BRITISH COLUMBIA

Ministry of Forests and Range Revenue Branch

MEMORANDUM

File: 6450-80/CCM

November 1, 2006

BY EMAIL

To: Regional Executive Directors

From: Bill Howard
Director
Revenue Branch

Re: Amendment No. 4 to the *Cruise Compilation Manual*

I hereby approve Amendment No. 4 to the *Cruise Compilation Manual*, and attach a copy for your use.

This amendment will come into force on November 1, 2006. Further amendments or revisions to this manual require my approval.

WBHoward

Bill Howard
Director
Revenue Branch

Attachment

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Mark Koepke, Claymore Consulting

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Hans Mannhardt, Industrial Forestry Services Ltd.

Jim Wilson, Cruise Compilation Manager, JS Thrower & Associates Ltd.

Amendments

Amendment No. 4 - Effective November 1, 2006

For your convenience the current amendment updates appear in red text. All changed graphics are indicated with a red arrow . Two arrows represents text removed.

Section	Description
Section 2.11.2	Tree class 4 and 6 stems may not be considered measure trees in measure - count plot cruises. When count plots are used a fatal error will occur when the only stem reported within a species, within a type, in a measure plot, is a tree class 4 or 6.
Section 2.11.3	A table defining the relationships between damage codes and tree classes has been added.
Section 5.1(3)	Root rot is added to the damage codes available to perform percent reductions.
Section 5.2	The Percent Reduction Worksheet Image is updated to show the inclusion of root rot as a damage code available to perform percent reductions.
Section 5.4.1	Housekeeping: The accepted values for Columns 8 to 10 of the Percent Reduction Worksheet have been reduced to Blank, as Block is not a value available to perform percent reductions.
Section 8.3	The Plot Summary by Maturity Overview and Listing summary has been made optional for reporting.
Section 14.1.2.4	The All Method slope will not be reported on the coast and so was removed from this section.

2.11 Card Type 2 - Tree Details

2.11.1 Table of Data Types

Column Position	Column Name	Accepted Values	Error Type
1	Card type	"2" - hard coded	F
2-24	N/A	Identical to card type 9	F
25-26	Tree number	01-99	F
27-29	Total height	9 (3, 1)	F
30-31	Species	Refer to *Cruising Manual*, Section 6.3.2 http://www.for.gov.bc.ca/hva/manuals/cruising/Ch6-02.htm#P290_8843	F
32-35	DBH	9 (4, 1)	F
36	Tree class	1-9	F
37	Conk	1-7, Blank	F
38	Blind conk	1-7, Blank	F
39	Scar	1-7, Blank	F
40	Fork or crook	1-7, Blank	F
41	Frost crack	1-7, Blank	F
42	Mistletoe	1-7, Blank	F
43	Rotten branch	1-7, Blank	F
44	Dead top	1-7, Blank	F
45	Spiral grain	0-9	F
46	Sweep	0, 1, 2, Blank (Coast)	F
47	Lean	0, 1, 2, Blank (Coast)	F
48	Log no. of 1st live limb	1-9	F

Column Position	Column Name	Accepted Values	Error Type
49	Log no. of 1st stub	1-9	F
50	Knots in 1st 5 m	0-6	F
51	Knots in 2nd 5 m	0-6	F
52-58	N/A	Not used at this time	N/A
59	Selective	Blank, C, L	F
60	Root rot	Blank 1 – 7, J, K, L	F
61	Insect and disease damage	1, 2, 3, 4, 5, 6, 7, 8, X, Y	W
62	Fire damage	A, B, C	W
63	Blowdown damage	E, G	W

2.11.2 Fatal Errors

1. Count trees tallied for a species without measured trees tallied. Tree class 4 and 6 trees are not considered "measure" trees.

2. For tree class 2, pathological codes are required.

2.11.3 Warnings

1. Insect damage code must be valid for species (refer to the *Cruising Manual*, Section A.6.1).

2. Damage codes must be valid for tree class.

Damage Code	1	2	3	4	Tree Class 5	6	7	8	9	Species
1	X	X			X			X		Pl,Py,Pw,B
2	X	X			X			X		Pl,Py,Pw,B
3			X				X		X	Pl,Py,Pw,B
4	X	X			X			X	X	Pw
5	X	X			X			X		S,F
6	X	X			X			X		S,F
7			X				X		X	S,F
8	X	X			X			X		F
X	X	X			X			X		All
Y	X	X	X		X		X	X	X	All
A	X	X	X		X		X	X	X	All
B	X	X	X		X		X	X	X	All
C	X	X	X		X		X	X	X	All
E	X	X	X		X		X	X	X	All
G	X	X	X		X		X	X	X	All

2.11.4 Messages

1. For interior compilations, if the tree DBH is less than the compilation standard DBH lower limit, then the tree will not be used.

2. For coast compilations, if the tree DBH is less than the compilation standard DBH lower limit OR the block maturity DBH lower limit, then the tree will not be used.

3. If the tree class is 4 or 6 and the Tree Class combination is not coded 1, then the tree will only contribute to the snag percent.

4. If the selective cut indicator does not match the card type B selective cut indicator then the tree will not be compiled.

5. A tree with a height less than 3 m will not be used.

6. A tree with no height and the species does not exist on a card type E will not be used.

7. No pathological codes are allowed for tree classes 1, 4, and 6.

8. For tree classes 4 and 6, do not code quality remarks.

2.12 Card Type 3 - Sample Tree Details

2.12.1 Table of Data Types

Column Position	Column Name	Accepted Values	Error Type
2-24	N/A	Identical to card type 9	F
36	Crown class	1-4	I
37-39	Total age	999	F

2.12.2 Messages

1. The tree height is not in range for species in Forest Inventory Zone - refer to Appendix 4.

2. The total age is not in range for species in Forest Inventory Zone - refer to Appendix 5.

Reduction Compilations 5

5.1 Reduction Compilations - Overview

Reduction compilations use the Percent Reduction Worksheet form (FS 221 - Figure 5.1). This data is contained in a separate input file that must be submitted in ASCII format showing reductions by Treatment Unit when requested.

A version number will be placed on the top row of the ASCII file. It will start with a V followed by the year, followed by a decimal point, followed by two digits. For example, the first version in a year would be V2005.00 and the next version in the same year would be 2005.01.

Unique types should be used when a partial reduction is planned for a single block when the type being reduced extends across multiple blocks. Another use for unique types would be for Coastal mixed mature and immature block situations. The determination to use a unique type is the decision of the prescribing forest professional.

The FS 221 form allows for a reduction of the volumes and stem counts by 4 methods:

1. By species, timber type, risk group/tree class and treatment unit.

2. By species, timber type and treatment unit

3. By species, risk group/tree class and treatment unit.

4. By species and treatment unit.

When compiling a reduction, pre-reduction and post-reduction reports are required. Leave Tree summaries are also required with post-reduction reports (see Chapter 9).

The reduced volume would not be cut. The remaining reported volume is the cut volume. When coding the percentages on the FS 221 worksheet, the number coded is the net volume percent that will be left standing.

For each tree, determine whether there is an eligible reduction:

1. If a Timber Type is coded, then the reduction applies to trees in that Type.

2. If the Timber Type is blank, then the reduction applies to all types.

3. If Damage is coded B, F, I or R on the reduction card, then do not apply the reduction to trees that have been assigned a damage code of that type.

4. If Species is non-blank, then an exact species match has to apply for the tree to be eligible for reduction. Otherwise, if Species is blank, apply the reduction to all species.

5. If Risk Group/Tree Class is non-blank, then an exact Risk Group/Tree Class match has to apply for the tree to be eligible for reduction. Otherwise, if Risk Group/Tree

Class is blank, apply the reduction to all risk groups and tree classes. An "L' in the Risk Group/Tree Class column indicates all live tree classes (1, 2, 5 and 8). An "R" in the Risk Group/Tree Class column indicates all dead tree classes (3, 4, 6, 7 and 9).

When a tree is targeted for a reduction, then reduce the calculated volume by the percent value that is coded for the DBH class that the tree falls into. See Section 5.3 for example.

If the DBH class is blank, then do not apply a reduction for that tree.

5.2 Percent Reduction Worksheet Image

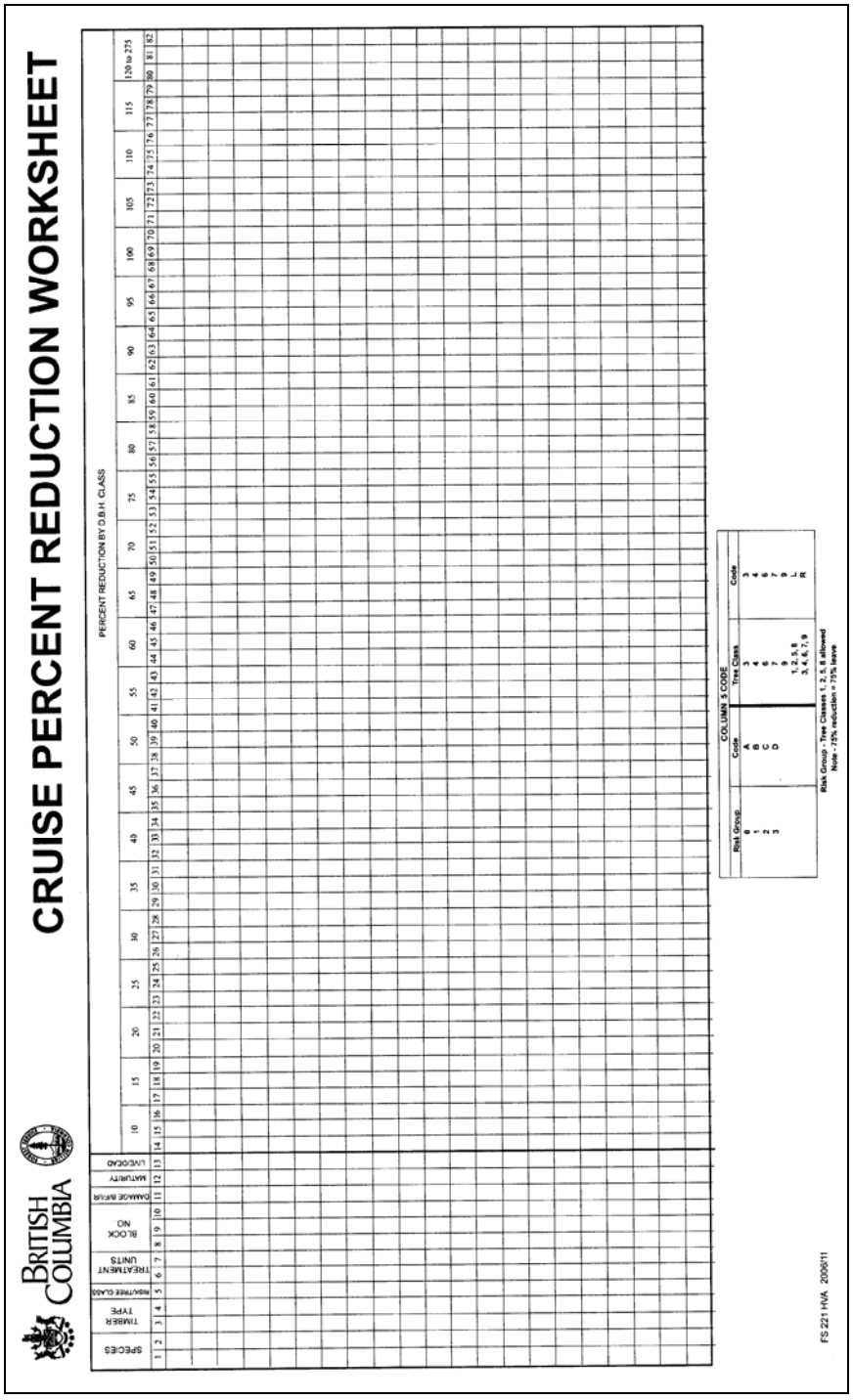


Figure 5.1 Sample Percent Reduction Worksheet.

5.4 Percent Reduction Card Edits

5.4.1 Table of Data Types

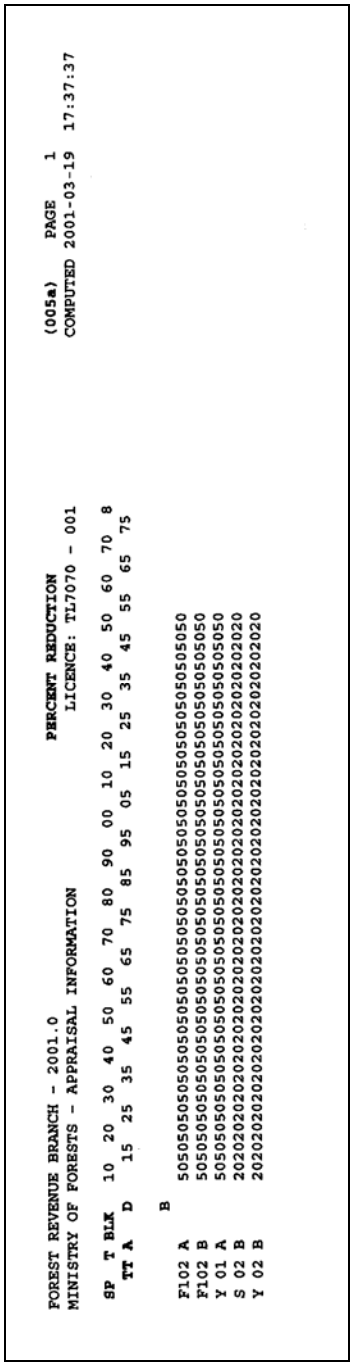
Column Position	Column Name	Accepted Values	Error Type
1-2	Species	Blank or valid species code (Refer to Appendix 3 for valid species codes)	F
3-4	Timber Type	Blank, 99	F
5	Risk Group/Tree Class	Blank, A, B, C, D, 1 - 9, L and R	F
6-7	Treatment Unit	A - CU, 1-99	F
8-10	Block	Blank	F
11	Damage type	Blank, B, F, I, R	F
12-13	N/A		
14-15, 16-17, …, 80-81	Reduction percent for DBH class	Blank, 001 – 100	F

5.4.2 Fatal Errors

1. A tree can only qualify for one reduction.
2. Timber Type must be a valid Type from a card type C.
3. Block must be a valid Block from a card type D.

5.5 Percent Reduction Input Values - Sample Listing

Report 005a. This report is required for reduction compilations.



```
FOREST REVENUE BRANCH - 2001.0                    PERCENT REDUCTION          (005a)    PAGE    1
MINISTRY OF FORESTS - APPRAISAL INFORMATION          LICENCE: TL7070 - 001   COMPUTED 2001-03-19  17:37:37

SP  T BLK   10  20  30  40  50  60  70  80  90  00  10  20  30  40  50  60  70  8
    TT A  D   15  25  35  45  55  65  75  85  95  05  15  25  35  45  55  65  75
              B
    F102 A    50505050505050505050505050505050505050505050505050505050505050
    F102 B    50505050505050505050505050505050505050505050505050505050505050
    Y 01 A    50505050505050505050505050505050505050505050505050505050505050
    S 02 B    20202020202020202020202020202020202020202020202020202020202020
    Y 02 B    20202020202020202020202020202020202020202020202020202020202020
```

Figure 5.2 Percent Reduction Input Values.

```
FOREST REVENUE BRANCH - 2001.0                          PLOT FREQUENCY                          (011)    PAGE    4
  MINISTRY OF FORESTS - APPRAISAL INFORMATION              USELESS VOLUMES EXCLUDED              COMPUTED 2001-03-19  15:50:21
                                                                                                 AVERAGE LINE
        LICENCE NUMBER TL7070          P.S.Y.U. 86-0          STANDARD:          DBH LIMIT        STUMP HT.  30.   TOP DIAM.
        CUTTING PERMIT 001               F.I.Z. C            EXCEPTION:
                    TIMBER TYPES
MEASURED PLOT          1       2
BLOCK 001
NO. OF PLOTS           2       2
HA/PLOT             1.25    1.25
BLOCK 002
NO. OF PLOTS           2       2
HA/PLOT             1.25    2.50
CUTTING PERMIT
NO. OF PLOTS           4       4
HA/PLOT             1.25    1.88
```

Figure 8.2 Plot Frequency - Sample Listing.

8.3 Plot Summary by Maturity Overview and Listing

For each Block/Timber Type combination, report the number of count and measure plots, by Maturity. Use the Block maturity indicator from card type D to determine whether the block is mature or immature.

This report is only for Coast compilations and is optional.

8.3.1 Header Information

1. License from card type A.
2. Cutting Permit from card type A.
3. Total Merchantable area from card type A.
4. Message indicating whether compilation is for appraisals or not.
5. Method of calculation (Average Line or Block).
6. Special compilation messages for:
    a. Double Sampling.
    b. Stump cruise compilation.
7. Compiler program name and version.
8. Compile date and time.
9. Page number.

14.1.2.4 All Method Parameters

Net volume per tree	Report net volume per tree from the All Method Summary.
Net volume per hectare	Report the Net volume per hectare from the All Method Summary.
Conventional Slope	Report total weighed non-helicopter Harvest Method Slope.

Example 14.2

Cable	Twenty-five hectares, average slope = 40 percent.
Ground Skidding	Twenty-five hectares, average slope = 20 percent.
Helicopter	Fifty hectares, average slope = 80 percent
	= (25* 40 + 25* 20)/(25 + 25) = 30 %.

14.2 Coast Appraisal Summary - Sample Listing

FOREST REVENUE BRANCH - 2001.0 **COAST APPRAISAL SUMMARY** COMPUTED 2001-03-19 15:50:22
MINISTRY OF FORESTS - APPRAISAL INFORMATION
LICENCE NUMBER TL7070 CUTTING PERMIT 001 LOCATION TEST 2000 CRUISED BY CRUISER B **F.I.Z. C VANCOUVER**
NO. OF BLOCKS 002 TOTAL MERCH AREA 12.5
SECOND GROWTH PERCENT: 76.%

SPECIES GRADE PERCENTS - ALL METHOD

SPECIES/GENUS	B	C	D	E	F	G	H	I	J	K	L	M	U	X	Y	TOTAL
ALDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
MAPLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
BIRCH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
BALSALM	0	0	0	0	0	0	19	16	41	0	0	0	3	8	13	1338.
CEDAR	0	0	15	0	21	0	11	0	27	0	0	0	11	13	2	1159.
COTTONWOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
CYPRESS	0	0	15	0	5	0	3	0	0	0	0	0	4	20	53	1205.
FIR	0	8	14	0	6	0	14	5	25	0	0	0	9	1	18	5462.
HEMLOCK	0	0	0	0	15	0	42	13	13	0	0	0	17	0	0	2628.
LODGEPOLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
SPRUCE	0	0	9	2	11	9	18	11	35	0	0	0	0	0	5	1983.
WHITE PINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
WH BARK PINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.
YELLOW PINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.

TOTAL NET VOLUME: 13776.

INDIVIDUAL HARVESTING METHOD SUMMARIES

VARIABLE	CONVENTIONAL		HELICOPTER		GROUND SKIDDER		HORSE	SKYLINE		SPECIFIED
	CLEARCUT	SELECT	CLEARCUT	SELECT	CLEARCUT	SELECT		CLEARCUT	SELECT	
NET MERCH VOLUME M3					11408.	2367.				
NET MERCH./10M LOG	0.00	0.00	0.00	0.00	1.00	0.92	0.00	0.00	0.00	0.00
NET VOLUME/HECTARE					1140.846	946.880				
HEMLOCK / BALSALM VOL %					30.	24.				
PARTIAL CUT VOL %						100.				
AVERAGE SLOPE %					60.	90.				
DOWN TREE VOL %					9.					
HEAVY FIRE DAMAGE VOL %					2.					

CUTTING AUTHORITY
95% CONF. INTERVAL(M/C) 46.5
TREES PER PLOT(M/C) 9.6
BLOCK NUMBER: 001 002
% IMMATURE BY BLOCK 23. 24.
PLOTS(M/C) PER HA 0.6

Figure 14.1 Coast Appraisal Summary - Sample Listing.