

# Options for measuring/estimating the large end diameter of a butt- cut log?

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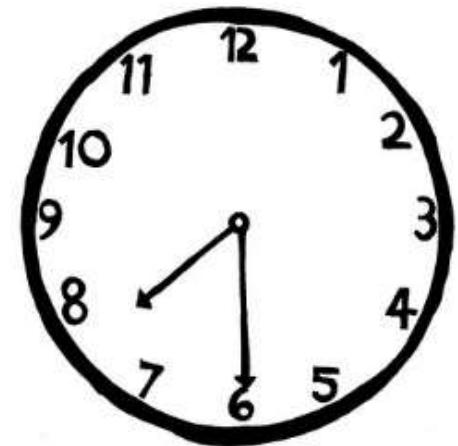
# Challenges with Cubic

- ▶ Timeline
  - My own team
  - Industry et. al.
- ▶ Rules
- ▶ Defect
- ▶ SAFETY
- ▶ Check Scaling
- ▶ Techniques
- ▶ Productivity



# Timeline

- ▶ My own team
  - Need to have buy in from those who will implement it
- ▶ Industry et. al.
  - Need to be comfortable using cubic
  - Must understand cubic volumes
- ▶ Goal is to provide enough time for purchasers to understand cubic scaling
  - Gather data and test methods
  - Provide Data in both CCF and MBF
  - Begin offering limited sales in CCF



# Rules

- ▶ Finish the IDL Cubic Scaling Handbook (Net rules)
  - We have to create and maintain our own
- ▶ Create policies for collecting and reporting data
  - What to collect and how accurate does it need to be?
- ▶ Establish overrides and scaler discretion
  - Consistency



# Defect

- ▶ Take defect in the same way as scribner
  - Very similar to USFS cubic
- ▶ What is the minimum defect to take?
  - .2 CF is roughly equivalent to 1bf but in Scribner Dec. C defect starts at 10bf
  - Is .5 CF a reasonable minimum defect?
- ▶ What is defect???



# Safety



# Check Scaling

- ▶ Whatever rules and policies we come up with Must comply with IBSP
  - Gross rules are already established
  - Our techniques must be acceptable and repeatable
    - Length
    - Defect
    - Butt-log diam



# Techniques

- ▶ Must be aware of time!
- ▶ Lengths
  - One or two foot multiples?
  - Mid-point diameters?
- ▶ Butt-log diameters
  - Calipers?
  - Taper equations? Apparently not good enough for cubic!
  - Formulas?

Region 6 formula or something similar





# Productivity

- ▶ Lengths – typically cubic lengths are to the nearest foot can or should we do two foot multiples to save some time taping logs? (Compare to Scribner Dec. C)
- ▶ Diameters
  - Butt Log Diameters are typically taken at 4' with calipers – this is just plain stupid and unsafe
  - We chose the R6 method over Taper Equations (overrides)
  - Mid Point Diameters on Multi-segment Logs – are they worth the effort?
- ▶ Frequencies
- ▶ Other Techniques for low value products (3P)



# The Region 6 Method

## ▶ Procedure

- Measure the actual butt diameters inside bark
- Measure through the geometric (true) center
- Avoid abnormalities
- Take two measurements at right angles (short axis is one)

## ▶ Formula

- Butt Dia – SED =  $\frac{\text{Avg. Dia} + \text{raise until divisible by 3}}{\text{divide by 3}} = X$
- Butt Dia – X = LED

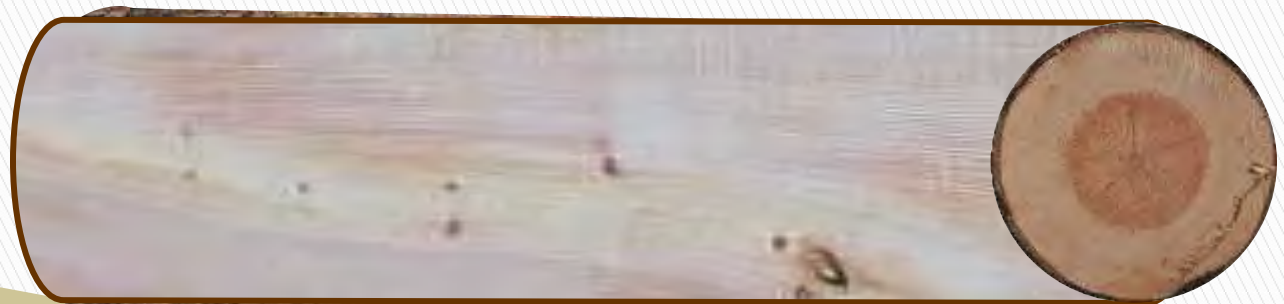
## ▶ Example

- Butt Meas = 21 – SED 17 = 4 add 2 to be divisible by 3  
 $6/3 = 2$  subtract 2 from the Butt Meas of 21 = 19  
19 is recorded as the LED for the log



# R6 Method in Table Form

Inches Difference	Subtract ____ Inches from actual butt diameter
1" - 3"	1"
4" - 6"	2"
7" - 9"	3"
10" - 12"	4"
13" - 15"	5"
16" - 18"	6"



# Preliminary Experience

- ▶ We have test scaled a couple hundred logs (242)

Species	Logs	R6 Method	Caliper	Diff
WRC	21	406	409.3	1.008
MIXED	79	2480.4	2528.8	1.019
MIXED	38	1339.4	1371.5	1.024
WRC POLES	63	1065.1	1072	1.006
MIXED	41	1147	1157.3	1.009
	242	6437.9	6538.9	1.016

Using the R6 Method results in a number equal to **98.455%** of the gross volume recorded using measurements taken with calipers.



This assumes that measuring with calipers is practical and accurate.

# Much More to Learn

- ▶ Have not studied lengths (1 or 2 foot increments)
- ▶ We need to further study the R6 method
  - Differences among species
  - Regional variability
  - Does it matter
- ▶ If we can't use standard taper (which is good enough for Scribner) can we at least use R6
  - Check Scaling and the IBSP
- ▶ What impact does cubic have on our scaling freq.
- ▶ How long does it take to scale cubic v Scribner



# Remember!!!

- ▶ Our goal is not perfection; it is improvement!
  - $\approx 1.5\%$  volume error is pretty small compared to Scribner



# Questions?

