

CRUISECOMP CRUISER CALL USER MANUAL

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1 CRUISER CALL MODULE

1.1 Introduction

Industrial Forestry Service's Cruiser Call Module compiles true log quality, as interpreted by the cruiser in the field instead of relying on arbitrary computer algorithms to derive log grades.

The **Cruiser Call Module** uses the log grade, length and the estimated net volume (net factor) percent for each log. The **Detailed Log Grades Table report** then displays the volume and percent of each grade by log diameter class, and by species.

1.2 CGNF Preset

There are four compilation preset buttons on the **Cruise Identity Tab**. Three of these buttons, **Coastal CGNF**, **Coastal Loss Factor**, and **Interior Loss Factor**, lock-in critical settings for appraisal compilations that will be submitted for cutting permit applications. The fourth option, **None**, allows the user free hand to make use of just about any combination of settings.

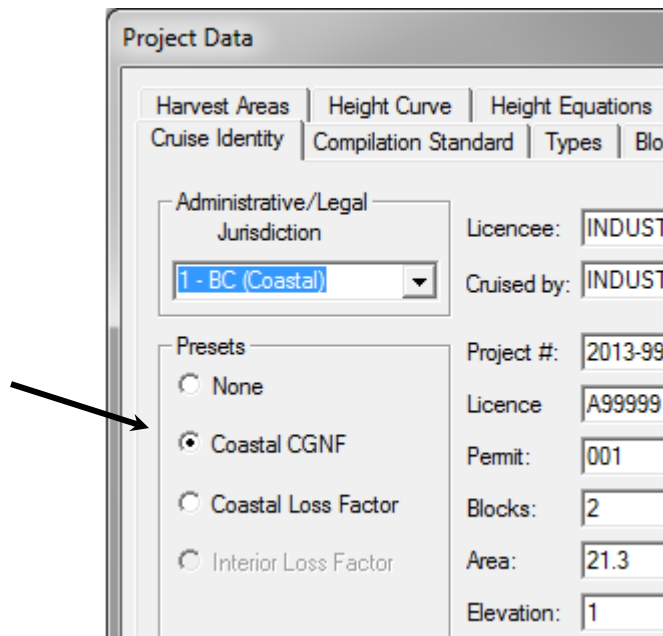


Figure 1- Preset radio buttons

When switching from a preset to **None**, **CruiseComp** retains the preset settings. This makes it easy to switch to a custom compilation that is based on either **Loss Factor**, or **CGNF compilation** settings. Pick the preset that is most similar to the custom compilation, then select **None** and make the necessary changes to the settings.

1.3 Cruiser Call Grade Interface and Reports

1.3.1 Grades Card (2A)

The tree card has been split up so that the normal appraisal information is on the **Trees (Card 2)** card and the **cruiser call grades**, with **variable length grades**, are shown on the **Grades (Card 2a)** card.

Tree No	Ht (m)	Spc	DBH	1 G	1 L	1 F	2 G	2 L	2 F	3 G	3 L	3 F	4 G	4 L	4 F	5 G	5 L	5 F	6 G	6 L	6 F	7 G	7 L	7 F	8 G	8 L	8 F	9 G
1	41.0	C	65.1	H	10	-	U	13.0	-	Y	8	98	Y	99.0	90													
2	37.2	C	111.3	H	13.0	-	U	10.0	-	Y	99.0	85																
3	34.3	C	151.2	I	13.0	70	U	13.0	-	Y	99.0	90																
4	43.9	C	106.0	H	13.0	-	I	13.0	-	U	8	-	Y	99.0	-													
5	30.6	HW	104.0	U	13.0	-	U	99.0	-																			
6	33.0	C	115.1	Z	3.0	40	U	13.0	-	Z	99.0	10																
7	30.6	C	57.8	I	13.0	80	Z	1.0	-	U	99.0	-																
8	17.6	HW	76.0	X	99.0	-																						
9	37.0	C	89.3	H	13.0	-	U	13.0	-	Y	99.0	-																

Figure 2 - Grades Card (2a)

The **Grades (Card 2a)** card contains some information from the **Trees (Card 2)** card in order to identify the trees in the plot. The Card 2 data cannot be edited from the **Grades (Card 2a)** card.

When the **Grades (Card 2a)** card is first called up, only the variable length grades section is visible. To view the fixed grade section, use the navigation arrows at the bottom of the tab or click on an area of the variable grade section to make it active, then move the cursor to the left until the fixed grade section becomes visible.

The **Zoom:** scale indicator at the bottom left of the **Grades Card**, allows the user to increase or decrease the viewable size of the card from 60 to 150%. Simply click on one of the arrow buttons to increase or decrease the size of the card.

1.3.2 Printing Out Call Grade Plot Information

The user also has the option of printing the **Call Grade** information for each plot. Edits may be required to the grades and net factors after the cruise is complete and the compiler or cruiser may want to keep a record of the grade data before and/or after the changes are made to the plot. Printouts can only be made on a plot by plot basis and only contain plot and tree identification plus the **Grade (card 2a)** information. Multiple plots cannot be printed at one time.

The **CruiseComp Plot Organizer** utility has the capability to printout plot information for all plots in a cruise. For more information contact one of the compilation specialists at the **Industrial Forestry Service Vancouver Office**.

1.4 Grades Tab on the Project Data (Map Area Statement) Interface

The **Grades tab** has all the **Cruiser Call Grade** features on one tab. There are a number of functions and fields on this screen that are listed below with a brief explanation.

Please note that when the **Coastal CGNF preset** is selected on the **Cruise Identity** tab, most of this tab is locked (grayed out), and cannot be changed.

The screenshot shows the 'Project Data' dialog box with the 'Grades' tab selected. The 'Grade Type' dropdown is set to '4 - Cruiser Called Alpha'. The 'Apply Taper Correction Factor' and 'Apply Net Volume Adjustment Factor (NVAF)' checkboxes are checked. Under 'Net Volume Deduction', the 'Check the Loss Types you want to calculate and deduct from the Net Volume:' section has three columns of options: Breakage (checked), Decay (checked), and Waste (checked). Below this, 'Use Coastal CGNF Lookup Table' (checked), 'Use Cruiser Called Net Factors' (checked), and 'Based on Cruiser Called Z Grades' (checked) are selected. The 'Breakage Factor' is set to 0 (0-50%). The 'Use PI Breakage Addon' checkbox is unchecked. At the bottom, there are 'Load' and 'Save' buttons, and at the very bottom, 'OK', 'Cancel', 'Apply', and 'Help' buttons.

Figure 3 - Cruiser Call Grades Features

- **Grade Type** – select the grade type of your choice
 - 1 – MOF Computerized
 - 4 – Cruiser Called Alpha
 - 5 – Cruiser Called Numeric
 - 6 – User Defined
- **Apply Taper Correction Factor** and **Net Volume Adjustment Factor** – these are only selected when compiling for **Coastal CGNF**.

- **Use Newton's/Smalian's Volume Equation** – select **Newton's** for **MOF** appraisal loss factor cruises and **Smalian's** for **Coastal CGNF** cruises.
- **Grades Table** – allows the user to input diameter classes so individual log grades can be sorted for reporting purposes.
- **Net Volume Deduction** – select the breakage, decay and waste checkboxes when required then select the appropriate radio button for each factor. Please note for Interior non-appraisal compilations, the **Use PI Breakage Add-on** check box allows for the option to use the additional PI breakage calculation from damage codes and/or tree classes. For further details see section 5, Net Factoring.
- **Load/Save Grades buttons** – saves the current settings for use with other data files or to load previously saved settings.
- **Custom Validation/Validation Rules** – select the checkbox and open up the validation rules to create or edit a custom set of grade validations.

1.4.1 Grade Details

The **Grade Details** dialogue contains several selections which allow the user to customize how **Cruiser Called data** can be compiled. As mentioned earlier, when the **Coastal CGNF preset** is selected, this dialogue is locked and cannot be changed.

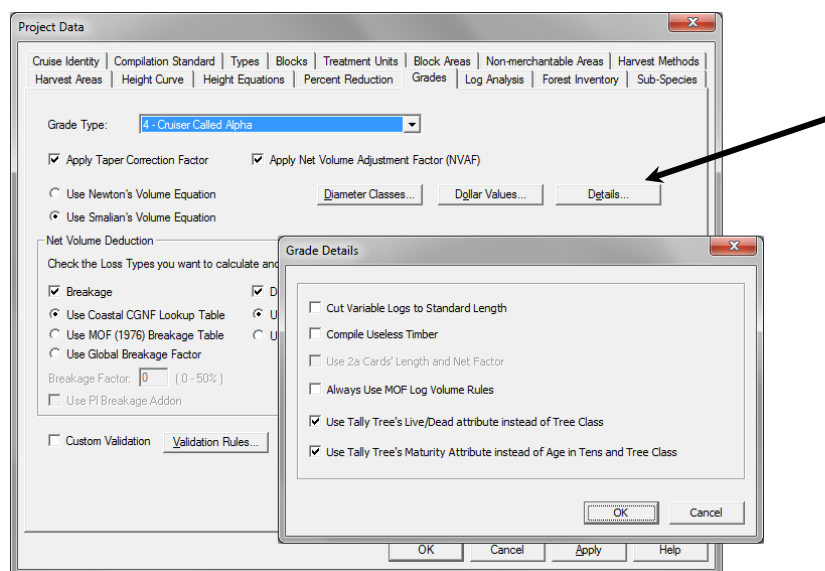


Figure 4 - Grade Details

1.4.1.1 Cut Variable Logs to Standard Length

Cut Variable Logs to Standard Length is used for non-appraisal compilations. When checked off, the program looks for logs called by the cruiser that exceed the standard length. It will then determine if it can computer buck the log into one or more standard length log(s). Any remainder after the standard length logs have been computer bucked, must be greater than or equal to the specified minimum log length, otherwise it will be appended to the previous log.

The standard length for **Coastal CGNF** compilations is 13m. The two options for minimum log length are grade specific (based on the species and grade) and global (one length for all logs). These are all entered on the **Compilation Standard** tab.

For user or numeric grades, select the most appropriate standard length. In these cases it is at the discretion of the compiler to use standard log length and the global minimum log length.

1.4.1.2 Compile Useless Timber

This switch enables the user to compile trees that are **Tree Class 4** (dead useless) or **Tree Class 6** (live useless). Normally, these trees are not compiled for appraisal purposes. However, they may contain at least some **"Y" grade** wood. If there is a sufficient amount of sound wood in these trees, they may contribute to a sizeable amount of net volume. Furthermore, by enabling this option the user can determine **"Z" grade** volume as the majority of **Tree Class 4 and 6** trees are **"Z" grade**.

1.4.1.3 Use 2a Cards' Length and Net Factor

This option is used with **Grade Type 6 – User Defined**. In situations where the stand has been cruised for statutory and user grades, this option allows the lengths & net factors to be recorded once on the 2a card, avoiding the need to record it on the **User Grades** tab as well.

1.4.1.4 Always Use MOF Log Volume Rules

This option is only available when the **None** preset is used. This allows the user to run variations on MoF standard runs using **MoF Log Volume Rules** for comparison purposes.

1.4.1.5 Use Tally Tree's Live/Dead attribute instead of Tree Class

Used for all **Grade Types** other than **1- MoF Computerized**. When selected, the program will use the **CGNF Live/Dead** attribute to determine the tree's live or dead status instead of the **Tree Class**.


1.4.1.6 Use Tally Tree's Maturity Attribute instead of Age in Tens and Tree Class

Used for all **Grade Types** other than **1- MoF Computerized**. When selected, the program will use the **CGNF Maturity** attribute to determine maturity. Otherwise the combination of **Age in Tens** and **Tree Class** will be used.

1.5 Validating Call Grade Data

To validate **Call Grade** data make sure the **CGNF preset** is set on the **Cruise Identity** tab or the grade type on the **Grades** tab is set to the appropriate call

grade. The data is validated by clicking the **Validate** button  or the **Generate**

Reports button . When the **Generate Reports** button is used, the data is validated automatically when the preset is set to **CGNF**, or at the users option, if the preset is set to none with the grade type set to one of the call grade settings.

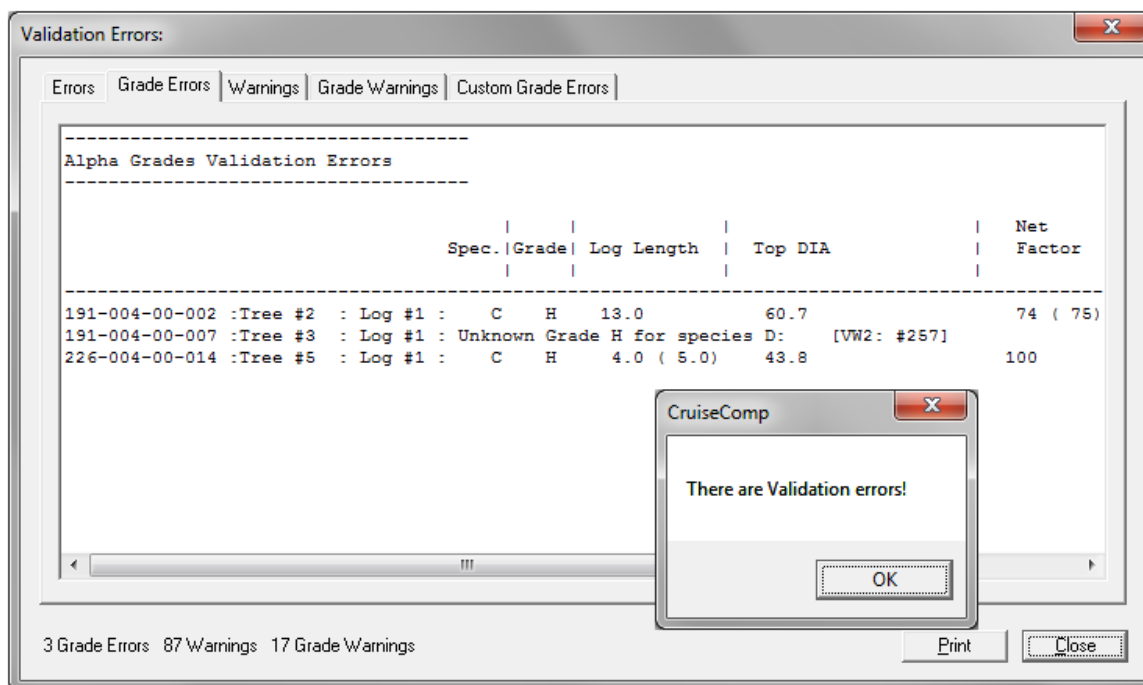


Figure 5 - Grade Validation Errors Report

The values shown in brackets in figure 5 are the allowable values for the given species and grade combination. In the above example, the first log of tree #2 has a net factor of 74%, which fails to make the minimum of 75% for an H grade. For tree #3, the first log has an invalid grade for alder. The first log in tree #5, the log length is 4.0m, which is shorter than the minimum 5.0m for an H grade.

When the **CGNF preset** is used, grade validations are mandatory. This means all grade errors must be fixed before compiling the data.

When the **None preset** is used, validating the data is at the user's discretion. This allows the validation process to be bypassed in order to view the results for special or unusual circumstances.

1.6 Volume By Grade Report

With **Cruiser Call Grade**, the **Detailed Log Grade Table** report will summarize the actual **net volume** and **percent volume by grade**, for the cutting permit, block and type by species. If "Z" grades have been cruised, the "Z" grade will display the amount of waste.

Net Area: [MBRCH : 16.0]											
Gross Area: [Grand Total : 16.0]											
		W. R. Cedar		Hemlock		W. W. Pine		Total		Conifer	
		m3	%	m3	%	m3	%	m3	%	m3	%
Cruiser Call Variable Length Grades %											
H	#2 Sawloc										
	30 - 49 CM	678	12.5	141	16.3			819	13.0	819	13.0
	50 - 69 CM	685	12.6					685	10.9	685	10.9
	70 - 999 CM	237	4.4					237	3.8	237	3.8
	Total	1600	29.5	141	16.3			1741	27.7	1741	27.7
I	#3 Sawloc										
	30 - 49 CM	778	14.4					778	12.4	778	12.4
	50 - 69 CM	538	9.9					538	8.5	538	8.5
	Total	1316	24.3					1316	20.9	1316	20.9
J	#4 Sawloc										
	Total	154	2.8					154	2.4	154	2.4
L	#3 Shingle										
	70 - 999 CM	48	0.9					48	0.8	48	0.8
	Total	48	0.9					48	0.8	48	0.8
M	#4 Shingle										
	Total	146	2.7					146	2.3	146	2.3
U	#5 Utility										
	Total	1439	26.5	726	83.7			2165	34.4	2165	34.4
Y	#7 Chipper										
	Total	720	13.3					720	11.4	720	11.4
TOTAL		5423	100.0	867	100.0	100.0		6290	100.0	6290	100.0
Z	#8 Cull										
	Total	418						418		418	

Figure 6 - Detailed Log Grade Table

2 ALPHA CALL GRADING

2.1 Introduction

Alpha Call Grading has a long history on the **Coast**. It is a system that has rigid rules for describing a log's quality and size. These grades have changed very little and have become standard in the coastal cruising community. It's possible that in the future, the **Interior** may adopt this system with some changes to reflect the smaller diameters.

2.2 Alpha Call Grade Data Entry

Alpha Call Grade data is entered on the Grades (2A) card. See section 1.2 for further information.

2.3 Compiling Alpha Call Grade Cruises

To run an **MoF Alpha Call Grade** cruise (for MPS purposes) set the preset to **CGNF**. To change any settings that are locked by the preset, select none after selecting the **cnf** preset. Then compile as normal.

3 NUMERIC CALL GRADING

3.1 Introduction

Numeric grades can be used for **Coastal** or **Interior** cruises. **Numeric grades** are a means by which a company can estimate the quality of its log population. Because numeric grades have no rigid, historic set of rules like **alpha grades**, the user can customize what each grade will represent for quality and diameter range.

This allows the user to designate '**grades to be cruised**' based on mill specifications. For instance, a mill or company may want to determine the net volume of **Peeler, Sawlog, Pulp** and **Cull grades** in each cutting permit. Each log will be graded by its quality. The cruiser will not need to be too concerned with the top diameter of each log. He is merely obtaining the grade quality of each log.

The compiler will be given a list of the grade types used, the priority level of each grade type and the breakdown of diameter class sorts per grade type, which will designate the minimum and maximum diameters for each sort.

The final outcome would be a **Grades Report** providing net volume and a percent value for each grade by species by cutting permit, block, type and harvest method. Each grade could have a sub-set of values broken up by diameter classes as well.

3.2 Using the Numeric Grade Table

A grade profile needs to be developed with grade numbers and diameter classes assigned to each description like the example in figure 8. These numeric grades will be used in the field. The cruiser does not need to worry about the actual top diameter of each log. The primary objective is to determine the quality of the log and how the log will be utilized.

To use the **Numeric Grades table**, the user must select the **Grade Type** field: **5 – Cruiser Called Numeric**. Then click the **Grades Table button** to open the **Grades and Diameters** table. This table provides room to fill in the **Grade, Priority Level, and Description**, plus the **Diameter Classes** for each grade (See fig 7).

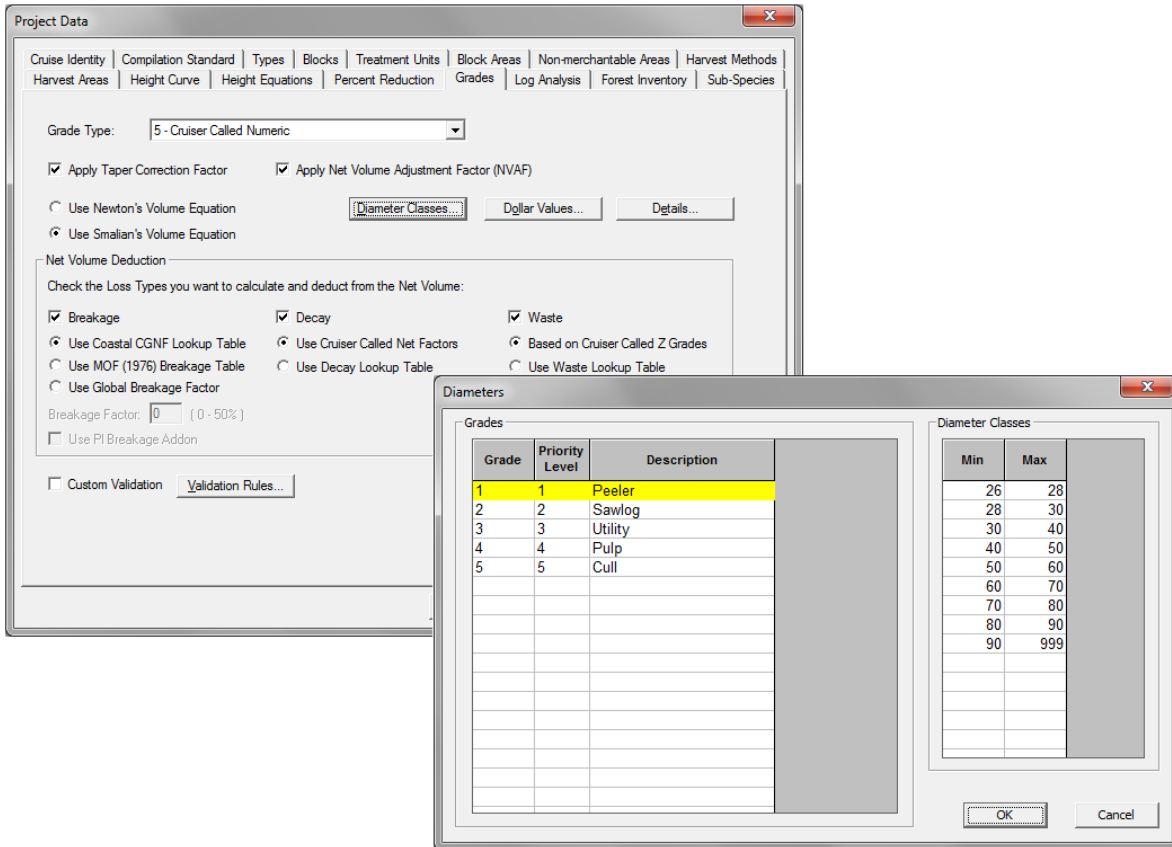


Figure 7 - Numeric Grades Table with Peeler Diameter Classes

Note that the diameter classes shown on the right are for the grade highlighted on the left of the numeric grades table.

3.2.1 Grade

The **Grade** is the quality attribute, the end use, or general grade of the log. Examples are: **Peeler**, **Sawlog**, **Utility**, **Pulp**, **Cull** or any other distinctions the user may want to use to delineate the grades. A maximum of nine grades, numbered from 1 to 9, are permitted. If more than nine grades are required consider using user defined grades (see sec. 6).

3.2.2 Priority Level

The **Priority Level** prioritizes the grades from 1 (high) to 9 (low). This allows **CruiseComp** to downgrade logs when the cruiser called grade fails to meet the minimum diameter for that grade.

The power of prioritizing grades using the **Cruiser Call Module** is demonstrated in the following example:

In figure 8, if a log graded as **Peeler** in the field only has a 25 cm top diameter, then the grade for that log is downgraded to **Grade 2 (Sawlog)** because a **Peeler** log grade must have a minimum top diameter of 26 cm. It can no longer be graded **Peeler** according to our table. It may have the quality of a **Peeler** log, but it is too small.

Accordingly, the log is then evaluated to determine if it can be graded as a “**priority 2**” [**Grade 2 – Sawlog**] as per figure 8. The **Sawlog grade** (priority 2) does permit 25 cm top diameter logs (its minimum allowable is 16 cm), so the log is graded as such.

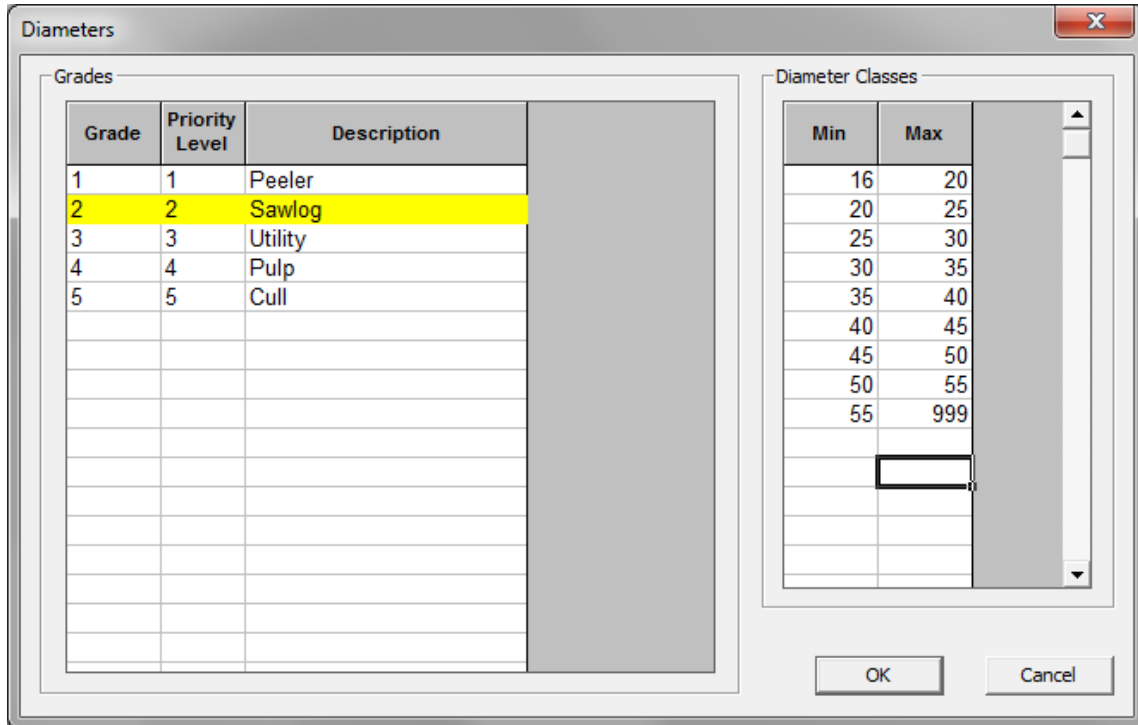


Figure 8 - Sawlog Diameter Classes

If, however, we had designated **Grade 3 - Utility** as priority 2 (see fig. 9), the log in question would have first been evaluated to determine if it was acceptable in this grade category. In this example, **Grade 3 - Utility** stipulates a minimum top diameter of 10 cm, so the log would be placed in that category.

The screenshot shows a 'Diameters' dialog box with the following data:

Grade	Priority Level	Description
1	1	Peeler
2	3	Sawlog
3	2	Utility
4	4	Pulp
5	5	Cull

Min	Max
10	15
15	20
20	25
25	30
30	35
35	40
40	45
45	50
50	55
55	999

Figure 9 - Utility Diameter Classes

The above example demonstrates the significance of setting priority levels in deciding how an undersized log is downgraded. Normal protocol dictates that the highest value grade should be designated a priority level 1 and put the lowest value grade as the last priority.

3.2.3 Description

A description field has been provided so that the user can assign a descriptive label to each grade. The description can consist of a name up to 35 characters in length. This label will appear in the summary reports under the **Cruiser Call Grades %** and also in the **Detailed Log Grades Table (Cutting Permit, Block and Type summaries)**.

3.2.4 Minimum and Maximum Diameter Classes

The **Minimum and Maximum Diameter Classes table** allows the user to designate the minimum and maximum top diameter for each diameter class for each grade. Each row is a separate diameter class and the number of diameter classes per grade is unlimited. This table allows the user to customize the reporting breakdown of each grade profile by diameter class.

The user must ensure that at least one of the minimum diameters, in at least one grade, is equal to the **Top Diameter Utilization Limit** or else not all of the timber will be reported in the cruise. At least one minimum and maximum diameter class must be entered for each log grade.

3.2.5 Save Grades Button

The **Save Grades button** at the bottom left of the **Grades tab**, allows the user to save any grade setups or different log class tables created, for use with another dataset. This will save a good deal of time because they can be imported and used in other datasets without the need to re-enter them.

Enter in the desired grades and the log classes for each grade and click the **Save button**. The **Export Grades screen** then appears. Type in a descriptive name for the grade table and then press the **Save button**. These files will have the ***.grd** extension.

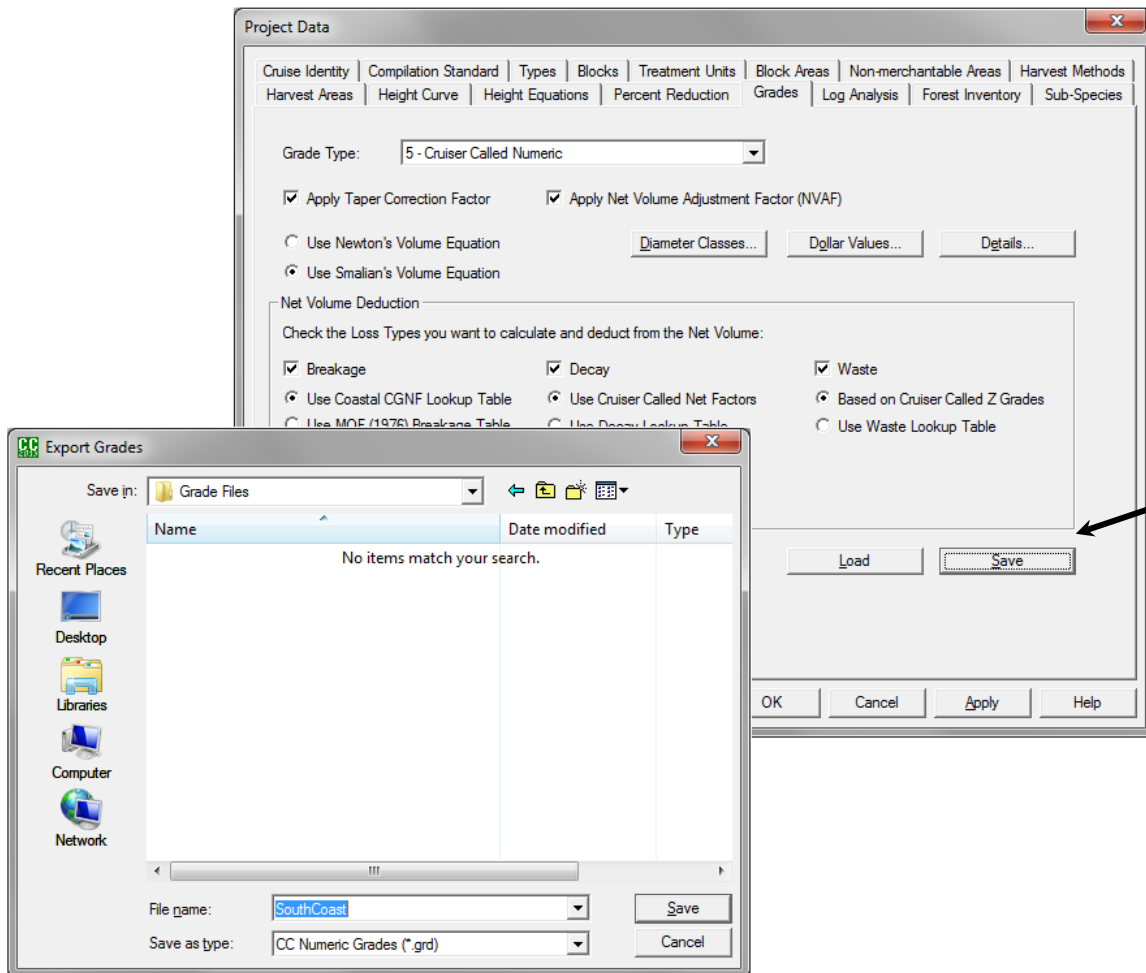


Figure 10 – Save Grades

3.2.6 Load Grades Button

The **Load Grades button** is similar to the import function of **CruiseComp**. Click the **Load Grades button**. Pick the ***.grd** file that you wish to use and click the **Open button**. The grades table will be opened with the saved grades, priority levels, grade description, and log classes.

4 FIXED AND VARIABLE LOG LENGTHS

4.1 Introduction

There are two methods of designating log lengths; either **fixed lengths** (usually 5 or 10 meters) or **variable log lengths**. Both have advantages and disadvantages.

4.2 Fixed Log Lengths

In **Fixed Log Length Cruising**, each log has an equal length (usually 10 meters on the Coast and 5 meters in the Interior). Beginning at the bottom of the tree, each fixed log length is given a grade. **Cruiser Call** only allows 5 logs to be entered for each tree. The fifth log grade is assigned from the top of the fourth log grade up to the **Utilization Limit** of the tree.

Fixed Log Lengths is much easier to use in that one length is given for each log. However, cruising in fixed lengths does not allow the optimization of quality for each tree.

Fixed log lengths are rarely used any more.

4.3 Variable Log Lengths

In **Variable Log Length Cruising**, each log is cruised to give maximum return of value and grade. Usually, the minimum log length is 1.0 meter. This form of cruising allows for a much more accurate estimate of the log quality in a tree.

While, cruising for variable log lengths is more time consuming, it is the preferred method of call grade cruising because it returns a better result.

4.4 Log Lengths to Use

When using fixed length logs, **CruiseComp** normally maintains the same **log, minimum** and **maximum** lengths throughout the compilation. This is not a requirement but is the normal practice. Typically, a **10** meter log length, **2.5** meter minimum and **12.5** meter maximum is used on the **Coast** and a **5** meter log length, **2.5** meter minimum and **7.5** meter maximum in the **Interior**.

When using the **Variable Log Length Cruising** method, the minimum log length for compilation should be the same as the minimum log length cruised. The standard is a 1.0 meter minimum log length, which is normally used for "Z" grades, allowing the cruiser to "*pencil*" buck defects out of the tree.

On the **Coast**, the accepted standard preferred lengths for **Variable Log Length Cruising** are, **8** meters, **11** meters, and **13** meters. Preferred lengths in the interior are determined by user.

Always bear in mind that if a tree has a defect, its location will dictate the length of the adjacent logs.

5 NET FACTORING

5.1 Introduction

The **British Columbia Ministry of Forests** uses a system of calculating **decay**, **waste** and **breakage** values called **Loss Factors**, based on averages within each **Forest Inventory Zone (FIZ)** and **Public Sustained Yield Unit (PSYU)**. These **Loss Factors** are determined by species, risk group, diameter class and maturity. This system works well for a given **FIZ** when all compilations within the zone are considered. However, these generalized tables may not accurately reflect the “net-down” for specific locations.

An alternate method called **Net Factoring** has been used on the BC Coast as well as in the United States for many years. The cruiser is responsible for estimating the net volume of a tree, log by log. The cruiser looks for pathological signs, the extent of any decay or missing wood fiber. They then consider, age, historical data and species in order to determine the amount of sound wood in each log of the tree.

5.2 Decay, Waste, and Breakage

Decay, Waste and Breakage Values can be generated in several cruiser/computer combinations. They are selected in the **Net Volume Deduction** section of the **Grades Tab** (see fig 11).

The screenshot shows the 'Grades' tab in a software application. The 'Grade Type' is set to '6 - User Defined'. There are two checked checkboxes: 'Apply Taper Correction Factor' and 'Apply Net Volume Adjustment Factor (NVAF)'. Below these are three buttons: 'Diameter Classes...', 'Dollar Values...', and 'Details...'. There are two radio button options: 'Use Newton's Volume Equation' (unselected) and 'Use Smalian's Volume Equation' (selected). A section titled 'Net Volume Deduction' contains the instruction 'Check the Loss Types you want to calculate and deduct from the Net Volume:'. Under this section, there are three checked checkboxes: 'Breakage', 'Decay', and 'Waste'. Below these are three columns of radio button options: 'Use Coastal CGNF Lookup Table' (selected), 'Use MOF (1976) Breakage Table' (unselected), and 'Use Global Breakage Factor' (unselected) in the first column; 'Use Cruiser Called Net Factors' (selected), 'Use Decay Lookup Table' (unselected), and 'Use Waste Lookup Table' (unselected) in the second column. There is a 'Breakage Factor' field with the value '0' and a range '(0 - 50%)'. Below that is 'Use PI Breakage Addon' (unselected). At the bottom left is 'Custom Validation' (unselected) and a 'Validation Rules...' button. At the bottom right are 'Load' and 'Save' buttons. An arrow points to the 'Net Volume Deduction' section header.

Figure 11 – Net Volume Deduction Options

If the **Breakage**, **Decay**, and/or **Waste** boxes are left un-checked, those deductions will not be made from the gross volume.

The **Use Global Breakage Factor**, **Use Cruiser Called Net Factors**, and **Based on Cruiser Called Z Grades** options, all rely on Cruiser Called input. The other options generate values using computer formulas and lookup values.

5.2.1 Net Factoring (Decay)

In **net factoring**, the cruiser looks at pathological signs on the tree, age, the extent of any visible decay or missing wood fiber, historical data and species to determine the amount of sound wood in each log of the tree. A value of 0 – 99 or a dash (-) for 100% is used to record the estimated amount of sound wood in the log (see fig. 12).

Header (Card 9)				Trees (Card 2)					Grades (Card 2a)					User Grades					Sample Trees (Card 3)					Growth Rates (Card 5)							
Tree No	Ht (m)	Spc	DBH	1	2	3	4	5	1 G	1 L	1 F	2 G	2 L	2 F	3 G	3 L	3 F	4 G	4 L	4 F	5 G	5 L	5 F	6 G	6 L	6 F	7 G	7 L	7 F	▲	
1	36.6	C	133.2						F	6.0	98	H	8.0	98	U	8.0	98	Y	99.0	99											
2	27.6	C	71.3						H	11.0	-	U	8.0	-	Y	99.0	-														
3	29.1	C	58.0						H	8.0	97	J	8.0	-	Y	99.0	-														
4	29.0	C	64.9						H	11.0	-	J	8.0	-	Z	3.0	-	Y	99.0	-											
5	35.4	C	111.5						H	8.0	-	I	13.0	-	Y	99.0	-														
6	34.8	C	86.8						H	8.0	-	I	8.0	-	U	8.0	-	Y	99.0	-											
7	36.0	C	120.0						Z	2.0	95	L	6.0	95	M	8.0	90	U	8.0	90	Y	99.0	90								

Figure 12 – Grades Card 2a with Net Factor

5.2.1 Cruiser Estimated Waste

The waste volume is estimated by the cruiser by calling **Z grades**. A **Z grade** is generally sound wood that will not be taken out of the woods. Because of its shape, length or high decay content, the log has no commercial milling value. A typical example of a Z grade is a fork/crook.

5.2.2 Cruiser Estimated Breakage

Breakage is the estimated net volume lost during harvesting operations. The **Breakage Factor** is a percentage that will be deducted from each log in the cruise as a result of breakage. Breakage values can range from 0-50%. Using this option, the cruiser can estimate a higher level of breakage if he feels the area is characterized by rough terrain or historically has a higher breakage rate.

6 USER DEFINED GRADES

6.1 Introduction

User Defined Grades, as the name suggests, allow the user to define their own grades based on the user’s criteria and specific needs. This is extremely useful for customizing grade profiles.

User Defined Grades are similar to **Numeric Grades** but differ in that they allow a bit more reporting flexibility and there is no limit in the number of available grades.

6.2 Setting Up User Defined Grades

Like **Numeric Grades**, **User Defined Grades** need to have a profile developed. A grade name, reporting order, description, and diameter class limits are assigned to each grade category.

6.2.1 User Defined Grade Table

Select **6 -User Defined Grades** from the **Grade Type** scroll down menu, then click the **Grades Table** button. The **Grades and Diameters Table** for **User Defined Grades** will pop up. It has two sections, one to describe the grades, and one to define the diameter classes for each grade (See fig 13).

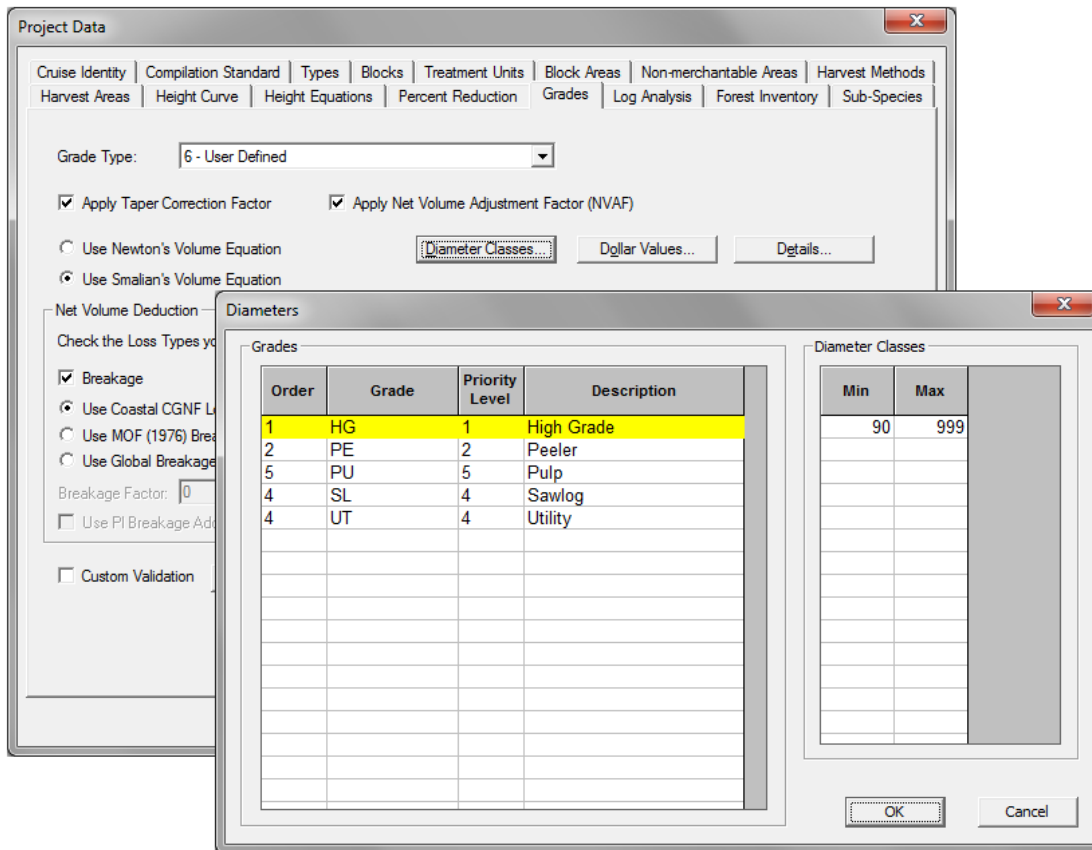


Figure 13 – User Defined Grades

6.2.2 Order

The **Order** heading will assign a reporting order to the grades. For example, if the user has three grades called **HG-High Grade**, **SL-Sawlog** and **PU-Pulp** and he wants the grades reported in order of value he would put a 1 under the order for HG, 2 under the order for SL and 3 under the order for **PU**. If the user does not enter any values under the order heading the grades will be reported in alphabetical order, thus reporting as **HG**, **PU** and **SA**.

6.2.3 Grade

Customized grades are entered in the **Grades table**. These grades can be anything that the user desires. The grades can be entered as letter codes, number codes or full words up to 16 characters long.

6.2.4 Priority Level

The **Priority Level** field is disabled for **User Defined Grades**.

6.2.5 Description

Under the **Description** heading the user will enter a grade description. For example, the description for the **HG grade** is **High Grade**, **SL grade** is **Sawlog** and **PU** is **Pulp**. This can also work for numeric grades. Descriptors allow the user to easily remember what their grade represents. This is especially true when the user has made many grades that may have similar codes.

6.2.6 Minimum and Maximum Diameter Classes

The **Minimum** and **Maximum Diameter Classes** table allows the user to specify the minimum and maximum top diameters for each grade diameter class. Each row is a separate diameter class and the number of diameter classes per grade is unlimited. This table allows the user to customize the reporting breakdown of the grade profile.

The user must ensure that at least one of the minimum diameters, in at least one grade, is equal to the **Top Diameter Utilization Limit** or some merchantable timber may not be reported in the cruise. At least one minimum and maximum diameter class must be entered for each log grade.

6.3 Using User Defined Grades in the Field

In the field the cruiser only needs to determine the log quality with out considering the size of each log. **CruiseComp** will look at the grade assigned by the cruiser and check that the log is within the **User Defined** parameters for that grade. If the log fails to meet the grade specifications, the program will down grade the log according to the priority level until it meets the grade specifications.

6.4 Using 2a Cards' Length and Net Factor Checkbox

When the user checks the **Use 2a Cards' Length and Net Factor checkbox**, the program will apply the lengths and net factors from the 2a card to the user grades entered in the **User Grades tab**.

The most common application for this feature is when the user has created grades based on sort criteria. The trees can be cruised in the field using the statutory grades and then back in the office the user could assign the appropriate sort grade to each of the logs.

An example of this application is as follows (refer to figure 14):

A cruise was done in the field using statutory **alpha grades** and the data was entered into **CruiseComp**. The licensee decides to put the cruised logs into several sorts, based on quality, to obtain a desired grade profile. Each sort grade has certain criteria for the logs it will contain.

To assign the sort grades to logs without re-cruising the stand to the sort grade specs, the user simply needs to go through the data in **CruiseComp** and for each log graded he needs to assign the sort grade that the cruised log fits into. After the user has assigned each log with the user defined grade he checks the **Use 2a Cards' Length and Net Factor box** and all the log lengths and net factoring from the statutory grade cruise will be applied to the user defined grades.

1. The cruise data with statutory grades is entered into **CruiseComp**.

Tree No	Ht (m)	Spc	DBH	1 G	1 L	1 F	2 G	2 L	2 F	3 G	3 L	3 F	4 G	4 L	4 F	5 G	5 L	5 F	6 G	6 L	6 F	7 G	7 L	7 F	8 G	8 L	8 F	9 G
1	36.1	CW	72.2	H	13.0	99	U	11.0	-	Y	99.0	-																
2	25.2	CW	45.4	J	13.0	99	U	99.0	-																			
3	33.1	CW	73.0	H	13.0	-	U	8.0	-	Y	99.0	-																
4	38.6	CW	101.5	H	8.0	-	I	11.0	-	U	8.0	-	Y	99.0	-													
5	28.0	CW	35.6	Y	3.0	98	J	13.0	-	Y	99.0	-																
6	29.5	CW	52.0	Y	3.0	98	J	13.0	98	Y	99.0	-																

2. The cruised grades are replaced with the user defined sort grades in the **User Grades** tab. Note in the figure below the **Show Fields** box is set to **Show Grade Names Only**.

Tree No	Ht (m)	Spc	DBH	1 Grade	2 Grade	3 Grade	4 Grade	5 Grade	6 Grade	7 Grade	7 L	7 F	8 Grade	8 L	8 F	9 Grade	9 L	9 F	1 ▲
1	36.1	CW	72.2	SL	UT	PU													
2	25.2	CW	45.4	SL	UT														
3	33.1	CW	73.0	SL	UT	PU													
4	38.6	CW	101.5	SL	SL	UT	PU												
5	28.0	CW	35.6	PU	SL	PU													
6	29.5	CW	52.0	PU	SL	PU													

User defined Sort Grades

- The **Use 2a Cards' Length and Net Factor box** is checked in the grades tab of the **Project Data Interface**. When the reports are generated the lengths and net factors of the cruised grades will be applied to the user defined "sort" grades.

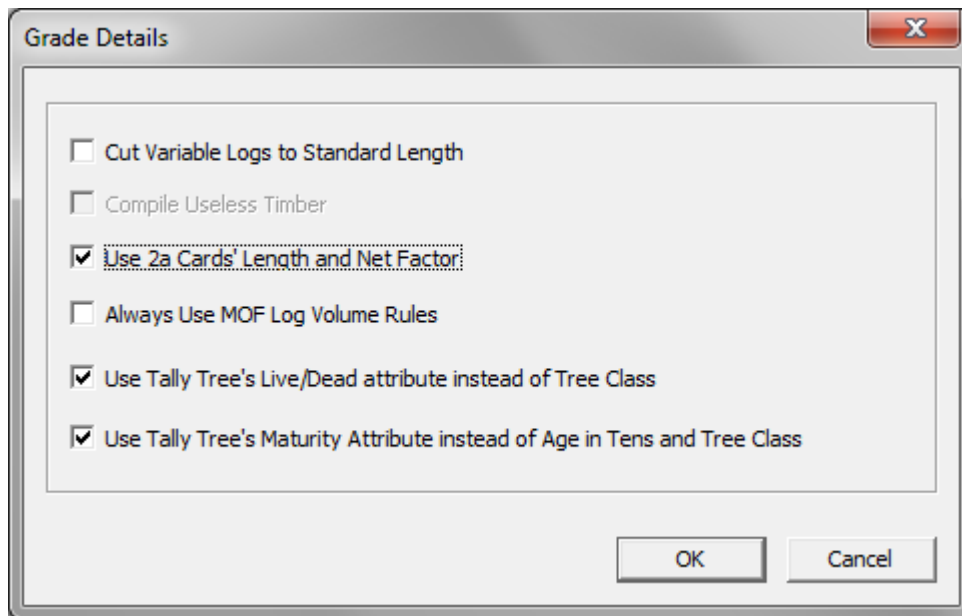


Figure 14 –Using Statutory & User Grades

6.5 User Defined Grade Validation Rules

The **Cruiser Call Module** allows the user great flexibility when determining grade specifications as well as choice of grade type. This flexibility has also been integrated into the way the user can validate data.

6.5.1 Creating Validation Rules

The **Validation Rules Button** on the **Grades Tab** takes the user to the **Grade Validation Table**. This table allows the user to set detailed rules for validating the grade data.

Valid parameter ranges:

Species	Grade	Min Diam	Max Diam	Min Len	Max Len	Min NF	Max NF
C	P	45.0	999.0	2.5	13.0	90.0	
C	S	30.0	999.0	2.5	13.0	80.0	
C	U	10.0	999.0	2.5	13.0	75.0	
C	X	10.0	999.0	2.5	13.0	50.0	
C	Y	10.0	999.0	2.5	13.0	40.0	
C	Z	10.0	999.0	2.5	13.0	90.0	
F	P	20.0	999.0	4.5	13.0	90.0	
F	S	30.0	999.0	4.5	13.0	75.0	
F	U	10.0	999.0	4.5	13.0	50.0	
F	X	10.0	999.0	4.5	13.0	40.0	
F	Y	10.0	999.0	4.5	13.0	90.0	
F	Z	10.0	999.0	4.5	13.0	90.0	
S	P	20.0	999.0	4.5	13.0	75.0	
S	S	30.0	999.0	4.5	13.0	50.0	
S	U	10.0	999.0	4.5	13.0	40.0	
S	X	10.0	999.0	4.5	13.0	90.0	
S	Y	10.0	999.0	4.5	13.0	90.0	
S	Z	10.0	999.0	4.5	13.0	75.0	

Invalid grades:

Species	Invalid Grade
C	D
F	D
H	D

Preferred log lengths:

Species	Grade	Prf. Len
C	S	13.0
F	P	10.0
F	S	10.0

Invalid pathologies and damages:

Species	Grade	Invalid Path
C	P	CK
C	S	CK
C	U	CK
C	X	CK
C	Y	CK
C	Z	CK
F	P	CK
S	P	CK
S	P	FO
S	S	CK

Specify invalid pathology or quality codes in the right bottom table. Code abbreviations are:
 BC = Blind Conk, CK = Conk, SC = Scar, FD = Fork/Crook, FR = Frost Crack, MT = Mistletoe,
 RB = Rotten Branch, DB = Dead/Broken Top, SG = Spiral Grain, SW = Sweep, LN = Lean.

OK Cancel

Figure 15 - User Grades Validation

6.5.2 Valid Parameter Ranges Table

The **Valid Parameter Ranges Table** is where the user enters the species, and grades, plus the minimum and maximum diameters, log lengths and net factor percentages for logs that will be acceptable for compilation. This means that the logs that fall within these parameters will not produce an error message when the data is validated.

6.5.3 Invalid Grades Table

The **Invalid Grades Table** is where the user enters grades by species that are not acceptable for compilation. If the data contains logs with a species/grade combination listed here, a validation error will be produced.

6.5.4 Preferred Log Lengths Table

The user enters any **preferred log lengths** by species and grade. For instance, a company may want to have log lengths of 7, 9, 12 and 15m. This being the case, the program would report all logs that do not meet these criteria.

6.5.5 Invalid Pathologies and Damage

The **“Invalid Pathologies and Damage Table”** is where the user enters the species and grades that would be unacceptable if they have a certain pathological indicator or quality attribute. A list of valid pathology codes is located at the bottom left of the window.

6.5.6 Using the Custom Validation Checkbox

When the **Custom Validation Checkbox** is checked **CruiseComp** will validate the data using the validation rules created in the **Grade Validation Interface**.