	605	231	216	96	1,182	515					2,897	1,785
Portion of Twp.	8,057	6,182	11,209	8,826	8,718	6,383	5,026	2,033	18,717	8,772	230	109			51,957	32,305
T.3 S., R 35 E., W.M.																
4	188	132	295	360	59	136	64	123	522	387					1,128	1,138
5	976	1,343	2,236	2,756	1,195	1,954	732	499	2,674	2,499					7,813	9,051
6	1,199	1,279	1,474	2,460	597	572	285	245	291	279	50	50			3,896	4,886
7	1,548	706	644	614	441	196	396	163	248	88					3,277	1,767
8	1,425	956	1,228	1,037	718	416	413	254	379	417					4,163	3,080
9	947	807	477	467	116	215	78	81	142	55					1,760	1,625
Portion of Twp.	6,283	5,225	6,354	7,694	3,126	3,489	1,968	1,366	4,256	3,725	50	50			22,037	21,547
Compartment No. 5 totals																
All townships Totals	15,527	12,511	20,003	18,803	13,778	11,204	9,010	4,133	32,905	14,694	280	159			91,503	61,504

PROJECT SUMMARY

All Compartments

Totals	61,121	47,200	80,422	68,949	42,899	40,477	69,036	34,379	123,581	44,496	8,721	6,015	10	35	385,790	241,551
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Conclusion

Based on the foregoing project averages for the timberland types only, the following averages are obtained:

Average per acre stand of timber, feet B.M.	7,320
Average number of snags per acre, all species	2.3
Average number of un-merchantable, large white fir trees, per acre	0.2
Average number of immature yellow pine trees per acre	3.1
Average number of small poles (4"-7") per acre	14.6
Average number of large poles (8"-11") per acre	9.1
Average percentage of immature yellow pine timber, based on volume of Y only	13.5%

By reference to the project summary totals in Table No. 6, it will be noticed that the acreage of mature white fir-larch-Douglas fir type is slightly more than that of mature Y, they each being approximately one-third of the total project acreage, with much of the remainder being open grassland and immature timber types. In connection with this comparison, it is, believed the following deductions will be of interest, viz:

Av. number immature yellow pine trees, in Y type, per acre	7.3
Av. number small poles (4"-7") in Y type per acre	5.1
Av. number large poles (8"-11") in Y type per acre	4.3
Av. number small poles (4"-7") all kinds, all other types, per acre	22.3
Av. number large poles, all kinds, all other types, per acre.	13.3

The Office of Engineering has already submitted a report on the engineering work done on this project. A report pertaining to the cost of the work appended.

Fred A. Matz

Fred A. Matz,
Chief of Timber Survey.

Approved Dec. 16, 1926
J. F. Irwin
Forest Supervisor

Approved Dec. 18, 1926
Jno. D. Guthrie
Acting District Forester.

S.
Timber Surveys-Umatilla
Hilgard Project.

November 17, 1926.

COST REPORT

Hilgard Timber Survey Project

Umatilla National Forest.

Season 1925.

Fred A Matz,
Chief of Timber Surveys

COST REPORT
Hilgard Project
Umatilla National Forest

I				<u>Acreage and Mileage</u>	
	1. Total gross area mapped				30,901 acres.
	2. Net area cruised National Forest Lands:				
	Ten per cent cruise				21,591 acres.
	Five per cent cruise				<u>9,015 acres.</u>
					30,606 acres.
	3. Patented lands mapped - 295 acres				
	4. Number of miles of vertical control (transit) – none.				
	5. Number of miles of horizontal control, retracements with chain and compass- 36.				
	6. Number of miles of strip cruising lines – 325.				
	7. Total volume of all species cruised				192,841 M. feet B. M.-
II				<u>Field Expenses</u>	
	1. Cost of subsistence supplies				\$439.89
	2. Cost of cook's wages				200.00
	3. Cost of packing and hauling				16.71
	4. Travel expenses				9.56
	5. Equipment				<u>22.36</u>
	6. Total all expense				\$688.52
	7. Average daily expenses per man				\$1.601
III.				<u>Field Work</u>	
	1. Cost of salaries				\$1,524.44
	2. Average size of crew				7.1 men
	3. Average individual monthly salary				\$106.20
	4. Secondary control (Transit) -	(Man days	7		
		(Salary	\$39.83		
		(Expenses prorated	<u>\$11.21</u>		
		Cost			\$51.04
	5. Tertiary control	(Man days	47 ½		

(Compass)	(Salary	\$163.85	
	(Expenses prorated	<u>76.05</u>	
	Cost		\$239.90
6. Strip surveys	(Man days 176.		
	(Salary	\$494.60	
	(Expenses prorated	<u>281.78</u>	
	Cost		\$776.38
7. Camp computing and map compilation	(Man days 34 ½		
	(Salary	\$153.69	
	(Expenses prorated	<u>55.23</u>	
	Cost		\$208.92
8. Supervision	(Man days 17 ½		
	(Salary	\$112.63	
	(Expenses prorated	<u>28.02</u>	
	Cost		\$140.65
9. Travel, moving, establishing camp, & camp chores	(Man days 66		
	(Salary	\$291.24	
	(Expenses prorated	<u>105.67</u>	
	Cost		\$396.91
10. Sundays, leave, holidays and rain	(Man days 81 ½		
	(Salary	\$268.60	
	(Expenses prorated	<u>130.56</u>	
	Cost		\$399.16
11. Total costs of field work	(Man days 430		
	(Salary	\$1,524.44	
	(Expenses prorated	<u>688.52</u>	
	Total Cost		\$2,212.96

IV. Headquarters Office Work

By reference to item No. 7 under Sec. III of this report, it will be noticed that the costs for camp computing and map compilation are much larger than usually occurs under this heading. This is due to the fact that all the computations of timber volume and the making of a special map for use in the appraisal of compartment 1 was completed in the field.

1. Computation	(Man days 38 ½		
	(Salary	\$204.52	
	(Expense	<u>0</u>	
	Cost		\$204.52
2. Type maps	(Man days 28		
	(Salary	\$162.34	
	(Expense	<u>1.00</u>	
	Cost		\$163.34
3. Drafting, map making and Printing	(Man days 36		
	(Salary	\$217.00	
	(Expenses	<u>30.00</u>	
	Cost		\$247.00

4. Written reports Descriptive and cost	(Man days	13	
	(Salary	<u>\$104.13</u>	
	Cost		104.13
5. Total cost of headquarters office work	(Man days	115 ½	
	(Salary	\$687.99	
	(Expense	<u>31.00</u>	
	Total Cost		\$ 718.99
<u>V Totals</u>			
Summarized cost of project	(Man days	545 ½	
	(Salary	\$2212.43	
	(Expense	<u>\$719.52</u>	
	Total Cost		\$2,931.95
Cost per acre for gross area mapped		\$0.0949	
Cost per acre for net area cruised		\$0.0958	
Cost per M. feet cruised by all methods		\$0.0152	

Fred A. Matz.

Fred A Matz,
Chief of Timber Surveys.