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May 12, 2011

BY EMAIL

To: *Cruising Manual Holders*

Dear Sir/Madam:

The purpose of the letter is to advise you that Section 8.6 of the *2010 Cruising Manual* was inadvertently omitted from the June 1, 2008 *Cruising Manual* and is subsequently added to the 2008 through 2011 *Cruising Manuals*.

Please replace the Table of Contents pages v to xii, Chapter 8 pages 8-11 to 8-20 and the Index pages i to ii. The corrected manuals are available on the internet at the following link:

http://www.for.gov.bc.ca/hva/manuals/cruising.htm

We apologize for any inconvenience that this may have caused.

Yours truly,

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Attachment

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8.5 Timber Available For Measuring

This method can be used if the timber is safe to measure and the cruiser or scaler can confirm which tree originated from which stump.

The following points apply to all options under Section 8.5.

8.5.1 Tally Card - FS 205S

Use the FS 205S stump cruise tally sheet unless the timber is being scaled. If the timber is scaled, use the FS 161 residue and waste tally sheet.

Record the Enforcement Action Administrative Review and Appeals (ERA) system case file number (i.e., DPA960001) in the licence and cutting permit header box. The first three characters identify the administrative organization unit (AOU), the next two characters identify the fiscal year, and the last four characters identify the number of the incident in that AOU for the reporting year. The ERA file number must be recorded in the locality description boxes in Card Type A of the Map Area Statement.

Code column 26 of each stump cruise tally sheet with a unique letter (A to Z) or number (0 to 9). This code will simplify the field data reconciliation of the cruise compilation. Also see Section 7.2 of the Cruising Manual (CM) for the correct map area statement stump cruise codes.

8.5.2 Field Measurements

If performing a cruise of the felled trees, complete the FS 205 cruise tally sheet as you would for a regular fixed area cruise and record all of the necessary information including pathological indicators and quality remarks. The cruiser must sign and date each tally card.

Record the total length of each tree in the height field and include the height of the stump in the total tree length.

Record the dbh of the felled trees and take the stump height into account when determining dbh. Use the FS 205S stump tally sheet if the decision is made to measure the stump heights and diameters. Record the total tree lengths in the margin of the tally sheet beside each stump tally.

All stumps and corresponding trees must be numbered. Each stump and its corresponding tree must be numbered with the same unique number.

8.6 Timber Not Available For Measuring

The following options apply if the timber has been removed from the UTH area, it is unsafe to measure the timber, or the scaler is unable to determine which tree originated from which stump. If this situation has occurred, use this measurement method for the whole stump cruise.

8.6.1 Tally Card FS 205S

The following points apply to all of the options under Section 8.5.

Record the Enforcement Action Administrative Review and Appeals (ERA) system case file number (i.e., DPA960001) in the licence and cutting permit header box. The first three characters identify the administrative organization unit, the next two characters identify the fiscal year, and the last four characters identify the number of the incident in the Administrative Organizational Unit (AOU) for the reporting year. The ERA file number must be recorded in the locality description boxes in Card Type A of the Map Area Statement.

Complete the FS 205S stump cruise tally sheet and sign and date each one.

Code column 26 of each stump cruise tally sheet with a unique letter (A to Z) and/or number (0 to 9). This code will simplify the field data reconciliation of the cruise compilation. Also see Section 7.2 of the *Cruising Manual* for the correct coding of the map area statement stump cruise codes.

8.6.2 Stump Measurements

Measure and record stump height to the nearest centimetre above the ground at the point of germination (POG) for the stump. Measure and record stump diameters inside bark (d.i.b.) consistent with the examples in Figure 8.1.

If stumps are longer than 1.3 m above the high-side ground, measure the stump at 1.3 m outside the bark above the point of germination, and record the diameter inside bark by estimating the bark thickness.

The measurement type must be consistent for the entire stump cruise. Check one of the diameter measurement type boxes “rads” (radius class units) or “centimetres” on the card type 9 of the stump cruise tally sheet (FS 205S).

8.6.2.1 Trees Less Than Timber Merchantability Requirements

Use the following options if the trees less than the merchantability requirements will be required information:

- 100 percent stump cruise.
- Sufficient fixed area plots of any size to achieve a 15 percent sampling error at the 95 percent confidence interval.
- One 400 square metre fixed area plot per hectare for cruises greater than or equal to 10 hectares.

If the area will be subject to an amortized rehabilitation cost or a value determination based on area, then a closed traverse of the harvest area will be required to a closing error of plus/minus 1 percent.

8.6.3 Roads and Land Clearing

If there are skid trails, roads or cleared areas present on the UTH area and the stumps have been removed from these areas or are so badly damaged that they cannot be measured, determine the area covered by the skid trails, roads or cleared areas. Do not sample the area of the skid trails or roads. Move any samples when the plot centre is on the road or cleared area 12 m (approximately 1 plot radius) North. If this fails try East, then South, then West. If this fails, increase distance to 24 m.

If the plot area is influenced by the road or cleared area, use the following border plot method:

Plot centres which fall within the stratum to be stump cruised but partially cover the skid road, road or cleared area will be made into border plots.

Divide the plot through the plot centre and parallel to the type line and measure the half which is entirely within the stratum to be sampled.

Refer to Section 3.4.1.7 for a diagram of the border plot procedure.

8.6.4 Measurement Options

The following options are listed in order of preference. Use Option 1 if it is feasible. If Option 1 is not feasible (adjacent information is not representative or unavailable or the area is too large), then proceed to the next option.

8.6.4.1 Option 1

Conduct a 100 percent stump cruise to determine the gross and net volume if the UTH area is < 10 ha.

Classify all of the stumps according to their maturity in relation to the stand, their defect and whether they are live or dead. See also Section 3.5.6 of the *Cruising Manual* or the

back of the FS 205 cruise tally sheet for the definition of the allowable tree classes. The correct tree class is necessary to ensure that the correct loss factor tables are used in the compilation.

The age correction for the counted age of stumps will be based on the prorated age correction at breast height in the Site Index Tables (see Appendix 9). For example:

Interior Douglas Fir, counted 100 years on stump, tree height = 30 metres, the site index is 20 and the years to boring height is 9 years, therefore 100 + (9*0.3m/1.3m) = 102 years.

Record scar and/or frost crack on the FS 205S if the stump has heart rot showing and the diameter of the rot is greater than 50 percent of the diameter of the stump (see Figure 8.2). This will ensure that the stump is moved into risk group 2. Coding scar will move all species into risk group 2 except Hemlock in FIZ A and FIZ C, which will require coding both scar and frost crack. Spruce in FIZ A, B and C will require coding both scar and frost crack to move them into risk group 2.

Record dead stumps that have sap rot that extends more than 1/6 the stumps diameter as tree class 4 (dead useless) as this indicates less than 50 percent sound wood content (see Figure 8.2).

Record conk if present on the outside perimeter of the stump or phaeolus schweinitzii is growing on the ground near the base of the stump or on the exposed root. Recording conk will move the stump into the highest risk group.

8.6.4.2 Option 2

Establish 400 m^2 fixed area (11.28 m radius) plots on a systematic grid to determine the gross volume if the UTH area is at least 10 ha.

Classify all of the stumps according to their maturity in relation to the stand, their defect and whether they are live or dead. See also Section 3.5.6 of the *Cruising Manual* or the back of the FS 205 cruise tally sheet for the definition of the allowable tree classes. The correct tree class is necessary to ensure that the correct loss factor tables are used in the compilation.

The age correction for the counted age of stumps will be based on the prorated age correction at breast height in the Site Index Tables (see Appendix 9). For example:

Interior Douglas Fir, counted 100 years on stump, tree height = 30 metres, the site index is 20 and the years to boring height is 9 years, therefore 100+ (9*0.3m/1.3m) = 102 years.

Record scar and/or frost crack on the FS 205S if the stump has heart rot showing and the diameter of the rot is greater than 50 percent of the diameter of the stump (see Figure 8.2). This will ensure that the stump is moved into risk group 2. Coding scar will move all species into risk group 2 except Hemlock in FIZ A and FIZ C, which will require coding both scar and frost crack. Spruce in FIZ A, B and C will require coding both scar and frost crack to move them into risk group 2.

Record dead stumps that have sap rot that extends more than 1/6 stumps diameter as tree class 4 (dead useless) as this indicates less than 50 percent sound wood content (see Figure 8.2).

Record conk if present on the outside perimeter of the stump or phaeolus schweinitzii is growing on the ground near the base of the stump or on the exposed root. Recording conk will move the stump into the highest risk group.

8.6.4.3 Option 3

Use adjacent cruise information for the gross and net volume per hectare if the timber in the UTH area is the same as the timber type in the adjacent cruise information.

8.7 All Stumps Removed From the UTH Area (i.e., Land Cleared, Road has Been Built)

8.7.1 Option 1

Perform a variable plot cruise or fixed area cruise in the adjacent timber as per the Cruising Manual to determine the net volume per hectare.

Measure the length of the timber edge along the UTH area and equally space the plots along that edge.

8.7.2 Option 2

Use adjacent cruise information for the net volume per hectare if the timber types were the same on the forest cover map.

8.7.3 Option 3

Use aerial photographs (approximate scale 1:3000 is recommended) taken before (pre) and after (post) the UTH occurred. Ensure that pre and post aerial photos are enlarged to the same scales for photo interpretation. Use the following procedure to determine a volume estimate for the UTH:

1. A qualified photo interpreter should be utilized to identify the tree count by species removed from the UTH cleared area based on the pre-harvest and post harvest aerial photographs. The UTH boundary must be transposed to the aerial photographs using legal map references and iron pin (legal references) found on site.

2. Field staff must attend the site and measure tree heights and diameters at breast height (dbh) for all species identified on the pre-harvest aerial photos as cut from the UTH area. Selected measured trees of various heights must be stem mapped with bearing and distance recorded to points on the ground that are visible on the post-logging aerial photograph. This will assist the photo interpreter in determining the tree heights of the cut trees on the pre-harvest aerial photographs.

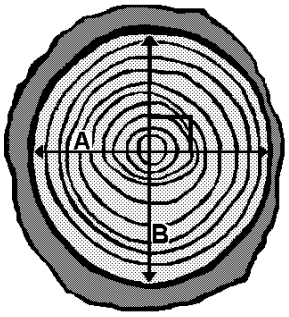
3. The tree height and dbh data collected for the removed trees must be plotted onto a height diameter curve by species (x-axis dbh, y-axis height). The height/diameter relationship can now be used to interpolate tree diameters for the tree heights provided by the photo interpreter for the removed trees.

4. Using the tree heights provided by the photo interpreter and the diameters interpolated from the height diameter curve, compute a merchantable volume for the UTH using the cruise compilation program.

8.8 Portions Of Trees Removed (i.e., Shake Blocks or Special Forest Products Removed From a Segment Of Tree(s))

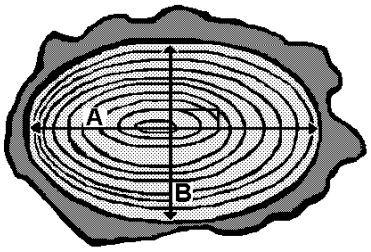
Use the residue and waste tally sheet FS 161 to record the missing and remaining portions of the tree using scaling procedures as per the Scaling Manual. Code the missing portion(s) as "A" for remaining and "U" for missing under the "Waste/Residue Class" column. These codes will permit segregation of the removed and remaining volumes in the Block Type Summary Report of the residue and waste systems reports.

a) Symmetrical Stump Diameter



$\frac{A + B}{2}$ Average two perpendicular stump measurements inside bark.

b) Asymmetrical Stump Diameter

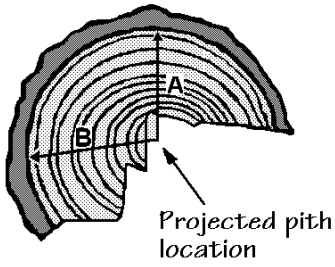


$\frac{A + B}{2}$ Average two perpendicular stump measurements inside bark as follows:

i - measure the longest vector through the pith

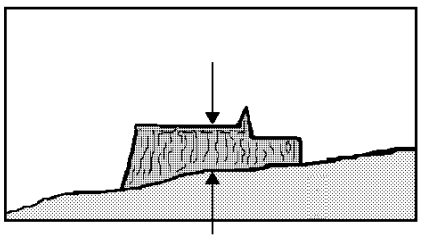
ii - measure the shortest vector perpendicular to the long vector at the midpoint (A/2) of the long vector.

c) Damaged Stump



$\left(\frac{A + B}{2}\right) \times 2$ Average two stump measurements inside bark using the longest and shortest vector from the projected pith location. Multiply by 2 since the measurements are the radius.

d) Stump Height

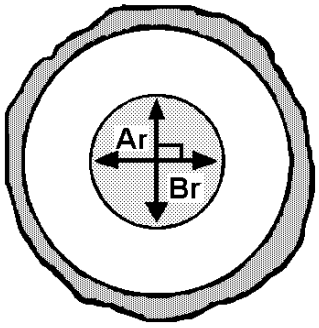


Measure stump height at the point of germination (POG) and to the midpoint of the undercut and back cuts if the cuts are uneven.

The point of germination is illustrated in Figure 3.15.

Figure 8.1 Examples of Recommended Stump Measurements.

a) Stumps with Heartrot >



50% of stump diameter

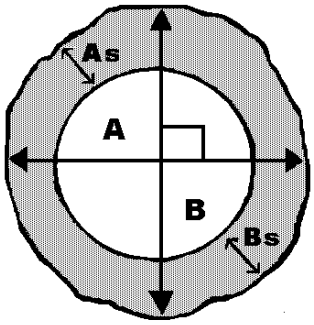
i determine stump diameter inside bark using long and short vectors - $\frac{A + B}{2}$

ii determine the rot diameter using long and short vectors

- $\frac{Arot + Brot}{2}$

iii if the rot diameter is greater than 1/2 the stump diameter, record scar or scar & frost crack (refer to Section 8.6.4.1) to ensure that the stump is compiled as Risk Group 2.

b) Dead Stumps

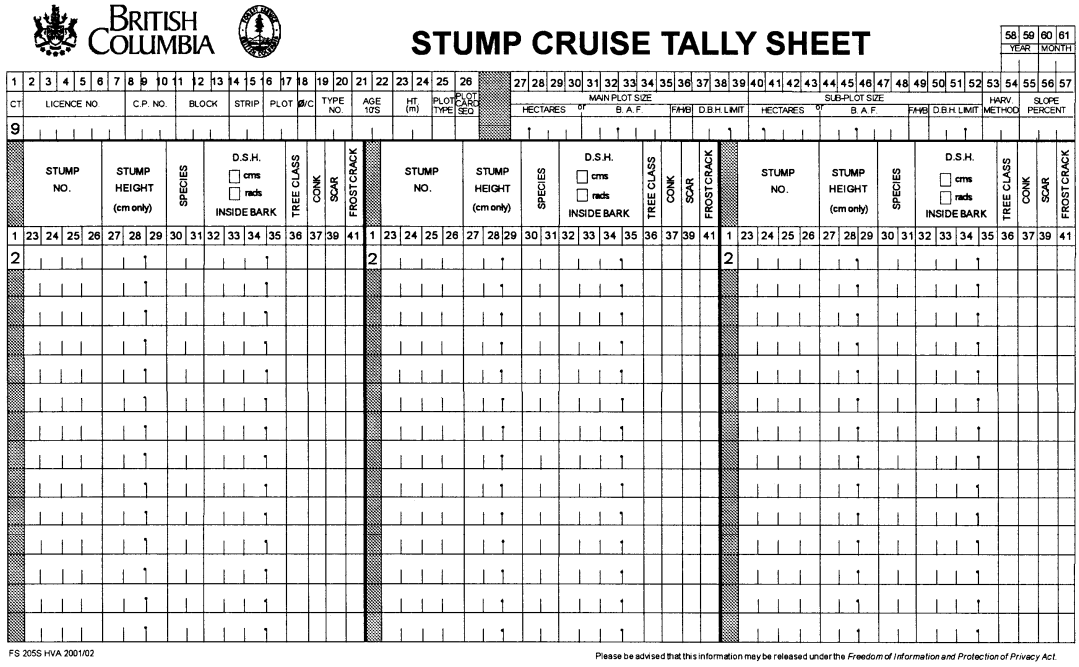


i determine stump diameter inside bark using long and short vectors - $\frac{A + B}{2}$

ii determine average thickness of the sap rot - $\frac{As + Bs}{2}$

iii if the average sap rot thickness is 1/6 or more of the average stump diameter, record the stump as a tree class 4 (dead useless). If not, record the stump as tree class 3 (will be compiled as highest risk group).

Figure 8.2 Examples of Risk Group Determinations for Stumps.


BRITISH COLUMBIA

STUMP CRUISE TALLY SHEET

YEAR MONTH

CT | LICENCE NO. | C.P. NO. | BLOCK | STRIP | PLOT | Ø/C | TYPE NO. | AGE 10'S | HT. (m) | PLOT TYPE | PLOT CARD SEQ | MAIN PLOT SIZE: HECTARES or B.A.F. | F/HB | D.B.H. LIMIT | SUB-PLOT SIZE: HECTARES or B.A.F. | F/HB | D.B.H. LIMIT | HARV. METHOD | SLOPE PERCENT

9

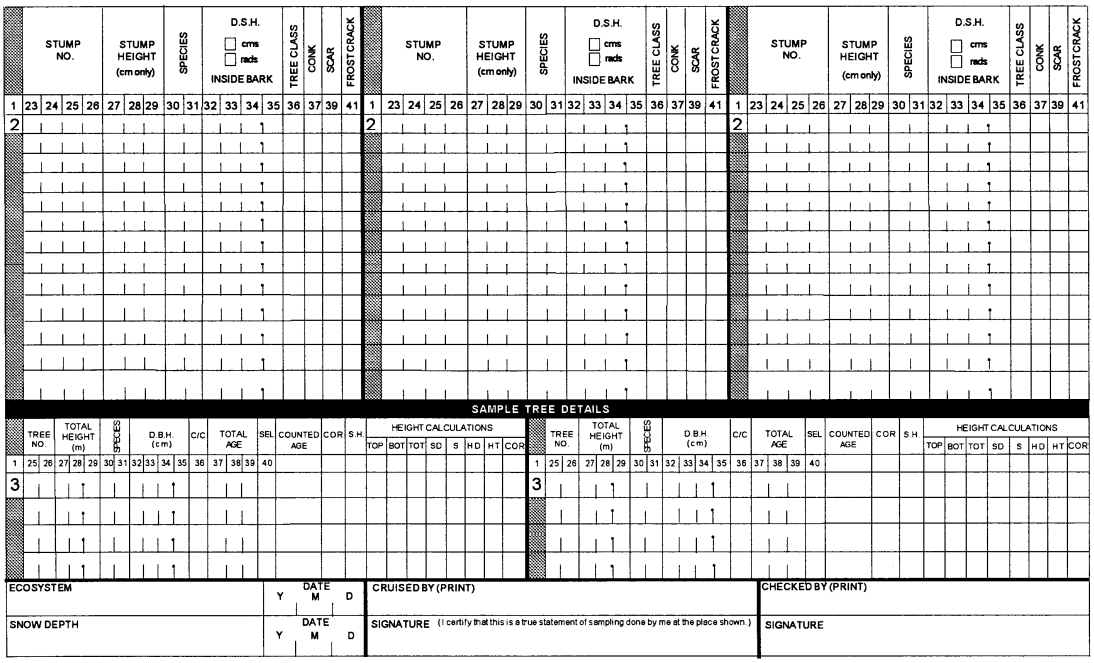
STUMP NO. | STUMP HEIGHT (cm only) | SPECIES | D.S.H. ☐ cms ☐ nads INSIDE BARK | TREE CLASS | CONK | SCAR | FROST CRACK

2

FS 205S HVA 2001/02

Please be advised that this information may be released under the *Freedom of Information and Protection of Privacy Act.*

Figure 8.3 FS 205S Ministry of Forests Stump Cruise Tally Sheet.


STUMP NO. | STUMP HEIGHT (cm only) | SPECIES | D.S.H. ☐ cms ☐ nads INSIDE BARK | TREE CLASS | CONK | SCAR | FROST CRACK

2

SAMPLE TREE DETAILS

TREE NO. | TOTAL HEIGHT (m) | SPECIES | D.B.H. (cm) | C/C | TOTAL AGE | SEL | COUNTED AGE | COR | S.H. | HEIGHT CALCULATIONS: TOP BOT TOT SD S HD HT COR

3

ECOSYSTEM | DATE Y M D | CRUISED BY (PRINT) | CHECKED BY (PRINT)

SNOW DEPTH | DATE Y M D | SIGNATURE (I certify that this is a true statement of sampling done by me at the place shown.) | SIGNATURE

Figure 8.4 FS 205S Ministry of Forests Stump Cruise Tally Sheet (side 2 of 2).

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