
SCALING METHODS

13

13.0 Rationale for Varying Scale Requirements

Scaling requirements in the Yukon vary according to the different products and permit types described by the Yukon Timber Regulation. In general, scaling requirements are established on a cost-risk basis.

The scaling methods described in this chapter vary in level of accuracy and proportionately, the cost to the operator in terms of time, labour and required equipment. The scaling requirements of different timber permits vary in relation to the value of the permit. In some cases, the operator has a choice of two or more available scaling methods.

This chapter describes the different scaling methods and names the types of permits that may use each method. Each method has an associated grading component which is described in Chapter 14.

13.1 Piece Scaling

Piece scaling is the most accurate and commonly used method in the Yukon.

13.1.1 Application

This scaling method may be used by all round wood permits other than Class H, and for deciduous timber.

13.1.2 Summary of Method

Gross dimensions of every log are measured, including length, and inside the bark diameters at both ends. Firmwood deductions are measured and recorded to determine net volume. Volumes are determined using Smalian's formula as described in Chapter one.

13.1.3 Method

Gross log or slab dimensions are measured as per Chapter 10. Any irregularly shaped pieces must be measured according to the procedures outlined. Care must be taken to measure butt diameters in the correct location on the log to avoid exaggeration due to flare.

Firmwood deductions are calculated and recorded as per Chapters two through nine. A calculation is then done to determine the net volume of the piece.

Net volume may be calculated one of two ways as described in Chapter two. The volume of any firmwood defects may be calculated and directly subtracted from the calculated gross log volume. Or, as is more commonly done, firmwood deductions are made to determine net log dimensions from which a net log volume can be calculated

- Using half volumes listed on scale stick,
- Using table of half volumes, or
- Automatically by software installed on hand-held computer

A grade must be assigned to each piece as per Chapter 14. All measurements and necessary information, including net log volumes and grades, must be recorded on the Scale Tally Sheet, form number FR-358 (see example in Figure 13.1).

Once the FR-358 has been completed, an accompanying summary of scale FR-381 must also be completed (see example in Figure 13.2). If a hand-held scaling computer is being used, a detailed log listing report along with a summary of scale must be generated. Examples of these reports are shown in Figures 13.3 and 13.4.

Submissions of all forms associated with the scaling and reporting of round wood logs must be submitted as per the schedule outlined in Section 15.9.

13.2 Weigh Scaling

This is the most efficient method of scaling large volumes of round wood timber. It is more cost effective than piece scaling in that only randomly selected loads are scaled. The sampling intensity is directly related to the volume and homogeneity of the wood being harvested.

13.2.1 Application

This method may be used for all round wood permits other than Class H permits.

13.2.2 Summary of Method

Truckloads of logs are weighed; both gross and tare, to determine the mass of the logs. Randomly selected loads are set aside for piece scaling. The selection of the sample loads is based on a sampling intensity that is set by the Forest Management Branch. Piece scale volume data from sample loads is used to calculate a weight to volume conversion rate. Grade information from sample loads is used to create a grade profile of the wood being weigh scaled. The calculated grade profile and conversion rate is then used to determine the volume and value of all loads, including those that were weighed but not piece scaled as samples.



Scale Tally Sheet

Scaling Site Name: ACME FOREST PRODUCTS Forest District Name: WATSON LAKE Scaled by: FRANK ROBERS
 Timber Permit #: 2002F770 66 Permit Holder: CHARLIE KOWALCHUK Cut Block # / RW: BLACK * 2

Scaler #	Tally #	Site #	Date Scaled	Load Arr. #	Load Receipt #	Timber Mark	# of Logs	Net Vol.(m ³)
Y066	013	W37	07/19/02	0125	632 597	2F7066		
Pop	Str.	Yr.	Sample #	Gross Weight	Tare Weight (kg)	Net Weight (kg)	Page <u>1</u> of <u>1</u>	

Please tick the box that applies to the manner in which you are scaling the timber

Piece Scale Weigh Scale Top Scale (Details) →

Spruce taper _____ m/r	TOP SCALE ONLY
Pine taper _____ m/r	
Other _____ m/r	

S = Species		DC = Deduction Code			Len = Length					
		GROSS		DEDUCTIONS		VOLUMES/GRADE				
#	S	Len	Top Butt	DC	Len	Top Butt	Gross Vol	Net Vol T/B	G R	
1	SW	190	10 22				.298 1.445	.298 1.445	1	
2	SW	179	9 18				.228 .911	.228 .911	1	
3	SW	189	7 15				.145 .668	.145 .668	1	
4	SW	190	6 18				.107 .967	.107 .967	1	
5	LO	177	8 18				.178 .901	.178 .901	1	
6	SW	189	7 19				.145 1.072	.145 1.072	1	
7	LO	189	7 17	Br	0.1		.145 .858	.145 .858	1	
8	SW	150	6 14				.085 .462	.085 .462	2	
9	LO	168	6 16	Br	0.2		.095 .676	.095 .676	1	
10	LO	189	7 17				.145 .858	.145 .858	1	
11	SW	188	6 20	Hr	9.9		.106 1.181	.053 .590	4	
12	SW	189	10 26	Br	0.2		.297 2.007	.297 1.190	3	
13	LO	183	6 15				.103 .647	.103 .647	1	
14	SW	189	8 15				.190 .668	.190 .668	1	
15	SW	193	7 15				.149 .682	.149 .682	1	
Total Pieces:							Net m ³ : 14.890			

		Len = Length			DC = Deduction Code			VOLUMES/GRADE		
		GROSS		DEDUCTIONS		VOLUMES/GRADE				
#	S	Len	Top Butt	DC	Len	Top Butt	Gross Vol	Net Vol T/B Butt	G R	
16	LO	166	6 15				.094 .587	.094 .587	3	
17	LO	181	6 14	Br	0.1		.102 .557	.102 .545	2	
18	SW	167	6 14	Hr	0.5		.094 .514	.094 .400	2	
19	SW	183	6 15				.103 .647	.103 .647	1	
20	SW	178	5 16				.070 .716	.070 .716	3	
21	SW	165	6 13				.093 .438	.093 .438	2	
22	LO	176	6 14				.069 .542	.069 .542	2	
23	SW	200	6 14				.113 .616	.113 .616	2	
24	LO	080	8 12				.081 .180	.081 .180	2	
25	SW	078	6 9	Hr	3.9		.043 .100	.043 .033	4	
26	SW	062	5 8				.027 .060	.027 .060	2	
27	LO	146	6 14				.092 .440	.092 .440	2	
28	SW	148	5 15				.091 .490	.091 .490	1	
29	SW	136	6 14				.076 .420	.076 .420	2	
30	SW	050	7 12	Hr	2.5		.090 .102	.091 .050	5	
Total Pieces:							Net m ³ : 7.353			

Signature of Scaler
FR-358

07/19/02
Date Signed MM/DD/YY

Figure 13.1 Scale Tally Sheet (FR-358)



Summary of Scale

Scaling Site Name: <i>Acme F.P.</i>	Forest District: <i>Watson Lake</i>	Scaled by: <i>Frank Rogers</i>
Permit Holder: <i>C. Kowalchuk</i>	Timber Permit: <i>2002 F77066</i>	Cut Block #/ RW: <i>Block #2</i>

Total number of piece scale/sample tally sheets summarized on this scale: *30*

Scaler #	Tally #	Site #	Date Scaled (MM/DD/YY)	Load Arr.#	Load Receipt #	Timber mark	Total Pieces	Net Vol. (m ³)
<i>Y066</i>	<i>013</i>	<i>W37</i>	<i>02/07/19</i>	<i>0125</i>	<i>632597</i>	<i>2F7066</i>	<i>30</i>	<i>22.243</i>
Str.	Year	Sample #	Block #	Gross Weight (kg)	Tare Weight(kg)			

Species	Grade	Number of pieces	Net Volume (m ³)
<i>Sw</i>	<i>1</i>	<i>9</i>	<i>9.006</i>
<i>Lo</i>	<i>1</i>	<i>5</i>	<i>4.538</i>
<i>Sw</i>	<i>2</i>	<i>6</i>	<i>2.884</i>
<i>Lo</i>	<i>2</i>	<i>4</i>	<i>2.051</i>
<i>Sw</i>	<i>3</i>	<i>2</i>	<i>2.273</i>
<i>Lo</i>	<i>3</i>	<i>1</i>	<i>0.681</i>
<i>Sw</i>	<i>4</i>	<i>2</i>	<i>0.719</i>
<i>Sw</i>	<i>5</i>	<i>1</i>	<i>0.091</i>
Total			


Signature of Scaler

02/07/19
Date Signed (MM/DD/YY)

FR-381

Figure 13.2 Summary of Scale (FR-381)

CHECKS
DETAILED LOG LISTING WITH DEFECTS

Region : YT
District : TE
Scaled By: VERN DAVIES

Page 1 of 3
Date of Scale: 02.03.12
Time of Scale: 17:43
Date Printed : 02.08.08

Signature: *Vern Davies*

Site Scaler	Ret.	G Log	Arr.	Blk.	Load	Net-kg
No.	No.	No.	N Count	Popn-St-Yr	No.	No.
X01	Y034	002	G 0074	2002 41 01	0026 012	0005326 029070

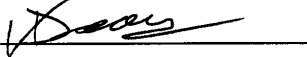
Log#	Mark	Pt	S	SpG	----- Gross -----			----- Defects -----				----- Net -----		Srt	Rm	
					Len	Top	But	Volume	DTM	Len	Tp	Bt	Volume			Volume
0001	1F7011			LO2	165	006	018	0.933							0.933	
0002				LO2	153	005	015	0.601							0.601	
0003				LO2	149	005	015	0.585							0.585	
0004				SP2	167	005	014	0.580							0.580	
0005				LO2	148	006	015	0.607							0.607	
0006				LO2	149	006	017	0.761							0.761	
0007				LO2	148	007	016	0.709							0.709	
0008				LO2	163	005	016	0.719							0.719	
0009				LO2	086	005	012	0.228							0.228	
0010				LO2	158	008	017	0.876							0.876	
0011				LO6	021	005	009	0.035							0.035	
0012				SP2	159	005	014	0.552							0.552	
0013				SP2	154	005	016	0.680							0.680	
0014				LO2	150	005	014	0.521							0.521	
0015				LO2	052	005	007	0.060							0.060	
0016				LO2	154	006	016	0.706							0.706	
0017				LO2	152	006	017	0.776							0.776	
0018				LO2	070	005	008	0.098							0.098	
0019				LO6	017	005	006	0.016							0.016	
0020				LO2	131	005	013	0.399							0.399	
0021				LO2	133	005	012	0.353							0.353	
0022				SP2	149	006	017	0.761							0.761	
0023				SP2	175	006	016	0.803							0.803	
0024				SP2	107	005	013	0.326							0.326	
0025				LO2	056	012	014	0.299							0.299	
0026				LO2	048	005	008	0.067							0.067	
0027				LO2	152	006	018	0.860							0.860	
0028				LO2	032	005	007	0.037							0.037	
0029				LO2	159	005	014	0.552							0.552	
0030				LO2	127	006	011	0.313							0.313	
0031				SP2	177	006	018	1.001							1.001	
0032				SP2	148	006	016	0.679							0.679	
0033				LO2	132	006	015	0.541							0.541	
0034				SP2	154	007	016	0.738							0.738	
0035				LO2	128	005	012	0.340							0.340	
0036				LO2	161	005	014	0.559							0.559	
0037				SP2	140	006	013	0.451							0.451	

Figure 13.3 Example of the first page of a multi-page detail log listing report generated by a hand held scaling computer

CHECKS
COMPUTED WEIGHT SCALE SAMPLE (F.S. 531)

Region : YT
District : TE
Scaled By: VERN DAVIES

Page 1 of 1
Date of Scale: 02.03.12
Time of Scale: 17:43
Date Printed : 02.08.08

Signature: 

SEQ#	SCALER	TALLY#	SITE#	YMMDD	LOAD ARR#	SLIP#	POPEN/ STRAT/YY	BLK #	LOAD#
col1-3	4-7	8-10	11-13	14-19	20-23	24-30	31-38	39-41	42-44
010	Y034	002	X01	020312	0026	0005326	20024101	012	

WEIGHT	MARK	F/C	SIGN	LOGS	EDIT BYPASS	METRIC WEIGHT	METRIC VOLUME	PAGES
col45-50	51-57	58	59	60-63	64	65	66	67
029070	1F7011			74		M	M	1

SEQ#	SPECIES	GRADE	NUMBER OF PIECES	SAMPLE VOLUME (M3)	VOLUME WEIGHT RATIO
col1-3	11-12	13	14-16	17-21	
024	LO		49	22.65	0.7792
034	LO	6	3	0.06	0.0021
044	SP		22	14.00	0.4816
O5T	TOTALS		74	36.71	1.2628

Figure 13.4 Example of a Scale Summary report generated by a hand held scaling computer

13.2.3 Method

Weigh scaling may be used as a scaling method only where authorization has been granted by the Forest Management Branch. Also, the use of weighing devices for any commodity trading is subject to regulation by the Weights and Measures Act of Canada. This Act states that all weighing devices must be approved and certified prior to use. The Forest Management Branch may require, in the scale site conditions, proof that the weigh scale has been inspected and properly maintained to ensure accurate and consistent readings.

The weight of the load is determined by measuring and recording the gross weight and then subtracting from it the measured and recorded tare weight of the truck. If the gross measurement includes the weight of the driver, then the tare measurement must also include the weight of the driver. All trucks must have their tare weights measured and recorded for each load delivered and must not refuel between gross and tare measurements.

The weighing of each truckload of logs must be properly recorded and documented according to the scale site conditions. Each load of logs received by the scale site must be accompanied by a properly completed load receipt (see Figure 13.5). The Forest Management Branch may also require the scale operator to produce a weigh scale receipt (FR-344) for each load weighed (see Figure 13.6). This receipt contains all the necessary descriptive information about the load including the load receipt number and whether or not it was selected as a sample.

The scale site operator is also required to maintain a log of incoming loads weighed (daily/monthly load inventory). Refer to Section 15.8.1 for a list of all forms that must be completed on a monthly basis with respect to weigh scaling.

The mechanism for the random selection of sample loads must be approved by the Forest Management Branch. Two methods are available. The most commonly used method involves sample selection cards obtained from the Forest Management Branch. These cards are commonly referred to as 'bingo cards'. See Figure 13.7 for an illustrated example. The second method involves the use of a computer to capture weights from the weighing device. The Forest Management Branch must approve software utilized with this method.

The frequency at which sample loads are selected is determined by the stratification plan developed by the Forest Management Branch. To ensure the precision of weight/volume ratios, the Forest Management Branch will identify distinct strata for weigh scaling in Forest Districts where stands of trees scheduled for harvest vary in size, grade profile and species. Where stands are more homogeneous, one stratum will be used.

At least two factors are considered when setting a sampling frequency for a given weigh scale stratum. Variability in the profile of the wood in a stratum necessitates a larger number of samples to achieve the desired precision. On the other hand, greater consistency of the wood in the stratum will lead to less variation in the weight/volume ratio, which should lead to fewer samples being required.

It is also important to consider the volume of wood expected to be weighed in a given stratum. Lower volumes (fewer truckloads) will lead to a higher sampling frequency to secure a sufficient number of samples.

NO. OF PIECES		DESCRIPTION PRODUCT, SPECIES DIMENSIONS	VOLUME FBM <input type="checkbox"/> M ³ <input type="checkbox"/>	UNIT PRICE	\$ AMOUNT
		SP/LD			
TOTAL			TOTAL VOLUME	TOTAL PRICE	
WEIGHT: GROSS		52020	WEIGH STATION		
TARE		17350	TICKET NO.		
NET		34670			

I hereby certify that these forest products were cut from

Landing No. 1 Block No. 4 District Watson Lake
 Permit No. 2001F77039
 Signed: *[Signature]*

WILLOW PRIMERS LTD. WHITE - ORIGINAL WITH CARBON

Figure 13.5 Example of a properly documented Load Receipt

Yukon
Energy, Mines and Resources

Weigh Scale Receipt
No. 697584

WEIGHED AT (PLACE) ACME FOREST PRODUCTS		SCALE SITE # W29	
TIME IN 15:30		GROSS WEIGHT 52020	
TIME OUT 15:55		TARE 17350	
DATE JULY 26 / 02		NET WEIGHT 34670	
LOAD RECEIPT # 39876	LOAD ARRIVAL # 157	SPECIES SW/LD	TIMBER MARK 2F7039
BLOCK # 4	STRATUM 17	SAMPLE? (YES/NO) YES	SAMPLE # 7
TRUCK NUMBER 665	TRUCKER'S SIGNATURE <i>[Signature]</i>	SCALE OPERATOR'S SIGNATURE <i>[Signature]</i>	

FR-344

Figure 13.6 Example of a Weigh Scale Receipt (FR-344)

WEIGHT SCALE SAMPLE CARD										
WEIGHT SCALE	W29			FREQUENCY	1/25		CARD NO.	1011		
STRATUM	98		LOAD NO.	1 TO 100		YEAR	01/02			

1	11	21	31	41	51	61	71	81	91
2	12	22	32	42	52	62	72	82	92
3	13	23	33	43	53	63	73	83	93
4	14	24	34	44	54	64	74	84	94
5	15	25	35	45	55	65	75	85	95
6	16	26	36	46	56	66	76	86	96
7	17	27	37	47	57	67	77	87	97
8	18	28	38	48	58	68	78	88	98
9	19	29	39	49	59	69	79	89	99
10	20	30	40	50	60	70	80	90	100

Figure 13.7 Example of a Bingo Card used for weigh scaling sample selection. Load number 7 is a sample.

13.2.3.1 Scaling of Sample Loads

Loads that are selected as samples are piece scaled as per the piece scaling procedure described earlier in this chapter. The schedule for the submission of sample scale tallies is included in Section 15.9.2. All sample scale tallies submitted must be accompanied by original copies of both load receipts and weigh scale receipts associated with the sample loads.

13.2.3.2 Set Conversion

Where sufficient data exists, the Forest Management Branch may authorize weigh scaling where a set weight/volume conversion is utilized. In recent years, timber harvesting in the Yukon has primarily been limited to “Harvest Planning Areas” identified by the Forest Management Branch and Client Services and Inspections. These planning areas are, in some cases, small and localized enough that timber profiles do not vary significantly.

Weigh scale data for a given harvest area may show a great deal of consistency over several months or possibly years. Where this is the case, a permit holder may make a request to the Forest Management Branch to use a set conversion rate which will be used for billing purposes for all wood that is weigh scaled. Where the Forest Management Branch authorizes this procedure, the weight/volume ratio and grade profile to be used will be provided by the Forest Management Branch. The Forest Management Branch will also set the conditions for the use of this procedure.

13.3 Stack Scaling Cut to Length

The Forest Management Branch recognizes that piece scaling and weigh scaling is not always practical or feasible for small sawmill operators. Stack scaling is recognized as an alternate scaling method for small volume round wood permits. This method does not allow for firmwood deductions or grade deductions.

13.3.1 Application

This method may be used for Class D or other fuelwood permits, and round wood permits (other than Class H) whose total round wood volume does not exceed 1,000 m³ per year, and for deciduous timber permits of any volume.

13.3.2 Summary of Method

Logs of uniform length are piled into a neat deck, or series of decks. Several measurements are taken to determine the average dimensions of each deck. A factor of 0.625 is then applied to the stacked volume of the deck to establish the net firmwood volume of the deck, less air and bark. Where fuelwood is being scaled using this method, volume may be estimated as number of cords, then converted to cubic meters.

13.3.3 Method (For Round Wood)

Where the stack scaling method is used to scale round wood, decks must be neat and uniform in shape. Logs are required to be bucked to a consistent length. The Forest Management Branch may restrict the length to which logs are bucked.

A number of measurements are taken to determine the average dimensions of a deck. Figure 13.8 shows the necessary measurements to be determined. Height measurements are taken at 2m intervals over the length of the deck and are recorded to the nearest 0.1 m. As shown in Figure 13.9, length and height measurements are related to one another. In most cases, it is necessary to 'square off' sloping ends of decks. Height measurements should only be taken within the boundaries of the determined length.

All height measurements taken, on both ends of the deck, must be used to calculate an overall average height for the deck. All measurements are recorded on the FR-380. The net firmwood volume is also calculated on this form (see Figure 13.10 for an example of this form).

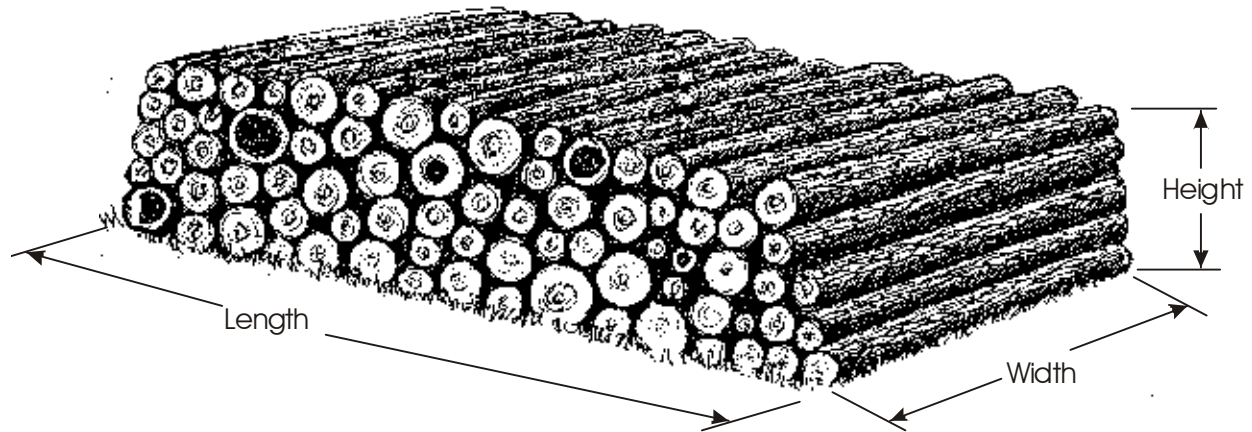


Figure 13.8 *The volume of the deck is determined by measuring the length, width and average height and then multiplying by a factor of 0.625.*

Where timber is bucked into logs of uniform length, odd size tops will result. These pieces must also be accounted for in the process of scaling. These pieces are piled into a deck or a series of decks in which log ends are aligned on one end of each deck (see Figure 13.11). As shown in the diagram, the scaler must estimate the average length of the deck. Once again, height measurements are taken at 2 m intervals within the boundaries of the determined length after ‘squaring off’ the ends of the deck. Measurements of these decks, along with net firmwood volumes are also recorded on the FR-380.

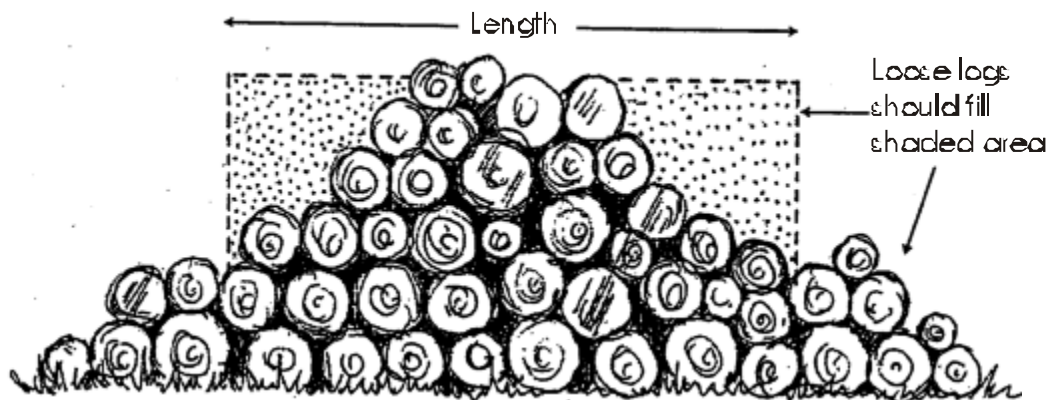


Figure 13.9 *Where the shape of a deck is not perfectly rectangular, it is necessary to square off the ends*



Stack Scale Tally Sheet

Permit Holder <i>JOE SMITH</i>		Permit # <i>2001F1099</i>		District <i>HAINES JUNCTION</i>	Deck # <i>1</i>
Scaler Name <i>MARTHA JOHNSON</i>		Scaler # <i>4076</i>	Tally # <i>23</i>	Date Scaled <i>JULY 29/02</i>	
Ave. Height <i>2.4</i> Meters X	Width <i>5.0</i> Meters X	Length <i>8.3</i> Meters X	Factor <i>0.625 =</i>	Volume <i>62.25</i> m ³	
Height Measurements <i>2.3 2.2 2.5 2.6 2.4</i> _____					
Scaler's Signature <i>Martha Johnson</i>					

FR-380

Figure 13.10 Example of a FR-380 used to record net firmwood volume of a deck of wood which has been stack scaled

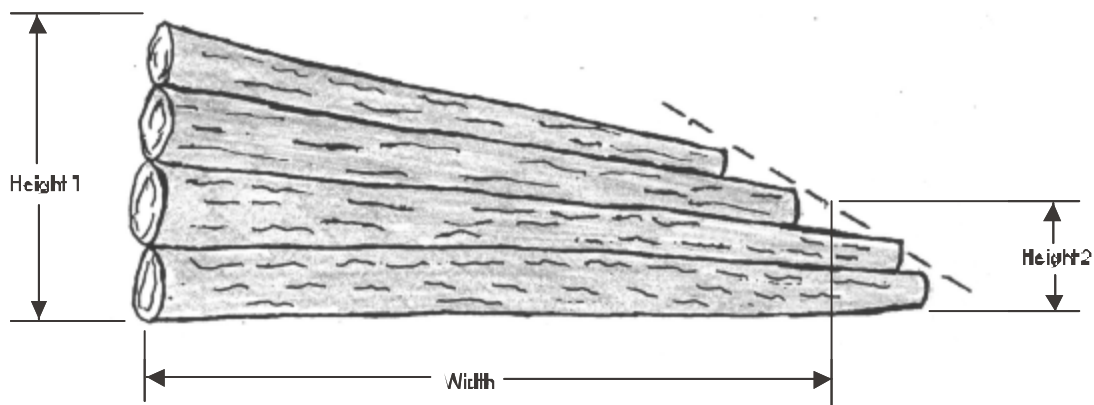


Figure 13.11 When measuring the width of decks containing odd length pieces, the height measurement should be taken at the point where the average length is estimated

13.3.4 Method (For Fuelwood)

A scaler's licence and authorization is not required for stack scaling fuelwood. The permit holder may estimate volumes independently.

First, the number of cords must be estimated. As shown in Figure 13.12, one cord is equal to a deck whose stacked volume is equal to 128 ft^3 , or more simply, whose overall dimensions are 4ft x 4ft x 8ft. The conversion factor used by the Forest Management Branch, for the purpose of converting cords to cubic metres, is 2.265. That is, one cord is equal to 2.265 m³.

The Forest Management Branch Commercial Fuelwood Monthly Invoice (FR-311), as shown in Figure 13.13, guides the permit holder through the process of converting volumes in cords to cubic metres. For the purpose of scaling fuelwood, it is not necessary to fill out a FR-380 (Stack Scale Tally Sheet).

The FR-315 (See Figure 13.14) is used to report volumes cut under a fuelwood permit that has been prepaid.

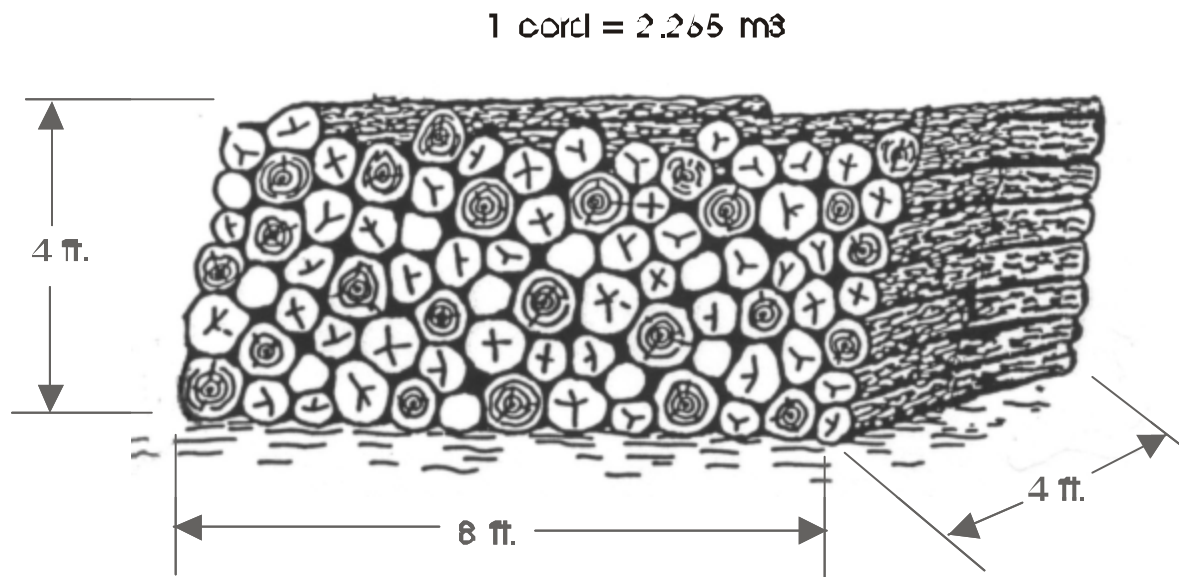


Figure 13.12 Dimensions of a cord of fuelwood



**Commercial Fuelwood
Monthly Return Invoice**

Permittee Name <i>NORM McNALLY</i>	Permit # <i>2002 F21013</i>	Reporting Month <i>JULY / 2002</i>
---------------------------------------	--------------------------------	---------------------------------------

Monthly Commercial Fuelwood Stumpage Dues

Total Cords for Month	Multiply Cords by Conversion Factor	Total Cubic Meters (m ³)	Commercial Fuelwood Stumpage Rate (See permit face for schedule of dues)	Stumpage Dues
<i>5</i>	<i>x 2.265</i>	<i>= 11.325 m³</i>	<i>x rate \$.25 /m³ =</i>	<i>\$ 2.83</i>
				Total owing \$ <i>2.83</i>

I, *NORM McNALLY*, of *WHITEHORSE*
 Hereby certify that the information provided by this return is true, complete and accurate.

Signature *Norm McNally*

M D Y

0	8	0	1	0	2
---	---	---	---	---	---

Section 5.3 Every permittee shall, within 15 days after the last day of each month in which the permit remains in effect, remit a timber report to the Minister setting out the volume, in cubic metres, of timber cut under the permit that was scaled during that month.

Section 6.2 A permittee shall remit (b) within 35 days after the last day of each month in which the permit remains in effect, dues on the volume of timber scaled during that month.

Departmental Use Only

Received by		M D Y <table border="1" style="display: inline-table;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>						
Date of Payment:	Amount received \$	Receipt #:						

FR-311

Figure 13.13 FR-311, Monthly return for Commercial Fuelwood



**Commercial Fuelwood
Permit Summary Return**

Permittee Name <u>JESSICA MACPHERSON</u>	Permit # <u>2002 F 77099</u>	Year <u>2002</u>
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Summary of Commercial Fuelwood Stumpage Dues for the permit period 06/15/02 to 06/15/03
Issue (MM/DD/YY) Expiry (MM/DD/YY)

Example:
 How to calculate cords into cubic meters (m³).
 Cords X 2.265 = Total _____ m³

Example Month 2 <u>June</u>	Example <u>10</u> cords <u>22.6</u> m ³	Month 4 <u>SEPT/02</u>	<u>13</u> cords <u>30</u> m ³	Month 8 <u>JAN/03</u>	<u>19</u> cords <u>40</u> m ³	Month 12 <u>MAY/03</u>	<u>0</u> cords <u>0</u> m ³
Month 1 <u>JUNE/02</u>	<u>9</u> cords <u>20</u> m ³	Month 5 <u>OCT/02</u>	<u>9</u> cords <u>20</u> m ³	Month 9 <u>FEB/03</u>	<u>11</u> cords <u>25</u> m ³	Month 13 <u>JUNE/03</u>	<u>7</u> cords <u>15</u> m ³
Month 2 <u>JULY/02</u>	<u>0</u> cords <u>0</u> m ³	Month 6 <u>NOV.02</u>	<u>11</u> cords <u>25</u> m ³	Month 10 <u>MAR/03</u>	<u>11</u> cords <u>25</u> m ³	Total cords cut: <u>113</u> m ³ : <u>255</u>	
Month 3 <u>AUG/02</u>	<u>11</u> cords <u>25</u> m ³	Month 7 <u>DEC/02</u>	<u>13</u> cords <u>30</u> m ³	Month 11 <u>APR/03</u>	<u>0</u> cords <u>0</u> m ³		

I, JESSICA MACPHERSON of WHITEHORSE
 hereby certify that the information provided by this return is true, complete and accurate.
 Signature Jessica Macpherson M D Y
|0|6|2|5|0|3|

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M D Y
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FR-315

Figure 13.14 FR-315 Commercial fuelwood yearly timber return summary

13.4 Stack Scaling Stem Length

This is the least accurate of the scaling methods discussed in this manual.

13.4.1 Application

This method may be used for deciduous permits of any volume. It may also be used, with the authorization of the Forest Management Branch, for round wood permits (other than Class H) whose total volume does not exceed 1,000 m³ per year. This may only be used where a more accurate scaling method is not practical. A request for authorization to use this scaling method may be refused where there is high variability in the lengths of logs harvested or where timber profiles exhibit a large amount of taper. Authorization may also be refused where the timber value is higher than normal, such as Class E or F permits which may be charged stumpage rates higher than those for other classes of permits.

13.4.2 Summary of Method

Several measurements are taken to estimate the average dimensions of the deck. A factor is then applied to estimate the net firmwood volume of the deck.

13.4.3 Method

Logs to be measured using this method must be arranged in very orderly decks. As with stack scaling cut to length wood, height measurements are taken at 2 m intervals over the length of the deck. Where this method is used, decks will often be sloping with logs arranged such that most log butts are on one end. Where a deck is sloping significantly it is important to note that the height measurement is taken at the exact location where the average length is determined (see Figure 13.11). A factor of 0.625 will be used to convert stacked volumes to solid cubic metre volumes.

13.4.4 Additional Consideration

Due to the potential of high variability in volumes measured using this method, conditions may be set in the conditions of a scale site's authorization or in a permit's scaling terms and conditions to ensure this method is used in a very controlled fashion and to ensure accountability for all trees harvested.

13.5 Top Scaling

Top scaling is also recognized by the Forest Management Branch as an acceptable scaling method for small volume round wood permits.

13.5.1 Application

This method may be used to scale logs on round wood permits, other than Class H, for volumes not exceeding than 1,000 m³ per year, and may also be used for deciduous timber. Authorization must be obtained from the Forest Management Branch. This method may only be used in areas where the Forest Management Branch has sufficient data to determine log taper.

13.5.2 Summary of Method

This scaling method involves measuring only the top diameter of the log as well as the length. The butt diameter of the log is calculated using the measured length and the taper of the log. Log taper values are supplied by the Forest Management Branch.

13.5.3 Method

This method helps to avoid incorrect butt diameters caused by measuring in the flare of the log.

Log lengths and inside the bark top diameters are measured as per Chapter 10. Firmwood deductions are measured and calculated as per Chapters 2 through 9.

Measurements are recorded on the FR-358 (Figure 13.1) along with calculated log volumes. The formula that is used to calculate butt diameters is as follows:

$$B = \frac{L}{(P \times 10)} + T$$

Where B = Butt diameter (rads)

L = Length (decimeters)

P = Log taper (metres/rad)

T = Top diameter (rads)

Example:

<u>Species</u>	<u>Length</u>	<u>Top</u>	<u>Taper</u>
Sw	100 dm	5 rads	2.5 m/rad

L = 100 dm

P = 2.5 m/rad

T = 5 rads

$$B = \frac{100 \text{ dm}}{(2.5 \text{ m/rad} \times 10 \text{ dm/m})} + 5 \text{ rads}$$

$$B = 9 \text{ rads}$$

13.6 Piece Count

In accordance with the Yukon Timber Regulation, Class H permits are not billed according to volume, but rather, by number of trees cut. This method is also available to Government employees for the purpose of estimating log volumes.

13.6.1 Application

This scaling method is used for Class H permits and may also be used by Government employees where a more accurate scaling method is not practical.

13.6.2 Summary of Method

The pieces harvested under a Class H permit are counted and recorded on the FR-385. Where a Government employee is estimating volumes, an average piece volume is determined and applied to the number of pieces counted to estimate total volume.

13.6.3 Method

In accordance with the Yukon Timber Regulation, wood cut under a Class H permit is billed on a per tree rate, regardless of volume. The trees harvested are simply counted and recorded on the FR-385 (see Figure 13.15 for an example).

In some cases, it is necessary for a Government employee to estimate volumes of unscaled wood. Where a more accurate method of scaling is not available, the piece count method may be used. Several pieces are measured to establish an average piece volume. A sufficient number of pieces must be measured, in proportion to the size classes that exist in the overall volume, to calculate an estimated average piece volume. This calculated average volume is then applied to the number of trees counted to estimate the total volume.

13.7 Standing Tree Measurement

Under specific circumstances it may be desirable to measure tree volumes prior to harvest rather than after. For example, billing volumes for land clearing operations where not all logs will be forwarded to designated scale sites will be more accurately calculated using this method. Also, where the holder of a round wood permit has no practical means with which to conduct a post harvest scale of logs, the permittee may apply for authorization to use this method.



**Class H Timber Permit
Piece Count**

Permittee Name <i>WALTER ZELINSKY</i>	Permit # <i>2002 F10666</i>	Year <i>2002</i>	Forest District <i>TESLIN</i>
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Is the Class H permit prepaid?

No, please complete Part A

Yes, please complete Part B

PART A

Return for _____
Month

Trees/Pieces cut _____

No trees cut this month (nil)

Prepaid permits must report within 15 days of the permits expiry or once operations are complete. Permits that are not prepaid must report monthly. If no trees are cut a nil return must be submitted.

PART B

Example Month 2 <i>June</i>	Example <i>10</i> Trees	Month 4 <i>OCT</i>	<i>0</i> Trees	Month 8	_____ Trees	Month 12	_____ Trees
Month 1 <i>JULY</i>	<i>15</i> Trees	Month 5 <i>NOV</i>	<i>15</i> Trees	Month 9	_____ Trees	Month 13	_____ Trees
Month 2 <i>AUG</i>	<i>0</i> Trees	Month 6	_____ Trees	Month 10	_____ Trees	Trees permitted: <i>60</i>	
Month 3 <i>SEPT</i>	<i>20</i> Trees	Month 7	_____ Trees	Month 11	_____ Trees	Total trees cut: <i>50</i>	
						<input checked="" type="checkbox"/> Operations Complete No more trees will be cut from this permit.	

I, *WALTER ZELINSKY* of *TESLIN*
hereby certify that the information provided by this return is true, complete and accurate.

Signature *Walter Zelinsky* M | 1 | 3 | 0 | 0 | 2 |
D | Y |

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M | D | Y |

FR-385

Figure 13.15 Example of a FR-385 used to record number of trees harvested under a Class H permit

13.7.1 Application

This method may be used where other more accurate scaling methods are not available and timber removal is being carried out under one of the following circumstances:

- For the clearing of fireguards, or rights of way (e.g.- utility access, pipelines, roads)
- For the clearing of land being developed for agricultural or industrial use
- For the clearing of land for the purpose of gravel removal or mineral extraction
- For round wood patch cuts not exceeding 5 hectares in size

While this method is intended for use by the Forest Management Branch staff, non-government individuals may apply for authorization from the Director of the Forest Management Branch.

The Forest Management Branch does not currently have a certification process for timber cruising. Applicants must have previous experience and must be able to demonstrate adequate knowledge in timber cruising. The individual must also apply to the Forest Management Branch for Acting Scaler Authorization (see Section 15.5) if he or she does not hold a valid Yukon Scaling Licence.

13.7.2 Method

The method used must be approved by the Director of the Forest Management Branch.