The Relationship of Lumber Recovery to Log Quality in 29 Old-Growth Douglas-fir Trees of the Oregon Coast Range

By

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Managing Director

SUMMARY

A cooperative study of 115 logs sawed at the Valsetz Lumber Company mill at Valsetz, Oregon, in October 1949, demonstrated that it was possible, even in a large sawmill, to saw study logs consecutively and to segregate the lumber from each log without slowing mill production.

The 115 study logs, which had a gross log scale of 209,910 board feet and a net log scale of 152,240 board feet, produced 201,163 board feet of lumber in 7 hours and 7 minutes.

Detailed data are presented for each of the 29 trees from which the study logs were cut. Although no conclusions are drawn by the author from individual log data, these data make it possible for the reader to relate the amount and quality of lumber produced from a given log to its size, grade and defectiveness.

Lumber recovery by grades is summarized for each log grade. Since most of the logs sawed were No. 2 or No. 3 sawmill logs, it was possible to show the variation in lumber grade recovery by log diameters for these log grades. The lumber recovery by grades from all logs was almost identical with that from 40-inch No. 2 sawmill logs.

On the basis of October 1949, lumber values, the lumber yield from these logs averaged $58.46 per M board feet, rough green. The only No. 1 peeler log in the study produced lumber valued at $106.50 per M board feet, while four cull logs produced lumber with an average value of $35.40 per M fbm.

The pond value for lumber production was calculated for each log by subtracting the cost of milling that log (based on head-sawing time and mill-operating costs per minute) from the value of the log's lumber yield. Average pond values for the several log grades and log diameters ranged from $107.55 per M board feet, net log scale, for the No. 1 peeler log, to $49.63 for 30-inch No. 3 sawmill logs. Pond values of particular grades and sizes of logs may be compared with the average cost of putting these classes of logs in the pond, thereby revealing the relative profit or loss from each class of log. Also, pond values for lumber production may be compared with the sale value of the log to some other manufacturer.

INTRODUCTION

The mill study described here was originally proposed as one phase of the investigation by the Oregon Forest Products Laboratory of conk rot in old-growth Douglas-fir (1). This investigation involved estimates of the extent of conk rot in standing trees and then a check of the estimates by careful examination of the same trees after they were felled and bucked. As a further check, it was desired to saw some of these defective trees in order to determine the quantity and quality of the lumber obtained.

The Valsetz Lumber Company, one of several cooperators who furnished timber, equipment, and labor for the investigation of conk rot, agreed to

(1) Boyce, J. S. and Wagg, J. W. Bruce. "Conk Rot of Old-growth Douglas-fir in Western Oregon". Bulletin to be published cooperatively by the Oregon Forest Products Laboratory and the Research Division, Oregon State Forestry Department, in July 1953.

conduct a sawing study of the timber examined on one acre of its lands. In formulating plans for the mill study, it became apparent that much additional information could be obtained with little increase in expense. Since the company was interested in obtaining complete data on sound trees as well as on infected trees, the School of Forestry was invited to collaborate with the company and the Oregon Forest Products Laboratory in a comprehensive mill study.

The following objectives were aimed at in this study:

1. To compare the gross log scale, deductions for defect, and log grade recorded by the field crew studying conk rot, with the Bureau log grade and net scale, and with the lumber recovery from each log.

2. To determine the lumber grade recovery and lumber values from each log grade, and to establish the relationship between log size and the quality of lumber recovered.

3. To establish the pond value (for lumber manufacture) of each log, so that this value might be compared with the log's sale value to other users, and with the cost of putting that log in the pond.

This study could not have been made without the wholehearted cooperation of a number of parties. Participants in the study included the management of the Valsetz Lumber Company, especially H. F. Thomas and W. B. Brownjohn; staff members of the Oregon Forest Products Laboratory, particularly J. W. Runkel, who made the computations, and J. R. Stillinger; and the West Coast Bureau of Lumber Grades and Inspection, which provided four supervisors to do the lumber grading. Special acknowledgement is due J. D. Snodgrass and a group of 25 students in the Lumber Manufacturing Problems class at the School of Forestry, Oregon State College, who contributed their time to mark, segregate and tally all lumber cut in this study. Two of the students, Wes Stanfield and Tom Jacobson, assisted in the preparation of Figures A, B and C. Finally, appreciation is expressed to A. E. Nelson and E. E. Matson for their constructive criticism of the manuscript.

STUDY PROCEDURE

Origin of the logs

The logs for this mill study were from old-growth Douglas-fir stands of the Coast Range in Oregon. Two 1/2-acre plots were selected on the Rock Creek drainage about 4 miles due south of Valsetz at an elevation of approximately 2000 feet.

The timber stand on each plot was decadent Douglas-fir with an understory of western hemlock. The ages of the 29 Douglas-fir trees on the two plots ranged from 353 to 391, and averaged 373, years. These trees had an average D.B.H. of 58 inches and an average height of 240 feet. The gross volume of the 29 trees, when scaled to a top diameter equivalent to 40 per cent of D.B.H., was 250,640 board feet, Scribner log scale.

Although 126 logs were bucked from these trees, 11 of them were so defective that they were left in the woods. Of the 115 logs taken to the mill, six were graded as culls, but were considered worth sawing for investigative purposes. The gross scale of the 115 logs was 209,910 board feet.

Description of the mill

The sawmill of the Valsetz Lumber Company, where the study was made, is equipped with one 10-foot band headrig and three resaws (gang, horizontal band, and vertical band). The mill's production at the time of the study averaged approximately 175 M board feet of lumber per 8-hour day; the plant layout is shown in Figure A.

Collection of data on the manufacturing operation

The 115 study logs constituted approximately an 8-hour cut for the mill and were sawed in the following manner:

a. The mill and chains were cleared of all lumber before the start of the study.

Mill Study Crew

1. Timer
2. Marker for gang cants
3. 4. Chasers - indicate first and last piece from each log to painters
5. Gang cant painter - paint ends of cants after cant trimming
6. Timber marker - put log number on timbers - record grade and footage
7. 8. 9. 10. Painters - paint ends of each piece with proper color
11. Relay man - relay log numbers to remarkers
12. 13. Remarkers - put log numbers on pieces after retrimming
14. Mark log numbers on both sides of pieces going to vertical band resaw
15 16 Interpret colors and mark log numbers on piece if number is not on piece
17 26 Tallyman - tally by size and grade all clear strips going direct to mechanical stackers
18 19 Same as 15 & 16
20. 27 Same as 17 & 26
21. Marker at control station - mark timbers
22. Marker for pieces from gang - mark log number on some pieces
23. Spotter - observe color and give log number to 11
24. Spotter - watch pieces going to vertical band resaw and signal log number to 14
25. Mark or remark numbers on pieces going to re-edger so number will remain
28. 29. Mark log numbers on both sides of pieces being pulled for vertical band resaw

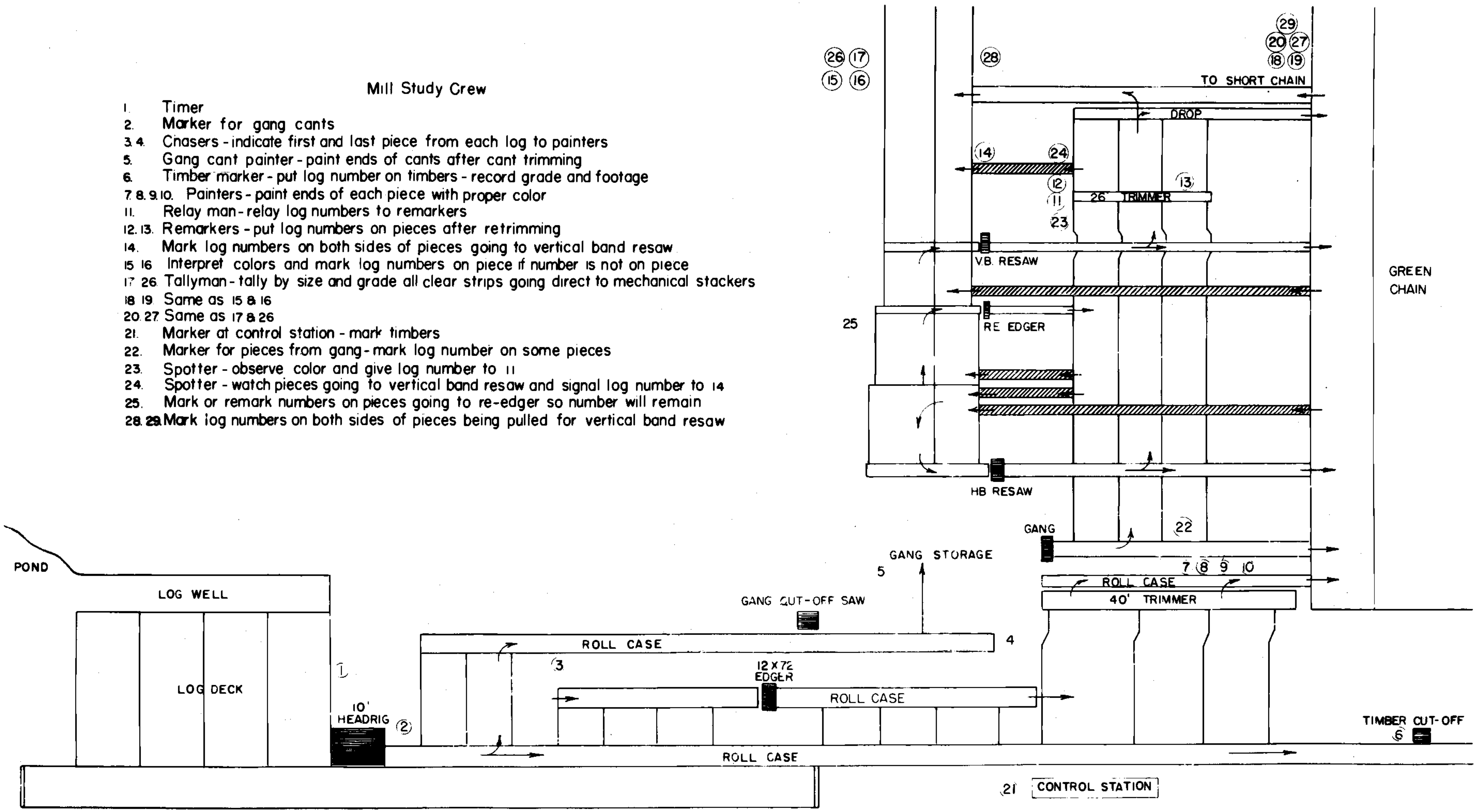


Figure A. Mill Diagram - Valsetz Lumber Company   Showing Equipment & Positions of Mill Study Crew

b. The shift started with a study log, and the study logs were sawed consecutively. Each log was given a sawing number, the first log being No. 1 and the last one No. 115. Sawing numbers were converted later to field numbers. For example, sawing No. 1 was log 22A in the field study.

c. Each piece of lumber was given an identifying mark to indicate the log from which it was produced.

d. All 1-inch clears were graded and tallied as cut, and went directly to the mechanical stackers.

e. All timbers were graded and tallied as cut, and credited to the proper log.

f. All other lumber was pulled from the chain and stored in the yard, where it was graded and tallied the next day.

g. All lumber was graded rough green by supervisors of the West Coast Bureau of Lumber Grades and Inspection.

h. Students from the School of Forestry and employees of the Oregon Forest Products Laboratory were responsible for segregating the lumber from each individual log, for timing the head-sawing operation, and for all lumber tallying. They were posted as shown in Figure A.

i. Since time did not permit placing the log number on each piece of lumber until it had passed through several or all of the manufacturing operations, a system of color identification was adopted.

Ten colors were selected, since this particular mill required only three minutes per log when sawing average logs, and it took approximately 30 minutes for lumber to pass through all of the sawmilling operations. The colored marks were converted to log sawing numbers before the lumber was pulled from the green chain.

The distinguishing colors were applied to one end of each piece, either directly behind the main trimmer at the head of the sorting chain, or where cants were stored for the gang saw. Quick-drying lacquers were used because they were much more visible than crayon, and dried rapidly enough to avoid smearing mill workers with color. The colors were more easily distinguished when lacquer wax applied with a brush than when it was applied with a spray gun.

j. Since the headrig sets the pace for the mill, each study log was timed while at the head-saw, and the milling cost prorated on this basis. The head-sawing time was taken as the interval between the first movement of the log loader to place a log on the carriage and the first movement of the loader to place the next log. Thus, any eccentricity of a study log, which might increase the loading time, was reflected in a greater sawing time and an increased manufacturing cost.

Any delays occurring during the sawing of a log that were not directly attributable to that log, were subtracted from the total time required for sawing the log. The total delay time of 17 minutes that occurred during this study was considered as representative of the average lost time per shift. The milling cost per minute was calculated on the basis of effective sawing time per hour.

RESULTS OF THE STUDY

Since this study began with standing trees, each tree has been reconstructed in Figures 1 to 29 of the appendix. The sketch on the left of each figure illustrates the location and extent of decay in the tree, while the table on the right gives detailed information on each log cut from the tree. These data on individual logs and trees have been included in the belief that they will reveal facts not shown in the general presentation of results.

No attempt has been made to draw other than general conclusions from the study, but each reader is invited to make his own review of the individual tree data.

The reader should bear in mind that these 115 logs were considerably better than the old-growth Douglas-fir sawlogs now generally available. Furthermore, the number of logs represents a limited sampling. Many of the reported results, therefore, must be regarded only as indications of what might be expected generally.

Table 1. Summary of Log Grades and Log Scales

Bureau Scaler			OFPL Field Crew			
					Log scale	
No. logs	Grade	Net scale	No. logs	Grade	Net	Gross
1	P1	1,910	2	P1	5,280	5,280
3	P2	6,080	4	P2	9,150	10,270
7	P3	13,560	7	P3	18,740	21,060
66	2	98,230	56	2	98,640	113,160
31	3	31,540	32	3	29,740	36,560
6	Cull	-	14	Cull	-	23,580
1	WL	920				
115		152,240	115		161,550	209,910

Total lumber tally 201,163 fbm

Log scale, log grade and lumber recovery--a comparison

During the field examination of the 126 logs cut from 29 Douglas-fir trees, the Oregon Forest Products Laboratory crew scaled and graded each log. The 115 logs selected for sawing were again scaled and graded by a representative of the Columbia River Log Grading Bureau after the logs were in the mill pond. Table 1 compares the log grade and scale of the field crew with that of the Bureau scaler, and records the lumber recovered.

Comparison of net scales. The Bureau scaler gave the 115 logs a total net scale equivalent to 72.5 per cent of the gross log scale, while the field crew gave the logs a total net scale equivalent to 77 per cent. The lumber tally overran the two net scales by 32 per cent and 24 per cent respectively. As far as individual logs were concerned, the Bureau net scale was closer to actual lumber tally for 41 logs; the field crew net scale was closer for 43 logs, while the two scales were approximately the same for the remaining 31 logs.

The field crew's estimate of net scale was somewhat closer for logs containing rot, as the crew had examined the logs carefully for rot in the woods. On the other hand, the field crew erred considerably in deducting for such defects as pitch and shake, especially in larger logs.

Lumber grade recovery

The average grade recoveries from the 66 No. 2 sawlogs and the 31 No. 3 sawlogs in this study are shown graphically in Figure B; Table 2 gives the same information in tabulated form. In the case of these logs, it was possible to show the relationship between lumber grade recovery and log size. The number of peeler logs and cull logs in this study, however, was too small to yield reliable data on the variation in lumber grade recovery with log size. The grade recoveries from these two classes of logs, therefore, have been shown in Table 3 only for each class as a whole.

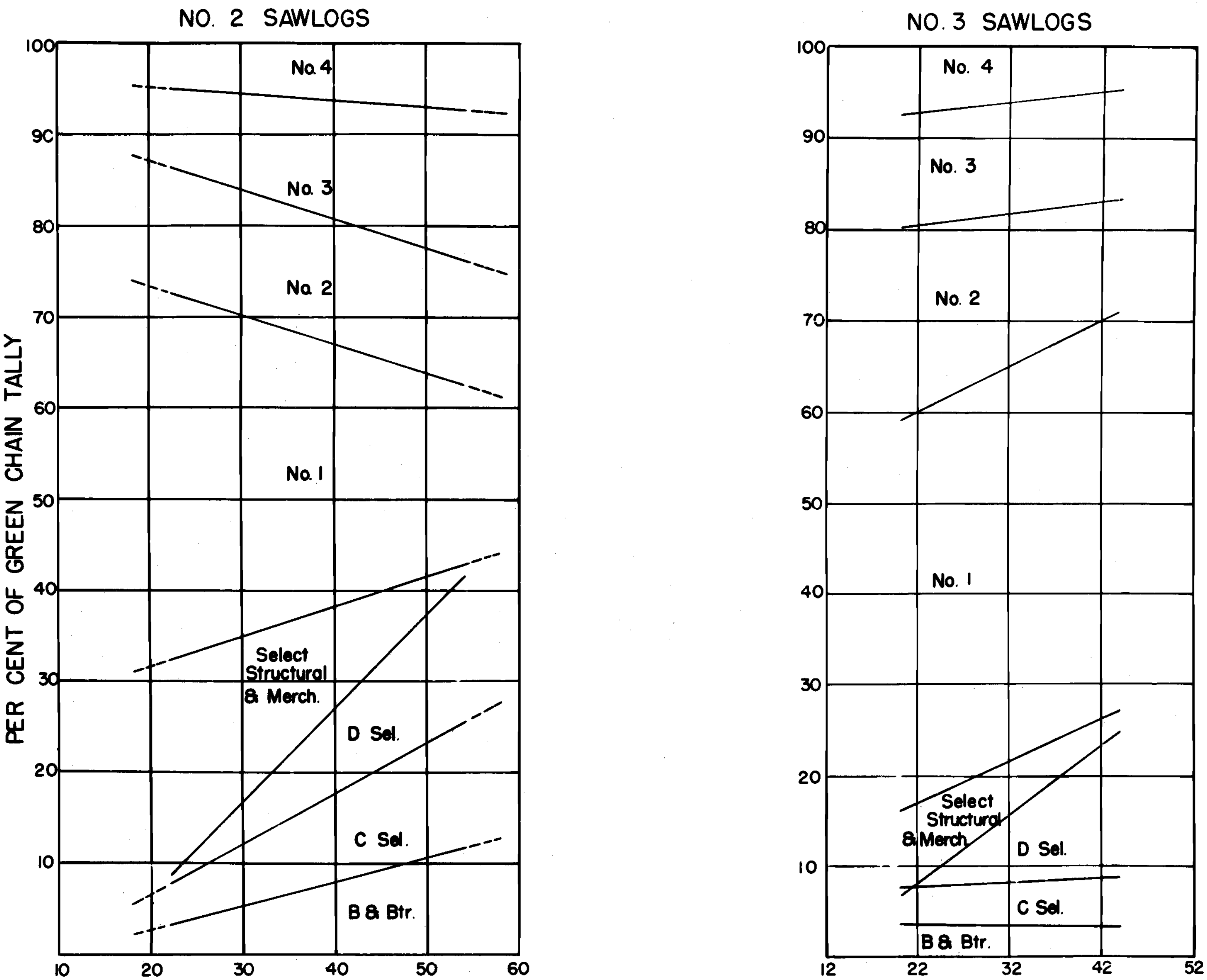


Figure B Relationship of Lumber Grade Recovery to Log Diameter

Table 2. Percentage Lumber Grade Recoveries from No. 2 and No. 3 Sawlogs
(Values read from Figure B)

No. 2 Sawlogs

Lumber grade	Log diameter (inches)									
	20	24	28	32	36	40	44	48	52	56
B & Btr	2.7	3.8	4.9	6.0	7.0	8.1	9.2	10.3	11.3	12.4
C Sel	3.9	5.0	6.1	7.2	8.4	9.6	10.7	11.8	13.0	14.2
D Sel	0	1.8	3.7	5.7	7.6	9.5	11.4	13.4	15.4	17.0
Str & Merch	25.2	22.5	19.7	16.8	13.9	11.1	8.3	5.5	2.6	-
No. 1	41.6	39.0	36.4	33.8	31.3	28.7	26.1	23.5	20.9	18.3
No. 2	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
No. 3	8.1	9.1	10.1	11.1	12.1	13.0	14.0	14.9	15.9	16.9
No. 4	4.8	5.1	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

No. 3 Sawlogs

	20	24	28	32	36	40	44
B & Btr	3.7	3.6	3.6	3.5	3.5	3.5	3.4
C Sel	4.1	4.3	4.5	4.8	5.0	5.2	5.4
D Sel		1.7	4.6	7.5	10.4	13.3	16.2
Str & Merch	8.3	8.3	7.1	5.9	4.7	3.5	2.3
No. 1	43.0	43.2	43.4	43.6	43.8	44.0	44.1
No. 2	21.1	19.6	18.1	16.6	15.1	13.6	12.1
No. 3	12.3	12.3	12.2	12.1	12.0	11.9	11.9
No. 4	7.5	7.0	6.5	6.0	5.5	5.0	4.6
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The total lumber recovery from the 115 study logs is shown by grades in Table 4. It is interesting to note that the average grade recovery from all logs approximated the average grade recovery from the 40-inch diameter No. 2 sawlogs, as given in Table 3.

Lumber values

The lumber recovery by grades from each log was converted to lumber value by using the selling price of rough-green lumber, fob mill, in effect at the time of the study (October 1949), as reported by the sales department of the cooperating company.

If it is desired to adjust the lumber values of individual logs for changed market conditions, this can be done simply and with fair accuracy by means of reported average lumber values. For example, the West Coast Lumbermen's Association reported the average realization on shipments from the Douglas-fir region to be $57.60 in October 1949 and $64.36 in March 1950, an increase of approximately 12 per cent. A check of one log included in the study showed an increased lumber value of approximately 10 per cent in the same period. The difference in percentage increase is due in part to the fact that the log which was rechecked yielded 60 per cent clears, and that the percentage increase in lumber values was considerably less for clears than for commons during this period.

The total value of lumber from the 115 study logs was $11,760.52; an average of $58.46 per M board feet. The value of the lumber from each log is shown in Figures 1 to 29 of the appendix.

Relationship of average lumber value to log grade. The relationship between average lumber value and log grade, for the logs in the study, is shown in Table 5.

Table 3. Percentage Lumber Grade Recovery from the Peeler Logs and Cull Logs Compared with Grade Recovery from No. 2 and No. 3 Sawlogs of Equivalent Diameters

Lumber grade	11 peeler logs, avg diam 40.5 in.	Average for No. 2 Sawlogs 40 in. diam*	Average for No. 3 sawlogs 33 in. diam*	6 cull logs, avg diam 33 in.
B & Btr	20.4	8.1	3.5	2.1
C Sel	19.0	9.6	4.9	3.9
D Sel	8.3	9.5	8.2	5.9
Struct & Merch	8.5	11.1	5.6	3.6
No. 1	20.7	28.7	43.6	4.7
No. 2	11.1	13.7	16.3	10.4
No. 3	8.4	13.0	12.0	43.4
No. 4	3.6	6.3	5.9	26.0
	100.0	100.0	100.0	100.0

* Values read from Figure B

Table 4. Summary of Lumber Recovery from All Logs

Grades	Footage	Lumber recovery as a percentage of Lbr Tally	Net log scale
	Board feet	Per cent	Per cent
B & Btr	16,966	8.5	
C Sel, C-shop, Clr Battery	18,965	9.5	
D Sel, Fact. Sel, Sel Battery	16,996	8.5	
Total Clears	52,927	26.5	35
Sel Merch & Structural	19,570	9.5	
No. 1 Com, No. 1 Shop, No. 1 Battery	59,755	30.0	
Total No. 1 & Btr	132,252	66.0	87
No. 2 (Common, Shop, Battery)	28,913	14.5	
No. 3 Com, No. 3 Shop, Reject Battery	27,442	13.5	
No. 4 Com	12,556	6.0	
Total	201,163	100.0	132

Table 5 reveals that average lumber values vary with log grade in the expected manner except for No. 2 peeler logs, but only two logs of this grade were included. The table also shows a somewhat smaller spread between the values of lumber recovered from No. 2 and No. 3 sawlogs than might be expected—only about $5.50 per M board feet for logs of equivalent diameters.

Table 5. Relationship of Average Lumber Value to Log Grade

Log grade	Average log diam (inches)	Approximate average lumber value* per M board feet (lumber tally)	No. of logs
No. 1 peeler	48	$106.50	1
No. 2 peeler	38	67.85	2
No. 3 peeler	41	72.85	5
No. 2 sawlog	45	62.80	8
	40	60.20	13
	35	57.30	10
	30	54.50	12
	25	51.80	9
No. 3 sawlog	40	55.40	3
	35	52.70	5
	30	49.90	8
	25	47.10	6
Cull logs	34	35.40	4

* Approximate average lumber values for No. 2 and No. 3 sawlogs of various diameters are curved values.

Sawing time. The actual sawing time required for the 115 study logs which contained 209,910 board feet gross scale, was 400.54 minutes, or 1.91 operating minutes per M board feet, gross log scale. The sawing time per M board feet for large logs was less than for small logs, as is illustrated in Figure C.

Figure C also compares the unit sawing time in this study with those obtained in other mill studies made at Oakridge and Glendale and indicates efficient manufacture for logs of the size and quality included in the study.

The curves for the Oakridge and Valsetz studies are based on actual operating time, exclusive of delays. In the Glendale study, the sawing time included delays but they were estimated at less than 5 per cent of the sawing time. All three mills were equipped with large, band head-saws. The Glendale mill had one vertical band resaw and an average production of 130 M board feet per 8-hour shift; the Oakridge mill, one horizontal band resaw and an average production of 140 M board feet; while the Valsetz mill had a horizontal band resaw, a gang resaw, a vertical band resaw, and an average production of 175 M board feet of lumber. These differences in production are due in part to differences in average log size. For example, the 115 study logs, which contained an average volume 50 per cent greater than that of the company's average log, produced approximately 201 M board feet of lumber in 7 hours and 7 minutes.

In Figure C, the Glendale curve is based on 32-foot logs only, while the Oakridge and Valsetz studies include logs ranging from 24 to 40 feet in length and averaging 32 feet. Previous studies have indicated that there is little difference in the lumber production rate for logs 24 to 40 feet in length, although the production rate drops considerably when 16-foot logs are sawed.

Although it might be expected that the Oakridge curve would follow approximately the Valsetz curve, Figure C illustrates the interesting point that sawing time per M board feet at Oakridge increases for logs over 25 inches in diameter. Two factors may have accounted for this: first, the mill had been operating only 8 months and was not running so smoothly as the older mill, and second, a planned gang-saw installation had not been completed at the time of the study, consequently the head sawyer had a tendency to perform at the head-saw too much of the breakdown of the clears contained in large logs.

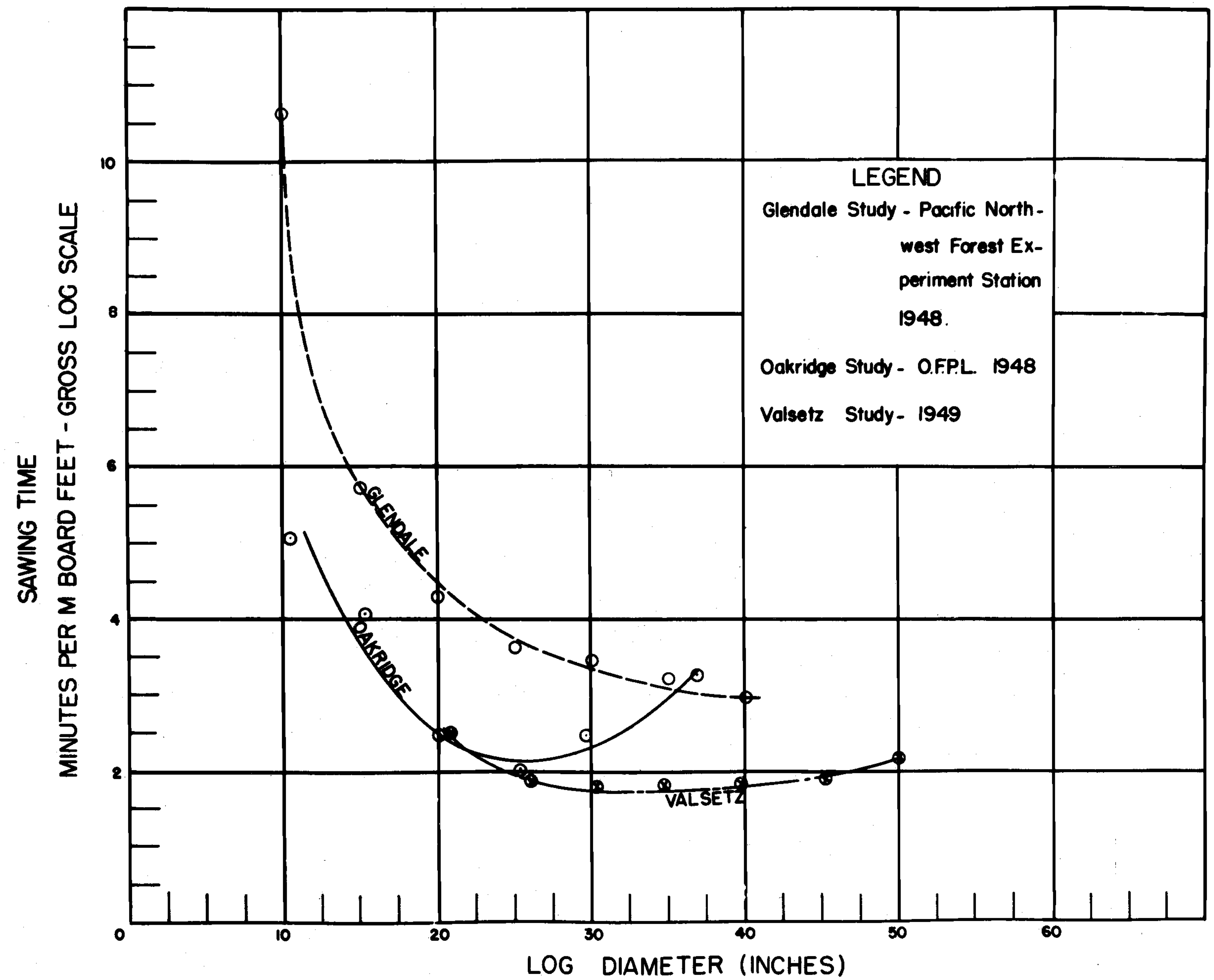


Figure C Variation of Sawing Time with Log Diameter for Three Mill Studies
(Logs averaging 32 feet in length)

In the Valsetz study, the increase in sawing time per M board feet for logs of large diameter is due to the high values present in large No. 2 sawlogs and peelers. These justified more attention and somewhat slower head sawing. When No. 3 sawlogs alone were plotted, the sawing time was found to be nearly constant for logs over 30 inches in diameter.

Pond values of logs

Often it is desirable to know whether a log will bring a higher return through sale to some other manufacturer than it will through sawing in the owner's plant. Peeler logs are nearly always salable, and pulp logs often are. If a particular log will bring $65 per M fbm net log scale, less loading and freight charges, the question may be raised, "How much is this log worth if sawed into lumber at our plant?"

Such information is readily obtainable for the 115 logs included in this study. The total value of the lumber from a certain log less the cost of its milling, gives the log's potential value for lumber production -- a value in the pond which can be compared with its sale value in the pond. Since logging and stumpage costs must be charged against the log regardless of its ultimate use, the cost of the log in the pond, when compared with its value in the pond, will determine whether or not it is a profitable log.

Pond values of the study logs are summarized by log grades in Table 6. The inconsistencies in Table 6, however, emphasize the fact that definite conclusions cannot be made on the basis of a limited number of logs. Nevertheless, some indication of the relative pond values of various log grades and log sizes may be obtained from the table. For example, No. 2 sawmill logs have a pond value, based on lumber tally, approximately $6 per M board feet higher than have No. 3 sawmill logs when equivalent log diameters are compared. Peeler logs have higher pond values than do sawmill logs but there were insufficient logs in this study to determine the average difference in values.

Table 6. Pond Values of Valsetz Logs for Lumber Production

Log grade	Average log diameter inches	Avg pond value per M fbm net log scale*	Number of logs	Range in pond values for the log group	Average overrun per cent	Avg pond value per M fbm lumber tally**
P1	48	$107.55	1		16	$92.72
P2	37	62.76	2	$53.50 - 85.70	10	57.05
P3	41	65.89	5	42.30 - 75.85	6	62.16
2 SM	45	68.07	8	46.85 - 96.10	29	52.76
"	40	62.47	13	40.30 - 73.10	21	51.62
"	35	62.18	10	43.50 - 81.40	36	45.72
"	30	58.73	12	41.40 - 90.30	30	45.17
"	26	59.20	9	48.60 - 81.00	35	43.85
3 SM	40	62.13	3	52.40 - 83.70	38	45.02
"	35	59.13	5	49.00 - 68.50	35	43.80
"	30	49.63	8	35.40 - 72.00	37	36.22
"	26	56.15	6	26.65 - 79.25	48	37.93
"	21	63.74	5	56.10 - 76.80	54	41.38

* Pond value represents the value (per M fbm, net log scale) of the log if sawed (manufacturing cost has been deducted from the sale value of the lumber). If sold, the logs should bring at least an equal return.

** The column showing pond values based on lumber tally is included to show that the differences in average overruns had a pronounced effect on relative pond values. In short, if the average overrun were the same for all logs, the pond values should decrease progressively with decreasing log grade or log diameter. The pond values in the last column, based on lumber tally, show a more progressive decrease than do the values in column 3.

It should be remembered that the pond values shown in Table 6 are for logs of better than the average run-of-mill size and quality. Furthermore, these values allow only for the bare cost of milling in an efficient sawmill.

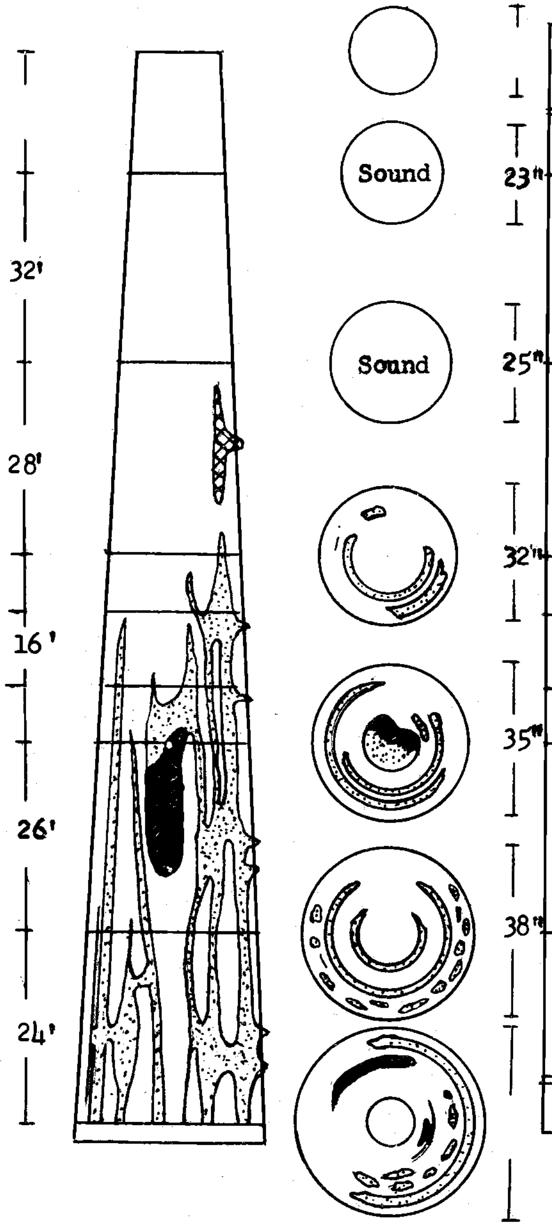
Although the pond values of individual logs given in Figures 1 to 29 are based on gross log scale, they may be converted readily to a net scale base. This may be accomplished by dividing the pond value shown for any log by the ratio of net to gross scale (in hundredths) for that log. For example, the top log from tree No. 1 (Figure 1) has a pond value of $20.80 per M board feet, gross log scale. The net scale of this log was 570 board feet, or 76 per cent of the 750 board foot gross scale. Dividing $20.80 by 0.76 gives a pond value of $27.40 per M fbm based on net log scale.

Pond values are given on the basis of gross log scale in order that this value may be compared readily with the cost of putting the log in the pond. Logging cost, including falling and bucking, yarding, loading and hauling, should be based on gross scale as these costs are proportional to the gross volume handled. The cost in the pond of each study log was calculated in this investigation, including adjustments in logging costs for log size, but this information was furnished only to the cooperating company. The analysis of log costs did reveal that pond costs exceeded pond values for 9 of the 115 logs.

APPENDIX

Figures 1 to 29 illustrate the extent and type of defect in each tree, plus the description, lumber recovery, and pond value of each log. The log grades and log scales used in these figures are those of the Bureau scaler.

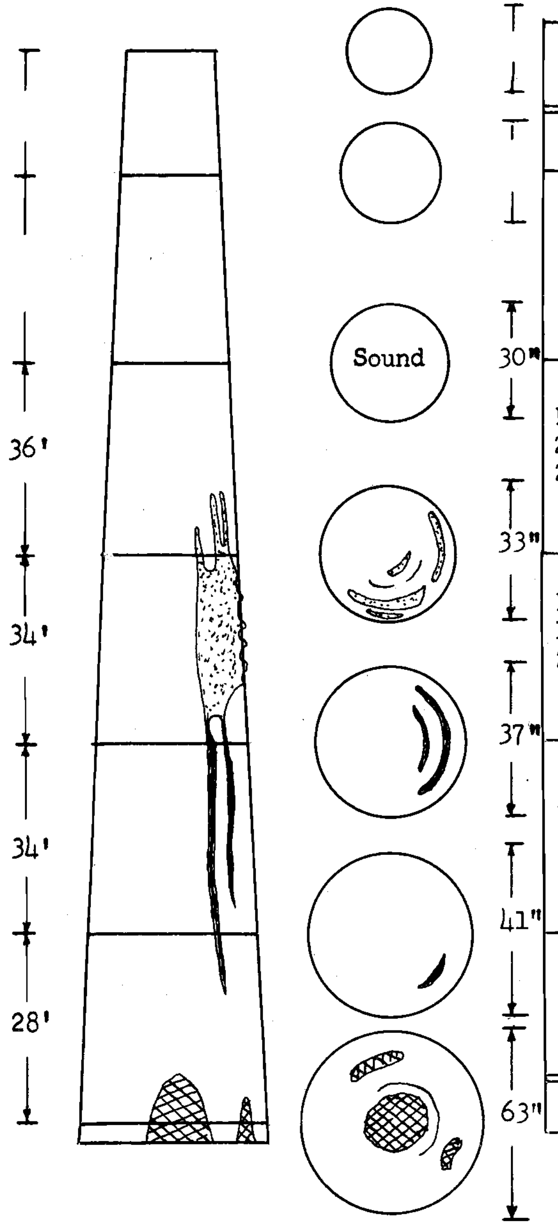
FIGURE 1. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber Recovery				Av. lbr. value /M bd ft	Pond value /M, gross log scale
		% clear	% #3 & 4	Total (FBM)	% gross log scale		
Sound No. 2 log 2-$\frac{1}{4}$" max. knot 1 clear quarter	76	8	19	495	66	24.21	20.80
No. 2 log 2" knot indictrs. 2 clear quarters	89	2	14	1146	143	29.60	56.40
Bucked break							
No. 3 log	50	15	20	1091	146	55.00	70.00
Bucked break							
Cull log 2" knot indictrs. 2 clr. quarters	0	7	88	714	50	29.56	6.50
Cull log 2" knot indictrs 2 clr. quarters	0	5	50	831	52	41.15	12.30
Totals & average		6	28	4277	80	47.80	28.50

Advanced white pocket rot   *F. pini* stain   Brown rot

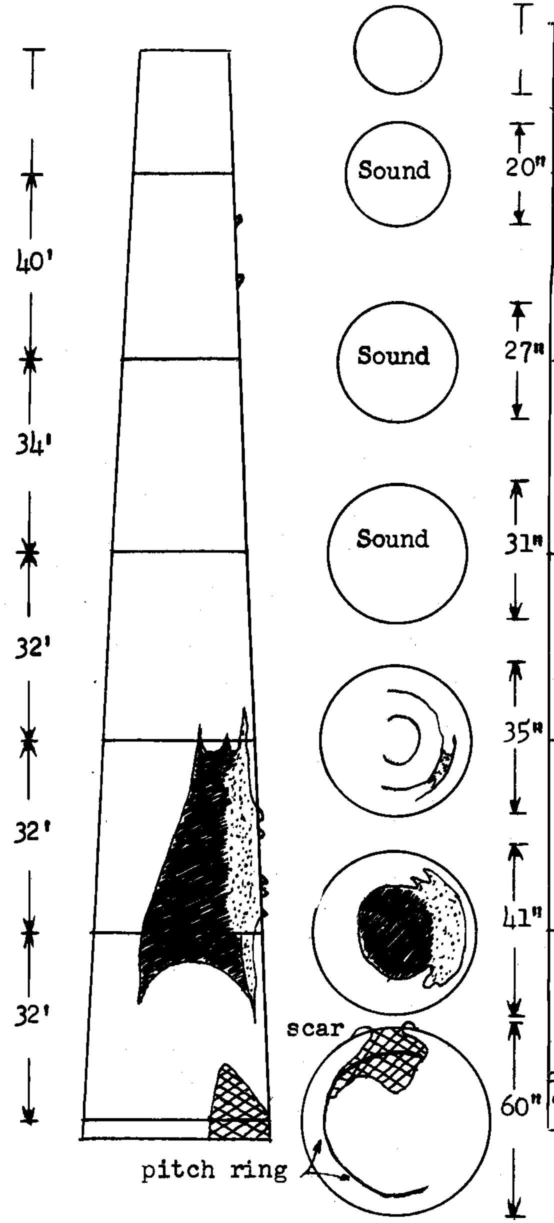
FIGURE 2. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery % clears	% #3 & 4	Total (FBM)	% gross log scale	Ave. Lbr. value /M bd ft	Pond value /M, gross log scale
No. 2 log 2" knot indictrs. 2 clear quarters	70	29	7	1581	107	66.00	62.90
No. 2 log $1\frac{1}{2}$" knots 2 clear quarters	66	21	30	1790	107	58.09	53.60
No. 3 peeler log One 1" dead knot 3 clear quarters	77	33	8	1064	49	70.81	32.50
No. 2 log 4 clear quarters	72	36	18	1956	88	66.69	58.50
Total or average	71	30	17	6391	84	64.80	44.80

Adv. white pocket rot   *F. pini* stain   Brown rot

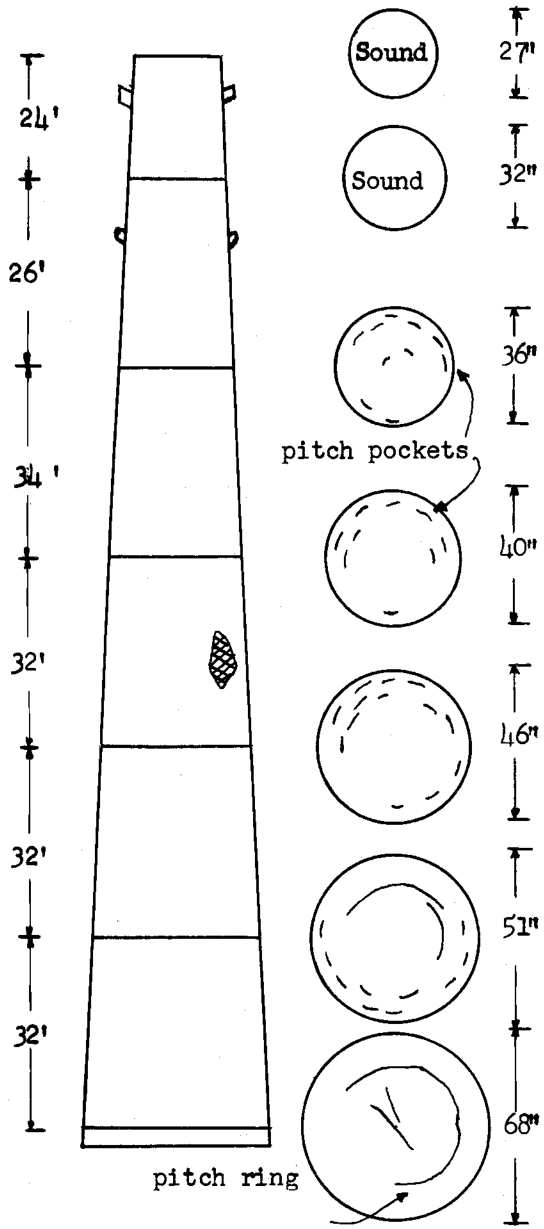
FIGURE 3. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. Lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
No. 3 log 2-4" knots 1 clear quarter	66	3	23	790	113	47.59	43.10
No. 3 log 2" knot indictrs. 2 clear quarters	69	9	9	1245	107	54.83	49.10
No. 3 log 2" knot indictrs. 2 clear quarters	78	9	11	1133	80	51.00	33.20
Wood log 2" knot indictrs. 3 clear quarters	52	10	65	1454	83	44.73	29.30
No. 2 log 4 clear quarters	63	14	32	2184	86	49.76	34.10
Total or average	65	10	30	6806	90	49.50	36.00

Adv. white pocket rot   *F. pini* stain   Brown rot

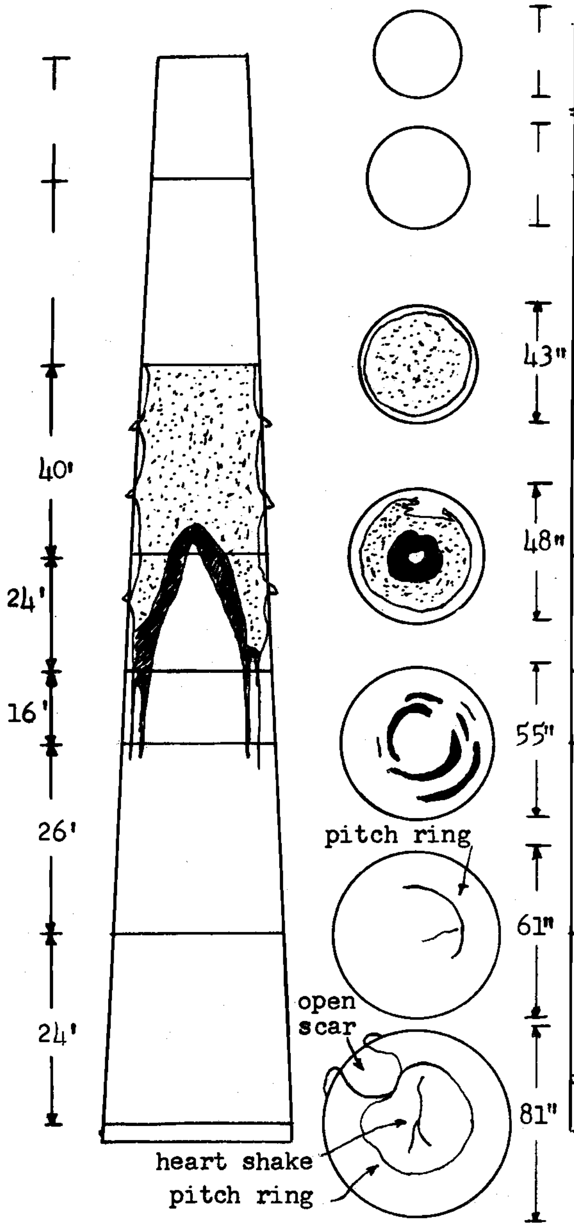
FIGURE 4. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. Lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Sound cull Knots up to 8"	0	11	44	372	45	42.55	7.50
No. 3 log, large live knots 4"-8" 1 clear quarter	82	5	11	1276	106	50.00	44.10
No. 3 log Large live knots 2 clear quarters	80	19	17	2198	112	49.78	47.70
No. 2 log $1\frac{1}{2}$" knot indictrs 2 clear quarters	89	16	11	2106	87	53.46	35.80
No. 2 log $1\frac{1}{2}$" knot indictrs 2 clear quarters	80	35	13	2472	78	60.17	37.60
No. 2 log 2" knot indictrs. 5 burls one side 2 clear quarters	73	33	22	3610	93	60.13	43.20
Total or average	75	24	17	12034	90	55.60	39.00

Adv. white pocket rot   *F. pini* stain   Brown rot

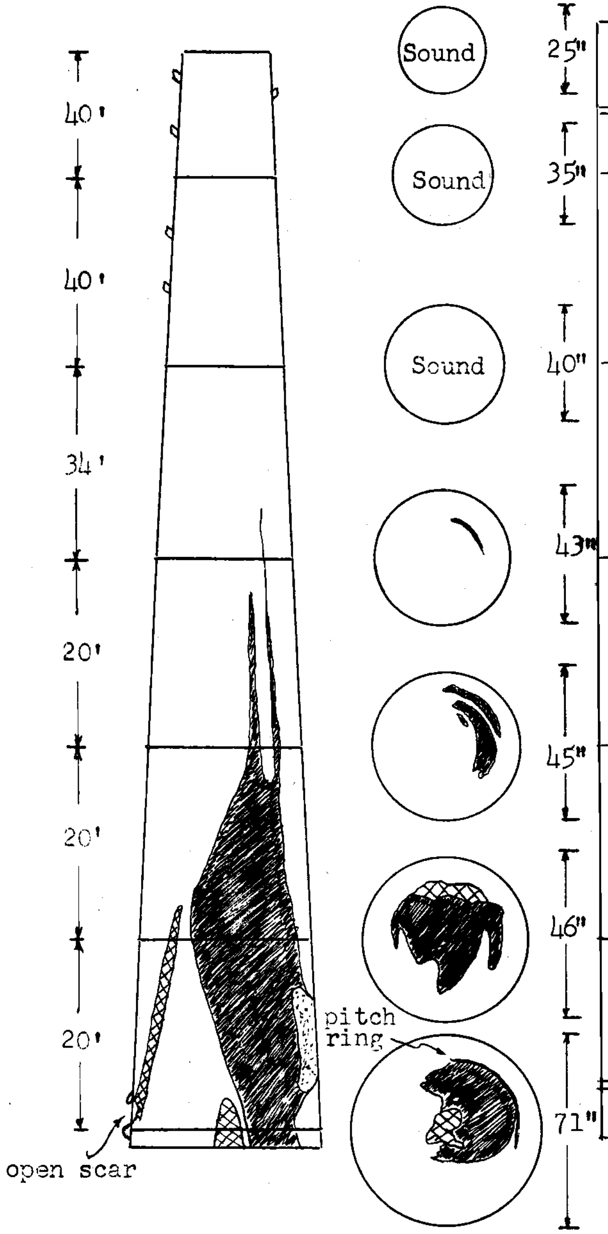
FIGURE 5. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery % clears	% #3 & 4	Total (FBM)	% gross log scale	Ave. lbr. value /M bd ft	Pond value /M, gross log scale
No log							
Culled in woods							
No. 2 log 2" knot indictrs.	37	32	51	2380	118	55.70	54.80
No. 2 log 2" knot indictrs. 3 clear quarters One 18" burl	69	47	16	3404	93	77.00	67.60
No. 2 log 2" knot indictrs. 3 clear quarters	80	49	20	2968	71	73.67	37.20
Total or average	67	44	27	8752	88	70.10	50.20

Adv. white pocket rot   *F. pini* stain   Brown rot

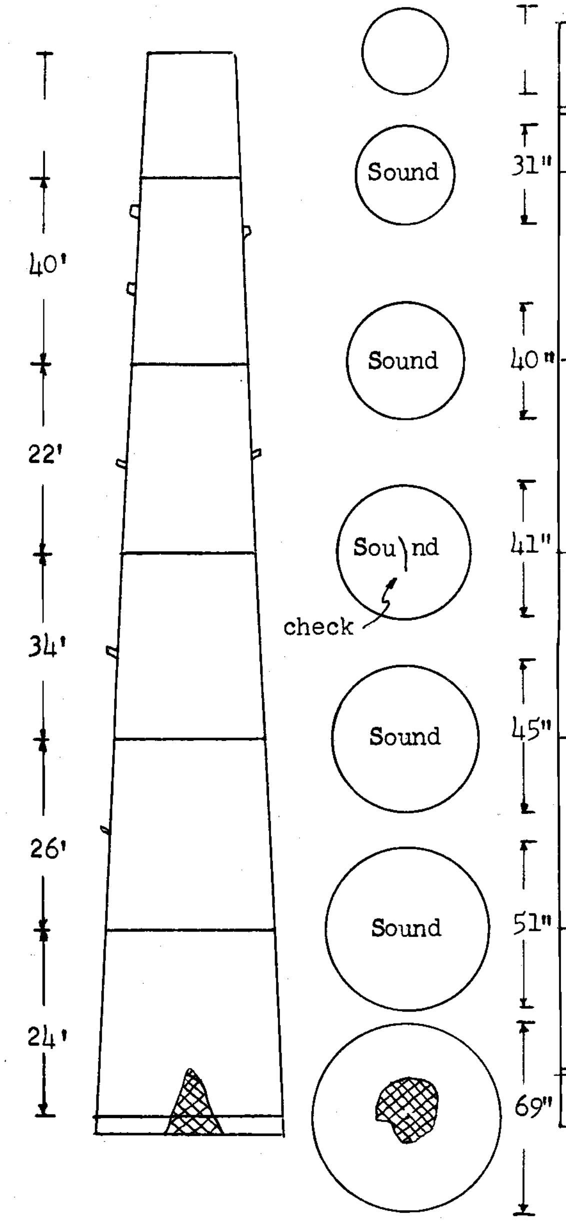
FIGURE 6. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery: % clears	Lumber recovery: % 3 & 4	Lumber recovery: Total (FBM)	Lumber recovery: % gross log scale	Ave. lbr. value /M bd ft	Pond value /M, gross log scale
No. 3 log 1 clear quarter	67	6	19	1748	140	44.79	53.30
No. 2 log Large knots 4-8" 1 clear quarter	76	19	11	3140	143	57.50	71.90
No. 2 log 2½" knot indictrs 2 clear quarters	77	23	7	2434	95	64.08	51.30
Bucked break							
No. 2 log 2" knot indictrs 2 clear quarters	47	23	42	1478	78	51.59	29.40
No. 2 log Numerous swollen knots 2 clear quarters	33	39	44	1371	69	60.81	29.20
Total or average	59	20	20	10171	103	56.50	46.80

Adv. white pocket rot — *F. pini* stain — Brown rot

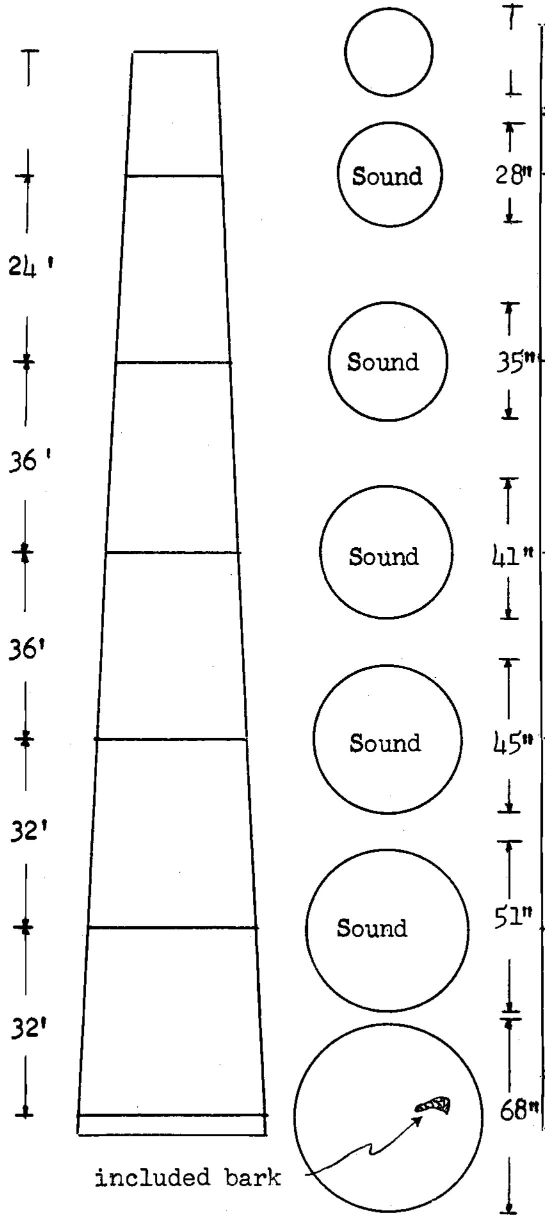
FIGURE 7. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
No log							
No. 3 log 4 live knots over 6" diameter 1 clear quarter	77	3	18	2058	116	45.03	41.20
No. 3 log 2" dead knots 1 clear quarter	54	16	9	1470	89	61.84	45.40
No. 3 log 2" dead knots 1 clear quarter	79	8	7	2611	97	58.87	49.10
No. 2 log $1\frac{1}{2}$" knot cators 1 clear quarter	97	17	17	2581	105	60.13	53.30
No. 2 log $1\frac{1}{2}$" dead knots 1 clear quarter	65	29	33	2169	74	61.52	35.00
Total or average	75	14	17	10889	95	57.50	43.90

Adv. white pocket rot   *F. pini* stain   Brown rot

FIGURE 8. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.

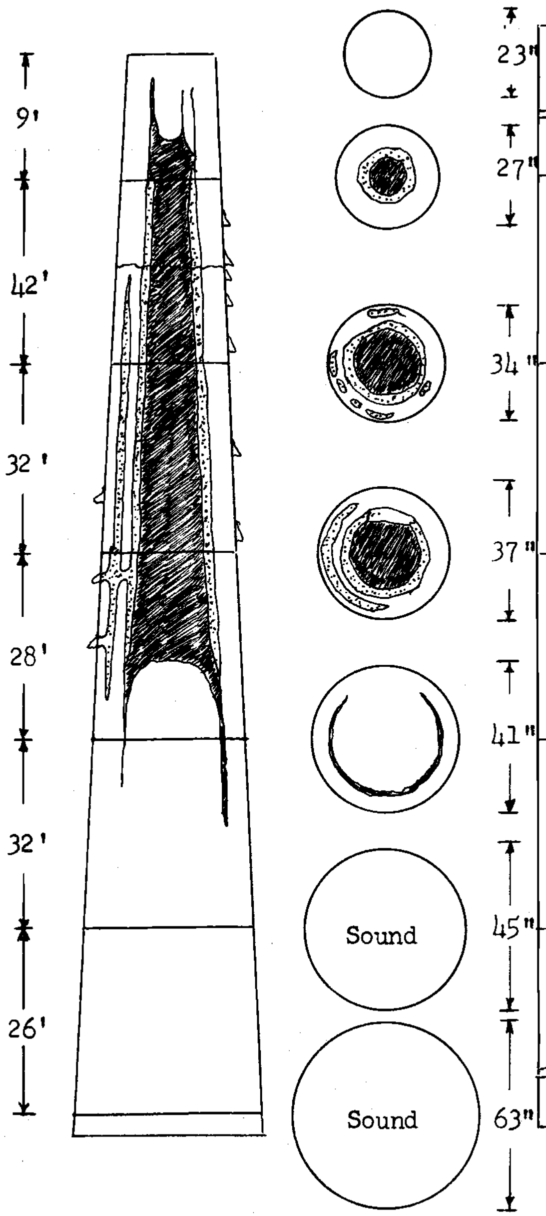


Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
No. 3 log with live knots up to 8 inches	57	4	33	964	111	47.50	41.40
No. 3 log with live knots up to 7" diameter	75	10	28	2176	110	51.50	47.30
No. 3 log with 2"-4" knots — 1 10" burl	69	9	18	2813	98	45.08	35.90
No. 3 log with 3" dead knots and 3 large burls	88	10	12	2673	88	57.60	42.20
No. 2 log with 3" dead knots 2 clear quarters	76	15	15	2574	66*	56.70	27.10
Total or average	76	10	20	11200	89	52.20	36.90

Adv. white pocket rot   *F. pini* stain   Brown rot

*Last log sawed -- some lumber from this log was not tallied.

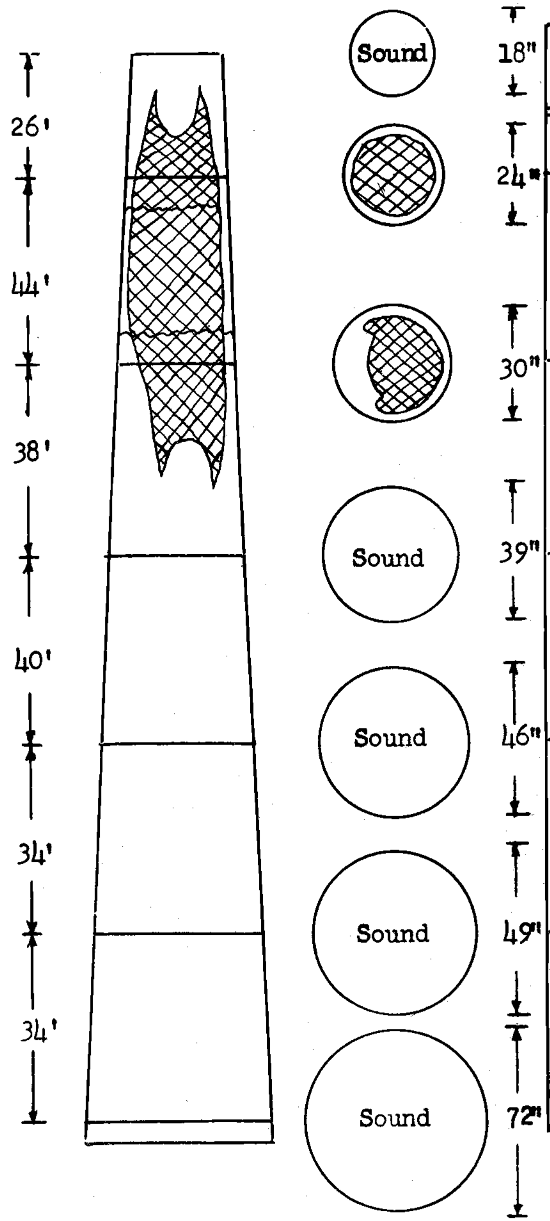
FIGURE 9. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
Broken section							
Cull log with 5" dead knots. 1 clear quarter	0	9	77	2059	129	44.28	50.90
No. 2 log with 3" dead knots 1 clear quarter	33	17	52	1265	70	46.00	23.60
No. 2 log with 3" dead knots 3 clear quarters Bucker's split	95	26	8	3058	120	65.00	69.20
No. 2 log with 1" knot indicators and 3 clear quarters	92	35	12	2469	100	72.00	60.10
Total or average	62	23	27	8851	105	59.40	53.30

Adv. white pocket rot   *F. pini* stain   Brown rot

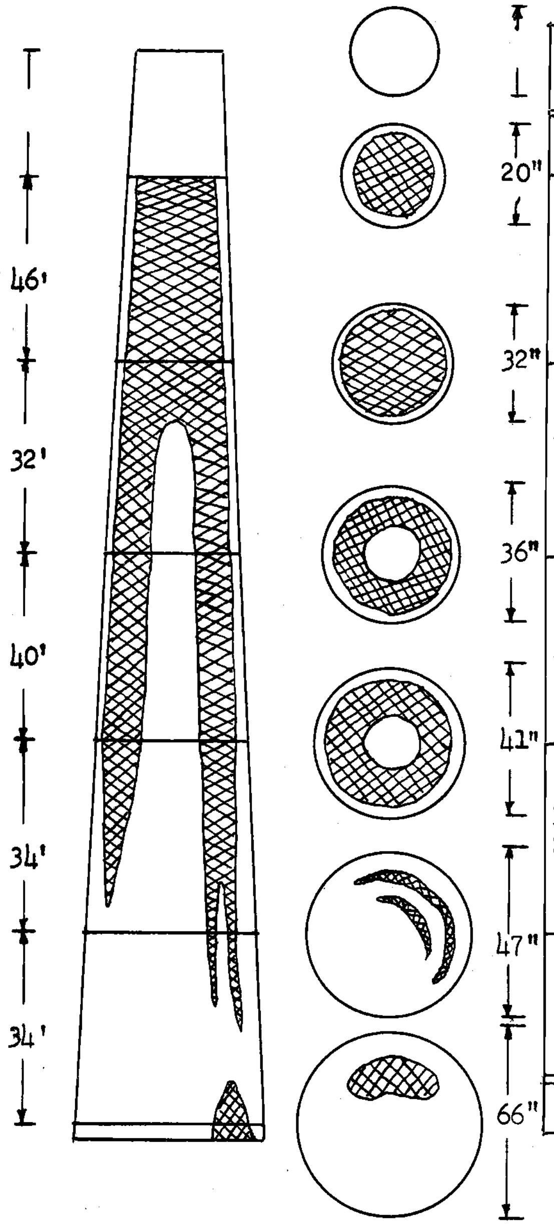
FIGURE 10. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
Broken section							
No. 2 log with 8" burl 5" dead knots 2 clear quarters	93	8	48	1864	119	43.00	41.00
No. 2 log with 6 burls, 3" dead knots 2 clear quarters	78	8	13	2606	93	51.90	38.30
No. 2 log with 4 burls 3" dead knots 2 clear quarters	90	8	11	3361	100	64.20	56.50
No. 2 log 1½" dead knots 2 clear quarters	83	14	17	4559	119	56.30	58.40
Total or average	81	10	19	12390	107	55.50	50.60

Adv. white pocket rot   *F. pini* stain   Brown rot

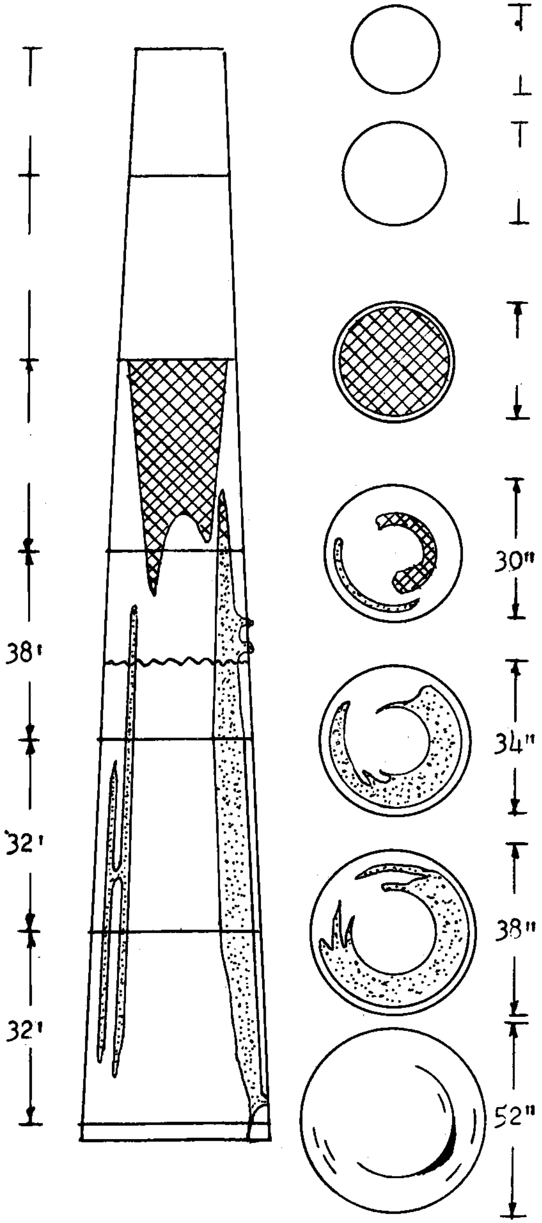
FIGURE 11. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
No. 3 log knots to 6" diam.	79	17	30	1570	107	52.40	44.20
Broken section							
No. 2 log $2\frac{1}{2}$" dead knots 2 clear quarters	78	37	13	2512	93	70.80	61.10
No. 2 log $1\frac{1}{2}$" knot indictrs 3 clear quarters	67	54	19	3357	95	77.50	64.10
Total or average	73	41	19	7439	97	69.90	58.30

Adv. white pocket rot   *F. pini* stain   Brown rot

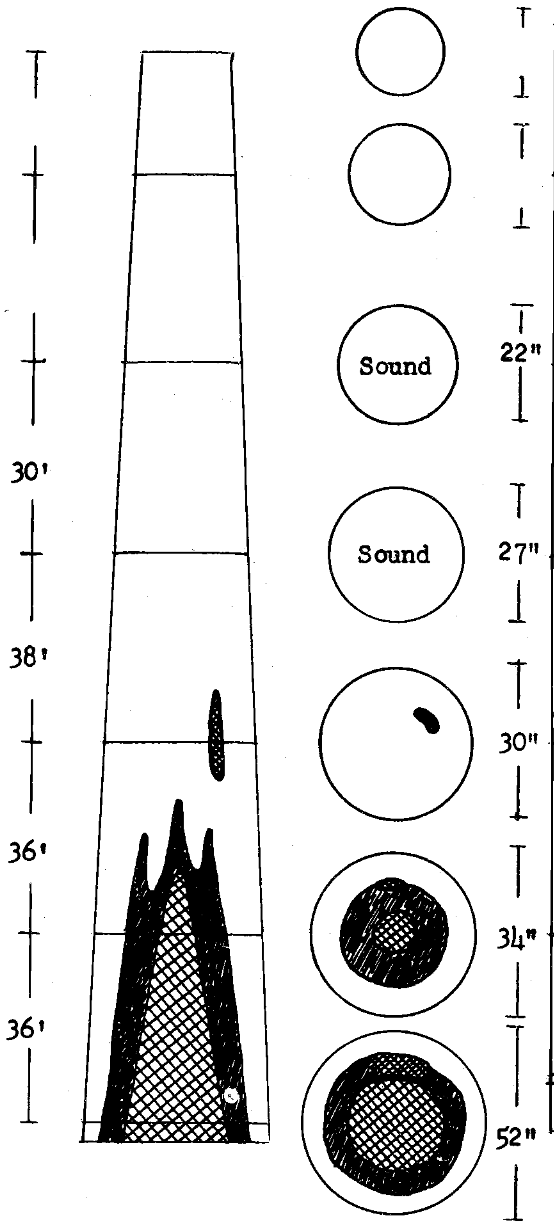
FIGURE 12. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber Recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clear	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
Broken section							
Culled in woods							
Cull log	0	8	76	1500	70	34.30	13.20
Totals & average	0	8	76	1500	70	34.30	13.20

Advanced white pocket rot   *F. pini* stain   Brown rot

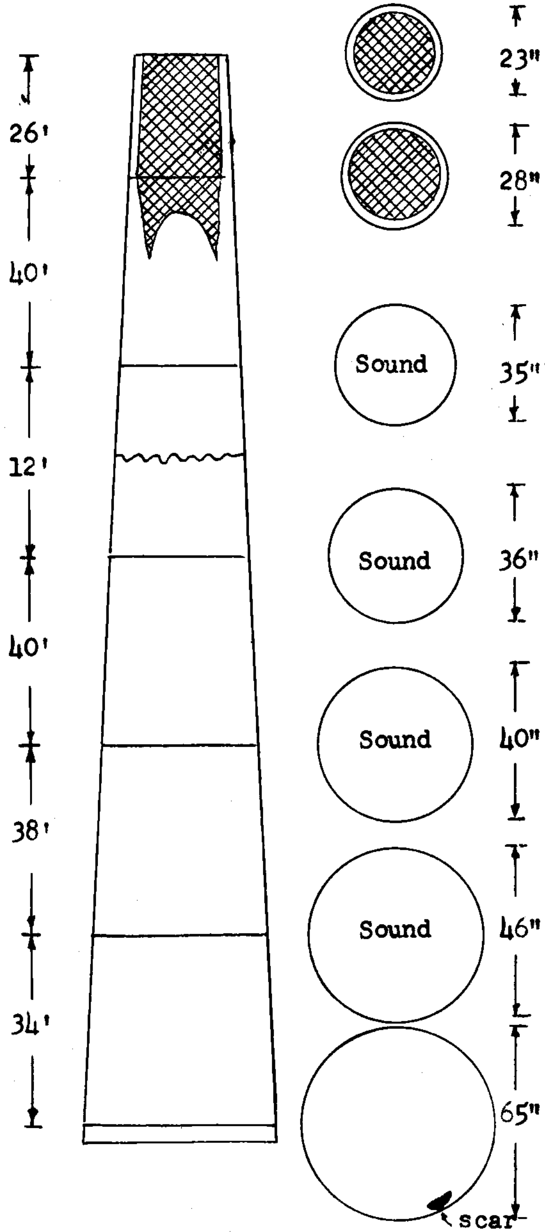
FIGURE 13. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber Recovery % clear	Lumber Recovery % #3 & 4	Lumber Recovery Total (FBM)	Lumber Recovery % gross log scale	Ave. lbr. value /M bd ft	Pond value /M, gross log scale
No. 3 log	90	12	19	791	126	53.60	53.40
No. 2 log	74	15	8	1440	111	53.00	50.00
No. 2 log	88	17	27	1379	93	52.90	38.40
No. 2 log 1½" knots 2 clr. quarters	49	33	41	934	52	57.20	21.50
Total or average	71	19	23	4544	87	54.00	37.30

Advanced white pocket rot — *F. pini* stain — Brown rot

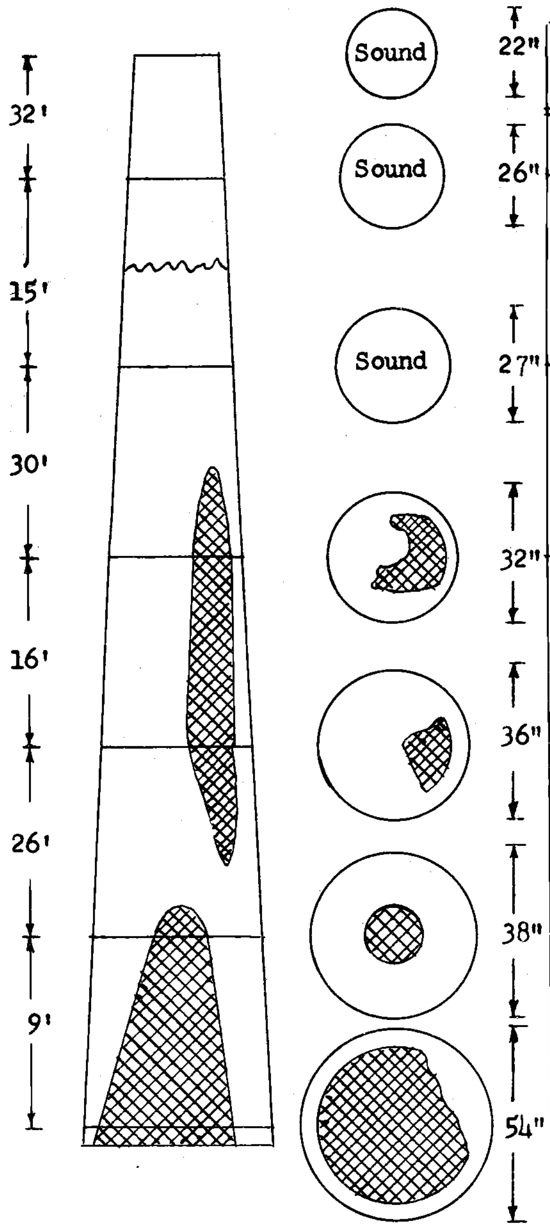
FIGURE 14. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber Recovery % clear	% #3 & 4	Total (FBM)	% gross log scale	Ave. lbr. value /M bd ft	Pond value /M, gross log scale
Broken section							
No. 3 log Live knots to 7" 1 clear quarter	79	7	64	1393	95	39.60	10.40
Bucked break							
No. 2 log with 4 burls 2½" dead knots 1 clear quarter	80	6	12	2394	104	50.90	45.00
No. 2 log 1½" knot indictrs. 2 clear quarters	94	10	12	3098	108	56.80	52.90
No. 3 peeler log 1" knot indictrs. 2 clear quarters	77	30	10	3830	113	64.90	63.10
Total or average	86	16	18	10715	107	56.10	48.30

Advanced white pocket rot   *F. pini* stain   Brown rot

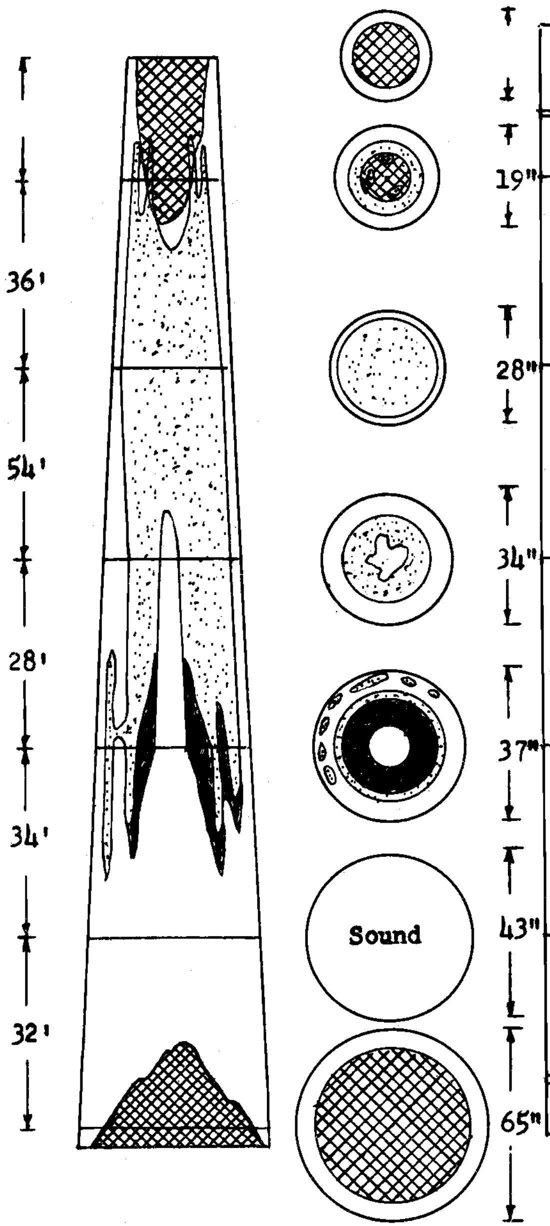
FIGURE 15. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber Recovery % clear	% #3 & 4	Total (FBM)	% gross log scale	Ave. lbr. value /M bd ft	Pond value /M, gross log scale
No. 2 log. Live knots 4-6" 1 clr. quar.	77	6	18	865	129	46.20	50.40
Bucked break							
No. 2 log 3" dead knots 1 clear quarter	83	10	39	1000	97	50.30	41.60
No. 2 log 3" knot indictrs. 1 clear quarter	48	17	36	1004	68	55.40	31.80
No. 2 log 2" dead knots 2 clear quarters	80	10	29	1274	85	56.20	39.60
Long butt							
Total or average	70	12	29	4684	93	53.10	41.50

Advanced white pocket rot   *F. pini* stain   Brown rot

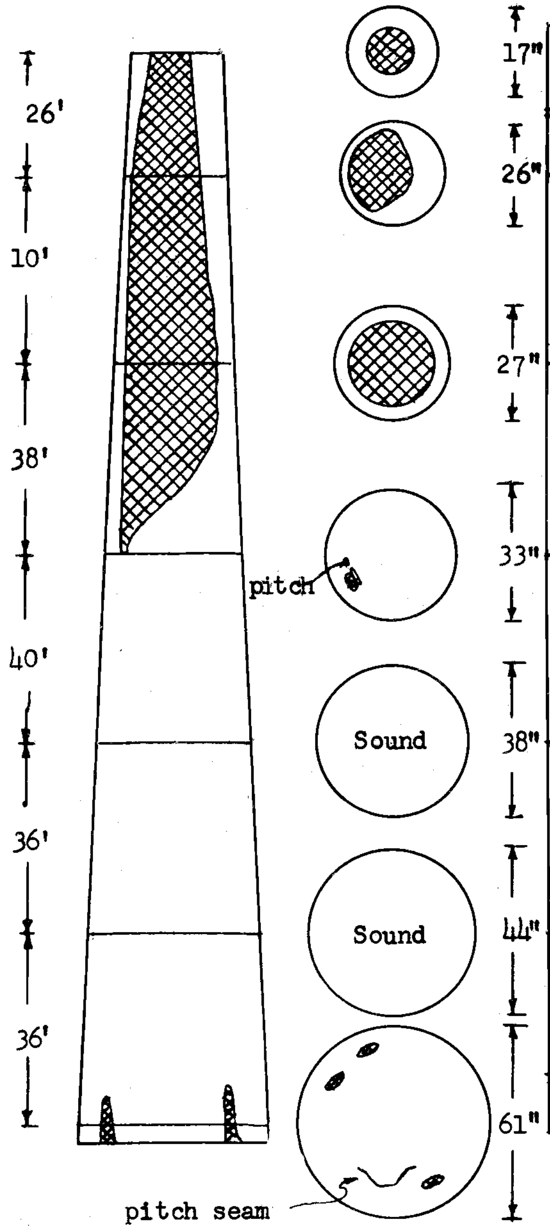
FIGURE 16. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber Recovery				Av. lbr. value /M bd ft	Pond value /M, gross log scale
		% clear	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
Broken section							
Broken section							
Culled in woods							
No. 3 log with 4" knots 2 clear quarters	82	14	21	2079	95	52.30	40.30
No. 2 log with 2" knots 2 clear quarters 3 burls	65	17	19	3051	109	56.70	50.50
Total or average	72	15	20	5130	103	55.00	46.00

Advanced white pocket rot   *F. pini* stain   Brown rot

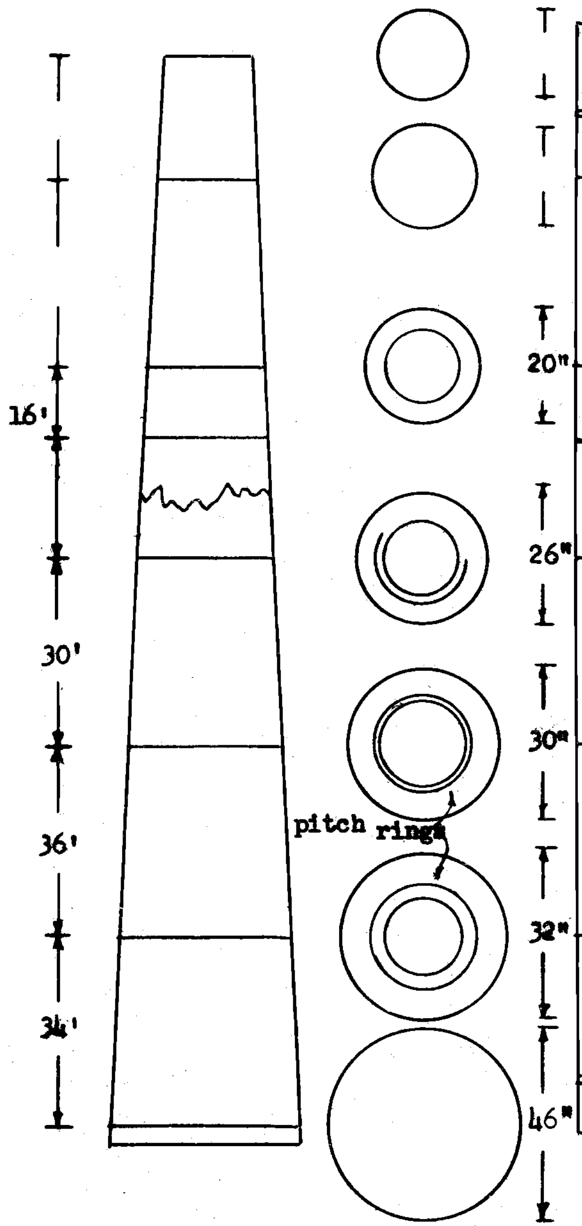
FIGURE 17. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken Section							
Bucked Break							
No. 3 log with 4" knots and no clear quarters	79	9	75	1034	80	38.80	21.10
No. 2 log with 3½" knots, one burl, and one clear quarter	84	8	24	2304	118	49.30	48.80
No. 2 log with 2" dead knots 1½ clear quarters	87	13	11	2580	108	55.50	50.70
No. 2 peeler log 1" knot indictrs. 3 clear quarters	86	24	22	3057	92	60.12	46.10
Total or average	85	14	25	8975	100	53.50	44.30

Adv. white pocket rot   *F. pini* stain   Brown rot

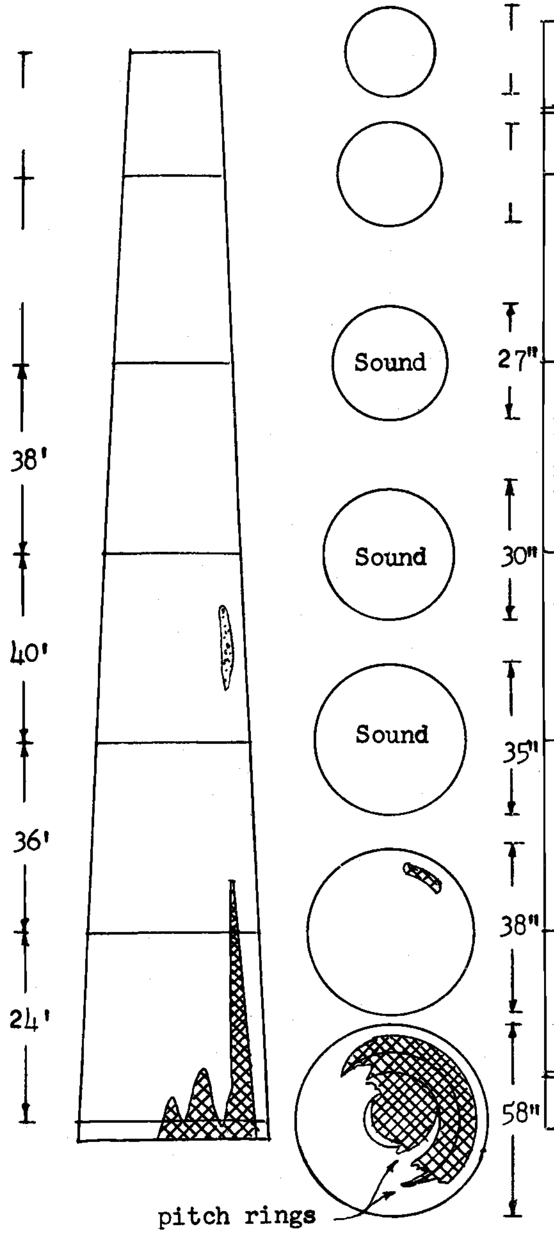
FIGURE 18. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
No. 3 log	86	20	21	457	163	54.50	72.10
Bucked break							
No. 2 log	95	10	23	1035	110	48.40	45.80
No. 2 log	59	16	32	1125	76	48.30	27.30
No. 2 log	53	17	32	1074	69	51.20	25.10
Total or average	64	15	28	3691	87	50.00	33.50

Adv. white pocket rot   *F. pini* stain   Brown rot

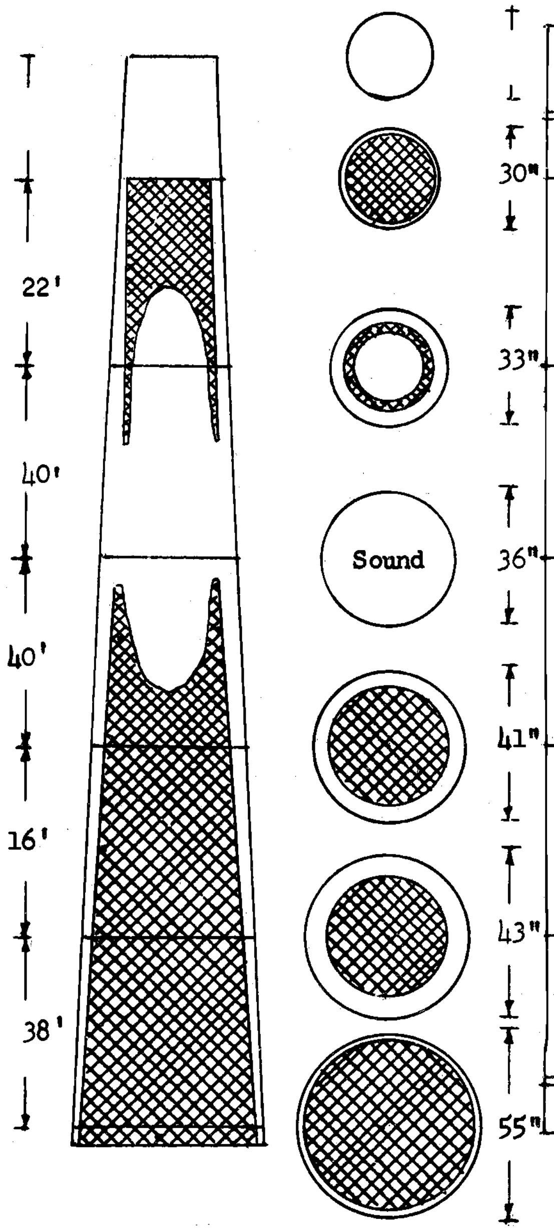
FIGURE 19. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. Lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
No. 2 log with 5" knots No clear quarter	71	15	8	1195	92	50.70	38.20
No. 2 log with 5" knots 1 clear quarter One scar	95	19	8	2085	127	60.60	69.20
No. 2 log with 2" knot indictrs. 2 clear quarters	91	15	8	2340	119	61.80	64.40
No. 2 log 1½" knot indictrs 3 clear quarters	81	20	21	1677	105	58.70	47.20
Total or average	85	17	11	7297	112	59.00	56.10

Adv. white pocket rot   *F. pini* stain   Brown rot

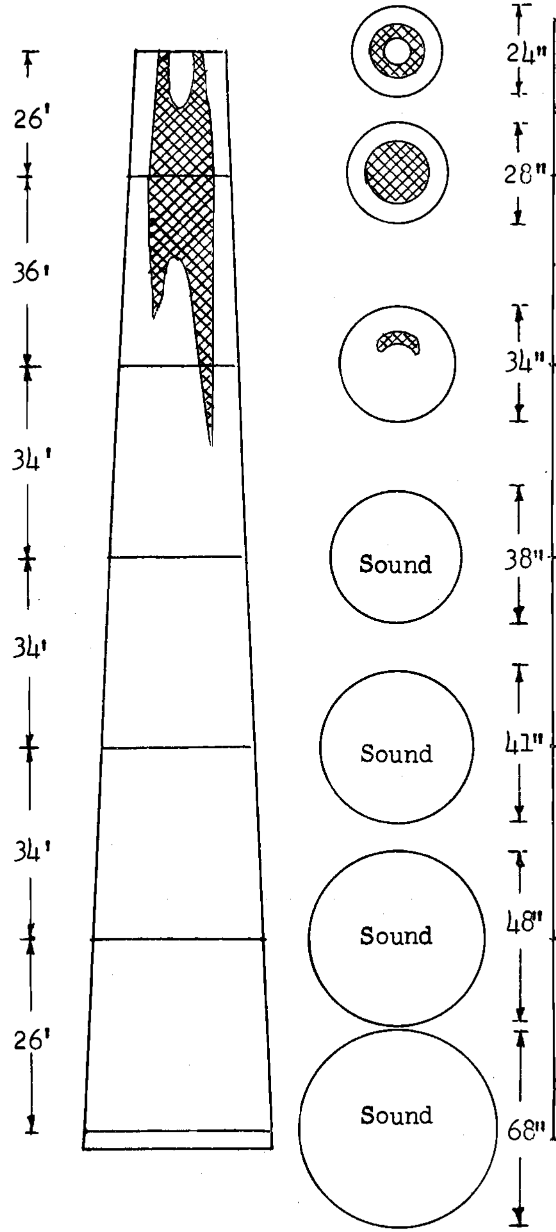
FIGURE 20. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES



Log description	Net scale as % of gross	Lumber recovery % clears	Lumber recovery % #3 & 4	Lumber recovery Total (FBM)	Lumber recovery % gross log scale	Ave. lbr. value /M bd ft	Pond value /M, gross log scale
Broken section							
No. 2 log with 1 5" knot 3 clr. quarters	59	21	41	1613	82	53.80	39.40
Culled in woods							
Broken section							
Broken section							
Total or average	59	21	41	1613	82	53.80	39.40

Adv. white pocket rot   *F. pini* stain   Brown rot

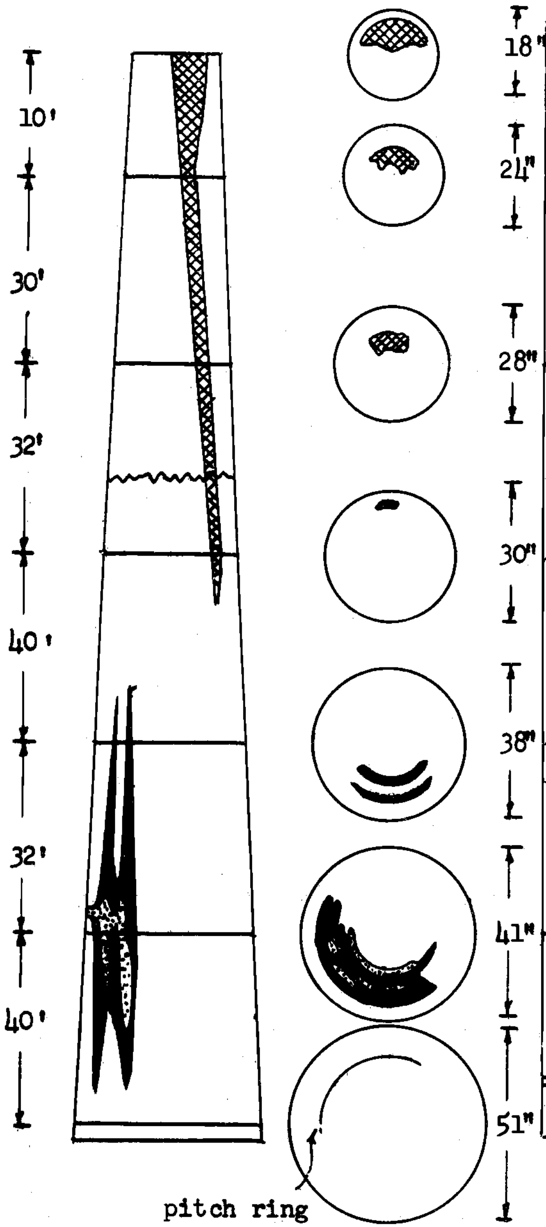
FIGURE 21. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES



Log description	Net scale as % of gross	Lumber recovery: % clears	Lumber recovery: % #3 & 4	Lumber recovery: Total (FBM)	Lumber recovery: % gross log scale	Ave. lbr. value /M bd ft	Pond value /M, gross log scale
Broken section							
No. 3 log, 6" knots plus 2 large branch fans No clear quarter	69	10	68	1386	106	35.60	28.30
No. 3 log with 5" knots, one large branch fan 1 clear quarter	78	14	12	2010	112	58.30	53.30
No. 2 log 2" knot indictrs. 2 clear quarters 1 pitch blister	87	23	1	2170	96	73.10	63.30
No. 3 peeler log 1" knot indictrs. 3 clear quarters	95	47	1	2393	89	90.40	71.90
No. 1 peeler log 1" knot indictrs. 3½ clear quarters	68	65	2	2220	79	106.60	73.10
Total or average	80	34	12	10179	94	76.40	62.10

Adv. white pocket rot F. pini stain Brown rot

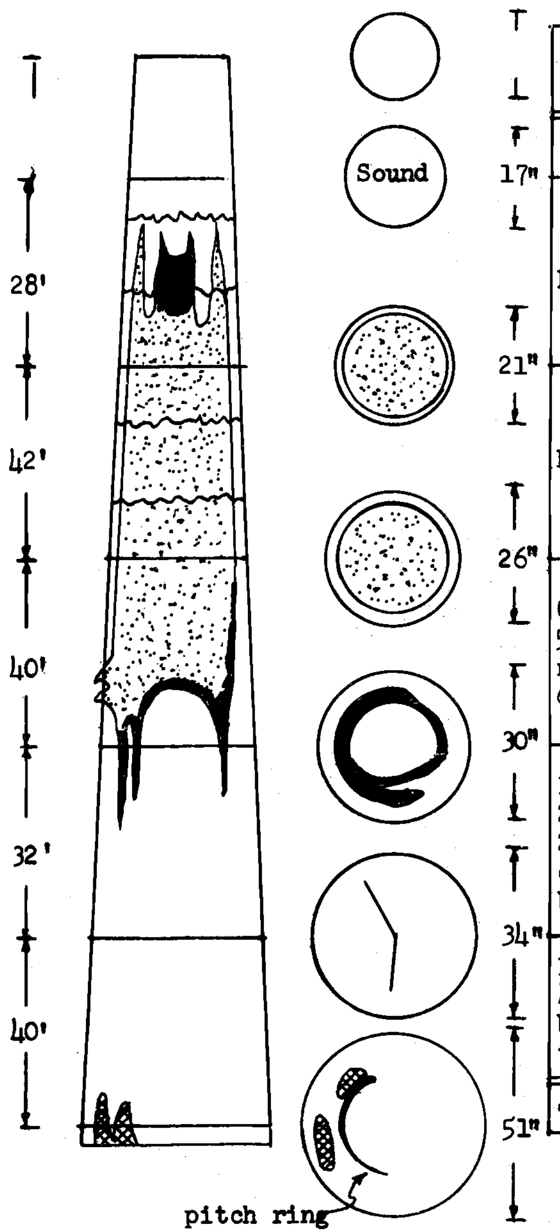
FIGURE 22. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
No. 3 log with 6" knots no clear quarter	66	3	18	538	88	43.50	28.90
Broken section							
No. 2 log with 3" knots, one branch fan 1 clear quarter	93	14	10	2110	129	52.10	57.20
No. 2 log 1" knot indictrs 3 clear quarters	66	25	16	2254	105	62.20	57.40
No. 3 peeler log 1" knot indictr.	71	21	40	2306	73	52.70	30.00
Total or average	74	19	22	7208	95	54.80	43.60

Adv. white pocket rot   *F. pini* stain   Brown rot

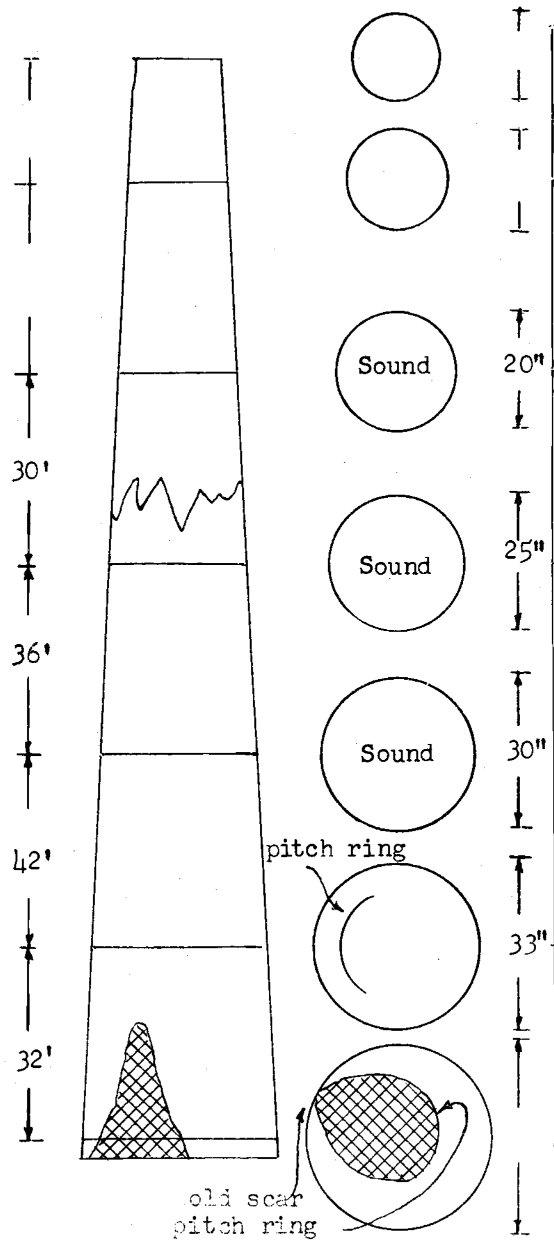
FIGURE 23. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
Broken section							
Cull log with 5" knots no clear quarters 6 burls up to 24"	0	7	90	1100	88	36.50	23.70
No. 3 log 2" knot indictrs. 2 clear quarters except for 15 burls up to 18"	84	11	22	1554	119	48.80	47.00
No. 3 log with 4 clear quarters but 18 burls up to 30" diameter	82	12	8	2196	110	52.40	48.10
Total or average	60	10	31	4850	106	47.70	41.10

Adv. white pocket rot   *F. pini* stain   Brown rot

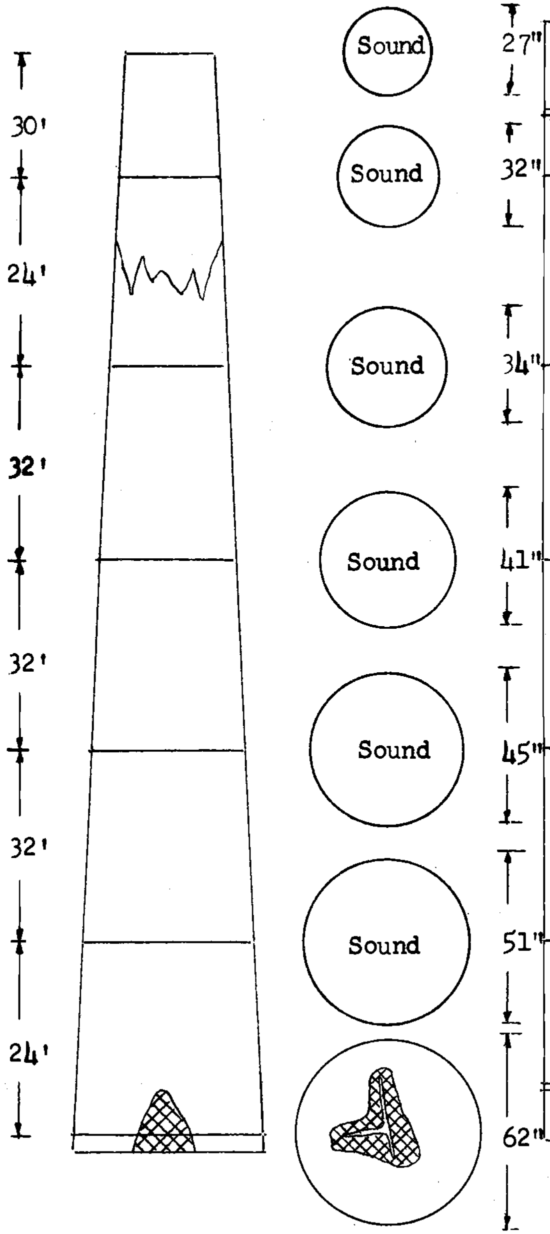
FIGURE 24. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken section							
No. 2 log 4" knots 2 branch fans 2 clear quarters	73	14	11	589	57	51.32	17.40
No. 2 log 3" dead knots 2 clear quarters	75	6	2	1818	100	51.00	41.40
No. 2 log 3" dead knots 3 clear quarters	76	15	33	1409	90	50.90	31.60
Total or average	75	10	15	3816	86	51.00	32.30

Adv. white pocket rot   *F. pini* stain   Brown rot

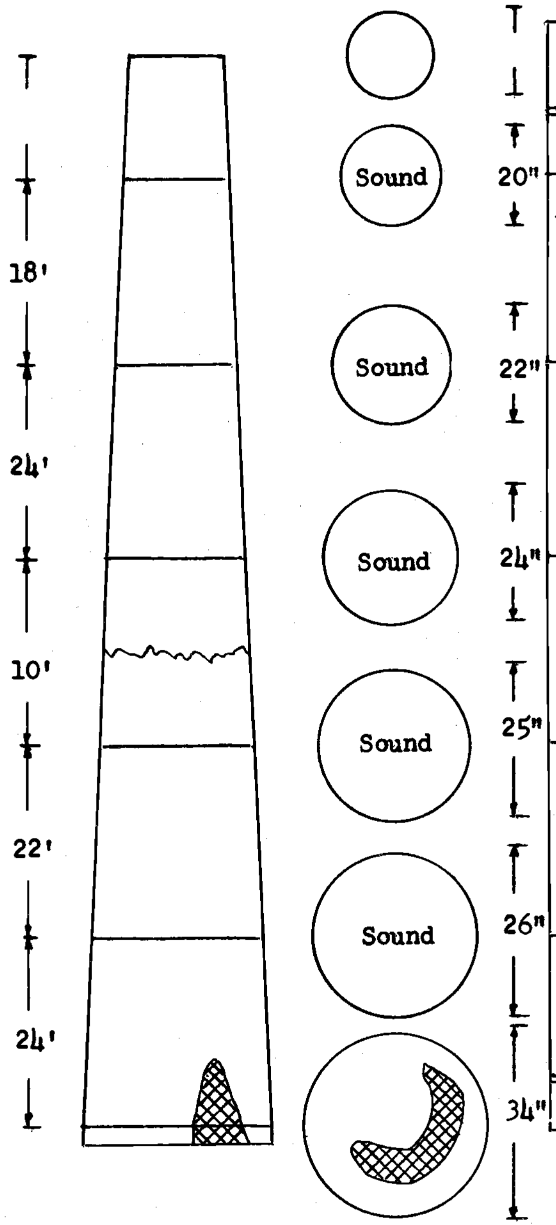
FIGURE 25. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
No. 3 log with 7 4-8" knots No clear quarters	67	8	18	1216	118	48.40	48.70
Bucked break							
No. 2 log with 3" knots (one 10") 2 clear quarters	86	17	6	2068	129	63.20	69.90
No. 2 log with 2½" knots 2 clear quarters	84	34	3	2258	89	72.90	57.00
No. 3 peeler log 1½" knot indictrs. 3 clear quarters	79	53	1	2310	76	83.50	56.00
No. 2 peeler log 1" knot indictr. 3 clear quarters	76	56	9	3100	92	82.00	61.90
	(includes log scale & lumber recovery of buttlog from tree 26)						
Total or average	79	37	6	11152	96	71.80	59.20

Adv. white pocket rot   *F. pini* stain   Brown rot

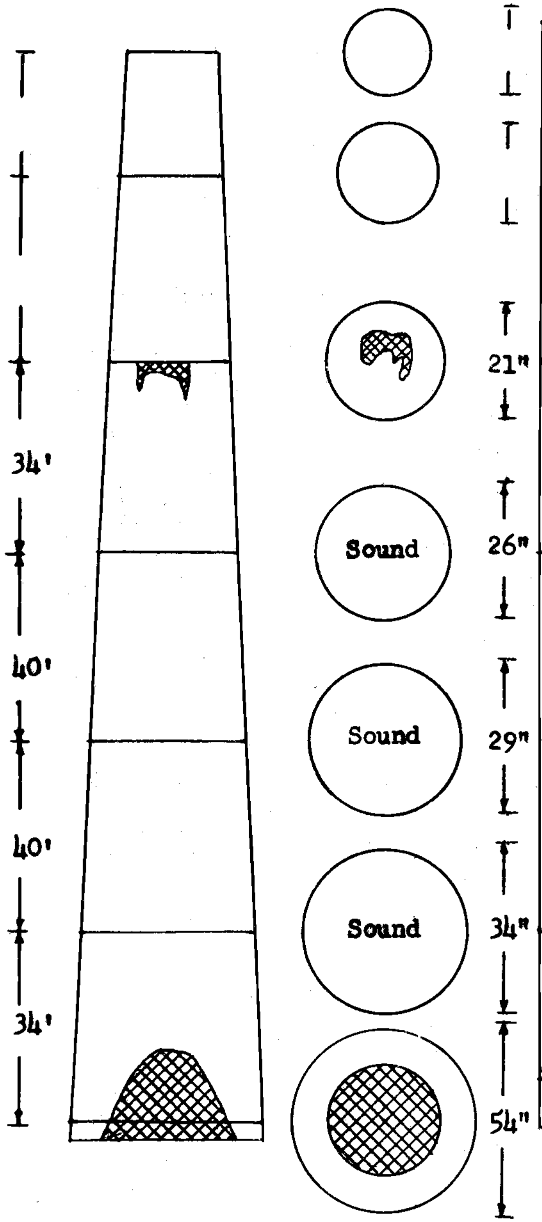
FIGURE 26. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% # 3 & 4	Total (FBM)	% gross log scale		
No. 2 log with 3-4" knots 1 clear quarter	77	7	15	383	123	50.40	45.20
No. 2 log with 3" dead knots 1 clear quarter	84	9	16	515	107	52.90	41.04
Bucked break							
No. 2 log with 1" knot indictrs.	83	22	12	497	79	61.20	41.20
Lumber recovery from this log included with butt log of tree #25.							
Totals & averages	82	13	14	1395	97	55.20	42.00

Adv. white pocket rot   *F. pini* stain   Brown rot

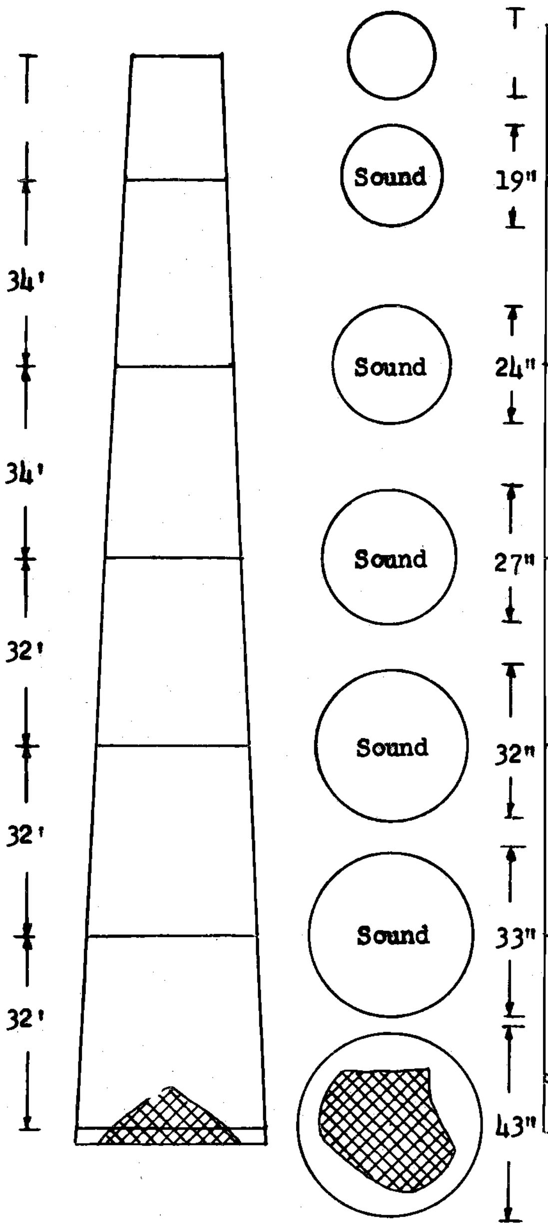
FIGURE 27. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Shattered							
No. 3 log 3 live knots 4-5" 1 clear quarter	92	0	11	1083	167	48.30	70.50
No. 2 log 3" knots 2 clear quarters	81	4	4	1527	122	49.60	51.20
No. 2 log $1\frac{1}{2}$" dead knots 2 clear quarters	96	17	1	1797	118	61.10	68.70
No. 3 peeler 1" knot indictrs. $3\frac{1}{2}$ clear quarters	71	54	13	1224	72	81.30	45.40
Total & averages	83	18	6	5631	110	59.90	56.90

Adv. white pocket rot   *F. pini* stain   Brown rot

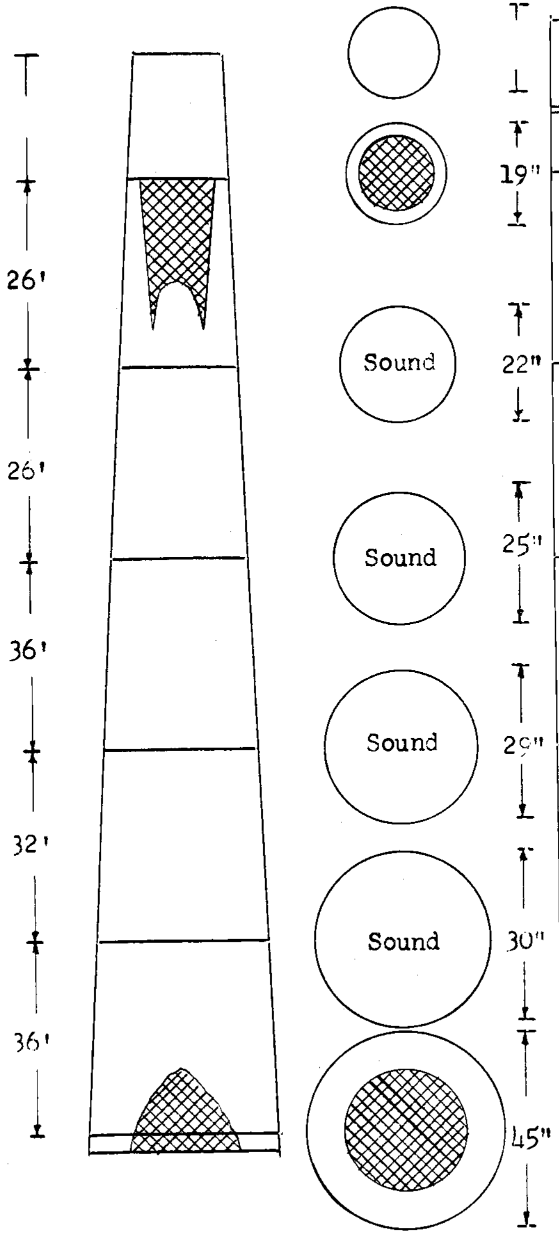
FIGURE 28. INDIVIDUAL TRE. SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
No. 3 log 4 knots 3"-4" No clear quarters	76	7	13	572	112	48.80	44.30
No. 3 log Six 2" knots 1 clear quarter	70	12	8	652	76	51.30	30.30
No. 2 log 1" knots with one 2" knot 1 clear quarter	84	9	8	988	90	53.80	40.67
No. 2 log One 2" knot Heavy spiral grain 2 clear quarters	78	33	5	1305	89	66.60	49.90
No. 2 peeler log 4 clear quarters	73	60	7	1369	87	85.10	62.80
Totals & averages	76	30	8	4886	89	65.10	48.20

Adv. white pocket rot   F. pini stain   Brown rot

FIGURE 29. INDIVIDUAL TREE SUMMARY SHOWING LOG DESCRIPTIONS, LUMBER YIELDS AND POND VALUES.



Log description	Net scale as % of gross	Lumber recovery				Ave. lbr. value /M bd ft	Pond value /M, gross log scale
		% clears	% #3 & 4	Total (FBM)	% gross log scale		
Broken top							
No. 3 log Two 5" knots 2 clear quarters	65	15	23	573	106	55.50	46.70
No. 2 log 1½-2" knots 2 clear quarters	73	11	1	1268	123	55.90	59.00
No. 2 log with 1½" knot indictrs. 3 clear quarters	75	12	17	1790	147	53.60	69.40
No. 2 log with 1" knot indictrs. 3½ clear quarters	83	21	14	1264	85	57.90	38.40
Total & averages	78	14	13	4895	115	55.50	53.30

Adv. white pocket rot   F. pini stain   Brown rot