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LUMBER GRADES FROM OLD-GROWTH DOUGLAS-FIR SAWMILL LOGS

by

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The Pacific Northwest Forest and Range Experiment Station has made in recent years several studies to determine the grades of lumber that could be expected from various sizes and grades of logs. Data on No. 2 and No. 3 Sawmill logs obtained in four Oregon old-growth Douglas-fir studies have been analyzed and combined in this report. Included in this analysis are data on 1,575 logs. All of these logs were scaled and graded according to bureau rules and record kept of the lumber produced by individual logs. Lumber grading was done by the West Coast Bureau of Lumber Grades and Inspection.

Log rules used by the log scaling and grading bureaus of the Douglas-fir subregion are based on the end product the logs will produce. No. 2 Sawmill logs must produce No. 1 Common and Better lumber in an amount of not less than 65 percent of the net scaled content of the log. No. 3 Sawmill logs must produce No. 2 Common and Better lumber in an amount of not less than 50 percent of the net scaled content of the log.

Since the log rules are based on prescribed grades of the net scaled content of the log, the lumber recovery data shown in tables 1 and 2 and figures 1 and 2 of this report have been computed on the same basis.

Practically no No. 1 Sawmill logs are produced as this grade has almost the same requirements as No. 1 Peelers. Logs are graded according to their highest current monetary value, therefore, if they will qualify, they are designated as Peelers. Lumber recovery from peeler grade logs has been released in Research Note No. 83 entitled, "Lumber grades from Douglas-fir peeler logs."

Average lumber recovery in percent of net log scale for the No. 2 and No. 3 Sawmill grades is summarized in table No. 1.

Table No. 1.--Average lumber recovery in percent of net log scale

Lumber grade	Log grade	
	No. 2 Sawmill	No. 3 Sawmill
B and Better	5.8	.8
C	12.4	5.1
D	1.0	.5
Sel. Struc. and Sel. Merch.	32.4	35.1
No. 1	34.5	36.9
No. 2	17.6	26.5
No. 3	14.0	15.4
No. 4	3.5	3.3
Total	121.2	123.6

Overrun averaged 21.2 percent for the No. 2 logs and 23.6 percent for the No. 3 logs. Overrun by diameter classes can be read directly from the top curve in figures 1 and 2. Often No. 4 lumber is not included in computing overrun. If this appears desirable, overrun for No. 3 and Better lumber can be obtained from the next to the top curve of the same two figures. Computing lumber recovery on the basis of net log scale not only gives a better measure of the adequacy of the log grading but also makes it possible to figure overrun on any desired combination of lumber grades.

All lumber data presented in this report are based on volumes and grades obtained on the green chain. Some loss in both grade and volume would have been expected if the lumber had been dried and surfaced.

Lumber recovery by log size and log grade is shown in tabular and graphic form in tables 2 and 3 and figures 1 and 2.

Table No. 2.--Lumber grade recoveries in percent of net log scale, No. 2 Douglas-fir sawmill logs

Diameter class	Lumber grade									No. of logs
	B & Btr.	C	D	Sel.Struc. Sel.Merch.	No. 1	No. 2	No. 3	No. 4	Total	
12	0.6	8.3	.9	58.6	44.3	9.6	2.8	1.5	126.6	13
13	1.0	8.9	.9	55.9	43.0	10.5	3.4	1.5	125.1	31
14	1.5	9.4	.9	53.3	41.8	11.2	4.0	1.6	123.7	47
15	1.8	9.9	1.0	50.8	40.8	12.0	4.5	1.6	122.4	50
16	2.2	10.4	1.0	48.5	39.7	12.7	5.1	1.7	121.3	66
17	2.6	10.8	1.0	46.2	38.7	13.4	5.9	1.7	120.3	67
18	3.0	11.3	1.0	44.0	37.7	14.0	6.6	1.8	119.4	65
19	3.3	11.6	1.0	42.0	36.9	14.6	7.4	1.9	118.7	68
20	3.7	12.1	1.0	40.0	36.1	15.1	8.0	2.1	118.1	81
21	4.1	12.3	1.0	38.2	35.4	15.7	8.8	2.2	117.7	53
22	4.5	12.7	1.0	36.3	34.7	16.2	9.7	2.3	117.4	69
23	4.9	13.0	1.0	34.5	34.0	16.7	10.6	2.6	117.3	68
24	5.3	13.3	1.1	32.8	33.4	17.2	11.5	2.7	117.3	26
25	5.8	13.5	1.1	31.1	32.9	17.6	12.4	3.0	117.4	26
26	6.1	13.8	1.1	29.5	32.5	18.1	13.4	3.2	117.7	23
27	6.6	13.9	1.1	28.0	32.0	18.6	14.5	3.4	118.1	25
28	7.0	14.1	1.1	26.4	31.5	19.0	15.7	3.8	118.6	34
29	7.5	14.3	1.1	24.9	31.1	19.5	16.8	4.1	119.3	22
30	7.9	14.5	1.1	23.4	30.9	19.8	18.0	4.5	120.1	11
31	8.5	14.5	1.1	22.0	30.5	20.2	19.4	4.9	121.1	15
32	9.0	14.7	1.1	20.5	30.2	20.5	20.8	5.4	122.2	9
33	9.5	14.8	1.1	19.2	30.0	21.0	22.2	5.7	123.5	16
34	10.1	14.9	1.1	17.7	29.7	21.2	23.9	6.3	124.9	8
35	10.8	14.9	1.1	16.3	29.6	21.6	25.4	6.7	126.4	9
36	11.3	15.0	1.1	14.8	29.5	21.9	27.2	7.3	128.1	6
37	12.0	14.9	1.2	13.4	29.2	22.2	29.1	7.9	129.9	5
38	12.6	14.9	1.2	11.9	29.1	22.5	31.0	8.6	131.8	6
39	13.4	14.8	1.2	10.4	29.0	22.8	33.1	9.2	133.9	5
40	14.1	14.7	1.2	9.0	29.0	23.0	35.3	9.9	136.2	2
41	14.9	14.5	1.2	7.3	28.9	23.3	37.7	10.7	138.5	3
42	15.8	14.4	1.2	5.8	28.9	23.5	40.1	11.4	141.1	2
44	17.6	13.9	1.2	2.5	28.9	23.7	45.4	13.3	146.5	2
Avg.	5.8	12.4	1.0	32.4	34.5	17.6	14.0	3.5	121.2	933

Table No. 3.--Lumber grade recoveries in percent of net log scale, No. 3 Douglas-fir sawmill logs

Diameter class	Lumber grade									Number of logs
	B & Btr.	C	D	Sel.Struc. Sel.Merch.	No. 1	No. 2	No. 3	No. 4	Total	
8	1.5	1.4	.8	66.8	55.0	14.9	9.0	2.6	152.0	6
9	1.3	1.8	.8	63.0	53.3	16.8	9.0	2.5	148.5	11
10	1.0	2.2	.7	59.5	51.6	18.5	9.2	2.5	145.2	30
11	.8	2.6	.7	56.2	50.0	20.0	9.4	2.4	142.1	56
12	.7	2.8	.6	53.2	48.5	21.4	9.6	2.4	139.2	40
13	.6	3.1	.6	50.4	47.1	22.5	9.9	2.4	136.6	21
14	.5	3.4	.6	47.8	45.6	23.6	10.2	2.4	134.1	43
15	.4	3.7	.5	45.4	44.3	24.5	10.6	2.4	131.8	30
16	.3	3.9	.5	43.1	43.0	25.3	11.1	2.5	129.7	37
17	.3	4.2	.5	41.1	41.8	25.9	11.5	2.5	127.8	37
18	.3	4.4	.5	39.2	40.7	26.5	12.0	2.6	126.2	40
19	.3	4.6	.5	37.5	39.5	27.0	12.6	2.7	124.7	39
20	.3	4.8	.5	35.9	38.5	27.4	13.2	2.8	123.4	30
21	.4	5.0	.4	34.6	37.5	27.7	13.9	2.9	122.4	31
22	.4	5.2	.4	33.3	36.5	28.0	14.6	3.1	121.5	32
23	.5	5.4	.4	32.1	35.7	28.2	15.3	3.2	120.8	20
24	.6	5.6	.4	31.1	34.8	28.3	16.2	3.4	120.4	22
25	.7	5.8	.4	30.2	33.9	28.4	17.1	3.6	120.1	21
26	.9	6.0	.4	29.4	33.2	28.4	18.0	3.8	120.1	26
27	1.1	6.1	.4	28.7	32.4	28.3	19.1	4.1	120.2	14
28	1.2	6.4	.5	28.1	31.7	28.2	20.2	4.3	120.6	16
29	1.4	6.5	.5	27.6	31.0	28.1	21.4	4.6	121.1	10
30	1.7	6.7	.5	27.3	30.3	27.8	22.7	4.9	121.9	8
31	1.9	6.9	.5	27.0	29.6	27.5	24.1	5.3	122.8	7
32	2.2	7.1	.5	26.8	29.0	27.2	25.6	5.6	124.0	7
33	2.5	7.3	.6	26.7	28.3	26.7	27.2	6.0	125.3	8
Average	.8	5.1	.5	35.1	36.9	26.5	15.4	3.3	123.6	642

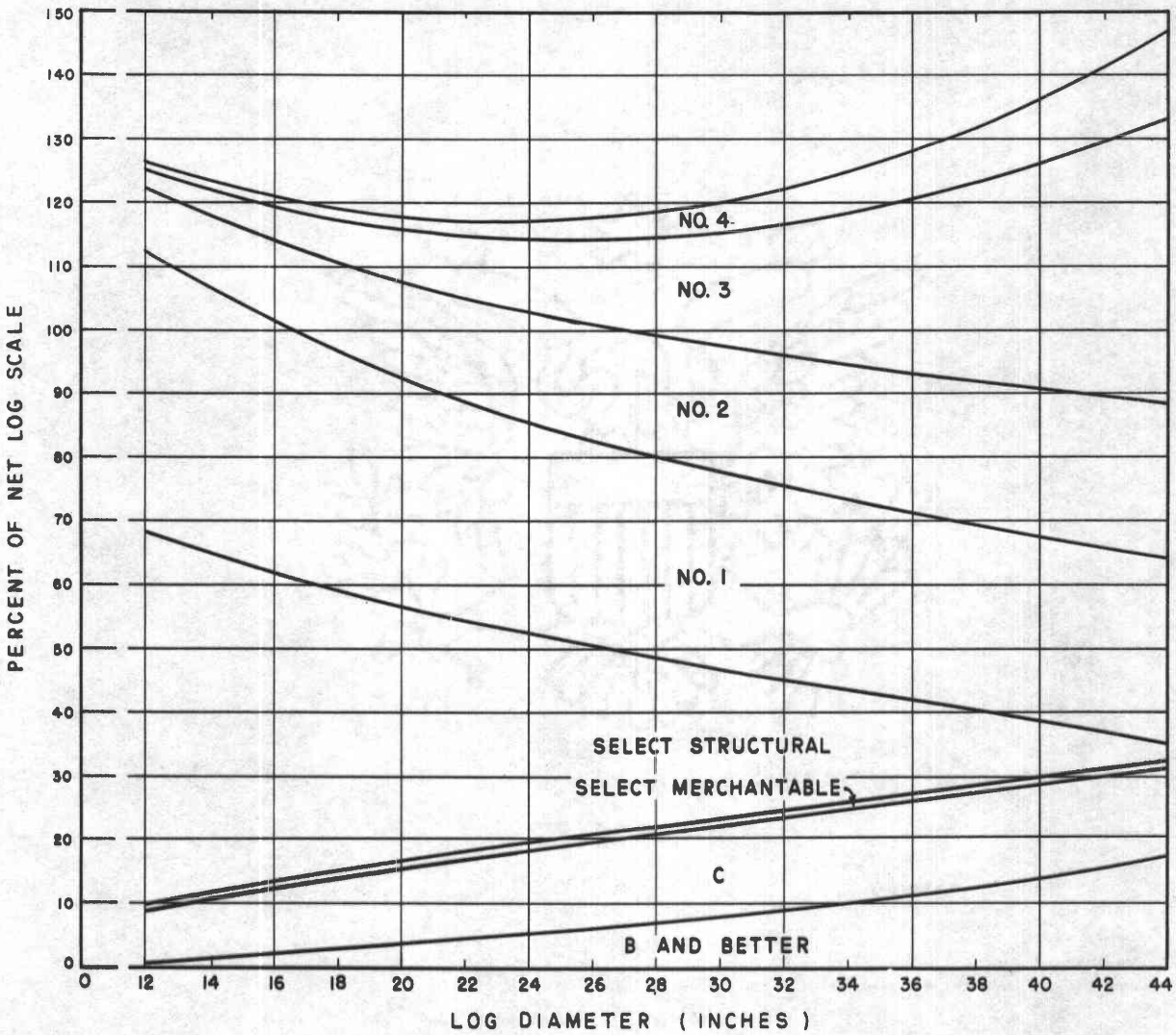

Figure No. 1 -- Cumulative Grade Recoveries in Percent of Net Log Scale - No. 2 Sawmill Logs (Douglas-Fir)

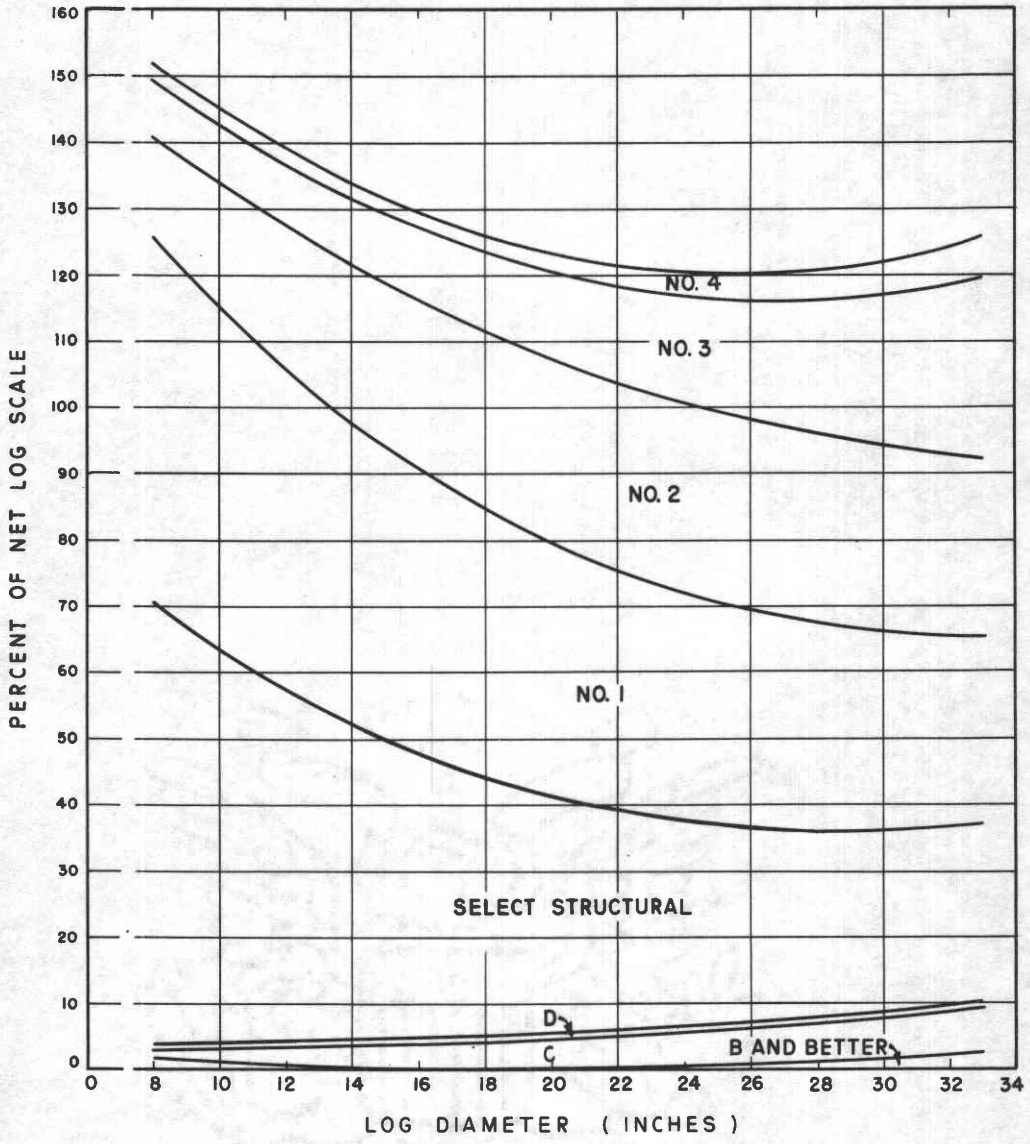

Figure No. 2 -- Cumulative Grade Recoveries in Percent of Net Log Scale - No. 3 Sawmill Logs (Douglas-Fir)