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20.06.03 - SCALING SPECIFICATIONS AND CHECK SCALING STANDARDS

000. - 009. (RESERVED).

010. DEFINITION.

Scaling is a method by which the contents of timber products are measured and expressed in acceptable units of measure. It requires a combination of scale data for each log scaled from which both gross and net scale measurements may be derived. Gross scale is defined as the contents of timber products before any allowance is made for defects. Net scale is defined as the usable contents of timber products after deductions are made for defects. (12-31-90)

011. UNITS OF MEASURE.

Acceptable units of measure shall include those stated in the National Forest Log Scaling Handbook, the board foot as determined using the Coconino Scribner decimal C log rule, and units of measure deemed acceptable by the Idaho State Board of Scaling Practices, which include the following: (12-31-90)

01. Standards for Poles. Manufacturing and grading specifications standards for poles as established by American Standards Association. (12-31-90)

02. Truckload Volume Formula. The cordwood (or cubic) formula for measuring truckload volumes:

$$(L \times W \times H) / .256 = \text{Volume IN BOARD FEET} \\ (12 \text{ Cubed})$$

Length (L), width (W), and height (H) are measured and expressed to the nearest actual inch. (12-31-90)

03. Cubic Rule (Smalian). The cubic rule (Smalian) measurement for pulp and cedar products as used by the USFS Region 1. (12-31-90)

04. Gross Weight Measurement. A gross weight measurement of timber products. (12-31-90)

05. Other Measurement Units. Other units of measure as established by the board of scaling practices through the rule-making process. (12-31-90)

06. Regional Supplements - USFS Timber Sales. Regional supplements to the National Forest Log Scaling Handbook, unless specifically adopted by the board, are only applicable to United States Forest Service timber sale contracts. (12-31-90)

012. -- 099. (RESERVED).

100. SAWLOGS.

01. Definition. Sawlogs are those logs which are suitable for the manufacture of lumber, beams, veneer, etc. Classification as "sawlog" requires a log or log segment to meet minimum merchantability specifications. Contractual scaling agreements may establish minimum merchantability specifications; otherwise, all logs or log segments measured for board foot volume by means of the Coconino Scribner decimal C scale rule shall be defined as sawlogs when their net scale volume is equal to or greater than thirty three and one third percent (33-1/3%) of their gross scale volume as determined by these rules. (12-31-90)

02. Species Identification. By its nature, log scaling reflects an arbitrary usable content of a log. It does not reflect grading. Because of this, species differentiation for check scaling purposes shall be made, according to normal commercial species. Contractual scaling agreements may establish further species differentiation, including a differentiation according to scaling diameter or scaling length, or lumping together of like species; otherwise,

differentiation of species shall be made as follows: (12-31-90)

WP	Western of Idaho White Pine (<i>Pinus monticola</i>)
PP	Ponderosa Pine (<i>Pinus ponderosa</i>)
S	Engelmann Spruce (<i>Picea engelmanni</i>)
C	Western Redcedar (<i>Thuja plicata</i>)
L	Western Larch or Tamarack (<i>Larix occidentalis</i>)
DF	Douglas Fir or Red Fir (<i>Pseudotsuga menziesii</i>)
GF	Grand Fir or White Fir (<i>Abies grandis</i> , <i>Abies concolor</i>)
AF	Subalpine Fir (<i>Abies lasiocarpa</i>)
H	Western Hemlock (<i>Tsuga heterophylla</i>)
LP	Lodgepole Pine (<i>Pinus contorta</i>)
CW	Black Cottonwood (<i>Populus trichocarpa</i>)
O	All other tree or shrub species shall be classified as "other"

(12-31-90)

03. Gross Scale Determination. (12-31-90)

a. The gross scale of a sawlog shall be determined by the volume obtained from the log rule after measuring and applying the scaling length and scaling diameter, in accordance with the Scribner decimal C volume table as listed in the National Forest Log Scaling Handbook, Appendix, Table II, EXCEPT that the volumes listed in the Appendix, Table I, of these rules shall apply to diameter classes 3" through 8" inclusive. (1-1-95)

b. Scaling length shall be determined by the length of the scaling cylinder (as explained in the National Forest Log Scaling Handbook) plus trim allowance. Length determination shall recognize logs measuring from the minimum length (plus trim) to 20' (plus trim) as single-segment logs; from 21' (or 22' plus trim) to 40' (plus trim) as two-segment logs; from 41' (or 42' plus trim) to 60' (plus trim) as three-segment logs, etc. (12-31-90)

c. Scaling diameters shall be determined by the methods outlined in the National Forest Log Scaling Handbook. Scaling diameters are measured down to a minimum top diameter. Mid-point diameters on second-cut, multi-segment logs are determined on the basis of calculated taper; mid-point diameters on butt-cut, multi-segment logs shall be determined by the methods stated in the Appendix, Table II, of these rules. (1-1-95)

04. Gross Scale Contractual Specifications. (12-31-90)

a. Contractual scaling agreements relating to determination of gross scale may establish the following specifications: (12-31-90)

i. Permissive minimum or maximum trim allowances per scaling segment. (12-31-90)

ii. Whether logs are to be scaled in one (1) or two (2) foot multiples, provided that they recognize scale for odd-length logs when odd-length logs are requested in addition to logs cut in two-foot multiples. (12-31-90)

iii. A minimum log length (plus trim). (12-31-90)

iv. A minimum top diameter. (12-31-90)

05. Gross Scale Non-Contractual Specifications. In the absence of a contractual scaling agreement denoting otherwise, the following specifications are established: (12-31-90)

- a. Logs shall be scaled with a six-inch maximum trim allowance per segment for the scaling length in accordance with the Appendix, Table III, of these rules. (1-1-95)
- b. Minimum log length shall be 8'1". (12-31-90)
- c. Minimum top diameter shall be 5.51" (actual measure). (12-31-90)
06. Net Scale Determination. (12-31-90)
- a. The net scale of a sawlog is the usable scale volume, after deductions have been made for scaling defects; it is subject to minimum merchantability specifications. (12-31-90)
- b. Types of defects and methods of deduction for sawlogs shall be made according to the National Forest Log Scaling Handbook and as herein elaborated. (12-31-90)
- c. Rot defects probably cause most of the overall volume loss in sawlogs. Scaling requires a thorough inspection of a log showing a deductible rot defect in order to determine the extent of total loss. This includes determining whether rot is in initial or advanced stages, recognition of external indicators to determine extent of decay, and knowledge of rot characteristics in specific stands of timber. (12-31-90)
- d. For "conk rot" and "Indian Paint rot" when nothing is evident to determine the overall extent of decay to the contrary, the following shall be used as guidelines: (12-31-90)
- i. For conk rot, from the "punk" or indicator of decay (except in White Pine), rot shall be estimated to extend 4' up the log and 6' down the log, and affect the entire heartwood. (12-31-90)
- ii. For conk rot in White Pine, from the "punk" or indicator of decay, rot shall be estimated to extend 2' up the log and 4' down the log, and affect 1/2 of the scaling cylinder. (12-31-90)
- iii. For Indian Paint rot, from the "punk" or indicator of decay, rot shall be estimated to extend 4' up the log and 6' down the log, and affect the entire scaling cylinder. (12-31-90)
- iv. On multi-segment logs, each segment shall be judged individually in order to determine whether it meets merchantability minimums. (12-31-90)
07. Net Scale Contractual Specifications. (12-31-90)
- a. Contractual scaling agreements relating to determination of net scale may establish the following specifications: (12-31-90)
- i. A merchantability minimum that net scale shall be in relation to the gross scale of a log or log segment. (12-31-90)
- ii. A minimum lumber length recovery. (12-31-90)
- iii. A provision for "combination logs" on multi-segment pieces (i.e., one segment sawlog, the other pulp log or cedar products log). (12-31-90)
08. Net Scale Non-contractual Specifications. (12-31-90)
- a. In the absence of a contractual scaling agreement denoting otherwise, the following specifications are established: (12-31-90)
- i. Merchantability minimum of net scale in relation to gross scale shall be thirty-three and one third percent (33-1/3%). (12-31-90)

- ii. Minimum lumber length consideration shall be 6' (with allowance for trim) and 1" x 4" board nominal (or rough cut) measurement. (12-31-90)
- iii. There are no "combination logs" on multi-segment pieces. (12-31-90)
- 09. Summary - Sawlogs. (12-31-90)
 - a. These scaling specifications enumerate the rules applicable to sawlog scaling by establishing rules for determining volumes and rot deductions in addition to the material in the National Forest Log Scaling Handbook. (12-31-90)
 - b. They allow for contractual scaling agreements to specify: (12-31-90)
 - i. Species differentiation, including an allowance for differentiation based on scaling length or diameter. (12-31-90)
 - ii. Permissive minimum or maximum trim allowances. (12-31-90)
 - iii. Log scaling in one (1) or two (2) foot multiples. (12-31-90)
 - iv. A minimum acceptable log length. (12-31-90)
 - v. A minimum acceptable top diameter. (12-31-90)
 - vi. A merchantability percentage minimum for net scale in relation to gross scale volume. (12-31-90)
 - vii. A minimum lumber length recovery. (12-31-90)
 - viii. A provision for "combination logs." (12-31-90)
 - ix. In the absence of a contractual scaling agreement, these specifications enumerate what the aforementioned shall be. (12-31-90)

101. -- 199. (RESERVED).

200. PULP LOGS.

01. Definition. Pulp logs are logs (or log segments) that are suitable for the manufacture of "wood chips." They are usually logs that do not meet net scale merchantability for sawlog classification although contractual scaling agreements may provide otherwise. In the absence of a contractual scaling agreement specifying otherwise, a pulp log is defined as a log whose net scale volume, as determined by the sawlog method, does not meet merchantability minimums. (12-31-90)

02. Species Identification. Normally, no species differentiation shall be made for pulp logs; classification shall be "pulp." A contractual scaling agreement may provide otherwise, including limitations as to species acceptable or the differentiation of species. (12-31-90)

03. Gross Scale. When the method of measurement is the Coconino Scribner decimal C scale rule, the gross scale of a pulp log shall be determined in the same manner as the gross scale of a sawlog. (12-31-90)

04. Gross Scale Contractual Specifications. Contractual scaling agreements relating to gross scale determination for pulp logs may establish the following specifications: (12-31-90)

- a. Permissive minimum or maximum trim allowances per scaling segment. (12-31-90)
- b. Whether logs are to be scaled in one (1) or two (2) foot multiples, provided that they recognize scale for odd-length logs when odd-length logs are requested in addition to logs cut in two-foot multiples. (12-31-90)

- c. A minimum log length (plus trim). (12-31-90)
- d. A minimum top diameter. (12-31-90)
- 05. Gross Scale Non-Contractual Specifications. In the absence of a contractual scaling agreement denoting otherwise, the following specifications are established: (12-31-90)
 - a. Logs shall be scaled with a six (6) inch maximum trim allowance per segment for the scaling length in accordance with the Appendix, Table III, of these rules. (1-1-95)
 - b. Minimum log length shall be 8'1". (12-31-90)
 - c. Minimum top diameter shall be 5.51" (actual measure). (12-31-90)
- 06. Contractual Multi-product Classification. In addition, if a contractual scaling agreement provides for multi-product classification, the gross scale included in pulp log classification may be one or more segments of a "combination log." (12-31-90)
- 07. Net Scale Determination. (12-31-90)
 - a. The net scale of a pulp log shall be determined by deducting defects which reduce the pulp volume, or chip yield, as determined by the pulp method, and subject to minimum merchantability. These defects are advanced stages of fungus rots and voids. In addition, a pulp log or log segment must be completely free of charred wood AND mechanically debarkable. (12-31-90)
 - b. Deduction procedures and deductible defects are as follows: (12-31-90)
 - i. Diameter cut. Use a diameter reduction for rotten sapwood extending around or part-way around the circumference of the log. The deduction procedure is the same as in sawlogs. Note: Only wood that has deteriorated to a degree severe enough to reduce chip volume shall be deductible. (12-31-90)
 - ii. Sector or pie-cut. Use this method when the pulp defect can be confined to a sector of a circle for the length affected. It applies to V-shaped rot pockets sometimes found in conjunction with sap rot or surface scars. The deduction procedure is the same as in sawlogs. (12-31-90)
 - iii. Interior defects. Usually caused by various fungi which have decayed the wood to the point where it becomes unsuitable for pulp manufacture; it is probably the most common and extensive type of defect in pulp logs. Not all stages of decay cause loss of volume; the usual field test to determine usability shall be to chop into the defect with a sharp ax removing a "chip" of wood. If the "chip" holds together it is usable; if the "chip" crumbles or falls apart it is not usable. After determining that a defect is deductible, the deduction procedure shall be to take out "a log within a log" for the length affected. This is accomplished by measuring the size of the defect to approximate an equivalent "log" diameter, and deducting the "log" volume (or a percentage of this volume if there is some pulp recovery within the defect measured) for the length affected. (12-31-90)
 - c. On multi-segment logs, each segment shall be judged individually in order to determine whether it meets merchantability minimums. (12-31-90)
- 08. Net Scale Contractual Specifications. Contractual scaling agreements relating to determination of net scale for pulp logs may establish the following specifications: (12-31-90)
 - a. A merchantability minimum that net scale shall be in relation to the gross scale of a log or log segment as determined by the pulp method. (12-31-90)
 - b. A provision for "combination logs" on multi-segment pieces (i.e., one segment pulp log, the other sawlog). (12-31-90)

09. Net Scale Non-Contractual Specifications. In the absence of a contractual scaling agreement denoting otherwise, the following specifications are established: (12-31-90)

a. Merchantability minimum of net scale in relation to gross scale (as determined by the pulp method) shall be fifty percent (50%). (12-31-90)

b. There are no "combination logs" on multi-segment pieces. (12-31-90)

10. Summary - Pulp Logs. (12-31-90)

a. These scaling specifications enumerate the rules applicable to pulp log scaling by establishing rules for the determination of gross scale and defect deductions. Except where a contractual agreement may specify otherwise, pulp logs are generally logs that are cull for sawlog classification. (12-31-90)

b. They allow for contractual scaling agreements to specify: (12-31-90)

i. Species differentiation. (12-31-90)

ii. Permissive minimum or maximum trim allowances. (12-31-90)

iii. Log scaling in one (1) or two (2) foot multiples. (12-31-90)

iv. A minimum acceptable log length. (12-31-90)

v. A minimum acceptable top diameter. (12-31-90)

vi. A merchantability percentage minimum for net scale in relation to gross scale volume as determined by the pulp method. (12-31-90)

vii. A provision for "combination logs." (12-31-90)

viii. In the absence of a contractual scaling agreement, these specifications enumerate what the aforementioned shall be. (12-31-90)

201. -- 299. (RESERVED).

300. CEDAR PRODUCTS LOGS.

01. Definition. Cedar products are those products generally manufactured from "shell material", or wood obtained from the outer circumference of cedar logs that have interior rot. Cedar products are usually derived from logs that do not meet minimum merchantability specifications for sawlog classification, although contractual scaling agreements may provide otherwise. Scaling of cedar products in Idaho according to the Coconino Scribner decimal C log rule shall be accomplished in compliance with these rules. The Scribner decimal C method of determining volume for cedar products shall be to measure the scaling diameter and scaling length to compute a gross volume, subtract the deductible defect, and arrive at a net volume. The concept of a "scaling cylinder" is modified when scaling cedar products logs. Taper is not actually considered, but recognized because shell thickness determines volume. (12-31-90)

02. Gross Scale Determination. (12-31-90)

a. The gross scale of a cedar products log in round form shall be determined by the volume obtained from the log rule after measuring and applying the scaling length and scaling diameter, in accordance with the Scribner decimal C, Appendix, Table II, of the National Forest Log Scaling Handbook. (12-31-90)

b. The scaling length of a cedar products log in round form shall be determined by the length of the scaling cylinder (as explained in the National Forest Log Scaling Handbook) plus trim allowance. All gross scaling shall recognize scale for odd-length logs when odd-length logs are requested in addition to logs cut in two (2) foot

multiples. All gross scaling shall recognize logs measuring from the minimum length (plus trim) to 20' (plus trim) as single-segment logs; from 21' (or 22' plus trim) to 40' (plus trim) as two (2) segment logs; from 41' (or 42' plus trim) to 60' (plus trim) as three-segment logs, etc. Length distribution on multi-segment logs shall be determined according to the methods stated in the National Forest Log Scaling Handbook, including "combination logs." (12-31-90)

c. Diameter measurement of logs in round form shall be accomplished according to the method stated in the National Forest Log Scaling Handbook. Mid-point diameters on second-cut, multi-segment logs shall be determined on the basis of calculated taper; mid-point diameters on butt-cut, multi-segment logs shall be determined by the methods stated in the Appendix, Table II, of these rules. (1-1-95)

d. Logging of cedar products often results in split logs, producing slabs. The following rules shall govern gross volume determination of pieces not in round form: (12-31-90)

i. Logs which are half of a round log or greater shall be gross scaled according to the portion of the log which is existent. For example see DIAGRAM I below:

DIAGRAM I



(16' Scaling length)

(1-1-95)

ii. If this were an entire log intact (i.e., no slab missing) it would gross scale 28 decimal C. However, since 1/4 of the log is missing, the gross scale would be 1/4 less or 21 decimal C. This is determined by figuring: (12-31-90)

$$1/4 \times 16' = 4'$$

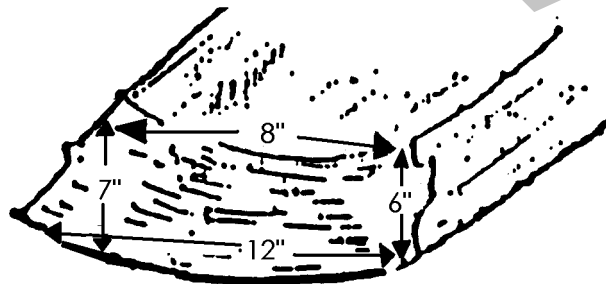
$$16' - 4' = 12'$$

iii. The volume for 12' with a 20" scaling diameter is 21 decimal C. Estimates for the slab missing are the same as those used for pie-cut deductions, such as 1/16, 1/8, 1/6, 1/4, 1/3, etc. (12-31-90)

e. Logs less than half of a round log (slabs) shall be gross scaled as follows: (12-31-90)

i. Mentally "square up" the sound wood within the slab; in other words, figure an approximate square or rectangle that can be shaped on the small end of the slab. For example:

DIAGRAM II



- the average width is 10"
- the average shell thickness is 6"
- this approximates a rectangle of 6" x 10" (1-1-95)

- ii. Use the following formula to determine volume: (12-31-90)

$W \times H \times (L / 16) = \text{volume in board feet}$

(round this to the nearest ten board feet to arrive at Scribner decimal C volume, five board feet or more rounds up)

W = the width of the slab in inches as measured using a Coconino-type scalestick.

H = the shell thickness of the slab in inches as measured using a Coconino-type scalestick.

L = the scaling length of the slab in feet.

If we use our previous example (assuming a slab length of 16')

$$10 \times 6 \times (16 / 16) = 60$$

This slab would gross scale 60 board feet or 6 decimal C. (12-31-90)

- iii. Slabs are always measured on the small end. (12-31-90)
- f. Length measurement for split logs and slabs shall be determined in the same manner as for logs in round form. (12-31-90)

03. Cord Measurement. In the absence of a contractual scaling agreement stating otherwise, cord measurement shall be used on material shorter than 8' (plus trim) in length. (12-31-90)

04. Piece Count. A piece count measure may be used on posts, rails, and shake boards. (12-31-90)

05. Gross Scale Contractual Specifications. Contractual scaling agreements relating to gross scale determination for cedar products logs may establish the following specifications: (12-31-90)

- a. Permissive minimum or maximum trim allowances per scaling segment. (12-31-90)
- b. Whether logs are to be scaled in one (1) or two (2) foot multiples, provided that they recognize scale for odd-length logs when odd-length logs are requested in addition to logs cut in two (2) foot multiples. (12-31-90)
- c. A minimum log length (plus trim). (12-31-90)
- d. A minimum top diameter. (12-31-90)
- e. A minimum slab size. (12-31-90)
- f. A provision for "combination logs" on multi-segment logs (i.e., one segment cedar products, the other sawlog). (12-31-90)

06. Gross Scale Non-Contractual Specifications. In the absence of a contractual scaling agreement denoting otherwise, the following specifications are established: (12-31-90)

- a. Logs shall be scaled with a six-inch maximum trim allowance per segment for the scaling length in accordance with the Appendix, Table III, of these rules. (1-1-95)
- b. Minimum log length shall be 8'1". (12-31-90)

- c. Minimum top diameter shall be 8.0" (actual measure). (12-31-90)
- d. Minimum slab size shall be 4.0" x 4.5" (actual measure) with a minimum length of 8' (plus trim). (12-31-90)
- e. There are no "combination logs." (12-31-90)
- 07. Net Scale Determination. (12-31-90)
 - a. The net scale of a cedar products log is the volume remaining after deductions have been made for defects. (12-31-90)
 - b. Deductible defects in the scaling of cedar products are those defects which reduce the usable quantity of cedar products that can be derived; they do not include such things as heart checks and straight splits. (12-31-90)
 - c. For cedar products scaling the four (4) types of defect deduction methods are: (12-31-90)
 - i. The interior defect deduction method. (12-31-90)
 - ii. Causing the largest volume loss in the scaling of cedar products is rot in the interior of a cedar log. The interior defect deduction method is used to determine defect volume. (12-31-90)
 - iii. The procedure for making the deduction is a modification of the squared defect procedure used for sawlogs. Instead of squaring the defect, a "round log" with dimensions equal to the average rot diameter is taken out. (12-31-90)
 - iv. The diameter of the rot is measured on the small end using the same procedures as in obtaining a scaling diameter, EXCEPT that, if the average of the right-angle measurements falls on the half inch (1/2") it is rounded UP. The resulting diameter is used to find the corresponding "log volume" from the scale rule. The volume obtained is the defect volume to subtract from the gross scale, to arrive at net scale. (12-31-90)
 - v. On multi-segment, second-cut logs, the mid-point diameter of the rot is determined by averaging the sizes of the rots showing on the ends of the log. When this average falls on the half-inch, it is rounded UP. (12-31-90)
 - vi. On multi-segment, butt-cut logs, the rot is first measured on the top end. The mid-point diameter of the rot is then increased according to the gross scale taper of the log, unless there are definite indications to the contrary. (12-31-90)
 - vii. If sound wood exists within any interior defect (as is sometimes the case with "ring rot") it must have a diameter of at least 10" on the small end. Careful examination of the log must be made to ensure that there is indeed recoverable sound material. (12-31-90)
- 08. The Diameter Reduction Method. (12-31-90)
 - a. Some types of defects, such as sap rot, large massed wormholes and shallow catfaces, affect only the outer circumference of a cedar products log. The diameter reduction method is used to determine defect volume. (12-31-90)
 - b. The procedure is to reduce the diameter to obtain a "new" diameter for the resulting sound core. The difference of these corresponding volumes is the defect deduction. If only a portion of the circumference is affected the defect is a fraction of the volume difference, such as 1/4, 1/3, 1/2, etc. (12-31-90)
- 09. The Length-Cut Method. (12-31-90)

a. Defects such as fluted butts, twisted grain, and some types of "thin shells" usually can be confined or reduced to an equivalent loss of length. The length-Cut method is used to determine defect volume. (12-31-90)

b. The procedure is to determine the length affected and make a length-cut deduction that provides a net scale length which is in a multiple of two feet. (12-31-90)

10. The Sector Or Pie-Cut Method. (12-31-90)

a. Other types of defects such as crook and sweep, large knots, burls, deep catfaces, scars, twisted grain, and portions of "thin shells" can be contained in a sector or segment of a cedar products log. The sector or pie-cut method is used to determine defect volume. (12-31-90)

b. Based on the fraction of the length affected the procedure shall be to compute the equivalent length cut deduction. For example: $1/4$ of 8' is equal to a two (2) foot length cut; $1/3$ of 10' is equal to a three-and-one-third ($3\frac{1}{3}$) foot length cut. All defect computations ending in five (5) board feet or "half-a-board" are rounded up for a deduction of ten (10) board feet or one (1) decimal C. (12-31-90)

11. Sequence Of Defect Deduction Methods. One or more of these defect deduction methods may be applied to any particular log, provided that the order of application shall be (1) length-cut method, (2) interior defect deduction method, (3) diameter reduction method, (4) sector or pie-cut method. For Example: (1-1-95)

DIAGRAM III



a. This is a cedar products log with a 16' scaling length and a 28" scaling diameter. The defects are: (12-31-90)

- a fluted, "thin shell" estimated to affect the butt end for a length of 4',
- interior rot measuring 18" on the small end,
- sap rot affecting $3/4$ of the collar to a 1" depth,
- a catface affecting $1/4$ of the shell.

(12-31-90)

b. After determining that the shell thickness meets merchantability requirements (4" of sound shell wood thickness in this example) the next step is the determination of gross scale. (12-31-90)

28" on 16' = 58 boards (12-31-90)

c. The next step is defect deductions, in the order of application. (12-31-90)

12. Length-Cut Method. The butt end of this log requires a 4' length cut; $16' - 4' = 12'$; the difference between the volumes of a 16' log and a 12' log is 14 boards

- 58 (total gross scale)
 $\frac{-14}{44}$ (length-cut defect) (12-31-90)
13. Interior Defect Deduction Method. This log has 18" of rot which will be deducted for a 12' length (since 4' has already been deducted) 18" on 12' = 16 boards.)
- 44 (total scale remaining after step #1)
 $\frac{-16}{28}$ (interior defect deduction) (12-31-90)
14. Diameter Reduction Method. This log has rotten sapwood affecting the collar to a 1" depth (requiring a 2" diameter drop), the difference between the gross scale (28" for 12') and the core scale (26" for 12') on 3/4 of the collar is 5 boards.
- 28 (total scale remaining after step #2)
 $\frac{-5}{23}$ (diameter reduction defect) (12-31-90)
15. Sector Or Pie-Cut Method. The catface causes a loss of 1/4 of the remaining volume (the shell thickness), 1/4 of 23 = 6 boards.
- 23 (total scale remaining after step #3)
 $\frac{-6}{17}$ (pie-cut defect) (12-31-90)
- a. This cedar products log has a gross scale of fifty eight (58) boards, a net scale of seventeen (17) boards, and a total defect of 41 boards. (12-31-90)
- b. On multi-segment logs, each segment shall be judged individually in order to determine whether it meets merchantability minimums. (12-31-90)
16. Net Scale Contractual Specifications. Contractual scaling agreements relating to determination of net scale for cedar products logs may establish the following specifications: (12-31-90)
- a. A merchantability minimum that net scale shall be in relation to the gross scale of a log or log segment as determined by the cedar products method. (12-31-90)
- b. A minimum "shell thickness." (12-31-90)
- c. A minimum length recovery for cedar products material per log segment. (12-31-90)
- d. A provision for "combination logs" on multi-segment pieces (i.e., one segment cedar products log, the other sawlog). (12-31-90)
17. Net Scale Non-Contractual Specifications. In the absence of a contractual scaling agreement denoting otherwise, the following specifications are established: (12-31-90)
- a. Merchantability minimum of net scale in relation to gross scale (as determined by the cedar products method) shall be ten percent (10%). (12-31-90)
- b. Minimum shell thickness shall be 4.0" (actual measure). (12-31-90)
- c. Minimum length recovery for cedar products material is 6'. (12-31-90)
- d. There are no "combination logs" on multi-segment pieces. (12-31-90)

18. Summary - Cedar Products Logs. (12-31-90)
- a. These scaling specifications enumerate the rules applicable to cedar products scaling by establishing rules for the determination of gross scale and defect deductions. Except where a contractual agreement may specify otherwise, cedar products logs are generally logs that are cull for sawlog classification. (12-31-90)
- b. They allow for contractual scaling agreements to specify: (12-31-90)
- i. Permissive minimum or maximum trim allowances. (12-31-90)
- ii. Log scaling in one (1) or two (2) foot multiples. (12-31-90)
- iii. A minimum acceptable log length. (12-31-90)
- iv. A minimum acceptable top diameter. (12-31-90)
- v. A minimum slab size. (12-31-90)
- vi. A merchantability percentage minimum for net scale in relation to gross scale volume as determined by the cedar products method. (12-31-90)
- vii. A minimum length recovery for cedar products material. (12-31-90)
- viii. A provision for "combination logs." (12-31-90)
- ix. In the absence of contractual scaling agreements, these specifications enumerate what the aforementioned shall be. (12-31-90)

301. -- 399. (RESERVED).

400. CHECK SCALING STANDARDS AND ALLOWABLE LIMITS OF VARIATION.

01. Authorization to Perform Check Scales. Check scaling is performed in order to ascertain compliance with the Standard Log Scaling Law, Title 38, Chapter 12, Idaho Code, and the Rules of Practice and Procedure, State Board of Scaling Practices. Appointed personnel perform ongoing, routine check scales on licensed scalers, as well as requested check scales when there is a disparity of agreement. Authorization and rules governing check scaling are to be found under Section 38-1215, Idaho Code and IDAPA 20.06.02, "General Rules, Licensing and Check Scales of The Idaho Board of Scaling Practices." (12-31-90)

02. Check Scaling Guidelines/Requirements. Generally, check scaling shall be performed without scaler knowledge. If there are insufficient number of logs or amount of volume, at least part of the logs (or loads of logs) checked shall be without scaler knowledge. Check scales with scaler knowledge shall be performed only: (12-31-90)

- a. Upon direction by the Board. (12-31-90)
- b. When a scaler has not been checked in the previous twelve (12) months (if a remote check cannot be obtained). (12-31-90)
- c. When, in the discretion of the check scaler, the surrounding circumstances warrant it (the check scaler shall state in his report what these surrounding circumstances are). (12-31-90)
- d. Check scales shall be performed only on logs that are in the same position as presented to the scaler, except when the Board directs otherwise, or an investigation on a requested check scale results in this method as being unsatisfactory. (12-31-90)
- e. Check scales shall not be performed if the logs are not spread adequately enough (in the check

scaler's discretion) to allow for accurate scaling. If these conditions arise, the check scaler shall make a written report describing the conditions and surrounding circumstances. The Board shall make a decision as to the disposition of these conditions and direct the check scaler accordingly. (12-31-90)

401. ROUTINE CHECK SCALING VOLUME REQUIREMENTS.

When the method of measurement is the Coconino Scribner decimal C scale rule, valid check scales for routine check scaling purposes shall consist of a minimum volume of ten thousand (10,000) board feet, gross and/or net scale. The minimum number of pieces shall be fifty (50). The gross scale volume proviso shall be used when the number of pieces exceeds two hundred (200), otherwise the net scale proviso shall apply for minimum volume. When other methods of measurement are used, the check scaler will investigate the situation and determine the most logical method of check scaling. The results shall include a written report explaining methodology and reasoning. (12-31-90)

402. AVAILABILITY AND USE OF CONTRACTUAL SCALING SPECIFICATIONS FOR CHECK SCALING.

Immediately prior to performing a check scale the check scaler shall ascertain the scaling specifications that may vary according to contractual scaling agreements, in compliance with scaling specifications. At all scaling sites scalers shall have in their possession a written copy of contractual scaling agreement specifications for the scaling of sawlogs, pulp logs, or cedar products logs, in compliance with these scaling rules. This written copy shall take one of the following forms: original contract or copy with only the scaling specifications required, or a summary sheet of the scaling specifications prepared from the original contract. (12-31-90)

403. SCALING SPECIFICATIONS TO BE USED IN ABSENCE OF CONTRACT.

In the absence of a written contractual scaling agreement, or omission of specific allowable contractual specifications, these rules shall constitute the scaling specifications that shall be used. (12-31-90)

01. Standards of Variations. A scaler must be within allowable limits of variation in all three areas-- gross scale, net scale and species identification--in order for the check scale to be acceptable. When the method of measurements is the Coconino Scribner decimal C log rule, the following allowable variations shall govern the check scaler to determine a check scale as acceptable or unacceptable for Board consideration: (12-31-90)

a. Gross Scale Standard.

Sawlogs	± 2.0 percent
Pulp logs	± 2.0 percent
Cedar products logs	± 5.0 percent

(12-31-90)

b. Net Scale.

Check Scale Percent of Defect on Logs Checked	Standard
Sawlogs - up to 10	± 2.0 percent
10.1 to 15	± 3.0 percent
15.1 to 20	± 0.2 percent for each percent of defect
Over 20	± 5.0 percent
Pulp logs	± 5.0 percent
Cedar products logs	± 8.0 percent

(12-31-90)

- c. Species identification - Allowable limit is 3.0%. (12-31-90)

404. STANDARDS OF VARIATION FORMULA FOR MULTI-PRODUCTS.

Some check scales will involve more than one classification (i.e., sawlogs, pulp logs, cedar products logs), with different parameters of variation. The overall allowable limit of variation to determine acceptability/unacceptability of the total gross and/or net scale shall be determined by the following formula: (12-31-90)

$$OAV = \frac{(a \times D) + (b \times E) + (c \times F)}{(D + E + F)}$$

OAV	=	overall allowable percentage variation
a	=	allowable % variation for gross/net sawlog scale
b	=	allowable % variation for gross/net pulp log scale
c	=	allowable % variation for gross/net cedar products scale
D	=	check scaler's gross/net sawlog scale
E	=	check scaler's gross/net pulp log scale
F	=	check scaler's gross/net cedar products scale

(12-31-90)

Due to the monetary value difference between sawlogs and pulp or cedar products logs, product classification is important. For this reason classification by piece count shall be determined and included by and with the same parameters used for species identification. The allowable error variation is 3.00%. Combination logs shall be counted as 1/2, 1/3, 1/4, etc.--depending on the number of scaling segments--to arrive at a piece or log count variation. Combination logs shall be considered only when provided for in a contractual scaling agreement. (12-31-90)

405. -- 409. (RESERVED).

410. CHECK SCALING RECORD DATA.

Check scaling records shall include: (12-31-90)

- 01. Contractual Specifications. The contractual scaling agreement specifications. (12-31-90)

02. Absence of Contractual Specifications. In the absence of contractual scaling agreement specifications, or the omission of specific allowable contractual specifications, these rules shall constitute the assumed specifications. (12-31-90)

- 03. Worksheets. The check scaler's original worksheets, which will include: (12-31-90)

- a. Log load identification. (12-31-90)
- b. Scaling site location. (12-31-90)
- c. Scaler being checked. (12-31-90)
- d. The date. (12-31-90)
- e. Species (or product) identification. (12-31-90)

- f. Log length. (12-31-90)
- g. Log diameter(s). (12-31-90)
- h. Gross, defect, and net scale. (12-31-90)
- i. Notes on type of deduction(s) made. (12-31-90)
- j. A check scale report form. (12-31-90)
- k. The manner in which the logs were presented. (12-31-90)
- l. If conducted, the results of the log review with the scaler. (12-31-90)
- m. All log loads involved in an unacceptable checkscale will be held at the point of the checkscale until such time as the logs have been reviewed with the scaler, or for a period up to forty-eight (48) hours. (12-31-90)
- n. During this period the load(s) shall not be moved or tampered with in any way. (12-31-90)
- o. The board's checkscaler shall affix a tag to all loads which must be held, and notify the scaler and landing supervisors respectively. (12-31-90)
- p. The check scaler's analysis of the overall results. (12-31-90)

411. -- 419. (RESERVED).

420. NON-SCRIBNER DECIMAL C CHECK SCALES.

When the method of measurement is accomplished in acceptable units of measure other than the Scribner decimal C scale rule, the check scaler shall investigate the situation and determine the most logical method by which the check scale can be performed. (12-31-90)

01. Report. His/her results shall include a detailed report explaining the methodology and reasoning used. The check scaler shall establish allowable parameters of variation, based on individual conditions, that are similar to those established for scaling by means of the Scribner decimal C scale rule. (12-31-90)

421. -- 429. (RESERVED).

430. COOPERATIVE SCALING.

Some check scales will involve "cooperative scaling." Cooperative scaling involves two scalers, using different scaling specifications, working together to determine the log scale volume. In these instances, each scaler shall be individually responsible for the scale recorded in his/her scale book. (12-31-90)

431. TEAM SCALING.

Some check scales will involve "team scaling." Team scaling is two (2) scalers, using the same scaling specifications, working together to determine the log scale volume. In these instances, both scalers shall be responsible for the scale recorded in the scale book, EXCEPT that if one of the individuals is an apprentice scaler working under the direct supervision of a licensed scaler, the licensed scaler shall be responsible for the scale recorded in the scale book. (12-31-90)

432. -- 449. (RESERVED).

450. STANDARD.

For the purpose of payment for logging or hauling logged forest products only, forest products shall be measured by gross weight, or by gross volume converted to gross decimal C. Measurement may be determined by a sampling process. (12-31-90)

451. SCALER REQUIREMENTS.

01. Contractual Specifications. At all scaling sites scalers shall be required to have a written document specifying the allowable contractual scaling agreement specifications in compliance with these rules. This written document shall take one of the following forms: original contract or copy with only the scaling specifications required (see appendix for sample form of items to be included under scaling specifications), or a summary sheet of the scaling specifications prepared from the original contract. (12-31-90)

02. Marking of Loads. At all scaling sites scalers shall be required to mark all loads that have been scaled in a manner that will provide for identification of the load until such time as the logs are removed. (12-31-90)

03. Required Information on Scale Tickets All scalers shall record on the scale ticket a combination of data from which both gross and net scale volumes may be derived. (12-31-90)

452. LOG SCALING CONDITIONS AND SCALER WORK LOADS.

01. Log Layout. It shall be the duty and responsibility of any individual, corporation or business to present logs for purposes of scaling in such manner that will enable the scaler(s) to measure gross volume, to check the ends and sides to determine defect, and to inspect for identification of species, under conditions that are both safe and conducive to proper scaling practices. (12-31-90)

02. Volume. The number of pieces or volume of timber to be scaled on a daily basis should not exceed a quantity that would jeopardize the scaler's ability to be accurate. (12-31-90)

03. Failure to Comply. Failure to comply with the criteria heretofore set forth shall be deemed as non-compliance with the intent and purpose of the Standard Log Scaling Law of Idaho (Idaho Code Title 38, Chapter 12). (12-31-90)

04. Truck Scaling. Truck scaling is permitted under this rule, but the defect taken must be visible on the logs as presented. (12-31-90)

453. -- 999. (RESERVED).

APPENDIXES

- I. Table I -- Volume Table
- II. Table II -- Mid-point Taper on Multi-segment Butt Logs
- III. Table III -- Log Length Table
- IV. Standard Converting Factors
- V. Sample - Scaling Specifications Agreement

TABLE I
Volume table

Diameter in inches	Log Length in Feet																
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
3										1	1	1	1	1	1	1	1
4					1	1	1	1	1	1	1	1	1	1	1	1	1
5		1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
6		1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
7	1	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3
8	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3

APPENDIX II
TABLE II
Mid-point Taper on Multi-segment Butt Logs

1. North Idaho Area (north of the Salmon River) ---

The basis for determining mid-point taper shall be the same as that established by Region 1 of the United States Forest Service. (Refer to "Average Taper for Long Logs on West Side Forests" in this appendix.)

2. Southwest Idaho Area ---

Mid-point taper shall be a standard taper as follows:

Larch -- 21' - 40' shall be 1-inch taper. All other species -- 21' - 40' shall be 2-inch taper.

3. Southeast Idaho Area ---

- a. Targhee National Forest Area -- mid-point taper shall be a standard taper as follows:

Douglas Fir, Alpine Fir, and Engelmann Spruce:

21' - 40' shall be 2-inch taper.

Lodgepole Pine:

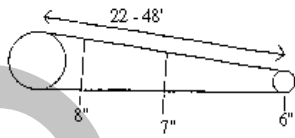
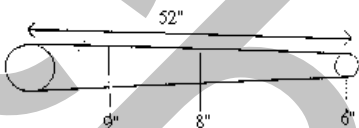
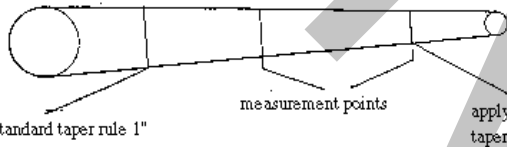
21' - 31' shall be 1-inch taper.

32' - 40' shall be 2-inch taper.

Multiple segment butt logs not included in the above lengths shall be determined with actual taper applied.

- b. Other Southeast Areas -- mid-point taper(s) shall be determined on the basis of actual taper.

APPENDIX -- TABLE II CONTINUED
REGION 1 AVERAGE TAPER FOR LONG LOGS ON WEST SIDE FORESTS

SPECIES	LENGTH	TAPER RULES
L & LP*	22 - 48'	1 inch per segment
		
L & LP	50 - 60'	2 inch top segment, 1 inch remaining segment
		
L & LP	4-segment logs	Take two measurements - top and top of the second segment. (The top diameter of the second segment shall be determined by calipering.) Apply normal taper distribution to top segment. Apply standard taper rule of 1 inch to bottom segment.
		

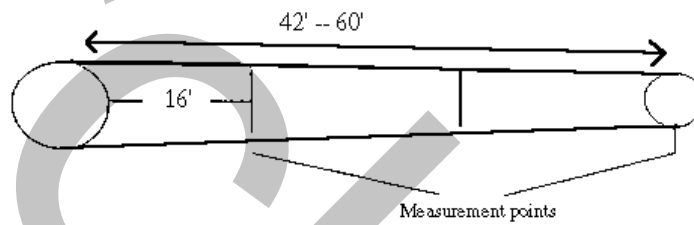
* To determine the scaling diameter for LP presented with topwood attached, allow a double bark thickness of 0.2" for all top measurements. For all other species, the top measurement should be determined by calipering. Scalping shall not be required except where bark thickness cannot be accurately estimated.

APPENDIX - TABLE II CONTINUED
REGION 1 AVERAGE TAPER FOR LONG LOGS ON WEST SIDE

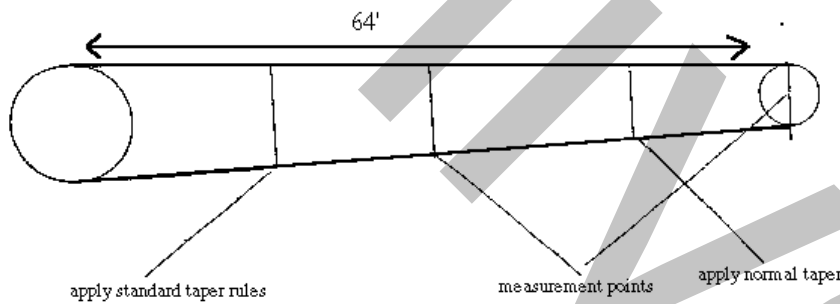
SPECIES	LENGTH	TAPER RULES
C	22 - 40'	2 inches per segment
C	42 - 60'	Take two measurements: - top 16' up from butt. (The diameter at the 16' measurement point shall be determined by calipering.) Apply normal taper distribution to determine scaling diameter of second segment.
All Other Species	22 - 40'	Allow 1 inch taper on pieces with an odd top diameter, allow 2 inch taper on pieces with an even top diameter. (Odd-Even Rule.)

APPENDIX - TABLE II CONTINUED
REGION 1 AVERAGE TAPER FOR LONG LOGS ON WEST SIDE

SPECIES	LENGTH	TAPER RULES
All Other Species	42 - 60'	Same taper rules as for cedar logs 42 - 60' long.



All Other Species	4-segment logs	Same taper rules for 4 segment L & LP logs, exc that the odd-even rule is applied to the top diams of the second segment to determine the scaling diameter of the butt segment.
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APPENDIX III
TABLE III

Log Length	Scaling Length	Segment Length	Segment Length	Segment Length	Segment Length
8'1" - 8'8"	8				
8'9" - 9'8"	9				
9'9" - 10'8"	10				
10'9" - 11'8"	11				
11'9" - 12'8"	12				
12'9" - 13'8"	13				
13'9" - 14'8"	14				
14'9" - 15'8"	15				
15'9" - 16'8"	16				
16'9" - 17'8"	17				
17'9" - 18'8"	18				
18'9" - 19'8"	19				
19'9" - 20'8"	20				
20'9" - 22'2"	21	11	10		
22'3" - 23'2"	22	12	10		
23'3" - 24'2"	23	12	11		
24'3" - 25'2"	24	12	12		
25'3" - 26'2"	25	13	12		
26'3" - 27'2"	26	14	12		
27'3" - 28'2"	27	14	13		
28'3" - 29'2"	28	14	14		
29'3" - 30'2"	29	15	14		
30'3" - 31'2"	30	16	14		
31'3" - 32'2"	31	16	15		
32'3" - 33'2"	32	16	16		
33'3" - 34'2"	33	17	16		
34'3" - 35'2"	34	18	16		
35'3" - 36'2"	35	18	17		
36'3" - 37'2"	36	18	18		
37'3" - 38'2"	37	19	18		
38'3" - 39'2"	38	20	18		

Log Length	Scaling Length	Segment Length	Segment Length	Segment Length	Segment Length
39'3" - 40'2"	39	20	19		
40'3" - 41'2"	40	20	20		
41'3" - 42'8"	41	14	14	13	
42'9" - 43'8"	42	14	14	14	
43'9" - 44'8"	43	15	14	14	
44'9" - 45'8"	44	16	14	14	
45'9" - 46'8"	45	16	15	14	
46'9" - 47'8"	46	16	16	14	
47'9" - 48'8"	47	16	16	15	
48'9" - 49'8"	48	16	16	16	
49'9" - 50'8"	49	17	16	16	
50'9" - 51'8"	50	18	16	16	
51'9" - 52'8"	51	18	17	16	
52'9" - 53'8"	52	18	18	16	
53'9" - 54'8"	53	18	18	17	
54'9" - 55'8"	54	18	18	18	
55'9" - 56'8"	55	19	18	18	
56'9" - 57'8"	56	20	18	18	
57'9" - 58'8"	57	20	19	18	
58'9" - 59'8"	58	20	20	18	
59'9" - 60'8"	59	20	20	19	
60'9" - 61'8"	60	20	20	20	
61'9" - 63'2"	61	16	16	15	14
63'3" - 64'2"	62	16	16	16	14
64'3" - 65'2"	63	16	16	16	15
65'3" - 66'2"	64	16	16	16	16

In the table above, the butt segment is the longest.

APPENDIX IV
TABLE IV
STANDARD CONVERTING FACTORS - USFS LOG SCALING HANDBOOK

PRODUCT	ASSUMED DIMENSIONS	EQUILVALENT IN BOARD FEET
Cord, standard -	4 by 4 by 8 feet -	500
Cord, long -	4 by 4 by 8 feet -	625
Cord, shingle bolts -	4 by 4 by 8 feet -	600
Cord, small material (averaging less than 5" middle diameter in the round) -	do -	333-1/3
Cord, short -	4 by 3 by 8 feet -	375
Cord, short, small material -	do -	250
Load (small, irregular pieces that cannot be ricked) -	4 by 4 by 8 feet -	333-1/3
Tie, standard -	7 by 9 inches by 8 feet -	35
Do -	7 by 8 inches by 8 feet -	30
Do -	6 by 6 inches by 8 feet -	20
Tie, narrow gage -	7 by 8 inches by 6-1/2 feet -	25
Do -	6 by 7 inches by 6-1/2 feet -	20
Do -	6 by 6 inches by 6-1/2 feet -	15
Pole (telephone) or piling -	8 inches by 45 feet -	200
Do -	8 inches by 40 feet -	150
Do -	8 inches by 35 feet -	100
Do -	7 inches by 60 feet -	280
Do -	7 inches by 50 feet -	200
Do -	7 inches by 40 feet -	100
Do -	7 inches by 35 feet -	80
Do -	7 inches by 30 feet -	60
Do -	7 inches by 25 feet -	50
Do -	5 inches by 25 feet -	30
Cubic foot -	13.6 inches by 1 foot -	6
Linear foot -	10 inches by 1 foot -	3
Linear Foot (long piling) -	80 to 125 feet by 6 inches -	5-1/2
Derrick pole -	7 inches by 30 feet -	60
Derrick pole(11 pieces)-	-	480
Post, fence- -	6 inches by 7 feet -	7
Do -	5 inches by 7 feet -	5
Post, split -	18 inches circumference by 7 feet -	6
Brace, fence -	4 inches by 6 feet -	2
Stake, fence -	3 inches by 5 feet -	1
Stay, fence- -	2 inches by 6 feet -	1/2
Rail, fence (split) -	20 inches circumference by 16 feet -	15
Pole, fence- -	4 inches by 20 feet -	10
Pole (12 pieces) -	4 inches by 16 feet -	100
Pole, converter- -	4 inches by 20 feet -	10
Prop- -	6 inches by 10 feet -	10
Lagging (6 pieces) -	3 inches by 6 feet -	10

SAMPLE SCALING SPECIFICATIONS AGREEMENT CONTINUED
Cedar Products Logs

Trim allowances _____
One or two foot multiples? _____
Special lengths _____
Minimum acceptable log length _____
Minimum acceptable top diameter _____
Minimum slab size _____
Merchantability % minimum _____
Minimum shell thickness _____
Minimum C/P material length recovery _____
Combination logs? _____

Units of Measure

(Check one or more)

- ___ 1. Coconino Scribner decimal C
- ___ 2. A.S.A. standards for poles
- ___ 3. Cordwood formula for measuring truckload volume
- ___ 4. Cubic rule measurement (Smalian)
- ___ 5. Gross weight
- ___ 6. Other (specify) _____

For consideration receivable, the log seller and log buyer agree to the aforementioned scaling specifications.

(Signed) _____
Log Seller Date

(Signed) _____
Log Buyer Date