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R. W. COWLIN, DIRECTOR

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WESTERN REDCEDAR LUMBER RECOVERY FROM A WESTERN WASHINGTON SAWMILL

By

E. E. Matson

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During the summer of 1956 a lumber-recovery study^{1/} was made at E. C. Miller Lumber Company in Aberdeen, Wash. to determine the grades of lumber that can be expected from western redcedar logs. This saw-mill is equipped with a 24-foot carriage, a 10-foot band headrig, a band pony headrig, and an edger. All of the upper grades of lumber are seasoned and then sent to the planing mill for further manufacture, primarily, into beveled siding. Most of the logs cut at this mill are purchased in the open market.

One hundred, fifty-three logs were scaled, graded, and followed through the mill. Each piece of lumber produced from the logs was graded and tallied by individual logs. All of the logs came from the Olympic Peninsula area adjacent to Grays Harbor.

Test Procedure

Every third or fourth log was designated as a test log. These logs were scaled, graded, and diagramed by representatives of Grays Harbor Log Scaling and Grading Bureau and the Forest Service. Logs were scaled and graded as they were removed from the rafts. They ranged from 18 to 40 feet in length. The majority were over 24 feet in length and had to be bucked into two pieces before they could be placed on the carriage. In such cases the two halves were recorded as one log.

^{1/} Cooperative project of West Coast Lumber Inspection Bureau, Grays Harbor Log Scaling and Grading Bureau, Bureau of Land Management, Bureau of Indian Affairs, and the Forest Service

Five colors of paint were used to designate the lumber from the test logs. All lumber from the first log was marked with red; that from each of the four succeeding logs with separate colors. By the time the color series had been completed the lumber from the first log had cleared the mill. Men were stationed at the headrig, pony carriage, and ahead of the trim saws to be sure that all lumber was properly marked.

A representative of West Coast Lumber Inspection Bureau graded and marked every board from the test logs. Next, two men tallied this lumber, using a separate sheet for each log. Lumber was graded according to Standard Grading and Dressing Rules No. 15, Effective March 15, 1956.

Lumber-Grade Recovery

Lumber-grade recovery for the three log grades is shown in tables 1, 2, and 3 and in figures 1, 2, and 3. Lumber recoveries are shown in percent of net log scale as these data are needed for appraisal purposes. Also, the log rules specify that the No. 1 grade shall be capable of producing 50 percent B and Better lumber, based on net log scale. The No. 2 logs are considered as the shingle grade and, therefore, have no lumber-recovery specifications.

The No. 3 log must be capable of producing Standard and Better lumber in amounts of not less than one-third of the gross scaled content of the log.

Some of the cedar logs, particularly those from large defective trees, get broken in logging. Slabs from these broken logs are scaled, graded, and sold the same as logs. Twenty-three slabs were included in this study. Lumber-grade recovery from these slabs is shown in the summary table (table 4).

All lumber data presented in this report are based on grades obtained at the green chain. It is assumed that there would be some change in both grade and volume if the lumber had been followed through the planing mill. Through trimming, it, undoubtedly, would have been possible to improve the lumber grade by sacrificing volume.

In a cedar mill of this type priority is given to the production of beveled siding. The top grade in this siding is "Clear." In the green-chain grades shown in this report "Clear" is a vertical-grain material suitable for production of top-grade siding.

Overrun

Overrun, when all grades of lumber were included, averaged 20 percent for the No. 1 logs, 16 percent for the No. 2 logs, and 47 percent for the No. 3 logs. Overrun by diameters can be read directly from the top curve in figures 1 through 3. Often Economy grade of lumber is not included in figuring overrun. If this appears desirable, overrun for Utility and Better lumber can be read from the next to the top curve of the same figures.

Table 1.--Lumber-grade recoveries in percent of net log scale
No. 1 western redcedar logs

Di- ameter class in inches	Lumber grade									No. of logs
	Clear	B	C	D	Con- struc- tion	Stand- ard	Util- ity	Econ- omy	Total	
28	11.7	14.0	33.4	2.0	29.0	2.9	20.2	4.3	117.5	1
29	12.2	14.4	33.5	2.0	28.5	2.8	19.9	4.4	117.7	0
30	12.8	14.7	33.6	1.9	28.1	2.8	19.5	4.4	117.8	0
31	13.3	15.1	33.6	1.9	27.7	2.8	19.1	4.4	117.9	0
32	13.9	15.4	33.7	1.8	27.2	2.8	18.8	4.5	118.1	3
33	14.4	16.0	33.5	1.8	26.7	2.8	18.5	4.5	118.2	1
34	14.9	16.1	33.8	1.8	26.3	2.8	18.1	4.5	118.3	1
35	15.4	16.4	33.9	1.7	25.9	2.8	17.8	4.6	118.5	3
36	15.9	16.7	33.9	1.7	25.6	2.7	17.5	4.6	118.6	2
37	16.4	17.0	34.0	1.6	25.2	2.7	17.1	4.7	118.7	2
38	16.8	17.4	34.0	1.6	24.8	2.7	16.8	4.7	118.8	1
39	17.3	17.6	34.1	1.5	24.5	2.6	16.6	4.7	118.9	0
40	17.7	17.9	34.1	1.5	24.1	2.6	16.4	4.7	119.0	2
41	18.1	18.2	34.2	1.5	23.7	2.6	16.0	4.8	119.1	1
42	18.6	18.4	34.2	1.5	23.4	2.6	15.7	4.8	119.2	1
43	19.0	18.7	34.2	1.5	23.0	2.6	15.5	4.8	119.3	0
44	19.3	19.0	34.3	1.4	22.7	2.6	15.2	4.9	119.4	1
45	19.7	19.2	34.3	1.4	22.5	2.6	14.9	4.9	119.5	1
46	20.1	19.5	34.3	1.4	22.1	2.6	14.7	4.9	119.6	2
47	20.4	19.8	34.3	1.4	21.8	2.6	14.4	5.0	119.7	0
48	20.8	19.9	34.4	1.3	21.6	2.5	14.3	5.0	119.8	0
49	21.1	20.2	34.4	1.3	21.3	2.5	14.0	5.0	119.8	2
50	21.4	20.4	34.4	1.3	21.1	2.5	13.8	5.0	119.9	0
51	21.7	20.6	34.5	1.2	20.8	2.5	13.6	5.1	120.0	1
52	22.0	20.8	34.5	1.2	20.6	2.5	13.4	5.1	120.1	1
53	22.3	21.0	34.5	1.2	20.3	2.5	13.2	5.1	120.1	1
54	22.6	21.1	34.6	1.1	20.2	2.4	13.1	5.1	120.2	2
55	22.8	21.3	34.7	1.1	19.9	2.4	12.9	5.1	120.2	0
56	23.1	21.4	34.7	1.1	19.7	2.4	12.7	5.2	120.3	0
57	23.3	21.6	34.7	1.1	19.5	2.4	12.5	5.2	120.3	1
58	23.5	21.8	34.7	1.0	19.4	2.4	12.4	5.2	120.4	0
59	23.7	22.0	34.7	1.0	19.2	2.4	12.2	5.2	120.4	0
60	23.9	22.1	34.7	1.0	19.1	2.4	12.1	5.2	120.5	2
61	24.1	22.2	34.7	1.0	18.9	2.4	12.0	5.2	120.5	1
62	24.3	22.3	34.7	1.0	18.8	2.4	11.8	5.3	120.6	1
Average	20.1	19.5	34.4	1.3	22.2	2.5	14.7	4.9	119.6	

Table 2.--Lumber-grade recoveries in percent of net log scaleNo. 2 western redcedar logs

Di- ameter class in inches	Lumber grade									No. of logs
	Clear	B	C	D	Con- struc- tion	Stand- ard	Util- ity	Econ- omy	Total	
20	11.4	5.4	7.6	2.1	45.3	10.5	21.3	5.9	109.5	2
21	10.8	7.2	10.5	2.0	43.4	10.0	20.7	5.7	110.3	3
22	10.3	8.9	13.1	1.9	41.7	9.6	20.0	5.6	111.1	1
23	9.7	10.6	15.6	1.9	40.0	9.1	19.5	5.4	111.8	3
24	9.2	12.2	17.9	1.9	38.4	8.7	18.9	5.4	112.6	4
25	8.7	13.7	20.2	1.8	36.9	8.3	18.4	5.2	113.2	2
26	8.2	15.1	22.3	1.8	35.5	7.9	18.0	5.1	113.9	5
27	7.8	16.4	24.3	1.8	34.1	7.6	17.5	4.9	114.4	1
28	7.4	17.6	26.1	1.8	32.9	7.2	17.1	4.9	115.0	4
29	7.0	18.8	27.8	1.8	31.7	6.9	16.8	4.7	115.5	1
30	6.7	19.8	29.4	1.7	30.7	6.6	16.4	4.7	116.0	6
31	6.4	20.8	30.8	1.7	29.7	6.4	16.0	4.6	116.4	3
32	6.1	21.7	32.1	1.7	28.8	6.1	15.8	4.5	116.8	3
33	5.8	22.5	33.3	1.7	28.0	5.9	15.5	4.5	117.2	1
34	5.6	23.2	34.3	1.7	27.3	5.7	15.3	4.4	117.5	1
35	5.4	23.8	35.2	1.7	26.7	5.6	15.0	4.3	117.7	3
36	5.2	24.3	36.1	1.7	26.1	5.4	14.9	4.3	118.0	0
37	5.1	24.7	36.7	1.7	25.7	5.3	14.8	4.2	118.2	0
38	5.0	25.1	37.2	1.6	25.4	5.2	14.6	4.2	118.3	0
39	4.9	25.4	37.5	1.6	25.2	5.1	14.6	4.2	118.5	2
40	4.8	25.6	37.8	1.6	25.0	5.1	14.5	4.2	118.6	1
41	4.8	25.6	38.0	1.6	24.9	5.1	14.4	4.2	118.6	0
42	4.8	25.6	38.0	1.6	24.9	5.1	14.4	4.2	118.6	0
43	4.8	25.6	38.0	1.6	24.9	5.1	14.4	4.2	118.6	0
44	4.8	25.6	38.0	1.6	24.9	5.1	14.4	4.2	118.6	0
45	4.8	25.6	38.0	1.6	24.9	5.1	14.4	4.2	118.6	0
46	4.8	25.6	38.0	1.6	24.9	5.1	14.4	4.2	118.6	1
Average	6.9	19.2	28.3	1.8	31.4	6.8	16.6	4.7	115.7	

Table 3.--Lumber-grade recoveries in percent of net log scale

No. 3 western redcedar logs

Di- ameter class in inches	Lumber grade									No. of logs
	Clear	B	C	D	Con- struc- tion	Stand- ard	Util- ity	Econ- omy	Total	
8	0.0	6.0	14.8	2.8	193.0	0.0	6.6	0.3	223.5	1
9	0.1	5.7	13.7	2.6	178.0	0.4	11.3	0.7	212.5	0
10	0.1	5.6	12.6	2.4	164.0	3.6	12.8	1.1	202.2	4
11	0.2	5.3	11.7	2.1	150.9	6.6	14.3	1.4	192.5	0
12	0.2	5.2	10.8	1.9	138.7	9.3	15.6	1.7	183.4	6
13	0.2	5.1	10.0	1.7	127.3	11.9	16.8	2.1	175.1	8
14	0.3	4.9	9.2	1.5	116.9	14.2	18.1	2.3	167.4	3
15	0.3	4.8	8.5	0.8	107.9	16.4	19.1	2.5	160.3	0
16	0.3	4.7	7.9	1.2	98.7	18.4	20.0	2.8	154.0	5
17	0.4	4.6	7.2	1.1	91.0	20.1	20.9	3.0	148.3	3
18	0.4	4.5	6.8	1.0	84.1	21.6	21.7	3.1	143.2	4
19	0.4	4.4	6.4	0.9	78.2	22.9	22.4	3.3	138.9	4
20	0.4	4.4	6.0	0.7	73.3	24.1	22.8	3.4	135.1	3
21	0.4	4.3	5.7	0.7	69.1	25.0	23.4	3.5	132.1	1
22	0.4	4.3	5.5	0.6	65.9	25.7	23.7	3.6	129.7	1
23	0.4	4.3	5.3	0.6	63.5	26.3	24.0	3.6	128.0	2
24	0.4	4.3	5.1	0.6	62.2	26.6	24.1	3.7	127.0	1
25	0.4	4.2	5.2	0.6	61.6	26.7	24.2	3.7	126.6	1
26	0.4	4.2	5.2	0.6	61.6	26.7	24.2	3.7	126.6	0
27	0.4	4.2	5.2	0.6	61.6	26.7	24.2	3.7	126.6	0
28	0.4	4.2	5.2	0.6	61.6	26.7	24.2	3.7	126.6	0
29	0.4	4.2	5.2	0.6	61.6	26.7	24.2	3.7	126.6	0
30	0.4	4.2	5.2	0.6	61.6	26.7	24.2	3.7	126.6	2
Average	0.3	4.6	7.2	1.0	89.6	20.4	21.1	3.0	147.2	

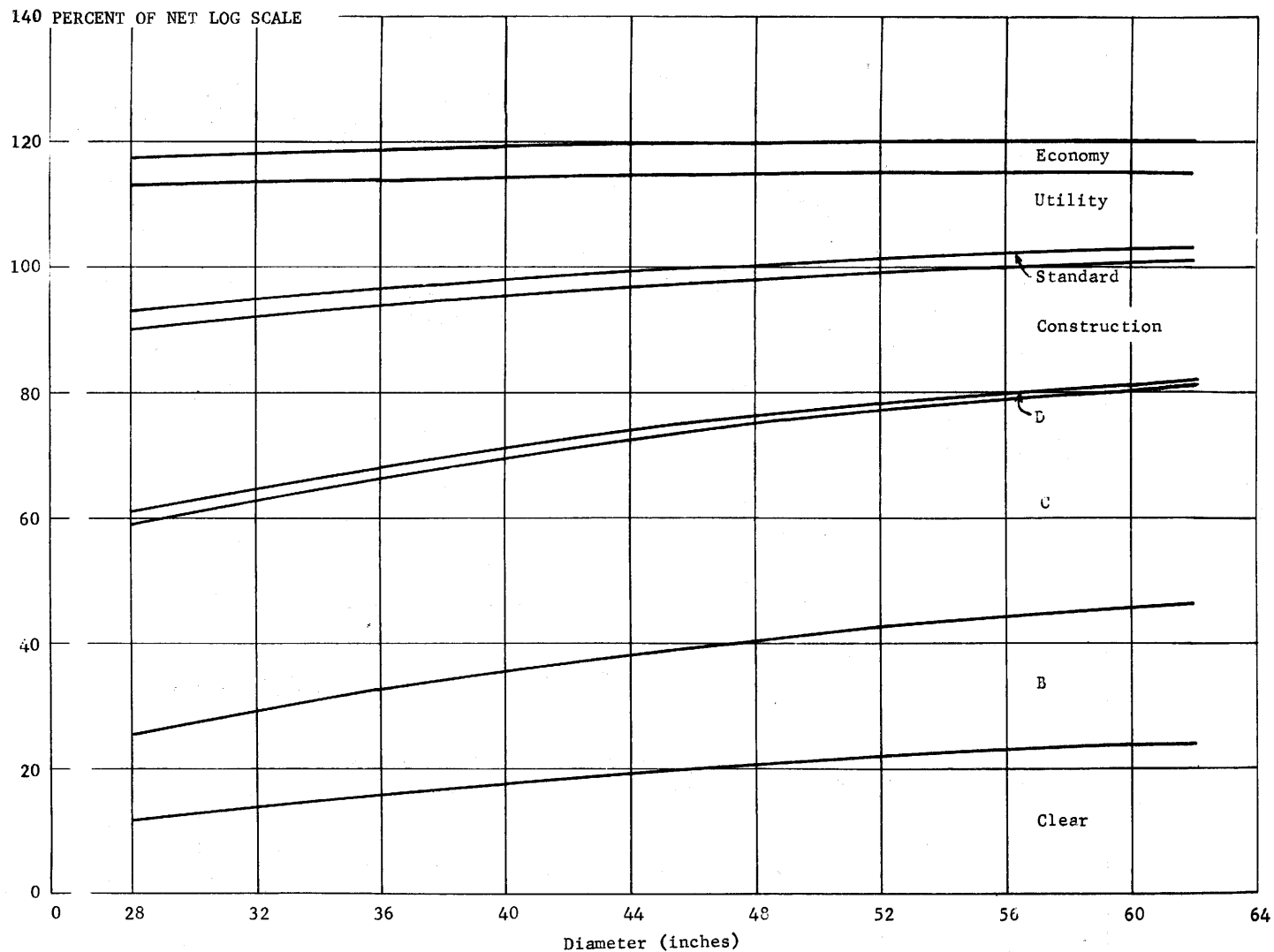


Figure 1.--Cumulative grade recoveries in percent of net log scale, No. 1 western redcedar logs.

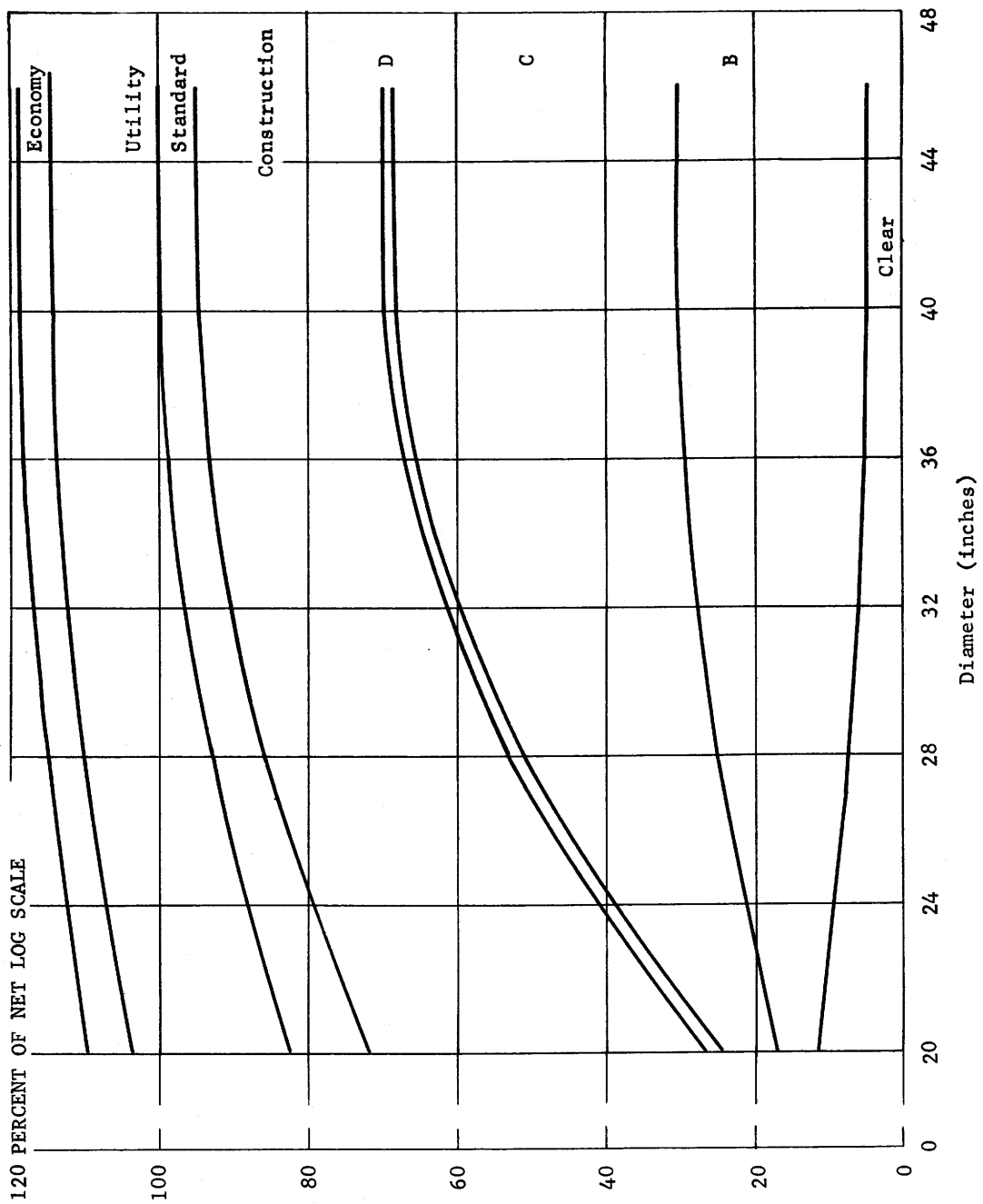


Figure 2.--Cumulative grade recoveries in percent of net log scale, No. 2 western redcedar logs.

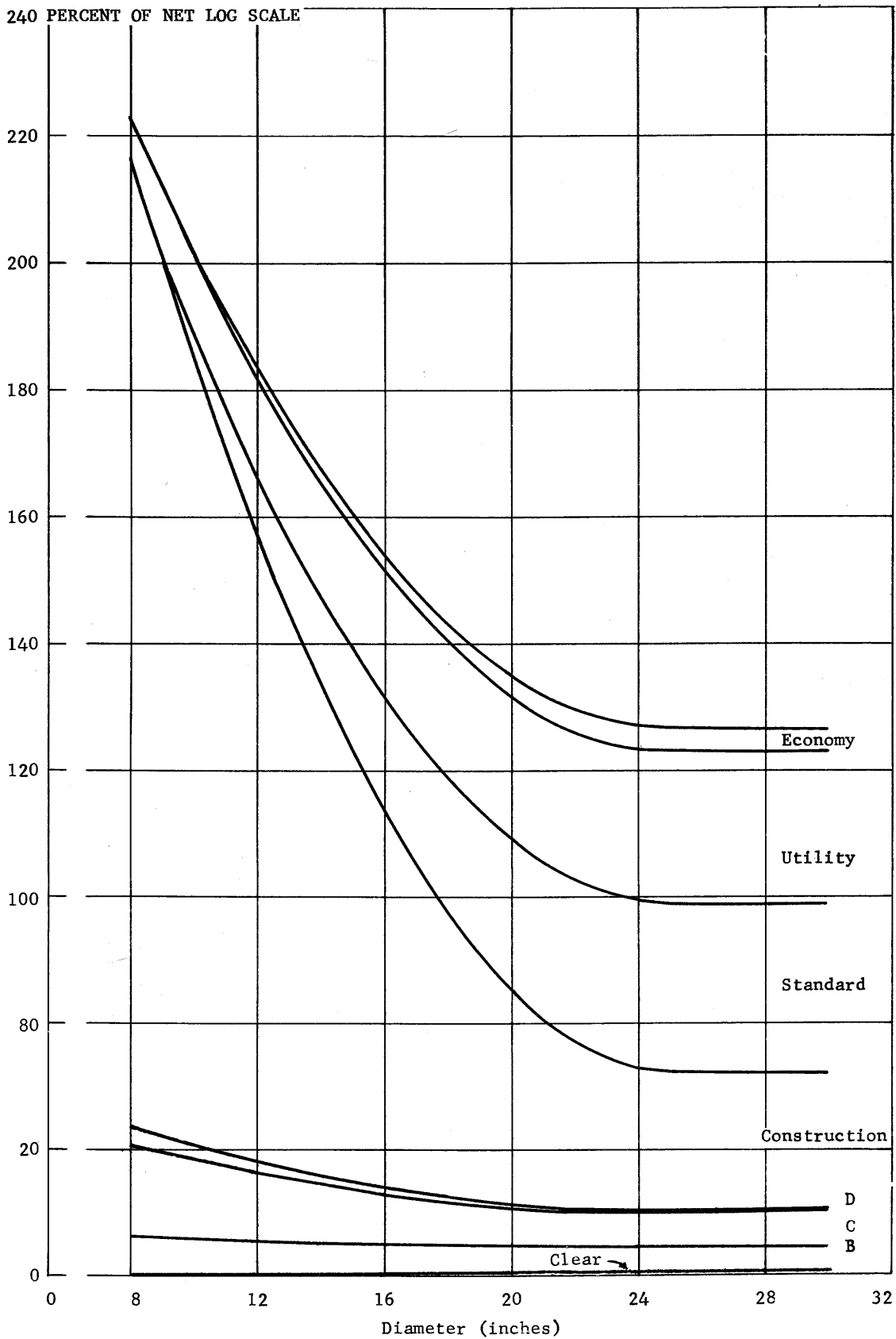


Figure 3.--Cumulative grade recoveries in percent of net log scale,
No. 3 western redcedar logs.

Sawing Time

By means of a stop watch, headrig sawing time was obtained for the logs cut in this test. Most of the logs, as scaled and graded, were too long for the carriage and had to be cut into two sections. Sawing time for each section was added together to get the time to cut each log. There was practically no difference in sawing time per thousand feet of lumber for the different diameter logs. Average headrig sawing time was 6.9 minutes per thousand board-feet of lumber.