COMMISSION OF INQUIRY INTO THE DECLINE OF SOCKEYE SALMON IN THE FRASER RIVER

In the matter of His Excellency the Governor General in Council, on the recommendation of the Prime Minister, directing that a Commission do issue under Part 1 of the *Inquiries Act* and under the Great Seal of Canada appointing the Honourable Bruce Cohen as Commissioner to conduct an inquiry into the decline of sockeye salmon in the Fraser River

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REPLY SUBMISSIONS OF THE PARTICIPANT GOVERNMENT OF CANADA ON INFECTIOUS SALMON ANAEMIA VIRUS

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I. OVERVIEW

1. The Participants' submissions reflect the complexity of the on-going scientific tests, methodologies, and protocols relating to animal health and infectious diseases and the difficulty of interpreting these. Further, the Participants' submissions often ignore the existing international and federal standards for the protection and improvement of aquatic animal health and welfare.

2. Before responding to individual aspects of the Participants' submissions, Canada notes that some of the Participants advocate that the Commissioner should make findings or recommendations regarding on-going scientific issues, relating to whether there is, or is not, ISAV or ISA in BC waters.

3. On this, Canada observes that the purpose of a commission of inquiry is to investigate, not to adjudicate. As such, the commission is not asked to determine who is right or wrong and/or whether ISAV or ISA does, or does not, exist in BC waters.

4. As noted in Canada's initial Reply, in *Dixon v Canada (Somalia Inquiry Commission)*, [1997] 3 FC 169 (Fed. C.A.) Marceau, J. stated at para 13 that:

> As investigative bodies, they, of course, are called upon to seek the truth, and no doubt they are ideally suited for uncovering facts that could not be discovered otherwise (precisely because they have broad investigative powers, they are inquisitorial, and they are not subject to the strict rules of evidence that apply to a court of law). Hence, their prestige. But, nowhere do we find the imposition upon them of a duty to conclude. On the contrary, their purpose, which is primarily to advise and to help the government in the proper execution of its duties, is not conducive to settling issues and drawing definitive conclusions."
>
> [emphasis added]

5. The Terms of Reference for the Cohen Commission reflect this goal that the primary purpose is to provide advice to the government of Canada on the policies, practices and procedures in relation to the management of the Fraser River sockeye salmon fishery. The Terms of Reference call for the Commissioner to make independent findings of fact on the causes of decline, including disease. However, Canada suggests this does not impose a duty to draw

conclusions where, as here, the scientific evidence and investigation is in a state of rapid development and scientists have differing opinions on the recent samples and test results.

6. Canada notes that some of the Participants have inaccurately described the scientific evidence led on ISAV and ISA. Canada will address significant inaccuracies in this Reply, in order to highlight that the scientific evidence led on disease is complex, evolving, and often the subject of differing interpretations. Canada also refers to its Submissions on ISA filed December 29, 2011.

II. REPLY TO CROSS-CUTTING ISSUES

A. Scientific Certainty and ISAV

7. There are a number of submissions, most notably from the Aquaculture Coalition, Conservation Coalition, and Areas D&B, that ask the Commissioner to conclude that ISAV is present in BC and has been found in Fraser River sockeye stocks. However, there are errors and omissions in these Participants' submissions regarding the evidence.

8. The following is a brief summary of the important evidence that Canada submits should be included when considering the recent reports and tests for ISAV:

a) All witnesses agree that ISA disease has not been found in British Columbian waters;

b) ISAV or ISA have not been confirmed to date in wild Pacific salmon;

c) The results of Nellie Gagné's tests results, read together with the test results of Dr. Kibenge, Dr. Nylund and Dr. Miller, indicate that whatever is causing positive results in certain tests is not a known strain of ISAV;

d) Further sampling, testing and research is required before reaching a definitive conclusion on whether ISAV or other orthomyxovirus exists in BC waters;

e) Even if ISAV or an orthomyxovirus were confirmed in BC waters, research would need to be done to determine whether it is virulent or avirulent; and

f) Based on the testimony of Dr. Kristi Miller, it appears that any ISAV-like pathogen found to exist has been in BC waters for at least 25 years, and probably longer.[1]

B. Reporting of Suspect Cases of ISAV

9. In their submissions, many Participants criticize the government for failing to make public all presumptive positive results.

10. The following is a brief summary of the important evidence that Canada submits should be included when considering the reporting requirements:

a) The OIE does not require the reporting of suspected detection of ISAV – it only requires that confirmed detection be reported;

b) Proper scientific process requires presumptive positives to be checked and double-checked, with the ability to reproduce positive results, prior to reporting them;

c) Presumptive positive results need to be corroborated and repeated using validated assays and testing methodologies; and

d) CFIA and DFO have worked closely together to respond quickly to the recent test results.

C. Draft Surveillance Plan

11. In their submissions, a number of Participants criticize the government for the adequacy of the draft surveillance plan. The draft surveillance plan is being developed by CFIA in co-ordination with DFO and will involve input from First Nations and stakeholders, which can include fishers and environmental groups. The draft plan is being developed consistent with international standards to monitor whether ISAV, or an ISAV-like virus such as IPNV or IHNV, exist in BC waters.

[1] See Canada's ISA submissions at paras. 67, 75-77, 79-81, 85, 92, 97-98; Dr Frederick Kibenge, 15 December 2011, pp 59:8 to 60:11; Dr Kristi Miller, 15 December 2011, p 50:26-34, p 60:12-24, pp 51:45 to 52:33, pp 87:28 to 88:21; Nellie Gagné, 15 December 2011, pp 60:25 to 61:25; Dr Are Nylund, 15 December 2011, p 10:11-27, p 57:13-40; Dr Kristi Miller and Dr Frederick Kibenge, 15 December 2011, pp 118:27 to 119:14.

12. The following is a brief summary of the important evidence that Canada submits should be included when considering the reporting requirements:

a) The draft surveillance plan will be circulated to stakeholders and consulted on in early 2012. Suggestions and recommendations will be incorporated into the final surveillance plan;

b) The draft surveillance plan will be in place by late spring 2012; and

c) The number of fish to be tested will be scientifically determined in order to meet CFIA's goal of detection or declaration of disease freedom; currently, the testing of 4,000 fish (8,000 tests) annually for the first two years is proposed.

III. REPLY TO 02 PROVINCE OF BRITISH COLUMBIA

13. Canada does not have any reply to BC's submissions and substantially agrees with them.

IV. REPLY TO 06 B.C. SALMON FARMERS ASSOCIATION

14. At paragraphs 6 and 29, the BCSFA suggests that Dr. Miller may have obtained false positive results if the samples she received from Dr. Rick Routledge were contaminated with ISAV. Canada submits that there is no evidence to support the notion of cross-contamination of Dr. Miller's lab through Dr. Routledge's samples.

15. At paragraph 17, the BCSFA points out that Dr. F Kibenge testified that he was not able to culture ISAV during his testing of the 48 samples provided to him by Dr. Routledge because the non-pathogenic or non-virulent strain of ISAV (or HPR0) cannot be cultured. Canada submits that the fact that HPR0 is non-virulent and cannot be cultured does not mean that all non-virulent strains of ISA, including any possible new strains, cannot be cultured.

16. From paragraphs 19 through 29, the BCSFA criticize Dr. Miller's expertise and testing methodology. They state that because of the concerns raised by other witnesses, Dr. Miller's evidence with respect to the presence of any type of ISAV in BC "should be accorded very little weight". Canada submits that the scientists who tested samples and those who testified, including

Dr. Miller, are all knowledgeable scientists and their evidence should be given considerable weight commensurate with their qualifications, and bearing in mind the caveats and cautions that each of them place on their own findings and the caveats and cautions that other scientists impose on their colleagues' work.

17. Further, as noted above, this commission of inquiry is not an adjudicative body who is asked to determine who is right and wrong or whether ISAV or ISA does, or does not, exist in BC waters. Rather, it is important for this inquiry to have before it the current state of knowledge, information and opinion on ISAV and ISA and make findings of fact on the causes of decline of Fraser sockeye, the current state of the stocks, the long-term projections for those stocks, and to develop recommendations for improving the future sustainability of the Fraser sockeye fishery.

18. As submitted in Canada's submissions filed December 29, 2011, the tests of samples show mixed results leading all scientists to say that something may have been detected and further research and inquiry is necessary to determine whether anything is truly being detected, if so, what it is and whether it is virulent.

V. REPLY TO 08 AQUACULTURE COALITION

19. The Aquaculture Coalition urges the Commissioner to make a factual finding that a form of ISAV is present in BC and has been found in Fraser River sockeye stocks (p. 1 of the submissions). Their submissions are premised on this asserted fact and, more particularly, assume that the test results were true positives and cannot be false positives, even though all the scientists agree that the PCR test is not perfect – it is not 100% sensitive and not 100% specific. The evidence as a whole does not support the premise on which the Coalition ground their submissions. The evidence is that there are mixed findings from test results, including presumptive findings of an ISAV-like virus that requires further inquiry and work as submitted above and more particularly set out in Canada's Submissions on ISAV dated December 29, 2011.

20. The Aquaculture Coalition refers to certain evidence and overstates what that evidence will support in seeking to draw conclusions. They omit reference to other evidence that is not to their liking. It is important to have regard to all of the evidence and information available to the

Commission. There is no principled reason to favour some evidence over other. Canada's submissions filed December 29, 2011, refer and review to all of the evidence given in the December hearings.

21. Taken as a whole, the evidence shows mixed results in testing. As against the presumptive positive findings, there is the CFIA assessment that the PCR detections are unlikely to be true positives based on information obtained from the test results conducted by National Aquatic Animal Health Laboratory System (NAAHLS), the original samplers, laboratory assessments, scientific literature, historical lack of evidence of ISA/ISAV reports and detections in BC, lack of evidence of massive die-offs in fish farms in BC, and knowledge and experience of disease pathogenesis and diagnosis. The competing findings and scientific assessment lead to the conclusion that something has or may have been detected by some scientists that warrants further inquiry. All scientists who testified agree on this. The next step(s) is to determine what is giving positive results - has something been detected or are there one or more problems with some of the testing. If something has been detected, what is it and is it virulent. That is the state of evidence and the task ahead for scientist and, specifically, CFIA with laboratory support and expertise from DFO. As Dr. F. Kibenge says in his Reply submissions at p. 2, para. 4:

> "It is important to note that the presence of ISA virus sequences in a tissue sample does not necessarily mean that the actual disease, ISA, is present in the subject fish or that ISA is present in the area where the fish was collected. ..."

22. The Aquaculture Coalition downplays the possibility of contamination (at the bottom of p. 1). Contamination is a real possibility and needs to be investigated. Similarly, the methodologies and protocols used by various labs, including the DFO Moncton lab, all need study to determine whether error or omission has crept into any of them. This is all part of a proper and robust scientific inquiry. In reference to the Aquaculture Coalition's assertion that only Dr. F. Kibenge produced the Dr. Molly Kibenge transcript, in fact Canada produced it to the Commission before Dr. F. Kibenge on November 22, 2011, as a stand alone production. Commission records will confirm this.

23. In reply to the Aquaculture Coalition's assertions regarding Dr. M Kibenge's work in 2004 and draft manuscript (pp. 3-4), that was seen then as presumptive positive results that could

not be confirmed despite numerous attempts at validation, as explained in Canada's submissions on ISA at paragraphs 67 to 75. The conclusion was that Dr. M. Kibenge did not find ISAV.

24. At page 5 the Aquaculture Coalition repeats its earlier suggestion that egg importations are the means by which disease may be introduced to BC. Egg importation rules are stringent and have been explained in Canada's final submissions filed October 17, 2011 at paragraph 668 and Reply filed November 3, 2011, at paragraphs 42 and 98. Moreover, there are multiple possible ways disease could introduced to BC, including past attempts to introduce Atlantic salmon to BC in the early 1900s and more recent attempts in Washington State in the 1980s. It is noteworthy that Dr. Miller opines that whatever it is that she has detected has likely been in BC waters for at least 25 years or "considerably longer than that".[2]

25. The Aquaculture Coalition's points in regard to the provincial lab findings (p. 4) are addressed by BC in its submissions on ISA, which Canada substantially agrees with.

26. In reply to the Aquaculture Coalition's submissions on the differences in 2007 vs. 2008 smolts (pp. 5-6), Dr. Miller testified that she saw higher proportions of fish testing positive for four different pathogens in 2007 and 2008. The presence of pathogens as determined by molecular means does not mean that a disease is present. She also noted that interpretation of her data needed to be done cautiously due to the very small samples sizes for 2007.[3] Within her testimony she mentions two genera of bacteria (*Flavobacterium* and *Psuedomonas*) as being present in samples of fish that she tested. Species from both of these genera are commonly found in soil and freshwater.

27. In reply to the points made by the Aquaculture Coalition, at page 7, as to heart and skeletal muscle inflammation virus (HSMI) in the Creative Salmon Fish Farm, while HSMI is a concern and warrants attention, the Aquaculture Coalition is premature in seeking to draw conclusions on the source of implications fro salmonids in BC.

28. At page 8, the Aquaculture Coalition repeats earlier assertions that finfish farms should be removed from contact with significant wild salmon migratory populations. Interactions

[2] Dr Kristi Miller, 15 December 2011, pp 51:43 to 52:27 and pp 78:39 to 79:5.
[3] Dr Kristi Miller, 15 December 2011, pp 113:41 to 114:25.

between farmed and wild salmon populations warrant further study, but the evidence, either on ISA or generally, does not support a finding that fish farms need to be relocated. In reference to testing of farmed fish and the Aquaculture Coalition's call for mandatory testing, it is already mandatory under the conditions of licences of the *Pacific Aquaculture Regulations*, and is not dependent of the cooperation of industry.[4]

29. At pages 8 to 16 of its submissions the Aquaculture Coalition suggests that the government - DFO and CFIA - are denying and/or suppressing information on ISAV and/or not properly responding to the recent reports of positive findings. The evidence refutes this. As explained in Canada's submissions filed December 29, 2011, a full scientific response is being undertaken, including retesting, review of assays and lab methodology, and surveillance. All of this is being done in accordance with sound science, which includes observation, research and objective assessment of all known information.

30. In reply to what the Aquaculture Coalition suggests, at page 9, regarding Ministerial statements, they are accurate in stating that there are no confirmed findings of ISAV and are consistent with the established practice of not reporting presumptive positive results pending validation tests and any confirmation.[5] Further, the statements were accompanied by technical briefings which explained the state of information and testing.[6] The Aquaculture Coalition's suggestions of cover-up and bias in reporting are without merit.

31. CFIA has explained the reasons for quarantine and concern over chain of custody issues in conducting an investigation to get at all the facts (cross-reference the Aquaculture Coalition's submissions at pp. 10-11). A Notice of Quarantine is prescribed by regulation and was lawfully carried out.

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[4] *Pacific Aquaculture Regulations*, SOR/2010-270.
[5] Exhibit 2089, Statement from the Federal Minister of Fisheries and Oceans Canada, Keith Ashfield and British Columbia Minister of Agriculture, Don McRae on new test results indicating that there are no confirmed cases of ISA in British Columbia Salmon, 9 November 2011; Exhibit 2004, Statement from the Federal Minister of Fisheries and Oceans Canada, Keith Ashfield, on Negative Infectious Salmon Anaemia Test Results in British Columbia Salmon, 2 December 2011.
[6] Exhibit 2030: Transcription: News Conference (8 November 2011); Exhibit 2032: New Conference, December 2, 2011.

32. While the Aquaculture Coalition suggests that CFIA sought to undermine Dr. F. Kibenge's work and lab (at p. 12), the evidence shows otherwise. CFIA commenced testing, is doing an investigation into the test results, and doing lab assessments. Dr. F. Kibenge, himself, said he would do what the government did if he was in their shoes.[7] It is important to remember that science is based on observation and a full inquiry into and assessment of all available information. Sound science does not rely on selected evidence only.

33. Dr. Klotins explained her email proposal that other labs be asked not to test samples (cross-reference p. 12). She said the email was a response to concerns around the chain of custody issues and that it was an idea to help ensure CFIA had oversight over testing to ensure that any findings could be confirmed.[8] Regardless, her proposal was not acted on.

34. The Aquaculture Coalition devotes considerable attention to Joseph Beres' email at pages 13-14 of their submissions[9]. Dr. Beres was not called to give evidence to explain his email, although there is an explanation and context that is necessary to properly understand it. Little weight should be given to an email where the author has not been called to give evidence to explain it or his thinking. The witnesses who gave evidence, including Dr. Klotins, did not know the context or what Dr. Beres' meant and, in any event, did not subscribe to the text.[10]

35. In reply to the Aquaculture Coalition's submissions at pages 15-16 where they question CFIA's mandate over wild fish, it is fundamental to understand that the CFIA's legislative mandate is to protect the aquatic animal resource base and ensure the continued health and sustainability of aquatic animals in Canada. This includes both wild and farmed populations.[11]

36. Further, the respective roles of CFIA and DFO, in accordance with legislative mandates, are that CFIA, as the lead agency, has regulatory and enforcement responsibilities, provides overall program direction and field operations capability for the aquatic animal industries in Canada. Whereas, DFO provides laboratory support for diagnostic testing required by the NAAHP, and the delivery and supervision of diagnostic science research and development.

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[7] Dr Frederick Kibenge, 16 December 2011, pp 45:31 to 46:8.
[8] Dr Kim Klotins, 16 December 2011, pp 91:34 to 93:17; Dr Kim Klotins, 19 December 2011, pp 48:18 to 49:38.
[9] Exhibit 2110: Email from J Beres to C Kiley et al, re Fwd - The Early Bird - Nov 9 2011. ISAV, Nov 9 2011.
[10] Dr Kim Klotins, 16 December 2011, pp 111:34 to 112:20.
[11] Canada's Written Submissions on ISAV at paras 18-20 and 33.

Together, CFIA and DFO coordinate in performing field operations for surveillance and monitoring activities for the wild stock and farm fish.[12]

37. In addition, the 2011-12 DFO Report on Plans and Priorities (RPP) identifies that the Aquatic Animal Health is a key program activity for DFO (under its Program Activity Architecture (PAA).[13] Delivery on these commitments will be reported through annual Departmental Performance Reports (DPRs), which are publicly available on the DFO website.

38. The Aquaculture Coalition refers to Dr Miller's evidence regarding a teleconference of November 24, 2011 involving Mr. Stephen. They refer to evidence that her discussion with Mr. Stephen on November 2011 was obviously not an easy one and he raised a concern about repercussions of the new diseases on trade and whether her funding could be at risk. The Aquaculture Coalition omits reference to Dr. Miller's evidence that she subsequently received DFO Genomic Research Development Initiative funding for three years in the amount of approximately $450,000 per year.[14] This is one of several sources of DFO funding for Dr. Miller's lab, which is substantial.

39. Mr Stephen testified that:

> "But, and in fact, I had just sent an e-mail to Dr. Miller advising her that she has been awarded $462,000 over the next three years, beginning this year, for research on genomic research, specific for Parvovirus and related research. If I add up all the money she's received since 1999 under the GRDI funding, it amounts to $2.4 million. She was also awarded, in collaborative work with Ruth Withler, another $400,000. So, in fact, over the last 10 or so years my office, or the branch I'm in now has awarded about $2.8 million of funding for her for research. And I'll just add one more thing. The $462,000 over the next three years represents 20 percent of all the funding allotted out of the budget I have for that money. So she's one of eight researchers and she gets 20 percent of the money."[15]

40. Further on this, Mr. Stephen testified in reference to the November 24, 2011, teleconference attended by Dr. Miller, himself and others that he explained to Dr. Miller the

[12] Written Submissions of Canada on ISAV at para 34.
[13] Exhibit 1922: Report on Plans and Priorities 2011-12.
[14] Dr Kristi Miller, 15 December 2011, pp 79:38 to 80:6.
[15] Stephen Stephen, 16 December 2011, p 109:2-28; Written Submissions of Canada on ISAV at para 135.

mandatory requirement by law for notification to CFIA where someone has a suspicion of ISA (which requirement had been set out in January 19, 201, notification to DFO scientists, as well); he did not say that Dr. Miller should stop testing; rather, he said DFO Research scientists are to be supported in their work but need to work within the mandatory reporting requirements; and he did not make suggestions to intimidate Dr. Miller.[16] This is consistent with what Dr. Miller stated in evidence.[17]

VI. REPLY TO 09 CONSERVATION COALITION

41. The Conservation Coalition's overreaching assertions (paras. 2-4) are that not enough has been done by government, specifically DFO, to research and assess ISA over the years and its possible presence in BC waters and, further, that science research is not sufficiently independent of political direction. The evidence refutes this.

42. The Conservation Coalition's submission assumes that Dr. Molly Kibenge detected the presence of ISA in BC in 2003-04, which is incorrect. Dr. M. Kibenge obtained some PCR products using ISAV primers the presence of which could not be confirmed in subsequent tests as explained in Canada's submissions filed December 29, 2011. As to the Cultus Lake samples, Dr. M. Kibenge, herself, concluded that those results were not ISAV.[18]

43. In reply to paragraphs 3-4 of the Conservation Coalition's submissions, the various assays used by different laboratories is something being looked at as a possible explanation for why different laboratories have obtained different results. Laboratory methodologies and protocols are also being looked at. In this, it is important to use scientifically sound and robust assays and have good lab methodologies and protocols in place to ensure that the findings are scientifically sound. CFIA is properly looking into this in order to get to the bottom of why different labs are obtaining different results. All this is in response to the recent presumptive positive reports and to determine what is being detected by some scientists and whether it is ISAV or something else. All of this work is ongoing.

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[16] Stephen Stephen, 16 December 2011, p 108:2-45; 19 December 2011, pp 100:21 to 11:32, pp 67:-18 to 69:38.
[17] Dr Kristi Miller, 15 December 2011, pp 107:17 to 109:13, pp 125:26 to 127:27.
[18] Canada's Written Submissions on ISAV at para 73.

44. The Conservation Coalition is critical of the draft surveillance plan being developed (at paras. 5-12 of their submission), including whether the surveillance will enable scientists to detect novel strains of ISAV.19 The draft plan is consistent with international standards as described by the OIE objective and is to ascertain whether ISAV or an ISAV-like virus, IPNV and/or IHNV, exist in BC waters, and through testing whether it can cause disease. Useful suggestions to further this objective will be considered, including those made through the Cohen Commission hearings and in the stakeholder input to occur in January 2012. Specifically, the Conservation Coalition's suggestions on where samples should be drawn from will be taken into account along with all other available information and criteria for sample locations. The draft plan currently proposes that about 4,000 will fish be sampled annually from multiple locations for the first two years. The plan will be reviewed as implementation proceeds to make sure that the methodology and implementation are meeting the objectives and any new critically evaluated science is taken into consideration.

45. The Conservation Coalition suggests that the government response to the presumptive positive results is heavy-handed, and involves intimidation and undermining scientists. That is not the evidence. CFIA and DFO, working together, have responded quickly to the recent test results by gathering information, assessing all of the information, developing a draft surveillance plan and other response measures (validation tests, lab assessments, review of assays) with a view to getting to the bottom of these recent findings. In doing this work, CFIA and DFO have provided technical briefings to the public via the media. They have provided extensive document disclosure of material generated from mid October 2011 onwards, and done so in real time. The witnesses and documentary material clearly show that the government has responded quickly and in a robust, scientifically sound way to the recent reports.

46. The suggestion in paragraphs 1and 13-14 of the Conservation Coalition's submissions that there needs to be further structural separation between scientists and political decision-making is not borne out by the evidence. The scientists who testified were clear as to their scientific assessment and, opinions and what should be done, and that is being done in response

[19] Exhibit 2112: Surveillance Plan for ISAV, IPNV and IHNV in Anadromous Salmonids in British Columbia – November 2011; Exhibit 2119: Memo to the Minister (For Info) - Complementary Surveillance Effort in Cultured and Wild Salmonid Species in BC, Dec 2011.

to the recent reports. Throughout this inquiry, we have heard from many scientists, inside and outside government, and managers who have testified that scientists are free to give their best science advice to managers and that science advice is given a lot of weight in decision making. More specifically, under the current structure, scientists will determine whether there is ISAV or an ISAV-like virus in BC waters and, if so, what should be done. That information and advice will then be considered by managers and, if warranted, ministers who will make decisions based on that science advice and all other relevant considerations.

VII. REPLY TO 10 AREA D SALMON GILLNET ASSOCIATION AND AREA B HARVEST COMMITTEE

A. Whether ISAV is Present in BC and, if so, its Effect on Wild Pacific Salmon

47. On pages 1-4 of their submissions, Areas D&B make numerous statements regarding the possible presence of ISAV in BC, and its impact on wild salmon stocks, including:

a) the virus has been identified in wild sockeye salmon;

b) the virus is negatively impacting the health of wild Pacific salmon;

c) there is a high risk of an ISAV outbreak occurring in Pacific salmon;

d) such an outbreak would be "a disaster"; and

e) that other such outbreaks have had devastating consequences for fisheries around the world.

48. Most of these statements are premised on the first of the above. The evidence is that there have been positive RT-PCR results for portions of segment 7 and segment 8 of the ISAV virus, with partial sequencing of segment 7 by Dr. Miller.[20] ISAV has yet to be isolated or cultured from Pacific salmon. The scientists who testified agree that the PCR results and sequencing information are important and warrant further study.[21] Neither the virus nor the disease caused by the virus have been identified in Pacific salmon.

[20] Canada's ISA submissions at paras. 67 to 102.
[21] Canada's ISA submissions at paras. 95 to 102.

49. Areas D&B rely on the genomics work of Dr. Miller for the statement that ISAV is negatively impacting the health of Pacific salmon. However, Dr. Miller was clear in her testimony that the genomic response she has seen does not mean that ISAV is causing disease or mortality in wild or farmed salmon.[22] In Canada's submission, there is an important distinction between a genomic response and a negative impact on salmon health.

50. The statement that there is a high risk of an ISAV outbreak in BC is simply not supported by the evidence. Moreover, the statement that such an outbreak in BC would be a "disaster" is premised upon a statement by Dr. Miller regarding the virulence of a strain seen in Norway.[23] There is no evidence that what is being detected in BC is even ISAV, let alone that it is a virulent strain of ISAV.

51. Finally, while there is evidence that outbreaks of ISAV around the world have had serious negative consequences for aquaculture operations, the evidence relied on by this Areas D&B does not support the statement that those outbreaks have had impacts on wild fish stocks or fisheries in countries where they have occurred. In particular, while Pacific salmon may be carriers of ISAV, they have shown to be not susceptible to ISA.

B. Government Communications on ISAV

52. At pages 5 to 8, Areas B&D state that the government did not take any actions to protect the health of wild salmon, and that its "primary response" was instead to "win a public relations battle." This participant even goes so far as to state that the government attempted to "cover up and discredit Dr. Kibenge's test results." In Canada's submission, these accusations are not borne out by the evidence and ought to be rejected.

53. The CFIA's primary response to the possible detection of ISAV in Pacific salmon was to initiate an investigation into the different notifications that it received, as described in great detail in Canada's ISA submissions.[24] In Canada's submission, the content of public statements is not

[22] Dr Kristi Miller, 15 December 2011, p 50:26-34, pp 87:28 to 88:21; and see Dr. Miller's evidence of August 24 and 25, 2011.
[23] Dr Kristi Miller, 15 December 2011, p 128:39-42.
[24] See Canada's ISA submissions at paras. 103 to 132.

the key factor bearing on the issues before this Commission – that is, the cause of the decline of Fraser sockeye and the future sustainability of the fish and the fishery. The contention of Areas D&B that the content of public statements is an indication that the government is "prioritizing the interest of the aquaculture industry" over wild salmon ignores the actual actions of CFIA and DFO to respond to the issue.

54. Again, it must be reiterated that neither ISAV nor ISA have been confirmed in BC salmon. Areas D&B's assertion that public statements to this effect were made "regardless of strong evidence to the contrary" ignores the evidence summarized above.

55. At page 5 of their submissions, Areas D&B submit that "inconclusive" results from Ms. Gagné's lab were publically reported as "negative" and that this was misleading. This ignores repeated statements made by Ms. Gagné in evidence that public statements were also made that clarified that her negative results were, in fact, inconclusive due to the degradation in the samples.[25] Moreover, the statement that her results were negative is not misleading because, as stated numerous times by Ms. Gagné, her RT-PCR results were, in fact negative, but the interpretation of those negative results had to be "inconclusive" due to the quality of the samples.[26] Had these samples tested positive, they would have been reported as such.[27]

56. Areas D&B further submit on page 6 that public statements to the effect that DFO test results were negative is misleading given a positive result from Ms. Gagné's lab. This ignores Ms. Gagné's evidence on this point. She stated clearly and repeatedly that this result was not a positive result for ISAV, but a weak fluorescent signal that could not be repeated despite multiple attempts and was likely only fluorescence from the probe.[28]

57. On pages 6-7, Areas D&B submit that the statement that "there has never been a confirmed case of ISA in BC salmon, wild or farmed" is misleading. Dr. Miller agreed that the statement is true in that it is about the disease and not the virus.[29] As noted by Dr. Nylund, there

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[25] Exhibit 2138, *Aquatic Animal Health's Technical Briefing regarding the Reported Suspect Finding of Infectious Salmon Anaemia Virus (ISAV) in BC*, 10 November 2011; Exhibit 2097, *Media Lines and Qs & As*, 8 November 2011; Nellie Gagné, 16 December 2011, pp 25:2 to 26:27.
[26] Nellie Gagné, 16 December 2011, pp 16:8 to 17:35, p 21:7-25.
[27] Nellie Gagné, 16 December 2011, p 16:9-24.
[28] Nellie Gagné, 16 December 1022, pp 21:43 to 23:1.
[29] Dr Kristi Miller, 15 December 2011, p 132:16-23.

is a large difference between the virus and the disease.[30] In Canada's submission, this distinction is an important one as it is the disease, and not the virus alone, which can cause mortality.

58. Further, Areas B&D submit on page 7 that "DFO and CFIA were strategizing to win what they saw as a public relations war" on the basis of an e-mail from Mr. Joseph Beres. As stated in reply to the Aquaculture Coalition submissions, Mr. Beres was not called as a witness and there is no evidence as to his intent or frame of mind in making this statement. In Canada's submission, little weight should be accorded to a statement in an informal e-mail by an author who has not testified and cannot give his account of the statement.

59. Finally on this, neither Dr. Klotins nor Mr. Stephen agreed with the proposition that this e-mail reveals that CFIA was only interested in concluding that ISAV is not present, rather than trying to learn the truth.[31] As stated by Mr. Stephen, one of the purposes of the NAAHP is to determine whether disease is present or not.[32] Where it is found to be present, swift and decisive action will be taken by CFIA to control the spread of the disease.[33] CFIA is doing this with the recent reports and has a history of doing so, including with the avian flu and swine flu outbreaks.

C. No Government "Attack" on Dr. Miller and Dr. Frederick Kibenge

60. At pages 9-13 of their submissions, Areas B&D make numerous claims regarding DFO and CFIA's treatment of Dr. Miller and Dr. Frederick Kibenge that are either inaccurate or unsupported by the evidence, including:

a) Dr. Miller is being silenced by her superiors;

b) senior management is interfering in and undermining Dr. Miller's research and is instead focussed on disproving ISAV;

c) Dr. Miller is being deliberately intimidated by DFO management;

d) Dr. Miller was told that "research should not fog policy"; and

[30] Dr Are Nylund, 15 December 2011, p 10:18-27.
[31] Dr Kim Klotins and Stephen Stephen, 16 December 2011, pp 112:23 to 113:19.
[32] Stephen Stephen, 16 December 2011, pp 112:41 to 113:19.
[33] Dr Peter Wright, 19 December 2011, pp 19:47 to 20:36.

e) Dr. Kibenge was "attacked" by government for his findings.

61. On the first point, what Dr. Miller said was that "I'm not supposed to be talking publically about much of this anyway, but I don't recall a specific statement, you know, not to discuss ISA, but I think it's a given that I don't go and speak publically about this." She clarified in later testimony that, as she has stated in evidence before, this was a longstanding requirement that all DFO employees, including her, should not speak with the media regarding matters that they may testify about before the Commission. This is an expectation within DFO and was not directed solely at her.[34] The purpose is to ensure that information is provided via evidence to the Commission, and not to engage in outside the hearing room interviews and statements. This is to ensure the integrity of the evidence and respect for processes before the Commission.

62. Regarding the second point, there is no evidence before the Commission that DFO has interfered with or undermined Dr. Miller's research. On the contrary, the evidence is that Dr. Miller has conducted her RT-PCR testing for ISAV unhindered, and has received significant funding, including as set out in paragraph 135 of Canada's submissions on ISA.

63. On the third point, Dr. Miller's actual evidence was that she felt intimidated not by her superiors, but by the prospect that her samples could be "seized" by the CFIA in the course of their investigation (an issue dealt with in the next section, below).[35]

64. As to the fourth point, the statement that "research should not fog policy" is neither a direct quote from Mr. Stephen nor a complete summary of his statements on the topic of the relationship between research and policy. As stated by Dr. Miller, her view is that research should inform policy.[36] Mr. Stephens' view on the matter, as he explained it to Dr. Miller, was that new research such as hers should be brought into and linked to the regulatory program under the NAAHP.[37]

[34] Dr Kristi Miller, 15 December 2011, p 141:17-35.
[35] Dr Kristi Miller, 15 December 2011, p 126:43 to 127:15.
[36] Dr Kristi Miller, 15 December 2011, p 126:9-42.
[37] Stephen Stephen, 19 December 2011, pp 68:47 to 69:23.

65. On the final point, while Dr. Kibenge stated that he felt attacked since his findings were released and that there has been a lot of pressure on him and his university regarding the results, Areas B&D omit from their submissions further important statements by Dr. Kibenge regarding the government's actions:

> 44 DR. KIBENGE: When I mentioned government, I mean the
> 45 Canadian Food Inspection Agency, and I think
> 46 ultimately they are responsible for, you know, the
> 47 health status of animals in Canada. And so with a
> 1 result like this, I would expect them to sort of
> 2 get on the case, to understand where is it coming
> 3 from, how they can control it, and so on. So the
> 4 way they came at it is quite understandable to me.
> 5 It may not have been acceptable to me, but given
> 6 the situation, if I was in CFIA, probably I would
> 7 have done the same thing. So that's what I mean
> 8 that I understood where they were coming from.[38]

66. As stated by Mr. Stephen, CFIA's conclusions regarding disease and its subsequent actions in response have widespread impacts on many stakeholders, including international trading partners, First Nations, commercial and recreational fishers, aquaculturalists and all Canadians.[39] As such, in Canada's submission, the steps taken in the course of the investigation – including the laboratory assessments – remain important and necessary steps to have taken in determining whether or not ISAV is present in British Columbia.

D. CFIA "Policy" on "Seizure" of Samples - Quarantine

67. Areas B&D submit on page 13 that "CFIA's apparent policy of seizing samples that test positive for a reportable disease should be reviewed as it appears to have a negative effect on independent research... ." There is no evidence that the CFIA has seized samples without good reason, let alone a "policy" of seizure of samples that test positive. Samples have been quarantined as a precaution while the CFIA continues its investigation.[40] In order to conduct confirmatory testing, CFIA has also collected the sample sets that have had positive RT-PCR

[38] Dr Frederick Kibenge, 16 December 2011, pp 45:44 to 46:8.
[39] Stephen Stephen, 16 December 2011, pp 112:41 to 113:19.
[40] Exhibit 2107, Situation Reports, 2011.

results.[41] In Canada's submission, these actions are necessary and proper in the case of a possible detection of ISAV in an area where it has never been previously detected.

68. Further, a request for return of samples can be made to the CFIA who will evaluate each request on a case by case basis with respect to prevention of the introduction of and spread of disease.[42] In fact, the original holders of these samples have sought return of the quarantined samples, a matter to be determined by the local inspector based on whether they are they are required for the continuing investigation.

E. Monitoring for ISAV

69. In support of the proposition that DFO has failed to monitor for ISAV, Areas D&B state at p. 14 that "[the Gulf Fisheries Centre in] Moncton, which is the DFO lab responsible for ISAV testing, has not been testing in BC since 2004... ." At page 15, these participants also state that the Gulf Fisheries Centre (GFC) "had never tested wild Pacific salmon" prior to this year. These are inaccurate statement on the role of the GFC and of DFO's monitoring.

70. As stated by Ms. Gagné, the GFC is the national reference laboratory for ISAV under the NAAHLS, which means that it is responsible for confirmatory or diagnostic testing for ISAV. It does not undertake routine testing or monitoring of Pacific salmon.[43] That is done by the Pacific Biological Station (PBS). The GFC has undertaken confirmatory testing of all known presumptive positive samples (i.e. those from 2004 from Dr. Molly Kibenge and those from late 2011).[44]

71. This confirmatory and diagnostic role does not mean that other DFO laboratories are not undertaking monitoring, research or testing for ISAV. [45] As stated by Mr. Stephen, viral surveillance of Fraser sockeye has been underway since before 2004 and up to 2011.[46] The cell

[41] Exhibit 2107, Situation Reports, 2011.
[42] Dr Kim Klotins, 19 December 2011, pp 46:32 to 48:8.
[43] Nellie Gagné, 16 December 2011, pp 29:28 to 30:4.
[44] See Canada's ISA Submissions at paras. 90-91.
[45] Nellie Gagné, 16 December 2011, pp 29:28 to 30:4.
[46] Stephen Stephen, 19 December 2011, p 74:8-22.

cultures used in this surveillance would have detected ISAV if it was present.[47] Further, DFO conducted specific screening for ISAV in Fraser sockeye in 2010 and 2011.[48] The statement at page 17 that DFO has failed to monitor for ISAV is inaccurate, and is not supported by the evidence.

72. Regarding monitoring, Areas B&D further state at page 16 that "[t]here is no reason to believe that DFO could not continue the ISAV testing that Dr. Molly Kibenge carried out under the supervision of Dr. Jones." For clarity, that testing was not a comprehensive surveillance or monitoring program, but a single set of opportunistic tests for research purposes.[49]

F. Disclosure of Draft Molly Kibenge Manuscript

73. At page 16 of their submissions, Areas D&B state that DFO has "failed to disclose" Dr. Molly Kibenge's 2004 manuscript, and that this "raises questions about what other information the Government has withheld from the public record."

74. Dr. Jones explained the reasons why he did not consider that the manuscript needed to be disclosed until the recent positive RT-PCR test results. In brief, her results could not be repeated despite multiple attempts, including her attempts to amplify segment 8. She was never able to amplify segments 2, 6 or 7. For these reasons, Dr. Jones explained that the conclusion was that her study had not found ISAV, and therefore was not of significance to this Commission.50 Following the recent testing results, the paper was disclosed by Canada to the Commission on November 22, 2011, prior to its disclosure by others. To now use this manuscript to raise a vague spectre of undisclosed material is, in Canada's submission, unwarranted and not supported by the evidence, particularly given Canada's extensive efforts to disclose documents to this Commission and other participants. 51

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[47] Exhibit 1456, *Hypothesis: diseases in freshwater and marine systems are an important contributor to the Fraser sockeye situation*, June 2010.
[48] Exhibit 1461, *Introduction to Pathogens, Diseases, and Host Pathogen Interactions of Sockeye Salmon.*
[49] Exhibit 2113 at p 1: *Presence of Infectious Salmon Anaemia Virus nucleotide sequences in Pacific salmon*, 2004.
[50] Dr. Simon Jones, 16 December 2011, pp 125:25 to 128:26.
[51] Dr. Simon Jones, 16 December 2011, pp 125:25 to 128:26.

VIII. REPLY TO 16 FIRST NATIONS COALITION

75. In reply to paragraph 7 of the First Nation Coalition's (FNC) submissions, although Dr. Frederick Kibenge announced positive test results for five samples, the lab assessment performed by CFIA revealed that three of five positives were reported on the basis of only one well (of two) having a positive result.52 Nellie Gagné testified that researchers typically prepare two wells of the sample for the RT-PCR test. It is expected that the result will be the same for both samples, unless there is a very weak signal at ct values in the high 30s. Ms. Gagné noted that her lab's procedure is to immediately re-test a sample where only one of two wells tests positive.53

76. The FNC in paragraph 18 seek to undermine the validity of Ms. Gagné's test results by asserting that labs using the Stratagene machine with MXPro software report "false positives" *[sic]*, however, DFO's Moncton lab was not involved in the study to which Dr. Kibenge refers.[54] Ms. Gagné testified as to why she did not believe that this concern regarding the MXPro software applied to her test results.[55] See also paragraphs 97 to 99 of Canada's reply submissions. Canada submits that there is insufficient evidence of the differences (if any) between the machinery and software in the various labs testing for ISAV to draw any conclusions, and, in particular, why these differences could account for why these labs produced inconsistent results.

77. In a similar vein, the FNC at paragraph 19 attempts to draw a negative inference from the fact that the NAAHLS in Canada has not yet obtained ISO 17025 certification. Both Nellie Gagné and Dr. Peter Wright testified to the enormity of the task in obtaining ISO 17015 certification, how the NAAHLS labs currently operate to ISO 17025 standards, and are well advanced in obtaining the formal certification. The evidence of both Ms. Gagné and Dr. Wright

[52] Exhibit 2075 at p 7: *Infectious Salmon Anaemia (ISA) Laboratory Assessment: ISA OIE Reference Laboratory, Atlantic Veterinary College*, 14 December 2011. Exhibit 2123: *LC480 Data Analysis of ISAV Testing at AVC*, 29 November 2011

[53] Nellie Gagné, 16 December 2011, p 73: 24-31; p. 74: 6-12. See also 15 December 2011, p 17: 13-23; p 18: 17-35.

[54] Dr. Fred Kibenge, 16 December 2011, p 38: 16-18; Dr. Kibenge testified that, according to his study, the MXPro software and the Strategene machine result in a higher risk of false negative results, Dr. Fred Kibenge, 15 December 2011, . 43: 20-32.

[55] Nellie Gagné, 16 December 2011, p 39: 22-42.

confirms that the DFO Moncton lab, part of NAAHLS and DFO's national reference laboratory for ISAV maintains a high standard of expertise and competence.[56]

78. Furthermore, Canada submits that there is no basis or evidence to support the FNC submission at paragraph 27 that the evidence and expertise of Dr. Fred Kibenge or Dr. Nylund should be given more weight or credibility than that of Ms. Gagné. Ms. Gagné is the Molecular Biology Scientist and Laboratory Supervisor at the Molecular Biology Unit at the Moncton lab, and it is the NAAHLS reference lab for testing for ISA and ISAV in Canada. She was qualified as an expert in diagnostic methods and validation techniques for viral detection in fish and seafood, and no participant raised any objections to her expertise and experience in this area.[57] Ms. Gagné's curriculum vitae demonstrates her in-depth knowledge and expertise in designing and conducting RT-PCR procedures and other tests for ISAV that were the focus of the ISA hearings.[58] She has published peer review articles on the subject of RT-PCR, some which are in evidence.[59] As an example of her expertise, Ms. Gagné has designed a validated RT-PCR assay for segment 8 that is similar to and overlaps in most respects with other internationally recognized RT-PCR assays.[60] Based on this uncontested evidence of Ms. Gagné's knowledge, expertise and experience, Canada submits that there is no basis to prefer Dr. Kibenge's or Dr. Nylund's evidence or expertise over that of Ms. Gagné.

79. At paragraph 34, the FNC cite testimony of Dr. Simon Jones to support the proposition that Dr. Molly Kibenge tested positive for ISAV in all 64 Cultus Lake sockeye salmon samples tested. However, Dr. Jones, among other concerns with Dr. Molly Kibenge's manuscript, was particularly critical of this assertion in Table 1 of the manuscript.[61] In particular, Dr. Jones testified that this result indicates that the PCR result was a false positive, possibly the result of

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[56] Nellie Gagné, 15 December 2011, p 63: 22-33; pp 64:43 to 65:19; p 133:9-16; 16 December 2011, pp 73:13 to 74:1; Dr Peter Wright, 19 December 2011, pp 17:36 to 18:18; pp 32:44 to 33:18.
[57] Nellie Gagné, 15 December 2011, p 9: 10-22.
[58] Exhibit 1994: *Curriculum Vitae of Nellie Gagné.*
[59] Exhibit 2001: *Traditional descriptive analysis and novel visual representation of diagnostic repeatability and reproducibility: Application to an infectious salmon anaemia virus RT-PCR assay*; Exhibit 2003: *Estimation of the repeatability and reproducibility of three diagnostic tests for ISAV.*
[60] Exhibit 2000: *Validation Pathway for NAAHLS Diagnostic Test Methods: Molecular Analysis for Infectious Salmon Anaemia Virus,* version 2.1, December 8, 2008.
[61] Exhibit 2140: Email from Molly Kibenge to Simon Jones, 5 March 2004; Dr Simon Jones, 19 December 2011, p 112:4-28.

sample contamination that raised questions about the test results generally.[62] Ms. Gagné also questioned the test results and reliability of the primers used by Dr. Molly Kibenge.[63]

80. The FNC, at paragraph 40, asserts that Canada had and has a legal obligation to inform First Nations of Dr. Molly Kibenge's test results and to conduct further research and testing on wild salmon based on those results. Canada submits that the FNC is seeking to invoke a novel and untested expansion of the Crown's legal duty to consult with respect to adverse impacts on potentially existing aboriginal or treaty rights. Moreover, and consistent with Canada's reply submission dated November 3, 2011 at paragraph 8, Canada respectfully submits that the Commissioner should not make findings, or comment upon, the parties' respective legal rights, particularly where, as here, there is no factual foundation or legal dispute upon which to base such findings.

81. Canada submits that the evidence cited from Dr. Klotins' testimony does not support the assertion at paragraph 42 that, but for the Commission hearings on ISA, Dr. Molly Kibenge's research would not have been made publicly available. Dr. Klotins was not asked about Dr. Molly Kibenge's manuscript. In reply to paragraphs 42-44, see paragraphs 22 and 74 of this reply submission.

82. The FNC submissions at paragraphs 47-53 seek to discredit the CFIA-commissioned assessment of the AVC lab on the basis of Ms. Gagné's purported involvement in that process. Canada submits that Ms. Gagné had no direct role in the assessment of Dr. Kibenge's lab. She testified that she was approached by Timothy Davis for her expertise on issues relating to RT-PCR. Mr. Davis was assessing the expertise required for the two lab assessments. Based on his discussion with Ms. Gagné, Mr. Davis concluded that a panel of scientists with expertise in the use of RT-PCR was required. This group of experts, including an independent scientist from the University of Guelph, is knowledgeable in RT-PCR methodologies and laboratory procedures. There is no evidence that Ms. Gagné's advice to Mr. Davis regarding the expertise required had any influence on the subsequent assessment of Dr. Kibenge's lab. Rather, as Ms. Gagné testified,

[62] Dr. Simon Jones, 19 December 2011, p 122:34-42.
[63] Nellie Gagné, 16 December 2011, pp 80:35 to 81:3.

the procedures followed by the panel of experts assessing Dr. Kibenge's lab were also those followed in its assessment of Ms. Gagné's lab. [64]

83. In further reply to paragraph 53, Dr. Kim Klotins testified that the Moncton lab assessment report was commenced after completion of the AVC assessment report.[65] The Moncton lab assessment report is underway. These reports were prepared for a CFIA investigation that is ongoing. The fact that the Moncton report was not completed in time for the Cohen Commission hearings is no reason to question the purpose for conducting the assessment of the AVC lab, or the credibility of the scientists and experts who conducted it.

84. The FNC at paragraph 62 omits elements of Stephen Stephen's testimony that describes his views on, and support for, Dr. Miller's continued research. In particular, and as noted previously in these reply submissions[66], Mr. Stephen testified that he supports, and is funding, Dr. Miller's research into disease in wild fish. Mr. Stephen testified that, particularly where diseases such as ISA are reportable in law, DFO research activities should be coordinated with ongoing investigations and surveillance into ISAV and other diseases, see paragraphs 40 and 64 of this reply submission.[67]

85. In reply to paragraph 76 and generally, the FNC fails to distinguish between the CFIA role in conducting an investigation into reports of ISAV or ISA disease in wild and farmed salmon for purposes of deciding whether there is a confirmed finding of a disease, on the one hand and the different perspective and approach of scientists engaged in academic research. The CFIA perspective is to determine whether a ISA virus or disease exists. The diagnostic and regulatory perspective is necessarily different from the approach taken by scientists engaged in academic research. This distinction is discussed at Part VI of Canada's ISA Submissions filed December 29, 2011.

[64] Nellie Gagné, 16 December 2011, p 52:16-44; p 53:19-33; p 71:33-44; p 72:4-16; Dr Kim Klotins, 16 December 2011, p 117: 9-33; p 118: 8-18; pp 118:46 to 119:9.
[65] Dr Kim Klotins, 19 December 2011, p 6:24-29.
[66] Canada's Reply Submissions on ISA, paras 38-40.
[67] Stephen Stephen, 16 December 2011, p 108:7-45; 19 December 2011, p 69:4-23.

IX. REPLY TO 18 STO:LO TRIBAL COUNCIL AND CHEAM INDIAN BAND

86. As a general comment, Canada submits that throughout their submissions the Sto:lo Tribal Council and Cheam Indian Band (STC-Cheam) make general allegations of misconduct and wrongdoing by the federal government and federal officials, and criticizes federal witnesses at the hearings, all without merit and without support in the evidence. Canada submits that these general allegations and criticisms should be disregarded.

87. Examples of STC-Cheam submissions that are not supported by evidence and that Canada submits should be disregarded include, but are not limited to:

a) Paragraph 6 - There is no evidence that Canada has "actively discouraged" research into disease-related issues. Rather, the evidence is that DFO actively supports research;

b) Paragraph 7 - The STC-Cheam do not offer or cite evidence to support the statement in paragraph 7 that DFO lacks "…the necessary data and an appropriate approach to testing and data collection…";

c) Paragraphs 9 – 13 - The STC-Cheam make general allegations without supporting evidence that Canada has failed to disclose relevant information to the Cohen Commission. Canada submits that it has made full disclosure to the Commission;

d) Paragraph 15 – an unsubstantiated and inaccurate comparison of Ms. Gagné's expertise and experience as compared to Drs. Kibenge and Nylund. Canada relies on its reply in paragraphs 76, 77 and 78 above;

e) Paragraphs 31 and 32 - where the STC-Cheam seem to suggest that ISA is a potential cause for fish deaths in the Harrison River in 2011, and moreover that DFO should have gone public with this theory. The consensus evidence from all witnesses is that ISA disease has not been found in Pacific salmon and that while they can be a carrier of ISAV Pacific salmon are known to be resistant to the ISA disease;

f) Paragraphs 33 and 34 – where the STC-Cheam allege that DFO deliberately withheld information about positive ISAV tests in Cultus Lake and Harrison River salmon from the Sto:lo and public generally. This allegation is entirely predicated on the incorrect assertion that there have been positive ISAV test results for Cultus Lake and Harrison River salmon. However, the evidence demonstrates that the test results for the Cultus Lake and Harrison River samples were negative;[68]

g) Paragraphs 35 to 37 – further general, unspecific but nevertheless serious allegations that Canada deliberately withheld relevant information from the Commission are groundless and not supported by the evidence;

h) Paragraph 44 - the STC-Cheam in paragraph 44 appear to link – without citing any evidence -- the decline of Cultus Lake sockeye salmon, and Fraser sockeye generally, to a failure on the part of DFO to develop "…appropriate assays and conducting specific research for [ISA] these stocks"; and

i) Paragraph 50 - the STC-Cheam state that "Stó:lō People often submit samples of fish that they locate or catch that do not look normal, carrying indicators of disease, such as jaundice and lesions, for testing to DFO, but they usually do not receive any response." Again, no evidence is cited in support for this assertion.

88. The STC-Cheam state at paragraphs 4 and 28 and generally that CFIA and DFO have not responded adequately through testing, surveillance and research in response to the recent reports of positive ISAV test results. Canada replies that, on the contrary, the evidence demonstrates that all reported positive findings of ISAV were (or are being) thoroughly investigated, including further testing and the development of a forward-looking surveillance plan for ISAV (and other pathogens) in wild Pacific salmon.[69]

89. The STC-Cheam make a number of assertions alleging a lack of expertise and experience on the part of DFO scientists and laboratories in connection with testing for, and conducting

[68] Canada's ISA submissions, Part IV, sub-section A and paragraph 76(d).
[69] Canada's ISA submissions, Part IV and Part VII.

research on, ISAV and other diseases and pathogens the could affect wild Pacific salmon. In particular, they say that:

a) Paragraph 16 - the DFO Moncton lab has no experience testing for ISAV in wild Pacific salmon;

b) Paragraph 19 –DFO (both the PBS and the NAAHLS laboratories generally) lack the experience and appropriate methods to undertake testing and research into pathogens in Pacific salmon stocks;

c) Paragraph 26 – the PBS and the NAAHLS laboratories have never focused on wild stocks, except with respect to research on the IHN virus; and

d) Paragraph 27 –"the current methodology of DFO fish pathologists is ill equipped to test for pathogens and research effects on wild pacific salmon stocks…" and that DFO has no appropriate for systematic testing for pathogens and disease in wild stocks

90. Canada submits that these allegations are based on no or insufficient evidence, and ignore the large volume of evidence provided not only in the recent ISA hearings, but at the earlier hearings on fish disease and aquaculture. Moreover, DFO scientists such as Drs. Stewart Johnson, Simon Jones, Christine MacWilliams, Kyle Garver, Kristi Miller and Ms. Gagné and others individually and collectively have significant expertise and experience in testing for, and research on, disease and pathogens in wild Pacific salmon.[70]

91. In response to paragraphs 17 and 18 regarding Cultus sockeye, Canada reiterates its reply submissions at paragraph 41 and 79 and its ISA submissions filed December 29, 2011.[71] This context must be considered in response to any allegations that DFO failed to approve publication of the article, call for further research into ISA, or notify the Sto:lo First Nations or any other party of the test results.

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[70] Exhibit 1451: *Curriculum Vitae* of Stewart Johnson; Exhibit 1759: *Curriculum Vitae* of Simone Richard Macrae Jones; Exhibit 1455: *Curriculum Vitae* of Christine MacWilliams; Exhibit 1511: *Curriculum Vitae* of Kyle Garver; Exhibit 1510: *Curriculum Vitae* of Kristi Miller; Exhibit 1994: *Curriculum Vitae* of Nellie Gagné.
[71] Canada's ISA submissions, Part IV, sub-section A.

92. Contrary to the STC-Cheam assertions in paragraphs 38 and 39 Dr. Klotins testified that CFIA is committed to consulting and working with First Nations in developing the surveillance plan, which is in draft stage and which will be shared with external parties in January 2012 to obtain their input. Moreover, Stephen Stephen testified to his efforts to ensure that DFO regional officials, including officials involved in Aboriginal fishing issues, to assist in developing the surveillance plan.[72]

93. Dr. Jones responded to STC-Cheam's assertion at paragraph 42 that he and DFO should have informed the DFO Cultus Lake Recovery Team of Dr. Molly Kibenge's ISAV test results. He testified that he saw no reason to report what he concluded were negative results for ISAV.[73] Dr. Jones also emphasized the important distinction between a possible positive finding of ISAV and ISA disease. Not only did he and his colleagues conclude that there were no confirmed positive results for ISAV, there was no indication of disease consistent with ISAV.[74]

94. In response to paragraph 54, Dr. Kim Klotins testified to CFIA's willingness to enter into agreements and protocols with third parties, including First Nations, to undertake sampling and testing. However, to ensure that the necessary sampling, storage and testing procedures are followed and to meet legislative requirements, CFIA must retain an oversight role.[75]

95. In response to paragraph 55, Canada typically does not share or comment upon preliminary and unconfirmed reports of pathogens or disease until those findings have been confirmed using validated tests and procedures. Canada submits that this approach is essential to ensure that the public and international trade partners have confidence in Canada's fish health standards and regulatory process.[76]

96. At paragraph 56 the STC-Cheam support the Conservation Coalition's earlier application to reopen the hearings on disease. This is a reference to the Conservation Coalition's application dated November 24, 2011. Commission counsel wrote a letter in response dated December 7,

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[72] Stephen Stephen, 19 December 2011, p 105:3-8; Dr Kim Klotins, p 89:25-36; p 90: 29-33; p 99:19-28.
[73] Dr. Simon Jones, 19 December 2011, p 95: 9-27.
[74] Dr Simon Jones, 19 December 2011, pp 95: 37 to 96: 1.
[75] Dr Kim Klotins, 19 December 2011, p 48:35-47, p 90:29-33, pp 105:41 to 106:9.
[76] Canada's ISA submissions, paras 145-152.

2011, saying, in part, that the Commissioner had advised him that this application was premature in light of the then upcoming ISA hearings. Canada's position on that application was that further hearings on disease beyond those scheduled in December 2011 were unnecessary. In particular, the Conservation Coalition's application was premised entirely on the suggestion that ISAV was found and was present in BC wild salmon in 2004. The December 16-19, 2011, hearings fully canvassed this, and related, subjects. Canada's position remains that further hearings on aquatic animal disease are unnecessary. With this, if the Conservation Coalition chooses to renew its application to re-open the Commission hearings, Canada submits that it should make a renewed application with supporting materials, notice to all participants and an opportunity to respond.

X. REPLY TO COUNSEL REPRESENTING DR. KIBENGE

A. Sensitivity of Software and Assay Used by Ms. Gagné

97. On page two of his submissions, counsel for Dr. Kibenge submits that a possible source of the discrepancy between the tests results at the Atlantic Veterinary College (AVC) and the GFC in Moncton is the machine and software used at GFC in the RT-PCR process. He submits, based on a paper co-authored by Dr. Kibenge, that that machine and software often yield high Ct values and thus false negatives.[77]

98. Ms. Gagné testified, however, that the GFC does not simply use the software 'out of the box,' but calibrates it and tests it to ensure that it is working properly.[78] She further stated that she believes the results in Dr. Kibenge's paper, which was actually a paper studying differences between assays and not machines, are nothing more than a coincidence.[79] In Canada's submission, a study comparing the assays of 14 different labs – excluding the GFC – is not a reliable basis for concluding that all labs which use the Strategene machine and software are not sufficiently sensitive to detect ISAV when present.

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[77] Exhibit 2034: *Infectious Salmon Anaemia Virus (ISAV) Ringtest: Validation of the ISAV Diagnositic Process using Virus-spiked Fish Tissues and ISAV TaqMan® Real-time RT-PCR*, 2011.
[78] Nellie Gagné, 16 December 2011, pp 39:17 to 40:10.
[79] Nellie Gagné, 16 December 2011, p 58:4-21.

99. Counsel for Dr. Kibenge also submits on page three that Ms. Gagné's assay is not sufficiently sensitive because it targets a longer sequence of the virus than the assays used by Dr. F. Kibenge, Dr. Nylund and Dr. Miller. However, in reply to this suggestion, Ms. Gagné stated that this difference has no real impact on the sensitivity of her assay because the validation data for the assay shows that it is a very sensitive test, and can detect Ct values as high as 35, which means that it is sensitive enough to have been able to repeat Dr. Frederick Kibenge's results. [80]

XI. CONCLUSION

100. The foregoing submissions are in reply to the other participants' submissions of December 29, 2011 and in addition to Canada's ISA submissions dated December 29, 2011.

All of which is respectfully submitted,

Dated this 3rd day of January, 2012.

On behalf of Mitchell Taylor, Q.C.
Counsel for the Participant Government of Canada

[80] Nellie Gagné, 16 December 2011, pp 39:17 to 40:10.

XII. LIST OF AUTHORITIES

Case Law

1.	*Dixon v Canada (Somalia Inquiry Commission)*, [1997] 3 FC 169 (Fed. C.A.)

Legislation

1.	*Pacific Aquaculture Regulations*, SOR/2010-270