Short Log Scribner: a Sellers Perspective on Regional Differences

Timber Measurement Society Central Meeting
April, 2015

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Focus on Value to Client

Evaluating to bids for the DF logs from a timber sale that is half way between two mills:

	Scribner Shortlog Net MBF	Bid RATE	Value Total $
Mill 1:	1000	$490	$490,000
Mill 2:	1000	$520	$520,000

< More $ better than less $

Good, we finally got a bid from Mill 2 so we can haul logs out of region!

This starts another line of inquiry, are there regional differences in Scribner Shortlog rules that change the Total Value?

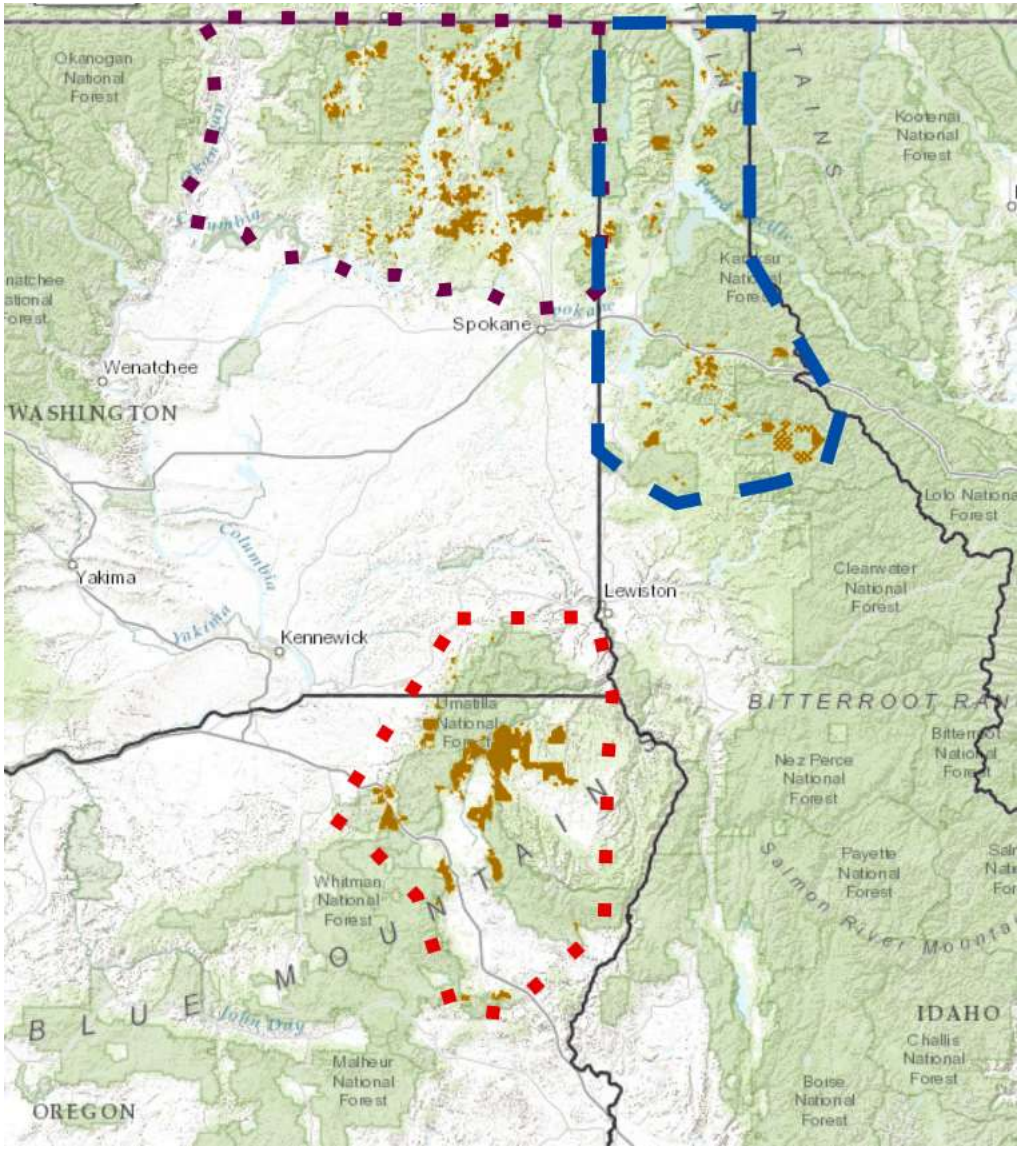
Focus on Value to Client

What regions are we talking about?

NE Oregon,

N Idaho,

NE Washington are the HFM administrative regions that are involved. They happen to be close to the boundaries with “regional differences”.



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Focus on Value to Client

What are the possible differences that could affect value?

What HFM NI have found so far

1) There are two different Scribner volume tables used depending on where the logs are scaled – Idaho or Oregon/Washington (R6).

2) Standard taper assumptions on butt logs is applied differently depending point of origin of the log and where they are scaled.

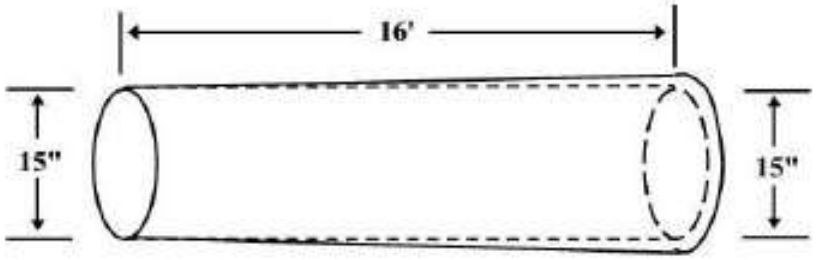
3) Gross diameter measurements on three segment logs vary depending where they are scaled - Idaho or Oregon/Washington (R6).

Understanding what those differences are and how they affect value will then allow use to focus on bring the best value to the client.



Scribner Basics

The Scribner method has an underlining volume table that is used as a look up table for gross and net volume based on the small end diameter inside bark (SEDib) and the segment length.



In the example above, segment length is 16' and SEDib is 15" . You or your handheld looks up the Scribner volume for a 16' – 6" log and find it is 140 bf on the R6 table or 14 on the Idaho table. This is the same volume as the Idaho table follows the standard Decimal C convention of dropping the zero in the digits place as superfluous. Note also that this is a gross volume, before defecting.

Focus on Value to Client

This example did not have a difference, so not every length-diameter combination causes a difference.

How do we understand the difference this cause and apply to value to the client?



Focus on Value to Client

Idaho less R6

Segment LEN Ft >	10	11	12	13	14	15	16	17	18	19	20
Dib											
5						(10)					
6				(10)	(10)	(10)					
7											
8										(10)	(10)
9	10	10								(10)	(10)
10			(10)							(10)	
11											
12										10	
13										10	
14											
15											
16											

85% Vol Evenly Distributed

15% Vol Decreasing with Size

Segment GLEN Ft >	10	11	12	13	14	15	16	17	18	19	20	
Log GLEN V												
16							18%					18%
17								1%				1%
24			4%									4%
26			4%		4%							8%
32							63%					63%
34								1%				1%
			8%		4%		81%	2%				95%

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Focus on Value to Client

Idaho less R6 as a % of R6

Segment LEN Ft >	10	11	12	13	14	15	16	17	18	19	20
Dib											
5						(50%)					
6				(50%)	(50%)	(50%)					
7											
8										(25%)	(25%)
9	50%	50%								(20%)	(20%)
10			(25%)							(14%)	
11											
12										11%	
13										9%	
14											
15											
16											

85% Vol Evenly Distributed

15% Vol Decreasing with Size

Segment GLEN Ft >	10	11	12	13	14	15	16	17	18	19	20	
Log GLEN V												
16							18%					18%
17								1%				1%
24			4%									4%
26			4%		4%							8%
32							63%					63%
34								1%				1%
			8%		4%		81%	2%				95%

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Focus on Value to Client

- There are pluses and minuses, will they on average compensate for themselves and end up a negligible difference?

- Answer is it depends!
  - Lengths you are cutting and delivering
  - Segment diameters you are delivering
  - How many length and diameter deductions move segment into a box that changes the volume. Log sellers are usually paid on net Scribner volume.

- Generally, Idaho table will yield less net volume then R6 given:
  - the range of diameters we are tending to deliver,
  - The lengths mills are preferring.

- What is that difference?
  - Theoretically, between Plus 50% - negative 50%,
  - One experience, a negative 3.2%.
  - If 16' multiples, suggest range negative 3-5% depending on defect, 4% average?
  - If 18-20' multiples, suggest range negative 6-10% depending on defect, 7.5% average?

Focus on Value to Client

What does this mean to the bid I just put out?

Assuming target 16' scaling multiples, discount volume by 4%.

	Scribner Shortlog Net MBF	Bid RATE	Value Total $
Mill 1:	1000	$490	$490,000
Mill 2:	960	$520	$499,200

< More $ better than less $

OK, what about those other differences you mentioned? Will they affect the value of the bids?

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Focus on Value to Client

What are the possible differences that could affect value?

What HFM NI have found so far

1) There are two different Scribner volume tables used depending on where the logs are scaled – Idaho or Oregon/Washington (R6).

2) Standard taper assumptions on butt logs is applied differently depending point of origin of the log and where they are scaled.

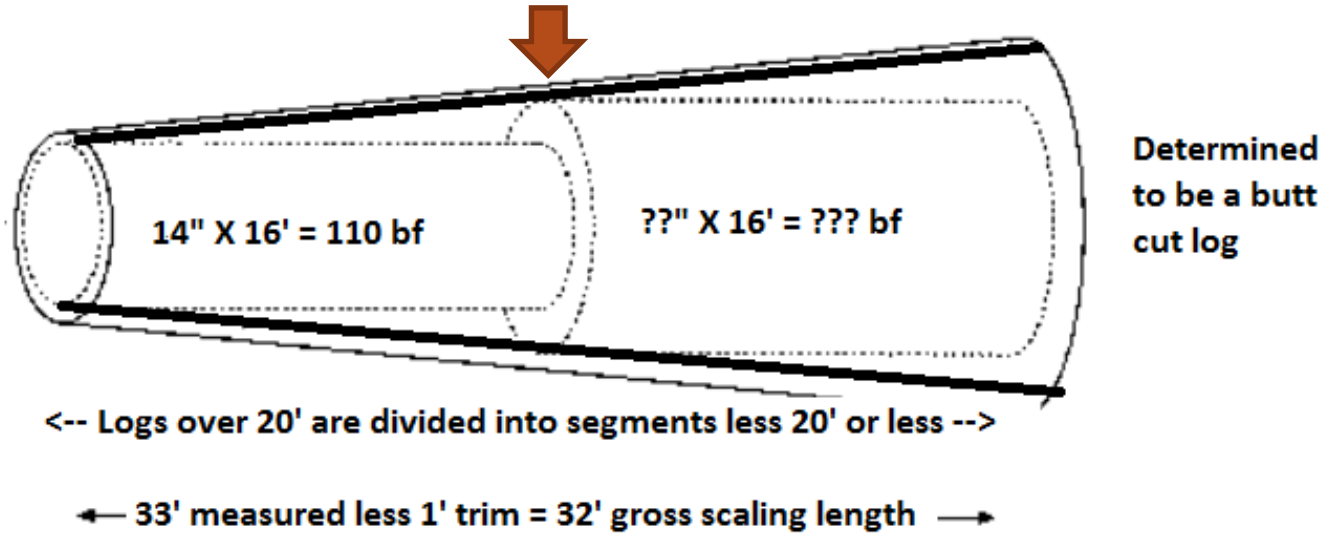
3) Gross diameter measurements on three segment logs vary depending where they are scaled - Idaho or Oregon/Washington (R6).

Understanding what those differences are and how they affect value will then allow use to focus on bring the best value to the client.



Scribner Basics

Here is where the Scribner Short log gets its name – logs more than 20 feet log are segmented into segments that are 20' or less. A standard taper rule is applied to butt cut logs to determine the mid segment diameter



Standard taper assumptions on butt logs is applied differently depending point of origin of the log and where they are scaled.

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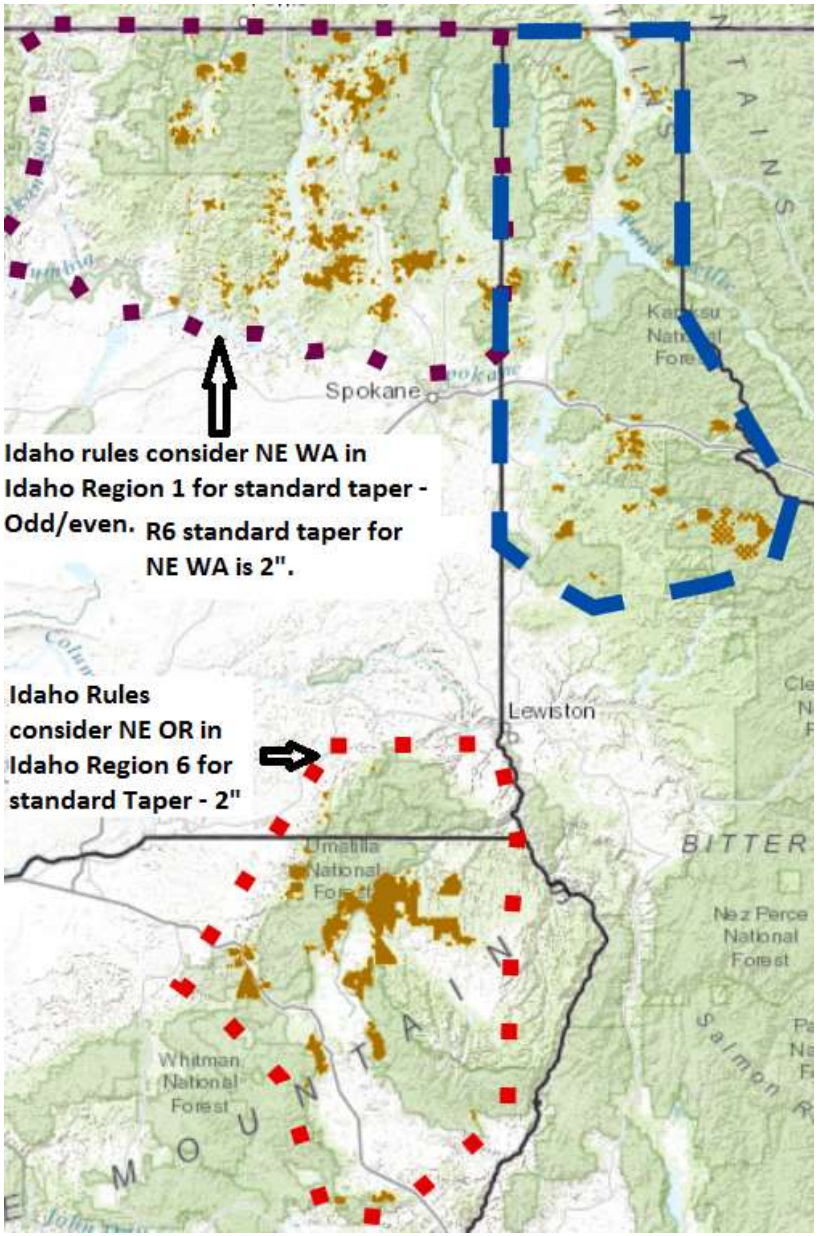
Scribner Basics

- Application of Point of origin is a generally applied.
  - R6 standard taper rules apply for log harvested in NE WA and NE OR – 2" rule
  - Idaho (N – R1 Odd/even) standard taper rules apply to logs harvested from N Idaho properties
- Except Idaho Scaling Manual apply Idaho Region 1 standard taper to logs harvested in NE WA and scaled in Idaho mill. (Odd/even)



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For the bid we put out, if the job is in NE WA and Mill 2 is in Idaho, the standard taper assumptions could affect the value of Mill 2's bid for our clients logs. How can will evaluate this? We will have to look at the standard taper rules in more detail. First from the Idaho Scaling Manual APPENDIX A-4 – TAPER TABLE:

MIDPOINT TAPER ON MULTI-SEGMENT BUTT LOGS		
Region 1 - North Idaho Area (North of the Salmon River, including all of Idaho county except that portion which is both south of the main Salmon river and east of the Little Salmon River. Also includes western Montana, and the northeastern Washington area bounded by the Snake River on the south, to the Columbia River, north to the Okanogan River, north to Canada) --- Midpoint taper(s) shall be a standard taper as follows:		
Larch & Lodgepole Pine	21'-48'	Shall be 1-inch per segment.
Larch & Lodgepole Pine	49'-60'	Shall be 2-inch top segment, 1-inch remaining segment.
Cedar	21'-40'	Shall be 2-inches per segment.
All Other Species	21'-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).
All Species (except Larch & Lodgepole Pine)	41'-60'	Take two measurements, small end and 16' up from the butt. The diameter at the 16' measurement point shall be determined by actual measure. Apply calculated taper distribution to determine scaling diameter of the second segment.
All Species	61' and longer	Take two measurements, small end and top of the second segment up from the butt. The top diameter of the second segment shall be determined by actual measure. Apply calculated taper distribution to top segment(s) and standard taper rule for the appropriate species to bottom segment.

Focus on Value to Client

What is the Standard Taper rules applied by Mill 1, which is in NE Washington to point of origin logs from NE Washington. It appears to be USFS Region 6 Standard taper rules which are :

USDA Forest Service								R6- FS-2400-28 (10/2010)
TAPER LOG RULE - SCRIBNER DECIMAL C TABLE - R6								
20- foot maximum								
All Species Except Western Larch and Lodgepole Pine in 4 counties of Eastern Washington			Western Larch			Lodgepole Pine - Eastern Washington Counties; Okanogan, Ferry, Stevens & Pend Oreille		
		Taper Dia.			Taper Dia.			Taper Dia.
		(Applied to			(Applied to			(Applied to
Total Taper	Lengths	each segment)	Total Taper	Lengths	each segment)	Total Taper	Lengths	each segment)
1"/2"	21'-31'	Diameter +1"	1"/2"	21'-31'	Diameter +1"	1"/2"	21'-31'	Diameter +1"
3"/4"	32'-40'	Diameter +2"	1"/2"	32'-40'	Diameter +1"	1"/2"	32'-40'	Diameter +1"
	41' - plus	Actual Taper		41'- plus	Actual Taper		41'- plus	Actual Taper

Going through these two standard taper rules, the difference that will apply will be for all other species except Western Larch and Lodgepole pine in NE Washington as the four counties named are in NE Washington.

So what species was bid? DF logs were bid. There may be a difference in value caused by the application of standard taper rules.

Again, how do we understand the difference this cause and apply to value to the client?

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Focus on Value to Client

Idaho Standard Taper Rule less R6 Standard Taper Rule in bf - uses R6 volume table

Gross Log LEN Ft >	16	17	24	26	32	34	39	40
Dib								
5					(10)	(10)	(10)	(10)
6								
7					(10)	(10)	(10)	(10)
8			10	10				
9					(10)	(20)	(10)	(10)
10			20	20				
11					(20)	(20)	(20)	(20)
12			20	20				
13					(30)	(30)	(40)	(40)
14			10	20				
15					(20)	(30)	(30)	(30)
16			20	30				

Idaho less R6 as a % of R6

Gross Log LEN Ft >	16	17	24	26	32	34	39	40
Dib								
5			0%	0%	(20%)	(20%)	(20%)	(20%)
6			0%	0%	0%	0%	0%	0%
7			0%	0%	(14%)	(14%)	(13%)	(13%)
8			20%	20%	0%	0%	0%	0%
9			0%	0%	(9%)	(17%)	(8%)	(8%)
10			25%	22%	0%	0%	0%	0%
11			0%	0%	(12%)	(11%)	(10%)	(10%)
12			15%	14%	0%	0%	0%	0%
13			0%	0%	(13%)	(12%)	(14%)	(13%)
14			5%	10%	0%	0%	0%	0%
15			0%	0%	(6%)	(9%)	(8%)	(7%)
16			8%	11%	0%	0%	0%	0%

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Focus on Value to Client

One Experience - Stand Stock Table as a percent

Gross Log LEN Ft >	16	17	24	26	32	34	39	40	Total
Dib									
6	3%	0%	2%	3%	6%	0%		0%	14%
7	4%	0%	1%	3%	9%	0%		0%	17%
8	1%	0%	0%	1%	12%	0%		0%	14%
9	1%	0%	0%	0%	13%	0%		0%	14%
10	2%	0%	0%	0%	10%	0%		0%	12%
11	2%	0%	0%	0%	9%	0%		0%	11%
12	2%	0%	0%	0%	5%	0%		0%	7%
13	1%	0%	0%	0%	3%	0%		0%	4%
14	1%	0%	0%	0%	2%	0%		0%	3%
15	1%	0%	0%	0%	1%	0%		0%	2%
16	0%	0%	0%	0%	1%	0%		0%	1%
Total	18%	1%	4%	8%	68%	1%	0%	0%	100%

Stand Stock Table as a percent times Idaho less R6 as a % of R6 Taper Rules

Gross Log LEN Ft >	16	17	24	26	32	34	39	40	Total
Dib									
6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	0.0%	0.0%	0.0%	0.0%	(1.3%)	(0.0%)	0.0%	0.0%	(1.3%)
8	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.3%
9	0.0%	0.0%	0.0%	0.0%	(1.1%)	(0.0%)	0.0%	(0.0%)	(1.2%)
10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
11	0.0%	0.0%	0.0%	0.0%	(1.0%)	0.0%	0.0%	0.0%	(1.0%)
12	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
13	0.0%	0.0%	0.0%	0.0%	(0.3%)	(0.0%)	0.0%	0.0%	(0.3%)
14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15	0.0%	0.0%	0.0%	0.0%	(0.1%)	0.0%	0.0%	0.0%	(0.1%)
16	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	0.0%	0.0%	0.1%	0.2%	(3.8%)	(0.1%)	0.0%	(0.0%)	(3.5%)

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- Again, there are pluses and minuses, will they on average compensate for themselves and end up a negligible difference?

- Answer is it depends!
  - Lengths you are cutting and delivering – 32' is big divide
  - Segment diameters you are delivering – not as big a difference

- Generally, Idaho Standard Taper Rule will yield less net volume then R6 given:
  - the range of diameters we are tending to deliver,
  - The lengths mills are preferring.

- What is that difference?
  - Theoretically, between Plus 25% - negative 17%,
  - One experience, a negative 3.5%.
  - If produced short (under 21') no difference
  - If average length under 21-31', gain 5-7% under Idaho Taper Rule
  - If average length 32'-40', lose 3-5% under Idaho Taper Rule depending on SED



Focus on Value to Client

What does this mean to the bid I just put out?

Assuming target 32' - 40' log length, discount volume by at least 3.5% for Mill2 using Idaho Region 1 Standard Taper rules. This is in addition to the 4% discount applied for the different volume tables.

	Scribner Shortlog Net MBF	Bid RATE	Value Total $
Mill 1:	1000	$490	$490,000
Mill 2:	925	$520	$481,000

< More $ better than less $

OK, any other differences? Will they affect the value of the bids?

Not sure, gross diameter measurements on three segment logs vary depending where they are scaled - Idaho or Oregon/Washington (R6). At this point, do not have an empirical method to predict or data to calculate.

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Focus on Value to Client

Summary

Regional differences in Short Log Scribner may affect the value of the clients' (or any sellers) when moving logs across scaling regions.

It is important to understand what those differences are, when they may occur, and how they affect the value of the log.

Certain log diameters and lengths can be affected more than others. Perhaps some of the differences can be mitigated by changing lengths (avoiding 18' and 20' multiples) or sorting diameters (larger logs vs smaller).

Accounting for likely differences, though problematic, should be done in evaluating log price quotes or bids to get a true picture of the value to the client.

ACKNOWLEDGEMENTS - QUESTIONS?

ACKNOWLEDGEMENTS

Many of the illustrations in this presentation were taken in part from one or more of the following sources – the presenters thanks the authors of these. Good references for Short Log Scribner.

Idaho Board of Scaling Practices (IBSP) - http://www.ibsp.idaho.gov/

Log Scaling in Idaho 2014.doc

Online Version - IDAHO LOG SCALING MANUAL (2008 Edition)

Print Version - IDAHO LOG SCALING MANUAL (2008 Edition)

Northwest Log Rules Advisory Group (NWLRAG) – http://www.nwlrag.com/

NWLRAG Changes in Official Log Scaling and Grading Log Rules 1969 to Present

NWLRAG Supplement Revised 04-1994

NWLRAG Official Rules Revised 01-01-2011

Fonseca, Matthew A. The Measurements of Roundwood: Methodologies and Conversion Ratios, October 2005, Cabi Publishing, 288 pages.

USDA Forest Service Forest Products Measurement - http://www.fs.fed.us/fmsc/measure/

Under Handbooks & Guides > Scaling > Forest Service Handbook (FSH) 2409.11 - NATIONAL FOREST LOG SCALING HANDBOOK - link to standard Forest Service-wide and Regional issuances detailing procedures and instructions for scaling National Forest timber to be sold, for free use, for exchange, and in timber trespass cases.

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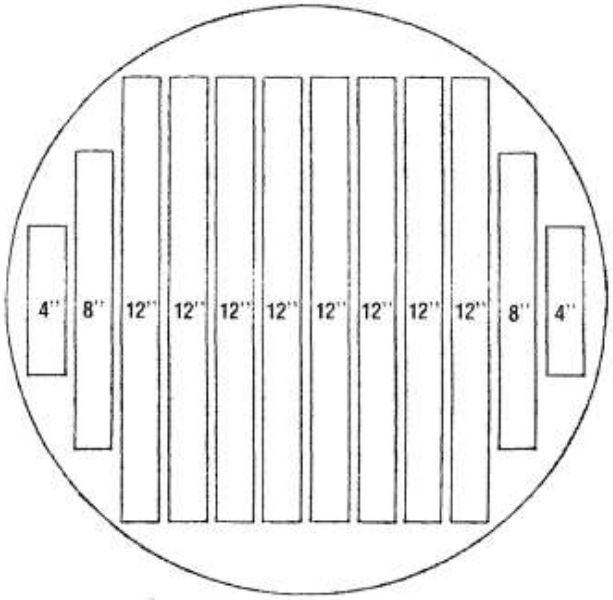
ACKNOWLEDGEMENTS

Rural Technology Initiative (RTI) - cooperative website to accelerate the implementation of new technologies in rural forest resource-based communities and for technology transfer from University of Washington (UW) and Washington State University (WSU) Cooperative Extension Chapter 2 Measurement of logs is also a good reference for different log scales. See http://www.ruraltech.org/projects/conversions/briggs_conversions/briggs_ch02/briggs_chapter02_complete.asp

Short Log Scribner – Basics for Gross Volume

Scribner is a diagram rule based on drawings of 1” boards with a projected cylinder defined by the small end diameter inside bark SEDib in inches and the Segment Length in feet. Example below has 16” SEDib and 16’ segment length



Board Widths

8 × 12''	=	96''
2 × 8''	=	16''
2 × 4''	=	8''
Total	=	120''

The end view drawing or diagram yields a surface area of 120” of 1” wide board at least 4” wide and accounting for ¼” saw kerf between boards and wasting slab areas.

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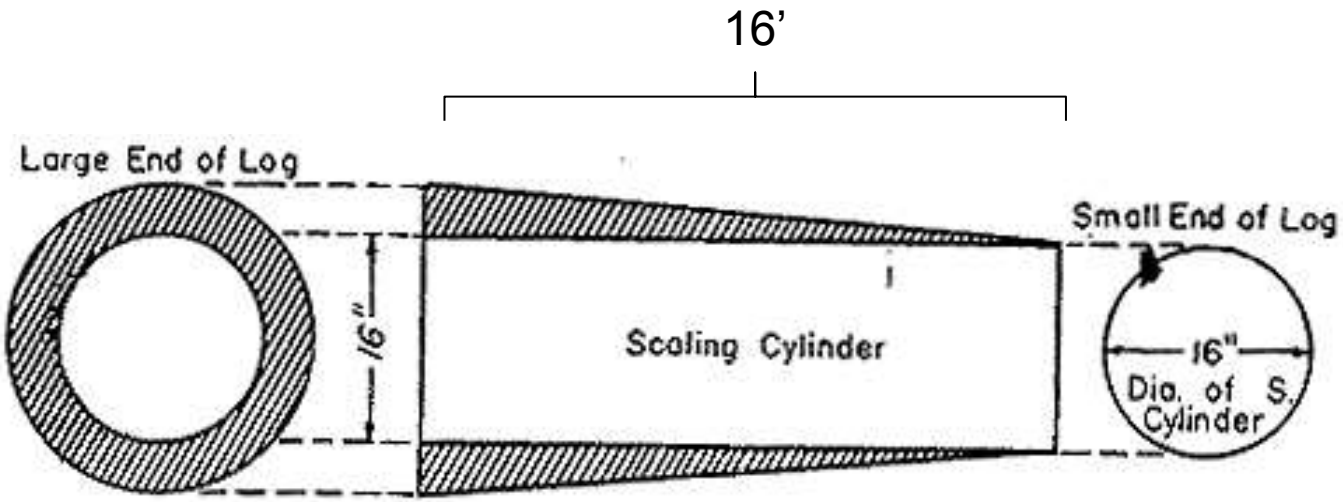
Short Log Scribner – Basics for Gross Volume

Each board then has a length equal to the log segment length which in this case is 16 feet.



The 120" of surface area from the previous slide is converted to feet by dividing by 12" per foot, so 120" / 12" = 10 feet. The 10 feet are then multiplied by the segment length of 16 with a result of 160 board feet (bf). This gives an estimate of what can be sawn from this log segment, given the assumption applied to the diagram in terms of board feet which is a unit 1" X 1" X 12".

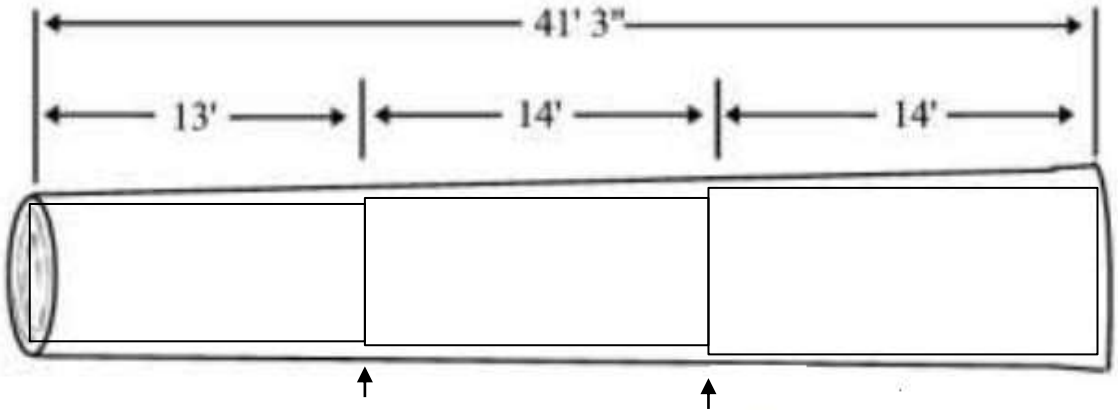


Scribner Basics

Idaho Guidance (41'-60') – Idaho Region 1 - Take two measurements, small end and 16' up from the butt. The diameter at the 16' measurement point shall be determined by actual measure. Apply calculated taper distribution to determine scaling diameter of the second segment.

All other Idaho Regions – Actual taper, actual taper is best determined by making caliper measurements.

From IBSP Scaling Manual ; APPENDIX A-4 – TAPER TABLE.



Determine it is a butt cut log

Apportion or Caliper measure

Caliper measure

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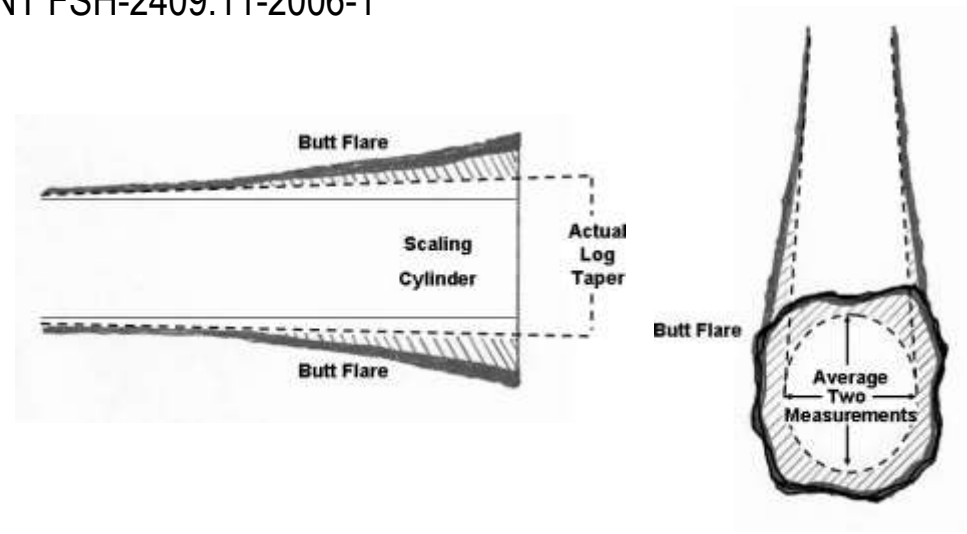
Scribner Basics

R6 Guidance 17.43 - Taper in Butt Log- Logs with a scaling length of 41 plus feet: Actual taper will be determined by measuring the diameter of both ends using procedures outlined in 17.3 - Log Diameters and computing total taper. On butt logs, the butt diameter is measured by projecting the actual taper of the log through the flared butt area. R6 SUPPLEMENT FSH-2409.11-2006-1



"Actual" taper is more average or apportioned taper, not what is actually in the log.

Focus on Value to Client

- One generally accepted principle of taper in trees is outlined in the Idaho Log Scaling Manual

"2.36 Taper in Long Logs

Since trees gradually taper from butt to top, it seems reasonable to expect that logs, which are sections of a tree, also uniformly taper in the same manner. This is generally true but not in all instances. Though giving the general appearance of a cone, trees usually taper quite rapidly for several feet above the ground, then for a distance the rate of taper can be slight or nonexistent. In the upper reaches the tree begins to taper more rapidly, with the rate of taper continuing to increase as the top is approached."

It is reasonable to apply this observation to logs. The swell at the butt of the tree generally is gone by 4.5 ft, and then the rate of taper is slight or nonexistent for some length, especially relative log cut from the top portion of the tree, which tapers more rapidly as the top is approached.

It would follow then, that the diameter at the top of the butt cut segment would tend to be underestimated if it is assigned the average taper of the three segment log. Thus, measurement of the top of the first segment as in the Idaho would present a more reasonable estimate of the volume of an average three segment log.

Data to test this hypothesis would be helpful.