
In the London Court of International Arbitration
No. 111790

THE UNITED STATES OF AMERICA,

Claimant,

v.

CANADA,

Respondent.

CANADA'S REJOINDER

NON-CONFIDENTIAL

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TABLE OF CONTENTS

	<u>Page</u>
INDEX OF CANADA’S SUPPLEMENTAL WITNESS STATEMENTS AND REBUTTAL EXPERT REPORTS.....	v
INDEX OF FIGURES IN CANADA’S REJOINDER	vi
GLOSSARY OF ABBREVIATIONS.....	vii
INTRODUCTION	1
ARGUMENT.....	12
I. THE UNITED STATES CONTINUES TO FAIL TO ESTABLISH A CLAIM FOR CIRCUMVENTION UNDER THE SLA.....	12
A. The United States’ Attempt to Reverse the Burden of Proof Fails	12
B. The United States Has Failed to Satisfy Its Burden of Proof.....	14
II. CANADA HAS NOT CIRCUMVENTED THE AGREEMENT’	22
A. The United States Mischaracterizes and Misinterprets British Columbia’s Grandfathered Timber Pricing System and the 50/50 Test.....	22
1. British Columbia’s Scaling and Log Grading System Is Grandfathered in Its Entirety	23
2. The April 2006 Changes.....	27
3. What the 50/50 Test Means and How It Is Applied.....	29
4. What the United States Says the 50/50 Test Means and Why That Is Wrong.....	37
a. Log Grades Based on the 50/50 Test Do Not Depend on Ultimate Lumber Recovery	38
b. The United States Has Not Offered a Consistent Account of What the 50/50 Test Should Measure or How Its Results Should Be Evaluated.....	51
B. The United States Fails in Its Attempts to Advance Its “Actions” Case.....	55
1. The Use of Local Knowledge.....	56
2. The Practice of Bucking.....	61
a. Diagnostic Bucking Is Grandfathered and Improves Scaling Accuracy.....	62
b. British Columbia’s Policy That Bucking to Downgrade Is Prohibited Has Not Changed	63

TABLE OF CONTENTS

(continued)

	<u>Page</u>
c. “Sweep” Is Irrelevant to the Grading of Lodgepole Pine.....	65
3. The Scaling Requirements for Checked Logs.....	66
a. Species-Specific Scaling Conventions Are Appropriate and Consistent With the Grandfathered System	66
b. The 2 cm Deduction Resolved an Ambiguity in the Scaling Rules and in Doing so Applied the 50/50 Test	69
c. British Columbia’s “Focus on Checks” Was Not a “Significant Departure” From the Grandfathered Scaling Regime.....	73
d. The Scaling Requirements Are Consistent With the Grandfathered 50/50 Test.....	75
e. Facilitating the Accurate Grading of Logs Does Not Provide a Benefit to Producers, and Is Consistent With a Move Toward Maintaining or Improving the Extent to Which Stumpage Charges Reflect Market Conditions	76
4. Kiln Re-drying.....	78
a. Kiln Re-drying Is an Effective Tool to Facilitate Accurate and Consistent Application of the 50/50 Test	78
b. The United States’ Arguments That Kiln Re-drying Causes Misgrading Are Without Basis.....	85
c. Facilitating the Accuracy With Which Scalers Identify the Physical Characteristics of Logs Is Consistent With a Move Toward Maintaining or Improving the Extent to Which Stumpage Charges Reflect Market Conditions	90
5. Mere Inaction Is Insufficient to Establish a Claim of Circumvention Under the Agreement.....	92
a. The Text Confirms That the Absence of Government Action Cannot Be the Subject of a Claim of Circumvention	94
b. The Negotiating History Confirms That Actions Are Required to Establish a Claim of Circumvention.....	96
C. The United States Cannot Resurrect Its Inferential Case.....	98

TABLE OF CONTENTS

(continued)

	<u>Page</u>
1. The United States Has Failed to Sever the Link Between Declining Timber Quality and Increasing Grade 4.....	99
a. There Is a Scientific Consensus That Significant Checking Occurs in Most MPB-Killed Pine by Three Years After Death	101
b. The United States Distorts the Concept of “Shelf Life”	107
c. Dr. Neuberger’s Critique of Canada’s Description of the Relationship Between Grade 4 and Years Since Death Is Without Merit	115
2. The United States’ Misinterprets the Four FII-Commissioned Mill Trials	116
3. Lumber Recovery Data Are Unreliable Indicators of Log Quality, but Even Under the United States’ Theory, Those Data Are More Consistent With Diminishing Log Quality Than With Misgrading.....	123
4. The LRF Adjustment Factor Is Irrelevant to Log Grades	128
5. The United States’ New “High Grading” Theory Does Not Support an Inference of Misgrading.....	129
D. The United States Has Now Conceded That the Bid Effect Operates to Price Timber at Market Value.....	132
III. REMEDY	136
A. The United States’ Remedy Proposals Fail to Establish the Requisite Connections Between a Remedy and Any of the Alleged Circumventing Actions.....	137
B. The United States’ Remedy Proposals Are Inconsistent With the Tribunal’s Decision in the 81010 Arbitration	138
1. The United States’ Remedy Proposals Are Based on the Same Flawed Interpretations of the SLA Considered and Rejected by the Tribunal in the 81010 Arbitration	141
2. The Nature of the Breach in the 81010 Arbitration Parallels the Breach Alleged in This Case	148
C. Dr. Neuberger’s Analysis Grossly Inflates His Remedy Calculation.....	153

TABLE OF CONTENTS

(continued)

	<u>Page</u>
1. Dr. Neuberger Calculates Benefit Rather Than Offset.....	153
2. Dr. Neuberger Miscalculates the Compensatory Adjustments.....	154
3. The 81010 Award Illustrates the Proper Application of Article XVII	157
4. Professor Kalt Explains How the Compensatory Adjustments Should be Calculated	159
a. Professor Kalt's Model.....	160
b. Professor Kalt's Benefit Calculation	161
c. Professor Kalt's Calculation of an Appropriate Remedy	164
CONCLUSION	166

**INDEX OF CANADA'S SUPPLEMENTAL WITNESS
STATEMENTS AND REBUTTAL EXPERT REPORTS**

FACT WITNESSES

1. [] (Ex. R-147) (**Confidential**)
2. Supplemental Statement of James D. Crover, Natural Resources Consultant, Former Scaling Policy Forester, B.C. Ministry of Forests, Lands and Natural Resource Operations (Ex. R-148) (**Confidential**)
3. Supplemental Statement of James Snetsinger, RPF, Chief Forester for the Province of British Columbia, Assistant Deputy Minister, Forest Stewardship, B.C. Ministry of Forests, Lands and Natural Resource Operations (Ex. R-149)

EXPERT WITNESSES

4. Rebuttal Expert Report of Susan Athey, Ph.D., Professor of Economics, Harvard University and Peter Cramton, Ph.D., Professor of Economics, University of Maryland (Ex. R-150)
5. Rebuttal Expert Report of Joseph P. Kalt, Ph.D., Ford Foundation Professor of International Political Economy, John F. Kennedy School of Government, Harvard University (Ex. R-151) (**Confidential**)
6. Rebuttal Expert Report of Katherine J. Lewis, RPF, Ph.D., Professor of Ecosystem Science and Management, University of Northern British Columbia (Ex. R-152)

INDEX OF FIGURES IN CANADA'S REJOINDER

Figure	Description	Page
1	Illustrations of two logs with 49 percent of volume available to manufacture lumber (represented by the darker area)	44
2	Slide showing an MPB-killed log with extensive shallow surface checks taken from a presentation by the U.S. Timber Measurements Society entitled "Lodgepole Pine Epidemic, Utilization Scaling" given in April 2011 (Ex. R-153)	72
3	Photo of log with end checks used in a training presentation related to the December 2007 Scaling Requirements (Ex. C-84 at CAN-010314)	87

GLOSSARY OF ABBREVIATIONS

Abbreviation	Description
AD	Antidumping
AMP	Average Market Price
B.C.	British Columbia
BCTS	British Columbia Timber Sales
C&E	Compliance and Enforcement
CVD	Countervailing Duty
EBBMA	Emergency Bark Beetle Management Area
EC	Economy Lumber Grade
Ha	Hectare (Unit of Measurement)
HBS	Harvest Billing System
ILC	Intermountain Logging Conference
ISAC	Interior Scaling Advisory Committee
ITC	International Trade Commission
LRF	Lumber Recovery Factor
mbf	One Thousand Board Feet of Lumber (Unit of Measurement)
MPB	Mountain Pine Beetle
MPS	Market Pricing System
rad	Radius Class Unit (Unit of Measurement)
RPF	Registered Professional Forester
SIFR	Southern Interior Forest Region
SLA	Softwood Lumber Agreement
SPF	Spruce-Pine-Fir
ST	Stud Lumber Grade
TSA	Timber Supply Area
TSL	Timber Sales License
U.S.	United States
WWPA	Western Woods Products Association
2B	Standard #2 and Better Lumber Grade
3U	Utility Lumber Grade

INTRODUCTION

1. The United States' Reply displays an unshakeable conviction that Canada and British Columbia have engaged in a calculated effort to circumvent Canada's commitments under the Softwood Lumber Agreement (the "SLA" or the "Agreement").¹ The strength of that conviction is not matched by the evidence advanced to support it. However, the weakness of the United States' case is not the result of the United States' evidence being circumstantial. It is rather a result of the bald absence of any actual evidence that Canada or British Columbia took any action to circumvent their treaty obligations, much less that either intended to do so.

2. This absence of evidence of an action is one of several fundamental flaws in the United States' case. The SLA forbids either Party to "**take action** to circumvent or offset the commitments under the SLA 2006."² Continuing a course of conduct well established before the entry into force of the SLA, and expressly grandfathered by its terms, cannot be such an action. British Columbia was selling Grade 4 timber to lumber producers before the SLA, and continued to do so afterwards. Grade 4 timber sold before the SLA was nominally priced at C \$0.25 per cubic metre, and it has been sold at that same price since. Such sales were and are part of British Columbia's "provincial timber pricing or forest

¹ 2006 Softwood Lumber Agreement Between the Government of Canada and the Government of the United States of America, Sept. 12, 2006 ("SLA 2006") (Ex. R-1).

² SLA 2006 Art. XVII(1) (Ex. R-1) (emphasis added).

management systems as they existed on July 1, 2006.”³ Measures that meet that criterion “shall *not* be considered to reduce or offset the Export Measures in the SLA 2006,” and therefore, under the express terms of the SLA, cannot constitute circumvention.⁴

3. The one hard fact advanced by the United States is that, from 2007 through 2009, the percentage of British Columbia’s timber harvest, and specifically of its pine harvest, that was graded as Grade 4 increased.⁵ That fact is not in dispute, although the increase in the amount of timber graded as Grade 4 is not nearly as dramatic as the United States implies.⁶

4. What is in dispute is the *reason* for the increase in the percentage of Grade 4 timber during this period. The United States asserts that the increase results from the deliberate misgrading of timber, but its evidence for the alleged misgrading consists entirely of the inferences drawn by its witnesses from certain statistics – selectively chosen for this litigation and few of which have any substantial relation to timber grading – that, in their view, can be explained by nothing other than misgrading. Circumstantial evidence has a

³ SLA 2006 Art. XVII(2)(a) (Ex. R-1).

⁴ SLA 2006 Art. XVII(2) and (2)(a) (Ex. R-1) (emphasis added).

⁵ U.S. Reply ¶ 15.

⁶ Stmt. of Defence ¶ 108 and Figure 19.

place in international proceedings that Canada has not questioned, but these inferences are not circumstantial evidence. They are simply speculation and entirely unpersuasive.

5. The Tribunal is presented with a choice between two mutually exclusive alternatives. The United States urges that the Tribunal ascribe the increase in the percentage of Grade 4 timber to deliberate misconduct carried out through a conspiracy spanning years and necessarily requiring collusion between numerous government officials and hundreds of members of the softwood lumber industry, and yet it has not produced any evidence of the existence of such a conspiracy. Canada, on the other hand, has documented in detail the correlation between the devastation of British Columbia's forests by the Mountain Pine Beetle ("MPB") and the resulting deterioration in the quality of British Columbia's timber and the rise in the amount of timber graded as Grade 4. This Tribunal should have little difficulty concluding that Canada's attribution of the rise in the percentage of timber classified as Grade 4 to this demonstrated deterioration in timber quality is more persuasive than the United States' undocumented and speculative conspiracy theory.

6. Aside from the speculations underlying its "inferential" conspiracy claim, the United States points only to four alleged actions that it claims were taken by British Columbia to encourage or condone the alleged misgrading, which is alleged, in turn, to have

resulted in sales of timber for less than its value.⁷ The United States attempts to give the impression that these actions – which it now calls “steps” or “mechanisms” – are somehow tangential to its circumvention claim, but its own theory belies that pretense. According to the United States’ theory, British Columbia faithfully applied the grandfathered timber scaling and grading regime until April 2007, but then suddenly decided to “abandon” it thereafter. To make out a circumvention claim under this theory, the SLA requires the United States to establish the affirmative conduct – the “action” – by which British Columbia allegedly accomplished this “abandonment” of the grandfathered regime. The United States obviously knows this, which presumably is why it felt compelled to identify the four so-called “actions” it cited in its Statement of Case. Those “actions” are not mere window dressing for the United States’ circumvention claim, they are the essential predicates for it.

7. The United States’ attempt to diminish the importance of the actions it has identified is understandable. None of them comes close to constituting circumvention under Article XVII. Two of these so-called actions – the encouragement of bucking and local knowledge – were not “actions” in the sense of the term as used in the SLA, and there is no evidence that they had a discernable effect on timber grading. They were in any event

⁷ The Reply, for the first time, asserts that British Columbia’s industry engaged in “high-grading” (U.S. Reply ¶¶ 112-115, 117), but fails to explain how that alleged activity either caused timber to be misgraded or, if it did, how it amounted to an action by either the provincial or the federal government.

part of British Columbia's grandfathered forest management systems, or alternatively are safe harboured under Article XVII.⁸ The other two – the Scaling Requirements for Checked Logs and the limited approval of kiln re-drying logs to help scalers see checks – at least involved government action, although the United States has not shown that either resulted in any misgrading of timber. And both are also either grandfathered or safe harboured by the SLA.⁹

8. Faced with the inability to establish a real-world connection between any action by British Columbia and increasing percentages of Grade 4 timber, the United States is reduced to constructing its own version of reality, and then complaining about how it imagines British Columbia to have acted in that parallel universe. It does so principally by imagining a world in which trees killed by the Mountain Pine Beetle will show no significant deterioration until eight or more years after death, in which each log is graded shortly after harvest according to the volume and quality of lumber that a mill will ultimately manufacture from that log, and in which mills in British Columbia have been exceeding an unspecified threshold for lumber production from Grade 4 logs. In this world, there would be very little Grade 4 timber, unless logs had been misgraded.

⁸ Stmt. of Defence ¶¶ 201-215.

⁹ Stmt. of Defence ¶¶ 221-234, 249-253.

9. Reality is very different. Nearly all trees killed by the MPB suffer significant deterioration, most notably cracking or “checking” within two or three years after death. This is consistent with the clear scientific consensus, and Dr. Lewis in her rebuttal report dispels the confusion that the United States has sought to create on this issue.¹⁰ As described by British Columbia’s Chief Forester, the MPB kills trees (to date, over 600 million cubic metres) faster than they can be harvested, leaving British Columbia with the Sisyphean task of trying to salvage increasing quantities of timber that is deteriorating faster than it can be cut down.¹¹ And the rise in the percentage of Grade 4 timber in British Columbia’s pine harvest from 2007 to 2008 to 2009 is closely matched by, and correlates statistically with, the rise in the proportion of that harvest that had been dead for more than two years when it was cut down.¹²

10. Most significantly for distinguishing reality from the parallel universe constructed by the United States, the 50/50 test for distinguishing a Grade 4 log from a Grade 2 log is applied by British Columbia’s scalers, not as a subjective estimate or mathematical calculation of what a particular mill will do with a particular log, but as a series of steps, derived from the 50/50 test, and embodied in specific directions to scalers in the

¹⁰ Rebuttal Expert Report of Katherine J. Lewis (hereinafter “Lewis Rebuttal Report”) ¶¶ 14-20 (Ex. R-152).

¹¹ Snetsinger Stmt. ¶ 49 (Ex. R-7). *See also*, BCTV (Global BC), News Insight (Oct. 2006), Segment 1 (Ex. R-176) and Segment 2 (Ex. R-177).

¹² Rebuttal Expert Report of Joseph P. Kalt (hereinafter “Kalt Rebuttal Report”) (Ex. R-151).

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Government-mandated Scaling Manual to make certain measurements and to draw certain conclusions from them. Those measurements and conclusions were designed to create a scaling process that could be applied consistently across the B.C. Interior, frequently under difficult conditions, including in snow, ice, rain, and mud.

11. That was how British Columbia's scalers scaled logs before the SLA was signed, and that is how they scale logs now. The process may be complicated and its parts may not always fit together perfectly, but it is the process grandfathered by the SLA, and which the United States accepted when it entered into the Agreement. The United States may find it frustrating that the 50/50 test does not provide a neat prediction of precisely how many board feet of lumber will ultimately be made from any given log, and that the results of scaling cannot be mathematically calibrated to the lumber outturns of any particular lumber mill, but the system was not designed to do either and makes no pretense of being able to do so. The SLA does not require British Columbia to have a perfect scaling and grading system, but rather permits it to continue using the one that it has. That the United States may be dissatisfied with the results that system produces does not permit the United States to go back on its agreement that the system that existed on July 1, 2006 may continue to be used.

12. The United States has failed to demonstrate that any benefit has been provided to softwood lumber producers such that compensatory adjustments would be warranted under Article XIV(22). Neither the United States nor Dr. Neuberger has offered

any evidence or analysis that would link any specific volume of alleged misgrading of timber to any of the so-called actions that they allege to have caused misgrading. The United States must prove three elements to establish circumvention: (1) Canada has taken an action; (2) the action has provided a grant or other “benefit”; and (3) the benefit was provided to exporters or producers of Canadian Softwood Lumber Products, as that term is defined in the Agreement.¹³ Neither the United States nor Dr. Neuberger makes any effort to link the first element with the second. Rather, Dr. Neuberger simply assumes that all logs over his arbitrary baseline were improperly graded as Grade 4. The United States has therefore failed to provide the Tribunal with a necessary element of its claim – a quantification of the actual benefit provided to producers of softwood lumber as the result of each action alleged to have caused misgrading.

13. The United States is also operating in a parallel universe when it comes to remedy. Both the United States and Dr. Neuberger continue to argue that compensatory adjustments must equate on a dollar-for-dollar basis with the value of the benefits that Dr. Neuberger has assumed. Professor Kalt explains that accepting Dr. Neuberger’s proposed approach to remedy would result in increasing export charges by the full dollar value of the alleged benefit provided, significantly overcompensating U.S. producers and

¹³ Stmt. of Defence ¶¶ 112-120; *see* ¶ 23 below.

penalizing Canadian producers, contrary to the SLA and international law.¹⁴ As the Tribunal in LCIA Arbitration No. 81010 (the “81010 Arbitration”) recognized, this argument suffers from three fundamental flaws: (1) it ignores the nature and objective of the SLA and the purpose of the Export Measures; (2) it reads the second sentence of Article XVII(2) in isolation, rather than in the context of the entire Article; and (3) it fails to take into account the provisions of Article XIV, which instruct the Tribunal how to determine what the remedy should be in the event that it finds circumvention.¹⁵ Articles XVII and XIV make clear that any compensatory adjustments awarded must address the offset of the Export Measures caused by any benefit provided in breach of Article XVII, and not the benefit itself.

14. In the 81010 Arbitration, which like the present dispute involved claims of circumvention, the Tribunal held that “the most appropriate measure for the amounts to be collected as Compensatory Adjustments is *not* the overall amount of the benefits but only *the amounts necessary to neutralize the reduction or offsets to the Export Measures caused by the programs and measures in breach of the SLA.*”¹⁶ In its Reply, the United States reluctantly concedes that in reaching this holding, the Tribunal rejected the United States’ position that the anti-

¹⁴ Kalt Rebuttal Report ¶¶ 114-115 (Ex. R-51).

¹⁵ See, e.g., Article XIV(23): “The compensatory adjustments that the tribunal determines under paragraph 22(b) shall consist of: (a) in the case of a breach by Canada, an increase in the Export Charge and/or a reduction in the export volumes” (Ex. R-1).

¹⁶ 81010 Award ¶ 348 (CA-6) (emphasis added).

circumvention and remedy provisions of the SLA must be interpreted so that the remedy in an anti-circumvention case recaptures the full amount of the benefits provided.¹⁷

15. The United States nonetheless proceeds as if it were writing on a blank slate, spending a dozen pages reiterating the same legal interpretations in support of its position that were thoroughly considered and rejected – unanimously – in the 81010 Arbitration. Unwilling to attack the Tribunal’s legal reasoning directly, the United States tries to convince this Tribunal that its predecessor did not really adopt the legal interpretations it did, and that its decision was somehow predicated on the “unique” facts that were before it.¹⁸ There is, in fact, no meaningful conceptual difference between the nature of the benefit alleged in that arbitration from what is alleged in this one.

16. The SLA is a trade agreement that provides protection to the United States by restraining exports through Export Measures. If such an agreement is circumvented, the remedy is to make up for any offset to those Exports Measures – or any adverse effect on the U.S. market or U.S. producers – that the challenged actions caused. This commonsense conclusion – dictated by the plain language of the SLA and its object and purpose – was the foundation of the Tribunal’s decision in the 81010 Arbitration. It was the correct conclusion then, and it remains the correct conclusion now.

¹⁷ U.S. Reply ¶ 270.

¹⁸ U.S. Reply ¶ 273.

17. This Rejoinder begins by explaining how the United States has failed to satisfy its burden of proof to establish the elements necessary for a case of circumvention. Canada also responds to the United States' attempt to turn its inferential case into an actions case by claiming that the "action" of which it is complaining is not any of the actions referred to in its Statement of Case, but rather the "selling of timber" for a price much lower than dictated by the system grandfathered by the SLA."¹⁹

18. Part II addresses the mischaracterizations of British Columbia's grandfathered timber pricing system that underlie both the United States' inferential and actions cases. It then demonstrates that British Columbia has employed the Scaling Regime that is part of the grandfathered timber pricing system since April 2006, and that the U.S. interpretation of the 50/50 test hinges on a distorted and implausible characterization of the grandfathered Scaling Regime.

19. Part II also responds to the U.S. arguments concerning the "actions" and "inferential" cases. The United States has introduced little that is new with respect to its actions case, beyond an attempt to mischaracterize local knowledge and bucking as "new" policies so as to remove them from the protection afforded by the grandfathering provision in Article XVII(2)(a).

¹⁹ U.S. Reply ¶ 6.

20. Finally, in Part III, we respond to the U.S. arguments on remedy, and discuss the appropriate approach to remedy under the SLA.

ARGUMENT

I. THE UNITED STATES CONTINUES TO FAIL TO ESTABLISH A CLAIM FOR CIRCUMVENTION UNDER THE SLA

A. The United States' Attempt to Reverse the Burden of Proof Fails

21. The United States' Reply begins with the erroneous premise that if there is an increase in the quantity of timber graded as Grade 4, then that increase must be presumed to have been due to misgrading unless Canada proves that the timber was graded correctly.

The United States concedes that there is a *close correlation* between two observed phenomena: the percentage of Grade 4 timber in the harvest and the share of MPB timber in the harvest.²⁰ But the United States continues to assert that the Tribunal should assume misgrading unless Canada can affirmatively establish correct grading. A review of the Table of Contents to the United States' Reply vividly illustrates the United States' attempt to shift the burden of proof to Canada:

- Reply Part I.B. (“Canada’s New Claim That BC Could Not Predict The Volume Of Longer-Dead MPB Timber *Failed To Show Correct Grading*”) (emphasis added).

²⁰ U.S. Reply ¶ 40.

- Reply Part I.C. (“Canada’s *Post-Hoc* Discrediting Of The Mill Studies *Failed To Disprove Misgrading*”) (emphasis added).
- Reply Part III (“*Canada Failed To Prove Its Lone Explanation* For The 2007 Surge In Grade 4”) (emphasis added).
- Reply Part IV (“*Canada Failed To Refute* The U.S. Demonstration That BC Took Other Actions To Facilitate Downgrading Of MPB Timber”)²¹ (emphasis added).

22. The United States’ argument flies in the face of customary international law.

It is beyond dispute that a claimant carries the burden of proving a violation of international law.²² As the International Court of Justice has explained, “it is the litigant seeking to establish a fact who bears the burden of proving it; and in cases where evidence may not be forthcoming, a submission may in the judgment be rejected as unproved....”²³ This principle derives from the Roman law rule expressed through maxims such as *ei qui affirmat*

²¹ Dr. Neuberger’s Rebuttal Expert Witness Report takes the same line:

{E}ven if there were a positive relationship between MPB attack and the increase in Grade 4, *that relationship does not prove that MPB attack directly caused the increase or that the observed increase was wholly explained or justified by the attack.*

Neuberger Rebuttal Report ¶ 91 (C-103) (emphasis added).

²² *The Corfu Channel Case* (Merits)(U.K. v. Albania), Judgment, 1949 I.C.J. Reports 4, 18 (Apr. 9) (“It is clear that knowledge of the minelaying cannot be imputed to the Albanian Government by reason merely of the fact that a minefield discovered in Albanian territorial waters caused the explosions of which the British warships were the victims.... This fact, by itself and apart from other circumstances, neither involves *prima facie* responsibility nor shifts the burden of proof.”) (CA-11).

²³ *Military and Paramilitary Activities in and against Nicaragua* (Jurisdiction and Admissibility) (Nicar. v. U.S.), Judgment, 1984 I.C.J. 392, 437, ¶ 101 (Nov. 26) (RA-5).

non ei qui negat incumbit probatio.²⁴ Nothing in the SLA or customary international law permits the United States to presume deliberate misgrading and impose upon Canada the burden of proving the contrary.²⁵

B. The United States Has Failed to Satisfy Its Burden of Proof

23. Canada demonstrated, in its Statement of Defence, that the United States failed to satisfy its burden of proving the elements of a violation of Article XVII of the SLA.²⁶ To establish circumvention under Article XVII, the United States must show that: (1) Canada has taken an action; (2) the action has provided a grant or other “benefit”; and (3) the benefit was provided to exporters or producers of Canadian Softwood Lumber Products, as that term is defined in the Agreement.²⁷ As the Tribunal in the 81010 Arbitration explained:

In order to avail itself of the presumption provided in the first sentence of Article XVII(2), the Claimant must establish that grants or other benefits have been provided and that these grants and benefits meet the criteria set forth in this same sentence (i.e., they are provided by a Party, including any public

²⁴ Stmt. of Defence ¶ 111, n.156.

²⁵ See 81010 Award ¶ 121 (CA-6). See Claim of W. Allan Odell, Reports of International Arbitral Awards, British-Mexican Claims Commission, Volume V, pp 133-306, at 154, ¶ 4 (24 March 1931-6 Aug. 1932) (RA-3); *The Corfu Channel Case*, 1949 I.C.J. Reports at 18 (CA-11).

²⁶ Stmt. of Defence ¶¶ 111-125. See generally, 81010 Award ¶¶ 112-122 (CA-6).

²⁷ Stmt. of Defence ¶ 112.

authority of a Party, on either a *de jure* or *de facto* basis, to producers or exporters of Canadian Softwood Lumber Products).²⁸

24. With regard to the second element, the SLA requires the Claimant to show that a benefit was actually provided. It is not enough for the Claimant to show that a benefit was “potentially” provided. As the Tribunal in the 81010 Arbitration went on to state:

{T}he Claimant bears the burden of proving the elements triggering the presumption contemplated in the first sentence of Article XVII(2) of the SLA. To meet this burden, the Claimant must show not only that a benefit was *potentially* provided but that it was *indeed* provided.²⁹

25. Canada has shown, in its Statement of Defence, that the U.S. assertion that the benefit alleged by the United States – the “increased likelihood of logs being misgraded as Grade 4”³⁰ – fails as a matter of law under the SLA.³¹ Additionally, the United States has also failed to show that these benefits were provided to producers or exporters of Canadian Softwood Lumber Products. Thus, Canada’s argument that this element has not been satisfied in this case goes un rebutted.

²⁸ 81010 Award ¶ 121 (CA-6).

²⁹ 81010 Award ¶ 242 (CA-6) (emphasis in original).

³⁰ Stmt. of Case ¶ 96.

³¹ Stmt. of Defence ¶¶ 114-118.

26. Canada also showed in its Statement of Defence that the United States had not identified a single “action” in its inferential case that allegedly caused a benefit to be provided to lumber producers (as it is required to do under Article XVII). This is most evident in the U.S. concession that the “reformed system {the April 2006 grading changes} functioned as anticipated for nearly one year.”³² Only after British Columbia’s alleged “abandonment” of the grandfathered system, including the 50/50 test, did the percentage of Grade 4 timber increase dramatically in May 2007, according to the United States. Abandoning a system requires an action. It follows, therefore, that the only “actions” of any consequence to this case are those that the United States identified in its “actions” case as taken on or after early 2007: encouragement of the use of local knowledge, bucking, kiln re-drying and the Scaling Requirements.

27. The United States switched gears in its Reply. The breaching “action” now is not alleged to be any of the so called actions that the United States identified in its “actions” case. Rather, the United States, in its Reply, refers to these as “*other*” actions that were “*the steps*” by which Canada accomplished the sole breaching action – the selling of timber “for a price much lower than dictated by the system grandfathered by the SLA.”³³ In phrasing the

³² U.S. Reply ¶ 73.

³³ U.S. Reply ¶¶ 6, 128-130.

“action” in this way, the United States obviously hopes to bring its inferential case under the ambit of Article XVII.

28. This attempted re-engineering of the U.S. claim reflects a fundamental misunderstanding of what both Parties agreed to grandfather when they concluded the Agreement. Under British Columbia’s grandfathered grading system, a Grade 4 log is priced at C \$0.25. British Columbia did not change the definition of a Grade 4 log and did not change the price at which such logs are sold after July 1, 2006. Selling timber classified as Grade 4 at C \$0.25, therefore, cannot be circumvention.

29. On the other hand, grading and selling Grade 2 timber at the Grade 4 price of C \$0.25, could potentially be circumvention if it resulted from an action taken after the SLA entered into force that departed from the grandfathered regime and was not safe harboured. However, the selling of Grade 2 timber at below market value, as the United States describes it, is the result of misgrading, not selling. Because the government itself does not “grade” logs (that is carried out by industry scalers under government supervision), the breaching “government action” – if there was one – could only be a measure or action taken by British Columbia that caused industry scalers to misgrade timber.

30. Since the United States has identified no government action that caused misgrading, its inferential case still rests on the assertion that, because neither it nor Dr. Neuberger can explain the rise in the percentage of Grade 4 logs in the harvest, that rise must have been caused by misgrading. Its attempt to link British Columbia’s supposed lack

of enforcement of the grading regime with the selling of timber at less than its value in order to construct an action falls flat, as is explained in Section II.B.5 below. Accordingly, the United States is still asking the Tribunal to draw an inference that “the rise in Grade 4 timber starting in 2007 has been due to misgrading.”³⁴

31. The United States attempts to justify its reliance on Dr. Neuberger’s speculation about the cause of the rise in the percentage of Grade 4 logs by arguing that it is entitled to present circumstantial evidence to support its case. Canada has never challenged the proper use of circumstantial evidence before international tribunals in the circumstances described by the United States’ legal authorities.³⁵ But the testimony on which the United States relies is not circumstantial evidence. It is, rather, speculation by an economist about what might have caused a change that he is unable to explain by statistical analysis.³⁶ Professor Kalt demonstrated in his expert report and again in his rebuttal report that Dr. Neuberger’s analysis is wrong. The rise in the volume of Grade 4 timber can be much

³⁴ U.S. Reply ¶ 24.

³⁵ See, e.g., *The Corfu Channel Case*, 1949 I.C.J. Reports at 18 (Apr. 9) (CA-11). The United States attempts to justify the speculative inferences it draws from circumstantial evidence by unwarranted insinuations that Canada has withheld relevant direct evidence. See U.S. Reply ¶ 28. Nothing could be further from the truth. The United States has had the benefit of significant document disclosure (Canada produced over 6,000 documents to the United States in disclosure). [

] (Ex. R-179).

³⁶ Dr. Neuberger, as an economist, does not pretend to be qualified to offer an opinion on forest management, or on the qualities and behavior of drying timber, or on the entomology Mountain Pine Beetle.

more convincingly explained statistically by the MPB attack than as the result of deliberate and intentional misgrading.³⁷

32. The United States originally argued to this Tribunal that “the increase in Grade 4 has *no relationship* to increases in mountain pine beetle damage.”³⁸ In its Reply, the United States back-peddles and recasts its position: “In its Statement of Case, the United States established that Canada’s own data show that the increase in Grade 4 was only *minimally* attributable to the MPB.”³⁹ Having thus conceded that Canada’s explanation of an aging supply of MPB-killed timber accounts for some portion of the rise in Grade 4 timber,⁴⁰ the United States can only salvage its case by reversing the burden of proof and arguing that Canada should have to disprove misgrading.

33. The Tribunal should reject this attempt to shift the burden. An international tribunal may not infer from circumstantial evidence – let alone from speculation – that a sovereign state has breached its international obligations unless the circumstantial evidence

³⁷ Kalt Report ¶¶ 17-18 (Ex. R-9).

³⁸ Stmt. of Case ¶ 78 (emphasis added); *see also id.* ¶¶ 4, 28, 51, 57.

³⁹ U.S. Reply ¶ 25 (emphasis added); *see also id.* ¶¶ 6, 33.

⁴⁰ U.S. Reply ¶¶ 6, 11, 44, 50.

leaves “no room for reasonable doubt,” that the state has breached its international obligations.⁴¹

34. The United States’ case would fail under even the most relaxed standard of proof. The United States repeats the assertion that lumber outputs from Grade 4 timber were too high, which it claims to show that British Columbia was not applying the 50/50 test.⁴² But, the United States never defines how high a lumber recovery is too high. Even though the United States says that the 50/50 rule is at the “heart” of its case,⁴³ the United States never establishes a base line of what maximum lumber recovery factor would, in its view, be consistent with the proper application of the 50/50 rule, or that the mills of British Columbia achieved lumber recovery factors in excess of that figure.⁴⁴

35. The speculative nature of the United States’ case is further shown by its extensive reliance on minutes of advisory committee meetings, news articles, and statements

⁴¹ See *The Corfu Channel Case* 1949 I.C.J. Reports at 18 (Apr. 9) (“The proof may be drawn from inferences of fact provided that they leave *no room* for reasonable doubt”) (CA-11) (emphasis in original). See also Stmt. of Defence ¶ 120.

⁴² U.S. Reply ¶¶ 94, 99.

⁴³ Stmt. of Case ¶ 40.

⁴⁴ This failure is hardly surprising, because lumber recovery factors cannot be correlated with log grading rules (see ¶¶ 63-80 below) and in any event B.C. mills never recovered 50 percent of the total volume of timber processed as lumber (see ¶ 85 below).

by non-government entities, as evidence of B.C. policy or government intent.⁴⁵ The United States apparently believes that, if someone said something about log grading in British Columbia, the Tribunal should assume that it was a statement of government policy.

36. In effect, the United States is telling the Tribunal that it has identified a collection of circumstances that seem to it to mean something. It then asks the Tribunal to “connect the dots.” The perils of such a course, and the caution with which a tribunal should approach an invitation to undertake it, were stated by the tribunal in *Methanex v. United States of America* in words that apply equally here:

Connecting the dots is hardly a unique methodology; but when it is applied, it is critical, first, that *all* the relevant dots be assembled; and, second, that each be examined, in its own context, for its own significance, before a possible pattern is essayed. Plainly, a self-serving selection of events and a self-serving interpretation of each of those selected, may produce an account approximating verisimilitude, but it will not reflect what actually happened. Accordingly, the Tribunal will consider the various “dots” which Methanex has adduced – one-by-one and then together with certain key events (essentially additional, noteworthy dots) which Methanex does not adduce – in order to reach a conclusion about the factual assertions which Methanex has made. Some of Methanex’s proposed dots emerge as significant; others, as will be seen, do not qualify as such. In the end, the Tribunal finds it impossible plausibly to

⁴⁵ See, e.g., U.S. Reply ¶ 151 (citing C-80 []; U.S. Reply ¶ 172 (citing C-152 []; U.S. Reply ¶ 69 (citing C-111 (FPInnovation Annual Report 2007-2008))).

connect these dots in such a way as to support the claims set forth by Methanex.⁴⁶

37. The United States has had access to extensive evidence from the public domain and through extensive document disclosure. The fact that the evidence is inconsistent with its claims does not justify relying on inferences and conjecture to torture dots into the configuration the United States would like to see. Indeed, in this case, the only reasonable inference that should be drawn from the absence of direct evidence of circumvention is that the dots form an entirely different pattern – one that shows that no circumvention occurred.

II. CANADA HAS NOT CIRCUMVENTED THE AGREEMENT

A. The United States Mischaracterizes and Misinterprets British Columbia's Grandfathered Timber Pricing System and the 50/50 Test

38. The U.S. Reply relies on a single premise to support the assertion that the rise in the volume of Grade 4 timber must have been due to misgrading and therefore constitutes circumvention of the Agreement. The United States argues that the 50/50 test is a system of log grades that predicts actual product outturns, so that the accuracy of a log's grade cannot be confirmed until that log is processed.⁴⁷ Canada has explained that the

⁴⁶ *Methanex v. United States*, Final Award pt. IIIB, para. 1 (NAFTA Ch. 11 Arb. Trib. Aug. 3, 2005) (RA-6) (emphasis in original).

⁴⁷ See, e.g., U.S. Reply ¶¶ 67, 83.

50/50 test is a benchmark for assessing the physical characteristics of logs, not a mechanism to connect log grades to eventual lumber production.⁴⁸ The United States continues to assert that Canada walked away from the grading changes it had instituted in April 2006, but now characterizes the failure of scalers to apply the United States' version of the 50/50 test as the departure from the grandfathered regime by which Canada circumvented the Agreement.⁴⁹

39. The SLA grandfathered British Columbia's log scaling system, of which the 50/50 test, as it existed on July 1, 2006, is a part. This means that application of the 50/50 test, as it existed on that date, does not constitute circumvention under the SLA. The 50/50 test was not changed by the April 2006 grading changes, or by the negotiation of the SLA, or during the period since the SLA has been in force. The following section will review for the Tribunal the log grading regime that was grandfathered as part of the timber pricing system under the SLA in 2006 and the meaning and operation of the 50/50 test that is part of that system.

1. British Columbia's Scaling and Log Grading System Is Grandfathered in Its Entirety

40. In its Reply, the United States relies on an informational presentation at an advisory committee meeting to assert that there is a "hierarchy" of authorities comprising

⁴⁸ See, e.g., Stmt. of Defence ¶¶ 54-57, 249-250.

⁴⁹ See, e.g., U.S. Reply ¶ 237.

the B.C. scaling regime and in which “the 50/50 rule is the controlling rule against which timber must be graded.”⁵⁰ The United States then declares that British Columbia has used the Scaling Manual to “undermine” the 50/50 rule set forth in the Scaling Regulation.⁵¹ The U.S. argument misconstrues both the SLA’s Article XVII(2)(a) grandfathering provision and the system that the Parties agreed to grandfather in 2006.

41. Article XVII(2)(a) grandfathers in relevant part, “provincial timber pricing ... *systems* as they existed on July 1, 2006”⁵² This provision ensures that the continuing operation of the B.C. scaling regime as it existed on July 1, 2006 cannot constitute circumvention. By its plain terms, this provision protects the system in its entirety, including all components of that system as well as the manner in which the components relate to one another. Achieving grandfathering protection for British Columbia’s timber pricing and forest management systems in the SLA negotiation was critical for Canada. Doing so enabled the Government of British Columbia to continue to manage its systems in the face of the MPB infestation.⁵³ By agreeing to grandfather British Columbia’s timber pricing system, including its scaling *system*, the United States agreed that the continuing operation of this system would be immune from challenge.

⁵⁰ *Id.* ¶¶ 86-88; C-18 [] at CAN-007155-64.

⁵¹ U.S. Reply ¶¶ 84-88.

⁵² SLA 2006 Art. XVII(2)(a) (Ex. R-1) (emphasis added).

⁵³ Hayden Stmt. ¶ 35 (Ex. R-6).

42. Contrary to the United States' view, the Scaling Regulation and Scaling Manual are not in tension with one another. Instead, the latter instrument gives content to the former. As James Crover, the Ministry's former Scaling Policy Forester has explained, "{t}he *Scaling Manual* translates the *Forest Act* and the *Scaling Regulation* into detailed and practical procedures that scalers follow in the field."⁵⁴

43. It would be impractical, if not impossible, for B.C. scalers to simply "apply the 50/50 test" without further guidance. The basic construct of the two-part 50/50 test is to determine, first, whether 50 percent of a log's volume is available to manufacture lumber and, second, whether 50 percent of that lumber would be merchantable. In order to make these determinations, a scaler needs to make measurements, calculations and assumptions. What types of defects make a log's volume unavailable to manufacture lumber?⁵⁵ How do you measure those defects or calculate their effect?⁵⁶ What does "lumber" mean for

⁵⁴ Crover Stmt. ¶ 19 (Ex. R-3).

⁵⁵ Scaling Manual (June 30, 2006), §§ 6.3.1, 6.3.2 at 6-7 to 6-9 (Such defects include fractures and fibre separation (i.e., checks and shake), catface, bark seams, sweep, crook, pistol grip, rot, hole, char, and missing wood) (Ex. R-19).

⁵⁶ Scaling Manual (June 30, 2006), §§ 6.4.1, 6.4.2 at 6-14 to 6-52 (providing pages of detailed calculations and examples for determining grade reduction volume for specific defects so that the scaler may deduct the grade reduction volume from the gross log volume and express the remaining volume as a percentage of the gross volume, which represents the percentage of the log that is available for the manufacture of lumber) (Ex. R-19).

purposes of the measurements and calculations?⁵⁷ What characteristics of a log should be considered to affect the merchantability of lumber that can be cut from it?⁵⁸ Different answers to these questions could lead to different grading outcomes. That is why the Scaling Manual, which answers each of these questions, is a necessary part of the grandfathered system. Without the Scaling Manual and its answers to these and other questions, there would be no scaling system. The 50/50 test is not itself a complete system. It is a quality specification that has meaningful content only through its implementation by the Scaling Manual. This relationship between the Scaling Regulation and the Scaling Manual has been the same since at least 1988.⁵⁹

44. The Scaling Manual and B.C. scaler reliance on its guidance – including how the Scaling Manual instructs scalers to apply the 50/50 test – are core components of the provincial scaling system that existed on July 1, 2006, and so are grandfathered under Article XVII(2)(a).

⁵⁷ Scaling Manual (June 30, 2006), at G-8 (Glossary of Terms) (“Lumber” is defined as “2.5 m long, free of rot and fractures.”) (Ex. R-19).

⁵⁸ Scaling Manual (June 30, 2006), § 6.4.3 at 6-53; Glossary of Terms at G-8 (merchantability is “assessed on the basis of knots and twist”) (Ex. R-19).

⁵⁹ Crover Stmt. ¶ 51 (Ex. R-3); Scaling Regulation, B.C. Reg. 250/88, Schedule 2, § 1(1) (Ex. R-23).

2. The April 2006 Changes

45. While the text of the SLA and the codification of the scaling system that it grandfathered are what control, a review of the facts surrounding the adoption of the April 2006 log grades may help clarify why the system operates as it does.

46. The major reform embodied by the April 2006 log grades was not the 50/50 test. That test had been in place since long before April 2006,⁶⁰ as had most of the Scaling Manual provisions and principles that implement it, including the definition of lumber for purposes of grading as fracture free, the standard for assessing merchantability, and the focus on logs rather than actual product outcomes.⁶¹

47. The major reform embodied in the April 2006 log grade changes was the elimination of log grades based on “vitality” – whether the tree was dead or alive at the time of harvest.⁶² Before the April 2006 log grade changes, logs that passed both parts of the 50/50 test, but came from trees that were dead, were classified as Grade 3 and subject to

⁶⁰ See Crover Stmt. ¶ 51 (Ex. R-3); Scaling Regulation, B.C. Reg. 250/88, Schedule 2, § 1(1) (Ex. R-23).

⁶¹ Compare Scaling Manual (Nov. 1, 1996), § 6.6.5 at 6-126 (defining “lumber”) (Ex. R-185) with Scaling Manual (June 30, 2006) at G-8 (defining “lumber”) (Ex. R-19); compare Scaling Manual (Nov. 1, 1996), § 6.4.3 at 6-56 (defining standard for merchantability) (Ex. R-185) with Scaling Manual (June 30, 2006), § 6.4.3 at 6-53 (defining standard for merchantability) (Ex. R-19); Scaling Manual (Nov. 1, 1996), § 6.4.2 at 6-14 (describing log characteristics relevant to volume assessment) (Ex. R-185) with Scaling Manual (June 30, 2006), § 6.4.2 at 6-16 (describing log characteristics relevant to volume assessment) (Ex. R-19).

⁶² See Background: Changes to Interior Log Grades (Dec. 2, 2005) at CAN-030070 (Ex. R-29).

C \$0.25 stumpage.⁶³ The April 2006 log grades changed this by disregarding the vitality of the tree and assigning grade based exclusively on the characteristics of each log.⁶⁴

48. The United States suggests that it bargained for a 50/50 test that tied log grade to actual product outputs.⁶⁵ The pre-SLA course of dealing between the Parties contradicts the United States' position. Over the course of the last domestic lumber case (Lumber IV), the United States frequently requested from the B.C. Government data reflecting B.C. lumber outputs by log grade, and Canada responded to each request by explaining that British Columbia collects no such data.⁶⁶ For instance, British Columbia explained to the United States that "{t}he Ministry does not track the species and grades of logs entering

⁶³ See Scaling Manual (Nov. 1, 1996), § 6.6.9 Dead and Dry Sawlog - Grade Code 3 at 6-129 to 6-130 (Ex. R-185).

⁶⁴ Stmt. of Defence ¶¶ 131, 136-137.

⁶⁵ U.S. Reply ¶ 80 ("Although Canada denies that the 50/50 rule is intended to assess stumpage based on the amount of merchantable lumber that a log will produce, the 50/50 rule in fact was a crucial benchmark under the bargain that the United States struck with Canada in the SLA.").

⁶⁶ Supplemental Witness Statement of James D. Crover (hereinafter "Crover Supp. Stmt.") ¶ 49 (Ex. R-148). See, e.g., Initial Questionnaire for the Second Countervailing Duty Administrative Review: Certain Softwood Lumber Products from Canada, Case No. C-122-839 (Sept. 8, 2004) and Response of the Government of British Columbia to the Department's Sept. 8, 2004 Questionnaire (Nov. 22, 2004) at BC-1-5, BC-I-7 to BC-I-10, BC-III-17, BC-III-19, BC-III-22 to BC-III-26 (Ex. R-154); Certain Softwood Products from Canada: 2nd Administrative Review Supplemental Questionnaire, Case No. C-122-839 (Mar. 16, 2005) and Response of the Government of British Columbia to the Department's Mar. 16, 2005 Supplemental Questionnaire (Apr. 13, 2005) at 54-55 (Ex. R-155).

sawmills,”⁶⁷ and that, “{t}he Ministry’s system of grading logs is for administrative purposes and may not indicate the actual end use of any log. End use is determined by the characteristics of the log (for example, species, dimension, defects), by market conditions, and by each company’s business decisions.”⁶⁸

49. No fundamental change to the nature of log grading in the B.C. Interior occurred in April 2006 that would have led the United States to believe that British Columbia would begin to calibrate log grading to product outputs. Nor did the United States bargain for such a change when it negotiated the SLA. The United States has pointed to nothing in the text of the SLA or the negotiating history that suggests the Parties bargained for the *type of output-based log grading* system that the United States would now like to read into the 50/50 test.

3. What the 50/50 Test Means and How It Is Applied

50. The United States argues that Canada has told the Tribunal what the 50/50 test does not do, but has failed to explain what the 50/50 test does.⁶⁹ This is incorrect,⁷⁰ but

⁶⁷ Initial Questionnaire to the Canadian Parties, Third Countervailing Duty Administrative Review: Certain Softwood Lumber Products from Canada, Case No. C-122-839 (July 11, 2005) and Response of the Government of British Columbia to the Department’s July 11, 2005 Questionnaire (Oct. 3, 2005) at BC-I-5 (Ex. R-156).

⁶⁸ *Id.* at BC-III-23. *See also id.* at BC-I-9, BC-III-18, BC-III-25.

⁶⁹ *See, e.g.*, U.S. Reply ¶ 80.

⁷⁰ *See, e.g.*, Stmt. of Defence ¶¶ 52-61, 143-148.

the potential confusion that results warrants further explanation of how British Columbia's timber is classified and what the 50/50 test is, as well as what it is not and cannot be.

51. For lodgepole pine, the 50/50 test is used to distinguish Grade 2 logs from Grade 4 logs based on objective indicators of log quality.⁷¹

52. Under the 50/50 test, log quality is *expressed* in terms of the percentage of log volume that is available to manufacture lumber and the percentage of potentially recoverable lumber that could meet the standard for merchantability.⁷² A log's quality is *assessed* under the 50/50 test based on a defined set of observable physical characteristics that are indicative of availability of log volume to manufacture lumber and potential lumber quality and that are evaluated according to reasonable, transparent assumptions capable of consistent application by log scalers.⁷³ Under the 50/50 test, the grade of a log is assigned – and is either accurate

⁷¹ The Regulation defines Grade 4 as a “log or slab higher in grade than firmwood reject {*i.e.*, Grade Z} and lower in grade than sawlog {*i.e.*, Grade 2}.” Scaling Regulation, B.C. Reg. 446/94, Schedule of Interior Timber Grades, § 5 (Ex. R-160). The 50/50 test is not applicable to all species. Hemlock and cedar, for example, are graded based on a 75/50 test. *See id.* § 4(a). Given this fact, the United States’ suggestion, in its Reply, that its claims relate to Grade 4 in all species cannot be reconciled with its focus on the 50/50 Test.

⁷² *See id.* § 4(d)-(e); Scaling Manual (June 30, 2006), § 6.3 at 6-5 (Ex. R-19).

⁷³ *See* Scaling Manual (June 30, 2006), § 6.3 at 6-5 (Ex. R-19).

or inaccurate – at the time of scaling, before the log is processed. Subsequent choices by a mill operator about how to process that log cannot change its *grade*.⁷⁴

53. The United States mistakenly attributes to Canada the “notion that grade has nothing to do with quality,”⁷⁵ and goes so far as to suggest that, to Canada, “the 50/50 rule means nothing at all and bears no relationship to lumber suitability.”⁷⁶ This, in fact, states the opposite of Canada’s position. Log grades have everything to do with *log* quality. In applying the 50/50 test, scalers classify logs based on their quality, expressed in terms that relate to the log’s *potential* for lumber production. That potential is assessed by scalers, often working in difficult conditions, according to the Scaling Manual’s rules, procedures, and assumptions. If a log has been classified as Grade 2, a log buyer or market observer will understand that, according to the standards set forth in the Manual, more than 50 percent of the log’s volume is *available* to manufacture lumber and that more than 50 percent of the potentially recoverable lumber volume is likely to be of “merchantable” quality. Most important, he will understand what that grade says about the quality of the log.

⁷⁴ *Id.*; see also Scaling Regulation, B.C. Reg. 446/94, § 2 - Scaling Procedures (describing timing of scale) (Ex. R-160); Forest Act, R.S.B.C. 1996, c. 157, Part 6, § 94 (describing timing of check scale) (Ex. R-20).

⁷⁵ U.S. Reply ¶ 74.

⁷⁶ *Id.* ¶ 72.

54. The United States has the system backwards when it insists that log grades have meaning only if they “reflect recovery and predict output.”⁷⁷ A log grading result that accurately reflects lumber output at one mill would almost certainly be inaccurate at another mill. To take an extreme example, if a scaler grades a log that he believes will be processed at a pulp mill, the only log grade that would reflect actual recovery and predict actual output would be Grade 4, because a pulp mill will not produce any lumber from that log. But if the same log was scaled with a highly efficient sawmill in mind, the product output results would be very different. Under the predictive scaling system that the United States posits, log grade provides little information about log quality unless one also knows the mill for which a log is destined and how that mill processes logs, with what technologies, and for what product mix. Under such a system, log grades would not help mill operators to predict their own mills’ likely recoveries and would give the Ministry and market observer little indication of the quality profile of the timber harvest as whole, or how that changes year-to-year. The grandfathered log grading system avoids these problems by classifying logs based on a defined, static set of publicly available, objective physical characteristics.

55. The Scaling Manual spells out the relevant physical characteristics and how they are to be measured and accounted for in applying the 50/50 test. A log buyer familiar with his own mill and desired end products may use this information to estimate the

⁷⁷ U.S. Reply ¶ 96.

products his mill will recover, but B.C. scalers (like their counterparts in the United States)⁷⁸ grade logs based on assessments of their potential for lumber recovery according to defined criteria, not based on predictions of actual product outcomes. As the Scaling Manual provides:

It is the job of the scaler to assess the visible characteristics of each log and, with strict reference to the schedule of grades, determine what can be recovered from the log given its size and other characteristics. It is up to the manufacturer to get the best and most product out of the available volume.⁷⁹

56. The United States suggests that some of the rules, procedures, and assumptions used in applying the 50/50 test are in tension with references in the Scaling Manual to scalers estimating recovery.⁸⁰ To the contrary, scalers estimate what *can* be recovered by assessing what is *available* to produce lumber according to the detailed guidance in the Scaling Manual. For example, log volume containing fractures (*i.e.*, checks) is considered unavailable to manufacture lumber, as is the volume between defects if the distance is less than 10 centimeters, and as is the volume two centimeters on each side of a

⁷⁸ See National Forest Log Scaling Handbook, 10-2-10-3 (Ex. R-128), Northwest Log Rules Advisory Group, Supplement to Official Log Scaling and Grading Rules (A Manual for Training Log Scalers) (1994) at 20 (“The matter of over-run or under-run in mill-tally recovery is not to be made a concern of the Log Scaler. The log scaler’s only concern is to apply the scaling and grading rules as diligently as possible, in line with the instructions of Bureau management.”) (Ex. R-164); Idaho Board of Scaling Practices, Idaho Log Scaling Manual (2008) at 7-8 (Ex. R-220).

⁷⁹ Scaling Manual (May 1, 2007), § 8.3 Principles of Timber Grading at 8-4 (C-50).

⁸⁰ U.S. Reply ¶ 95.

defect.⁸¹ While some mills may choose to try to make boards out of fractured wood, wood between defects, or wood close to defects, such a choice conveys no useful information about the logs themselves. A mill's (or anyone else's) ability to discern information about log quality from log grade should not be determined by the processing decisions other mills make. The application of consistent rules allows log purchasers, mills and Ministry policy makers to draw conclusions and make decisions based on the quality of the resource.⁸² It also allows relative stumpage rates to vary with the quality of timber rather than with the efficiency or product choices of the mills processing that timber.

57. The United States chastises Canada for using the definition of lumber in the Scaling Manual – a board “2.5 meters long and free of rot and fractures,”⁸³ – to argue that lumber must be fracture free. This criticism is misplaced. As an initial matter, Canada has not invoked this definition to argue “that lumber must be ‘fracture free.’”⁸⁴ Sawmills are free to manufacture whatever products they choose from their logs. [

]⁸⁵ There is no

⁸¹ Scaling Manual (June 30, 2006), § 6.3.1.1 at 6-7 (fractures considered unavailable to manufacture lumber); § 6.4.2.3 at 6-21 (less than 10 cm between defects makes it unsuitable for manufacture), § 6.4.2.5 at 6-23 to 6-42 (determining trim allowance) (Ex. R-19).

⁸² See [] (Ex. R-147).

⁸³ U.S. Reply ¶ 97.

⁸⁴ U.S. Reply ¶ 97.

⁸⁵ [] (Ex. R-5).

question, however, that fractures (*i.e.*, checks) affect *log* quality in ways that can limit the volume and value of the lumber that can be recovered from the log.⁸⁶ The fact that some mills may be capable of producing fractured boards from fractured logs, and that they choose to do so, does not, under B.C.'s grandfathered system, determine the grade of such logs.

58. The Scaling Manual's definition of lumber as fracture free has been the same since at least 1996.⁸⁷ It informs the rules and examples provided throughout the grading chapter and the Scaling Manual as a whole.⁸⁸ The fact that the Scaling Manual contains multiple sections on measuring and deducting the log volume affected by checks, but nothing about predicting the ability of a mill to produce fractured lumber, confirms that the Scaling Manual's definition of lumber is an integrated part of the grandfathered system, not a meaningless provision buried in the Manual's glossary.

59. With respect to the second prong of the 50/50 test, which relates to "merchantability" of the lumber that could potentially be produced from a log, the Scaling

⁸⁶ Fettig Report ¶¶ 7, 16, 23 (C-104); Lowell Report ¶¶ 7, 35, 36, n.1, 46, 49 (C-105); Beck Report ¶ 34 (C-107); Wong & Taylor Report [] (Ex. R-12).

⁸⁷ Scaling Manual (Nov. 1, 1996), § 6.6.5 Definition of Terms in the Schedule of Interior Timber Grades at 6-126 ("Lumber must be 2.5 m long and free of rot and fractures.") (R-185).

⁸⁸ See, e.g., Scaling Manual (June 30, 2006), § 6.3.1.1 at 6-7 to 6-8 and Figure 6.9 at 6-39 (Ex. R-19).

Manual likewise provides specific instructions without which the 50/50 test could not be consistently applied. As the Scaling Manual explains:

Merchantability is determined by assessing the size and placement of knots, and the degree of any spiral or twist observed on the log. Merchantable lumber is considered to be lumber which grades out better than utility. *There is no direct relationship between log grading and lumber grading*, as lumber graders assess the finished product, whereas scalers must assess the round log from which the product is cut. For instance, the grain slope permitted by the *National Lumber Grades Authority* ... differ from the twist allowance in the log grading schedules; a scaler cannot presuppose the affect of grain slope on lumber, because sawing methods have a major impact on grain slope. The log grading rules therefore only gauge the recovery potential of a log under average sawing conditions.⁸⁹

The Scaling Manual thus does not just leave it to scalers to assess the percentage of potentially recoverable lumber that would be merchantable. It specifies that merchantability should be assessed on the basis of knots and twists,⁹⁰ explains how each must be measured, and sets forth exactly how much of each is permitted for a log to be Grade 1 or Grade 2.⁹¹

60. The consistency in application of the 50/50 test that is enabled by such standardized rules also makes possible a system of verification of scaling outcomes. Both

⁸⁹ Scaling Manual (June 30, 2006), § 6.4.3 at 6-53 (Ex. R-19) (emphasis added).

⁹⁰ Scaling Manual (June 30, 2006), § 6.4.3.1 at 6-53 to 6-58 (knots); § 6.4.3.2 at 6-58 to 6-60 (twist) (Ex. R-19). In the Interior, compression wood is also considered for merchantability. *Id.*, § 6.4.3.5 at 6-61 to 6-62. On the Coast, grain density and stain are part of the merchantability assessment. *Id.*, §§ 6.4.3.3 and 6.4.3.4 at 6-60 to 6-61 (Ex. R-19).

⁹¹ Scaling Manual (June 30, 2006), §§ 6.6.3.3.2, 6.6.6.4.2, at 6-108 to 6-111 (Ex. R-19).

random and targeted check scales – essentially audits by Ministry scalers – ensure consistent and accurate application of the Scaling Manual’s implementation of the 50/50 test and the system in general. Scaling results are rejected if they differ from the check scaler’s results by more than 3 percent.⁹² Without standardized rules and assumptions, this level of precision would be impossible.

61. Once logs are scaled, purchasers are free to process them as they wish, and presumably will do so in different ways depending on market conditions and other variables. What happens to a log after it is scaled and graded cannot alter the log’s grade.

4. What the United States Says the 50/50 Test Means and Why That Is Wrong

62. The fundamental premise underlying both the United States’ inferential case and its actions case is that there must be a direct correlation between a log’s grade under the 50/50 test and the ultimate lumber output from that log.⁹³ The United States does not, however, offer any evidence of such a correlation in actual practice either before or after the SLA, including during the period prior to April 2007, when the United States concedes that logs were being accurately graded.⁹⁴ Nor does it put forward a clear or consistent account of

⁹² Scaling Regulation, B.C. Reg. 446/94, § 14 - Check Scale – Prescribed Percentage (Ex. R-160); Forest Act, R.S.B.C. 1996, c. 157, Part 6, § 97(4) (Ex. R-20).

⁹³ See, e.g., U.S. Reply ¶ 28.

⁹⁴ U.S. Reply ¶ 73.

how it believes the 50/50 test operates and in what way its results should correlate with actual lumber production. Instead, the United States alternates between three different versions of the 50/50 test, depending on what fits the evidence being offered or argument being made. Canada first addresses the U.S. premise and then each of these versions.

a. Log Grades Based on the 50/50 Test Do Not Depend on Ultimate Lumber Recovery

63. Log grades describe log quality, and the 50/50 test is a quality standard. The United States operates on the premise that log grades describe the outcomes of lumber production, and that the 50/50 test must result in a mathematical correlation between a log's grade and the lumber that is ultimately produced from that log.⁹⁵ There are two reasons why the U.S. premise fails on its own terms, and numerous additional reasons why it departs from practical reality.

64. The first problem with the U.S. premise is that it lacks content. The United States spends much of its Reply insisting that the 50/50 test imposes limits on the amount and quality of lumber that can be produced from a Grade 4 log, but fails to define those limits.⁹⁶ As Exhibit 9 in Dr. Neuberger's original report demonstrates, the United States has access to large quantities of information about the volume of timber harvested in the B.C. Interior, the log grade composition of that timber, and the total volume of lumber produced

⁹⁵ U.S. Reply ¶ 28.

⁹⁶ See, e.g., U.S. Reply ¶¶ 83, 94-95.

from that timber. Even though Dr. Neuberger characterizes the data as providing an “LRF Proxy,” the United States has never attempted to argue that those data – or any other – show that more than 50 percent of the volume of Grade 4 logs was recovered as lumber.⁹⁷

65. The closest the United States comes to articulating a threshold is when it states that a log that fails the 50/50 test and is classified as Grade 4 should not be capable of producing *any* lumber.⁹⁸ This amounts to a “0/0” test, rather than a 50/50 test. Beyond this unsupported and unsustainable position, the United States offers no threshold for lumber production that it claims the 50/50 test established and B.C. mills have exceeded. Rather, the United States and Dr. Neuberger repeat the mantra that observed declines in lumber volume and value recovery were too small to explain the increase in Grade 4.⁹⁹ That proves nothing. For the United States to establish that the lumber produced from Grade 4 logs exceeded a threshold created by the 50/50 test, it must not only establish that the 50/50 test imposes a threshold for lumber production (in terms of volume and grade), it also must

⁹⁷ Neuberger Report, Ex. 9 (C-2).

⁹⁸ See, e.g., U.S. Reply ¶ 83 (“If a log fails the 50/50 rule but then is sold as merchantable lumber, the grading was not accurate.”), ¶ 35 (“an increase in Grade 4 logs of this magnitude cannot be justified by the much smaller increase in the share of logs not ‘useable’ for making lumber.”).

⁹⁹ See, e.g., Neuberger Report ¶ 35 (“the loss in the quantity and value of lumber that would have been caused by the MPB is not large enough to explain the significant increases in the amount of timber assigned to Grade 4.”) (C-2); U.S. Reply ¶ 68 (emphasizing that “the United States said that the Mill Studies show that lumber recovery *and* value recovery *may* decrease in grey-stage timber, but not nearly enough to explain the massive increase in the amount of timber designated Grade 4 from 2007 onward,” but never providing any specification of how much would have been “enough”).

establish what that threshold is and that it has been exceeded. The United States fails on the first count, and does not even attempt the second and third.

66. The second fundamental problem with the U.S. premise is that it overlooks the fact that the 50/50 test contains two “50s” separated by an “and.” As Canada explained in its Statement of Defence, the structure of the 50/50 test means that an accurately classified Grade 2 log could have as little as 25 percent of its volume available to manufacture merchantable lumber while an accurately classified Grade 4 log could have as much 49 percent of its volume available to manufacture merchantable lumber.¹⁰⁰ In other words, it is entirely consistent with the language of the 50/50 test that a Grade 4 log could produce more merchantable lumber than a Grade 2 log. Of course, it would also be consistent with the 50/50 test for a Grade 2 log to produce more merchantable lumber than a Grade 4 log. The key lesson is that the 50/50 test does not guarantee either outcome, or any particular outcome in between. Given this interaction between the elements of the test, it is difficult to imagine how the results of the 50/50 test are supposed “to directly correlate how a log was graded with its ultimate lumber output.”¹⁰¹ It is even more difficult to imagine how the United States can look at lumber recoveries – harvest-wide and in the FII Mill Trials – and conclude how much Grade 4 timber there should have been based on the

¹⁰⁰ Stmt. of Defence ¶ 60.

¹⁰¹ See U.S. Reply ¶ 28.

magnitude of declines in volume and grades of lumber recovered. The United States simply ignores this problem, but the Tribunal should not.

67. The Tribunal could stop reading here, because the United States' case collapses on these fundamental failings. If one also considers that the scaling system is grandfathered and that B.C. scalers were using the same system in the fall of 2006 and the spring of 2007, a period in which the United States concedes that scaling "functioned as anticipated,"¹⁰² the U.S. claim will be seen to be unsalvageable. In the event the Tribunal should wish to further consider the United States' arguments, however, Canada explains below that, apart from these two fundamental flaws, numerous points of logic and practical reality render the U.S. view of the 50/50 test impossible.

68. *First*, as explained by [] and Drs. Wong and Taylor, []

[]¹⁰³ The United States does not dispute that these variables affect lumber recovery, but argues that changes in these variables that result in greater lumber recovery must be accounted for in the application of the 50/50 test.¹⁰⁴ This argument is both wrong and self-defeating.

¹⁰² U.S. Reply ¶ 73.

¹⁰³ [] (Ex. R-147); Wong & Taylor Report [] (Ex. R-12).

¹⁰⁴ U.S. Reply ¶ 83.

69. The argument is wrong because the grandfathered Scaling Manual makes clear that the grading rules “assume{} only common end products, assume{} only conventional manufacturing processes, and {}are} entirely independent of the marketing and/or processing practices of the purchaser.”¹⁰⁵ The U.S. argument is also wrong because, as the United States’ expert, Mr. Duran, correctly observes, “BC also views scaling as an independent practice that should not be influenced by the buyer or by the seller.”¹⁰⁶ Even if a scaler could know exactly what mill would process a log, using what technology (many mills have multiple lines employing different technologies),¹⁰⁷ and into what products (a decision often made by computers based on market data as the log is processed),¹⁰⁸ the grandfathered rules in the Scaling Manual and good scaling practices do not leave room or provide for a mechanism to take such knowledge into account.

70. More important, the U.S. argument that the 50/50 test should account for variations in mill technologies, practices, and products defeats itself. These variations

¹⁰⁵ Scaling Manual (June 30, 2006), § 6.3 at 6-5 (Ex. R-19).

¹⁰⁶ Duran Report ¶ 10 (C-106).

¹⁰⁷ See Wong & Taylor Report [] (Ex. R-12); C-5 (Comparison of Lumber Recovery and Value Yields from Green Lodgepole Pine Logs and Grey stage (5+ years) Mountain Pine Beetle Attacked Logs, Part 3, Princeton Sawmill (Dec. 2008)) (hereinafter “Princeton Sawmill Study”) at CAN-007026); C-41 (Comparison of Lumber Recovery and Value Yields when Processing Green S-P-F Logs and Grey stage (5+ years) Mountain Pine Beetle Attacked Logs, Part 2, Prince George Sawmill (Nov.-Dec. 2007)) (hereinafter “Prince George Sawmill Study”) at CAN-029290).

¹⁰⁸ See Wong & Taylor Report [] (Ex. R-12).

confound the U.S. theory that log grades can be correlated to lumber recoveries, not because the variations allow mills to produce more lumber than allowed by the 50/50 test (assuming such a threshold exists), but because they allow two mills processing an identical log to recover very different volumes and values of lumber.¹⁰⁹ For example, one mill processing a load of MPB-killed logs might choose to produce large volumes of low-quality, fractured lumber, while another might process the same load in a way that yields low volumes of high-quality lumber. This makes correlating log grades with lumber production in a variety of mills an impossible exercise.

71. ***Second***, although the United States fails to articulate how much lumber it believes can properly be recovered from a correctly classified Grade 4 log, it appears to assume that a decline in the percentage of log volume available to manufacture lumber under the 50/50 test should translate into a parallel decline in the quantity of lumber produced.¹¹⁰ The assumption reflects a simplistic and erroneous understanding of how mills process logs into lumber. As Drs. Wong and Taylor explained, [

]¹¹¹ [

¹⁰⁹ Wong & Taylor Report [] (Ex. R-12).

¹¹⁰ See, e.g., U.S. Reply ¶ 83.

¹¹¹ Wong & Taylor Report [] (Ex. R-12).

]¹¹² It follows that, to predict how much lumber can be produced from a log with 50 percent available volume as compared to a log with a 100 percent available volume, one needs to know something about the volume that is lost. In determining this, it must be kept in mind that not all volume in a log is equivalent. Consider for example, the following illustrations of the ends of two logs of identical diameter, each of which has 49 percent of its volume available to manufacture lumber (as represented by the darker area of each figure):



Figure 1A. Illustration A of a log with 49 percent of its volume available to manufacture lumber



Figure 1B. Illustration B of a log with 49 percent of its volume available to manufacture lumber

72. From a scaling perspective, these logs are identical: both have less than 50 percent of their volume available to manufacture lumber and both would be classified as Grade 4. From a milling perspective, however, the lumber recovery will be very different.¹¹³

¹¹² *Id.* [].

¹¹³ [] Wong & Taylor Report [] (Ex. R-12). []

(Footnote continued on next page)

The amount of lumber recovery from Log A would be far less than from Log B. This illustrates yet another reason why one cannot assume that each one-percent change in the volume of a log available to produce lumber should be accompanied by a corresponding one-percent change in the volume of lumber produced. The notion implicit in the United States' case that single-digit declines in lumber volume are inconsistent with larger increases in the share of logs that fail the 50/50 test thus lacks both mathematical support and any basis in reality.

73. The problem of assuming that lumber volumes must decline at rates directly proportional to increases in the number of logs that fail the 50/50 test is only exacerbated when one looks at the Interior harvest as a whole. A scaler is unlikely to have any difficulty distinguishing a log that is 100 percent available from one at the borderline of 50 percent availability. A questionable log that just makes it into Grade 2 may well have been judged to have 51 percent or 52 percent of its volume available. If that same log is judged to have only 49 percent available, tipping it into Grade 4 would move only one or two percent of that log's volume into the "unavailable" category, not 100 percent. As the United States presents the 50/50 test, one might believe that a large increase in accurately classified Grade 4 must translate into a correspondingly large decrease in the log volume available to manufacture

See Wong & Taylor Report [

]
] (Ex. R-12).

lumber. This simple analysis belies that assumption and exposes a critical error in the United States' conception of the 50/50 test.

74. The United States commits a similar error when looking at the second prong of the 50/50 test: merchantability. It asserts that, in 2006, both the Grade 4 share of the harvest and the percentage of nonmerchantable lumber produced from that harvest were 16 percent.¹¹⁴ It then asserts that, in 2009, the Grade 4 share of the harvest was 66 percent, but the percentage of nonmerchantable lumber produced from that harvest had risen only to 19.5 percent. According to the United States, “{t}he numbers simply do not add up,” but it is not clear what the United States believes they should add up to.¹¹⁵

75. As an initial matter, the United States' comparison of data is, at best, profoundly misleading. The “nonmerchantable” lumber percentages are based on *annual lumber production* from trees of *all species*, whereas the percentage of Grade 4 timber in the harvest “in 2009” is actually the *percentage of pine* that was Grade 4 during a *single month* in 2009.¹¹⁶ The Grade 4 share of the pine harvest in August 2009 surely cannot be expected to explain the lumber produced from all species of trees over the course of the entire year. The more serious problem, though, is that there is no analysis. The United States simply

¹¹⁴ U.S. Reply ¶ 38.

¹¹⁵ *Id.*

¹¹⁶ See Harvest Billing System Data – Monthly Grade 4 (Oct. 28, 2011) (Ex. R-221).

juxtaposes what it characterizes as a large change in the percentage of Grade 4 with what it characterizes as a small change in “nonmerchantable” lumber, and declares that the relationship should be different. The United States never explains what the relationship should be, or how it arrived at that conclusion. This is not evidence, circumstantial or otherwise. It is innuendo and conjecture.

76. ***Third***, the United States insists that the only evidence that could “demonstrate directly and conclusively that the 50/50 rule has been applied accurately” is data connecting log grade to “ultimate output.”¹¹⁷ The United States makes this argument even while asserting that “only the private mills retain this data.”¹¹⁸ Yet the United States constructs a fictional system in which the B.C. government oversees and is responsible for the log grades assigned to timber without ever collecting the only information from which the accuracy of log grades should (in this parallel universe) be determined.¹¹⁹ This, of course, does not, and cannot, describe the system in place.

77. Since long before 2006, log grading has been a task performed by scalers and check scalers who examine logs outdoors, often in rain, mud, ice, or snow, and assign grades to those logs. They do so without knowing what products will be made from those logs or

¹¹⁷ U.S. Reply ¶ 28.

¹¹⁸ *Id.*

¹¹⁹ The United States knows very well that British Columbia does not collect such data. *See Crover Supp. Stmt.* ¶ 49 (Ex. R-148).

where the logs will be processed.¹²⁰ To accept the United States' premise that log grades must directly correlate to lumber production would be to accept that log grades assessed under the 50/50 test can be evaluated only by examining data that plays no part in British Columbia's system of grading logs and that is never available to the people who assign or verify log grades.

78. *Fourth*, assuming that the United States accepts that scalers do, indeed, assess log grade by examining logs, it has remained silent about how a scaler is supposed to divine the volume and quality of lumber that will ultimately be recovered from a log before that log is processed. Certainly, if prediction were the objective, one would expect that guidance on making the prediction – including how to adjust for variations in mill technology, practices, and product choices – would appear somewhere in the hundreds of pages of scaling rules that are part of the grandfathered system. Yet there is no such guidance. Instead, the Scaling Manual offers very specific guidance about measuring and accounting for physical manifestations of defects in the logs.¹²¹ The report of the United States' expert, Mr. Duran, who is able to see defects in logs that are undetectable to the untrained eye, offers no description of how a scaler would accurately predict actual lumber recovery by examining a log. Indeed, Mr. Duran's report does not describe the task of log grading in terms of

¹²⁰ Crover Supp. Stmt. ¶ 47 (Ex. R-148).

¹²¹ Scaling Manual (June 30, 2006), Ch. 6 (Ex. R-19).

predicting lumber recovery at all. Instead, he focuses on the ability of scalers to identify checks, which he acknowledges to be relevant to log grade, and is precisely how the B.C. system operates.¹²²

79. Scaling in the United States is no more able to correlate log grade and lumber recovery. The United States asserts that Canada's reference to the distinction between British Columbia's volumetric scaling system and the prevailing U.S. product output systems "does not alter the reality that its *grading* system is by definition related to output."¹²³ Unlike B.C. log grades that express grade in terms of log volume available for lumber production, U.S. scaling systems employ a "log rule" that does express scaling results in terms of lumber volumes. Nevertheless, the official U.S. Forest Service scaling guidelines make clear that, even under a so-called product output system, scaling depends on assumptions that do not change based on real-world lumber outturns. The following excerpt taken from the official U.S. Forest Service scaling guidelines shows how inconsistent the United States' own scaling rules are with the United States' expectations of the B.C. system:

Scaling is not guessing; it is an art founded on *applying specific rules in a consistent manner* based on experienced judgment as to how serious *certain external indicators of defect* are in a specific locality.

¹²² Duran Report ¶¶ 11-12 (C-106); Stmt. of Defence ¶¶ 55-56.

¹²³ U.S. Reply ¶ 90.

The measuring standard used in scaling logs, called a log rule, is a table intended to show amounts of lumber which may be sawed from logs of different sizes under *assumed* conditions. *At best, a log rule can only approximate salable manufactured volume because of constant changes in markets, machinery, manufacturing practices, and even the varying skill of individual sawyers. Thus a log rule is an arbitrary measure. Its application must not be varied according to the mill in which logs are sawed. The scaled volume of logs must be independent of variations in manufacture.*

The difference between the volume of log scale and the actual volume of lumber sawed from the same logs is called “overrun” if the lumber tally exceeds log scale, or “underrun” if it is less.

* * *

*This fact does not change scaling practice. Overrun (or underrun) is estimated in the process of appraising National Forest timber for sale, and presumably by the purchaser in determining what prices he will bid. Overrun or underrun is not considered in log scaling, even though it is very important to any mill.*¹²⁴

80. British Columbia would not characterize the U.S. scaling system as “meaningless.” The U.S. system has its own logic and integrity. Yet, no less than under the B.C. system, scaling in the United States does not produce results that correlate with actual lumber recovery. Log scaling in the United States - as in British Columbia - classifies logs based on their physical characteristics, and mills recover what they can from those logs. This is the nature of scaling, as the United States should well understand.

¹²⁴ National Forest Log Scaling Handbook, 10-2 to 10-3 (Ex. R-128) (emphasis added).

b. The United States Has Not Offered a Consistent Account of What the 50/50 Test Should Measure or How Its Results Should Be Evaluated

81. Given the centrality of the 50/50 test to the United States' arguments,¹²⁵ one might expect the United States to offer a clear and consistent account of how it believes the 50/50 test should operate and how log grades assigned under the test should be evaluated. The United States has offered no such account. Instead, the U.S. Reply alternates between three versions of the 50/50 test, none of which comports with reality.

82. The first version of the 50/50 test is the one on which the United States most relies. Under this version of the 50/50 test, a log that can be used to manufacture more than a negligible quantity of lumber cannot be a Grade 4 log. The following are examples of this version of the 50/50 test:

- “{F} or Canada to demonstrate that the MPB epidemic actually caused the large increase in Grade 4 that occurred between 2007 and 2009, it would have to have shown that during the period there were equally large increases in the *share of logs unusable for making lumber*”¹²⁶
- “Because Grade 4 logs by definition must be *mostly unusable* for lumber, an increase in Grade 4 logs of this magnitude cannot be justified by the much smaller increase in the share of logs not ‘useable’ for making lumber.”¹²⁷

¹²⁵ The 50/50 test is specifically referenced in more than a quarter of the Reply's paragraphs, and discussed in many more.

¹²⁶ U.S. Reply ¶ 33 (emphasis added).

¹²⁷ U.S. Reply ¶ 35 (emphasis added).

- “If a log fails the 50/50 rule but then is *sold as merchantable lumber*, the grading was not accurate.... Canada admits that its producers are *able to make merchantable lumber from Grade 4 logs* that should have passed the 50/50 rule. This admission alone proves the claim here.”¹²⁸
- “BC began to misgrade as Grade 4 *timber that was suitable for lumber* and should have passed the 50/50 rule”....¹²⁹
- “Canada effectively concedes that there was a higher and higher amount of Grade 4 timber entering BC mills after 2007, and that the *mills were able to manufacture merchantable lumber from that timber*.”¹³⁰

83. This first U.S. version has no basis in the grandfathered system. Significantly, though, this improbable reading is the only version of the 50/50 test for which the United States has offered evidence of a violation. Mills have always been free to produce lumber from logs that fail the 50/50 test, and Canada does not contest that they did.¹³¹

84. The second version of the 50/50 test offered by the United States in its Reply is one under which the volume of lumber produced from a Grade 4 log cannot exceed 50

¹²⁸ U.S. Reply ¶ 83 (emphasis added).

¹²⁹ U.S. Reply ¶ 5 (emphasis added).

¹³⁰ U.S. Reply ¶ 12 (emphasis added).

¹³¹ See Scaling Manual (June 30, 2006), § 6.3 at 6-5 (“grading ... is entirely independent of the marketing and/or processing practices of the purchaser.”) (Ex. R-19).

percent of the volume of the log.¹³² As discussed above, the B.C. system does not and could not operate in such a way as to tie actual lumber outputs to log grade.

85. Equally important, the United States has not addressed any evidence demonstrating a violation of its own incorrect formulation of the 50/50 test. In fact, the public data on lumber volume produced from harvested volume suggest that lumber recovery volumes have not exceeded 50 percent of raw timber volumes even from harvests that included more Grades 1 and 2 than Grade 4. The Ministry's Competitiveness and Innovation Branch publishes annual aggregate figures reflecting aggregate log input volume, lumber output volume, and the ratio of the two for mills throughout the Interior.¹³³ The percentage of wood volume converted to lumber by Interior mills peaked at 49 percent in 2005 and 2006 and remained between 44 and 45 percent for 2007 through 2009.¹³⁴ Those estimated volume recovery percentages reflect lumber produced from all grades and species of wood. For all species, the Grade 4 share peaked at 41 percent in 2009, with the remainder being Grades 1 and 2.¹³⁵ Thus, even when the majority of logs processed were

¹³² See, e.g., U.S. Reply ¶ 91 (“the correct application of the 50/50 rule necessarily requires a determination of what can be recovered from a log...”), ¶ 95 (“the 50/50 rule and BC’s grading system require an assessment of output...”).

¹³³ See Major Primary Timber Processing Facilities in British Columbia (For the years 2005 to 2009) (Ex. R-182).

¹³⁴ *Id.*

¹³⁵ Harvest Billing System Data (Oct. 28, 2011) (Ex. R-24).

Grades 1 and 2, Interior sawmills did not recover more than 50 percent of log volume as lumber. The United States' suggestions that B.C. mills were able to recover more than 50 percent lumber from Grade 4 logs cannot be reconciled with these facts.¹³⁶

86. The third version of the 50/50 test used by the United States comes closer to reality, but still misses the mark. Under this version, the 50/50 test requires scalers to assess the volume of a log that is available to be used in the production of merchantable lumber.¹³⁷ Up to this point Canada agrees with the United States. But the United States goes further to describe a system under which the volume available to manufacture merchantable lumber must be assessed with reference to the capabilities of particular mills and that can be audited based on the volume of lumber that mills actually produce. This version does not hold up. Knowing the volume available to produce lumber according to a defined and static set of geometric assumptions provides a valuable metric for tracking log quality in the aggregate and assists individual mills in predicting their potential output. But, as explained above,¹³⁸ there are simply too many variables at play for one to find a direct relationship between the volume available to be used by mills and the volume of lumber that mills will actually produce.

¹³⁶ See, e.g., U.S. Reply ¶ 95.

¹³⁷ U.S. Reply ¶¶ 92-96, 237.

¹³⁸ See ¶¶ 70-73.

87. The absence of a coherent account of the 50/50 test from the United States is not a minor shortcoming; it is a fatal deficiency in the United States' case. Both the United States' "actions" case and its "inferential" case rely on assertions of varying consistency about what the 50/50 test means and how it operates. The United States' actions and inferential cases fail for numerous reasons of their own, as discussed below, but they share a missing foundation in an accurate, coherent version of the 50/50 test.

B. The United States Fails in Its Attempts to Advance Its "Actions" Case

88. The United States now describes the alleged government actions it complained about in its Statement of Case as mere "*examples*" or "*steps*" that British Columbia took to "facilitate its sales of timber to B.C. producers and exporters at stumpage fees lower than those required by the SLA."¹³⁹ This is a surprising change of position. Canada has already explained why the "selling" of Grade 4 timber for C \$0.25 cannot be circumvention under the SLA.¹⁴⁰ The U.S. case is no longer based on any government action that could trigger Article XVII. Although that should result in a dismissal of all the U.S. allegations regarding circumvention of the SLA, Canada nevertheless responds in this section to the arguments the United States has made with respect to each of the "steps" British Columbia is alleged to have taken to facilitate the misgrading of timber.

¹³⁹ U.S. Reply ¶ 130.

¹⁴⁰ See ¶¶ 27-30.

1. The Use of Local Knowledge

89. The United States acknowledged in its Statement of Case and its Reply that local knowledge was grandfathered.¹⁴¹ The U.S. Reply now attempts to back-pedal by claiming that the practice was a “new” action that did not exist as of July 1, 2006.¹⁴² This attempt fails.

90. The United States asserts that Mr. Laberge’s February 2007 e-mail was a “new local-knowledge policy” that “encouraged lumber producers to use untested grading practices,” and thus was not grandfathered under the SLA.¹⁴³ That e-mail did not introduce a new policy.¹⁴⁴

91. The United States attempts to characterize Mr. Laberge’s February 2007 email¹⁴⁵ as a “directive,”¹⁴⁶ but it will not bear that weight. The email commences:

This memo is intended to encourage the development of local scaling knowledge with regard to checks.¹⁴⁷

¹⁴¹ Stmt. of Case ¶ 99; U.S. Reply ¶¶ 132, 151.

¹⁴² U.S. Reply ¶ 132 (“BC’s encouragement of untested practices based on local knowledge is not grandfathered...”).

¹⁴³ U.S. Reply ¶¶ 132, 151; C-45 (E-mail from Steve Laberge sent to ISAC and scaling staff (Feb. 2, 2007)) at CAN-010975.

¹⁴⁴ Stmt. of Case ¶ 99; Stmt. of Defence ¶¶ 201-209.

¹⁴⁵ C-45 (E-mail from Steve Laberge sent to ISAC and scaling staff (Feb. 2, 2007)) at CAN-010975.

¹⁴⁶ U.S. Reply ¶¶ 138, 146; *see also* Stmt. of Case ¶¶ 100-101.

The email concludes:

Employers/managers should support industry and ministry scalers in developing this knowledge. We encourage this sharing on a regional and provincial basis across the Mountain Pine Beetle affected areas. The ministry scaler has the responsibility to be satisfied that this “new” local knowledge is accurate and should be reviewed on an ongoing basis. We must all be receptive to ideas that may make the scale more accurate.¹⁴⁸

Nothing in the text in between bears any resemblance to a “directive.”

92. This e-mail may well have contemplated that some policy directive might follow in the future, but there is no evidence that it led to any change in policy or practice. If British Columbia had intended to change its policy regarding local knowledge, it would have done so through formal means, such as amending the Scaling Manual, not through an e-mail by a member of the Ministry’s scaling staff.¹⁴⁹ Regardless of how one might characterize Mr. Laberge’s e-mail, however, it is impossible to read it as anything other than the encouragement of an existing, grandfathered practice for ensuring an accurate scale.

93. The only document that the United States cites to illustrate how local knowledge might have affected scaling decisions are [

¹⁴⁷ C-45 (E-mail from Steve Laberge sent to ISAC and scaling staff (Feb. 2, 2007)) at CAN-010975.

¹⁴⁸ *Id.*

¹⁴⁹ Crover Supp. Stmt. ¶ 9 (Ex. R-148).

]¹⁵⁰ The United States again fails to recognize the important distinction between “local knowledge,” which requires Ministry approval based on testing, and “local practices,” which are local and regional inconsistencies in the application of the scaling rules that are actively discouraged by the Ministry.¹⁵¹ Under the Scaling Manual, scalers develop local knowledge through the repeated observation and study of standing timber and logs.¹⁵² The documents on which the United States relies demonstrate that the Ministry sought to encourage scalers to do exactly that: develop knowledge about defects and test and confirm what they learned, all under Ministry supervision.¹⁵³

94. Jim Crover explained that local knowledge was seen as a possible solution to the difficulties scalers were experiencing measuring and identifying checks following the

¹⁵⁰ U.S. Reply ¶¶ 155-158; C-141 [] at CAN-018873-74.

¹⁵¹ U.S. Reply ¶¶ 155-159 (citing C-141 [] at CAN-018873. [

]¹⁵² The United States similarly mischaracterized a discussion of local practices as local knowledge in their Statement of Case. *See* Stmt. of Case ¶ 101 and Stmt. of Defence ¶ 202.

¹⁵² Scaling Manual (June 30, 2006), § 5.1.4 at 5-4 (Ex. R-19). *See also* Crover Stmt. ¶¶ 78-80 (Ex. R-3).

¹⁵³ *See, e.g.*, C-73 [] at CAN-10539 [

].

implementation of the April 2006 log grades.¹⁵⁴ The documents that the United States relies on show that the “high priority” for the Ministry was *not* the development of local knowledge, but rather the accurate measurement of checks.¹⁵⁵ After the February 2007 e-mail was sent, both Ministry and Industry recognized that difficulties measuring and assessing checks needed “regional involvement” and that local knowledge alone was “not enough.”¹⁵⁶ Accordingly, the Ministry concluded that these scaling issues were best addressed through a comprehensive, province-wide solution to the measurement and assessment of checks.¹⁵⁷ The fact that the encouragement of local knowledge led to no change in scaling practices belies the U.S. claim that government action caused increases in Grade 4 volumes beginning in April 2007.¹⁵⁸

95. The United States’ scaling expert and scaling handbook acknowledge, that experience based on local, species-specific knowledge is an important element of accurate

¹⁵⁴ Crover Stmt. ¶ 82 (Ex. R-3); C-116 [] at CAN-020939 []

¹⁵⁵ C-49 (ISAC Grading Sub-committee Meeting Minutes (Sept. 11, 2007)) at CAN-011328 (indicating the “Issue” is “Measurement of and assessment of checks” that one “Proposed Solution” is “development of local knowledge” and the “Priority” is “High.”).

¹⁵⁶ C-49 (ISAC Grading Sub-committee Meeting Minutes (Sept. 11, 2007)) at CAN-011309.

¹⁵⁷ Crover Stmt. ¶¶ 83, 92-94 (Ex. R-3).

¹⁵⁸ See U.S. Reply ¶ 147 (“Seven months after BC announced the new local-knowledge policy, in September 2007, ISAC members acknowledged that a study on local knowledge had not yet been carried out....”).

log scaling.¹⁵⁹ Local knowledge allows scalers to use observations of the timber in their locality and make adjustments for local variations in climate and ecosystem. Far from being a method for lumber producers to use “untested grading practices” and “be creative in ways to detect defects in logs,”¹⁶⁰ as the United States alleges, local knowledge must be verified through repeated observation, and receive Ministry approval, before it can be used in scaling.¹⁶¹ Similar processes for developing local knowledge are repeatedly referenced in the U.S. Scaling Handbook and are described by Mr. Duran.¹⁶² The United States has shown no improper use, much less any government action or result, of this unquestionably grandfathered practice.

¹⁵⁹ Duran Report ¶¶ 11-12 (noting that experience, based on observation and developed through mill visits, is an important part of a scalers ability to assess checks) (C-106); National Forest Log Scaling Handbook at 10-2 (defining scaling as “an art founded on applying specific rules in a consistent manner based on experienced judgment as to how serious certain external indicators of defect are in a specific locality.”) (Ex. R-128).

¹⁶⁰ U.S. Reply ¶ 132.

¹⁶¹ Scaling Manual (June 30, 2006), § 5.1.4 at 5-4 (Local knowledge “should be discussed and agreed to by the local district scaling supervisor or check scaler before they are employed. It must always be remembered that the Ministry of Forests scaling staff have the ultimate authority in the interpretation and application of scaling procedures.”) (Ex. R-19).

¹⁶² See, e.g., National Forest Log Scaling Handbook at 10-28; 30-9; 30-12; 30-14; 50-4 (Ex. R-128); Duran Report ¶¶ 11-12 (noting that experience, based on observation and developed through mill visits, is an important part of a scalers ability to assess checks) (C-106).

2. The Practice of Bucking

96. The United States persists in the Reply in its efforts to make an “action” or “step” out of the practice of bucking.¹⁶³ Bucking is simply the cutting of logs. As one might imagine, and as Mr. Crover has explained, logs are bucked (*i.e.*, cut) under many different circumstances, three of which have potential relevance in the context of scaling: bucking in the bush (cutting-to-length), bucking prior to scaling (log-yard merchandising), and bucking during scaling (diagnostic bucking).¹⁶⁴ Because documents often refer simply to “bucking,” the context of such references is essential to understanding the type of bucking being described. The arguments regarding bucking in the U.S. Reply depend in large part on ignoring context and exploiting confusion between the types of bucking.

97. The United States describes one set of circumstances, where bucking a log to the length at which it will be processed (log-yard merchandising) shortens its length for purposes of scaling, and argues that shorter logs may be subject to downgrade under certain scaling rules and conventions.¹⁶⁵ The United States then identifies documents, including a November 13, 2008 memorandum proposing to encourage more use of bucking as a diagnostic tool to determine whether or how far defects penetrate a log (diagnostic

¹⁶³ U.S. Reply ¶ 203.

¹⁶⁴ Crover Stmt. ¶¶ 101-104 (Ex. R-3).

¹⁶⁵ U.S. Reply ¶ 203 (citing Stmt. of Case ¶¶ 135-140).

bucking),¹⁶⁶ a set of circumstances where bucking *does not* change log length for purposes of scaling.¹⁶⁷ The United States melds the two types of bucking into one, using words like “new” and “enhanced” to refer to the proposed policy of encouraging diagnostic bucking,¹⁶⁸ and on that basis concludes that the Ministry adopted a new policy of bucking logs to downgrade them under scaling conventions and rules.¹⁶⁹

a. Diagnostic Bucking Is Grandfathered and Improves Scaling Accuracy

98. The “new” policy was no change at all, and it could not have led to grading more timber as Grade 4 through the operation of conventions that depend on log length. At the time the November 2008 memorandum was drafted, the Ministry was concerned that mills without kiln re-drying capabilities did not have comparable tools to identify checks and determine their depth.¹⁷⁰ The Ministry decided to encourage diagnostic bucking as a way to reveal the true extent of defects, much as kiln re-drying reveals the true extent of defects. Accuracy, not downgrading, was the desired result.

¹⁶⁶ U.S. Reply ¶¶ 204-210.

¹⁶⁷ Crover Supp. Stmt. ¶¶ 41-42 (Ex. R-148).

¹⁶⁸ U.S. Reply ¶ 208.

¹⁶⁹ U.S. Reply ¶¶ 209-210, 212.

¹⁷⁰ C-83 (Letter from Ministry to ISAC (Nov. 13, 1008)) at CAN-001867.

99. The so-called “new” direction was “new” only to the extent that it may have promoted the increased usage of an existing practice. The purpose behind encouraging diagnostic bucking was not to downgrade logs, but to provide better quality observations about the features (including checks) present on the logs.¹⁷¹ Mr. Duran’s endorsement of bucking to assess the depth and length of weather checks is precisely the type of bucking that the Ministry sought to encourage.¹⁷² In any event, as explained in more detail in the Statement of Defence, the November 2008 memorandum did not lead to any policy change.¹⁷³

b. British Columbia’s Policy That Bucking to Downgrade Is Prohibited Has Not Changed

100. No policy change with respect to log-yard merchandising (the other type of bucking described by the United States) occurred either. Bucking logs to lengths at which they will be processed can result in those logs being subject to scaling conventions based on log length. But this is a grandfathered practice conducted under strict controls. The B.C. scaling system incorporates safeguards to ensure that the length conventions are not exploited in this context. Scalers may only use length conventions in situations where they

¹⁷¹ Crover Supp. Stmt. ¶ 42 (Ex. R-148).

¹⁷² Duran Report ¶ 18 (explaining that end checks “can most likely be cleaned up with a quick cookie cut off the ends, having no effect on the eventual production of lumber from the log.”) (C-106).

¹⁷³ Stmt. of Defence ¶¶ 212-214.

are unable to ascertain the length of a defect from external observation.¹⁷⁴ In all other circumstances, scalers are required to scale based on a defect's actual length.¹⁷⁵

101. "Bucking to downgrade" is expressly prohibited by British Columbia, and the Ministry reinforces this rule in its communication with scalers.¹⁷⁶ For example, an August 2007 memorandum to scaling staff in the Southern Interior Forest Region orders:

"{b}ucking logs before scaling is not to be used as a means to manufacture more sawlog grade logs, or more lumber reject grade logs, but rather to help identify the proper grade of the logs."¹⁷⁷ The same memorandum also cautions scalers against scaling by conventions

¹⁷⁴ See, e.g., C-82 (Memorandum from Bill Howard (Nov. 28, 2007)) at CAN-011402 ("Check visible at log end, but not visible on the log surface, run half way up to a maximum of 2.5m."); C-168 [] at CAN-020766 []

[]; Scaling Manual (May 1, 2007), § 8.5.1 at 8-24 (C-50).

¹⁷⁵ *Id.*

¹⁷⁶ *Scaling Manual* (May 1, 2007), § 8.5.1 at 8-24 ("Scalers must be cautioned however, that conventions are only 'rules-of-thumb'. When logs are bucked shorter than 4.9 metres scalers must not, and should not automatically downgrade based on 'the heart rot in one end' convention. Bucking practises must be conducted for the purpose of ensuring an accurate scale. It is the responsibility of the scaler to demonstrate how the defect length determination was made.") (C-50); see also *Scaling Manual* (June 30, 2006), § 5.1.4 at 5-3 to 5-4 ("While scaling conventions help the pace of scaling and help scalers achieve consistency, strict adherence to conventions fails to recognize that the trees from which logs are cut are often variable because of their inherit genetic blue print, their physical growing conditions and their history... Under these circumstances strict adherence to some conventions will not always yield the most accurate scale. An accurate scale will best be achieved when scalers temper the use of conventions with local knowledge and sound judgment.") (Ex. R-19).

¹⁷⁷ C-85 (Ministry of Forests Memorandum (Aug. 8, 2007)) at CAN-010535.

when the minimum length rules will factor into grade decisions.¹⁷⁸ The minutes from a 2005 ISAC meeting, nearly a year before the adoption of the SLA, address the same issue in the context of the rot length convention. The minutes note that the “Revenue Branch will take action if bucking is done for {the} sole purpose of downgrading logs to Grade 4.”¹⁷⁹

102. Moreover, the data do not support a claim that bucking caused increases in levels of Grade 4. The United States complains that “Mr. Crover’s figures are both questionable and unverified, and Canada has failed to rebut the demonstration that bucking has resulted in increased volumes of Grade 4 logs that otherwise met the 50/50 rule.”¹⁸⁰ But the record is devoid of any demonstration by the United States that bucking has increased volumes of Grade 4 timber. In fact, the most the United States actually says is that bucking “created a *risk* that the industry will use the policy to downgrade lumber-suitable logs.”¹⁸¹

c. “Sweep” Is Irrelevant to the Grading of Lodgepole Pine

103. Finally, the United States’ arguments regarding the relationship between bucking and “sweep” are irrelevant. No U.S. witness has disputed Dr. Lewis’ testimony that

¹⁷⁸ *Id.*

¹⁷⁹ ISAC Meeting Minutes (June 28, 2005), CAN-007075-79 at CAN-007078 (Ex. R-183).

¹⁸⁰ U.S. Reply ¶ 218.

¹⁸¹ *Id.* (emphasis added).

lodgepole pine is rarely affected by sweep.¹⁸² In fact, the Scaling Manual, which details the “common defects and identifiers” of trees on a species-by-species basis, does not list sweep as a common defect for lodgepole pine.¹⁸³

104. Even in the rare circumstances where a lodgepole pine log may be afflicted with sweep, the “sweepy” portion of the log, which has the potential to wreak havoc in mill machinery, is commonly bucked out and left in the bush. As explained in the U.S. National Forest Log Scaling Handbook, failure to buck a tree when doing so would “avoid excessive sweep deduction” is an example of “improper log manufacturing.”¹⁸⁴ There is no evidence that a single lodgepole pine log was misgraded on the basis of sweep.

3. The Scaling Requirements for Checked Logs

a. Species-Specific Scaling Conventions Are Appropriate and Consistent With the Grandfathered System

105. The United States devotes many pages to arguing that the December 1, 2007 Scaling Requirements (“Scaling Requirements”) apply only to MPB-killed pine and therefore

¹⁸² Lewis Report ¶¶ 77-79 (Ex. R-10); *see also* Crover Stmt. ¶ 108 (Ex. R-3); Crover Supp. Stmt. ¶ 45 (Ex. R-148). “This case is about Canada’s longstanding practice of selling underpriced timber affected by the mountain pine beetle.” U.S. Reply ¶ 1. The mountain pine beetle only affects pine species. *See* Ebata Stmt. ¶ 9 (Ex. R-4).

¹⁸³ Scaling Manual (June 30, 2006), compare § 3.2.4 at 3-9 (Douglas-fir) with § 3.2.7 at 3-12 (Lodgepole Pine) (Ex. R-19); Crover Supp. Stmt. ¶ 45 (Ex. R-148).

¹⁸⁴ National Forest Log Scaling Handbook (FSH 2409.11), Ch. 40 – Special Scaling Problems at 40-4 (Ex. R-128).

create “inconsistent standards” for MPB timber.¹⁸⁵ Indeed, reading the U.S. Reply, one would think that this is now its sole reason for the claim that the Scaling Requirements amount to circumvention. This criticism is without merit. British Columbia explicitly adopted the Scaling Requirements in response to the unique characteristics of MPB-killed pine.¹⁸⁶ Developing and applying such species-specific guidance is a long-standing practice in both the B.C. and U.S. scaling systems.¹⁸⁷ By recognizing the impact of the MPB on timber quality, the Scaling Requirements increased accuracy and provided for consistent treatment of MPB-killed trees.

106. It is a long-standing practice in British Columbia to consider species-specific distinctions in the grading of timber due to specific variations in susceptibility to defect, disease, and deterioration. British Columbia’s Scaling Regime recognizes that defects can manifest themselves in patterns unique to both species and external circumstances, and that the scaling rules should account for those patterns.¹⁸⁸ Indeed, the Scaling Manual contains

¹⁸⁵ U.S. Reply ¶¶ 231-232, 234, 236.

¹⁸⁶ Crover Stmt. ¶¶ 95-100 (Ex. R-3).

¹⁸⁷ See, e.g., Scaling Manual (June 30, 2006), § 5.6.2 at 5-72 (providing species-specific guidance on butt rot) (Ex. R-19). See also, National Forest Log Scaling Handbook at 10-28 (“Average taper can be determined by local studies conducted by species.”) (Ex. R-128); Duran Report ¶¶ 11-12 (C-106).

¹⁸⁸ Scaling Manual (June 30, 2006), § 5.1.4 at 5-3 (“Conventions are based on experienced relationships between external log characteristics and their impacts on firmwood content and product recovery.”) (Ex. R-19).

provisions that are species-specific¹⁸⁹ and provisions that recognize that external factors – such as insects, fire, or environment – create cognizable patterns within species.¹⁹⁰ Similarly, the Scaling Regulation distinguishes between species, setting different standards for recovery by species.¹⁹¹

107. The scaling system recognizes that different species are not necessarily affected by the same defects. For example; the scaling system does not expect a scaler to treat rot the same way in a Douglas-fir or spruce tree with pronounced butt flare as in a hemlock, balsam, or red cedar tree with minimal butt flare.¹⁹² Similarly, the scaling system recognizes that external forces can fundamentally alter the characteristics of logs within a given species, dictating that those logs be treated differently during scaling. As the United States’ experts acknowledge, checks are the most significant type of defect that affects MPB-

¹⁸⁹ See Scaling Manual (June 30, 2006), § 3.1 at 3-2 (“The wood of each species has unique properties that affect its value and in many cases, the grade applied to it. Each species’ commercial value is tied to its suitability for the manufacture of specific products.”) (Ex. R-19); *see also* Scaling Manual (June 30, 2006), § 5.6.2 at 5-72 (providing species-specific guidance on butt rot); § 6.3.2.2.3 at 6-11 (providing species specific guidance on knot distribution) (Ex. R-19).

¹⁹⁰ See Scaling Manual (June 30, 2006), § 6.3.2.3 at 6-12 (noting that Cedar is affected by a unique “serious defect” caused by the “borings of larvae of the western cedar borer.”), § 6.3.2.6 at 6-13 (describing “compression wood” that forms on the underside of leaning trees) (Ex. R-19).

¹⁹¹ See Scaling Regulation, B.C. Reg. 446/94, Schedule of Interior Timber Grades, §§ 3-4 (Ex. R-160).

¹⁹² See Scaling Manual (June 30, 2006), § 5.6.2 at 5-72 (providing a convention for estimating butt rot and species-specific guidance) (Ex. R-19). *See also* Scaling Manual (June 30, 2006), § 4.3.1.1 at 4-13, § 4.3.4.1 at 4-14, 4-16 (noting that Douglas-fir, balsam, western larch, Engelmann spruce, western white pine, lodgepole pine, and yellow pine are all susceptible to Red Fomes and Redring heart rot. Juniper is affected by Red Fomes heart rot, but is *not* affected by Redring.) (Ex. R-19).

killed pine, so it is entirely logical that the Scaling Requirements should focus on that characteristic.¹⁹³

b. The 2 cm Deduction Resolved an Ambiguity in the Scaling Rules and in Doing so Applied the 50/50 Test

108. The United States alleges in its reply that “Canada has particularly failed to justify the two centimeter rule.”¹⁹⁴ This is incorrect. The two-centimetre deduction to which the United States refers was based on documented and numerous observations of shallow surface checks around the perimeter of MPB-killed logs, particularly those with loose or missing bark.¹⁹⁵

109. By definition, “checks,” including shallow surface checks, are “defects.”¹⁹⁶ The Scaling Manual has long instructed that when there exists less than 5 rads, or 10 cm of wood, between multiple defects on a log, “the available material separating the defects is also deemed as unsuitable for manufacture and is added to the grade reduction.”¹⁹⁷ This is

¹⁹³ See, e.g., Fettig Report ¶¶ 7, 16, 23 (C-104); Beck Report ¶¶ 34-35 (C-107).

¹⁹⁴ U.S. Reply ¶ 239.

¹⁹⁵ Crover Stmt. ¶ 97 (citing Ex. R-31 at CAN-028337-38) (Ex. R-3); see also Lewis Report ¶ 56 (Ex. R-10).

¹⁹⁶ See Scaling Manual (June 30, 2006) Glossary of Terms at G-4 (defining “defect” as “any abnormality or irregularity which lowers the commercial value of wood. Typically defects may reduce a logs {sic} firmwood volume and/or log grade.”) (Ex. R-19).

¹⁹⁷ Scaling Manual (Nov. 1, 1996), § 6.4.2.3 at 6-19 (Ex. R-185); see also Scaling Manual (June 30, 2006), § 6.4.2.3 at 6-21 (Ex. R-19).

known among scalers in British Columbia as the “10 cm between defects rule.” Applying this rule to MPB-killed logs with closely-positioned surface checks results in collar deductions analogous to those set forth in the Scaling Requirements, and is perfectly consistent with the grandfathered scaling system.

110. The Scaling Manual has stated since at least 1996, and still states, that “surface and end checks *due to delays in processing* are disregarded for the purposes of grading.”¹⁹⁸ But surface checks develop in MPB-killed logs for other reasons, notably the drying out of the tree after it dies.¹⁹⁹ The U.S. National Forest Log Scaling Handbook similarly distinguishes between “natural defects” that exist at the time of harvest and “logging defects” that are caused by delay or mishandling.²⁰⁰

111. The Scaling Requirements resolved this ambiguity between weather checks caused by delays in scaling and checks caused by the MPB. That document assumes that, on an MPB-killed log with less than 50 percent of its bark remaining, at least a 2 cm collar

¹⁹⁸ Scaling Manual (Nov. 1, 1996), § 6.3.1.1 at 6-7 to 6-8 (emphasis added) (Ex. R-185); *see also* Crover Stmt. ¶ 97 (“the Ministry did not – and does not – permit grade reductions attributable to delays in scaling. MPB-killed lodgepole pine, however, presented a new problem, as the extensive surface checking observed on older dead trees commenced prior to harvest.”) (Ex. R-3); Crover Supp. Stmt. ¶¶ 14-15 (Ex. R-148).

¹⁹⁹ Lewis Report ¶¶ 56, 83 (Ex. R-10).

²⁰⁰ *See* National Forest Log Scaling Handbook, Ch. 30 at 30-3 (Ex. R-128).

would be unavailable to cut lumber, and should thus be deducted.²⁰¹ This convention only applies where the loss of bark cover provides an indication that such checks are likely to exist.²⁰²

112. The slide presented below is from a U.S. Timber Measurements Society presentation entitled “Lodgepole Pine Epidemic: Utilization & Scaling,” given in Tacoma, Washington in April 2011.²⁰³ The slide shows an MPB-killed log with extensive shallow surface checking that runs the length of the log. These shallow surface checks in the slide below are closely positioned and evenly distributed around the log’s bole.

²⁰¹ The loss of bark on MPB-killed trees comes after they reach the grey-attack stage (approximately 3 years after the initial attack). See Ebata Stmt. ¶¶ 20-21 (Ex. R-4). This loss of bark is associated with increased checking. See Lewis Report ¶¶ 9, 58 (Ex. R-10). Accordingly, the Ministry’s selection of “missing” bark (as opposed to “loose” bark) was a conservative standard. See Crover Stmt. ¶¶ 99-100 (Ex. R-3).

²⁰² See C-82 (Memorandum from Bill Howard (Nov. 28, 2007)) at CAN-011402; [] at CAN-028338 [

] (Ex. R-31); Crover Stmt. ¶¶ 96-98 (R-3).

²⁰³ Timber Measurements Society Presentation, “Lodgepole Pine Epidemic – Utilization and Scaling,” (Apr. 2011) at 28 (Ex. R-153).

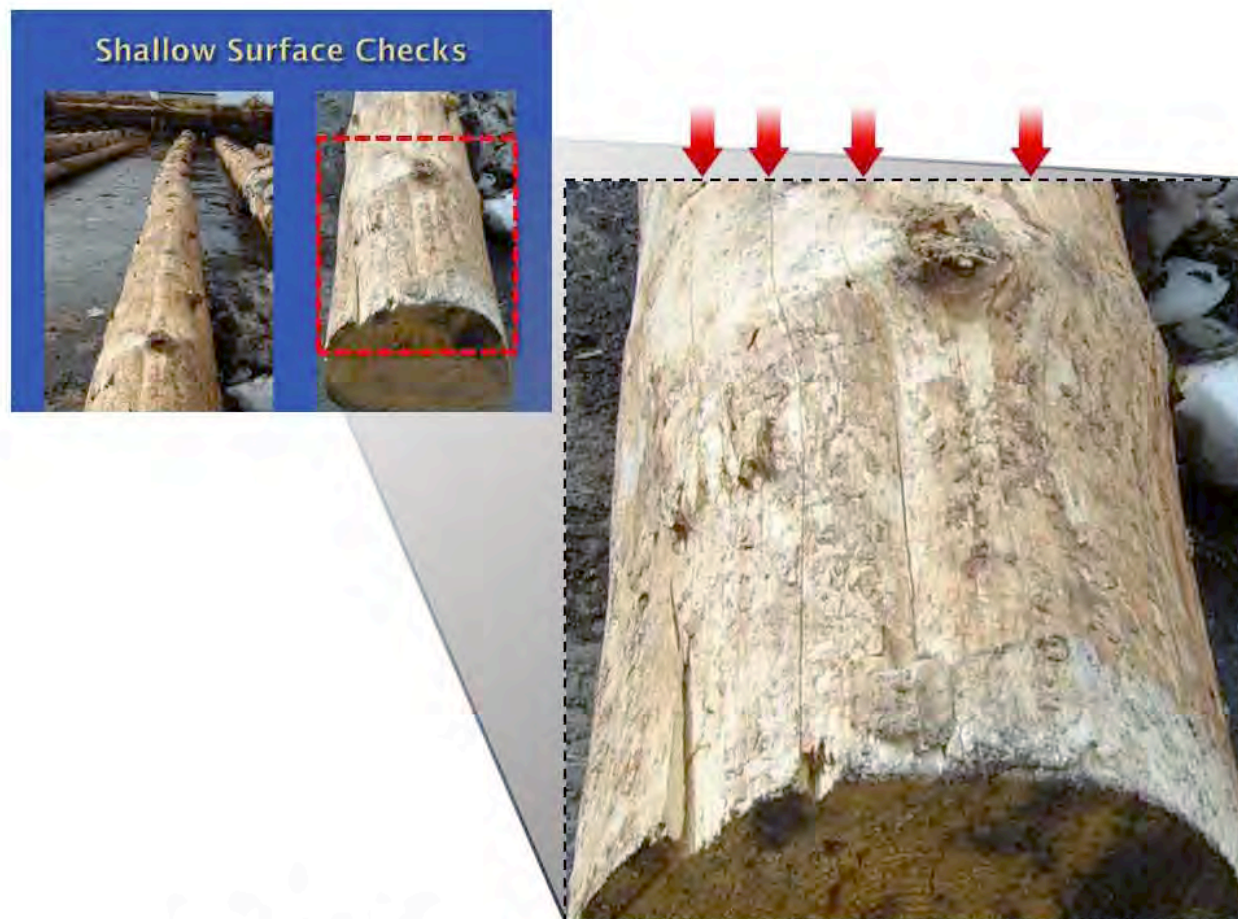


Figure 2. Slide showing an MPB-killed log with extensive surface checks taken from a presentation by the U.S. Timber Measurements Society entitled “Lodgepole Pine Epidemic: Utilization & Scaling” given in April 2011 (Ex. R-153)

113. Mr. Beck, in Figure 5 of his report, claims to show that a log with surface checks can be used to manufacture lumber, but actual U.S. practice is in line with British Columbia’s practice. Surface checks of the sort illustrated both in Mr. Beck’s Figure 5 and the U.S. presentation referenced above would likely be deducted from available volume under American “Scribner” scaling rules. In Mr. Beck’s illustration, a U.S. scaler would likely take a diameter deduction analogous to the 2 cm collar deduction incorporated into the

Scaling Requirements for logs with less than 50 percent bark.²⁰⁴ Such a deduction is a reasonable way to account for volume loss and is fully consistent with the 50/50 test.²⁰⁵

c. British Columbia's "Focus on Checks" Was Not a "Significant Departure" From the Grandfathered Scaling Regime

114. The United States argues that "BC's sudden focus in 2007 on 'checks' as determinative of grade for MPB logs was a significant departure from the grandfathered system, and one that greatly benefitted lumber producers."²⁰⁶ There was nothing sudden about the significance of checks. Numerous sections of the 2006 Scaling Manual are dedicated to assessing the appropriate volume deductions for checks when grading.²⁰⁷ Checks, defined in the 2006 Scaling Manual, as "separation of the wood,"²⁰⁸ are defects that affect grade under the grandfathered system.

²⁰⁴ See National Forest Log Scaling Handbook, Ch. 30 at 30-41 to 30-42 (Ex. R-128). See also Timber Measurements Society Presentation, "Lodgepole Pine Epidemic – Utilization and Scaling," April 2011, p. 31 ("Shallow check (slight or no heartwood affected), Measure a centered, new diameter inside the check(s), deduct by diameter-cut, or portion of a diameter-cut") (Ex. R-153).

²⁰⁵ Crover Supp. Stmt. ¶ 17 (Ex. R-148); Crover Stmt. ¶ 98 (Ex. R-3).

²⁰⁶ U.S. Reply ¶ 233. The U.S. Reply would be noticeably shorter if every use of the words "sudden" and "abrupt" and their derivatives were expunged.

²⁰⁷ See, e.g., Scaling Manual (June 30, 2006), § 6.3.1.1 at 6-7; § 6.4.2.5 at 6-23 (Ex. R-19).

²⁰⁸ Scaling Manual (June 30, 2006), Glossary of Terms at G-2 (Ex. R-19).

115. Checks are also the defects most likely to result from MPB infiltration. By late 2006/early 2007, the Ministry was inundated with observational and experiential data that demonstrated that checks in MPB-killed logs were opening and closing in response to changing weather conditions.²⁰⁹ Ministry and industry scalers had limited practical experience assessing checks, because, before April 2006, whether a log was from a living or dead tree was a more important issue for scaling purposes. Both grappled with how to correctly determine the depth of fibre separation in MPB-killed wood.²¹⁰

116. The Ministry ultimately included the following language concerning checks in the 2007 Scaling Requirements:

All visible checks at log ends must be considered, regardless of depth or width, or whether a feeler gauge can be inserted. For example, a thin black line visible at the log end and/or bole *may* be considered a check.²¹¹

117. This language reinforced the definition of “check” in the Scaling Manual, which does not include minimum depth and width requirements. It also made application of

²⁰⁹ Crover Stmt. ¶ 72 (Ex. R-3); *see also* C-18 [] at CAN-007147 []; C-46 [] at CAN-008928 []

²¹⁰ Crover Stmt. ¶ 72 (Ex. R-3).

²¹¹ C-82 (Memorandum from Bill Howard (Nov. 28, 2007)) at CAN-011402 (emphasis added).

the Scaling Manual more accurate by ensuring that all scalers were properly assessing volume impacted by checks.

118. The Scaling Requirements did not introduce the practice of assessing grade based on the number, depth and distribution of checks.²¹² The 2006 Scaling Manual provides:

Section of log with one check or more, 4 cm or more in depth, in a portion of logs 5 cm to 7 cm in radius, is not allowed.

Section of log with two checks or more, 4 cm or more in depth, with less than a 10 cm residual core or collar, in a portion of log 8 cm or more in radius, is not allowed.²¹³

The Scaling Requirements apply the same concepts of using log diameter and number, depth, and position of checks to reach the same conclusions as dictated by the geometric analyses found in the grandfathered Scaling Manual.²¹⁴

d. The Scaling Requirements Are Consistent With the Grandfathered 50/50 Test

119. Jim Crover, who supervised the development of the Scaling Requirements, provides diagrams and explanations of the math behind each cell of the Scaling

²¹² Crover Supp. Stmt. ¶¶ 26-27, App. A (Ex. R-148); Scaling Manual (June 30, 2006), § 6.6.6.4.2 at 6-110 (Ex. R-19).

²¹³ Scaling Manual (June 30, 2006), § 6.6.6.4.2 at 6-110 (Ex. R-19).

²¹⁴ Crover Supp. Stmt. ¶¶ 23-25, App. A (Ex. R-148); Scaling Manual (June 30, 2006), § 6.6.6.4.2 at 6-110 (Ex. R-19).

Requirements in Appendix A to his Supplemental Report.²¹⁵ Mr. Crover's analysis demonstrates how each cell of the 2007 Scaling Requirements applies the grandfathered scaling principles to the assessment of available volume for the first leg of the 50/50 rule.²¹⁶ Mr. Crover's explanations and calculations demonstrate, for each cell, that there is less than 50 percent volume available for the manufacture of lumber, with one minor exception.²¹⁷

e. Facilitating the Accurate Grading of Logs Does Not Provide a Benefit to Producers, and Is Consistent With a Move Toward Maintaining or Improving the Extent to Which Stumpage Charges Reflect Market Conditions

120. Far from “divert{ing} more MPB timber into Grade 4,” the Scaling Requirements ensured that beetle-killed logs with significant checking were properly graded.²¹⁸ The consideration of “more checks,” by itself, does not confer a benefit if those checks do, in fact, affect the volume of a log available to manufacture lumber.²¹⁹ The

²¹⁵ Crover Supp. Stmt. ¶ 24, App. A (Ex. R-148).

²¹⁶ *Id.* ¶ 23, App. A.

²¹⁷ Mr. Crover acknowledges that it is theoretically possible to apply the rules of the Scaling Requirements regarding 9 rad logs with less than 50 percent bark and achieve the result of 51.1 percent volume available. Mr. Crover, in his supplemental statement, explains why it is highly unlikely that the positioning of checks on 9 rad log would be such that the 51.1 percent example would come into play. Nine rad logs account for only 10 percent of volume of the pine harvest audit is highly improbable (if even possible) that a 9 rad log would have less than 50 percent bark and the requisite number of checks all clustered in one quadrant with no additional space between defects. *See* Crover Supp. Stmt., App. A at 1, 8-10 (Ex. R-148).

²¹⁸ U.S. Reply ¶ 235.

²¹⁹ *Id.* ¶ 242; *see* Crover Supp. Stmt. ¶ 17 (Ex. R-148); Crover Stmt. ¶ 98 (Ex. R-3).

application of conventions based on repeated observation of obscured checks did not “allow industry to down-grade lumber quality logs,” but instead served to ensure accuracy in grading logs.²²⁰ Accordingly, by allowing scalers to accurately assess the proper grades of logs based on a procedure that properly applied the 50/50 test, the Scaling Requirements did not confer a benefit on producers or exporters of Softwood Lumber.

121. In any event, the Scaling Requirements, are consistent with, and are applications of, the Scaling Regulation and Scaling Manual as they existed on July 1, 2006 and are therefore grandfathered under Article XVII(2)(a).²²¹

122. Even if the Tribunal were to determine that the Scaling Requirements are not grandfathered, they are protected under the safe harbor of Article XVII(2)(a), which permits modifications or updates to the existing timber pricing or forest management systems that “improve the extent to which stumpage charges reflect market conditions.”²²² By improving a scaler’s ability to assess severely-checked logs, the Scaling Requirements increased the accuracy of grading. Such accuracy, as reflected in proper grading and assessment of stumpage charges, improves the extent to which stumpage charges reflect market conditions.

²²⁰ *Id.*

²²¹ Crover Stmt. ¶¶ 92-94 (Ex. R-3); *see also* Crover Supp. Stmt. ¶¶ 23-28, App. A (Ex. R-148).

²²² SLA 2006 Art. XVII(2)(a) (Ex. R-1).

4. Kiln Re-drying

123. The United States' Reply presents two lines of argument regarding kiln re-drying that do not differ materially from the arguments in the Statement of Case.

124. The first line of argument challenges the use of kiln re-drying as a tool to identify and measure existing checks, and thus achieve consistent grading results that depend on the characteristics of the log rather than the weather. This argument concerns logs that would have been classified as Grade 4 without kiln re-drying if they were scaled during dry weather and all of their defects had been visible.²²³ The second line of argument asserts that the true objective of kiln re-drying was not to identify checks that affect log quality, but was instead to create new, small checks that have no effect on log quality yet nonetheless result in grade reduction. This argument relates to logs that, according to the United States, would not have been classified as Grade 4 without kiln re-drying even if all of their defects had been visible.²²⁴

a. Kiln Re-drying Is an Effective Tool to Facilitate Accurate and Consistent Application of the 50/50 Test

125. The first U.S. challenge relates to the use of kiln re-drying to identify *existing checks* that, if they had been visible without kiln re-drying, *would have resulted in grade reduction*

²²³ U.S. Reply ¶¶ 178, 196-198.

²²⁴ U.S. Reply ¶¶ 177, 187, 191-192.

*based on the rules in the grandfathered Scaling Manual.*²²⁵ But without kiln re-drying, logs containing checks that reduced the volume available to manufacture lumber to less than 50 percent would have been misgraded as Grade 2 because those checks were not visible. The United States thus characterizes as circumvention the use of a tool to reveal hidden defects so that they can be properly accounted for in the application of the 50/50 test under the scaling rules set out in the Scaling Manual.

126. Mr. Duran argues that no such assistance was necessary. With reference to Figures 2 and 3 in his report, which reproduce photographs from Dr. Oliveira's report of the same log dry and wet, Mr. Duran states that "any experienced scaler will be able to easily identify checks that will impact lumber recovery. Although how a check appears may vary with the weather or moisture, a scaler's ability to identify and assess checks is not dependent on the seasons."²²⁶ But an examination of those photographs suggests that Mr. Duran understates the challenge that the log pictured in his Figure 3 would present to a scaler.²²⁷ B.C. scalers are conscientious workers, who do their best to perform a difficult job in challenging conditions in all seasons, but it is doubtful that all of them would be able to see

²²⁵ U.S. Reply ¶¶ 178, 196-198.

²²⁶ Duran Report ¶¶ 11-13 (C-106).

²²⁷ Duran Report ¶¶ 12 and Figure 3 (C-106); Dr. Oliveira Report ¶¶ 16-20, Figures 1-3 (Ex. R-11). *See also* Ex. R-184 for a series of CT scans from Dr. Oliveira's study showing the closing and opening of checks.

the checks in the log in Mr. Duran's Figure 3 without the benefit of kiln re-drying to make them as visible as they appear in Mr. Duran's Figure 2.²²⁸

127. The changing appearance of the same log illustrated in Mr. Duran's Figures 2 and 3 results from susceptibility of MPB-killed pine to changes in moisture conditions.

These changes in logs' appearance gave rise to concerns about scalers' ability to grade logs in cold and wet weather and those concerns are well documented:

- C-138 (ISAC Grading Sub-committee Meeting Minutes (Dec. 5, 2006)) at CAN-007176 (stating under the subheading "Checks in Winter," a priority to "Develop a local knowledge for assessment of checks. Problem with measure what you see. Know checks are deeper.");
- Ex. R-139 (ISAC Meeting Minutes (Dec. 6, 2006)) at CAN-007171 ("Hard to determine checks in the winter.");
- C-79 (ISAC Grading Sub-committee Meeting Minutes (Jan. 31, 2007)) at CAN-007178-79 ("{W}e do not have a good handle on our ability to determine checks particularly in winter Need the ISAC grading sub-committee to sort out ability to detect checks in winter.");
- C-115/Ex. R-146 (ISAC Meeting Minutes (Mar. 6, 2007)) at CAN-007189 (stating under subsection "e) Depth/checks" that the "{p}rimary concern was winter condition.");
- C-78 [] at CAN-007210 []
];
- C-49 (ISAC Grading Sub-committee Meeting Minutes (Sept. 11, 2007)) at CAN-011328 (referencing the "{d}ifficulty in the measurement and

²²⁸ See Crover Stmt. ¶¶ 72-74 (Ex. R-3).

assessment of checks” and proposing to study “depth of checks under different weather conditions.”); and

- C-52 [] at CAN-010637 [].

128. These concerns are corroborated by seasonal variations in the percentage of Grade 4 timber in the pine harvest between November and January, when the B.C. Interior tends to be wet, and between July and August, when it tends to be dry.²²⁹

129. It is equally well documented that this problem of “disappearing checks” in the winter and/or wet conditions was what kiln re-drying was intended to address:

- C-54 [] at CAN-007294 []

];

- Ex. R-133 [] at CAN-010606 []

];

- C-97 [] at CAN-051293 []

];

²²⁹ Crover Supp. Stmt., App. B. (Ex. R-148). *See also* Crover Stmt. ¶ 85 (Ex. R-3); [] at CAN0001812, CAN-011818-19 (Ex. R-30).

- C-82 (Memorandum from B. Howard (Nov. 28, 2007)) at CAN-011400 (“Since the introduction of the New Interior Log Grades, there have been concerns expressed about the grading of the logs affected by checks. Scalers have indicated to us that there are difficulties in the measurement of checks especially after rain or snow, resulting in different interpretations in the grading of those logs due to difficulties seeing the checks.”); and
- C-151 (Memorandum from L. Oliveira to B. Friesen (Jan. 22, 2008)) at CAN-000255 (“{C}hecks that were initially present may ‘close’ which in turn can prevent an accurate assessment of the original log quality (grade).”).

130. Using kiln re-drying to address these concerns was not, as the United States asserts, a departure from the 50/50 test. No rule or principle limits the application of the 50/50 test to defects easily visible to the naked eye. Mr. Duran has no objection to the use of invasive tools and techniques, such as probing a log with a “spud” or bucking a log end, to identify and measure checks.²³⁰ Kiln re-drying is simply another such tool.²³¹ And the adoption of kiln re-drying followed an extensive trial-and-error driven search for other tools that might perform a similar task, i.e. assist scalers in seeing and measuring closed checks.²³²

131. Kiln re-drying proved to be a superior tool, because it allowed scalers and check scalers to look at the same log and see the same thing, regardless of their levels of

²³⁰ Duran Report ¶¶ 11-12, 16 (C-106).

²³¹ ISAC Meeting Minutes (June 17, 2008) at CAN-007334 (“Kiln was a tool to see checks”) and at CAN-007335 (“Problem is that scalers still cannot see the checks,” and later “Checks are the most significant factor ... cannot easily be seen.”) (Ex. R-187).

²³² Other tools and techniques considered, but rejected, were the use of RV antifreeze with food coloring and a feeler gauge. *See e.g.* C-215 (ISAC Meeting Minutes (Mar. 6, 2007)) at CAN-007189; [] at CAN-0-10606 (Ex. R-133).

experience or the weather at the time of the scale.²³³ The United States attempts to characterize a [

]²³⁴ In addition to providing another illustration of the United States' efforts to erect drafts and discussion papers into formal pronouncements, that reading is simply wrong. Mr. Crover notes:

As the document cited by the U.S. explains, however, [

].... The page cited by the U.S. reflected the Ministry's concern that, [

]²³⁵

This is consistent with the fact that the option, [

]²³⁶

132. Mr. Duran objects that “{i}t is also nearly impossible to perform accurate and fair check scales when kiln drying logs.”²³⁷ This criticism is misguided. The site

²³³ See [] (Ex. R-147).

²³⁴ U.S. Reply ¶ 185 (citing C-178 []) at CAN-011793.

²³⁵ Crover Supp. Stmt. ¶ 33 (discussing C-178 []) (Ex. R-148).

²³⁶ C-178 [] at CAN-011798.

authorization conditions for kiln re-drying guidelines require that mills provide advance notice to the Ministry of when they intend to kiln re-dry a load of logs, so that a check scaler can be present when the logs come out of the kiln.²³⁸

133. Mr. Duran also invokes his experience “as a former check scaler and Master Scaler” to judge “not sufficient” the Ministry’s monitoring of kiln operators’ compliance with the kiln re-drying guidelines.²³⁹ Mr. Duran asserts that the Ministry oversees kiln operation entirely by means of a reporting form that “is manually filled in and there is no automated check system by which to verify any of this information.”²⁴⁰ But the kiln charge report forms to which Mr. Duran refers, which must be submitted for each load of logs subject to kiln re-drying, must be accompanied by machine-generated data reflecting the

²³⁷ Duran Report ¶ 25 (C-106).

²³⁸ [] at CAN-028735 (Ex. R-32); E-mail from S. Laberge (Dec. 17, 2007) at CAN-011379 (Ex. R-35); [] at CAN-011426 (Ex. R-34).

²³⁹ Duran Report ¶ 24; *see also id.* ¶¶ 21-26 (C-106).

²⁴⁰ Duran Report ¶ 24 (C-106).

conditions in the kiln throughout the re-drying process.²⁴¹ That data provides precisely the “automated check system” that Mr. Duran finds missing.²⁴²

b. The United States’ Arguments That Kiln Re-drying Causes Misgrading Are Without Basis

134. The United States concedes that kiln re-drying does not produce “large-scale checks.”²⁴³ It nevertheless insists that the real purpose of kiln re-drying “was to create small-scale checks that could be used to downgrade perfectly usable sawlogs to Grade 4.”²⁴⁴ The United States relies on Mr. Duran’s assertion that the manner in which kiln re-drying is conducted means that the logs are “likely” to develop small “end checks” and that these permit the improper downgrading of logs that would otherwise be graded Grade 1 or Grade 2.²⁴⁵ Although there is some evidence that small end checks may form during the kiln re-drying process, the fatal defect in that argument is that such checks are not taken into account in determining log grade.

²⁴¹ [REDACTED] at CAN-019737 [REDACTED] (Ex. R-36).

²⁴² See, e.g., [REDACTED] (R-161); [REDACTED] (R-162); [REDACTED] (Ex. R-163).

²⁴³ U.S. Reply ¶ 183.

²⁴⁴ U.S. Reply ¶ 177.

²⁴⁵ Duran Report ¶¶ 15-17 (C-106).

135. Checks of the type Mr. Duran refers to are known as “end checks,” “weather checks,” or occasionally, “sun checks.” Such checks were never considered for grade reductions – either before, or after, the implementation of kiln re-drying.²⁴⁶ These checks owe their two latter names to the process by which they are created, *i.e.* the exchange of moisture in the ambient conditions of the scale yard.²⁴⁷ Because both weather checks and “deep end,” or straight checks that extend at least 4 cm deep, appear on the ends of logs, there is some overlap in terminology.²⁴⁸ However, weather checks differ from “deep end” or straight checks that are at least 4 cm deep in that they appear to be wider in the centre of the log end than at the edges and will radiate towards, but not as far as, the surface of the log.²⁴⁹

136. Mr. Duran’s assertion that the December 2007 Scaling Requirements “required the scaler to count the end checks when grading the logs” is contrary to B.C.

²⁴⁶ See Scaling Manual (June 30, 2006), § 6.3.1.1 at 6-8 (“Surface and end checks due to delays in processing are disregarded for the purposes of grading. The Forest Service may order that these checks be ignored.”) (Ex. R-19); Scaling Manual (July 1, 2008), § 8.3.1.1 at 8-7 (“Surface and end checks due to delays in processing are disregarded for the purposes of grading.”) (C-48).

²⁴⁷ See Scaling Manual (June 30, 2006), § 6.4.2.5 at 6-40 (“End checking is not to be confused with splits, shakes and surface checking visible at the end of a log. End checking is caused by rapid drying at the end of a log after it is bucked green and normally penetrates only a short distance into the log. The Forest Service may order that it be ignored.”) (Ex. R-19).

²⁴⁸ C-168 [] at CAN-020741 []

²⁴⁹ Scaling Manual (July 1, 2008), § 9.2.2 at 9-7 (C-48).

policy as communicated by Ministry officials to scalers.²⁵⁰ A training presentation prepared contemporaneously with the Scaling Requirements makes this distinction. After discussing the requirement of the conventions to assess visible checks, it notes that end (weather) checking “occurs on the ends and usually does not penetrate very far.”²⁵¹ In the illustrative slides at the end of the presentation, a log is shown with end checks, as appears in Figure 3.



Figure 3: Photo of log with end checks used in a training presentation relating to the Scaling Requirements (Ex. C-84, at CAN-010314)

²⁵⁰ Crover Supp. Stmt. ¶¶ 34-37 (Ex. R-148).

²⁵¹ C-84 (Presentation of Requirements and Convention For Checked Logs (Dec. 1, 2007)) at CAN-010284.

The legend in the presentation does not provide any deduction for the checks seen in Figure 3, and the log is described as having more than 50 percent available.²⁵² Similarly, an April 2009 memorandum clarifying the application of the December 1, 2007 conventions states unambiguously that [

]²⁵³ Moreover, as Mr. Crover explains, scalers in the field are able to distinguish between the types of end checks that the Scaling Manual instructs than to ignore, and the types of checks that affect log grade.²⁵⁴

137. Disregarding or removing end checks was standard practice on kiln re-dried logs, and neither affected the grade assigned to the log. As a B.C. Forest Service presentation on checks prepared in late 2007/early 2008 states [

]²⁵⁵ The presentation

²⁵² *Id.* at CAN-010314. *See also* C-168 [] at CAN-020760 [

]

²⁵³ C-47 [] at CAN-026604.

²⁵⁴ Crover Supp. Stmt. ¶ 37 (Ex. R-148).

²⁵⁵ C-168 [] at CAN-020745.

explains, [

]²⁵⁶

138. The United States criticizes Dr. Oliveira – who is not a scaler – for relying on the opinions of two scalers – one from the Ministry and one from industry – about the impact on log grades of the tiny checks created in a small number of the cross-sectional samples by kiln re-drying.²⁵⁷ Canada has made available to the United States the same high-resolution CT scans that those scalers reviewed in concluding that kiln re-drying did not create or enlarge checks to an extent that would change log grade.²⁵⁸ Yet neither the United States nor Mr. Duran has argued that the images reveal anything different than what Dr. Oliveira reported, or that any log was actually downgraded as the result of minor end checks caused by kiln re-drying.

²⁵⁶ *Id.* at CAN-020766 (emphasis added).

²⁵⁷ U.S. Reply ¶ 190. One criticism is particularly misplaced. In his Expert Report in this arbitration, Dr. Oliveira explains the methodology he employed when he was asked by British Columbia and its counsel to study the effects of kiln re-drying on checks in 2009-2010. Oliveira Report ¶ 62 (Ex. R-11). Though Dr. Oliveira noted in his Report that he was “working under the supervision of counsel for British Columbia,” his research in this regard was not *directed* by counsel as suggested by the United States. U.S. Reply ¶ 188. Rather, counsel requested that he, as an expert in the field, develop an opinion and conduct the research necessary to do it.

²⁵⁸ Dr. Oliveira tested hundreds of the logs most “vulnerable” to such down-grading, *i.e.* Grade 2 logs, and the thousands of CT scans, hundreds of photos, and numerous spreadsheets resulting from those tests were provided to the United States. Yet the United States could not find, within that sample, any evidence to support its claims. Some examples of these scans are reproduced in Ex. R-184.

c. Facilitating the Accuracy With Which Scalers Identify the Physical Characteristics of Logs Is Consistent With a Move Toward Maintaining or Improving the Extent to Which Stumpage Charges Reflect Market Conditions

139. Because kiln re-drying promotes accurate log grading by ensuring that existing checks can be identified and accounted for in applying the 50/50 test under the grandfathered system, it does not provide a benefit to softwood lumber producers and thus cannot constitute circumvention. If a log is a Grade 4 log, allowing it to be classified and priced as a Grade 4 log does not confer a benefit.

140. Nothing in the grandfathered system requires identification of checks and other defects only through unaided visual observation. To the contrary, scalers have long used practices such as bucking logs to expose internal defects,²⁵⁹ applying conventions or local knowledge to identify hidden defects,²⁶⁰ and using a scale stick (or a “spud,” as Mr. Duran calls it) to strip away bark to identify defects that would otherwise be obscured.²⁶¹ Kiln re-drying is simply another tool. It neither changes the definition of Grade 4 nor alters the log characteristics accounted for in grading. Permitting scalers to use a tool to accurately assess the characteristics of a log is part of the grandfathered system, not a change to it.

²⁵⁹ See Scaling Manual (June 30, 2006), § 5.6.3.2 at 5-73 (describing the use of bucking to reveal extent of heart rot) (Ex. R-19).

²⁶⁰ See *id.*, § 6.6.2.3.1 at 6-103 (describing use of local knowledge to estimate the length of defects).

²⁶¹ See *id.*, § 5.3.5 at 5-15, § 5.6.1 at 5-70 (describing proper application and use of the B.C. Metric Scale Stick).

141. The United States insists that the industry’s request for approval prior to kiln re-drying, and the Ministry’s “misgivings” about the practice, establish that it was a departure from the grandfathered system. But approval of scaling practices subject to conditions that ensure accurate scaling and facilitate oversight are part of the day-to-day administration of the grandfathered system.²⁶² The fact that kiln re-drying was first authorized at the district-office level²⁶³ (there are 20 forest districts in the Interior) and no amendment to the Scaling Regulation was required to do so,²⁶⁴ demonstrates its consistency with the grandfathered system.

142. Even if kiln re-drying were not grandfathered, it would still be protected by the Article XVII(2)(a) safe harbour as a “modification,” because it “maintains the extent to which stumpage charges reflect market conditions, including fluctuations resulting from ... timber quality.” The United States disputes the applicability of the safe harbour, but only on the basis that it believes that Canada has failed to show that kiln re-drying “maintains or improves accurate application of the 50/50 rule.”²⁶⁵ Canada has shown that kiln re-drying improves a scalers’ ability to identify and measure checks accurately and that identification

²⁶² See *id.*, § 11.3 at 11-9 to 11-16 (describing scale site authorization process).

²⁶³ See [] at CAN-028734-35 (Ex. R-32).

²⁶⁴ See C-81 (Draft Discussion Paper: Alternatives to Redrying (LO) (Sep. 26, 2008)) at CAN-007355 (describing extension of kiln re-drying as a matter of procedure).

²⁶⁵ U.S. Reply ¶ 201.

and measurement of checks is central to application of the 50/50 test. A process that improves the accuracy of log grading under the 50/50 test, thereby maintaining the extent to which stumpage charges reflect market conditions, is entitled to the protections of the safe harbour under Article XVII(2).

5. Mere Inaction Is Insufficient to Establish a Claim of Circumvention Under the Agreement

143. The United States’ attempt to base a claim for circumvention on the allegation that “BC’s failure to apply and enforce its pricing and grading system allowed increasing amounts of timber to be assigned to Grade 4 without regard to the timber’s lumber-suitability” fails on two grounds.²⁶⁶ First, it is not supported by the evidence. And second, no such claim may be made under the SLA.

144. Canada has already demonstrated that British Columbia takes reasonable steps to enforce its pricing and grading system, and that each allegation of non-enforcement made in the Statement of Case is unsupported, exaggerated or fabricated.²⁶⁷ The claim of failure to enforce may therefore be disregarded, because the United States has failed to show that

²⁶⁶ U.S. Reply ¶ 243.

²⁶⁷ Stmt. of Defence ¶¶ 255-266.

there has in fact been any failure to enforce, and the evidence before the Tribunal is to the contrary.²⁶⁸

145. Nevertheless, the U.S. Reply argues that the B.C. Ministry's taking "no action" to correct the "industry's misgrading"²⁶⁹ resulted in what the United States now argues to have been British Columbia's action resulting in circumvention: sales of allegedly misgraded timber at prices below that required by British Columbia's scaling and pricing rules.²⁷⁰ This argument cannot be sustained. Not only does the United States fail to establish any causal connection between British Columbia's alleged unwillingness to take "action to correct the industry's misgrading" and British Columbia's alleged sales of "misgraded timber at prices below that required by the scaling and pricing rules,"²⁷¹ but, more fundamentally, it also ignores the structure and content of Article XVII of the SLA.

²⁶⁸ *Id.*

²⁶⁹ U.S. Reply ¶ 252.

²⁷⁰ Canada explains at paragraphs 26-29 of this Rejoinder that such sales would not, for other reasons, constitute an "action" on which the United States may base a claim of circumvention. Also, the number of "examples" the United States offers are minuscule compared to the number of check scales that were conducted in this timeframe. *See* Crover Stmt. ¶ 23 (stating that from 2006 - 2010 the Ministry conducted 12,320 check scales, issuing replacement scales in 1,076 instances) (Ex. R-3).

²⁷¹ U.S. Reply ¶ 252.

a. The Text Confirms That the Absence of Government Action Cannot Be the Subject of a Claim of Circumvention

146. Article XVII has six paragraphs, two of which are dispositive of the United States' attempt to state a failure-to-enforce claim. *Failures to act*, are dealt with in paragraph 3 of Article XVII. That paragraph provides, in its entirety, that:

Either Party *may consult* with the other if it believes that the other Party has substantially *failed to enforce* its legal requirements in a manner that has a material impact on the price or cost of harvesting Softwood Sawtimber. (emphasis added).

147. Paragraph 3 is separate and apart from the anti-circumvention obligation that is set out in Article XVII(1). The Vienna Convention requires each provision of a treaty to be read so as to give it effect.²⁷² A failure to enforce “legal requirements in a manner that has a material impact on the price or cost of harvesting Softwood Sawtimber,” which is what the United States' failure-to-enforce claim alleges, invokes paragraph 3. That consequence is consultation, not arbitration. Paragraph 3 would be entirely redundant if a failure to enforce was capable of being considered part of a circumvention claim under paragraph 1.

148. The structure of the SLA assigns “actions” that could amount to circumvention to paragraph 1 of Article XVII, unless such actions fall within one of the exceptions enumerated in paragraph 2. Alleged failures to act are dealt with in paragraph 3. The United States' “actions case” thus must be evaluated in this arbitration under paragraphs

²⁷² Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331, Art. 31(1) (RA-4).

1 and 2 to establish whether any action of British Columbia’s circumvented or offset any commitment under the SLA and, if so, whether that action was nevertheless permitted by paragraph 2, because that is the form of process the Parties elected in Articles XIV and XVII of the SLA to resolve that type of claim.

149. In this instance, where no government “action” has been taken, and where the strongest description used by the United States of the government’s supposed action is “acquiescence,” no claim for circumvention can be brought under the SLA. Although the United States denies that it is arguing that “Canada has violated its ‘domestic legal requirements,’”²⁷³ there is no question that it does so argue.²⁷⁴ It also claims that it has “identified specific instances in which the BC government, aware that industry scalers violated scaling rules, failed to correct errors or otherwise enforce its rules.”²⁷⁵ Its denial, therefore, is nothing more than a transparent effort to distance itself from the terms of Article XVII(3) of the SLA.

²⁷³ U.S. Reply ¶ 244.

²⁷⁴ *See, e.g.*, U.S. Reply ¶ 244 (“BC’s knowing failure to apply and enforce its grading system has allowed increasing amounts of timber to be misgraded as Grade 4...”).

²⁷⁵ U.S. Reply ¶ 246.

b. The Negotiating History Confirms That Actions Are Required to Establish a Claim of Circumvention

150. Canada's interpretation of the text and structure of Article XVII is reinforced by the negotiating history of the Article. On June 16, 2006, during the negotiation of the Agreement, the United States made an effort to introduce explicitly into Article XVII the reading that it seeks to give that article now. Specifically, the United States sought to add the following provision to Article XVII:

Substantial failure to enforce legal requirements in a manner that has a material impact on the price or cost of harvesting Softwood Sawtimber *shall be considered circumvention* of this Agreement.²⁷⁶

On June 25, 2006, the United States proposed precisely the same language.²⁷⁷

151. Canada rejected the proposed U.S. insertions on June 27, 2006, by deleting the entire paragraph that the United States sought to add.²⁷⁸ Two days later, on June 29, 2006, the Parties resolved this disagreement, in a merged text, by replacing the phrase "shall be considered circumvention" with the phrase "has the right to consult," as follows:

Either Party has *the right to consult* with the other Party if it believes that the other Party has substantially failed to enforce

²⁷⁶ SLA U.S. Text Draft (June 16, 2006) (Ex. R-191) (emphasis added).

²⁷⁷ SLA U.S. Text Draft (June 25, 2006) (Ex. R-192).

²⁷⁸ SLA Canada Text Draft (June 27, 2006) (Ex. R-193).

legal requirements in a manner that has a material impact on the price or cost of harvesting Softwood Sawtimber.²⁷⁹

152. Over the course of the next three weeks, the Parties agreed on the final text as it appears in Article XVII(3).²⁸⁰ This solution not only provided a different method for resolving a dispute about a failure to enforce than for resolving a dispute about an allegation of circumvention, but also emphasized the difference by putting the failure to enforce process into a separate paragraph, which is now paragraph 3 of Article XVII.

153. The Parties thus specifically considered and rejected a proposal to make a failure to enforce involving no positive action on the part of government a matter subject to arbitration. Instead, they substituted language providing a different remedy – consultations – in the event that a Party believes a failure to enforce to have occurred. This negotiating history reinforces and supports the ordinary plain meaning of the text of the SLA.

154. An alleged failure to enforce domestic legislation thus gives rise only to the right to consult under Article XVII(3). Such a failure does not constitute an “action” within the reach of Article XVII(1), and therefore cannot support a claim of circumvention of the Agreement.

²⁷⁹ SLA Merged Text Draft (June 29, 2006) (Ex. R-194) (emphasis added).

²⁸⁰ SLA Scrubbed Text Draft (July 19, 2006) (Ex. R-195).

C. The United States Cannot Resurrect Its Inferential Case

155. The United States has asked the Tribunal to infer that the increasing percentages of Grade 4 timber in the Interior harvest after April 2007 resulted from misgrading.²⁸¹ Canada has explained that increases in volumes of Grade 4 timber cannot constitute circumvention unless they were caused by a government action and conferred a benefit on softwood lumber producers.²⁸² The United States has failed to establish these elements of its claim, but persists in trying to persuade this Tribunal to draw an inference of misgrading from a purported insufficiency of explanations for the volume of Grade 4 timber.²⁸³ To exclude other explanations, the United States is forced to assume: (1) that the MPB does not affect wood quality; (2) that there is no relationship between the spread of the MPB and the increasing volume of Grade 4 timber; and (3) that increases in levels of Grade 4 timber should have been accompanied by one-for-one declines in lumber volume or value recovery. None of these assumptions can be supported.²⁸⁴ In its Reply, the United States

²⁸¹ Stmt. of Case ¶ 61.

²⁸² Stmt. of Defence ¶¶ 111-120.

²⁸³ Canada also previously stressed the absence of any actual evidence that misgrading had occurred. *See, e.g.*, Stmt. of Defence ¶ 172.

²⁸⁴ Stmt. of Defence ¶¶ 128-129.

still has provided no evidence of misgrading, but has nevertheless persisted with a case based on inferences from these assumptions.²⁸⁵

1. The United States Has Failed to Sever the Link Between Declining Timber Quality and Increasing Grade 4

156. The United States persists in insisting that, “{f} or Canada to prevail, the objective data about the quality factors relevant to the 50/50 rule must support its contention that the observed Grade 4 pattern is consistent with the proper application of the 50/50 rule.”²⁸⁶ The United States asserts that “these data do not support Canada’s claim, nor does Canada explain how these data can be consistent with its defense.”²⁸⁷ It is, of course, not Canada’s burden to disprove the United States’ claim, but Canada has nonetheless demonstrated precisely what the United States claims it must show.

157. Canada has demonstrated four facts that together establish the connection between the Mountain Pine Beetle infestation and the rise in the volume of Grade 4 timber in the B.C. Interior: (1) checking is relevant to the application of the 50/50 test;²⁸⁸ (2) checks are the most significant form of deterioration affecting MPB-killed timber (a fact that

²⁸⁵ U.S. Reply ¶¶ 18, 41.

²⁸⁶ U.S. Reply ¶ 41.

²⁸⁷ *Id.*

²⁸⁸ Stmt. of Defence ¶¶ 154-155; *see also* Part II.C.1.a, *supra*.

is consistent with the opinions of the United States' experts);²⁸⁹ (3) most MPB-killed logs exhibit significant checking by approximately two to three years after the death of the tree;²⁹⁰ and (4) the percentage of logs graded as Grade 4 closely tracks the percentage of log harvested three or more years after death.²⁹¹ Put another way, trees killed by the MPB are likely to develop checks if not harvested within three years, logs with checks are more likely to be graded as Grade 4 under the grandfathered system, and the percentage of pine logs likely to have checks increased at a rate virtually identical to the increase in the percentage of pine logs that were classified as Grade 4.

158. The United States has attempted to sever this very concrete link between the effects of the MPB and observed levels of Grade 4 timber by: (a) mischaracterizing

²⁸⁹ Fettig Report ¶ 23 (“Checking is unquestionably the most important factor affecting wood quality and lumber recovery from trees killed by mountain pine beetle.”) (C-104); Lowell Report ¶ 50 (noting, with qualifications, that “checks are the major challenge in processing MPB-killed timber”) (C-105).

²⁹⁰ Stmt. of Defence ¶¶ 74-84. The United States seems to have confused Canada’s position with respect to number of years after death by which most trees will exhibit checks. Based on the work of Dr. Lewis and the weight of literature on the subject, Canada explained that “{t}rees harvested more than two years after being killed” were almost certain to exhibit significant checking. *See, e.g.*, Stmt. of Defence ¶¶ 156-157; Lewis Report ¶¶ 9, 57 (Ex. R-10); Magnussen S. & Harrison, D., “Temporal Change in Wood Quality Attributes in Standing Dead Beetle-killed Lodgepole Pine,” 84 Forestry Chronicle 392, 399 (June 2008) (Ex. R-170); Lowell, et. al., “Effects of Fire, Insect, and Pathogen Damage on Wood Quality of Dead and Dying Western Conifers,” U.S.D.A. Forest Service, Pacific Northwest Research Station, PNW-GTR-816 (May 2010) (hereinafter “Lowell 2010”) at 35 (“More than two years after” is, of course, the same as “three or more.”) (Ex. R-200). Although some studies find significant checking in most trees by two years after death, Canada used three years as a conservative assumption that conforms to the findings of both Canadian and U.S. scientists.

²⁹¹ Stmt. of Defence ¶¶ 158-159.

unambiguous data and overwhelming scientific consensus about when checks form in MPB-killed logs; (b) relying on a distorted concept of “shelf life” as a basis for asserting that MPB-killed timber exhibits virtually no deterioration until many years after death; and (c) constructing an alternative analysis of the data that relies on a series of counterfactual assumptions. But nothing in this flawed analysis succeeds in calling into question the relationship between the effects of the MPB and the levels of Grade 4 timber in the pine harvest.

a. There Is a Scientific Consensus That Significant Checking Occurs in Most MPB-Killed Pine by Three Years After Death

159. The United States asserts that Canada’s evidence that lodgepole pine killed more than two years prior to harvest is likely to exhibit significant checking “appears to be reverse-engineered to correspond to when Canada concedes the peak of the outbreak occurred rather than to hard facts about timber quality.”²⁹² Instead, the United States argues, “{a}ll reliable evidence shows that declines in lumber recovery and value recovery remain relatively stable well after two years of mortality.”²⁹³ This argument: (1) confuses log characteristics with product outputs; (2) mischaracterizes the data presented by Dr. Lewis; and (3) ignores the clear scientific consensus regarding the timing of timber deterioration.

²⁹² U.S. Reply ¶ 47.

²⁹³ *Id.*

160. **First**, the United States' argument rests squarely on its theory that there is some undefined (and unstated) ceiling on the volume and grades of lumber that British Columbia lumber mill ought to be able to recover from a batch of Grade 4 logs. But, as we explain in Section II.A.4.a, above (and will not repeat here), it is not possible to correlate log grades with the lumber recovery that is obtained from a particular log. Once that imagined connection is severed, the effort of the United States to argue that checks cannot have developed in logs, because mills were still producing lumber from those logs, may be seen for the *non sequitur* that it is.

161. **Second**, Canada's explanation of the connection between the share of Grade 4 timber in the Interior harvest and the percentage of pine that had been dead for more than two years when it was harvested is based on sound scientific evidence. Dr. Lewis explained, in her original report, the extensive, rigorous, and peer-reviewed research that she conducted into how MPB-killed pine trees deteriorate, and her review of the literature on the same subject.²⁹⁴ She also explained her conclusion that 50 percent to 70 percent of MPB-killed lodgepole pine trees are likely to develop checks by two years after death, that the percentage

²⁹⁴ Lewis Report ¶¶ 3, 37 and App. 3 (Ex. R-10). As Dr. Lewis explains in her rebuttal report, most research into the effects of the MPB on timber quality – including both those that look at log quality and those that look at lumber recovery – use methodologies for estimating the time of tree death that are less reliable than the precise methodology employed by Dr. Lewis. See Lewis Rebuttal Report ¶ 21 (Ex. R-152).

is likely to continue to increase thereafter, and that large trees are the most likely to check and to have the greatest number of checks.²⁹⁵

162. In her rebuttal report, Dr. Lewis details the mistakes made by the United States' witnesses in criticizing her methods, data, and conclusions.²⁹⁶ The most remarkable – and incredible – account of Dr. Lewis's work appears in the U.S. Reply brief: "Canada's own expert agrees that most MPB-killed timber remains check-free until many years after attack."²⁹⁷ This statement disregards almost the entirety of Dr. Lewis' report and is based instead on Dr. Fettig's mistaken interpretation of a data point relating to the frequency of checking observed at breast height (1.3 metres) of MPB-killed trees. Dr. Fettig misreads one of Dr. Lewis's charts to conclude that breast height is the portion of a tree most likely to exhibit checking.²⁹⁸ In fact, the opposite is true: Because the lowest part of a tree retains moisture longer than the highest part, the portion of a tree at or below breast height tends to exhibit checks later than the much larger portion of a tree above that height.²⁹⁹ Indeed, Dr. Lewis's report explains that, while 60 percent of trees are without checks at breast height (1.3 metres from the ground) after being dead for two years, approximately 70 percent of

²⁹⁵ Lewis Report ¶ 82 (Ex. R-10).

²⁹⁶ Lewis Rebuttal Report ¶¶ 5, 7-9, 14-15, 17-23, 29, 31, 39, 40-41 (Ex. R-152).

²⁹⁷ U.S. Reply ¶ 58.

²⁹⁸ Fettig Report ¶ 20 (C-104).

²⁹⁹ Lewis Rebuttal Report ¶¶ 14-18 (Ex. R-152).

trees *do* exhibit checking (in any section, not just at breast height) by the second year after death.³⁰⁰ Thus, the United States' principal basis for questioning Dr. Lewis's conclusion that checks appear in most MPB-killed trees by three years after death is simply wrong.

163. **Third**, Dr. Lewis is not the only researcher to conclude that significant checking affects most MPB-killed timber by three years after death. Although there is some variation in findings between researchers, the scientific consensus is consistent with Dr. Lewis's conclusions about the timing of checking in dead pine. For example:

- Three to five years after being killed by the beetle *virtually all standing dead lodgepole pines will have numerous and large (>2 cm) checks in every 2.5 m stem section.*³⁰¹

- [

]³⁰²

- *At the end of year two, all sampled trees had cracks and the percentage of disks with cracks increased dramatically from year one.... The percentage wood volume affected by cracking increased substantially in years two and three and then stabilized.*³⁰³

³⁰⁰ Lewis Report ¶ 57 (Ex. R-10).

³⁰¹ Magnussen S. & Harrison, D., Temporal Change in Wood Quality Attributes in Standing Dead Beetle-killed Lodgepole Pine, 84 Forestry Chronicle at 398 (Ex. R-170) (emphasis added).

³⁰² [] CAN-032554-67 at CAN-032563 (Ex. R-196) (emphasis added).

³⁰³ Hadfield and Magelssen, Wood Changes in Fire-Killed Tree Species in Eastern Washington, U.S. Department of Agriculture, Forest Service, Okanogan and Wenatchee National Forests (2006) at 19 (Ex. R-198) (emphasis added). The Hadfield and Magelssen study looked at pine killed by fire rather than beetle.

- These data indicate that *checking will become an issue for beetle-affected wood within 2 years of tree death.*³⁰⁴
- {T} rees ... estimated to have been dead for approximately four to five years ... had a *significant number of deep checks* present along the lengths of the trees. Every tree and *almost every log had at least one large check* (> 2cm in depth). Even when bucked into 2.5-m logs, *95% of the logs contained a large check....* Checking was *extensively distributed around the circumferences of sampled logs*. For example, checking was restricted to a single log quadrant in only 11% of the 5-m logs and 17% of the 2.5 m logs, whereas *all logs of longer lengths had checks in more than one quadrant.*³⁰⁵

164. Dr. Lewis's conclusions regarding check formation are not only consistent with the overwhelming weight of the scientific literature, but they are also consistent with the conclusion expressed by the United States' expert Eini Lowell prior to this arbitration. Ms. Lowell was lead author on a 2010 report for the United States Forest Service entitled "Effects of Fire, Insect, and Pathogen Damage on Wood Quality of Dead and Dying Western Conifers."³⁰⁶ Ms. Lowell and her coauthors concluded that, by three years after being attacked by the MPB, "{c} racks affect the majority of standing trees. Bark is dropping from basal logs ... {and} {c} racks cause significant volume loss."³⁰⁷ Ms. Lowell and her

³⁰⁴ Trent et. al., Wood and Fibre Quality-Deterioration Model for Mountain Pine Beetle-Killed Trees by Biogeoclimactic Subzone, Mountain Pine Beetle Initiative Working Paper 2006-10. Natural Resources Canada, Canadian Forest Service, Victoria BC (2006) at 18 (Ex. R-199)(emphasis added).

³⁰⁵ Harrison, D., Methodology to Assess Shelf Life Attributes to Mountain Pine Beetle-Killed Trees, Canadian Forest Service (2006) at 2 (Ex. R-208) (emphasis added).

³⁰⁶ Lowell 2010 (Ex. R-200).

³⁰⁷ *Id.* at 33.

coauthors summarized their conclusions about what happens following the death of lodgepole pine after MPB attack:

Because lodgepoles crack quickly, the wood is too dry for most decay fungi. The blue-stained wood typically shows little decay, even 5 years after tree death.... The dry upper parts of lodgepole pine are very decay resistant. *The extensive cracking, however, can cause significant volume losses by the third year and near total loss by the fifth year.*³⁰⁸

165. Neither the United States nor any of its experts – including Ms. Lowell – addresses Ms. Lowell’s 2010 conclusions about the rate of checking in MPB-killed timber.³⁰⁹ That report refers to volume loss from cracks separately from the effects of blue stain,³¹⁰ explicitly acknowledges biases based on scaling methods and presumably accounts for them,³¹¹ and relies on five separate studies as support for its conclusions that checks appear in the majority of trees and cause significant volume loss by three years after death.³¹²

³⁰⁸ *Id.* at 34 (emphasis added); *see also* Lowell, et. al., Deterioration of Fire-Killed and Fire Damaged Timber in the Western United States, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Gen. Tech. Rep. PNW-GTR-292 (1992) at 16 (“Because {lodgepole pine} is a thin-barked species, checks may develop from drying stresses in the first year, although depending on moisture conditions, it may take up to 3 years for checks to develop.”) (Ex. R-202).

³⁰⁹ The article is listed under “Publications” at page 20 of the curriculum vitae attached to Ms. Lowell’s report.

³¹⁰ Lowell 2010 at 33 (Ex. R-200).

³¹¹ *Id.* at 40-41.

³¹² *Id.* at 33.

166. Ms. Lowell's report in this arbitration does cite the four FII mill trials, although they were not among the eighteen sources on which Ms. Lowell and her coauthors of the 2010 Report chose to rely in drawing conclusions about the wood volume and value loss in lodgepole pine.³¹³ This was not an oversight. The mill trials do not address rates of deterioration of MPB-killed pine and each contains express language indicating that the results should be read to apply only "to the test samples and the specific sawmill used for the study."³¹⁴ Canada addresses the United States' mistaken reliance on the FII mill trials in Section II.C.2 below.

b. The United States Distorts the Concept of "Shelf Life"

167. The United States seeks to overcome the scientific consensus on the timing and significance of check formation in MPB-killed timber by focusing on the "shelf life" of such timber. Although Dr. Neuberger concedes that "shelf life studies do not have a consistent definition of shelf life,"³¹⁵ he nonetheless declares (without any support) that "{s}helf life, properly defined for our purposes in assessing grading, refers to the length of

³¹³ *Id.* at 65-66.

³¹⁴ Princeton Sawmill Study at CAN-007030 (C-5). *See also* C-40 (Comparison of Lumber Recovery and Value Yields when Processing Green S-P-F Logs and Grey stage (5+ years) Mountain Pine Beetle Attacked Logs, Part 1, Quesnel Sawmill (Sept. 2007)) (hereinafter "Quesnel Sawmill Study") at CAN-029266; Prince George Sawmill Study at CAN-029289 (C-41); C-39 (Stud Mill Lumber Grade and Value Yields from Green Spruce-Pine-Fir and Grey-Stage Dry Mountain Pine Beetle Attacked Logs (Mar. 2007)) (hereinafter "Vanderhoof Sawmill Study") at CAN-029360.

³¹⁵ Neuberger Rebuttal Report ¶ 33, n.13 (C-103).

time before a killed tree no longer meets the 50/50 sawlog test.”³¹⁶ He assembles a series of reports that purport to estimate shelf life (using widely varied definitions) and concludes from them that it takes upwards of eight years before MPB-killed timber no longer meets his conception of the 50/50 test. There are two fundamental problems with this line of reasoning. First, “shelf life” does not mean what Dr. Neuberger assumes it to mean, and contrary to his unsupported assertion, not one of the studies he cites defines shelf life by reference to the 50/50 test. Second, the reports on which he relies contain *assumptions*, *not findings*, about shelf life.

168. **First**, Chief Forester Snetsinger and Dr. Lewis explain that the term “shelf life” is most generally understood by forest professionals to refer to the length of time after trees in a stand have been killed during which it will remain economical to harvest the timber in the stand for some end use, which may include the production of wood chips or pulp as well as sawing lumber.³¹⁷ Different reports base their estimates of shelf life on different assumptions concerning such parameters as market conditions, harvesting costs, alternative sources of timber, and the quality of the timber.³¹⁸ This variability of the concept of shelf

³¹⁶ *Id.* ¶ 33.

³¹⁷ Lewis Report ¶ 5 (Ex. R-10); Snetsinger Stmt. ¶ 35 (Ex. R-7). Lewis Rebuttal Report ¶ 43 (Ex. R-152); Supplemental Witness Statement of James Snetsinger (hereinafter “Snetsinger Supp. Stmt.”) ¶¶ 4, 12 (Ex. R-149).

³¹⁸ B.C. Ministry of Forests and Range, Prince George Timber Supply Area: Information Report (Nov. 2008) at 5 (noting “{s} helf-life uncertainty is also increasing due to a growing interest in using MPB-killed pine to make products other than sawlogs, such as bioenergy.”) (Ex. R-174); B.C.

(Footnote continued on next page)

life is not unique to reports generated by the Ministry. It is, for example, consistent with the definition of shelf life included in a paper published on the website of Mr. Beck's firm:

The longer shelf-life projections are based on the assumption that when individual stands are salvaged, at least 20 percent of the volume can be recovered as sawlog material, while the balance of the material would be used for various bioenergy products.... The bottom line is that the shelf life hinges on many variables, and it remains to be seen how shelf life will impact BC's sawlog supply.³¹⁹

169. Some of the reports cited by Dr. Neuberger estimate shelf life based on the assumption that the timber's intended use will only be in lumber production – *i.e.*, that the timber will be used as sawlogs.³²⁰ It is important to note that the term “sawlogs” in these reports has nothing to do with log grades, but instead refers to any log that is processed by a sawmill (and sawmills have always processed Grade 4 logs).³²¹ Other reports base shelf life

Ministry of Forests and Range, Morice Timber Supply Area: Rationale for Allowable Annual Cut Determination (Feb. 2008), CAN-005004-61 at CAN-005030 (observing that shelf life is a complex issue dependent on factors including “stumpage rate, lumber price, sawmill configuration and technology, moisture regime at harvest site, and Canadian dollar exchange rate.”) (Ex. R-203).

³¹⁹ Roy Anderson, “BC, Beetles, and Increasing Timber and Timberland Values” (July 2010), *available at* http://www.beckgroupconsulting.com/Misc_PDF/Anderson_Column_-_The_Forestry_Source_Jul_2010.pdf (last visited Feb. 3, 2012) (Ex. R-207).

³²⁰ *See, e.g.*, B.C. Ministry of Forests and Range, Urgent Timber Supply Review for the 100 Mile House Timber Supply Area: Public Discussion Paper (Apr. 2006), CAN-002902-26 at CAN-002908 (assuming shelf life for sawlogs, but defining shelf life as “the length of time {dead lodgepole pine} will remain commercially viable.”) (Ex. R-209). *See also* Morice Timber Supply Area, Rationale for Allowable Annual Cut Determination (Feb. 2008) at CAN-005028 (Ex. R-203).

³²¹ Snetsinger Stmt. Supp. ¶¶ 6-7 (Ex. R-149).

estimates on the assumption that timber could be economically harvested for pulp production or alternative uses.³²² But not a single report identified by Dr. Neuberger ties shelf life to log grades or the 50/50 test. Dr. Neuberger's assumption that the shelf life estimates on which he relies reveal the point at which MPB-killed logs no longer pass the 50/50 test is without any basis other than his imagination.

170. **Second**, the shelf life estimates that Dr. Neuberger extracts from various reports are just that: "estimates." They are based on assumptions and are used as inputs for the analyses contained in the reports, but they are not the product of those analyses. The shelf life figures are not findings, results, or conclusions. They may be useful for informing and developing policy, as explained by Chief Forester Snetsinger,³²³ but they do not support independent conclusions about the nature and rate of deterioration in MPB-killed pine.

171. Such shelf life estimates are no substitute for scientific studies. Indeed, most shelf life studies explain that their assumptions are subject to change as warranted by subsequent research. The shelf life report on which Dr. Neuberger chooses to place

³²² See, e.g., B.C. Ministry of Forests and Range, Quesnel Timber Supply Area: Rationale for Allowable Annual Cut Determination (Jan. 2011), CAN-005517-54 at CAN-005540 (basing shelf life estimate on assumption that "dead and deteriorating MPB-impacted pine trees can be made into some form of product for up to 20 years following death.") (Ex. R-206).

³²³ Snetsinger Supp. Stmt. ¶¶ 11-13 (Ex. R-149).

principal reliance is no exception.³²⁴ That working paper – which Dr. Neuberger erroneously characterizes as a “shelf life study” and uses as the foundation for his purported quantification of when MPB-killed timber fails the 50/50 test – begins with the statement, “{t}here is significant uncertainty about the length of time that beetle killed wood will be usable for any given product (its ‘shelf-life’).”³²⁵ It concludes by explaining:

Work is currently being funded by the Mountain Pine Beetle Initiative of the Canadian Forest Service to provide some better estimates of the biological and engineering/manufacturing aspects of shelf-life. That work may resolve some of this uncertainty. However, given that economic factors substantially contribute to the ‘realized’ shelf-life, *it is entirely conceivable that we will not ‘know’ the shelf-life until after the infestation has subsided* and the dead wood has been recovered....

* * *

To the extent possible we will refine the parameters used in our shelf-life model by acquiring any available field data. *We anticipate that one of the most important sources will be the shelf-life field work funded by the MPBI and the subsequent analysis of the data by Dr. Kathy Lewis....*³²⁶

172. Neither Dr. Neuberger nor the United States heeds the cautions and qualifications expressed in this 2005 working paper. They conclude that they “know” the

³²⁴ Neuberger Rebuttal Report ¶ 49 (C-103) (citing Mountain Pine Beetle Initiative (“MPBI”) Working Paper 2005-20, Provincial-Level Projection of the Current Mountain Pine Beetle Outbreak: An Overview of the Model (BCMPB v2) and Results of Year 2 of the Project, Canadian Forest Service (2005) (hereinafter “MPBI Working Paper 2005-20”) (Ex. R-173).

³²⁵ MPBI Working Paper 2005-20 at 7 (Ex. R-173).

³²⁶ *Id.* at 49-50 (emphasis added).

shelf life of MPB-killed pine, even though the authors of the paper did not. They also choose to ignore the subsequent analysis of Dr. Lewis that the working papers' authors anticipated would lead to adjustments in their shelf life assumptions. Dr. Lewis has since conducted her analysis, and it is indeed inconsistent with the conclusions that the United States erroneously draws from the shelf life reports.³²⁷

173. The United States' confusion about the relationship between shelf life estimates and the 50/50 test is illustrated by Dr. Neuberger's reliance on a table from a 2010 report by Wood Markets Group (which Dr. Neuberger refers to as the "Wood Products" report).³²⁸ The United States reprints the table in partial form in its Reply and characterizes as evidence that "the lumber recovery factor in the first five years since death drops a minimal amount at 'average' sawmills, and even grey-stage logs that have been dead for 12 years can routinely produce enough lumber to satisfy the first prong of the 50/50 rule."³²⁹ The table does not support those conclusions.

³²⁷ Lewis Rebuttal Report ¶¶ 45-55 (Ex. R-152).

³²⁸ Neuberger Rebuttal Report ¶ 35 (C-103); U.S. Reply ¶¶ 64-65 (citing C-102 (Wood Markets Report on BC Interior Mountain Pine Beetle Attack (Mar. 2010) at 32).

³²⁹ U.S. Reply ¶ 64.

174. First, the United States fails to reprint the table's header, which states that the percentages are derived from *nominal* lumber recovery factors.³³⁰ What this means is that the figures significantly overstate the percentage of the log volume that is actually recovered as lumber.³³¹ That is why, at least since the 1980's, the standard for expressing lumber recovery as a percentage of log volume does so based on the actual volume of lumber recovered and the actual volume of the log.³³² The author of the Wood Markets Report has clarified that the use of nominal measurements causes the table to overstate the estimated percentages of log volume recoverable as lumber.³³³ He has also converted the nominal percentages to actual percentages, showing that the estimated ratios of actual lumber volume to log volume are consistently *below* fifty percent. For example, the Wood Markets estimate of a 59 percent *nominal* lumber recovery from 8-year dead sawlogs translates to a 40 percent *actual* recovery. Therefore, the United States' assertion that lumber recoveries consistently *exceed* fifty percent of log volume in MPB-attacked pine finds no support in the Wood Markets report's estimates.

³³⁰ See C-102 (Wood Markets Report on BC Interior Mountain Pine Beetle Attack (March 2010)) at 32.

³³¹ "Nominal" figures are based on the fiction, for example, that a two-by-four board is two inches thick and four inches wide, when everyone in the industry knows that its actual dimensions are 1½"x3½".

³³² R.W. Nielson et. al., Conversion Factors For the Forest Products Industry In Western Canada, Forintek Canada Corp. (1985) at 38 (Ex. R-211). See also Major Primary Timber Processing Facilities in British Columbia (2006) at 7 (Ex. R-182).

³³³ Snetsinger Supp. Stmt., App. 1 (Ex. R-149).

175. The second problem with the United States' use of the Wood Markets estimates of lumber recovery from MPB-killed timber is that it fails to acknowledge that those estimates apply only to the proportion of harvested pine that the authors assume would have an "appropriate LRF" to be processed into lumber.³³⁴ In other words, the Wood Markets estimated lumber recovery factors *apply only to logs that the authors assumed would have acceptable lumber recovery factors*. The report estimates that the proportion of logs harvested from MPB-killed stands that would have acceptable LRFs begins to decline when stands entered the red/grey stage, which the authors estimated to be four years after death.³³⁵ The estimated lumber recoveries decline 14 percent from green to 12-year-dead grey, but that estimate is based on the assumption that only half of the timber in the latter type of stand would support sufficient LRFs to be processed into lumber. The estimates thus say as much about Wood Markets' assumptions about what kinds of logs mills would choose to process as they do about the potential lumber recovery from long-dead MPB-killed logs. Even if these were scientific findings rather than assumptions and estimates, they would not support the U.S. assertions about how long after death MPB-killed timber is likely to pass the 50/50 test.

³³⁴ *Id.*

³³⁵ See C-102 (Wood Markets, BC Interior Mountain Pine Beetle Attack (Mar. 2010)) at 38.

c. Dr. Neuberger's Critique of Canada's Description of the Relationship Between Grade 4 and Years Since Death Is Without Merit

176. The United States and Dr. Neuberger do not challenge Canada's data showing how many years prior to each year's harvest MPB-attacked lodgepole pine had been killed (*i.e.*, years since death). Instead, they attack the analysis of the data that shows that the increase in percentage of Grade 4 timber in the harvest tracks the increase in the share of pine harvested more than two years after death. Professors Lewis and Kalt address these attacks.³³⁶ It is worth emphasizing, however, that Dr. Neuberger's disagreement over the import of the years-since-death data hinges on his view of how long it takes for a tree to show significant signs of deterioration after it has been killed by the MPB.³³⁷

177. Dr. Neuberger's analysis is based on the implausible and unsupported premise that not a single pine tree should be graded as Grade 4 until four years after death.³³⁸ According to Dr. Neuberger's analysis, "100 percent of log volume is available for all products three years after death."³³⁹ This assertion conveniently ignores all scientific

³³⁶ Kalt Rebuttal Report ¶¶ 63-71 (Ex. R-151); Lewis Rebuttal Report ¶¶ 21-25 (Ex. R-152).

³³⁷ See Neuberger Rebuttal Report ¶ 41 ("Dr. Kalt omits from this analysis any attempt to determine whether there is enough harvest volume beyond the shelf life estimates and volume/value thresholds established in the literature I have summarized to justify the observed Grade 4 increase.") (C-103).

³³⁸ Neuberger Rebuttal Report ¶ 50 (C-103).

³³⁹ *Id.*

evidence and even the 16 percent share of the harvest graded as Grade 4 during the period in which the United States assumes that the 50/50 test was correctly applied.³⁴⁰ It also ignores the fact that the majority of the total Interior harvest (of all species) has, throughout the relevant time period, been Grade 2 logs, which are not defined to have 100 percent of their volumes available to manufacture lumber. The fact is that while logs vary in quality, by three years after death most pine logs will exhibit significant checking,³⁴¹ and logs with significant checking are more likely to be Grade 4.

2. The United States' Misinterprets the Four FII-Commissioned Mill Trials

178. In its Statement of Defence, Canada explained that the results of the four FII mill trials could not be stretched so far as to support the United States conclusions about the accuracy of log grading in the studies themselves or throughout the Interior.³⁴² Canada explained that the mill trials had limitations, most of which are stated in the FII reports and that, regardless of those limitations, the United States could not explain why the results somehow show misgrading.

³⁴⁰ U.S. Reply ¶ 36.

³⁴¹ Lewis Report ¶ 57 (Ex. R-10).

³⁴² Stmt. of Defence ¶¶ 193-198.

179. In its Reply, the United States characterizes Canada's first point as a disavowal of its own studies and devotes most of its discussion of the mill trials to the purported inconsistencies between current and contemporaneous characterizations of their purpose.³⁴³ Canada has not "disavowed" the FII mill trials; it has accurately described the incongruity between the design, methodology, and findings of the trials and what the United States wants them to prove. The United States describes Canada's treatment of the mill trials as a "*post hoc* spectacle,"³⁴⁴ but that is only bluster intended to distract attention from Canada's second point: that there is no inconsistency between the mill trial results and the proper application of the 50/50 test. Canada invited the United States to explain why it believes the losses in lumber recovery observed in the mill trials establish misgrading.³⁴⁵ In response, the United States simply repeats its original unsupported assertion, that the losses were "not nearly enough to explain the massive increase in the amount of timber designated Grade 4 from 2007 onward."³⁴⁶ The only support the United States offers for that assertion is that Canada "wishes to distance itself from its own work."³⁴⁷

³⁴³ U.S. Reply ¶¶ 59-63.

³⁴⁴ U.S. Reply ¶ 16.

³⁴⁵ Stmt. of Defence ¶ 198.

³⁴⁶ U.S. Reply ¶ 68.

³⁴⁷ U.S. Reply ¶ 69.

180. Canada has neither disavowed the FII mill trials nor attacked their author.³⁴⁸ Canada observed that the “non-representative characteristics of the mills and the logs that they processed make it difficult to generalize the results to the Interior.”³⁴⁹ The mill trial reports themselves provide the same caution: “The above results apply to the test samples and the specific sawmill used for the study. The results can certainly be used as an indication of the losses to be expected when processing older MPB attacked lodgepole pine. However, actual losses will likely differ with different log samples and different sawmills.”³⁵⁰ The United States dismisses these statements as “boilerplate disclaimers,” but cannot explain why the reports should not be taken at their word about what the mill trials were and were not intended to do.³⁵¹

³⁴⁸ Regrettably, the United States has gone beyond criticizing the methods and conclusions of certain of Canada’s witnesses to making remarks that can only be read as aspersions. *E.g.*, U.S. Reply ¶¶ 59, 60, 175, 188-189. The tone of some of these comments is not only unbecoming to an international proceeding, but is also unwarranted by the substance of the disagreement expressed. Canada will not burden the Tribunal with responses to these ad hominem statements, but wishes to put on the record, by this note, its regret that that the United States has resorted to this sort of tactic and its continued confidence in the character of each of the witnesses who responded faithfully to Canada’s request for testimony in this arbitration and its firm belief that any insinuation that any of them has conducted himself or herself other than honorably is uncalled for and unfounded.

³⁴⁹ Stmt. of Defence ¶ 195.

³⁵⁰ Prince George Sawmill Study at CAN-029270 (C-41); Princeton Sawmill Study at CAN-007002 (C-5); Quesnel Sawmill Study at Can-029250 (C-40). *See also* Vanderhoof Sawmill Study at CAN-029330 (containing similar language) (C-39).

³⁵¹ U.S. Reply ¶ 61.

181. Recognizing the limitations on synthesizing and extrapolating the results of the mill trials would be consistent not only with the contemporaneous disclaimers of the trials' authors, but also with a caution expressed by the United States' expert on timber utilization. When Ms. Lowell and the coauthors of her 2010 U.S. Forest Service report examined a number of other studies of mill recoveries, they noted that “{i}t is difficult to synthesize data from these studies, as they were conducted at different mills, the product mix differed, and resource characteristics were not the same.”³⁵²

182. The United States' determination to cling to the mill trials as representative samples from which it can generalize to the entire Interior is further undermined by Dr. Neuberger's decision to limit his analysis of the mill trials to two sets of results, on the grounds that the other two were not representative.³⁵³ Dr. Neuberger's decision to ignore data from two of the four mill trials was based on his conclusions that the data from the Quesnel trial were “outliers” and that the Vanderhoof trial involved a “stud mill and thus had a different product mix than the other mills.”³⁵⁴ In other words, Dr. Neuberger concludes that two of the four mill trials are not representative, yet assumes that the other

³⁵² Lowell 2010 at 44 (Ex. R-200).

³⁵³ Neuberger Report ¶ 89, n.67 and Appendix E (C-2). *See also* Neuberger Rebuttal Report ¶ 130 (C-103).

³⁵⁴ Neuberger Report ¶ 89, n.67 (C-2).

two are sufficiently representative of the Interior that he can rely on their results to calculate “corrected” levels of Grade 4 for the entire Interior.³⁵⁵

183. Remarkably, the two mill trials on which Dr. Neuberger relies – Prince George and Princeton – are the trials that the final mill trial report (Princeton) describes as outliers. With respect to the Prince George trial, the Princeton report explains that the technology used in that mill differed from that used in the other mills and resulted in relative lumber recoveries that principally reflect the mill’s inability to extract high-value sideboards from the green sample (as explained detail below).³⁵⁶ As for the Princeton trial, the authors explained that the checks found in the grey sample used in Princeton were significantly shorter than the checks found in the Quesnel and Prince George grey samples, and that the Princeton mill was also able to adapt to the checked logs in ways that the mills in the other trials did not.³⁵⁷

184. Canada also pointed out, based on the expert opinion of Dr. Lewis, that many of the logs in the grey samples, which were identified based on visual indicators of attack stages, had almost certainly been killed fewer than five years prior to harvest.³⁵⁸ This is not

³⁵⁵ See Kalt Rebuttal Report ¶¶ 80-81 (Ex. R-151).

³⁵⁶ Princeton Sawmill Study at CAN-007027 (C-5).

³⁵⁷ *Id.* at CAN-007027-28.

³⁵⁸ Stmt. of Defence ¶ 195; Lewis Report ¶ 93 (Ex. R-10).

an attack on the credibility of the mill trials or their lead author, Dr. Taylor. It is a statement of scientific fact, based on years of research by Dr. Lewis, about the unreliability of visual indicators as an indicator of time since death in MPB-killed trees. The United States' expert, Dr. Fettig, agrees that external visual indicators "are crude estimates of YSD that may vary by several years from the actual time since death of an individual tree."³⁵⁹ It is no attack on the mill trials or their author to observe that they employed a methodology sufficient for their purposes (*i.e.*, providing a rough indication of losses mills can expect when switching from green timber to grey timber) but lacking the precision that would be required to support the United States' arguments about log grades, lumber recovery, and years since death.

185. Far more important than the purposes or limitations of the mill trials is what they show and the relevance of that to this case. Canada interprets the mill trials as providing information about the types of challenges and losses that mills can expect as they shift from unattacked timber to MPB-killed timber. Those results have no bearing on the United States' claims of misgrading. The United States, on the other hand, characterizes the mill trials as evidence of misgrading, not just in the trials, but in the B.C. Interior as a whole.³⁶⁰ The United States' confidence that the mill trials prove rampant misgrading in the

³⁵⁹ Fettig Report ¶ 15 (C-104).

³⁶⁰ Stmt. of Case ¶ 78; U.S. Reply ¶ 68.

B.C. Interior is not supported by any precise reference to where in the mill trial results such proof can be found.

186. The United States seems to believe that the mill trials reveal lumber recoveries in excess of 50 percent from grey-stage timber. Thus, the United States insists that the mill trials provide “evidence that B.C. Interior sawmills are capable of extracting merchantable lumber from MPB timber at a rate that overwhelmingly satisfies the 50/50 rule.”³⁶¹ But the United States has not explained why it believes that to be the case. Even under the most generous reading of the United States’ theory of 50/50, the mill trials show no such thing. The mill trials do not report how much lumber the participating mills produced from the green and grey samples. Instead, each of them reports the relative lumber production from the grey sample as compared to the green sample.³⁶²

187. Knowing the relationship between the volume of lumber recovered from the grey sample as compared to that volume recovered from the green sample reveals nothing about the absolute recovery from either sample. A small volume loss when switching from green to grey samples could be due to the mill’s proficiency in processing beetle-killed

³⁶¹ U.S. Reply ¶ 69. *See also* Lowell Report ¶ 51 (“the mill studies showed that the four mills were consistently able to recover significantly more than 50% No. 2 or better lumber from long-dead grey-stage logs.”) (C-105).

³⁶² *See, e.g.*, Vanderhoof Sawmill Study at CAN-029330 (“the findings of this manufacturing trial are provided on a relative percentage bases. The relative lumber recovery and relative product value recovery obtained from the Grey MPB trees is presented as a percentage of the corresponding recovery from Green SPF trees processed through the high speed stud mill.”) (C-39).

timber, the mill's proficiency in processing green timber, the quality of the logs, or a combination of all three factors. The results from the Prince George mill trial illustrate this fact. As explained in the final mill trial report, the Prince George mill was not able to recover "side boards," which are normally a source of high-quality lumber in green logs, but which are less available in grey-stage material.³⁶³ The effect was to reduce absolute volume and value recovery in the green sample relative to the volume and value recovery in the grey sample, thereby creating the appearance of high recovery from the latter. But these are relative values comparing grey to green. It is simply impossible to draw conclusions about absolute lumber recovery from relative figures.

3. Lumber Recovery Data Are Unreliable Indicators of Log Quality, but Even Under the United States' Theory, Those Data Are More Consistent With Diminishing Log Quality Than With Misgrading

188. In response to the United States' argument that an increase in the Grade 4 share of the harvest should have been accompanied by a decrease in lumber recovery, Canada explained (1) that lumber recovery is a poor indicator of log quality and thus would not necessarily track changes in log quality, and (2) lumber recoveries *did* decline in terms of both volume and value, but the extent of the decline was mitigated by investments in

³⁶³ Princeton Sawmill Study at CAN-007027 (C-5). Also note that shortly after the mill study was completed, the Prince George Sawmill shut down. *See* Mark Nielsen, Rustad Sawmill Employees to Receive Severance, Prince George Citizen (Dec. 6, 2011) (noting closure in July 2009) (Ex. R-212).

technology.³⁶⁴ In other words, the United States was wrong about both the standard that applies and whether that standard has been satisfied.

189. With respect to Canada's first argument, the United States does not seriously question the variability in LRFs that make them sensitive to product choices, mill technology, and other factors that have nothing to do with the quality of a log.³⁶⁵ Dr. Neuberger goes even further, chastising Professor Kalt for failing to take the variability of LRF into account.³⁶⁶ It is precisely this variability that makes it impossible to reverse engineer accurate log grades from lumber recovery data. The United States' acknowledgement that these variables affect the relationship between log quality and lumber outturns should end the inquiry into the reliability of using the latter to evaluate the former.

190. The United States, however, has also challenged Canada's second point in three ways. First, the United States, through Dr. Neuberger, asserts that lumber recoveries declined because of the economic downturn.³⁶⁷ Professor Kalt explains that Dr. Neuberger's assertion defies both economic theory and empirical testing.³⁶⁸ Professor

³⁶⁴ Stmt. of Defence ¶¶ 181-184; [] (Ex. R-147). *See also*, BCTV (Global BC), News Insight, Segment 3 (Oct. 2006) (Ex. R-178).

³⁶⁵ U.S. Reply ¶¶ 82-83.

³⁶⁶ Neuberger Rebuttal Report ¶ 61, n.35 (C-2).

³⁶⁷ Neuberger Rebuttal Report ¶ 68 (C-103).

³⁶⁸ Kalt Rebuttal Report ¶¶ 17-23 (Ex. R-151).

Kalt demonstrates that Dr. Neuberger's alleged demand side explanations do not explain the loss in British Columbia's lumber output and quality. If fully accounted for, however, the demand-side forces would constitute an additional drain on B.C. timber value of C \$5,531 million, which far exceeds the reduction in B.C. timber prices over the period.³⁶⁹ Professor Kalt concludes that "{w}hile it is true that recession has resulted in huge losses in the value of logs to the B.C. industry, it is also true that the MPB attack has depressed log values by more than C \$414 million since 2005."³⁷⁰

191. Second, Mr. Beck argues that the trend in capital expenditures and lumber recoveries in the B.C. Interior followed the trends in the U.S. South, a region not affected by the MPB.³⁷¹ This, the United States asserts, shows that the leveling trend in lumber recoveries had nothing to do with the MPB or with technology. [

] ³⁷² [

³⁶⁹ Kalt Rebuttal Report ¶ 22 (Ex. R-151).

³⁷⁰ Kalt Rebuttal Report ¶ 23 (Ex. R-151).

³⁷¹ Beck Report ¶¶ 55-58 (C-107).

³⁷² [] (Ex. R-147).

]

³⁷³

192. Third, the United States and Mr. Beck argue that the technologies implemented by B.C. Interior mills as described by Drs. Wong and Taylor, [

] were not beetle-specific and thus have no relevance.³⁷⁴ This is both false and beside the point. [

]

³⁷⁵ In any event, he says that [

]

³⁷⁶

Mills adopt new technology to improve their productivity. If lumber recoveries remain stable even while mills are investing in technologies designed to increase lumber recoveries – whether or not they have any relationship to the MPB – it is reasonable to assume that some other factor is depressing recoveries. In this case, that other factor is deteriorating log quality caused by the MPB.

³⁷³ *Id.* ¶ 7.

³⁷⁴ U.S. Reply ¶ 108; Beck Report ¶ 59 (C-107).

³⁷⁵ [(Ex. R-147).

³⁷⁶ *Id.*

Mills in British Columbia experienced declines in both the volume and value of lumber recovered between 2004-2010. [

]³⁷⁷

[

³⁷⁷ [

] (Ex. R-147).

]³⁷⁸

4. The LRF Adjustment Factor Is Irrelevant to Log Grades

195. The United States claims that the MPS system fully accounts for any loss of value attributable to the MPB through the operation of the LRF adjustment factors used in the MPS regression equation.³⁷⁹ This argument is both incorrect and irrelevant. The argument is incorrect because, while the LRF adjustment factor does result in relative stumpage adjustments based on the attack stage of the stands for which stumpage is being assessed, these relative effects pertain only to the distribution of stumpage.³⁸⁰ That is, they may result in one payor paying more and another less, but the prices paid by each will still

³⁷⁸ *Id.* [

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³⁷⁹ U.S. Reply ¶ 32; Neuberger Rebuttal Report ¶¶ 18-19 (C-103).

³⁸⁰ Kalt Rebuttal Report ¶¶ 24-28 (Ex. R-151).

average out to the Average Market Price (AMP). Contrary to the United States' claims, the LRF adjustment factors have almost no effect on the AMP to which these individual stumpage rates are tied.³⁸¹

196. The argument is irrelevant because there is no connection between the LRF adjustment factors and log grading. They are distinct mechanisms that operate independently of one another as parts of different elements of the timber pricing system. The existence of an LRF adjustment factor says nothing about whether logs in B.C. were properly scaled and graded.

5. The United States' New "High Grading" Theory Does Not Support an Inference of Misgrading

197. Mr. Beck has submitted extensive testimony concerning B.C. waste standards and alleged "high-grading" of MPB-killed pine stands.³⁸² Nowhere in its Reply, however, does the United States explain the legal significance of these issues, because there is none. Nor do Mr. Beck or the United States point to any specific government measures or actions constituting a departure from the grandfathered timber pricing and forest management systems as they apply to waste. In the absence of any clearly defined allegation or explanation of relevance, Canada responds only to Mr. Beck's assertions.

³⁸¹ Kalt Rebuttal Report ¶ 26 (Ex. R-151).

³⁸² Beck Report ¶¶ 8-40 (C-107).

198. As explained by Chief Forester James Snetsinger, the accumulation of waste in MPB-killed stands is a significant forest management challenge for the Province.³⁸³

However, large waste piles are an inevitable outcome of a salvage strategy, and a stark illustration of the severity of the damage that the MPB has wrought in the Interior. Many of these MPB-killed stands are barely economic to harvest, and are only worth harvesting if licensees carry out some degree of processing in the forest to separate the worst of the bad logs (those left behind as waste) from the better of the bad logs (those hauled to mills for processing). The United States seems to imply in the Reply that, because licensees leave certain unusable wood in the bush, the logs they choose to process must be of high quality.³⁸⁴ However, as [] has explained, []³⁸⁵

199. Mr. Beck implies that “high-grading,” or the removal of higher-quality trees from a stand while leaving behind lower-quality trees as waste, is somehow a suspect practice.³⁸⁶ As explained by [], however, high-grading is not the evasive practice that Mr. Beck describes. []

³⁸³ Snetsinger Supp. Stmt. ¶¶ 30-32 (Ex. R-149).

³⁸⁴ U.S. Reply ¶ 112.

³⁸⁵ [] (Ex. R-147).

³⁸⁶ Beck Report ¶¶ 19-23 (C-107).

Waste exceeding specified benchmarks (which have not changed since the SLA entered into effect) is subject to stumpage liability.³⁸⁸ Chief Forester Snetsinger also explains that waste piles can reflect the Province's legitimate salvage strategy – *i.e.*, to utilize damaged, MPB-killed stands of ever-diminishing quality – in order to facilitate rehabilitation of the forest.³⁸⁹ Moreover, as also explained by [

]³⁹⁰

200. At any rate, the forest management challenges associated with waste have no bearing on this arbitration. As Chief Forester Snetsinger has also explained, the rules governing waste have not changed since the Parties entered into the SLA,³⁹¹ and the United State concedes that no relevant aspect of Ministry waste policy has changed since April 2006.³⁹²

³⁸⁷ [] (Ex. R-147).

³⁸⁸ Snetsinger Supp. Stmt. ¶ 32 (Ex. R-149).

³⁸⁹ *Id.* ¶ 31.

³⁹⁰ [] (Ex. R-147).

³⁹¹ Snetsinger Supp. Stmt. ¶ 31 (Ex. R-149).

³⁹² U.S. Reply ¶ 114.

D. The United States Has Now Conceded That the Bid Effect Operates to Price Timber at Market Value

201. The United States concedes that at least part of the value of Grade 4 timber that may exceed the administratively set price will be captured in the bids at auction of the particular stand of timber. It could hardly do otherwise, although it still argues that “such effect is unlikely to eliminate the benefits obtained by lumber producers through the misgrading and underpricing of timber.”³⁹³

202. Dr. Neuberger also accepts the operation of the bid effect: “Of course, bidders, absent any expectation of misgrading, will bid more the greater the expected value of the tract, which is a function of their evaluation of the quality of the timber in the tract. Furthermore, to the extent that bidders believe that the statutory price for Grade 4 (C \$0.25 per cubic metre) is below the market price for reject timber, they also will bid higher.”³⁹⁴ He nevertheless criticizes several aspects of the B.C. auction and pricing system that he contends would “eliminate a significant share of the effect of misgrading.”³⁹⁵ Professors Athey and Cramton address each of Dr. Neuberger’s criticisms in their Supplemental Report.

³⁹³ U.S. Reply ¶ 291.

³⁹⁴ Neuberger Rebuttal Report ¶ 92, n.50 (C-103).

³⁹⁵ Neuberger Rebuttal Report ¶ 93 (C-103).

203. Dr. Neuberger's first criticism is that bids at BCTS auctions do not capture the full value of the Grade 4 timber in the auctioned stands, because there would be a time lag between the introduction of any change in the grading system and the bidders' understanding of the implications of such a change when they make their bids.³⁹⁶ Professors Athey and Cramton point out that Dr. Neuberger puts forward no evidence for expecting such a delayed reaction, and point to Dr. Neuberger's statement that "bidders have an incentive to gather full knowledge" as inconsistent with his conclusion.³⁹⁷ In their broad experience with auctions, Professors Athey and Cramton have come to expect bids to "respond very quickly, indeed almost immediately, to any new information."³⁹⁸ They analyze data comparing the timeline for the commencement of the widespread use of kiln re-drying in 2008 with the pattern of bids for that year, and conclude that the evidence suggests strongly that bidders acted very promptly on new information. They conclude that there is no "credible basis for supposing that bidders would not become immediately aware of any policy or procedural changes affecting Grade 4."³⁹⁹

³⁹⁶ *Id.* ¶¶ 97-99.

³⁹⁷ Rebuttal Report of Susan Athey and Peter Cramton (hereinafter "Athey & Cramton Rebuttal Report") ¶ 15 (Ex. R-150).

³⁹⁸ *Id.* ¶ 16.

³⁹⁹ *Id.* ¶ 24.

204. Dr. Neuberger also argues that the number of bidders at BCTS auctions declined after 2006, and that this would make those auctions less competitive, which would in turn undermine the bid effect. Dr. Neuberger attributes this decline to the declining demand for lumber in the U.S. housing market.⁴⁰⁰ There was indeed a decline in the U.S. housing market. But that collapse did not prevent the BCTS auctions from continuing to operate properly, or interfere with the operation of the bid effect.

205. Professors Athey and Cramton explain that bidders' decisions to attend an auction reflect their individual calculations of the likelihood of making a profit, and that attendance may well have fallen if a falling demand for lumber made it seem less likely to a bidder that he or she would turn a profit in reselling timber. But, they add, if prices at auction fall below the real value of the goods auctioned, bidders who have stayed on the sidelines will promptly come back in to profit from the spread.⁴⁰¹ There is, Professors Athey and Cramton conclude, "no reason that a softening lumber market should cause bidders to abandon their rational approach to forming valuations."⁴⁰² As long as there are no artificial

⁴⁰⁰ Neuberger Rebuttal Report ¶ 103 (C-103).

⁴⁰¹ Athey & Cramton Rebuttal Report ¶¶ 27-28 (Ex. R-150).

⁴⁰² *Id.* ¶ 28.

barriers to participation, they conclude, “competition or potential competition will ensure that prices reflect market forces. The bid effect will not be attenuated.”⁴⁰³

206. Dr. Neuberger also argues that British Columbia’s MPS system is unlikely to transmit bid information from the BCTS auctions into the prices paid by major tenure holders in a timely way. Specifically, he argues that, because the MPS model uses data from five years of sales, it takes five years for auction results to be transmitted to tenure holder prices.⁴⁰⁴

207. Again, Professors Athey and Cramton set him straight. While the MPS system uses five years of data, it uses data prior to the most recent year mostly for purposes of statistical accuracy and reliability; prices charged are based principally on the most current year.⁴⁰⁵ To test their conclusion, Professors Athey and Cramton arranged for the Ministry to run a simulation through the actual MPS model. The results, they explain, are that MPS valuations respond to increases in winning bids six months after the end of the calendar year in which the increased bids were made. At most, there would be a lag of no more than 18 months between the introduction of any significant change to the system and full

⁴⁰³ *Id.* ¶¶ 28-29.

⁴⁰⁴ Neuberger Rebuttal Report ¶¶ 95-96 (C-103).

⁴⁰⁵ Athey & Cramton Rebuttal Report ¶¶ 37-38 (Ex. R-150).

recognition of that change in the MPS system.⁴⁰⁶ Moreover, the MPS valuations increase, on average, by approximately the same amount as did the winning bids.⁴⁰⁷

208. The United States is thus unable to demonstrate that the bid effect did not capture the value of the additional amounts of Grade 4 timber coming into BCTS auctions, or that the MPS tenure pricing system did not fully transmit the prices that captured that value to the prices charged to major tenure holders.

III. REMEDY

209. Canada has demonstrated in its Statement of Defence and in this Rejoinder that there has been no breach of Article XVII of the SLA, and thus no basis for finding any liability in this arbitration. Nevertheless, because the Procedural Orders governing this arbitration make no provision for a separate consideration of remedy if the Tribunal should disagree with Canada's position, Canada must address the remedy arguments asserted by the United States at this stage of proceedings, even though the United States has failed to demonstrate that any of the actions challenged in this proceeding are circumvention under Article XVII of the SLA. The following discussion is, accordingly, offered without prejudice to Canada's position that none of the so-called actions identified by the United States has circumvented the SLA and that no remedy is required.

⁴⁰⁶ *Id.* ¶ 47.

⁴⁰⁷ *Id.* ¶ 48.

A. The United States' Remedy Proposals Fail to Establish the Requisite Connections Between a Remedy and Any of the Alleged Circumventing Actions

210. The United States continues to rely on Dr. Neuberger to assert that misgrading occurred and to quantify the alleged benefit such misgrading provided to lumber producers. As in his first Report, all of Dr. Neuberger's calculations relate entirely to the United States' inferential case, which as Canada has shown, fails as a matter of law. Neither Dr. Neuberger nor the United States offers any analysis or evidence linking a specific volume of alleged misgrading to any of the four "actions" that represent the only possible legal basis for a finding of circumvention in this case.

211. This is not a mere technicality. It is a fundamental failing of the U.S. case. To be entitled to a remedy, the United States first must identify the action claimed to circumvent or offset Canada's commitments, and then must quantify the benefit it claims to have been provided as a result of the alleged action.⁴⁰⁸ The United States has identified four so-called "actions" that British Columbia is alleged to have taken, which are the only legally cognizable circumvention claims before the Tribunal, but it has failed to quantify any benefit associated with any of them. As a result, even if the Tribunal were to agree with the United States that one or more of these actions constitutes circumvention, the United States' remedy proposals would have to be rejected because none of the proposals establishes for

⁴⁰⁸ SLA 2006 Art. XVII(1) (Ex. R-1).

the Tribunal an essential component of the United States' claim, namely, a quantification of a benefit that corresponds to an action that allegedly caused the misgrading of logs.⁴⁰⁹ The United States' remedy proposals fail on this basis alone.

B. The United States' Remedy Proposals Are Inconsistent With the Tribunal's Decision in the 81010 Arbitration

212. The United States' remedy proposals suffer from a second fundamental failing as well. Each is based on an interpretation of the SLA under which any remedy in an anti-circumvention case must recoup 100 percent of the benefits provided. The tribunal in the 81010 Arbitration flatly rejected this approach as inconsistent with the *lex specialis* remedy regime the SLA establishes.⁴¹⁰ Instead, the tribunal held that the remedy should be no greater than necessary to neutralize the effect the benefits had in offsetting or reducing the Export Measures. Here too, the United States offers the Tribunal nothing that would allow it to determine the appropriate compensatory adjustments to be applied under the SLA in the event it was to find that any of the four "actions" identified by the United States constitute circumvention.

⁴⁰⁹ B. Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (London, Stevens and Sons Ltd, 1953), p. 253 ("{T}he principle of integral reparation in responsibility has to be understood in conjunction with that of proximate or effective causality which is valid both in municipal and international law.").

⁴¹⁰ 81010 Award ¶¶ 326, 339-49 (CA-6).

213. In the 81010 Arbitration, the tribunal established the following analytical framework for calculating a remedy under the SLA in the case of circumvention: first, determine the amount of the benefit attributable to the circumventing action; second, determine the extent to which the benefit has offset or reduced the Export Measures; and third, determine the adjustment to the Export Measures required to neutralize the adverse effects on the U.S. industry of the offset or reduction to the Export Measures caused by the benefit provided.⁴¹¹ The tribunal *explicitly* instructed Professors Kalt and Topel to calculate those remedial adjustments to the Export Measures which were needed to restore “U.S. producer surplus.”

214. The United States concedes that, in adopting this framework, the 81010 tribunal “declined to adopt a remedy based on the benefits conferred by Canada’s breach of the SLA,”⁴¹² “concluded that the reduction or offset to the Export Measures did not have to be measured in the amount of the benefits provided,”⁴¹³ and “did not agree with the interpretation of the Anti-circumvention provision advanced by the United States.”⁴¹⁴

⁴¹¹ [] (Ex. R-214), 81010 Award ¶¶ 348-349 (CA-6).

⁴¹² Stmt. of Case ¶ 174.

⁴¹³ *Id.*

⁴¹⁴ U.S. Reply ¶ 270.

215. Notwithstanding all of this, the United States argues that “{t}he ordinary meaning of the text is clear – if a party provides a grant to softwood lumber producers or exporters, the grant offsets the Export Measures. No further analysis regarding the extent to which or manner of offset should be undertaken.”⁴¹⁵ On this basis it insists that any remedy in this case must recoup the full amount of benefits provided, and that such a result is somehow consistent with the tribunal’s award in the 81010 Arbitration.⁴¹⁶ In fact, the United States’ approach to remedy amounts to a wholesale rejection of the approach adopted in the 81010 Arbitration. As shown below, all of the arguments the United States offers in its Reply in support of its benefit “recoupment” theory reflect the same flawed interpretations of the SLA that the tribunal rejected in the 81010 Arbitration.

216. Apparently unwilling to ask this Tribunal outright to dismiss the reasoning of the 81010 tribunal, the United States argues that the 81010 tribunal’s rejection of the U.S. recoupment theory was somehow driven by the “unique” facts in that case, and should not be applied to the “quite different” nature of the circumvention alleged in this case.⁴¹⁷ That argument rests on a misreading of the 81010 tribunal’s award, and on a fallacious distinction between the benefits found in the 81010 Arbitration and those alleged here.

⁴¹⁵ U.S. Reply ¶ 264.

⁴¹⁶ *Id.* at ¶ 264.

⁴¹⁷ *Id.* ¶¶ 272-273, 276.

1. The United States' Remedy Proposals Are Based on the Same Flawed Interpretations of the SLA Considered and Rejected by the Tribunal in the 81010 Arbitration

217. The 81010 tribunal stated that the “most appropriate measure for the amounts to be collected as Compensatory Adjustments” in cases involving government actions that provided benefits to “softwood lumber producers” is *not* the overall amount of the benefits, but rather “*the amounts necessary to neutralize the reduction of offsets to the Export Measures caused by the programs and measure in breach of the SLA.*”⁴¹⁸ Disregarding the difference between the benefits provided by the programs and the offsetting effects of such benefits on the Export Measures would lead, in the opinion of the 81010 tribunal, “to collecting amounts in excess of those needed to restore the level playing field initially established by the Export Measures.”⁴¹⁹

218. The arguments offered by the United States suffer from the same three flaws as those presented by the United States in the 81010 Arbitration.

219. **First**, the United States’ arguments ignore the nature and objective of the SLA, even though the United States concedes that the purpose of the SLA was to restrain exports, and that the Export Measures were central to this purpose and to the bargain that was struck between the Parties. In fact, the United States describes the Export Measures, in

⁴¹⁸ 81010 Award ¶ 348 (CA-6) (emphasis added).

⁴¹⁹ *Id.* ¶ 349.

its Statement of Case, as “a critical part of the benefit for which the United States bargained in the SLA.”⁴²⁰

220. In the 81010 Arbitration too, the United States described the Export Measures as “the heart of the agreement.”⁴²¹ It stated repeatedly, in its pleadings and at the hearing, that the purpose of the Export Measures was to discourage and limit exports of Canadian softwood lumber to the United States and to encourage a certain balance of lumber shipped to the United States.⁴²² The United States acknowledged in its Request in the 81010 Arbitration that the Export Measures may be reduced or offset, not by a benefit being provided, but rather if that benefit encourages overproduction and artificially high levels of exportation.⁴²³

221. Professor Kalt, in his first report, described the role of the Export Measures:

⁴²⁰ Stmt. of Case ¶ 12.

⁴²¹ 81010 Tr. vol. 5, 1095:9-10 (Ex. R-215).

⁴²² See U.S. Post-Hearing Brief, LCIA Case No. 81010 (Oct. 15, 2009) ¶¶ 4, 8, 94 (Ex. R-216); *see also* U.S. Request for Arbitration, LCIA Case No. 81010 (Jan. 18, 2008) ¶ 27 (Ex. R-217); U.S. Stmt. of Case, LCIA Case. No. 81010 (Dec. 23, 2008) ¶¶ 3, 4, 16 (Ex. R-218); U.S. Reply Memorial, LCIA Case. No. 81010 (Apr. 3, 2009) ¶¶ 3, 201 (Ex. R-219); 81010 Tr. vol. 1-A, 11:1-4, 110:1-8 (Ex. R-213); 81010 Tr. vol. 5, 1137:9-15 (Ex. R-215).

⁴²³ U.S. Request for Arbitration, LCIA Case No. 81010 (Jan. 18, 2008) ¶¶ 5, 6. (“Each of these government programs provides a benefit to the Canadian softwood lumber industry ... This benefit, in turn, reduces or offsets the export measures by encouraging overproduction and artificially high levels of exportation, in violation of the Agreement. The United States, therefore, respectfully requests that the LCIA award to it the remedy requested in Section VII, Claimant’s Request for Relief.”) (Ex. R-217).

The economic consequence of the Export Measures under the SLA is protection of U.S. softwood lumber producers. The SLA's Export Measures do this by limiting the supply of exports of Canadian lumber to the North American market, thereby constricting overall supply relative to what it would be under conditions of free trade and, thus, raising the prices received by U.S. lumber producers when they bring their supplies to the North American market.⁴²⁴

222. If the object and purpose of the Export Measures is the restraint or limitation of exports, it follows that a circumvention of the Agreement (if proven), which by definition results in an offset or reduction of the Export Measures, should be remedied through compensatory adjustments that address that offset or reduction. Yet, when the United States discusses remedy, it continues to claim that the remedy must consist of a dollar-for-dollar recoupment of the benefits allegedly provided to Canadian producers and exporters of softwood lumber, without any reference to the effect of such benefits. The U.S. focus on benefits thus ignores what the United States has conceded to be the trade restraining object and purpose of the Export Measures.

223. ***Second***, the United States' arguments dismiss entirely paragraph 1 of Article XVII and the second sentence of paragraph 2 and focus only on the first sentence of paragraph 2. Article XVII is not, on its face, a simple prohibition against providing benefits to producers, as the United States would have it. Rather the prohibition is contained in paragraph 1 of Article XVII which provides, in its entirety, that:

⁴²⁴ Kalt Report ¶ 158 (Ex. R-9).

Neither Party, including any public authority of a Party, shall take **action to circumvent or offset** the commitments under the SLA 2006, including **any action having the effect of reducing or offsetting the Export Measures** or undermining the commitments set forth in Article V.⁴²⁵

Paragraph 1 thus establishes an obligation on the Parties not to take action to circumvent the obligations under the SLA.⁴²⁶

224. Paragraph 2 of Article XVII imposes no obligations. There is no provision in paragraph 2 that requires a Party to do, or not do, anything. Rather, the first sentence of paragraph 2 adds clarification of what does and does not constitute a measure that may violate the anti-circumvention obligations of paragraph 1. The first sentence of paragraph 2 states that government grants or other benefits “shall be considered to reduce or offset the Export Measures if they are provided on a *de jure* or *de facto* basis to producers or exporters of Canadian Softwood Lumber Products.”⁴²⁷ The second sentence of paragraph 2 modifies the first sentence and the obligation of paragraph 1 by providing that, “notwithstanding the foregoing,” measures that “shall *not* be considered” to reduce or offset Export Measures “include, without limitation” the five categories set out in (a) – (e) of Article XVII(2).

⁴²⁵ SLA 2006 Art. XVII(1) (Ex. R-1).

⁴²⁶ Stmt. of Defence ¶ 284.

⁴²⁷ SLA 2006 Art. XVII(2) (Ex. R-1).

225. The introductory phrase “notwithstanding the foregoing” at the beginning of the second sentence of paragraph 2 means that the second sentence is intended to limit the first sentence of paragraph 2. In other words, the text contemplates that there may be benefits that meet all the terms of the first sentence that nevertheless “shall not be considered” to reduce or offset Export Measures. The absence of a similar “notwithstanding” clause in the first sentence of paragraph 2 indicates that the first sentence of paragraph 2 is not intended to limit the application of paragraph 1 of Article XVII.

226. In addition, the term “without limitation” in the second sentence of paragraph 2 means that the list of grandfathering and safe harbour provisions (subparagraphs (a) – (e) of Article XVII(2)) is not exclusive so that there may be additional safe harbours (“exceptions”) that are listed. That the second sentence of paragraph 2(e) undeniably contemplates such additional “exceptions” contradicts the U.S. argument that all benefits meeting the terms of the first sentence of paragraph 2 are automatically prohibited. If, as argued by the United States, the drafters had intended to establish a flat prohibition of benefits (with limited exceptions), they could have drafted paragraph 2 to create such an obligation. They did not do so.

227. The United States thus errs in contending that the first sentence of paragraph 2 means that the “parties agreed that a limited subset of circumventions would operate

differently. They would be circumventions based simply upon their very existence.”⁴²⁸ The Parties would not have chosen such a qualified and convoluted structure under the rubric of an “Anti-Circumvention” provision if they had intended to create, as the United States argues, a flat prohibition on benefits.

228. **Third**, the United States has chosen, in its Reply, to read Article XVII (and more specifically the first sentence of paragraph 2 of Article XVII) in isolation, rather than in conjunction with Article XIV. This reading results in an even more skewed interpretation than that which the United States presented in its Statement of Case. As the tribunal in the 81010 Arbitration recognized, such a reading is contrary to the interpretive principles of the VCLT, which require that a treaty be interpreted in accordance with the ordinary meaning to be given to the terms of the treaty *in their context*.⁴²⁹

229. The tribunal in the 81010 Arbitration looked at both Article XVII and Article XIV in determining the appropriate basis for compensatory adjustments. In response to a U.S. argument that paragraph 2 of Article XVII makes program grants and benefits themselves reductions or offsets to the export measures,⁴³⁰ the tribunal stated, “{i}n determining the appropriate measure for the amounts to be collected, the tribunal must look

⁴²⁸ U.S. Reply ¶ 265.

⁴²⁹ 81010 Award ¶¶ 344-349 (CA-6).

⁴³⁰ 81010 Award ¶ 343 (CA-6).

primarily at the provisions of the SLA dealing with the remedies system (particularly paragraphs 22 and 23 {of Article XIV}). In this context, the anti-circumvention clause in Article XVII(1) is only relevant as part of the context (in the meaning of Article 31 of the VCLT) of the SLA's provisions on remedies.”⁴³¹

230. Reading Articles XIV and XVII together, as mandated by the VCLT, shows that the compensatory adjustments must remedy the circumvention, and, more specifically, the reduction or offset of the Export Measures caused by the breach alleged.⁴³² Article XIV(22) provides that what is to be remedied is “the breach.” Article XIV(23) adds that the remedy shall consist of adjustments of the Export Measures in an amount that remedies the breach. The breach claimed by the United States is a violation of Article XVII. The first paragraph of Article XVII provides, in part, that “Neither Party ... shall take action to circumvent or offset commitments under the SLA 2006, including any action having the effect of reducing or offsetting the Export Measures.”⁴³³ A breach of Article XVII, therefore, is circumvention of the commitments under the Agreement, and, in particular, the reduction or offset of the Export Measures.

⁴³¹ *Id.* ¶ 344.

⁴³² SLA 2006 Art. XIV(22) and (23) (Ex. R-1). Article XIV(23) provides, in pertinent part, that “The Compensatory adjustments that the tribunal determines under paragraph 22(b) shall consist of: (a) in the case of a breach by Canada, an increase in the Export Charge and/or a reduction in the export volumes permitted.... Such adjustments shall be in an amount that remedies the breach.”

⁴³³ SLA 2006 Art. XVII(1) (Ex. R-1).

2. The Nature of the Breach in the 81010 Arbitration Parallels the Breach Alleged in This Case

231. The United States argues that the “features” of the 81010 Arbitration “are not remotely shared by the breach in this case.”⁴³⁴ According to the United States, the programs challenged in the 81010 case had an “attenuated relationship to the Export Measures,” making it difficult to “determine precisely how the producer has benefitted,” while the action challenged in this case “*directly* offsets the Export Measures.”⁴³⁵ The U.S. attempt to distinguish the 81010 Arbitration from this case fails.

232. First, the underpricing of timber as a result of alleged misgrading is not a direct offset of the Export Measures, just as the challenged actions in the 81010 Arbitration were not. A direct offset would occur only if the benefits provided by the action were in the form of direct export subsidies per unit of exports or, in other words, the benefits were tied to the exportation of lumber to the United States. That is not the case here. A producer or exporter could derive a benefit from purchasing undervalued timber as a result of alleged misgrading by merely harvesting timber from Crown lands. That timber could be used for production of pulp, for the production of lumber, for domestic consumption in Canada, or exportation to other markets, such as China. There is, as a result, no necessary linkage

⁴³⁴ U.S. Reply ¶ 276.

⁴³⁵ U.S. Reply ¶ 274.

between timber pricing and exportation of lumber to the United States and thus no direct offset of the Export Measures.

233. Second, the “benefits” at issue in the 81010 Arbitration and allegedly in this arbitration were benefits to production, not exportation of lumber. The 81010 Arbitration concerned allegedly circumventing measures that had the effect of reducing the cost of *non-timber inputs* into lumber production, such as logging roads and sawmill equipment. This arbitration concerns allegedly circumventing actions that had the effect of reducing the cost of *timber inputs* into lumber production. A production cost reduction is a cost reduction, whether it comes in the form of a decrease in non-timber costs or a decrease in timber costs. There is nothing, therefore, to distinguish the 81010 Arbitration from this case when it comes to the concept of the “benefits” allegedly being provided to lumber producers.

234. Notwithstanding the United States’ argument that the type of benefits provided in this case are somehow “different” from those provided in the 81010 Arbitration and therefore require a different type of remedy, the U.S. arguments in the 81010 Arbitration were strikingly similar to those being advanced by the United States in this arbitration: that any benefit provided to exporters is a *direct reimbursement of the export tax* (“put into the pockets of Canadian lumber producers”)⁴³⁶ and that, as a result, the benefit amount should be recouped on a dollar-for-dollar basis in the form of compensatory adjustments. The

⁴³⁶ U.S. Reply ¶ 268.

tribunal in the 81010 Arbitration unanimously rejected this argument and determined that compensatory adjustments in a circumvention case that recouped benefits on a dollar-for-dollar basis would overcompensate U.S. producers for the harm they suffered as a result of the benefits conferred, and would provide trade protection to U.S. producers far in excess of what the Export Measures were intended to achieve.⁴³⁷

235. Third, the United States asserts that quantifying the benefit conferred by the types of actions challenged in the 81010 Arbitration was different and more difficult than quantifying the benefit conferred by the challenged action in this case, and suggests that, as a result, a remedy compensating for the effect on Export Measures, while necessary in the 81010 Arbitration, is not necessary in this arbitration.⁴³⁸ This is simply wrong. In the 81010 Arbitration, while they may have debated various inputs into the calculations (just as Dr. Neuberger and Professor Kalt do here), Professors Kalt and Topel had no conceptual difficulty measuring the benefits conferred by the programs the tribunal found to have circumvented the Agreement. Their Joint Report in the 81010 Arbitration set out benefit amounts calculated for Ontario and Quebec loans programs, loan guarantee programs, and road and capital tax credits. Both Professors agreed that the remedy in a circumvention case under Article XVII should be calculated by determining the effect of the benefits on the

⁴³⁷ 81010 Award ¶ 349 (CA-6); Kalt Rebuttal Report ¶¶ 109-115 (Ex. R-151).

⁴³⁸ U.S. Reply ¶ 272.

Export Measures and calculating the percentage tax that should be applied to compensate for that effect. They used the same dynamic simulation model that Professor Kalt would use in this case to determine the appropriate compensatory measures, should the Tribunal find any reason to do so.

236. The U.S. intimation, therefore, that a dynamic simulation model to calculate the appropriate compensatory adjustments is not necessary because the quantification of benefit in this case is straightforward, is completely without basis. Employing a dynamic simulation model to determine appropriate adjustments has nothing to do with the difficulty or ease with which benefits can be calculated. Rather, it has everything to do with the fact that the ordinary meaning of the terms of Articles XVII(1) and (2) and XIV(22) and (23), in their context and in light of the object and purpose of the SLA to restrain exports, require that compensatory adjustments compensate for the effects of benefits on the Export Measures, not the benefits themselves.

237. The United States argues that “{a} party can circumvent the SLA without taking action that reduces or offsets the export measures.” It uses as an example a failure by the United States under Article IV to refund the billions of dollars that were owed to Canadian exporters. Had the United States failed to refund this money, Canada would have brought an action alleging that the United States had violated Article IV, not Article XVII. The remedy Canada would have sought in that case would have been for the U.S. to cure its breach pursuant to Article XIV(22)(a) (*i.e.* by paying the monies owed), failing which it

would have asked for an adjustment of the Export Measures to zero (given the magnitude of such a breach).

238. The example provided by the United States parallels the direct “violation” that was alleged in the 7941 Arbitration. That arbitration involved an allegation by the United States that Canada had breached or violated paragraph 14 of Annex D of the SLA by (1) not properly applying an adjustment to the “Expected United States Consumption” to Option A Regions and (2) applying that adjustment in the period between January 1 and June 30, 2007. This again, was a *direct* violation of a provision of an Annex under the Agreement, which did not involve any claim of circumvention under Article XVII.

239. Finally, the United States argues that a Party can also circumvent the Agreement if it undermines the commitments set forth in Article V (mentioned in Article XVII(1)). This, again reveals a misunderstanding of how Article XVII operates. If the United States circumvented Article V by imposing an antidumping duty order on Canadian exports of softwood lumber (the example used by the United States) this would be a direct violation of Article V, not a circumvention under Article XVII.

C. Dr. Neuberger's Analysis Grossly Inflates His Remedy Calculation

1. Dr. Neuberger Calculates Benefit Rather Than Offset

240. The amount of *benefit provided* to softwood lumber producers is not the same as the amount of *offset* of the Export Measures.⁴³⁹ Measuring the amount of a benefit does not accurately measure the *effect* of the benefit on the Export Measures. They are different concepts.

241. Professor Kalt explains in his Rebuttal Report that export charges that correspond exactly to a benefit amount would overcompensate U.S. producers for any harm caused to the U.S. industry and would force disgorgement of monies from Canadian producers grossly in excess of the computed benefit amount.⁴⁴⁰

The economic reason for this is straightforward: A remedial export duty extracts monies from Canadian producers by both (1) causing more Canadian lumber supply to not be exported to the United States, thereby reducing the prices Canadian lumber producers realize on the volumes they sell at home in Canada, and (2) reducing the *net* price Canadian lumber producers realize on the lumber they export to the U.S. (*i.e.*, the net price is the price they realize when selling in the U.S. less the export duties they pay). Dr. Neuberger's remedial duties collect purported "payback" revenues on the latter (export volumes) while imposing revenue reductions for Canadian producers on both those producers' export volumes and their domestic sales. The

⁴³⁹ See above at ¶¶ 217-218.

⁴⁴⁰ Kalt Rebuttal Report ¶¶ 111, 114 (Ex. R-151).

result is gross over-collection of purported breaching ‘benefits.’⁴⁴¹

Employing a dynamic simulation model, Professor Kalt, in Figure 10 of his rebuttal report, calculates that this over-collection would total more than C \$570 million. The U.S.’ proposed remedy does not restore the SLA’s “level playing field.” It tilts that field dramatically against Canadian lumber producers.

2. Dr. Neuberger Miscalculates the Compensatory Adjustments

242. Even taken on its own terms, Dr. Neuberger’s proposed remedy, which would collect additional export duties equal to the dollar amount of the benefit, would result in a grossly inflated export tax. As Professor Kalt explains, there are three main reasons why Dr. Neuberger overstates the remedy allegedly required: (a) he fails to quantify the volume of misgraded timber that allegedly resulted from the actions in question; (b) he has improperly determined the per unit value of the volumes that he assumes have been mis-scaled; and (c) he has based his remedy proposal on this resulting inflated measure of benefit without showing or even claiming that there has been an offset of the Export Measures.⁴⁴²

243. Neither the United States nor Dr. Neuberger has provided any evidence linking the actions claimed by the United States to have caused misgrading to an increase in

⁴⁴¹ Kalt Rebuttal Report ¶ 108 (Ex. R-151).

⁴⁴² Kalt Rebuttal Report ¶¶ 129-148 (Ex. R-151).

Grade 4 logs. Rather, they simply assume that all Grade 4 logs over an arbitrary baseline were improperly graded. Professor Kalt, on the other hand, has conducted a statistical analysis and determined that only one of the actions in question, kiln warming, had any measurable impact at all.

244. The United States and Dr. Neuberger have also failed to provide a coherent methodology for assessing the value of the timber they allege to have been misgraded. Professor Kalt explains that Dr. Neuberger failed to correct several of the mistakes that he made in his first Report.⁴⁴³ In addition, although Dr. Neuberger acknowledges the operation of the bid effect in his Rebuttal Report, he fails to make the appropriate adjustments to his initial measure of benefit. Instead, Dr. Neuberger makes arbitrary adjustments intended to reduce the measured bid effect, based on the erroneous assumption that the MPS system takes five years to transmit winning bids to licensees.⁴⁴⁴ Dr. Neuberger also persists in employing a methodology based on attributing to Grade 4 logs the same value as high quality sawlogs, even though Professors Athey and Cramton, using an improved version of Dr. Neuberger's regression equation,⁴⁴⁵ show that the market value of Grade 4 logs is relatively low.

⁴⁴³ *Id.* ¶¶ 122-128.

⁴⁴⁴ Athey & Cramton Rebuttal Report ¶¶ 35-48 (Ex. R-150).

⁴⁴⁵ *Id.* ¶ 65.

245. Any valuation of the Grade 4 volume must be based on a calculation of what stumpage payments would have been if the alleged misgrading had not taken place. As Professor Kalt has shown, this calculation can be done by simulating the operation of the Market Pricing System based on: (a) increasing the timber volumes to be priced as “sawlogs” to reflect the elimination of any alleged misgrading (and, correspondingly, reducing the volumes priced as Grade 4), and (b) reducing the winning bids on BCTS auction sales to reflect the lower quality of the resulting mix of sawlogs and the available quantitative evidence on the “bid effect.” Both Canada and the United States agree that winning bids on BCTS sales were higher than they would have otherwise been, if there had been less Grade 4,⁴⁴⁶ and both have provided quantitative estimates of this effect. Thus, there should be no disagreement between the Parties that this is the proper valuation methodology.

246. The Parties also agree that there is a bid effect. Canada has shown that any increases in winning bids due to an increase in Grade 4 are transmitted to licensees with a short lag. Given this, a benefit can arise only to the extent that full “recapture” of any initial “benefit” does not occur within the time frame set by the Tribunal. This can only be determined by simulating the actual operation of the MPS system under the alternative assumptions of the “but for” scenario.

⁴⁴⁶ U.S. Reply ¶ 291; Neuberger Rebuttal Report ¶ 108 (C-103).

247. As discussed, should the Tribunal find that Canada has circumvented the SLA, the remedy awarded should compensate for the effect on the Export Measures – in this case the effect on U.S. producers – caused by any benefit provided as a result of the breaching action. Rather than demonstrating such an effect, however, neither Dr. Neuberger nor the United States has not even alleged an impact, and has not provided any analysis to show that exports from British Columbia increased due to the alleged misgrading or that any harm was caused to U.S. producers. In fact, as Professor Kalt has explained,⁴⁴⁷ the United States' valuation methodology assumes there was no such effect. Canada agrees.

3. The 81010 Award Illustrates the Proper Application of Article XVII

248. The Award in the 81010 Arbitration provides a good illustration of how Dr. Neuberger's proposed remedy would result in a grossly overinflated export tax bearing no relationship to any harm to U.S. producers. In its calculation of compensatory adjustments in the 81010 Arbitration, the tribunal determined the total benefit amount for each of the Ontario and Quebec programs that it determined circumvented the Agreement. Using the Kalt/Topel dynamic simulation model, the tribunal calculated the change in U.S. producer surplus caused by the benefit, the tax rate to be imposed. These amounts are set

⁴⁴⁷ Kalt Rebuttal Report ¶¶ 154-155 (Ex. R-151).

out in a chart in paragraph 410 of the 81010 Award.⁴⁴⁸ For ease of reference we have simplified the 81010 chart in the table below, which shows only the *totals* for the benefit amounts, the change in producer surplus, and the tax rates that the tribunal ordered be collected for the Ontario and Quebec programs found to have breached Article XVII.

Ontario Programs	
Total Benefit Amount (\$CDN)	\$36.57 million
Change in US Producer Surplus	-\$1.54 million
Tax Rate	0.1%
Quebec Programs	
Benefit Amount (\$CDN)	\$220.61 million
Change in US Producer Surplus	-\$57.31 million
Tax Rate	2.60%

249. The table illustrates the significant difference between the total benefit amounts that the 81010 tribunal calculated as having been conferred on Canadian producers and the change in U.S. producer surplus (or harm suffered by U.S. producers) that occurred as a result of those benefits being provided. The tax rate imposed was based on the latter, not the former. The chart also shows how a one-to-one benefit to export tax amount would drastically overcompensate U.S. producers.

⁴⁴⁸ 81010 Award ¶ 410, Att. A (CA-6).

4. Professor Kalt Explains How the Compensatory Adjustments Should be Calculated

250. To provide a further and more immediate illustration of how inflated the benefit amount and the compensatory adjustments proposed by Dr. Neuberger are, Canada asked Professor Kalt to calculate what the appropriate export tax would be if: (a) kiln re-drying were found to circumvent the SLA; (b) all of the increased Grade 4 volume attributable to kiln re-drying was found to have been misgraded; and (c) the benefit, if any, arising from this assumed breach, reduced or offset the Export Measures. This exercise was undertaken for illustration purposes only and is not an admission of any liability. Canada chose kiln re-drying for this illustration because it is one of the two actual actions about which the U.S. complains.⁴⁴⁹ Kiln re-drying was also chosen because the record-keeping required by the Ministry provides statistically significant data correlating the use of kiln re-drying with a modest increase in the amount of timber graded as Grade 4.

251. In performing this calculation, Professor Kalt relied on: (a) the only analysis in the record that quantifies the effects of kiln warming; (b) a simulation of the Market Pricing System using quantitative evidence on the bid effect; and (c) a dynamic simulation

⁴⁴⁹ Canada has explained that the identification of a government action is an indispensable first step in making out a claim of circumvention under the SLA. *See* above ¶¶ 27-30.

model of the North American lumber market based on the Kalt/Topel 81010 model used in the 81010 Arbitration.⁴⁵⁰

a. Professor Kalt's Model

252. To adjust and extend the 81010 model so that it would incorporate the factors appropriate to this arbitration, Professor Kalt made the following adjustments and extensions:

- Adding regions to permit specific modeling of the B.C. Coast and B.C. Interior to account for significant offshore demand for B.C. Coast and B.C. Interior, respectively;
- Adding a separate logging sector to permit more detailed and reliable analysis of policies affecting timber harvesting directly;
- Incorporating trade directly into the model so that there is no need to convert an output tax into an export tax (as in the 81010 Arbitration);
- Incorporating the SLA's Export Measures;
- Incorporating the recession's effect on demand; and
- Other minor technical changes to eliminate certain unrealistic assumptions (involving competition in investment goods, and treatment of investment goods).

253. The model, as adjusted, calculates the effect, over time, for a given change in the economic environment on softwood lumber prices and quantities. When the model is calibrated to a given level of past and future lumber market size (which can be conveniently

⁴⁵⁰ Kalt Rebuttal Report ¶¶ 120-149 (Ex. R-151).

expressed in terms of revenues to U.S. and B.C. lumber producers), the changes in lumber prices and quantities calculated by the model can be used to measure the effect of the change in the economic environment on U.S. lumber producers and B.C. lumber producers in terms of the change to their producer surplus. If the change in the economic environment is found to harm U.S. lumber producers, the model can calculate the additional tax to levy on B.C. lumber exports to the United States that will restore the U.S. lumber industry to the level of producer surplus it would have experienced absent the change in the economic environment. Similarly, if an additional export tax was to be imposed on B.C. lumber producers, the model can calculate the harm inflicted on B.C. lumber producers by the additional tax. A detailed description of the model, its technical structure, calibration and an explanation of how it works can be found in Appendix B to Professor Kalt's rebuttal report.

254. In the unlikely event the Tribunal should find any of the challenged actions to constitute circumvention, Professor Kalt is prepared to use this adapted model to determine the compensatory adjustments that would be necessary to return the U.S. industry to where it would have been absent the breaching action. Professor Kalt is also willing to file a further submission in this regard.

b. Professor Kalt's Benefit Calculation

255. The first step taken by Professor Kalt in determining the amount of the benefit was to calculate the quantity of Grade 4 timber that could be attributed to the use of kiln re-drying to more accurately identify checks. In order to perform this exercise, Professor Kalt employed the regression analysis presented in his first report to determine for

each month what percentage of the kiln re-dried logs would have been scaled higher than Grade 4 absent the use of kiln re-drying to make the defects in those logs visible.⁴⁵¹

256. Professor Kalt then calculated the amount of benefit that would have been provided to softwood lumber producers based on the quantity of Grade 4 logs that could be attributed to kiln re-drying each year, assuming for that purpose that all such logs were misgraded.⁴⁵² The benefit amount associated with this volume of Grade 4 timber cannot be calculated as simply the difference between the price of Grade 1 and 2 logs and the \$0.25 administratively set price of Grade 4 logs, as Dr. Neuberger proposed to do in his first report.⁴⁵³ Professors Athey, Cramton, Kalt, and now even Dr. Neuberger, concur that the so-called “bid effect” captures any value of Grade 4 timber in excess of the administratively set price through the BCTS auctions.⁴⁵⁴ Professors Athey and Cramton reviewed the economic model used by Dr. Neuberger to measure the bid effect and proposed a correction. Professor Kalt used both Dr. Neuberger’s model and the alternative model of Professors Athey and Cramton in his calculation.⁴⁵⁵

⁴⁵¹ Kalt Rebuttal Report ¶¶ 133-136 (Ex. R-151).

⁴⁵² Professor Kalt’s benefit number overstates the potential value of the additional amounts of Grade 4 in that it relies on Dr. Neuberger’s assumption that Grade 4 timber should be valued at the price of Grade 1 and 2 timber, and does not take into account the costs involved in kiln re-drying.

⁴⁵³ Neuberger Report ¶ 68 (C-2).

⁴⁵⁴ See Athey & Cramton Rebuttal Report ¶¶ 20-24 (Ex. R-150).

⁴⁵⁵ Kalt Rebuttal Report ¶ 148 and Figure 13 (Ex. R-151); Athey & Cramton Rebuttal Report ¶¶ 62-67 (Ex. R-150).

257. In order to calculate any benefits enjoyed by non-BCTS license holders, Professor Kalt used the Average Market Price to look at what tenure holders actually paid for stumpage and what they would have paid absent kiln re-drying. In doing so he took the historical shares of Grades 1 and 2 and Grades 4 and 6 and adjusted them for the purported effects of kiln re-drying on the grading of logs.⁴⁵⁶ He then adjusted the winning bids in the competitive BCTS timber auctions to remove the “bid effect” associated with the reassignment of this volume from the Grade 4 to the sawlog category of this Grade 4. Having made these adjustments, he calculated the prices that would have been charged to tenure holders in this “but-for” setting. Professor Kalt treats the difference between actual and but-for stumpage payments as a benefit for purposes of this example, although the difference arises primarily from the timing of payments and the need to truncate the calculation effective March 2012 due to when the United States instituted this action.

258. Professor Kalt’s calculations showed that, if kiln re-drying were considered to have been an action in circumvention of the SLA, and if all kiln re-dried logs were considered to have been misgraded, the estimated amount of benefit associated with the quantity of Grade 4 timber tied to kiln re-drying would be C \$17.5 million if the Athey/Cramton approach is used and C \$16.6 if Dr. Neuberger’s approach is used. This contrasts starkly with Dr. Neuberger’s preferred benefit number of C \$303.6 million.

⁴⁵⁶ *Id.* ¶ 131.

c. Professor Kalt's Calculation of an Appropriate Remedy

259. Next, Professor Kalt used the 81010 dynamic simulation model, adjusted to incorporate the relevant factors in this case, to convert the benefits that he attributed to kiln re-drying into associated measures of price, supply, demand and producer surplus effects of such benefits.

260. In order to have any offset of the Export Measure, there must be a supply effect – kiln re-drying must affect the supply of lumber to the United States from British Columbia. Thus, for this illustration, Professor Kalt treated the entirety of the benefit calculation that he associated with kiln re-drying as representing a price reduction, and further assumed that this hypothetical price reduction had induced increased harvesting of timber. As Professor Kalt explains, these assumptions were necessary, because, unless the benefits are of a type that have an effect on lumber output, the model has nothing to work with.

261. Professor Kalt's results are set out in Figures 12, 13 and 14 of his rebuttal report. They show the amount of the benefit calculated (as explained above) associated with kiln re-drying to be C \$17.5 million in the Athey/Cramton case and C \$16.6 million if Dr. Neuberger's approach is used; the resulting hypothetical change in the price of lumber in the United States arising from the assumed additional exports from British Columbia to be no more than .05 percent under the Athey/Cramton and Neuberger approaches; the change in producer surplus associated with such a change in price to be C \$6.4 million; and the

calculated add-on export duties or compensatory adjustments that would be needed to “remedy” this set of hypothetical effects to be 0.09 percent under either approach.

Dr. Neuberger, in contrast, asserts that export duties of 8.2 percent would be needed to generate total add-on revenue collections equal to his benefit amount.

262. Canada recognizes that this exercise compares apples to oranges. The tax proposed by Dr. Neuberger is based on a raw benefit amount, which assumes that the entirety of the increase in the volume of Grade 4 timber observed after April 2007 was due to misgrading.⁴⁵⁷ Professor Kalt’s tax is based on the calculated effect of an assumed benefit derived from one action – kiln re-drying – on the Export Measures. However, it is apparent from Professor Kalt’s exercise that Dr. Neuberger’s benefit amount and export tax calculations far exceed any possible effect on the Export Measures that could be attributed to the actions identified by the United States, even if all of those actions amounted to circumvention of the SLA, and even if all of them resulted in a benefit that had an effect on the Export Measures that could be quantified and made the subject of the same sort of calculation. It is also apparent that Dr. Neuberger’s proposed remedy would overcompensate U.S. lumber producers for any reduction in price caused by any benefits provided to Canadian producers in precisely the same way the remedy proposed by the United States would have done in the 81010 Arbitration.

⁴⁵⁷ Kalt Rebuttal Report ¶ 136 (Ex. R-151).

CONCLUSION

263. For the reasons stated above and in its Statement of Defence, Canada respectfully requests an award:

- (1) declaring that Canada has not breached the SLA; and
- (2) dismissing all claims of the United States for relief.

Respectfully submitted,

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