



# **Board of Scaling Examiners**

## **Examination Standards**



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Timber Pricing Branch

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## Introduction

The purpose of the Board of Scaling Examiners (BOSE) is to ensure consistency and fairness in setting and conducting scaling examinations.

## Objectives

The objectives are:

1. To develop consistency in the examination for scaling licences by prescribing procedures and policy.
2. To identify areas of scaling to be tested for a scaling licence, to what level they are to be tested and to communicate to the individuals and institutions offering scaling training.
3. To review the current written and practical testing systems to ensure they are suitable for today's current needs.
4. To investigate and recommend testing systems to be used in the licensing examination.
5. To review the need for supplemental scaling examinations and to recommend procedures to address these needs.
6. To monitor scaling examinations to ensure consistency province wide.

BOSE understands that a substantial amount of time and effort is required by students to prepare for the examination. Exams are meant to test knowledge and ability. They are set with the purpose of ensuring students who have a good understanding of log scaling succeed. Examinations conducted in BC require a pass rate of 75%. BOSE developed these standards and commits to following them as closely as possible.

If unsuccessful, there are two opportunities to students to obtain a scaling licence: one is to re-write and second one is to be issued an acting scaler appointment in order to gain more experience.

Good luck.

BOSE

## **Rounding**

Rounding of numbers by students on the exam shall be in accordance with Scaling Regulation Section 10, calculation of volume.

Link:

[http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/33\\_446\\_94#section10](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/33_446_94#section10)

## **Tools**

The use of non-programmable calculators will be permitted for both the practical and written portions of all scaling exams. An approved calculator will be distributed by an examiner and will be collected at the end of each portion of the exam. The use of any other electronic devices is not allowed.

Scale stick and measuring (logger's) tape are allowed to be used.

## **Results**

After the Areas have completed marking and reviewing exams with any interested examinees, they will be forwarded to the Provincial Wood Measurement Specialist at Timber Pricing Branch for finalization.

A copy of the notification of exam results for successful candidates will be sent to the Provincial Wood Measurement Specialist who will ensure that the Minister's delegate is contacted and the Scale Control System (SCS) is updated.

## **Opportunity to Re-write the Written or Practical Exam**

The following criteria may apply for candidates who are unsuccessful in passing an examination:

1. This opportunity shall only be offered once.
2. Re-write of the written or practical exam must occur within three months of having completed the full exam. An extension to this time limit may be considered by the Board of Scaling Examiners upon written request from the candidate.
3. The candidate should have achieved at least 50% in each section and a total mark of 70% or more to qualify.
4. The written examination must be different version from the one previously written.
5. The full practical examination must be a different set of logs from the one previously scaled.

6. The Ministry shall not be obligated to provide this opportunity.
7. It will only be made available if there is another practical examination scheduled within the three month time frame or if it involves only the written examination.

The Board of Scaling Examiners may approve other rewrite opportunities based on a review of the circumstances.

### **Acting Scaler Appointment Opportunity**

BOSE may recommend to the District Manager that an acting scaler appointment be issued to students who have not succeeded in obtaining 75% providing the student has succeeded in obtaining at least:

- i a minimum of 70% overall, and
- ii at least 50% in each section.

If a recommendation is made, it will be with the condition to work under the supervision of an experienced licenced scaler and the person will be restricted to work with certain species, grades and/or log sizes. The District will follow up with mentoring, feedback and check scaling. It is the District Manager's decision to issue or not to issue an acting scaler appointment.

### **Recommendation Letters to the Minister's Delegate**

Letters to successful candidates should state, "We have recommended to the Minister's delegate that you be issued a scaling licence". The letter must not state that a candidate will be issued a scaling licence.

### **Issuance of Scaling Licenses**

The Chair of the Board of Scaling Examiners will first review the results and ensure that the Examination Standards were met. A scaling license may then be issued to the successful candidate by the Minister's delegate and entered into SCS.

### **Filing of Exams**

The exam will be returned to the Region where the exams are to be filed.

### **Minimum Age and Citizenship**

The minimum age to obtain a scaling licence is 16 and must be a Canadian Resident. The information for all applicants under the age of 18 will be forwarded to the Client System Administrator for entry.

## Scaling Exam Fee

The exam fee is \$50.00 (no GST).

## Coast Examination

The Coast examination consists of two parts: a written exam and a practical exam. Candidates are given a maximum of five hours for the written exam, while a maximum of nine hours is given for the practical exam, which requires the scaling of 80 logs. To pass the examination, a candidate must obtain at least 50 percent of the marks in each of four categories and at least 75 percent of the total marks.

The following categories are included:

		Maximum Marks	Minimum Pass
Written paper		25	12.5
Net volume	Old growth logs	20	10
	Second growth logs	20	10
Grading	Old growth logs	10	5
	Second growth logs	10	5
Accuracy	Old growth logs	7.5	3.75
	Second growth logs	7.5	3.75
Total		100	75

### a. Written Paper

The written paper mark is expressed as a percentage. The percentage on the paper is multiplied by 25 for inclusion in the final mark.

For example, if the percentage on the written paper were 79%, the marks for the category would be calculated as follows:

$$79\% \times 25 = 19.8$$

**b. Net Scale Volume**

The scaled logs are marked as two groups (40 old growth logs and one group of 40 second growth logs). The net length, net top radius, and net butt radius recorded for each log are used to compute the net volume. The net volume is compiled and the percent difference from the master scale is calculated. Marks are allocated as follows:

Difference %	Mark
0.0 to 3.0	100 - (% difference x 3.333)
Over 3.0 to 5.0	90 - ((% difference - 3) x 10)
Over 5.0 to 8.0	70 - ((% difference - 5) x 23.333)

The allocation of marks resulting from the above formulae is graphically demonstrated in the following table:

Difference %	Mark %	Difference %	Mark %
0.5	98	4.5	75
1.0	97	5.0	70
1.5	95	5.5	58
2.0	93	6.0	47
2.5	92	6.5	35
3.0	90	7.0	23
3.5	85	7.5	12
4.0	80	8.0	00

The sum of the marks for the two groups is divided by two to obtain a percentage mark for the category and is multiplied by 40 and rounded to two decimal places for inclusion in the final mark.

For example, if the percentages for the two volume groups were 75%, 96%, the marks for the category would be calculated as follows:  $85.5\% \times 40 = 34.20$  marks out of a possible 40.

### **c. Species/Grading**

Grading is marked in two groups; the first group contains 40 old growth logs and the second group contains 40 second growth logs. For the old growth group, a count of each incorrectly recorded species and grade is made and the total count subtracted from 40 and divided by 40 to obtain a percentage mark for the group. That mark is multiplied by 10 and rounded to two decimal places for inclusion in the log mark. For the second growth group, a count of each incorrectly recorded species and grade is made and the total count subtracted from 40 and divided by 40 to obtain a percentage mark for the group. That mark is multiplied by 10 and rounded to two decimal places for inclusion in the log mark.

For example, if 10 grading errors were recorded for the old growth group and 5 for the second growth group, the marks for the category would be calculated as follows:

$$\left(\frac{40-10}{40}\right) \times 10 = 7.50 \text{ marks}$$

and

$$\left(\frac{40-5}{40}\right) \times 10 = 8.75 \text{ marks}$$

$$7.50 + 8.75 = 15.75 \text{ out of a possible } 20 \text{ marks}$$

Marks for the two grading groups are rounded to two decimal places, and then summed to obtain a mark for the grading category.

### **d. Accuracy**

Accuracy is marked in two groups: the first group is for 40 old growth logs and the second group is for 40 second growth logs. For the old growth group, a count is made of each log with an incorrectly recorded gross length and gross radius out by more than one radius class, then the total number of logs with accuracy errors is subtracted from 40 and divided by 40 to obtain a percentage mark for the group. That mark is multiplied by 7.5 for inclusion in the log mark. For the second growth group, a count is made of each log with an incorrectly recorded gross length and gross radius out by more than one radius class, then the total number of logs with accuracy errors is subtracted from 40 and divided by 40 to obtain a percentage mark for the group. That mark is multiplied by 7.5 for inclusion in the log mark.

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For example, if 14 accuracy errors were recorded for the old growth group and 6 for the second growth group, the marks for the category would be calculated as follows:

$$\left(\frac{40-14}{40}\right) \times 7.5 = 4.88 \text{ marks}$$

and

$$\left(\frac{40-6}{40}\right) \times 7.5 = 6.75 \text{ marks}$$

4.88 + 6.75 = 11.63 out of a possible 15 marks

Marks for the two accuracy groups are rounded to two decimal places, and then summed to obtain a mark for the accuracy category.

To obtain a log mark the volume, grading and accuracy marks are summed then rounded to the nearest whole number. The written mark is added to the log mark to obtain the final mark.

Using the results from the previous examples, the log mark and final mark would be calculated as follows:

Volume	34.20			
Grading	15.75		Written Mark	20
Accuracy	11.63		Log Mark	62
Log Mark	61.58		Final Mark	82

## Practical Exam (Coast) Standards

These are the minimum requirements to set and correct practical log scaling exams in the Interior of BC:

Exam Set Up	
Number of pieces	80 (40 old growth – 40 second growth)
Number of different species	7 minimum
Number of different grades	Maximum of 6 logs with 2 grades that may be accepted for a given log per exam

Exam logs have been reviewed and agreed by two or more examiners	All logs
<b>Marking</b>	
Grades	Incorrect grade = accuracy error
Species	Incorrect species = accuracy error Do not provide species code list
Lengths	Incorrect length = accuracy error e.g. log length 128dm, student entered 127dm = 1 error
Gross dimensions	Incorrect entry or out by more than one radius class = accuracy error
Net dimensions	Allow the regional representative of the BOSE to give some latitude for up to 2 transposition errors. If there are more than 2 of these errors, the volume will be calculated on actual entries.
Procedural errors	Not considered for species but considered for species code errors. Not considered for grades and gross dimensions. Latitude in marking is the same as for net dimensions (net volume).

## Interior Examination

The Interior examination consists of two parts: a written exam and a practical exam. Candidates are given a maximum of five hours for the written examination and a maximum of six hours for the practical examination, which requires scaling and reporting scale results for 60 logs.

To pass the exam, candidates must achieve at least 50 percent in each of three categories and at least 75 percent of the overall exam marks.

Marks are allotted as shown in the following categories:

	<b>Maximum mark</b>	<b>Minimum pass</b>
Written paper	40	20
Net scale volume	20	10
Grading and Accuracy	40	20
<b>Total</b>	<b>100</b>	<b>75</b>

### **a. Written Paper**

The written paper mark is expressed as a percentage. The percentage obtained on the written paper is multiplied by 40 for inclusion in the total mark for the examination.

For example, if the percentage on the written paper was 79%, the marks for the category would be calculated as follows:

$$79/100 \times 40 = 31.6$$

### **b. Net Scale Volume**

The net length, net top radius, and net butt radius recorded for each log are used to compute the net volume.

Examiners compile the net volumes. The net volume is used to compute the mark for net scale volume.

The percentage difference of the candidate's net volume from the master scale net volume is calculated. Marks are allocated as follows:

<b>Difference %</b>	<b>Mark</b>
0.0 to 3.0	100 - (% difference x 3.333)
Over 3.0 to 5.0	90 - ( (% difference - 3) x 10)
Over 5.0 to 8.0	70 - ( (% difference - 5) x 23.333)

The allocation of marks resulting from the above formulae is graphically demonstrated in the following table:

<b>Difference %</b>	<b>Mark</b>	<b>Difference %</b>	<b>Mark</b>
0.5	98	4.5	75
1.0	97	5.0	70
1.5	95	5.5	58

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2.0	93	6.0	47
2.5	92	6.5	35
3.0	90	7.0	23
3.5	85	7.5	12
4.0	80	8.0	00

The mark is multiplied by 20 before being included in the total mark for the examination. For example, if the mark on the net scale volume was 75%, the marks for the category would be calculated as follows:

$$75/100 \times 20 = 18.4$$

**c. Grading and Accuracy**

From the 48 marks allotted to this category, 1.0 mark is deducted for each incorrect species and each incorrect grade.

A further 0.5 of a mark is deducted for each incorrect gross length, gross radius out by more than one radius class, and each type of procedural error made in recording the scale details.

The mark is multiplied by 40 for inclusion in the total mark for the examination.

For example: 48 marks – 18 errors = 30/48 x 40 = 25 marks

## Practical Exam (Interior) Standards

These are the minimum requirements to set and correct practical log scaling exams in the Interior of BC:

<b>Exam Set Up</b>	
Number of pieces	60
Number of different species	7 minimum
Number of different grades	5 or all – Maximum of 3 logs with 2 grades that may be accepted for a given log per exam
Lengths	All lengths to be measured with a tape
Exam logs have been reviewed and agreed by two or more examiners	All logs
<b>Marking</b>	
Grades	Incorrect grade = accuracy error
Species	Incorrect species = accuracy error. Do not provide species code list
Lengths	Incorrect length = accuracy error e.g. log length 50dm, student entered 49dm = 1 error
Gross dimensions	Incorrect entry = accuracy error
Net dimensions	Allow the regional representative of the BOSE to give some latitude for up to 2 transposition errors. If there are more than 2 of these errors, the volume will be calculated on actual entries.
Procedural errors	Not considered for species but considered for species code errors. Not considered for grades, and gross dimensions. Latitude in marking is the same as for net dimensions (net volume).

## Marking

Volume – 20 marks, Written – 40 marks, Accuracy & Grading – 40 marks.

Must score 50% on each part and 75% for the full exam.

Rounding for marking is as follows:

- Round the written, volume, and grading/accuracy parts of the exam to one decimal place. For example; Written -- 31.6, Volume – 18.4, Accuracy/Grades – 32.9
- Add the marks together for the final mark (no rounding).
- Mark must a minimum of 75.0 to pass. The example shown equals 82.9 and passes.

Where there is doubt about the use of latitude during the marking of an exam the decision must be referred to a regional member of the BOSE.

Practical exam length is 6 hours.

Logs must not be rolled by the candidates during the practical exam.

Where the minimum requirements:

- To set an exam cannot be met, the exam must not be conducted
- Cannot be met, the BOSE will not recommend the successful candidates to the Minister for licensing.

This guide will be used to set up log scaling exams including all other applicable requirements as per the scaling manual where the manual does not conflict with these standards.