

CRUISECOMP LOG ANALYSIS USER MANUAL

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1 LOG ANALYSIS

1.1 INTRODUCTION

The **Industrial Forestry Service Ltd. Log Analysis Module** sorts cruise data by diameter class, to get a better picture of the stand log profile.

The **Log Analysis Module** allows top diameter distributions by:

- Fixed diameter classes
- Variable diameter classes
- Variable diameter classes by grade (when the cruiser call net factoring module is used)

This module can also estimate the number of board feet using four different log rules:

- BC Log Scale
- Doyle
- Scribner
- International 1\4" & 1\8"

This means the log seller and buyer can review compilation reports generated from the same data, using log rules that they are most familiar with.

There are two report classes for this module. The first, **Log Analysis by CP, Block, or Type**, summarizes a variety of fields by species and diameter class, and the second, **Log Analysis with Grade by CP, Block, or Type**, summarizes species and grade by diameter class.

The summary fields include:

- Gross Volume
- Net Volume
- Number of Logs
- Net Volume/Log
- Lineal Meters
- Net Volume/ Lineal Meter
- Net Board Feet/Cubic Meter
- Gross Board Feet (x1000)
- Net Board Feet (x1000)
- Net Board Feet/Log
- Average Taper
- Average Log Length

Log Analysis can be run on a standard **loss factor** appraisal cruise or on a **Cruiser Call Grade** cruise.

2 LOG ANALYSIS FEATURES

2.1 THE LOG ANALYSIS TAB

The **Log Analysis** tab (Figure 1) displays all the log analysis features on one tab, divided into several sections. The Compile Log Analysis check box at the top left of the tab determines if the **Log Analysis Module** will be used in compilations. Leaving it unchecked when it is not needed will reduce the total compilation time.

The screenshot shows the 'Project Data' dialog box with the 'Log Analysis' tab selected. The 'Compile Log Analysis' checkbox is checked. Under 'Diameter Classes', 'Diameter Classes in Imperial Units (inches)' is unchecked, 'Fixed Log Diameter Class Increments' is checked, and 'Use Grade Diameter Classes for Log Analysis Report with Grades' is unchecked. The 'Floor' is set to 10, 'Ceiling' to 150, and 'Increments' to 10. Under 'Board Feet', the 'Board Feet Rule' is set to '1 - BC Log Scale Rule'. 'Shrink Loss (always inches)' is 0.0625, and '4 feet Log Taper (always inches)' is 0.5. The 'Calculating Net Board Feet, Deduct:' section has 'Decay, Waste, Breakage' selected. The 'Variable Increments' table has 'Min' and 'Max' columns. The 'Log Analysis Settings File' section has 'Load' and 'Save' buttons.

Figure 1 - Log Analysis tab

2.2 DIAMETER CLASSES

2.2.1 Diameter Classes in Imperial Units (inches)

When this box is checked, the program will report diameter classes in imperial measurements (inches) (Figure 2). If unchecked, the diameter classes will be in metric diameter limits (centimetres). The fixed and variable diameter boxes automatically change from inches to centimetres to indicate the selection. All log analysis reports display the diameter class units to avoid any confusion.

Diameter Classes

inches

Diameter Classes in Imperial Units (inches)

Floor :

Fixed Log Diameter Class Increments

Ceiling :

Use Grade Diameter Classes for Log Analysis Report with Grades

Increments :

Interpret the entered diameter classes as logs' :

Top Diameter Bottom Diameter

Figure 2 - Diameter Classes section

Note: The **Log Analysis Module** compiles the top diameters shown in the interface; it does not convert diameter classes from metric to imperial. The user must enter the values to summarize for both types of units. Once this is done, the user can save the settings for future runs. This is explained in greater detail in **Loading and Saving Log Analysis Settings**.

2.2.2 Fixed Log Diameter Class Increments

If this checkbox is empty, then the program assumes the user is entering variable diameter classes in the columns on the right. If the checkbox is filled, the program un-shades the **Floor**, **Ceiling** and **Increments** boxes to set up the fixed diameter class log profile.

The **Floor**, **Ceiling**, and **Increments** fields are used to define the fixed diameter classes. The **Floor** and **Ceiling** fields are the lowest and highest diameter class values that will be used for reporting in the log profile.

It is important to note that log diameters that fall outside the **Floor** or **Ceiling** values are not deleted from the compilation. They are omitted from the fixed diameter class section, but are still reported in the totals section of the report.

Enter the fixed increments based on the **Floor** to **Ceiling** values. Thus, if the **Floor** and **Ceiling** values are 10cm and 60cm, respectively, the increments are 10cm and the following classes are created:

10-20, 20-30, 30-40, 40-50, 50-60

Examples can be found in Appendix I.

2.2.3 Use Grade Diameter Classes for Log Analysis Report with Grades

The **Use Grade Diameter Classes for Log Analysis Report with Grades** checkbox is used to select diameter classes from the **Grades** tab (Figure 3). Leaving it unchecked means the program will use either the fixed or variable diameter classes as specified on the **Log Analysis** tab.

Note that this feature can only be used in conjunction with the **Cruiser Call Grading Module**.

Check the **Use Grade Diameter Classes for Log Analysis Report with Grades** checkbox. Go to the **Grades** tab, click the **Diameter Classes** button and enter the diameter classes for each grade. Click OK and save your work.

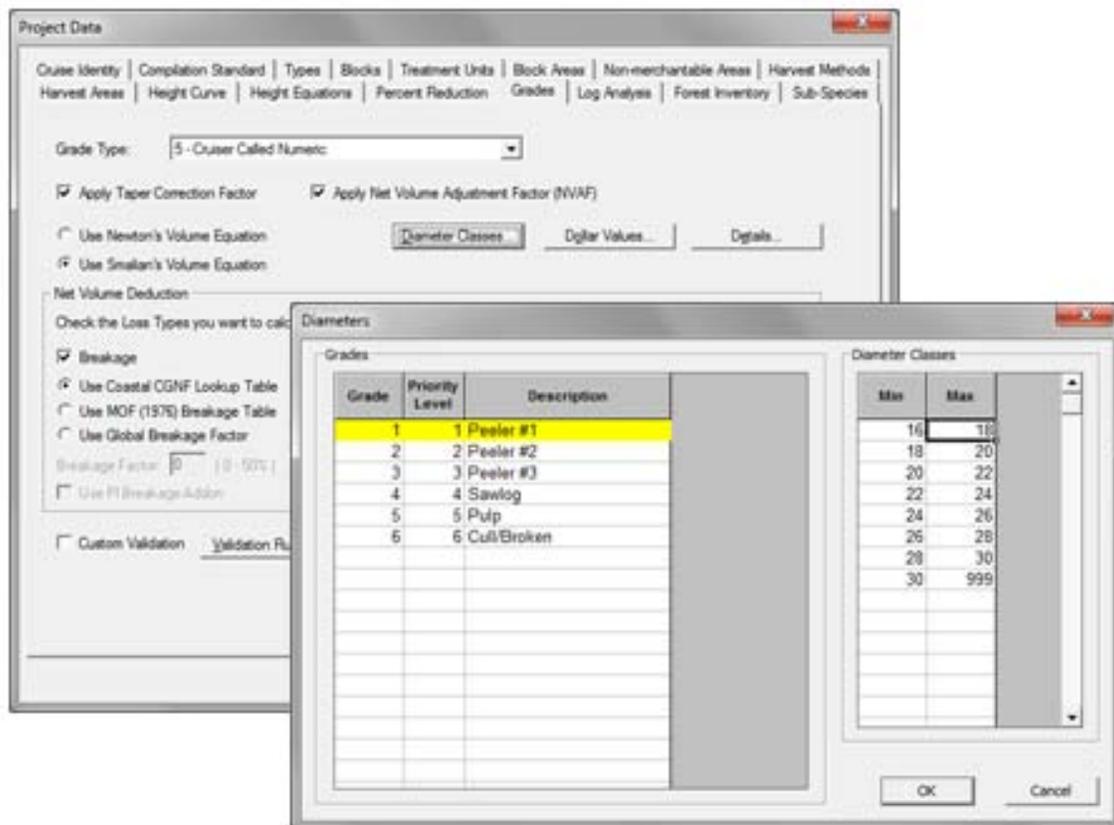


Figure 3 - Setting up grade diameter classes

2.2.4 Interpret the entered diameter classes as logs':

The **Interpret the entered diameter classes as logs'** options allows the user to generate reports using the log's top or bottom diameter.

2.3 BOARD FEET CALCULATION

Figure 4 - Board Feet section

2.3.1 Board Feet Rule

The user can pick one of five board feet log rule options, **BC Log Scale**, **Scribner**, **Doyle**, **International 1\8"**, and **International 1\4"**. Each one estimates the number of board feet contained in a log, and is used for specific reasons.

The **BC Log Scale Rule** is familiar to many in BC sawmills and was used by the **Ministry of Forests** before it changed to solid wood volume estimations (cubic volume). The kerf allowance is 3\8".

Scribner is the log rule used primarily in the United States and is useful for conversing with American clients. This rule assumes a 1\4" kerf.

The **Doyle Log Rule** is sometimes used by log brokers. It usually underestimates the amount of board feet in logs; however, it is still used in the southern and eastern United States (mainly for scaling hardwood logs), and in South America.

The **International Log Rule** is the most accurate log rule because it uses 4 foot logs as its base for calculation and is best used for marketing shorter logs. The 1\4" & 1\8" rules, use 1\4" & 1\8" kerfs respectively.

2.3.2 Shrink Loss (always inches)

The **Shrink Loss** estimate is used with the **International Log Rule** to quantify shrinkage. The default amount is 1\16" or 0.0625 inches.

2.3.3 Use Actual Log Taper

This field is a modification used only for the **International Log Rule**, which normally estimates the log taper of a four foot log at 1/2 inch; however, the actual log taper should be calculated to develop a more accurate board foot estimate.

2.3.4 4 feet Log Taper (inches)

This field is also used only for the **International Log Rule**. The default is 1/2 inch, but can be changed to any value from 1/16 inch to 15/16 inch (Figure 5). The fraction to decimal conversion table, seen at the right in Figure 5, pops up automatically when one of the International Board Feet Rules is selected.

The screenshot shows a software window titled "Board Feet". It contains several input fields and a conversion table. The "Board Feet Rule" dropdown is set to "5 - International 1/4 inch Ri". The "Shrink Loss (always inches)" field contains "0.0125". The "Use Actual LogTaper" checkbox is unchecked. The "4 feet Log Taper (always inches)" field contains "0". To the right, under "Calculator Deduct:", there are two radio buttons, both labeled "Deca". A table of fraction-to-decimal conversions is displayed on the right side of the window.

1/16	=	0.0625
1/8	=	0.125
3/16	=	0.1875
1/4	=	0.25
5/16	=	0.3125
7/8	=	0.375
7/16	=	0.4375
1/2	=	0.5
9/16	=	0.5625
5/8	=	0.625
11/16	=	0.6875
3/4	=	0.75
13/16	=	0.8125
7/8	=	0.875
15/16	=	0.9375

Figure 5 - Fraction to decimal conversion reference

Note: When the **Shrink Loss** or **4 feet Log Taper** fields are selected, a fraction to decimal conversion reference automatically appears to the right.

2.3.5 Calculating Net Board Feet, Deduct:

2.3.5.1 Decay and Waste

This allows the user to deduct decay and waste volume from the gross board foot volume.

2.3.5.2 Decay, Waste and Breakage

This allows the user to deduct decay, waste and breakage volume from the gross board foot volume.

2.4 DIAMETER CLASS VARIABLE INCREMENTS

This is used to create a specific log diameter profile. Each pair of minimum and maximum fields must have a number, and the minimum must be smaller than the maximum field. These fields can report in centimetre or inch diameter classes.

Variable Increments centimeters		Variable Increments inches	
Min	Max	Min	Max
10	15	2	4
15	16	4	6
16	17	6	8
17	18	8	10
18	19	10	12
19	20	12	14
20	24	14	16
24	28	16	18
28	36	18	20
36	60	20	999
60	999		

Figure 6 - Examples of variable diameter classes

2.5 LOG ANALYSIS SETTINGS FILE

This feature is used to save all settings and is used in the **Cruiser Call Grade Module**. This allows the user to create and assess several scenarios during planning.

To select a previously saved **Log Analysis** settings .lgs text file, click on the **Load** button, find the directory where the settings file is located and click on it.

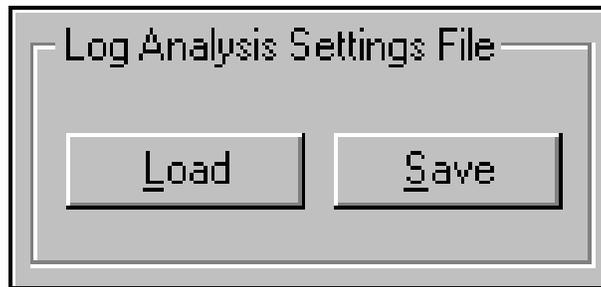


Figure 7 - Load Log Analysis Settings File

To save the current settings created in the **Log Analysis Module**, click on the **Save** button and a dialogue box will prompt the user to enter a file name and a directory to save the file in.

3 REPORTS

There are two classes of reports in the **Log Analysis Module**. These are the **Log Analysis by CP, Block or Type** and the **Log Analysis With Grade by CP, Block or Type**. Both reports summarize by cutting permit, block and type. The **Log Analysis Report** summarizes the total, conifer and all species in the Cutting Permit by top diameter classes. The **Log Analysis With Grade** summarizes the species and the grade by diameter classes.

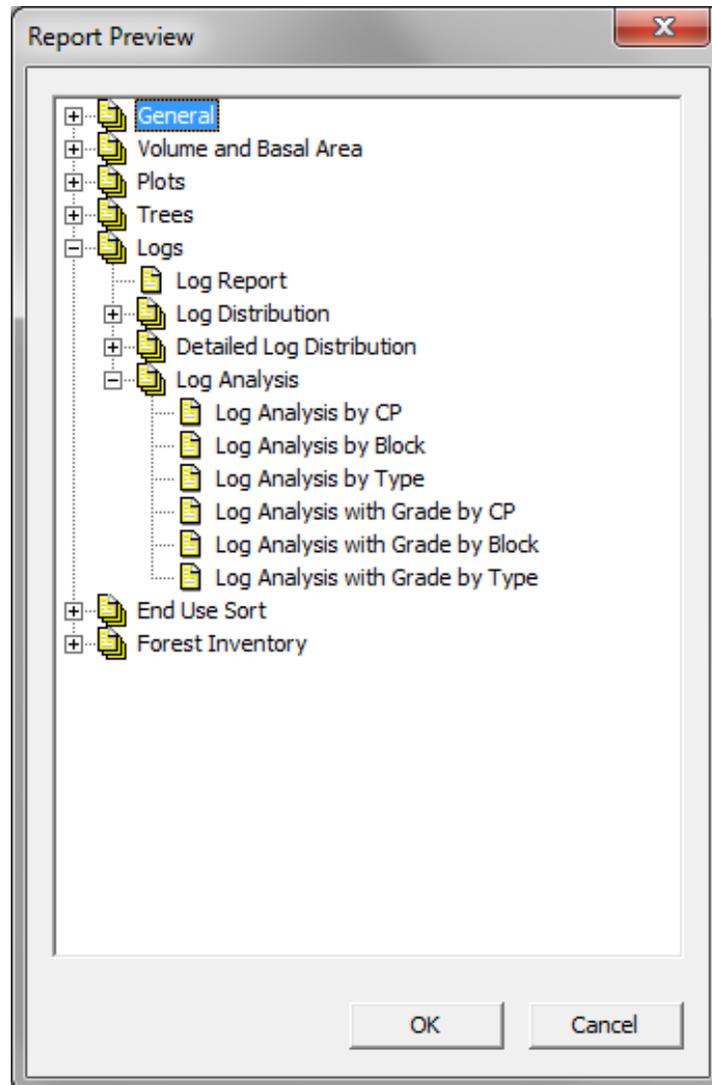


Figure 8 - Log Analysis Report Listing

APPENDIX I – FIXED DIAMETER CLASS INCREMENT - OUTPUT

Algorithm Grades *

Species	Top Diam Class	Gross Volume	Net Volume	No. of Logs	Avg Log Length	Net Vol /Log	Lineal Metre	Net Vol /LM	GrossBF (x1000)	Net BF (x1000)	Net BF /M3	Net BF /Log	Taper cm/m
Alder	15.0- 20.0 cm	1455.6	1365.2	4260	8.0	0.320	33979	0.040	81.8	80.6	59.1	18.9	2.014
	20.0- 30.0 cm	1392.4	1298.9	1660	10.0	0.782	16601	0.078	185.6	182.0	140.2	109.7	1.823
	30.0- 50.0 cm	1515.5	1401.1	743	10.0	1.887	7427	0.189	238.1	231.6	165.3	311.9	2.996
	Total	4363.5	4065.3	6662	8.7	0.610	58006	0.070	505.5	494.3	121.6	74.2	2.076
Doug-Fir	15.0- 20.0 cm	894.0	817.0	3059	7.5	0.267	22986	0.036	69.3	67.3	82.4	22.0	1.397
	20.0- 30.0 cm	655.7	542.8	798	10.0	0.680	7985	0.068	94.7	84.9	156.5	106.4	1.278
	30.0- 50.0 cm	2343.7	1880.9	1438	10.0	1.308	14382	0.131	471.9	400.0	212.7	278.1	1.410
	50.0- 80.0 cm	2706.4	2179.6	742	10.0	2.937	7422	0.294	610.3	522.1	239.6	703.5	2.269
	80.0-100.0 cm	873.5	810.1	115	10.0	7.030	1152	0.703	208.1	203.4	251.1	1765.1	3.371
	Total	7717.7	6457.9	6173	8.8	1.046	54126	0.119	1513.3	1335.7	206.8	216.4	1.536
Hemlock	15.0- 20.0 cm	11688.0	10764.9	40777	7.6	0.264	309146	0.035	813.5	794.1	73.8	19.5	1.507
	20.0- 30.0 cm	10786.7	10015.2	13947	10.0	0.718	139465	0.072	1587.4	1550.7	154.8	111.2	1.380
	30.0- 50.0 cm	23350.3	20795.0	15078	10.0	1.379	150779	0.138	4589.1	4328.5	208.1	287.1	1.676
	50.0- 80.0 cm	12918.4	9931.7	3545	10.0	2.802	35445	0.280	2876.2	2359.9	237.6	665.8	2.640
	80.0-100.0 cm	1016.9	508.1	133	10.0	3.819	1330	0.382	230.4	128.1	252.2	963.0	4.651
	Total	60104.7	52046.5	73510	8.7	0.708	636479	0.082	10173.7	9172.9	176.2	124.8	1.580
Maple	15.0- 20.0 cm	817.9	740.7	2884	7.0	0.257	20076	0.037	54.8	52.5	70.8	18.2	1.838
	20.0- 30.0 cm	494.2	448.0	570	10.0	0.786	5698	0.079	58.4	56.1	125.3	98.5	1.929
	30.0- 50.0 cm	776.0	636.1	473	10.0	1.345	4731	0.134	130.0	113.2	178.0	239.4	2.324
	50.0- 80.0 cm	345.1	310.1	78	10.0	3.954	784	0.395	58.3	55.0	177.3	700.9	4.376
	Total	2433.3	2134.8	4006	7.8	0.533	31289	0.068	301.5	276.8	129.6	69.1	1.958
L. P. Pine	15.0- 20.0 cm	84.4	82.3	240	11.2	0.342	2690	0.031	6.5	6.4	78.2	26.8	1.084
	Total	84.4	82.3	240	11.2	0.342	2690	0.031	6.5	6.4	78.2	26.8	1.084
Spruce	15.0- 20.0 cm	409.1	392.5	1400	7.5	0.280	10507	0.037	35.4	35.4	90.1	25.3	1.629
	20.0- 30.0 cm	202.1	193.6	282	10.0	0.686	2821	0.069	21.1	21.1	109.0	74.8	1.764
	30.0- 50.0 cm	631.3	603.4	438	10.0	1.376	4385	0.138	107.5	107.3	177.7	244.6	2.414

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage, Scribner Rule