

# WHEN IS A CUBIC METRE NOT A CUBIC METRE?

By Aaron Sinclair

Recently we were asked by a logging contractor to answer the question of “What is the definition of a cubic metre?” On the surface, the factual definition is the amount of wood in a one metre by one metre by one metre cube. However, logs are not nicely crammed into neat cubic blocks for simple measurement. That means a process of measurement is required to quantify how many logs are in a cubic metre (small piece size) or how many cubic metres in a log (large piece size).

In British Columbia the measurement of logs to calculate the cubic metres is outlined in *The Scaling Manual* published by the Timber Pricing Branch of the Ministry of Forests, Lands and Natural Resource Operations. The current version is dated November 1, 2011 with its current amendment number three dated March 15, 2016.

*The Scaling Manual* is a short 504 pages long of complex instructions of how to scale. At its simplest, *The Scaling Manual* defines the calculation of a cu-

bic metre as a formula that measures the area of the two ends inside of the bark and the length of the log.

char and missing wood are straightforward. Rot is more complicated. It is defined as “...the level of decay where

$$V = \frac{A_1 + A_2}{2} \times L$$

where: **V** is the volume of the log in m<sup>3</sup>.  
**A<sub>1</sub>** is the area of the small end of the log in m<sup>2</sup>.  
**A<sub>2</sub>** is the area of the large end of the log in m<sup>2</sup>.  
**L** is the length of the log in m.

Figure 1.2 The Smalian Formula.

This method of determining the measurement of a cubic metre of a log has been the official volume measurement in British Columbia since 1979.

But it's not as simple as just taking three measurements of a log. *The Scaling Manual* allows for deductions from the volume to account for things such as rot, holes, charred wood or missing wood. Holes,

wood begins to lose its strength and fibre integrity...” Discolouration or stain in itself is not an allowable deduction. The remaining portion of the wood is the “net firmwood volume.” From *The Scaling Manual* perspective, a cubic metre is actually the net firmwood volume, after permitted deductions. For scale-based stumpage blocks,

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the net firmwood volume determines the volume for stumpage payments to the provincial government.

And this is what gave rise to the question asked about defining a cubic metre.

## The contractor...thought they were getting paid a cubic metre rate for all volume they delivered unless the logs were rejected due to quality issues.

The contractor that asked the question thought they were getting paid a cubic metre rate for all volume they delivered unless the logs were rejected due to quality issues. A review of various logging contracts across the province identified that none of the contracts specifically defined a cubic metre and only vaguely, if at all, referenced *The Scaling Manual*. Importantly, the contractor did not know the practice their customer was employing for measuring and calculating a cubic metre for payment of the negotiated logging rate.

As a generalization, it costs a contractor the same to harvest, process, and transport a log regardless of the firmwood deductions mentioned above. Contractors who have accepted pay-

ment of a cubic metre rate calculated on net firmwood volume have agreed to an inferred transfer of fibre quality risk to the contractor.

This transfer of risk is an interesting

question when viewed against the backdrop of Bill 13 replaceable contracts. Generally contractors have no input to block layout or engineering, nor a pecuniary interest in the input fibre or the output fibre. They are a service provider who is effectively required, regardless of economic outcome, to harvest fibre their customer instructs them to harvest under penalty of loss of contract if they do not.

So here's the answer to the question: When is a cubic metre of wood not a cubic metre of wood? When it is a net firmwood cubic metre. Contractors need to clearly understand not only the unit rate they are being paid but the basis for measurement of the unit when negotiating rates. Not understanding

that basis of calculating payment can be costly and result in a contractor negotiating away some or all of their profit before they ever started the work.

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PNL Consulting helps businesses maximize profits by proactively planning and analyzing financial results on a continuous basis.

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Source: *The Scaling Manual*, Timber Pricing Branch, Ministry of Forests, Lands and Natural Resource Operations, November 1, 2011.



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