Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River

Commission d'enquête sur le déclin des populations de saumon rouge du fleuve Fraser

Public Hearings

Audience publique

Commissioner

L'Honorable juge /
The Honourable Justice
Bruce Cohen

Commissaire

Held at:

Room 801
Federal Courthouse
701 West Georgia Street
Vancouver, B.C.

Monday, January 31, 2011

Tenue à :

Salle 801
Cour fédérale
701, rue West Georgia
Vancouver (C.-B.)

le lundi 31 janvier 2011

Errata for the Transcript of Hearings on January 31, 2011

Page	Line	Error	Correction
15	32	Q. Okay. They are part of that information...	Q. Okay MR. CAVE: They are part of that information...
84	34 and 37	C-grid	Sea-grid
86	5 and 16	C-grid	Sea-grid

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APPEARANCES / COMPARUTIONS

Wendy Baker, Q.C. Maia Tsurumi	Associate Commission Counsel Junior Commission Counsel
Mitch Taylor, Q.C. Jonah Spiegelman	Government of Canada ("CAN")
Boris Tyzuk, Q.C.	Province of British Columbia ("BCPROV")
Tam Boyar	Pacific Salmon Commission ("PSC")
No appearance	B.C. Public Service Alliance of Canada Union of Environment Workers B.C. ("BCPSAC")
No appearance	Rio Tinto Alcan Inc. ("RTAI")
No appearance	B.C. Salmon Farmers Association ("BCSFA")
No appearance	Seafood Producers Association of B.C. ("SPABC")
No appearance	Aquaculture Coalition: Alexandra Morton; Raincoast Research Society; Pacific Coast Wild Salmon Society ("AQUA")
Tim Leadem, Q.C.	Conservation Coalition: Coastal Alliance for Aquaculture Reform Fraser Riverkeeper Society; Georgia Strait Alliance; Raincoast Conservation Foundation; Watershed Watch Salmon Society; Mr. Otto Langer; David Suzuki Foundation ("CONSERV")
No appearance	Area D Salmon Gillnet Association; Area B Harvest Committee (Seine) ("GILLFSC")

APPEARANCES / COMPARUTIONS, cont'd.

No appearance	Southern Area E Gillnetters Assn. B.C. Fisheries Survival Coalition ("SGAHC")
No appearance	West Coast Trollers Area G Association; United Fishermen and Allied Workers' Union ("TWCTUFA")
No appearance	B.C. Wildlife Federation; B.C. Federation of Drift Fishers ("WFFDF")
No appearance	Maa-nulth Treaty Society; Tsawwassen First Nation; Musqueam First Nation ("MTM")
No appearance	Western Central Coast Salish First Nations: Cowichan Tribes and Chemainus First Nation Hwlitsum First Nation and Penelakut Tribe Te'mexw Treaty Association ("WCCSFN")
Brenda Gaertner	First Nations Coalition: First Nations Fisheries Council; Aboriginal Caucus of the Fraser River; Aboriginal Fisheries Secretariat; Fraser Valley Aboriginal Fisheries Society; Northern Shuswap Tribal Council; Chehalis Indian Band; Secwepemc Fisheries Commission of the Shuswap Nation Tribal Council; Upper Fraser Fisheries Conservation Alliance; Other Douglas Treaty First Nations who applied together (the Snuneymuxw, Tsartlip and Tsawout)
No appearance	Adams Lake Indian Band
No appearance	Carrier Sekani Tribal Council ("FNC")
No appearance	Council of Haida Nation

APPEARANCES / COMPARUTIONS, cont'd.

No appearance	Métis Nation British Columbia ("MNBC")
Tim Dickson Nicole Schabus	Sto:lo Tribal Council Cheam Indian Band ("STCCIB")
James Hickling	Laich-kwil-tach Treaty Society Chief Harold Sewid Aboriginal Aquaculture Association ("LJHAH")
Lisa Fong Benjamin Ralston	Heiltsuk Tribal Council ("HTC") Articled Student
No appearance	Musgamagw Tsawataineuk Tribal Council ("MTTC")

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THE REGISTRAR: The hearing is now resumed.
MS. BAKER: Thank you. Mr. Commissioner, today we are starting a panel dealing with the topic of Test Fishing, and we have three new witnesses for you today: Mr. Jim Cave, from the Pacific Salmon Commission, Mr. Paul Ryall, from Fisheries and Oceans, and Mr. Brian Assu from, I'm going to say Cape Mudge, but I know you've got a different name, but I'll ask you to pronounce it when you're introduced. So these witness all need to be sworn in, please.

JIM CAVE, affirmed.

PAUL RYALL, affirmed.

BRIAN ASSU, affirmed.

THE REGISTRAR: State your full name, please.
MR. CAVE: My name is Jim Cave.
MR. RYALL: My name is Paul Ryall.
MR. ASSU: Brian Assu.
THE REGISTRAR: Thank you.
MS. BAKER: Thank you. And those mikes, you need to be about six inches from them for people to hear you, so you may have to move them around as you answer. Thank you.

EXAMINATION IN CHIEF BY MS. BAKER:

Q I'll start with you, Mr. Cave. You work with the Pacific Salmon Commission currently?
MR. CAVE: That's correct.
Q And you worked at the previous Commission, starting in 1978; is that right?
MR. CAVE: That's correct. That was the International Pacific Salmon Fisheries Commission.
Q Okay. And have you been at the old Commission and the new Commission since '78?
MR. CAVE: Yes, that's correct. I started with the Pacific Salmon Commission in 1986.
Q Okay. And right now you are the Head of Stock Monitoring at the Salmon Commission?

MR. CAVE: That's correct.
Q And just by way of introduction, what does that group do?
MR. CAVE: The Stock Monitoring group puts the Test Fishing Program together, the Hells Gate Program together, and the Hydroacoustics Program together. We also have a role in analysis of all of those data in Stock Monitoring. And we do the fishery modelling work and run size estimation models.
Q Okay. And at Tab 9 of the binder before you, which is not a Ringtail document, but your *c.v.* is at Tab 9. Have a look at that and just confirm that that is...
MR. CAVE: Yes, that is my *c.v.*
MS. BAKER: Thank you. I'll have that marked, please, as the next exhibit.
THE REGISTRAR: Exhibit number 363.

EXHIBIT 363: *Curriculum vitae* of Jim Cave

MS. BAKER:
Q Mr. Assu, you have also provided a *c.v.* and that's at Tab 8 in the binder.
MR. ASSU: Yes, that's...
Q Okay. And you are a Councillor with the We Wai Kai, is that the...
MR. ASSU: We Wai Kai, yes.
Q We Wai Kai, and that is also related to the Cape Mudge Band, is the same name?
MR. ASSU: That's right, same...
Q Same organization.
MR. ASSU: Yes.
Q All right. You have been a Councillor since '85 with that First Nation?
MR. ASSU: That's correct.
Q All right. And you've been an alternate on the Fraser River Panel of the Pacific Salmon Commission since 1992?
MR. ASSU: Yes.
Q And you are also involved with an organization known as A-Tlegay Fisheries Society?
MR. ASSU: Yes.
Q And what's that organization?
MR. ASSU: It's an organization that was formed to receive AFS funding in 1999 and it represents five bands, We Wai Kai, We Wai Kum, Komox, Tlowitsis and Kwiakah.

Q And previous to that, or I guess at that time, how long have you been involved in A-Tlegay?
MR. ASSU: Since the inception.
Q In '99?
MR. ASSU: Yes, that's correct.
Q Okay. And there was an interval from 2002 to 2007 you were also the Chair of the First Nations Marine Society?
MR. ASSU: That's correct.
Q Okay. And we will talk about that society a little bit today. You are also since 1995 a test fisher for Fisheries and Oceans and the Salmon Commission; is that right?
MR. ASSU: Yes.
Q And where do you operate your vessel?
MR. ASSU: Area 13.
Q Okay. In Johnstone Strait?
MR. ASSU: Yes.
Q And have you also been involved with the Commercial Salmon Advisory Board?
MR. ASSU: Yes, I have been.
Q For how long?
MR. ASSU: About six years now, I think.
MS. BAKER: I'd like Mr. Assu's *c.v.* to be marked as the next exhibit, please.
THE REGISTRAR: Exhibit number 364.

EXHIBIT 364: *Curriculum vitae* of Brian Assu

MS. BAKER: Thank you.
Q And, Mr. Ryall, I'll just take you to your *c.v.* It's at Tab 1 of the binder. Now, you have been with the Department since 1986; is that right?
MR. RYALL: Since 1989.
Q '89.
MR. RYALL: Before that I worked for the Salmon Commission for a couple of years, as well.
Q Okay.
MR. RYALL: Maybe that's what you were looking at.
Q Yes. And you have a Masters in Natural Resource Management?
MR. RYALL: I do.
Q You were the Area Chief of Resource Management in the Lower Fraser from '99 to 2003?
MR. RYALL: Yes, part of that time it was the Area Chief for the Fraser River, which was the whole area. It was split into two areas, Lower Fraser

and BCI about 2002, I think it was.
Q Okay. And you were the lead on the Salmon Team from 2003 to 2009?
MR. RYALL: That's correct.
Q You were also the Canadian Chair of the Fraser River Panel for five years, 2004 to 2009?
MR. RYALL: About four years. It was from late 2004 into 2009.
Q And while you were in that role, you were also the Chair of the Fraser River Integrated Management Team, FRIMT?
MR. RYALL: I was, that's correct.
Q And in 2006 you were a member of a group known within the Department as the ***Larocque*** Working Group?
MR. RYALL: I was for a short period of time, about three-and-a-half months, I think it was, in 2006, the fall of.
MS. BAKER: Okay, and we'll come back to that. And I'd like your *c.v.* marked, please, as the next exhibit.
THE REGISTRAR: Exhibit number 365.

EXHIBIT 365: *Curriculum vitae* of Paul Ryall

MS. BAKER:
Q I would like to start with some technical information, and I'll direct these questions primarily to Mr. Cave. And the first document I'd look to go to is at Tab 2. This is the Policy for Fraser River Panel Authorized Fraser Sockeye and Pink Salmon Test Fisheries. Yes?
MR. CAVE: Yes. Yes, it is, sorry.
Q That's okay. Were you involved in drafting this document?
MR. CAVE: I had some involvement, yes.
Q Okay. And this document sets out the policies under which the Salmon Commission carries out Panel-approved test fisheries in both Panel and non-Panel waters; is that right?
MR. CAVE: That's correct.
MS. BAKER: I'd like that marked, please, as the next exhibit.
THE REGISTRAR: Exhibit number 366.

EXHIBIT 366: Policy for Fraser River Panel Authorized Fraser Sockeye and Pink Salmon Test Fisheries

MS. BAKER:
Q And this document also sets out the key elements of the Test Fishing Program. It sets out the purpose of the program and on the pages 2 and 3 sets out the key elements of the operations?
MR. CAVE: That's correct.
Q Okay. And just so that we've got some things to locate ourselves here, I just wanted to put the maps for the test fishing operations in front of you. If we can just take a second to get that document up. Yes, Exhibit 330, if Mr. Lunn can just put that up to page 408 and 409.
So page 408, are there any changes to this map in terms of what's currently being operated as a test fishery?
MR. CAVE: The troll test fisheries indicated by "Xs" in Canadian Statistical Areas 123 through 127 are no longer operated.
Q Okay. So that would be the "Xs" in 127, 126, 124 and 123, those are all not active at the moment?
MR. CAVE: That is correct.
Q All right. And as you can see on this map, it indicates different kinds of test fisheries, troll fisheries, gillnet and seine, and those are the three kinds of marine test fisheries you run?
MR. CAVE: That is correct. I should add that there is a Panel-approved test fishery in the U.S. Statistical Area 5, which is in Juan de Fuca Strait, and that is a small test fishery that's operated for a period of time until that commercial fishery starts operating.
Q Is that the reef net observations indication?
MR. CAVE: No, it's a gillnet test fishery --
Q Okay.
MR. CAVE: -- in Area 5.
Q Okay. And if you could turn, Mr. Lunn, to the next page in that document, which is the following page, page 410; there.
This RMS document, Exhibit 330, sets out the fisheries strategies that were employed in 2009. So I'm just putting this to you as an example of what happened in 2009. There is a schedule prepared every year that sets out what the test

fisheries will be and what their start dates will be, and that's prepared in advance of the season; is that right?

MR. CAVE: That is correct.

Q Okay. And this document for 2009 sets out all of the different test fisheries that the Salmon Commission will be running in that year?

MR. CAVE: That is correct, there is -- yes, that is correct. Sorry.

Q And it shows start dates for the test fisheries and anticipated end dates. Do those dates, are those fixed in stone, or is there some flexibility around those start dates?

MR. CAVE: As a starting point we look at what we did four years earlier and modify them accordingly. But also they reflect data needs and some of these we don't change very often. The Area 20 gillnet typically starts in the last ten days in June, somewhere in there, usually somewhere between the 20th and the 22nd. Now, if in the case of Early Stuart sockeye there are specific conservation concerns, we will sometimes not run that test fishery. So it might start, and in some years has started as late as July 14.

Q That's where you don't anticipate there being any fishery permitted at all on that run?

MR. CAVE: That's correct, and it just reflects a conservation concern that we would likely not use the data for in-season management on such a small run size. And it's just any catch on that run is not necessary.

Q Okay. I'd like you to just go through the different fisheries just to describe where they're located, and just in an overview sense what they are comprised of, what they do. So starting with the gillnet fishery. Where are those located and can you give us an overview of that program.

MR. CAVE: We have three marine gillnet test fisheries. One in Area 20, one in Area 4B, 5 and 6E, actually it's technically Area 5 in the U.S., and one at Round Island. Those are gillnet test fisheries.

Q And where is Round Island?

MR. CAVE: Round Island is in the vicinity of Port Hardy.

Q What area is it in?

MR. CAVE: Statistical Area 12, the subarea I don't recall.

Q Okay.
MR. CAVE: Those test fisheries run at night. Area 20 gillnet starts about eight o'clock at night. They fish two sets with a 300-fathom net that's 90 meshes deep. Typically the set times are from 8:00 until midnight, and then again from about 1:00 in the morning until 5:00 or 6:00 in the morning, depending on catch levels.

In Area 12 they run between three and four sets a night at Round Island, with a 200-fathom net that is 60 meshes deep. And again they run from approximately eight o'clock at night until six o'clock the following morning.

Area 5 can run a broader duration, depending on the nature of that fishery, but we still need the data as soon as possible in the morning, so we're typically getting that one wound up by about 9:00 in the morning. That's a longer net. I believe it's 550 fathoms. It's a very long net and quite deep, about 200 meshes deep, and that's a monofilament net.

The seine fishery, we have three seine vessels that we have chartered. One fishes Canadian Statistical Area 20, one fishes Canadian Statistical Area 12, and another one fishes Canadian Statistical Area 13, and that is Brian Assu's area.

In Area 20 we fish what's called an outside seine net that is eight-and-three-quarters strips in depth. It's a 300-fathom net. They fish six sets per day across an area, a location in Area 20 known as the "Blue Line".

In Area 12 again we fish six sets per day in the vicinity of Blinkhorn, Robson Bight, at standard tie-off spots in Area 12. It's not at different depth intervals, it's at specific tie-off spots. And that is using an inside seine net that I understand is 5.75 strips, and depending on, I believe, there's a 25-mesh border on the bottom, and a 50-mesh border on the top. Is that correct, Brian?
MR. ASSU: Other way around.
MR. CAVE: A 50-mesh border on the bottom, sorry. We've got a technical representative here and understands the gear better than I do. Those nets are the same for both 12 and 13. And similarly in Area 13 we fish six sets from approximately

Chatham Point down to almost Browns Bay, I suppose, and those are standard tie-off spots, as well. And if Brian wants to clarify the Area 13, he can.

MR. ASSU: I guess the only thing I would add, Jim, is from Ripple Point to just outside of Deepwater Bay.

MR. CAVE: Okay. Thanks, Brian. We also have two gillnet test fisheries in the Fraser River, one at Cottonwood, located near Deas Island in Area 29 in the Fraser River. That test fishery is primarily a stock composition test fishery. It fishes a variable mesh net that's 175 fathoms in length - sorry, no - correction, 120 fathoms in length. And we also fish a variable mesh net at Whonnock, and that's very near where the former Albion Ferry used to operate. That is primarily a species composition test fishery, but it also collects data for biological samples for stock ID as well.

We have another test fishery that's experimental at this time that we operate during pink salmon years, those are odd-numbered years, and that's at Mission. And that is a combined driftnet and set net test fishery that operates three days a week, and that's to provide information on species composition in the vicinity of the Mission hydroacoustic site.

And finally we have -- or not finally, actually, I'll back up. There's a reef net program that collects observations in U.S. Statistical Area, Washington State Statistical Area 7 at three sites at Lummi Island: at Lummi Island, San Juan Channel and another location in Haro Strait near the top end of San Juan Island. There is no fish that are caught during the course of the reef net observations. However the test fishery there is paid for with pay fish that are taken again by another reef net operator.

And finally we have a troll test fishery that operates in Canadian Statistical Area 29, subareas 1 through 6, and that is targeted on Late run sockeye for estimation of potential delay of those stocks.

Actually, there's another test fishery which I will mention. It's Naka Creek that operates near Robson Bight in Canadian Statistical Area 12 for a handful of days in the year.

Q What kind of fishery is that?
MR. CAVE: It's a gillnet test fishery. It fishes a twisted monofilament, so-called Alaska twist, and it's 90 meshes deep.
Q Thank you. Just backing up a little bit on the gillnet fishery. Are any fish retained and sampled at the gillnet fisheries?
MR. CAVE: The gillnet fishery, all fish are typically killed as a consequence of running that fishery, and they are retained for samples, and those are used for stock ID, length and sex and age composition. And, yes, that's the case in all of our gillnet test fisheries, all fish are sacrificed.

In the case of the seine test fisheries, we limit our sample to between 100 and 150 fish a day, if possible, if we can get that many fish, and generally we can. And there has also been the take of some sets in odd years, in pink years, to get species composition to confirm our estimates of catch of sockeye and pink salmon in those sets, but there's only a limited number of those, two or three a year.

Q And those are where the fishery would keep the whole set?
MR. CAVE: We'd keep the whole set, yes.
Q And with a gillnet fishery, are all of the fish sampled, or just a subset of the fish that are caught?
MR. CAVE: A subset of the fish that are caught, up to 115 fish, between 100 and 115 fish, depending on the type of sample required.
Q Where do the samples go?
MR. CAVE: The DNA samples are sent to the DNA lab at Nanaimo Biological Station, Terry Beacham's group.
Q Which is a Fisheries and Oceans lab?
MR. CAVE: It's a Department of Fisheries and Oceans Canada lab, that's correct. And the scales come directly to our office.
Q So you do the scale sampling work in-house at the Salmon Commission?
MR. CAVE: That's correct.
Q is there an E-log system used in the seine fisheries?
MR. CAVE: Yes, there is. and also the Round Island and Naka Creek gillnet are also handled by E-log.
Q What is the E-log system?

MR. CAVE: I'm going to let either Paul or Brian answer that, because I'm not as familiar with that program.

MR. RYALL: Just going back to test fisheries for a second. There's one other test fishery that's operated by DFO at Qualark, which is just upstream of Hope, and it's run in conjunction with the hydroacoustic facility there, as well, that's operated for the last number of years.

As far as the E-log system, it's a national program and the intent is to gather information, biological information on test fisheries, or could be as well on commercial fisheries. So that information is entered into a database and is provided on a very timely manner. So there's gear that's put onto either it be a test vessel or a commercial vessel that gather that information and transmit it.

I don't know if Brian wants to add anything to that.

Q Is the program in Areas 12 and 13 administered differently, and I'm talking of, I guess, here about the seine fishery. Is the program in Areas 12 and 13 administered differently than the seine fishery in area 20?

MR. CAVE: There are some differences that relate to how the pay fish are handled there, how the fish are handled there and sold. In Area 20, all of the fish that are sold as part of the biological samples are sold to the same buyer as the gillnet. And so we deal with that buyer directly, the Pacific Salmon Commission does. In the case of Area 12 and 13, seine and gillnet, the fisherman deals with the sale of those fish, but identifies what the sale of those fish are, and the amount of money that we would pay him after he has sold those fish would be adjusted accordingly.

Q Is the Department of Fisheries and Oceans more involved in the Area 12 and 13 fisheries?

MR. CAVE: Yes, they are. The contracts are in our name. We handle the ***Larocque*** funds, which I believe Paul will speak to later, on behalf of those test fisheries, but the actual direction of the people, of the individual test fishermen, typically comes from the technicians based out of Nanaimo, Carmen McConnell and Lee Keary.

Q Who are Fisheries and Oceans technicians?

MR. CAVE: They are Fisheries and Oceans technicians.
Q And why is that, why is the Area 12 and 13 somewhat different in that DFO technicians are involved?
MR. CAVE: Well, they're the people most familiar with that test fishery, and they are the people that ran that entire program up until ***Larocque***, the change in procedure under ***Larocque***. And so we're keeping them involved and, well, actually they are involved, they continue to be involved. But we historically have administered, the Pacific Salmon Commission has historically administered the Panel area waters test fisheries and the Department of Fisheries and Oceans historically administered the non-Panel area water test fisheries, and some of the changes that have come about have come about because of the requirements under ***Larocque***.
Q Okay. So that's really the distinction is that Area 12 and 13 are not Panel water areas?
MR. CAVE: That's correct.
MR. RYALL: Could I just add on other thing to that, as well?
Q Yes.
MR. RYALL: I think it's important to note that regardless of who is operationalizing test fisheries as far as some day-to-day activities, the schedule that you brought up earlier of these starts and end times of the planned test fisheries is done through the Fraser River Panel. It's done bilaterally. There's a lot of discussion that goes into setting up these schedules. They are schedules as planned and there's a number of footnotes on the actual schedule that talks about that they'll be maybe terminated, based upon different abundances and how the runs migrated. You have to adjust, depending on what actually returns. So they're more of a guide than an actual we start and end on these dates.

My point is that there's a lot of discussion between the parties about what's needed to do the stock assessment in each one of the years. And as Jim was talking about, historically the test fisheries that were done in non-Panel waters were operated by DFO, and the ones in the Panel waters were operated by the PSC. But starting in 2007, the test fisheries operated by the PSC with a lot of input from DFO staff, as well, about the

schedules and the timing and how they would operate.

I think I'd like to add, as well, that there's some guidance on how these would operate. There's a policy document, as well, that's on Policy Approaches for Interim Adjustments and Strategies that provides the guidance to all test fisheries that occur in Canada about the disposition of fish, and ensuring that we're conforming with the ***Larocque*** decision and what that disposition of fish are.

Q Okay. I'd like to move to the use of the data that is collected from the test fisheries, and again back to Mr. Cave. We've talked a bit about the fact that the fish go to the DNA lab in Nanaimo and the scales come to the PSC. What kind of analysis is actually done on the fish when they go to their different labs, and what kind of analysis is done by your group with that data once it's received by you?

MR. CAVE: Okay, thank you. I'll speak just very briefly on the analysis of the biological data that come to our office and we collect length and sex and scales. The scales are read for age of the returning fish, and that's work that is processed in part for production analysis, as well as other things. But the DNA analysis is done. It's a fairly involved work. I'm not an expert on that. But the purpose of the DNA analysis, using microsatellite DNA, is to identify the likely stock of origin of the individual fish in the mixture, and there's a series of statistical models that are used to do that. Once that work is done, our geneticist reviews those results and may make adjustments to those once he receives them. And that's just set aside for the moment.

We collect also the catch per unit effort data. So in the morning we collate all those data, the catches, the effort, which is in the case of seines is the number of sets that have been made, in the case of gillnet it's a calculation of the average soak time times the length of the net, expressed in thousand fathom minutes, and with the goal to get the catch per unit effort. And in the case of the DNA data it's applied to either catch data, or to the CPUE data, and also to the Mission hydroacoustics data, so

that we're not interested just in Fraser sockeye, but we're interested in the stocks of origin of those at any given point in time, at any given location, within our sphere of management.

So in the case of if we had a catch per effort of 1,000 per set in Area 20, if we had a stock composition that indicated 50 percent Chilko in that, we would estimate the catch per effort uniquely for Chilko River sockeye, or the Summer run complex as a whole, and it's on the basis of that where we then make our assessments.

As part of our assessments we also evaluate catchability or expansion line, which catchability is the proportion that is removed from the population from a defined unit of effort. And the combination of the catch per effort by stock and historical measures of catchability are what we use to estimate the abundance in the marine areas.

Q Okay. So maybe you can just go through that description of catchability a little slower and kind of maybe get some examples of how that works, because it's a different concept.

MR. CAVE: Well, let's say we had a catch per effort on a given day, of 1,000, and you had a million fish going by. The catch per effort of 1,000 divided by a million fish in the migration for that day, would be the catchability. So it's 1,000 divided by a million.

Q Okay. And how do you determine the million fish. Is that using the Mission data?

MR. CAVE: Well, that would be based on reconstruction, run reconstructions. Now, you can calculate catchability and expansion line for any defined period. It could be an annual estimate. And so it would be summing up the catch per effort for the entire year through an approach or combination of approaches, and dividing it by the total abundance that would have migrated through those areas during the course of that time.

Q And are some of these calculations done not at the end of the year, but during the season to --

MR. CAVE: Yes.

Q -- project what the run size will be?

MR. CAVE: Well, we typically work historical data, but we also look to see if there are deviations in-season from historical data. So if we have six days of data, we try and project the six days of

fish en route for a given complex of stocks, but say it's the Summer run stocks. Later we reconstruct the run to Mission once all those fish have reached or passed Mission, and then we will look to see if that catchability, or the inverse of that, the expansion line, is consistent with what we were using. If there's a compelling reason to change, we may change. But generally we work with the long-term historical averages.

Q Okay. Is there uncertainty in that, or not?

THE COMMISSIONER: Ms. Baker.

MS. BAKER: Yes.

THE COMMISSIONER: I wonder if I could just so I can follow this evidence ask if you could have this witness explain to me what he's talking about in the context of the evidence we've already heard up to this point, which is the forecasting evidence, total available catch and so on. He's talking about something called "catchability", which I had not heard before.

MS. BAKER: Yes.

THE COMMISSIONER: So I'm trying to put this into context of several days of evidence we've already heard around forecasting and run size assessment and those kinds of things.

The other couple of things that would be helpful just to lay the groundwork for me so I can follow this is two things. One, what is a test fishery and what are the protocols for this, and secondly, we've heard a lot about the Wild Salmon Policy and CUs, and you're still talking about stocks. I'm just wondering if you could explain to me whether you're talking about CUs when you talk about the data that you require, or you're talking about something different.

MS. BAKER: Okay. So there's three areas there. First let me just quickly make a note of those.

Q Well, first of all test fisheries, I think that's outlined in the first document we took you to, but maybe you could give just an overview of what a test fishery is, what the purpose is in the program.

MR. CAVE: A test fishery is what we use to understand what is swimming by. We don't know what the abundance of fish is on any given day. It's our goal to find the abundance of fish that are migrating or expected to migrate past Mission.

And we don't know what that number is, so we collect data, we fish on the run, and we take samples from the population from the run. So a vessel will go out. He'll complete his test fishery. That individual might catch 300 fish for the night. It's our goal to try and find out what that 300 fish means. And we do that based on looking at past years, historical database that in the case of some of these goes back some 50 years, to understand what the proportion of the fish that are caught, we try and relate that to the population as a whole. We don't catch the whole population. We only catch a very, very small amount.

So what we're doing with the catch per effort data is we're expanding it to the abundance that's moving by. So catchability is the proportion that's removed from the run. If you turn it around you can expand that catch per effort to the abundance. So we talk about catch expansion lines and catchability is just simply the inverse of that expansion line.

Test fisheries are operated, they're approved by the Panel. They run regardless of whether there's a TAC or not. That separates them from other fisheries. It's they're kind of a cost of collecting data.

Q The results from the test fishery help to establish whether there will be a TAC made available; is that fair?

MR. CAVE: Eventually, yes.

Q Okay. They are part of that information. So we have the Mission hydroacoustics, the daily passage at Mission, and I think Mike Lapointe showed you those graphs, those run timing graphs, which compared to the pre-season forecasts. So there were normal distributions of abundance, expected run timing, expected abundance, and what we try and do is understand the progress of that migration in time during the season.

So we have a run through Mission that might be, say, through July 31st. We have data through Mission, we're drawing that curve. And then the next six days come from the test fisheries. They're more uncertain than the hydroacoustics data, but we're trying to look seaward, because if we do, we get a better understanding of the run as

it progresses.
Q All right.
MR. RYALL: Maybe I could add a few words, as well.
Q Sure.
MR. RYALL: If that would help.
Q Yes.
MR. RYALL: So it would be helpful maybe if we brought the map back up that shows where these test fisheries operate.
Q Sure. I think that's just two pages, like 408, backwards; there.
MR. RYALL: So while that map is coming up, just thinking back to maybe some of the other evidence you've heard earlier is that we have a pre-season forecast that starts off giving us some idea of what could return in any one particular year. However, there's a lot of variability around that pre-season forecast, and as the fish start returning, they don't always hit the same area of the Pacific Coast. They could return and make landfall further up around Haida Gwaii. They could also hit landfall much further down around Vancouver Island. It's really going to depend on oceanographic conditions.

Regardless, we run what we've called test fisheries. These are very integral to gathering in-season information, whether it be how the timing of the runs returning. We have forecasts on those as well. We also want to know how many fish are coming down through Johnstone Strait, and also how many are coming through Juan de Fuca. And we want to know what those pedigree of those fish are, and that's what the stock ID provides us.

Jim was using the word "stock ID". The DNA gives us a very discrete understanding of what those groups of fish are and what lakes they're returning to. But the other part of that is we do roll that up into management groups, is how we manage the fisheries in-season, not by conservation units.

The test fisheries provide us all this information, and as Jim was indicating, they occur whether there is a TAC occurring or not. This is how important they are to gather this information. Without this information we would be, I would not say totally blind, but we would be missing how we

would conduct fisheries in-season and make decisions to manage those fisheries.

They're also linked to the Mission hydroacoustics, as well, which gets into this expansion area, where, where there's fish when we test fish in Johnstone Strait and also in Area 20, Juan de Fuca, we only sample a small part of the population. And so you have to expand it into what we think that abundance is, and then you can link that back to how many fish are estimated as they migrate past Mission, which is giving a total daily estimate of fish that are migrating upriver.

You can take those counts and make some adjustments that Jim and his staff does to say how many fish are between where we caught fish and Johnstone Strait, and also in Juan de Fuca Strait, and expand it into that block of fish as they migrate into the river before they hit Mission. So there's some uncertainty there, but we want to know what that total magnitude is from those test fisheries, and that's where the expansion lines come in that Jim was talking about.

So I guess I'd probably repeat myself on this, but these test fisheries are very important to the operation of the Pacific Salmon Commission operations. And that we view these, as Jim mentioned as well, they operate without TAC. We will make decisions on whether we need to curtail them or not because we're concerned about stocks. It could be Fraser sockeye, it could be Cultus, it could be other stocks that we identify each year. But nonetheless, without those, we would be having a challenge to know what the actual returns are each year.

And these are operated under a Section 52 licence, which is different than a commercial licence. And so there's a difference of licensing that goes on with these test fisheries, as well.

Q And the test fisheries are done on a schedule that Mr. Cave identified initially, and that is done on that schedule every day that is set to be fished is fished, whether or not there's fish in the water, unless there's a conservation concern like you identified earlier, and is that correct?

MR. RYALL: Go ahead, Jim.

MR. CAVE: Yes, that's correct, unless there's a commercial fishery operating, those test fisheries

operate. Others operate on a schedule of two or three days a week.
Q Right.
MR. CAVE: But the principal ones, the marine area gillnet, the marine area seine, and the in-river gillnet test fisheries, operate daily unless there's commercial fishing operating.
Q And the idea, in part at least, is to identify what the size of the run is as it moves through the marine areas heading towards Mission to allow fisheries to open in those marine areas?
MR. CAVE: That's correct. I should clarify one thing I said, that we don't operate the seine tests, we don't operate those fisheries if there's a commercial fishery on. In fact, with under the ITQ we have been operating those test fisheries during the course of the ITQ fishery.
Q Okay. And the further away from Mission these test fisheries happen, the more opportunity there is to fish between that test fishery and the Mission site; is that also fair?
MR. CAVE: I think it's perhaps fair to say that if there are commercial locations in between those areas, then there would be commercial opportunities taken, should there be an opportunity identified by either the run, strength of the run, through the Panel, or through decisions by Department of Fisheries and Oceans.
MS. BAKER: All right. And if I can ask you, Mr. Lunn, to put up in the same document that you're in, the same exhibit, page 170 shows an example, an illustration of the data that's presented to the Panel, it's further down.
MR. LUNN: (Indiscernible - away from microphone).
MS. BAKER: Yeah, my numbers are different than yours.
Q Here we go.
MR. CAVE: Yes, these graphs are useful. Perhaps we can move down a little bit further.
Q Yes, go down to the third one.
MR. CAVE: Okay. Yes.
Q So for example, if you when you're at Mission, you know through the calculations that are done at Mission you have an estimate of what the run size is, when you're out in the marine areas and you're receiving test fishing information, this allows you to get a projection six days before Mission of what the anticipated run size is; is that fair?

MR. CAVE: That's correct.
Q Okay.
MR. CAVE: And so if you look at these graphs here, and perhaps the best one to look at here is the Early Summer run migration, you've got these normal distributions. The top dotted line is the 50 percent p level forecast. The next one down, normal curve, is a 75 p forecast. And then that solid line is what we're projecting the migration to be in-season. The last six days on that line, which I presume would go to about, say, the 31st of July, the last six days, would be based on marine test fishing. It would be catch per effort times expansion line equals the estimated abundance, and we sum it up for both routes.
So you can see that those marine test fisheries are telling you that you haven't got the run on the Early Summer run migration. It's just confirming. If you didn't have those, you would not know, you'd be blind in between Area 20 and Mission.
Q And just you said there you sum up both routes. That means you're taking data from the test fisheries in Johnstone Strait and data from test fisheries in the Strait of Juan de Fuca and combining that information to give you the full run size?
MR. CAVE: Yes.
Q Okay.
MR. CAVE: Yes, that's correct.
Q And just to go back to a question the Commissioner had. As you said, the 75 p and 50 p forecast lines, which are those normal distributions you see in dotted, those are references to the pre-season forecast expectations?
MR. CAVE: That's correct, plus the timing.
Q Plus the timing. Okay. And I will ask you some questions towards the end about the Wild Salmon Policy and management, but just to address what the Commissioner has asked, I know that you touched on it, Mr. Ryall, saying that you manage to management groups, not to CUs. But I take it the data that is retrieved from the samples is data which would be relevant to a CU analysis; is that fair?
MR. CAVE: Well, they can be. But the DNA is, while very extremely useful, the sample size is only 100

individuals. So when you start trying to narrow these things down to smaller and smaller stocks at the CU level, you start to lose resolution.
Q Mm-hmm.
MR. CAVE: So really, once you start getting below five percent in the sample, there's a lot more uncertainty about that estimate that just relates to sampling efficiencies.
Q Right. So would you agree with me then to have a better idea of what CUs are passing by, you actually have to catch a whole lot more fish and keep and retain and analyze a whole lot more fish than what's being kept and retained now?
MR. CAVE: That would be correct. And also the associated costs that go with analyzing those DNA samples at $20 a fish.
Q And are there limits also to what DNA can tell us about CUs, as well?
MR. CAVE: I would presume so, but I am not as familiar with the Wild Salmon Policy. And when you start getting into these small stocks, it's the needle in the haystack, you know, it's trying to find, to identify them.
Q Okay.
MR. CAVE: And sometimes you can find indications of them, but...
Q Just again, and hopefully this is helpful, but you have talked about two things, expansion lines and catchability. Expansion lines is a function that you use based on historical data kind of projecting forward to estimate what the run size is; is that right?
MR. CAVE: That's correct.
Q And that happens in-season?
MR. CAVE: That's correct.
Q And the catchability analysis that you described, that's a post-season calculation, or it's after the runs complete and you have actual data; is that fair?
MR. CAVE: We've been using the term "expansion line" because it's easier for people to understand, that you take a number and you multiply it by a number and another number and you get abundance. It's more correct scientifically for a number of different reasons to actually work with the term "catchability", which in a loose sense is the inverse of that. So that's the proportion of the

population that is removed by your fishing operation. Okay. And I think as we start to get more rigorous approaches and analyzing different models, statistical models that define the relationship between catch per effort and abundance, it's more appropriate to work with catchabilities. And I think we just need to go through that education process. And some of this rigorous analysis that we're doing in a Bayesian context, where we're actually evaluating this and evaluating model uncertainty, parameter uncertainty, all of those key items, it really is a better way to do that is with analyzing catchability in the historical context.

Q And those uncertainties that you mentioned and the Bayesian analysis that you're doing, has that been implemented now, has the PSC made some efforts to incorporate that uncertainty analysis into run projections --

MR. CAVE: Yes.

Q -- in-season?

MR. CAVE: Absolutely. It's work that Catherine Michielsens, myself and Keith Forrest have been working on. That work is ongoing and it probably will continue for as long as we manage Fraser River sockeye. It's continually updating what you do, how you do it, the sorts of models you would use as you get more data.

Q All right. Now, in terms of the importance of test fishing data for the Panel in managing the sockeye or the fisheries, you've talked quite a bit about run size as being an important outcome for the test fishing results, and stock ID. Does it also have a role in understanding the diversion rate, the number of fish that are going down Johnstone Strait versus the number of fish that are going on the outside of Vancouver Island?

MR. CAVE: Yes, it does. We look at the catch per effort data from both approaches and we make an estimate of diversion rate based on that. We use both seine data and gillnet data with the appropriate catchabilities applied.

Q And migration timing I think we've touched on, as well, but just to identify that clearly, that's an important component also?

MR. CAVE: Yes. Yes. You get an earlier estimate of timing, an earlier estimate of run size than you

would if you did not have those data available and all you had was Mission. But you get improved run size estimate and performance.

Q And is test fishing data published in the industry as it comes in, in-season?

MR. CAVE: We make those results available daily in a daily report, and they can be accessed either daily or you can download a test fishery for the entire year. You can download it, either Adobe Acrobat or by Excel, if people want to do their own analysis.

Q All right. And, Mr. Assu, does the industry use test fishing data as it comes in, in-season?

MR. ASSU: Yes, I guess the simplest is industry, I guess, is looking at what the overall run size is and in trying to plan for whatever they're going to be doing as far as fisheries.

Q And do First Nations use test fishing data in planning their FSC harvest?

MR. ASSU: Yes, we do. Typically what we try to do, at least at home, is watch for when there is an abundance starting to occur in Area 12, so that we can start our food fishery. It's just far more cost-effective to be there while there is an abundance to harvest, rather than working on the low abundance. And in recent years, I guess, we've been constrained up in the Strait by the, what do you call it, Sakinaw, you know, which has sort of delayed our timing. So our timing has been pushed back, and so we've sort of been bookended the same as industry.

Q All right. So it has usefulness in terms of the people who manage the fisheries, but it also has usefulness for people who are hoping to conduct their own fisheries.

MR. ASSU: Yes.

Q Is there any other importance, have I covered everything that is important about test fishing data or is there anything to add I haven't covered. Okay.

I'd like to move on to funding and implementation. First of all, in implementing the test fishing programs, who actually conducts the fisheries and who administers the contracts? How is it actually done, implemented?

MR. CAVE: Are you asking that question to me or Paul?

Q I'm asking that question of the panel, but why

don't we start with you, Mr. Cave, and then people can chime in if they've got something to add.

MR. CAVE: Well, under the current environment we're under, we have dialogues with Canada and let them know, after consultation with the Panel, what our schedule would be, and try and make an estimate of the costs that would be required to run these test fisheries. And if we try and make an estimate of what our realistic catch would be under these scenarios and identify a required funding over and above that. The contracts themselves for all Panel-approved test fisheries are operated out of our office. The contract is between ourselves and the test fishing individual involved. In terms of actually administering the day-to-day operations, we ensure that there's observers on board those boats, that sampling equipment is there.

Q Observers from the Salmon Commission?

MR. CAVE: Yes, the Pacific Salmon Commission, or in the case of the Johnstone Strait test fisheries, in their instance they actually have to pay for the observers from their part of the contract.

Q Okay.

MR. RYALL: Maybe I could add to that, as well. Your question is about who administers the test fisheries and how do we plan for them, that was the two parts?

Q Yes.

MR. RYALL: Okay. So there's a series of steps that are undertaken each year as far as developing a Test Fishing Plan. It really starts back in, I would say, January of the year, thereabouts, or even maybe a bit earlier, through the Fraser Panel process that a Draft Test Fishing Plan would be put together and presented to the Panel about what may be required that year. A lot of it is based upon history, that will be modified by what we know at that time about how things may occur and what constraints there may be, whether it be budgetary or whether it be stock constraints that may also constrain the test fishing plan.

It will go through a series of iterations and discussions about what test fisheries are needed, and how they would operate and the starts and end times. There's also a Financial and Administration Committee of the Pacific Salmon Commission, it's a subcommittee that reports to

the Commission. There needs to be joint agreement between Canada and the U.S. on what's agreed. The F&A Committee, for short, will get input from the Fraser Panel about what the Test Fishing Plan is, and what sort of budget requirements may be required from each party. These will change each year. What I mean "these will change", I mean the parties' contributions could change each year, and in recent years it's been Canada that's been contributing financial money to the operation of test fisheries within Canadian waters, whether it be within Panel or non-Panel. And within the U.S. waters, the test fisheries have operated much as they have as far as generating income to pay for those services through the use of fish.

Within Canada, Canada provides a contribution to the PSC. There's a Joint Project Agreement, JPA for short, that's put together between Canada, and DFO for short, and the Pacific Salmon Commission that outlines the work plan, the agreed upon work plan, who is going to be responsible for what, what test fisheries operate, provides a guide about when those test fisheries will start and stop and what the contributions are of each of the parties, whether it be money that's transferred from DFO to the PSC, or in-kind support as well.

So I guess there's a few steps in this, the whole process of coming up with an agreed upon Test Fishing Plan that generally is concluded by, I would say, late May of each year, or could be into June. I think one of the memos you brought earlier here showed June, I think, on the date.

So you start with a draft. It goes through the Fraser Panel. The F&A Committee, as well, needs to understand what there could be any financial obligations between the parties, and then make a recommendation to the Commission. And then that test fishing is approved. And as I was talking about earlier, it will modify each year, depending on how these stocks, actually how Fraser sockeye pink salmon return. I mention pink salmon because every second year, every odd year we have pink salmon, as well, that we need to monitor and this could, as well, increase the duration of the test fishery, as well, and that's why these times all change.

And as Jim was talking about earlier, the stock makeup, the Fraser sockeye changes each year, which also then impacts upon what test fisheries you need and what duration of those test fisheries are going to occur. And as those return each year, you're going to make adjustments.

Q Okay. And you enter into contracts with individuals who perform the test fisheries; is that fair? That would be that PSC enters into those contracts?

MR. CAVE: Yes, we do.

Q And, Mr. Assu, you're an example of a person who administers a PSC test fishing agreement every year?

MR. ASSU: Yes.

Q And do you typically have new people coming on board doing the test fisheries every year, or do you have a set group that you have used over and over for years?

MR. CAVE: It's our preference that we keep working with the same individuals. In the case of Johnstone Strait, these are basically put up to tender every five years. As part of what has always occurred under the DFO, of running of those test fisheries and that was again done again -- what year was that, Brian?

MR. ASSU: I think two years ago.

MR. CAVE: And then basically we still have the same individuals involved in those test fisheries, even though it went to tender. But in the case of the Panel area test fisheries, if an individual is doing a good job, we prefer to stay with them because it just controls one variable in the variation. Not everybody fishes the same way, no matter how hard you try to do that, there are individual differences. And so we try and stay with the same individual for the longer term if we can.

Q I'm going to get into the funding in a bit more detail, but has there been a change since the ***Larocque*** decision in terms of how these contracts are administered by the PSC in Panel and non-Panel waters?

MR. CAVE: Certainly I think the biggest change is how they're funded. Once we start fishing, it's pretty much as we always have, and I mean we have to fish the same way, otherwise it changes our

database, our long-term database. So you can't decide, well we're going to cut back to three sets and pay somebody less. You have to basically run that test fishery the same way. That's what the data, to preserve the integrity of the data, that's what has to be done.

Q All right. Well, let's move, then, to funding and ***Larocque***, because that has a big significance for test fishing. First of all, Mr. Ryall, how did Department of Fisheries and Oceans pay for test fisheries prior to the ***Larocque*** decision in 2006?

MR. RYALL: Prior to 2006 it was through use of fish, meaning that we would plan test fisheries as we have done pre- or post-***Larocque***. There's really been no change to planning those. But the actual vehicle for paying for those services pre-***Larocque*** was through harvesting fish to compensate the test fishermen for providing those services.

Q So the test fishers were able to keep the fish and sell the fish that they caught? That's the...

MR. RYALL: That's correct, that's what I mean by "use of fish".

Q Okay.

MR. RYALL: And there's some policies that were put in place to guide how that would all operate under use of fish, as well.

Q All right. And did the Department contribute some funds for salaries or administrative costs, or was everything paid for by fish?

MR. RYALL: No, the Department as well would be having staff that were paid by A-base dollars, Departmental dollars, and providing technical support to operate those test fisheries, as well. And providing funds for operations of collection of those samples, as well.

Q All right. And in the U.S. test fisheries, is that still the model that's employed?

MR. RYALL: That's my understanding, but Jim can correct me if I'm wrong.

MR. CAVE: I missed the question. I heard part of it but not all of it.

Q I was asking how Canada paid for test fisheries prior to ***Larocque*** and Mr. Ryall explained that fishers were allowed to keep and sell the fish they caught.

MR. CAVE: Mm-hmm. But you were asking me the question under U.S.?

Q Yes. Are the U.S. administered, or not U.S. administered, but the test fisheries that are in U.S. waters still paid for on that same model?
MR. CAVE: Pretty much, yes. Yes.
Q But the bulk of the test fisheries are in Canadian water, is that right?
MR. CAVE: That's correct.
Q And now, Mr. Ryall, since ***Larocque***, how does Canada pay for test fisheries?
MR. RYALL: Well, the test fisheries have been paid primarily through DFO funds. I say primarily. In the first year, in 2007, post the 2006 ***Larocque*** decision, the U.S. as well contributed about $200,000 in 2007 to operation of test fisheries. And since 2007, so for '08, '09, and '10, and end of '07, as well, there was a JPA, the Joint Project Agreement, that transferred funds once there was agreed-upon Test Fishing Plan to the PSC to operate test fisheries.
Q All right.
MR. RYALL: And those amounts varied depending on what that Test Fishing Plan amounted. I think it was probably in the order of 2007 of about $450,000, $500,000, and then thereafter about $700,000 to $800,000.
Q Okay. Well, we'll get into those details in a minute, so you don't have to stretch your memory on that. I think I've got a document that will help you with that.
Are fish sales relied on at all currently to fund test fisheries?
MR. RYALL: Well, it depends what you mean "relied upon". There is under the JPA, there are funds provided to PSC to operate those test fisheries. There's guidance in a Policy document that outlines what fish can be retained and what has to be released, and really the operating principle here in that Policy is that anything that can be released and has a high probability, and specifically it says 50 percent or greater probability, of survival must be released. And so really the red-face test, as we might call it, is can those fish be released and will they survive. That's the first thing that needs to be determined.
So in the purse seine test fisheries, you can take your sample and release those fish, and they

will survive or a high majority of them will. They will swim over the cork line and fish will be counted out and off they go.

On the gillnet test fisheries, though, that's not the case. There is a high mortality rate and all those fish are retained, and the disposition of those fish is up to who is authorized under the Section 52 licence to do with those fish what they will. They can be sold. They could be used for other purposes. But in the case of what we're talking about here, for a good part of those fish, or maybe even all of them, are sold and there's value attached to those.

Q And is that accounted for somehow in the payment to test fishers?

MR. RYALL: Well, there are contracts that are entered into, but I don't negotiate the contracts. They're negotiated through the PSC, what Jim was talking about, what the services are and what will be done each day and how they'll be compensated.

Q All right. So, Mr. Cave, if you have...

MR. CAVE: All fishermen or all fishers are paid a charter rate, a daily charter rate. It's not expressed in fish. If there are fish that are sold as part of the test fishing sampling, those are used to fund part of the operation.

Q Within Panel waters, does the PSC actually receive and sell fish that are caught under the test fishing program, or do the fishers sell their retained fish, and is that accounted for in the funds they're paid, or how does it work?

MR. CAVE: I believe the licences are issued to -- I need clarification on this. But what I will tell you is that in Panel area waters we enter into an agreement with the buyers, the Pacific Salmon Commission does.

Q Okay. All right.

MR. CAVE: Those fish are sold and we handle those monies.

Q Okay.

MR. CAVE: That's a different approach to what happens in non-Panel area waters. Because there's more buyers involved and it's just a carryover. We tried to do it our way one year and it was messy, and we felt the fishermen had a better handle on things, so...

Q All right. So the Salmon Commission pays the

fishers, the Salmon Commission receives proceeds from any fish that were sold.
MR. CAVE: That's correct.
Q In Panel waters.
MR. CAVE: That's correct.
Q And outside of Panel waters, maybe, Mr. Assu, how is it administered, from your perspective?
MR. ASSU: As far as the sale of the samples.
Q Yes.
MR. ASSU: Well, the sale is done by us, and I guess at the end of the season what happens is whatever is owed to you, that sale is deducted and then the difference is paid by the Salmon Commission.
Q Right. Okay.
MR. CAVE: That's my understanding, as well.
Q Okay. And, Mr. Ryall, after the ***Larocque*** decision came down in 2002 did the Department do a review of all of the test fishing programs in Canada?
MR. RYALL: Yeah, after it came down, the ***Larocque*** decision came down in 2006, in the fall of 2006 there was a national working group put together that wanted to see what programs were operated across Canada that would be affected by that decision. I was a member of that working group, as I mentioned earlier this morning, in the fall of 2006. And one of my main tasks in that working group was to get in touch with all people across Canada that ran various programs that would be impacted by the decision about use of fish and not being authorized, the Minister not having the authority to use fish to run programs like that, and what sort of changes might we have to undertake.
Q And that is the ***Larocque*** Working Group; is that right?
MR. RYALL: That's my -- yes, that's my memory of the name.
Q And who was the ***Larocque*** Working Group going to report to, or who did they report to once this review was completed?
MR. RYALL: It was in Science Branch, I reported to the ADM of Science, and the ADM of Science made a presentation to DMC, Departmental Management Committee, November the 1st of 2006 outlining what national programs that would be affected.
MS. BAKER: Mr. Commissioner, just before we started this morning, I was given a document that was from

Canada that was produced for that meeting, which I haven't had a chance to review because we just came in right before we started. So I wonder if we could take the morning break now, and I could look through this document and we could continue?
THE COMMISSIONER: There was a reference a few minutes ago. Let me find it. Mr. Ryall may have referenced it. He talked about an agreement between DFO and the PSC, and he gave an overview of that agreement, what it contains. And then other agreements have been referred, that is the agreements between PSC and those that they contract with. But I just wondered whether you have either already referred to or you're going to refer to these different agreements.
MS. BAKER: Actually put those agreements into evidence?
THE COMMISSIONER: Well, I don't know, the agreement that Mr. Ryall referred to when he talked about an agreement with the DFO and the PSC.
MS. BAKER: That's the Joint Project Agreement.
THE COMMISSIONER: Well, I don't know if that's what he was referring to or not.
MR. RYALL: Yes, that's what I was referring to, the Joint Project Agreement.
THE COMMISSIONER: Is that an annual agreement?
MR. RYALL: It's an annual agreement between the two parties, yes.
THE COMMISSIONER: I see. And is that what you're referring to now, Ms. Baker?
MS. BAKER: That was what I just asked you if you were referring to. That's the agreement that is done between the two organizations to set out the terms of the administration of the test fishing program.
THE COMMISSIONER: Is that in evidence already?
MS. BAKER: It's not in evidence, no.
THE COMMISSIONER: Oh, I see. All right.
MS. BAKER: And then there would be individual contracts with individual fishers to implement on a local basis each of those test fishing programs.
THE COMMISSIONER: But you're coming to that agreement, is that the plan, or...
MS. BAKER: I wasn't going to put that into evidence, but I know that Canada was wanting to put that into evidence.
THE COMMISSIONER: All right.
MS. BAKER: I can certainly raise it with them now if

that's helpful to you. I didn't think it needed to be in evidence, but we can certainly put it in.

THE COMMISSIONER: I was just trying to keep track of these different agreements --

MS. BAKER: Yes.

THE COMMISSIONER: -- they're talking about, and just to understand the entire context of how these agreements are worked out, and then the implications for those agreements across the process of the test fishery.

MS. BAKER: Okay.

THE COMMISSIONER: Thank you. We'll take the morning break.

THE REGISTRAR: The hearing will now recess for 15 minutes.

(PROCEEDINGS ADJOURNED FOR MORNING RECESS)
(PROCEEDINGS RECONVENED)

THE REGISTRAR: Order. The hearing will now resume.

MS. BAKER: Mr. Commissioner, just before we broke, you asked us about a joint project agreement and Canada has brought a copy of an example of one from 2009 which I think a copy has been put on your desk or will be passed up to you through Mr. Lunn. Thank you.

EXAMINATION IN CHIEF BY MS. BAKER, continuing:

Q And Mr. Ryall, you have a copy of that?

MR. RYALL: Yes, I have a copy of the agreement.

Q All right. And this is an example of a joint project agreement that basically sets out how the test fisheries will be implemented in a given year, right?

MR. RYALL: Yes. It provides detail on the work plan, what those test fisheries will start and stop as a plan, what sort of information will be collected, who's responsible for what between the two parties, DFO and the PSE.

Q And it includes not just sockeye but all of the species that are -- where data is collected and fisheries are conducted?

MR. RYALL: Yes, it does. I mean, to further complicate this picture a little bit anyhow, I've only mentioned two parties but there is a third party involved in here, the B.C. Wild Harvest

Salmon Producers Association that we enter into the agreement, as well, that operate or administer test fisheries that are not Fraser River sockeye and pink salmon. Within the Pacific Region, B.C. and Yukon, there are test fisheries that are operated in the Yukon, on the Skeena River --

Q But for our purposes in this commission of inquiry, we -- that's probably one bit of information we don't need to worry too much about; is that fair?

MR. RYALL: Well, I think it's -- it comes up in another instance where you're asking questions about funding, as well, and we could go that direction now or wait till you start to ask about it is the reason that I raise those other test fisheries, as well.

Q Okay. Well, for now let's just leave it and I'll have this marked, I guess, as the next exhibit, if I could.

THE REGISTRAR: Exhibit number 367.

EXHIBIT 367: Joint Project Agreement between Canada and The Pacific Salmon Commission and The BC Wild-Harvest Salmon Producers Association

MS. BAKER: Three-six-seven?

THE REGISTRAR: That's correct.

MS. BAKER: And it's CAN065910.

Q Thank you. And then just before we broke we were talking about a meeting that was -- or a presentation, I guess, that was done by the ADM of Science to the DMC -- and DMC again stands for what?

MR. RYALL: DMC stands for Departmental Management Committee and it has well, senior management, and it's chaired by the Deputy Minister of Fisheries and Oceans.

Q Okay. And this morning we were provided with a PowerPoint presentation that I understand was made at that meeting by the ADM Science - it should be in front of you on the screen. Is that the presentation?

MR. RYALL: Yes, that is the presentation.

Q Okay. There's been some redactions in this document. Basically all of the options appear to be redacted; why is that?

MR. RYALL: Are you asking me why they've been redacted?
Q Yeah. What was the -- was it --
MR. RYALL: Is that the question for me or...?
Q I'm just curious. What has -- I don't want him to tell me what the content was, but what was -- what were on these pages that were blacked out? Why is -- what are we missing, just so we understand?
MR. SPIEGELMAN: Mr. Commissioner, the ***Larocque*** working group was -- had participation of DFO legal services and their role was to help analyze the consequences of the decision and so there was legal advice incorporated into the presentation made to the DMC and Canada is asserting solicitor/client privilege over some content of the deck.
MS. BAKER:
Q So were options presented as to how test fisheries would be funded in the face of ***Larocque;*** is that what this was about?
MR. RYALL: Well, the deck was to provide what the cost implications are for the department on a national -- and you'll see there's a number of graphs in the deck, and trying to look forward about what sort of options there may be.
Q Right. In a document which is at Tab 3 of the materials in front of you, which is CAN465 -- sorry, CAN146548 page -- CAN number -- page 11 at the bottom of the -- CAN11, so it would be two pages back. Okay. Stop. Stop there at the bottom there it says here number 4, Post-***Larocque*** APPFA Test fishing alternatives.

Are the -- you'll see some options set out and they carry on to the next page where DFO would pay all costs, industry would pay costs, et cetera. There. Three options. Are those the kinds of options that were put forward at that meeting?
MR. RYALL: I don't think they were in that particular detail but, I mean, also within the minutes of the DMC which is in another tab here, talked about guidance that came from the departmental management committee and looking into options into the future.
Q Those are in Canada's documents at Tab 2; is that right, the test fishing section? Would...
MS. BAKER: Mr. Lunn, can you find it? Document number

2 on Canada's list. There. All right.
Q Is this what you're referring to? It's on the screen now, Mr. Ryall.
MR. RYALL: Yes, that's what I'm referring to.
Q All right. That was a little bit faster. We should make use of these electronic tools. All right.
MR. RYALL: So further down in that document there is a summary of the meeting. It's pretty brief.
Q This is ***Larocque*** decision and update?
MR. RYALL: Yes. Point 4. So the deputy minister asked DMC in a policy lead to develop a policy framework on who pays for science advice.

I mean, really, there's a number of options here. One is that the department pays for test fishing; the other is that it be done in a manner of -- collaborative manner which is the other policy document that we were just looking at that have laid out options, that it could be a joint operation between DFO and industry to fund these types of arrangements. It was thought, as well, that this would take time to work that option of joint projects would take some time to develop and that's alluded to in the previous document that we were just looking at.

You know, the other option, as well, in this is to go back to use of fish, and that was considered and implemented into a draft of the ***Fishery Act*** that was tabled in Parliament. That was -- while that was not accepted by Parliament, I'm not saying not because of use of fish, but overall it was -- that ***Fishery Act*** with the changes were not finalized.

MS. BAKER: I'll have the minutes that are in front of us now marked as the next exhibit and then following that, I'd like the policy document marked as the following exhibit.
THE REGISTRAR: The first document will be 368.

EXHIBIT 368: Extended Departmental Management Committee Mid-Year Review Record of Decisions dated November 1, 2006

THE COMMISSIONER: Sorry, what is the first document?
MS. BAKER: It's the one that's on the screen. It's the minutes of the meeting.
THE COMMISSIONER: Okay. Thank you.

THE REGISTRAR: Second document will be 369.
MS. BAKER: And this is Departmental Policies and Guidelines Developed in Response to the ***Larocque*** and APPFA Federal Court Decisions 2008. And that is, sorry, what exhibit is that?
THE REGISTRAR: Three hundred and sixty-nine.

EXHIBIT 369: Departmental Policies and Guidelines Developed in Response to the ***Larocque*** and APPFA Federal Court Decisions 2008

MS. BAKER:
Q I'm going back to Ringtail number -- page 11 in this document, 369, at the bottom, the options that you just summarized there are DFO pays all costs; industry pays the costs for data collection or collects data during normal commercial fishing opportunities, that's the second, and the third one is DFO and industry partner together cooperatively. Those were your options. And then the fourth one was the continue to use fish.
MR. RYALL: Which would require a legislative change.
Q Okay. Looking at the PowerPoint presentation which I don't -- has this been marked yet? Which has not yet been marked, but it's the PowerPoint presentation that was provided by Canada this morning and I should probably mark this, please, as the next exhibit.
THE REGISTRAR: Three hundred and seventy.

EXHIBIT 370: The ***Larocque*** Decision and Cost Implications for Science October 2006

MS. BAKER:
Q All right. Thank you. Three hundred and seventy, if you turn to page 11 of Exhibit 370, it sets out Pacific Cost Analysis Findings - Risk Analysis. What was the risk analysis that was done at that time?
MR. RYALL: Well, the previous page looks like 9 gives you an indication of the risk analysis we're looking at on test fisheries.
Q Can you -- yeah, I have looked at those briefly, but they didn't provide enough information for me to understand what the risk analysis was, so that's why I'm asking if you can give me some more

information on that.
MR. RYALL: Well, we were looking at what the risk would be if we did not undertake those test fisheries as far as gathering that stock assessment information and so would it have an impact on conservation, for example? Or was it being used for other purposes? Some of the programs that were being operated pre-***Larocque*** could have been information that would have been helpful, but was more primarily being run for purposes of gathering information for industry as far as economic value and really, not being run for conservation purposes and gathering stock assessment information as much as we've talked about here this morning about gathering in-season run size information and other pertinent pieces that would manage the fishery. So that was the type -- one of the types of risk analysis that was undertaken.
Q All right. So if you go back, if you could, to page 11 of that document for the Pacific Region, were each of these species which are shown in the right-hand column analyzed, all the test fishing programs for each of those species analyzed as to whether they would have an impact on some of the issues you just described? Is that -- I'm still not really clear what the risk analysis was.
MR. RYALL: Well, I guess what I was saying is, for example, there's -- could be a program that's undertaken to determine whether herring roe is -- had a good quality, for example, that has a higher economic value. Well, that doesn't really impact upon whether we should harvest those fish or not because of conservation reasons. It really impacts upon whether that's the right time to harvest those fish or not. Our view is that that's more driven by an economic analysis than it is a conservation analysis about what the actual stock is.
Q What was --
MR. RYALL: So that's the distinction I was making, what -- telling a risk analysis.
Q All right. What was the risk analysis that was performed in relation to Fraser River sockeye?
MR. RYALL: Similar type of analysis.
Q And what was the outcome of that analysis?
MR. RYALL: Well, the outcome of that analysis was that

the test fisheries that were operating with -- for Fraser River sockeye and pink salmon are very important for the management of Fraser River sockeye and pink salmon and that, as I was speaking to earlier this morning, that we need those test fisheries to operate to gather this information to properly manage Fraser River sockeye and pink salmon.

Q All right. Were any of the test fishing programs that were operated at that time, 2006, changed as a result of this risk analysis going forward?

MR. RYALL: No. This was providing guidance about what sort of requirements would be to -- nationally to operate test fishing programs, whether it be in Pacific or Atlantic. As we talked about earlier, as well, there's a whole process that comes up with outlining what a test fishing program is going to be for each year on an annual basis, depending on what's returning. So then you make some decisions on what needs to operate.

Q All right. Was this -- this was a presentation that was done to -- as a result of a review of all test fisheries, and was it designed to plan for the next year or to set priorities for the future in general or was it set for a five-year plan or what was the context of this meeting?

MR. RYALL: Well, the context of this meeting was to gather all this information. This was a -- well, let me backtrack. Since the decision came down in 2006 it was that the department could not -- did not have the authority to use fish to pay for this type of service. It did not mean it didn't have the authority to collect this information. It had to do it in a different manner as far as payment for those services. And the intent of this was to figure out across all the problems across -- excuse me, all the programs across Canada, what were those programs and what was the end use of that information.

And to categorize it here as we've done into a risk analysis of red, yellow and green, to give an indication if we were going to now be responsible for paying for these services within the department or those other options that we talked about here using payments either from DFO or industry, how were we going to move ahead in the short term, and as a result of providing

guidance to develop a submission to Treasury Board to seek funds for five years to operate test fisheries till a longer-term solution could be developed.

Q And if -- do I read this graph pie chart on the left-hand side of the page of page 11 as indicating that the bulk of the test fishing costs were paid for -- how can I say this? The bulk of the high likelihood, high-impact test fisheries in the Pacific Region were being at that time paid for by catch, by industry in that sense?

MR. RYALL: Well, when this analysis was done, all these test fisheries were operated through use of fish. I mean, there could have been some contributions, but the majority of those funds were from use of fish.

Q Right. But this -- just reading this graph, is it saying here this circle represents all of the funding that's essentially provided by industry through the sale of fish --

MR. RYALL: Well, what -- this is the interpretation I would put on this graph on the left side --

Q Okay.

MR. RYALL: -- where it's coloured red and it has -- these are in millions, so $10.5 million, in our view those are high likelihood in impact and at risk and have impacts on conservation. The other ones where it says yellow is about 900,000 and then low impact and -- is 354,000.

Q Right. And why is it described as industry contributions to science programs?

MR. RYALL: Good question. Really, this is at the time, you know, it's use of fish and probably that's not the best label that should be on there as far as industry contributions. These are use of fish and I was -- thinking back to this, it would be at that time this use of fish would come off the TAC overall and more appropriately, it probably should say industry contribution.

Q Okay. But it represents the value of the test fishing program, I guess, that was funded by the sale of fish --

MR. RYALL: That's correct.

Q -- and it's allocated between high impact, medium impact and low impact?

MR. RYALL: That's correct.

Q All right. Following the presentation to the DMC

was a presentation made to Treasury Board for funding? I think you described this already.
MR. RYALL: I don't know if this was presented or not.
Q No, I ask --
MR. RYALL: I was not involved with that part.
Q No, but was there -- ultimately there was a presentation made to Treasury Board --
MR. RYALL: Yes.
Q -- for funding test fisheries?
MR. RYALL: That's correct, there was.
Q Okay. Following this meeting?
MR. RYALL: Yes.
Q And out of that there was a funding -- a policy to fund test fisheries for five years; is that what you said?
MR. RYALL: Well, the decision was to fund -- provided funding to DFO to operate test fisheries nationally, and it was an envelope of money with ten million in the first year and 12 million thereafter, and those are -- I'm talking national dollars here, not coming to Pacific Region.
Q All right.
MR. RYALL: Within the Pacific Region it was about 50 percent of that ten -- of that money came to Pacific Region because we're the -- well, we're a large region and we have a lot of these programs within Pacific Region. So roughly, I guess it was about five million in the first year that came to Pacific Region to conduct the stock assessment programs and about 5.5 million thereafter. But that's to do all species, not just salmon. That was to do everything as indicated on here. It covered -- these programs covered everything from geoduck, ground fish, halibut, herring, crab, rockfish, sablefish, salmon, sea cucumber, shrimp. My point is that that five million was to cover all those programs.
Q All right.
MR. RYALL: And out of that I would say about 1.2 to 1.6 is my recollection would go to salmon. And out of that amounts of funds I would say roughly half would end up being contained within the joint project agreement that would go to operate Fraser River sockeye and pink salmon programs.
Q All right. And this funding was called ***Larocque*** relief funding?
MR. RYALL: Yes, that's the terminology. I don't...

Yeah.
Q Okay. And it was a funding agreement or commitment for -- from 2007 to 2011?
MR. RYALL: Yes. This would be the last year.
Q And why was funding only committed to for five years?
MR. RYALL: Well, as I was talking earlier, there was the idea that this was to be until a longer-term solution was found, which was a direction that came from the DMC committee back November 1st, 2006. So here is funding for five years while a longer-term solution is developed. It could be any of those options that we were talking about earlier. And the other one, as well, that's not listed in this policy document about use of fish, as I mentioned, was put in in amendments to the ***Fishery Act*** that were tabled, as well.
Q Okay.
MR. RYALL: I mean, you really get down to those types of options.

Our view going back into why these programs are important and why they operate without TAC, as well, is important, I think, as well, is that they provide in-season information about the health of the stock, whether it's providing this run size information or stock ID information, how -- where and -- where those fish are migrating that manage fisheries that are going to impact on them, whether those fisheries are First Nations FSE fisheries, commercial fisheries or recreational and without that information we don't have the information to manage these fisheries.
Q Okay. Has the department decided what it will do after this relief funding ends in 2011?
MR. RYALL: Well, I've been off this file for a little bit so I don't know exactly the -- what sort of options might be contemplated at this point. There had been some work done earlier around those four options when I was involved, but I don't know the exact standing at this point in time.
Q It's fair to say though that you are not aware of an agreed upon proposal or even an agreed upon solution for -- that will take place after the 2011 funding expires?
MR. RYALL: It would be -- yes, I would agree with that, that I'm not aware that there is an agreed upon solution, but, you know, I mean this is also

not just a Pacific Region issue. This is a national issue. You know, as you can see, as I talked about Pacific Region does about 50 percent of the cost of this, but -- so the other 50 -- my point is that it's going to be a national policy. It won't be a made-in-B.C. solution, I don't think.

Q All right. How is the national -- while this relief funding is in place, who makes the decision as to how those funds will be allocated within the Pacific Region?

MR. RYALL: Well, there's a national working group that has membership from all the regions. It has representatives from our Science Branch and our Fisheries and Aquaculture Management Branch that will get together on a -- more than an annual basis, but -- so each year right now we have 12 million. So for 2011 there's $12 million nationally that's available to operate programs across the country.

After four years, things have kind of settled down into a -- what I mean settled down into a -- more of an operating type, so each region pretty much knows what they're going to get on an annual basis. But things change each year and so these funding pressures will come up. The national committee will get together and ask if there's been any changes from the previous year from your requirements. If there has, then what -- how are we going to deal with those funding pressures?

In preparation for that national working group, the regional groups will get together and outline all the different programs that they need to operate in a year, whether it's Fraser River sockeye or geoducks or ground fish or halibut or so on. That's then discussed in this national working group and come to agreement about what the regional allocation will be of that $12 million.

Q All right. And who in the region actually makes the decisions on where the funds go?

MR. RYALL: Well, it's not quite a, you know, a linear fashion. We talked earlier this morning about a fishing -- test fishing plan gets developed through the Fraser River Panel. That test fishing plan goes through the panel and gets finally approved after some discussion about what's required. That information is provided to the

financial administration committee that's also within the Pacific Salmon Commission and that is reported to the commission about what the financial obligations will be for the parties and then is approved by the commission as far as what will happen as far as dollars will be provided to operate test fishing programs.

Q So for Fraser River sockeye, is it -- is the decision-making process in the first instance at the Fraser River Panel level and then the commission level and once the commission has made its decision does it go to Canada for a further approval? I know that Canada's part of the commission, but does it go to a different place in Canada for final approval or once the commission is made up as approved the test fishing budget is that binding in essence on Canada?

MR. RYALL: I would say it's binding on Canada to deliver that program.

But the reason I raise this back and forth discussion is that I know in 2008, for example, there was, as I mentioned earlier, the U.S. had provided $200,000 roughly in 2007 and we're not able or willing - I don't recall the details, but they were not going to provide those funds in 2008 and on for various reasons. And there was also discussion at that time about looking at whether we were going to modify test fisheries within Fraser River sockeye and the outcome of that was is going back to the panel process of looking at what's needed to operate.

The final outcome of all this though is that a bilaterally-agreed test fishing program and what the obligations of the parties, whether it's Canada or the U.S. to operate.

Q Okay.

THE COMMISSIONER: Could I just again, Ms. Baker, just so I understand this evidence, when you talk about the funding that you've just spoken to, you're addressing not just the test fisheries that you described earlier on the map that you showed, but you're also talking about Mission and Qualark as well; is that correct?

MR. RYALL: That F-and-A committee will look at the whole budget for the Pacific Salmon Commission and test fishing should be one component as -- of that.

THE COMMISSIONER: And hydroacoustic element is part of that consideration?
MR. RYALL: It'll be another part of the consideration as well as other aspects that the PSC funds, as well. The F-and-A committee will look at the whole package.
THE COMMISSIONER: I see.
MS. BAKER:
Q Does the PSC approve the costs of Qualark?
MR. RYALL: No. The PSC does not approve the cost of Qualark. That's with departmental program.
Q All right. So there's some programs that are simply dealt with by DFO outside of the PSC. Qualark would be one. Was there any others?
MR. RYALL: For Fraser River sockeye?
Q Yes.
MR. RYALL: Yes, absolutely. You mean as far as test fishing goes?
Q Yes.
MR. RYALL: In particular? There is programs that have operated under the Southern Endowment Fund, which is -- that goes back to the PSC and I think in 2008 or '09 there was a feasibility study as --
Q Sorry. If I can just interrupt. I'm asking about programs that are funded by DFO, not funded by the Southern Endowment Fund and that are test fishing programs, not -- not stock assessment programs or anything like that, just test fishing programs.
MR. RYALL: Yeah. Well, the one I was going to raise was a test fishing program at Siska which is just downstream of Lytton. There was a fish wheel feasibility study done there. There's also been some --
Q Sorry, but was that funded by the Southern Endowment Fund or was that --
MR. RYALL: That one was and --
Q So it wasn't a DFO-funded project.
MR. RYALL: No, that's correct. And then I was going to also mention that there have been fish wheel programs in the Lower Fraser that have received funding from a variety of sources, some from DFO and some from other sources, as well.
Q Okay. But the test fishing programs, the marine area test fishing programs that we talked about earlier this morning, those are all approved through the PSC process, correct?
MR. RYALL: All the ones we talked about this morning,

that is correct.
Q Okay. And if I can ask you to turn to Tab 1 in Canada's documents or Mr. Lunn can pull it up on the screen, perhaps it might be simpler. This document sets out test fishing program funding from Canada. The first page is 2009 to 2010 but if you turn through the document it goes back to 2007/8 is the first funding year, I think. There. Yes. Stop there.
And that shows the funding. This is the first program funding that was approved after the ***Larocque*** came in; is that right?
MR. RYALL: Yes, 2007 was the first year.
Q And it shows a total funding of -- I'll just ask you to point out to me where -- show me on -- if you could, on this document where the total funding provided by Canada shows?
MR. RYALL: Well, the line labelled Canadian contribution under panel areas of 200,000 would be the first part; and then under non-panel areas where it says Canadian contribution of 265,000 would be the second part; and just to add a complication to all of this where it's labelled BCWHSPA funds, a further $22,200 would also be DFO-funded, as well.
Q And what is the line that says PSC test fishing, what is that? 'Cause that's showing the amount that was spent on PSC?
MR. RYALL: I would assume that that -- I haven't added these numbers up, but I would -- it seems to me that it adds up to -- oh, the other part is the -- or, excuse me, the U.S. contribution of 198,000 roughly up at the top under panel areas. So the 419,000 --
Q That's the portion that is simply allocated to PSC test fisheries; is that correct?
MR. RYALL: I'm sorry, I haven't added these up. Do you see, Jim?
MR. CAVE: Three-ninety-seven --
MR. RYALL: Yeah.
MR. CAVE: -- plus the 22 equals the four -- four-twenty.
MR. RYALL: Yeah. Perfect. There you go. Jim knew the answer.
Q So the answer was the three-ninety-seven plus the --
MR. RYALL: Yes, the --

Q -- 22 --
MR. RYALL: -- three-ninety-seven plus the 22,000 comes to the --
Q All right.
MR. RYALL: -- four-twenty.
Q Right. And what -- for non-panel waters, two-sixty-five, that is not considered a PSC test fishery and that's why we separate it out from the total?
MR. RYALL: I think that's the reason, yes.
Q Okay. And then if you go to the 2008/9 year, you see the number is now 665,394 PSC test fishing?
MR. RYALL: Yes.
Q And then in the current year or the past year, sorry, 2009 to 2010, the number is -- now, when I read this document I was having -- sort of struggling with this 'cause it looked like the number had gone way down. Can you explain to me, is two-fifty-one the total PSC test fishing payment from Canada in the 2009/10 year or is it the 705,000 that you see to the --
MR. RYALL: Actually, I think it's the combination of the two.
Q Okay.
MR. RYALL: I think where it says contributions, and I say think. I actually didn't put this table together and it was put together through the PSC that are administering the funds, but my understanding of this is that where it says Canada's contributions that total up 706,000 roughly, it came from fiscal year 2009/2010. Where it says contributions that add up to 251,000 was a requirement to find some additional funds to fund test fishing programs in '09/'10 that was also provided. So roughly 951,000 but we'd need to confirm that.
Q All right. Do you have any information on that, Mr. Cave?
MR. CAVE: This is probably a document that we had put together in part and I think there's -- it looks to me that there's a carry-over from the 2008 season, Paul, which is why that $152,438 looks to me to be a carry-over.
MR. RYALL: That's the way I was reading it, as well.
MR. CAVE: Yeah. And also, there's a small contribution from the PSC revolving fund in that year, as well, which is -- there was a budget

shortfall.
Q What is the PSC revolving fund?
MR. CAVE: Well, there's a fund that was pre-***Larocque***, if I may, where it was capped at $500,000 by finance and administration committee of the Pacific Salmon Commission to, in years where there was insufficient fish to fund the program or conservation concerns, that that fund could be used. It has been used only occasionally in a limited extent, and because it was generated pre-***Larocque*** by fish sales, there's been a reluctance to use it and it requires bilateral -- I believe bilateral approval to access those funds.
Q Does that fund still exist?
MR. CAVE: Yes.
Q Okay.
MR. CAVE: And I believe -- I believe it is fully topped up to the $500,000. But I can't -- I'm not certain of that.
MS. BAKER: All right. I'd like this document, please, marked as the next exhibit.
THE REGISTRAR: Exhibit number 371.

EXHIBIT 371: Summary of Test Fishing Program Costs 2007-2010

MS. BAKER:
Q I think I touched on this question earlier, but if we could just go back, has there been any impact on the Fraser River sockeye test fisheries from the loss of fish sales in the test fishing program? Has that impacted the test fishing program of the PSC? And I'll ask that to Mr. Cave to start.
MR. CAVE: We've managed to retain our core programs. There have been some changes. There's been a considerable discussion on this subject. We've managed to retain the -- our core test fisheries, such as the purse seine, the marine purse seine, the marine gillnet, the marine -- the river gillnet test fisheries. There has been some -- some of the days where we had for days of overlap between the Area 12 and within the Area 12 and within the Area 13 purse seine test fisheries, those have been removed. And those have removed some flexibility to fund other initiatives.
For example, some of the radio tagging work

that was carried on by LGL, we were able to fund some of those activities through sale of fish. We're no longer able to do so. So -- as part of test fishing program. They've had to, when they've had to do marine tagging, they've had to find those funds themselves.

There has been some removal of some of the fishing time from the river gillnet test fisheries, as well, and -- but by and large we've been able to maintain our core programs, but it's been -- you know, it's been the subject of some discussion.

Q Have there been impacts to other non-sockeye fisheries?

MR. CAVE: By non-sockeye fisheries, you're referring to pink or...?

Q Chum, pink, others.

MR. CAVE: I can't speak to those other species.

Q Mr. Ryall, can you?

MR. RYALL: There has been some impact on some of the other species, I would say.

Q There was a Chum fishery in Johnstone Strait which has been eliminated; is that right?

MR. RYALL: Well, it was eliminated and -- for a couple of years but it has been re-started and one needs to look at these whole things in a whole comprehensive package. Bottom line to me, though, is that each year that when we go through and try and determine what we need to do as an annual test fishing program is what are the priorities and what are the needs to meet to do the assessment. There has been, I would say, some impact on some of the other species, though, just as a summary.

Q All right. And Mr. Assu, have you got anything to add to that?

MR. ASSU: I don't think I have any more to add to what Paul has said.

Q Okay.

THE COMMISSIONER: Ms. Baker, could I just again for clarification, either Mr. Cave or Mr. Ryall, to the extent that the test fisheries contribute to the process of forecasting and escapement information that's supplied to the Pacific Salmon Commission, are the numbers you're talking about within these numbers or -- in other words, to the extent that DFO is using test fisheries to develop pre- and in-season information with respect to

escapement or forecasting, are the costs associated with that all part of the numbers you've been talking about or is there another set of numbers?

MR. RYALL: No. These three fiscal years that we've been looking at are incorporated in these tables. And the reason that there's not one for 2010 and '11 is that they're still gathering information to complete that one. But as far as -- I think, as well, the question, I think, maybe you're asking as well is were there any impacts on test fisheries as far as the assessment capability either in quantity or quality. I think, as Jim was saying, that we have retained and continue to operate test fisheries to gather the information and provide the assessment that we need to manage Fraser sockeye and pink salmon.

I would say, having said that though, this is not a static thing, whether it's use of fish or whether it's use of dollars to pay for these services. If we go back into history when we were using use of fish to pay for the services and gathering this information, that amount went up over the years and I think at the last amount, so we were harvesting probably about 110,000 sockeye, Jim, in that order. I think in recent years we're probably between 30 and 40,000 sockeye, so we've made this change because of the -- we've reduced the impact on the overall stock, but we still are killing fish, 30 to 40,000 on average, I would guess.

But whether it was use of fish or dollars, when we go back to use of fish, that came off the overall total allowable catch. This has an impact on other people and they're watching this very carefully. There's always this trade-off. You can gather more information, but it's going to be a cost and whether it's a cost in money or it's a cost in fish and so how -- if you harvest more fish to -- use of fish to pay for those test fisheries, then it's going to have an impact on the resource. So, you know, you've got to balance what your information needs are against the costs that you're undertaking, as well.

So whether, you know, we were looking at use of fish or dollars, each year we would be looking at these test fishing programs very carefully

about what do we need to provide a program to run and gather this information? And what's the impact going to be? And how are we going to make -- and then make those judgments and go through the whole process of having those discussions within the Fraser River Panel and coming up with agreed test fishing program.

I think there are, personally, benefits to use of fish as far as putting the obligation on the resource. It's used to -- as I mentioned, as well, around conservation, this is -- we were not just making these decisions around whether a commercial fishery operates or not. It's a matter, as well, of access for First Nations fisheries, as well. And one needs to gather this type of information.

Q Mr. Cave?

MR. CAVE: Just to clarify, that the test fishing budget is administered separately from the other budgets. It's not hydroacoustics, it's not part of an overall budget. It's in its own area historically because it has involved use of fish to pay for it. None of the other programs have that. So either the DFO programs for the spawning ground enumeration or any other core programs or our own, the DNA, the hydroacoustics program, in-season management, all of those things are funded from bilateral funds. The test fishing is funded by use of -- has historically been funded up until 2007 by use of fish and only beginning in 2007 were separate funds made available to fund the test fishing program. I think that clarification is important.

Q Mm-hmm.

MR. CAVE: I think one other thing that I would add is under this environment, it's more difficult to -- we have not made a case for additional test fisheries, so if you wanted another test fishery... One year I -- in fact, in 2009 I specifically asked that we consider a west coast of Vancouver Island troll test fishery in the middle of 2009 because we weren't seeing the fish anywhere and it would be useful to go a little bit seaward to see whether, in fact, there was anything out there, give us a little bit more lead time and it was basically turned down.

Q Okay.

MR. CAVE: Because -- essentially because of funding issues and for balancing that off against information needs.

Q Is it fair to say that there has been pressure to reduce test fishing costs, since 2007?

MR. RYALL: Well, I guess I might be repeating myself, but whether it's use of fish or dollars, you're going to be asking yourself those questions about what information you need to run these test fisheries. So I would say yes, each year we, within Canada, and similarly within the U.S. would be looking at what's required.

Q Okay. If I could have you turn to Tab 5, which is CAN013783. This is a memo that was written by you, Mr. Cave, March 30, 2007 and it was to Mike Lapointe and Don Kowal at the commission. In this memo you outline a number of options to reduce test fishing costs; do you see that?

MR. CAVE: Yes, I do.

Q Why was this memo prepared?

MR. CAVE: Well, we had met with members of the Fraser Panel and indicated Paul Ryall and Dave Cantillon, some of the technical committee members. I can't recall whether this was a telephone conference call. And what we -- we were asked to review some of our core programs. First option that's outlined there is that we would start Area 20 later and largely that was okay. We felt that was reasonable because of the small size of the return that was expected in 2007 for Early Stuart, and that given there would be conservation concerns it would not be unreasonable to start that later and I think it started on July the 14th that year. So there were cost savings that came with that. And I've noted that there's minimal jeopardy, given the forecast Early Stuart sockeye. The Round Island gillnet would remain as July 10th, so I think we actually moved the Area 20 program to July 14 that year, but Round Island remained at July 10.

Another one is to operate all Fraser Panel approved test fisheries during August only. Potential concern was summer run sockeye. Felt that I would rather see -- I felt we could get through the early part of the summer run with primarily gillnet test fishing information. But I felt -- I emphasized that if we wanted to

understand the Fraser River pink salmon return, we would need to carry -- that those test fisheries were very valuable in September, in particular because there is no escapement estimation program for Fraser River pink salmon and the only way we can estimate the size of the total return of Fraser River pinks is with marine area assessment.

Q Were any changes made in reaction to that option?

MR. CAVE: Well, in fact, we did start those test fisheries on August 1st, if I recall, but that was largely because there was no abundance of sockeye early in those test fisheries, so we started them late. And that's generally something we typically do. I would prefer to see test fisheries start on some building abundance. If you don't see the building abundance in the gillnet test fisheries, the seine test fisheries are costly to operate, it's prudent fiscally to delay those if there's -- if the information is low on it. That's balanced against the need for the individual test fishermen involved to have an income. If we take too many days of test fishing away from them, they can't earn a living. The return does not justify their commitment, their financial commitment to the test fishery.

The last, the third one, operate the test fisheries every other day, I was dead set against this. I knew I couldn't sell it to the test fishermen. I knew, for example, for Area 20 my -- the test fishermen there would not agree to it. Brian can probably comment as to whether he would agree to that.

Test fisheries in the Fraser River, I noted we had no options. If we need to assign a minimum wage, a minimum of $50,000 to this test fishery --

Q Were you introducing a new test fishery that year in the river?

MR. CAVE: We did. We wanted the test fishery at Mission was -- and I don't think at this time we'd identified it or discussed that, but I cannot recall when the request for the Sumas test fishery was in place.

Q And then just to go back to the beginning of this memo, you indicate you begin by saying that you had:

> ...had this meeting with Mr. Ryall and Mr.

Cantillon and various members of the technical committee to discuss options provided to the panel and finance committee and Mr. Ryall at that time indicated that no sale of fish was more likely than Option 2 --

I'm not sure what Option 2 was.

-- based on discussion with the lawyers. Paul stated he would like to see a third option reflecting a reduction of test fishing programs.

And Mr. Ryall, this was in -- this was because you needed to find ways to reduce costs in the test fishing program; isn't that fair?

MR. RYALL: Well, I don't know that it's fair to say it's reduced costs. We were looking at ways to what information is required and so do we need to start the Area 20 gillnet later? Is that an option? So the overall impact of that would be, yes, it would reduce costs.

Q All right. And that was, I take it, something that Canada was looking to do because all of a sudden Canada was faced with having to fund all these programs when they hadn't in the past, when you hadn't in the past?

MR. RYALL: We had not funded them through dollars, that's correct.

Q Okay. Now, if you can turn to --

MS. BAKER: Sorry. I'd like that marked, please, as the next exhibit.

THE REGISTRAR: Exhibit 372.

EXHIBIT 372: Possible Options to Reduce Test Fishing Costs in 2001

MS. BAKER:

Q And then Tab 6 is a memo, this is in April of 2007, so the same year and it looks like there is at this point, again, this is a memo from you, Mr. Cave, to Mr. Lapointe and there was further consideration done of dropping certain test fisheries and this is your response to those proposals. Why was this memo prepared or do you remember the context of that discussion?

MR. CAVE: Well, there was a suggestion that some of

the test fisheries that there was some redundancy, that perhaps under this environment of funding could not be afforded, was not affordable. And so I felt - and one of the suggestions was - that the Area 13 test fishery is -- did we need it? And I said well, yes, we did. And we did in particular because it's a quantitative argument but one that shows that we can reduce the uncertainty in our overall estimation and this is before Catherine came on staff, so I sort of dug into my own documents and dug this out, that essentially the uncertainty is cut dramatically by having independent estimates of abundance.

So as a person who is involved with doing these estimates, I'm -- I felt that it would be a real mistake to get rid of this test fishery because we use it to average the abundance estimates essentially. It doesn't just average the abundance estimates, it comes with increased certainty or let's put it this way, reduced uncertainty is a more correct way of saying that. It reduces your uncertainty in the estimates. And so it gives us tighter probability intervals when we're estimating run size.

Q And what happened as a result of that discussion or whatever discussions followed your memorandum, was Area 13 dropped?

MR. CAVE: No, it is -- it continues and Brian Assu is the test fisherman there and it continues through 2010 and it would be -- it's on our proposed program for 2011, as well.

Q All right. And was it changed? Was there a reduction in the test fishery activity in Area 13?

MR. CAVE: What was done was we had two test fishermen there and there was -- it was felt that we had more flexibility by going to a single individual and it would allow us to, if we had to restructure the test fishery, it would come with less effect on the income of the individual in part. And as I'd mentioned, what doesn't come out here - and I'm sure Brian can speak to this better than I can - but we're starting to get to the point with fisheries in Canada and on Fraser River sockeye where people are wondering whether they should continue to fish. And we need good people. They need to maintain their investment. They need to maintain their boat. They need to maintain their

gear. And if you're not paying them enough from the test fishery and they don't get commercial opportunities, it comes to the point where they wonder whether it's worth them continuing. And so it comes down to income and it's -- they do a job and we have to pay them appropriately for the job they do and on top of that, they have to maintain their investment.

Q All right. Mr. Assu, maybe I could just ask you to comment on that. Can a test fisher operate on a reduced schedule on every other day or whatever, a reduction, 50 percent reduction as to what the current operations are that you're involved in?

MR. ASSU: Well, I certainly didn't like the every other day proposal. It just -- really because of the gear that you've got. Leaving the seine net on the drum for a day, you know, every other day just doesn't make any sense, and it's hard with the crew. You know, they don't all live in Campbell River and you've got to bring them in, so just the logistics.

But the reduced part, I guess we've lived through that, Jim. I guess we shortened up on, you know, the front end of the test fishery and I guess somewhat on the back end too.

Q But the idea of cutting out every other day, which may make sense from a science perspective, is it a workable solution from a fisher perspective?

MR. ASSU: Well, we're -- no, the every other day, it just -- I remember this being talked about previously and, no, it just didn't make sense.

Q Would you be able to continue operating as a test fisher if that was the option available to you?

MR. ASSU: Personally I guess I wouldn't have any choice, because I have the contract. But --

Q Would you negotiate a new contract on those terms?

MR. ASSU: You know, when Jim talks about, you know, the reasons too behind what you're doing is -- the crew play a big part in all of this. It's very difficult to find a good crew nowadays with the way the whole industry is. It's changed. And I'm not just talking about salmon. Salmon and herring both go together in a lot of our communities and it's been a difficult time. You know, getting a good crew is really difficult and you need it.

Q Okay. Thank you. Mr. Cave, back to your memo. I'll just try and finish this memo before the

lunch break.
MR. CAVE: I'd like to add one thing --
Q Yeah.
MR. CAVE: -- to -- although when you go to every other day, you're losing a lot of information. You might say you can average in between, but it does result in increase in the uncertainty in the estimates, 'cause you're interpolating between days. It's a loss of information.
Q Right. And I take it one of the goals that you have is to reduce uncertainties, not increase uncertainties.
MR. CAVE: Under this environment, I think I'm looking for more, not less.
THE COMMISSIONER: Ms. Baker, could we take the break at this point?
MS. BAKER: Could I ask him just a couple of questions on this document and then I'll be done? No?
THE COMMISSIONER: I would prefer --
MS. BAKER: You've got to go. Okay.
THE COMMISSIONER: Thanks a lot.
MS. BAKER: Thank you.
THE REGISTRAR: Hearing will now adjourn until 2:00 p.m.

(PROCEEDINGS ADJOURNED FOR NOON RECESS)
(PROCEEDINGS RECONVENED)

THE REGISTRAR: The hearing will now resume.
MS. BAKER: Thank you.

EXAMINATION IN CHIEF BY MS. BAKER, continuing:

Q Mr. Cave, we were looking at a document, a memo, dated April 11, 2007. It was at Tab 6.
MS. BAKER: Maybe I'll mark that as an exhibit so it's on the record.
THE REGISTRAR: Exhibit number 373.

EXHIBIT 373: Memo dated April 11, 2007 from Jim Cave to Mike Lapointe

MS. BAKER:
Q And we had talked about the option of dropping Area 13, and you described what your reaction was to that suggestion.
The next -- there's two other -- three other

points, I guess, in this memo that you set out. One of them is to drop one of the river test fisheries. Was that being proposed to the Commission as a way to reduce costs?

MR. CAVE: Yes, that's correct.

Q And what was the -- what's your view on the necessity for the river test fisheries?

MR. CAVE: Well, first of all, these test fisheries have different objectives. One is a species composition test fishery. The other one is primarily a stock ID test fishery. The design of the nets are different, so you really can't -- they're just different, completely different gear.

Second of all, we have a problem with low stock sample size, particularly on some of these small years. We've been bumping up against low catches, so small sample size for our work.

Finally, again, having different samples, it reduces your overall bias in stock composition, so those were the three main points that I raised there.

Q Maybe you could just explain, then, what is the difference between species composition and stock identification?

MR. CAVE: Stock identification is only for Fraser sockeye. So we have different Fraser sockeye have different sizes. So Nadina are very small, Weaver are very large. There's five-year-old fish as well that are large. So we have a net that has different mesh sizes to catch the different sizes that represent the different stock mix that we're dealing with.

Species composition is we have Chinook, pink, Coho and chum as well as sockeye. We need to try and get an unbiased representation of the proportion of sockeye in the migration that's passing Mission. So if we had a Mission number, we multiply that by the percent sockeye. Let's say it's 90 percent. So we've gone from, say, 100,000 total fish to 90,000 total fish. If we want to find out how much Chilko are going by, we multiply that by the stock composition. So it's 40 percent Chilko in what's left. It's 40 percent of 90,000 fish, so 36,000 fish. That's kind of what we're doing here.

Q Those two different tests provide you with different pieces of data for that analysis.

MR. CAVE: Different pieces of information, and they're both critical to what we do when we're estimating the daily passage of the different stocks that are going by Mission.
Q And so were any changes made to that? Was a river test fishery dropped?
MR. CAVE: No, no, none were.
Q And in fact you eventually did add in the 2000 -- maybe 2007 or '08, you added another test fishery into the river; is that right?
MR. CAVE: Yes, that's correct. In order to collect additional species composition information at Mission, specifically directed at the sockeye/pink salmon transition period which is a period of difficult -- would have had difficulty estimating the proportion of sockeye and pink at Mission.
Q This is the Sumas test fishery. We did hear about this from Mike Lapointe, but that's the same program; is that right?
MR. CAVE: Yes, that's correct, yeah.
Q Okay. And then another proposal was to reduce seine fishing in July?
MR. CAVE: Mm-hmm.
Q What was your reaction to that?
MR. CAVE: The date of this memo is...?
Q April 2007.
MR. CAVE: 2007. In fact, we did this, but we did this for -- we actually had a -- I think we got rid of about two to three days in the schedule. So normally we'd start around somewhere between the 20th of July -- I think the final schedule was the 23rd of July. In fact, we had such low abundance that we were seeing in the gillnet test fisheries, that we decided to delay the seine test fisheries.
Q So this is the gillnet. Is that Area 20 or is that...?
MR. CAVE: Area 20 and Round Island. So Area 20 gillnet was providing us feedback as to whether or not we needed to open the Area 20 purse seine. The Round Island gillnet was providing us information as to whether or not we needed to start the Area 12 purse seine, and then later the Area 13 purse seine.
Q So you delayed the opening of the Area 12 test fishery, but that was, it sounds like, more reaction to the fact that you weren't seeing an abundance that justified Area 12 in that year as

it turned out; is that fair?
MR. CAVE: Well, it was actually, as I mentioned, both. We actually had a slightly later start date of about three days in the schedule, and then again we actually delayed the start of the test fishery based upon the information we were seeing in season.
Q All right. And then the last heading in your memo here is, "Implications of reduced frequency of test fishing." Is this the discussion we had before lunch where you talked about sampling every other day, and so you talked about some of the difficulties scientifically in losing data by going through that process.
MR. CAVE: Yes. If I could see that?
Q It's the "Implications of reduced frequency for test fishing." There, stop.
MR. CAVE: Yeah, so what we're saying here is that it doesn't necessarily reduce the accuracy, but it increases the uncertainty or variability of the run size estimates substantially. Basically what you're doing is if you'd go every other day, you're cutting your data in half, and you're extrapolating between days. So, in a qualitative sense, it actually means that you're less certain about the run size estimates that you generate from that.
Q Right. And you also talked about the difficulty in having test fishers that would be willing to take on that assignment on every other day.
MR. CAVE: Yes. I had been told it's what do they do when they're in the middle of nowhere on their days off, and their income is cut in half. As Brian alluded, it's hard to keep a crew. A skipper might think that's fine, but then all of a sudden he loses key crew members, and it affects the test fishing operation. He has to find replacements. It's not something I supported at all.
Q And has this sort of reduction been implemented? Every other day instead of every day test fishery?
MR. CAVE: No.
Q So those memos that we just looked at were in 2007. Was there continued suggestions from the Panel or from Canada that reductions be found in the test fishing program since 2007?
MR. CAVE: I believe in 2008, we had a meeting in June.

It was not a Panel meeting, it was a smaller group where some of the test fishing options were discussed.

Q And what was the outcome of that?

MR. CAVE: I think there was -- I believe there was a call for a certain dollar value of reduction that would not be available to us over our budget. What it did, as far as I was concerned, was that our test fishermen in specifically the river -- a lot of these cuts were directed at the river, cutting down days. If there's no fish, we stop test fishing, but if there are fish, we need to continue test fishing because of sample size restrictions.

But also it goes to income, as I mentioned. After it gets to a point where it's not worth that test fisherman's while to continue test fishing. I went to bat for our test fishermen, as I recall.

Q And so were any test fisheries reduced as a result of those discussions in 2008?

MR. CAVE: They were, simply because the run was quite early. Once the fish dried up, there was no point in continuing. So if there's a data need, we'd like to continue test fishing.

Q Okay. Mr. Assu, have you seen reductions in your test fishing program?

MR. ASSU: I guess what I would add to what Jim described was Area 13 had two vessels operating there previously, and it was reduced to one vessel to try and make some savings there. I think that's the only one that I can remember.

Q I think earlier you had mentioned that some days had been trimmed at the front end and the back end. Have you experienced that as well?

MR. ASSU: Well, I think all of the test fisheries' timing has changed for start and ending.

Q Okay. Reducing the length of the test fishing?

MR. ASSU: I guess it has been reduced a bit, you know, in some cases. I can't remember the exact number of days, though.

Q All right. I'd like to move to a new topic and that is quality of information and data gained through the test fisheries. Has the quality of information generated by test fisheries changed over the years? I'd to start with you, Mr. Cave.

MR. CAVE: In the case of the seine test fisheries, when I first started working with them, and my

first year with them was 1984, you would schedule them a couple or three days, two or three days a week. So if you had a commercial fishery, they may fish Monday through Wednesday -- Monday, Tuesday if they had two days a week, then Monday, Tuesday, Wednesday.

Now, in those days the seine fishermen would line up. They called it "line up", and what they would do is when the next week's opening was announced, they'd actually line up for the preferred purse seine spots, locations. So we could test fish for basically Wednesday, Thursday and Friday. So if you had two days of commercial fishing, you might be able to test fish for three days, and then the fishermen would want to go get into the line-up. They called line-up spots, and Brian can speak to these. It's first-come, first-served and you line up and you say what tide you want to go commercial fishing on, because that's your livelihood.

Once we started to get into this -- in about 1984, when we had the Fraser River Sockeye Review Board, and moving into 1995 when there was area licensing coming into effect, commercial fishing was much, much more reduced. At the same time, there were recommendations that came out of that Fraser River Sockeye Review Board and the Area 13 test fishery was one such program. It became clear that for us to -- in the reduction of the commercial fishing, for us to maintain our ability to attempt to make run size estimates, we had to increase our sampling with test fisheries.

So currently we run these test fisheries daily, almost without exception. So once those purse seine test fisheries start up, they're running seven days a week. Even under the commercial fishing over the last couple of years, the so-called ITQs, which have been operational, we will test fish through those. If it was what they call a derby-style fishery where it wasn't under individual transferable quota, again, we wouldn't test fish at that time because all the fleet could go out.

So, yes, the quality of test fishing has improved, in particular, the purse seine test fishing. We've been doing a little less gillnet test fishing commensurately, in part, because of

some conservation concerns later in the run, particularly on Late run sockeye.

Q Okay. You did refer to the fact that commercial fishing was taking place in the past more frequently on Monday, Tuesday, or whatever, two to three days a week.

MR. CAVE: Yes.

Q Were those derby-style fisheries?

MR. CAVE: Yes, they were.

Q And did you use that information that was obtained from commercial fisheries in doing your analysis of run sizes?

MR. CAVE: The major run-size estimation, up until 1994, was based on assessment of commercial purse seine test fishing data. Those data were written up. Those models were reviewed and written up in a document called "Pacific Salmon Commission Test Fishing Technical Report #6". So up until that time, we were using these commercial run size models that harvested a substantial fraction of the fish migrating through Juan de Fuca and Johnstone Straits.

Q And has that situation changed?

MR. CAVE: Yes, it has, and I believe I've provided a document that would show just how that situation has changed.

MS. BAKER: Mr. Cave provided me last week with a document that's just been circulated to all the participants. Mr. Lunn, do you have a copy of it? It's got "return abundance" and "total exploitation rates", Areas 11 to 13, and 20 net fisheries and then a graph which shows returned abundance and total exploitation rates in Areas 11 to 13 and 20 net fisheries.

Q So is this a useful document for you to explain what you want to talk about now?

MR. CAVE: Yes, it is. So the first page is just simply a table of the graph. So you have total return, the Area 20 total net catch, the Areas 11 through 13 net catch, and then the combined exploitation rate, which is simply Area 20 plus the Area 11 to 13 catch divided by total run. So that final column is what we call "exploitation rate" which is the proportion of the run that has been removed from the total return.

So you'll note that there's some interesting data here. So if you go through, looking down

that Area 20 net fishing column, you'll notice there's a whole bunch of zeros beginning in 1998. Those zeros, that was due to the Coho conservation restrictions. The net fisheries in Area 20 were completely closed to any kind of fishing, period, in those years from '98 to 2000.

In 2001, they had an experimental kind of a fishery to see whether or not they could catch sockeye and still have sufficient conservation for Coho. Those were highly monitored fisheries. Paul can probably speak to these in a bit more detail.

You'll notice that there's large numbers of gaps, so we need to have commercial fisheries in both Juan de Fuca Strait and Johnstone Straits in order to have a total run size model.

Q Right now, you have test fisheries in both those areas?

MR. CAVE: We have test fisheries in both those areas, but if we wanted to have commercial run size models, we'd have to have some level of catch, and it should be weekly, because if it isn't, then you could be -- these were based on the peak catch for the year. So you would fish each week, and at some point you get a peak in your catch for a particular stock, and it's that week you use in your run size model. Well, if you didn't go fishing that week, you lose that information.

If we were to continue with marine area assessments, the only way we can do that now, currently, is with purse seine test fishing and gillnet test fishing.

Q The only way you can do that is because of various conservation constraints on the runs coming through Area 20?

MR. CAVE: Principally, yes.

Q And that includes the Late run that come through Area 20?

MR. CAVE: Yes.

MR. RYALL: I was just going to add one thing. In more recent years, there's also been much lower returns of Fraser sockeye overall as well, is why there's not been commercial fisheries. So looking at 2007, '08 and '09, you'll see that the actual total returns there are very much lower with one-and-a-half million, 1.7 million, 1.4 million. So there were not commercial fisheries to any extent

in those years, so that's what's limiting this collection of information through commercial fisheries. There's just not enough TAC to have those fisheries go ahead, which increases the reliance on test fisheries to collect that information.

Q When Area 20 stopped being available for commercial catch in some of these years, and when the run size began declining generally, did the PSC make changes to the test fishing program? I think you've described that now the test fishing takes place every day, not the first two or three days a week. Is that one of the changes that was done?

MR. CAVE: That's the principal one, and we've also added Area 13 --

Q Okay.

MR. CAVE: -- to our suite of run size estimation.

So if we go to the graph, and it might be useful to page down here, to finish my argument. The sweet spot, it appears from this graph - and I'm just trying to show in general here - there's some declines in here. So if you look at it, there's a decline in about '62 to '64. That was low run size.

In 1975, there's a major decline. That was a strike year. There were no commercial fishery -- very few commercial fisheries that year.

In the next low spike there, that low trough there, that's 1988. That was a poor return. As you get to 1995, you can see that that was a poor return relative to forecast. Then we went back up to about 30 percent exploitation rate in these fisheries. Then, after that, we're down to very low numbers and as Paul points out, a lot of these years were poor returns so we could not run these run sizes, we couldn't do these models.

But these models were successful because they were harvesting somewhere between 25 and 45 percent of the run on these years. When you take that many fish, you have two things going on. You have lower uncertainty. You know much better about what your harvest rates are because they're higher, so the point of variation is much less. Second of all, catch is known, well known. So that means that component of the run that is caught is well known.

So that reduced your overall uncertainty about run size, so there's two things. If you've caught 75 percent of the run, which is what we were averaging on some of these years, you're already three-quarters of the way there on your run-size estimation. If you catch only five percent, you only know five percent of the run with a great deal of certainty, and then you have this increased uncertainty about the harvest rate. So it's kind of a double whammy if you will.

Q So it sounds like when the commercial fishery was active, you had good information from those commercial fisheries to use in doing a run-size estimate. That's correct?

MR. CAVE: That's correct, yes.

Q Okay. Then when the run size declined and some of those commercial fisheries were curtailed, you didn't have same good quality information coming from the commercial fisheries, and you had to put more emphasis on the test fishing that we've been talking about here today.

MR. CAVE: Both test fishing and Mission became key players in the estimation of run size, yes.

Q How has the changes in the data available to you in estimating run size affected the quality of estimates that you were able to develop for run size?

MR. CAVE: I think it's safe to say that it's a trickier business to do run size estimation now, and part of what a lot of our effort is going into understanding the uncertainty about that run size estimate. The different components of uncertainty, both that pertain to catchability as well as catch per effort. Lots of model uncertainty. There's a lot of parameter uncertainty. There's a lot of things that -- we have to try and understand that uncertainty. It's not just what's your point estimate, 'cause it's quite likely that in season, we don't get the exact run size, and we want to tell people what we think the likely range or the probability of a given run size being true is.

Q And how do you think the Commission is doing with understanding those uncertainties? Is it getting better or is it still where we were in '98?

MR. CAVE: Oh, I think we've made huge strides in understanding uncertainty, both because we've

collected a lot more information -- in 1998, we only had three years or four years -- going into '98, we only had three years of continuous purse seine data. Now we've got over 15, so we've got more information.

But second of all, this area of expertise, which is quite technical, and we've hired a particular individual who is an international expert in this area, so it's been an exciting time and a very useful learning curve for us, and we'll continue to learn. We don't take what we've got today and then hang our hats on it. You're constantly updating your knowledge and your understanding of what's going on.

MS. BAKER: Could I have the document that's on the screen, the document prepared by Mr. Cave, marked as an exhibit?

THE REGISTRAR: Exhibit number 374.

EXHIBIT 374: Two-page document showing return abundance and total exploitation rate prepared by Mr. Cave

MS. BAKER:

Q Given what you've just described in terms of the changes to run size estimation and the data that you are able to use in doing those run size estimates, are you satisfied with the current methods of data collection that you have available to you?

MR. CAVE: Is the question am I looking for more information? Is it enough, or...?

Q Is it enough? Are you satisfied with the current data? Is it sufficient for you to provide a comfortable estimate of run size?

MR. CAVE: We have two purse seine test fisheries in Johnstone Straits. I'd like another one. And we only have one in Juan de Fuca Strait. Given if we double the test fishing effort in that approach, we'll actually cut the uncertainty in half. So, yeah, I'd like to see a greater frequency of test fishing.

Q And that's sort of looking forward. With where we are today, is the data that you have available to you within the test fishing program inadequate for the purposes of estimating run size?

MR. CAVE: We can describe the uncertainty right now in

our run size models, and it's up to the Panel and others to tell us whether those ranges are appropriate for the decisions that they need to make. So it's kind of -- I'm always looking for more as is our staff generally, because if mistakes are made, we take them personally. So the more information we have that we can analyze, that we can work with, we think we can do a better job of providing better estimates to the panel for decision.

Q All right. And is it your view that increasing the test fishing sites or operations, as you've described, an additional one in Johnstone Strait and an additional one in the San Juan (sic) would be the best improvement that you would see in terms of gaining data, or would you be looking to restate commercial fisheries as a way of -- in those particular areas, as a way to improve the data collection?

MR. CAVE: I'd like to see assessment fisheries seriously considered again that would operate weekly. However, I understand there are constraints with that because those assessment fisheries require a TAC to operate.

Q Okay. I'm going to ask you, then -- I was going to ask you a little bit later to describe the difference between an assessment fishery and a test fishery, but maybe this would be the time to do it.

MR. CAVE: A test fishery is usually a single or two or three -- a single individual, maybe two individuals in some cases, that are chartered. It's not part of their commercial catch. So we charter them, they do a job for us, it's clearly defined.

The catch in this instance is a deduction from the total run. It's one of the deductions in calculating the TAC. So you don't need -- or the Panel has decided that there doesn't need to be a TAC to go test fishing. There's no sharing. It's a cost to the resource, clearly, because those fish don't make the spawning grounds and they're not available for other harvesters to catch. It's a cost of collecting the data that we need.

An assessment fishery is typically a commercial operation where people are not chartered, but are, as part of their -- a

condition of them going fishing. An assessment fishery would be that they would fish a certain way for you in a certain pattern with a certain amount of effort. Maybe you'd have, say, ten boats operating for one day in one particular site. They catch their fish, they sell their fish as they choose, and the data are then used for run size estimation.

My understanding is - in fact it is the case - that there has to be a TAC in order to do that. That's an area that requires a policy decision. So if you had an estimate of total run, then you have to meet your escapement targets, then you have to meet your test fishing, all those other deductions, the MA, and then on the calculation of that, you'd have some TAC. People need to decide whether that's an appropriate way to catch their TAC, because some harvesters don't really want to be constrained by an assessment fishery, particularly in only a few can do it.

So that's the distinction between a test fishery and an assessment fishery. I hope I've explained that.

Q Okay. Thank you. The next area I wanted to talk to you about were assessment fisheries and other types of fisheries that would provide information to the Commission in assessing run sizes. The first one I wanted to talk about was, in general, was seaward assessments, and it may not be necessarily an assessment fishery. It may be conceived of as a test fishery. But let me just sort of preface it by asking is there some suggestion that more seaward fisheries, test fisheries or assessment fisheries, would improve the information coming in to the Panel for decision-making?

MR. CAVE: It's clear that there's one piece of information that would really be nice to get, and that's an estimate of timing. Because if you know the timing of a return, once you've reached that date and you say, okay, well, we're 50 percent of the way through the run. People call it the "peak", but it's more correct to say that it's the median of the run distribution. It's halfway through the run.

Q Mm-hmm.

MR. CAVE: You've seen 50 percent of the fish. Once

you know that, then it's simply theoretically a case of just doubling the run size to get your total run. So if you could get that earlier, then it makes things a lot better, because right now you have to -- the longer you wait, there's an information lag.

The best areas for run size estimation are those areas where the fish are constrained. They have to go through. They either have to go through Johnstone Straits or they have to go through Juan de Fuca Strait. They can't just appear at the mouth of the Fraser River.

When you start getting outside of those areas, there's a lot more uncertainty as to what you're fishing on. So you catch fish off the Queen Charlotte Islands, you don't know whether you're fishing on five percent of the run, ten percent of the run, 50 percent of the run, 60 percent of the run.

If it's going down Johnstone Straits and you can get an idea of the diversion rate, you know that they're fishing likely on 80 percent of the run, but it's much, much more uncertain when you're fishing outside of those areas, and that includes the west coast of Vancouver Island as well as the Queen Charlotte Islands.

So the associated uncertainty with that will be larger, potentially a lot larger. That said, if we can get earlier estimates of timing somehow, by going seaward, then I'd like to hear about them.

Q In 2009, the PAC staff did an presentation to the Panel and the Technical Committee talking about Area D assessment fisheries.

MR. CAVE: Yes.

Q Do you remember that?

MR. CAVE: Yes.

Q Okay. That's in Tab 7 of the material before you, and it's CAN 023346.

MR. CAVE: Yes, I'm familiar with this presentation.

Q Okay. If you turn to the last -- well, first of all, what was the proposal? What is the Area D assessment fishery that was being talked about?

MR. CAVE: The Area D assessment fishery that was one that was run actually by the Area D harvesters to try and provide a buy-in, I guess, if you will, or an ability to participate in the management. They

felt that they could convince their membership to put part of their catch that they were allowed into an assessment fishery. So they were sort of at the front end of this.

Q And, sorry, where is Area D?

MR. CAVE: Area D are those gillnetters that are allowed essentially to fish in Area 11 through 13, but also in Barclay Sound as well.

Q So is it an area north of where you currently have your purse seine test fisheries?

MR. CAVE: It's right in the middle of it.

Q Right in the middle of it.

MR. CAVE: So they can fish that whole area all the way down to -- how far down? Campbell River, I suppose, almost Campbell River. So they can fish from the top end of the Island all the way down.

Q Okay.

MR. CAVE: This particular assessment fishery was located, I believe, in the Robson Bight area in the vicinity of Naka Creek. They were looking to see if they could fish just ten boats and see if there was a relationship between the catch per effort in those boats with run size. So they engaged our staff and DFO staff to help them with understanding this. We did the sort of quantitative work on it. I, myself, was not involved in that, but it showed some promise. But it's only on one approach.

Q Okay.

MR. CAVE: And that's kind of a bit of a difficult thing. They're not allowed to fish in Area 20. In fact, no gillnetter can now fish in Area 20 except for our test boats. So you don't have a similar test fishery going on in Juan de Fuca Strait.

Also, one of the problems that you have is that you don't know the end-of-season diversion rate, so all they can do is estimate the total run in their area based on their catch, in theory. If you want to extrapolate that to the total run, you have to apply some sort of a scaler, if you will, increase that to reflect the migration that goes through Juan de Fuca Strait that you're not monitoring.

It was after some review of it, it looked to us that it was difficult to make these estimates work, and I think that was the conclusion in this

paper.
Q All right. And then just some comments at the end of the presentation on the last page, final comments. There's a statement [as read]:

> Marine assessments and seaward approaches currently rely on test fisheries which do not provide timely estimates for marine area fisheries.

It notes that:

> Large fractions of the TAC in both countries are allocated to commercial fisheries in seaward locations.

Then there's some options set out.

> Accept increased risk to conservation objectives and conduct seaward fisheries.
>
> Do not accept risk and fail to achieve allocation objectives.
>
> Try to reduce the risk by improving seaward assessments and changing commercial fisheries like small bites.
>
> Shift allocations closer to the river.

Was anything done with those? What was the outcome of this discussion? Were these options pursued?
MR. CAVE: I think the panel was focused on whether or not -- how to proceed when this discussion came up. The panel was focused -- they didn't really answer these options. Specifically they were more interested in what they could do if they couldn't run this test fishery and they then wanted to explore a Naka Creek test fishery.
But let me just walk through some of these points here.
Q Mm-hmm.
MR. CAVE: The easiest one to deal with:

> Large fractions of the TAC in both countries are allocated to commercial fisheries in

seaward locations.

That's true. The first bullet:

Marine assessments and seaward approaches currently rely on test fisheries --

True.

-- which do not provide timely estimates for marine area fisheries.

I think if we were to think about that we'd be here today discussing that, we would probably phrase it a little bit differently. I think it would be truer to say that the marine area assessments have greater uncertainty than if we were relying on Mission. That would be more specific.

Now, what I want to speak to is "do not provide timely estimates". Well, in fact, they are the estimates that we have for Late run sockeye, specifically Adams River sockeye. We do not get Mission information from the Mission hydroacoustics site in time to make run size estimates and run size decisions and fisheries decisions. We don't have the timing. We'd have to wait until the end of September to get that all in.

Similarly for pinks. Pink salmon rely entirely on the information we get from those marine test fisheries, so they have increased uncertainty for sure, but they are used.

Q Okay.

MR. CAVE: So when we walk through these points:

Accept increased risk to conservation objectives and conduct seaward fisheries.

I think that risk means something differently to different people. It's hard for me to go through that without having the graphics, but let me try and explain.

I think the question that we would ask at this point in the season is we would be looking to open some of these larger-scaled fisheries, but the burden that we'd look at is are we at the

level of escapement - and I think Mike talked about that criteria for fishing decision's table - are we on track with our escapement? Do the fish en route, does that look like that makes sense relative to the pre-season planning work that we had done? If so, then we -- then the panel will evaluate that risk and decide whether or not to go fishing.

Now, you could actually do that in a risk assessment framework in a much more objective sense. That's something that we're looking at doing and haven't completely got there yet. But, in fact, the panel was provided figures in 2009 on the run size with the probability of meeting the escapement goal. On top of that, what's the probability of ensuring that we have enough fish to get the FSC in the river, and then similarly, if we went fishing next week, what catch might we want to take and what's the probability of obtaining all of those within the run size, and what's that risk?

That can be quantified and should be quantified, I think, in future. But who decides what level of risk to take? It's a policy decision.

Q What about the third point:

> Try to reduce risk by improving seaward assessments and changing commercial fisheries, e.g. small bites, or shift allocations close to the river.

Has anything been done in relation to those points?

MR. CAVE: At the time of this, not as yet. As I mentioned, we did explore -- well, I don't know whether I did mention. We did explore other test fisheries in Juan de Fuca Strait at Sheringham Point. We tried to understand what gains we could make in our run size assessments by increasing test fishing, and a lot of work was done in 2002 on that.

But at this time, small-bite fisheries, which means assessment fisheries to me, more needs to be done there.

MR. RYALL: Can I just add one thing about assessment fisheries?

Q Mm-hmm.
MR. RYALL: The test fisheries are operated under s. 52 of the *General Fishery Regulations* to collect scientific information. Then assessment fisheries, as we're calling them here, would be operated by people that have a licence to go commercial fishing. One of the regulatory challenges on this type of thing would be that if you open a fishery in a particular area, anyone that has a licence in that area - and let's say, for argument's sake it's a purse seine and it has a B licence - anyone that has that licence could fish in that area. If you're trying to have a limited fishery of rather than 170 purse seines going fishing and only have ten, you have some regulatory challenges around having that with the current tools that we have at hand.
Q Okay.
MR. RYALL: Now, there's some ways around that, but it's more by agreement than by regulatory control. Some of this is pooling arrangements where vessels get into a pool, but that's not a regulatory thing. That's more by agreement.

So I just wanted to point out there are a bit of challenges with this concept around assessment fisheries as well.
Q So you have done some initial work on looking at an Area 20 test fishery, that's right? An additional Area 20 test fishery.
MR. CAVE: That's correct. We ran some experimental programs in 2002, two of them, two different ones. We looked at another site called Sheringham Point. When we did that analysis, I wasn't altogether pleased with the data we were getting out of that. It was much more variable in nature. I had hoped to do it one more year.

It turns out that probably we could have done that in 2006 or 2010, but it would have been harder to do that on other years. You need some fish to sort of make sense of it. With some of these years of high diversion, I think we would have been struggling a bit with it. But I would really like to see another purse seine test fishery in the southern route. It's a case of where.

Unfortunately the U.S. waters just geographically are not good places to conduct that

kind of work.
Q Have you considered making an approach to the Panel or to Canada to develop an Area 20 beyond this experimental work?
MR. CAVE: Well, I guess we haven't really thought about it a lot recently, but the more I remind myself the gains that could be made with an independent estimate on uncertainty, I think if people want to see us try and reduce the uncertainty about our run size estimates, then I think we need to do more test fisheries.
Q Does the ***Larocque*** decision factor into why you haven't pursued that more aggressively?
MR. CAVE: Oh, I just think it would be hard for us to -- I mean I haven't put that forward under ***Larocque***.
Q But are you concerned that with the challenges for funding, given that the ***Larocque*** decision requires that money to come from the country's -- or from Canada, that you have an uphill battle, I guess, to get a test fishery in Area 20 in?
MR. CAVE: Well, that would be my perception, but perhaps Paul could say whether he thinks we'd be able to float another $250,000 test fishery.
Q 250,000 is the approximate cost of that test fishery?
MR. CAVE: Well, $5,000 a day for 45 days, something like that.
MR. RYALL: I mean, some of the questioning today, just going through each one of the years, there's questions that come up each year about test fishing plans and what programs get operated. I think it's good to put it back into a policy framework as well about how do we make these decisions around test fisheries, and the policy document that was put together and agreed upon in June 18th, 2009, is one such place I would recommend to go as far as making decisions upon any test fishery, whether it's Area 20 or wherever that test fishery might be desired and just see what the value added.
Some of the memos that Jim's put together here provide, you know, really clear indications of the value of different options and provide guidance back to the panel about the worth of those test fisheries. As we're going through the questions, the answer was coming back, well, we

did carry on with Area 13, for example, and while we might have made some minor changes to it, it operated it.

And if there was the need for something like Area 20 or any other area, then I think -- put it back into this policy framework and ask the question: what additional information are we going to get, what it's going to cost in money, and put it in that sort of light.

Q Right. But you would agree with me that the pressure from Canada since ***Larocque*** has been to decrease costs for test fishery, not to increase costs in test fishing.

MR. RYALL: I wouldn't totally agree with you on that. My comments earlier were whether it was use of fish or whether it was dollars, we would be asking similar questions one way or the other, and it's not just around money or just around the fish.

We are trying to provide the best assessment that we can. We need to do it in light of considering all risks and what does it mean for the population as well, as well as the information we're collecting.

One of my functions, I would say, was when I was in the role of the Chair of the Fraser Panel is to ask those types of questions. What information do we need? What is it going to cost? What is the risk if we don't do it? And what benefits are we going to get if we do it? I would ask those questions whether it was pre-***Larocque*** or post-***Larocque***.

Q We touched very briefly on a small-bite assessment fishery. How would you -- what is a small-bite assessment fishery?

MR. CAVE: This language came from Carl Walters. Small bites and drilling down deep he felt was a way of really trying to understand both harvest rate as well as the abundance of the fish that it was working on.

I look at this as basically small bite is a small fishery that takes a small amount of fish, but takes it sort of almost surgically in a very short and small clearly-defined area. If I was king for a day, I'd have these things running weekly in a good fishing area in both approaches. You need to run them weekly because you need to see -- there's different stocks that you're

fishing on. They have different timing and you need to see how that -- how those change with time. Because these things only work if you are, on average, fishing through the entire migration, because (a) you don't know where the peak is.

So if you had your ten-boat assessment fishery and it was ten days early, you'd catch a very small catch and it wouldn't be well related to the total run.

Q And is this --

MR. CAVE: That's what I think of the small bite fishery as.

Q And that -- is that's what's referred to on this document in front of us where it says "e.g. small bites" in quotation marks?

MR. CAVE: That's correct, yes.

MS. BAKER: Okay. Can I have this document marked, then, this PowerPoint presentation as the next exhibit?

THE REGISTRAR: Exhibit 375.

EXHIBIT 375: Review of Area D Assessment Fishery

MS. BAKER:

Q Are there risks to a small-bite fishery? Are there times when you shouldn't be actually fishing on a run in a way that would be contemplated by a small bite fishery?

MR. CAVE: Well, if you're fishing -- let's put it this way: We've talked about ITQ fisheries, and we've talked about derby-style fisheries. A small bite would be basically a derby-style fishery. In a derby-style fishery, the harvest rate determines the catch. So the more fish you have and the higher the harvest rate, the higher your catch.

In ITQ, the catch determines the harvest rate, so it's different. They operate differently. So if you had a very small run, your harvest rate will be the same regardless of whether you have a small run or a big run. Your catch drops.

Q This is with the small bite, so derby-style?

MR. CAVE: Yes. So you might be taking five percent of the fish per week. In a small run, you're still taking five percent, if it's linear.

Q Mm-hmm. So are there any -- are the risks -- like

would there be times when running an assessment fishery or small-bite fishery like this would introduce an unacceptable level of risk?

MR. CAVE: It could be, and that would be for people to define their level of risk that they're willing to take, and whether the gain in information justifies the risks.

Q Because if you had a very, very small run, a run where there were conservation concerns, you might not want to run this kind of a fishery; is that fair?

MR. CAVE: It's quite possible, yes.

Q And if you were to run a small-bite fishery, for it to be of value to the PSC, would it need to be run every year in the same way that the test fisheries are run, to have a steady dataset, or is it something that could be done on a good year and not in a bad year?

MR. CAVE: Well, I think you'd have to have a range of returns for it to be useful. You can't establish a relationship. You know, you need a bunch of small returns and a bunch of big returns and you're presumably drawing a line, as you're connecting through those dots of linear regression. If you had them all up in the large returns, you wouldn't be learning a lot about what the underlying relationship is in those data.

Similarly, the time when you need your best information is when you're trying to decide whether or not to go fishing or not. So it's kind of a Catch-22. If you need a TAC to go fishing, but you need a good run size estimate to get there, you know, it's -- what can you do?

I think it's important that people realize that run size estimation benefits all users. It's not just -- these seaward assessments aren't just useful for seaward fisheries. They're useful for fisheries all up the Fraser River as well. I think that's a key point. Particularly, for example, is Early Stuart. Once we could show that we could get an earlier estimate of run size earlier, there was a real gain to the fishers in the Fraser River and upstream of Mission.

Q Why could you not just use the numbers that are extrapolated at Mission?

MR. CAVE: Because you lose five days of information. If you're fishing five days to seaward, you're

getting additional five days of information that you wouldn't have if you were relying on Mission-only data. So on the 10th of July, you'd only have the data through Mission, whereas if you were seaward of Mission, you'd have another six days which might tell you an awful lot about what the timing of the run is, and it might structure your openings and closures in the Fraser River to accommodate that. It might mean that people get to fish earlier because of that.

Q These small-bite fisheries that we've been talking about, would they replace the test-fishing program in any sense?

MR. CAVE: No, I don't think they could because the test fishing gives a lot of information over all days of the run, whereas the small bite would be just weekly bites, small removals once a week.

Q And you also need the test fishing to establish whether there's TAC which is needed for a small-bite fishery, right?

MR. CAVE: Correct. It's a tricky business and in spite of the fact that I've always wanted to see these, it's been hard for the people who make the decisions to wrap their arms around it and provide it. I only know of one small-bite seine fishery that was ever operated, and I can't even remember the year. I think it was 2002.

Q Okay. Could an assessment fishery be structured within an ITQ model of fishery?

MR. CAVE: It could.

Q And the current ITQ model that has been put into play in 2010, would that -- could an assessment fishery be operated within that model?

MR. CAVE: It could, but it has to operate in a particular fashion that may or may not be acceptable to the users, the ITQ holders. It would have to take some part of that ITQ catch which was available for the week, and it would have to be taken derby-style, okay? Because the harvest rate, you can't let the catch determine the harvest rate. For an assessment fishery to be useful, the harvest rate must determine the catch. So it means that you have to take some of the ITQ catch and say we're going to take it -- and the fishermen involved are going to have to make sets at particular locations, particular stages of the tide potentially, and they'd have to do those

sets.

And if they're just under ITQ, quite often people are looking for the big set and taking their 5,000 fish and going home. You can't do that if you're going to use it for a run size estimation model.

Q I think you've already talked about whether there's value in having an assessment or a test fishery off of Vancouver Island or off the Queen Charlottes. Did -- Mr. Cave, you've, I think, addressed that already.

Was there anything that either Mr. Ryall or Mr. Assu wanted to add to that question?

MR. RYALL: Not for myself, thanks.

MR. ASSU: Well, I think the only thing that I'll add to that is there was a vessel that we had harvesting at the sea fish for us off the Gordon group. It actually proved out to be quite successful over time. I can't remember how many years we ran it for. I think it was four years before -- it was basically recommended to roll it into an official test fishery at one point in time. But that is just when the ***Larocque*** decision came down and it was dropped off the table.

MS. BAKER:

Q Has there been a change in information available since the change in licensing which has impacted information available seaward for Fraser River sockeye? This is a question for you, Mr. Assu.

MR. ASSU: Sorry, could you repeat it, please?

Q Yeah, there was a change in licensing which split the coast into two areas some time ago. Did that affect the ability -- or the information that was available to assess Fraser River sockeye from your perspective?

MR. ASSU: I believe it changed it a bit, and when I say that it -- I don't understand how the Pacific Salmon Commission utilize the information that came in from 2 West, the area just off the Queen Charlotte Islands. There used to be seine fisheries there when we were just under one licence for the whole coast, troll fisheries too, I guess.

So I guess there was quite a bit of information that used to flow previously, but I just really don't know how it was being used.

MR. CAVE: If I can answer that, the answer was it was

not used directly in run size estimation. It was an add-on to the total run at the end of the year, but we did not take information from either the 2 West seine fishery or the Area 1 fishery or the troll fishery in 2 West. We could not make run size models out of those.

MS. BAKER: Could I keep going, or would you like to take the afternoon recess?

THE COMMISSIONER: No, I just had some questions in the evidence. I can wait until you're done, or...?

MS. BAKER: I'm going to just ask a few more questions about some of these other fisheries models, and then -- so would you like to ask your questions now, then?

THE COMMISSIONER: It might be better so I can keep it in context.

I think the witnesses have used references to the commercial fishery and the First Nations FSC fishery and other fisheries. What I'm trying to understand is when you talk about risk. I think Mr. Ryall used that example of what information is being sought and the cost of getting it and the risk if you do or you don't go for it. Maybe you've already said this and I've missed it, but are you measuring this risk against the same set of objectives, be it conservation or FSC or commercial fishery?

In other words, is the risk assessment being done the same, or is it prioritized? In other words, is there somewhere I can look in one of these documents, or that you have mentioned, that will tell me what your objectives are against which you're measuring a risk? If it's for conservation purposes, what is the standard you're measuring to in order to be able to meet your duties under the legislation with respect to conservation?

In other words, if you have a certain level of test fisheries, that level has to be maintained for conservation purposes, or is this a moving target? Are you constantly changing your view about the objectives?

Is there somewhere where - and maybe it's already in one of the exhibits - but is there somewhere where I can understand, over the course of - and I think it's Exhibit 374 - but over the course of time, how have the number of test

fisheries changed and why? So if you go back to the early 1990s, how many test fisheries were there? We come up to 2011, how many test fisheries are there now. Is someone keeping a record of why there's been change over the course of those times?

I think at one of the public hearings I attended - it was the one, I believe, in Prince Rupert - there were at least one, but maybe more, submitters who talked about the reductions, severe reduction in the number of test fisheries. It was their view that this had an implication for the quality of the data being received and the measurements that were being taken from that data.

But is there somewhere where I can look or I can have some sense of what's going on with respect to the test fishery? But more importantly for me, I'm not sure I'm understanding what are the standards against which we're measuring all of this, or is it changing constantly?

MR. RYALL: I'll start with the assessment of what we're trying to accomplish in risk. For me, the first is what do we -- meeting our conservation objectives. I think those are getting somewhat more challenging as we implement the Wild Salmon Policy.

But regardless of that change or not, the first is conservation and meeting our escapement targets. How many fish to put on the grounds, and what sort of information do we need to collect that? Then the next, under the Salmon Treaty, is meeting international obligations and that would go into the allocation. Thirdly is domestic.

And then overriding all the domestic one is meeting First Nations' requirements. So when I look at making decisions about whether we're going to add more test fisheries or not, I'm going to look at whether it's going to improve meeting those obligations.

Then I look at -- in those orders, of what we have to try accomplish under the Salmon Treaty and also our First Nation obligations to provide opportunities for FSC.

As to your question about looking for a table of providing changes in test fisheries over time, I don't think I have seen one myself, but I think it's something that could be put together. Jim

and I have talked about here over the course of today, and it depends how far back you want to go. If you go back into the '70s and '80s, there was less test fishing, I would argue, and there was a much increased reliance on commercial fisheries to provide us the information that we're now trying to get from test fisheries.

As the runs have decreased in, I would say, the last decade or so, with more uncertainty, there's been less commercial fisheries, and an increased reliance on test fishing. I think there has been changes and increases to the test fishing to try to provide and compensate for that lack of information that's come from commercial fisheries that used to provide that information.

As Jim's been talking about, the information that came from commercial fisheries was better information because it was really a much bigger sample size, if you will. You're getting more fish harvested, increasing your sample size, less uncertainty. 'Cause you then would have many boats fishing and both Johnstone Strait where the fish are migrating and also Juan de Fuca where they're coming in. So you're sampling these both routes with lots of boats, getting a much better estimate of the abundance and decrease in the variability around that estimate.

Now you go into no commercial fisheries or much reduced ones, rely on test fisheries. Whether we increase them or not, you're really talking about a much smaller sample size. We're talking about, right now, three boats operating in Johnston Strait, two to three, two to four. It's a pretty small sample size. One to two in Juan de Fuca, and then all these other gillnet test fisheries. So, you know, there's a big scale change between what the information you get from a commercial fishery versus a test fishery.

But to try and compensate that, and as the last decade has unfolded, there's been lots of interest. How can we improve our information, because we don't have the commercial fisheries operating that provide us those seaward estimates, and now gather that information through test fisheries.

We have made some changes. There's been lots of work done to look at ways to improve upon that

information, whether it's been through what we call test fisheries, that operate under s. 52, or whether it's these small bite or assessment fisheries which would operate under a regular commercial licence, which has some regulatory challenges as I was pointing out. It doesn't mean they can't be overcome, but there would be some challenges for us to overcome that way.

There's been a lot of, I would say, improvements at Mission as far as ways to improve upon our assessments and collect information. There's been a lot of work done at Mission hydroacoustics with new tools and new techniques to improve upon and reduce that uncertainty.

As well, the Departments ran another hydroacoustic facility up at Qualark, just upstream from Hope, that could help reduce and provide more information as well.

So I don't know if that kind of helps to provide a bit of a picture.

THE COMMISSIONER: It does, and if you could just finish it off by just again explaining to me the funding arrangement that you mentioned earlier which expires in 2011. Where are you at in assessing all of these options that you've just mentioned? You've described very well, in a few moments, the historical context and where you're at today. But in terms of going forward, where are you at?

MR. RYALL: Well, I'm not 100 percent sure. I haven't been on that file for the last year, but this is what I know right now.

We have -- there's really, I think, four options. One could go back to use-of-fish, and that would require changes to the legislation back in the ***Fisheries Act***, and we did do that a number of years go.

We could carry on and seek funding and put in another request for a Treasury Board submission and carry on with additional funding. We could also do this in partnership, make an assessment of what's really required to meet the conservation obligations in FSC, for example, and what serves the -- and then also have partnerships with commercial industry. There's some sort of cost-sharing between the parties.

So those are the type of options that one

would be looking at, carrying forward.
MS. BAKER: I'm quite happy to keep going, so it's up to --
THE COMMISSIONER: We'll take a short break.
THE REGISTRAR: The hearing will now recess for 15 minutes.

(PROCEEDINGS ADJOURNED FOR AFTERNOON RECESS)
(PROCEEDINGS RECONVENED AT 3:23 P.M.)

THE REGISTRAR: Order. The hearing will now resume.
MS. BAKER: Mr. Commissioner, I don't know if it's worth asking if there's an ability to sit a little bit later today if we think we can get through these witnesses today, but we're a little bit behind schedule, so I'm getting worried about timing again.
THE COMMISSIONER: How much ---
MS. BAKER: I don't know, would half an hour be possible today?
THE COMMISSIONER: Yes.
MS. BAKER: Okay. Is that possible for the rest of the room, including the witnesses? Yes? Okay, well, let's keep that in our back pocket, if we need it.
THE COMMISSIONER: I'm sorry, I should ask Mr. Registrar and everyone else if that's convenient? All right.
MS. BAKER: Okay, thank you.

EXAMINATION IN CHIEF BY MS. BAKER, continuing:

Q Then just one quick question for you, Mr. Cave. Are you familiar with a concept described as the C-grid test fishery? It's been described by Dr. Carl Walters.
MR. CAVE: Yes, I am.
Q And what is that, in brief, what is that C-grid test fishery model?
MR. CAVE: Well, it's a concept, I think, right now, rather than a model, and it's about 20 years old. It started, to my knowledge, in 1989, and Carl and David Ellis advanced the concept that we could get -- it would be possible to get earlier estimates of run size and timing if we moved the test fishery further afield. And it's not new, it's been around for quite some time. Carl and I have discussed it at length over the years, and I think

probably the best places to do assessments are where the fish are compressed in the areas, so that they have to go through Johnstone Straits, they have to go through Juan de Fuca Strait, and when you start moving further afield from that, if somebody's fishing on those fish, you don't know -- it's very difficult to determine, in the historical sense, the actual abundance that they were fishing on.

Now, Carl has a conceptual model or theoretical model that would allow that to be done, and it's basically a run reconstruction model in latitude, longitude and time dimensions. We don't have to worry about the spatial dimension so much we we're working with the other test fisheries. And it's going to have higher uncertainty. And it would also require many more boats to carry that out.

And I talked with Carl fairly recently on it and I think he's sort of changed his point of view a little bit on it. Originally, he was in sort of a grid, like different boats fishing in a box that would have quite broad latitude and longitude near the Queen Charlotte Islands. I think, now, he's looking at that as having that as far offshore as possible, but along the coast, so it would be off the continental shelf would be his ideal location.

It is theoretical that you could get additional information from such a project, but it would require a lot of funding to pull it off, I would suspect, probably in excess of eight trollers, anyways, and for sure the uncertainty about the catchability of those individual boats and the uncertainty in the timing and run size data would be greater than what it is in the current locations where we currently run test fisheries.

Q Is this a model that you are interested in pursuing, then? Do you think it's a worthwhile model?

MR. CAVE: I think the discussion would have to occur as to -- Paul talks about the benefits and the risks, and I think it would have to require a broader discussion and a clearer idea from the people, from the proponents, exactly the sorts of models they're looking at running, and the potential range and uncertainties to see whether

you can actually -- whether it actually will deliver what its stated purpose would be.

Q All right. So compared to your Area 20 new test fishery, would you put your money on that, or would you put your money in the C-grid test fishery?

MR. CAVE: I go with what I know and understand best, and I would like to see another purse seine test fishery on the southern approach before I would go for a proposal that I (a) don't fully understand and, (b) can't quantify the benefits that I would get from it. I'm pretty certain, I know that with the information we have right now, we can quantify the gains from another purse seine test fishery in Area 20. I don't think that would be easily done with the C-grid concept.

Q Okay. I want to move, now, to the First Nations Marine Society. These questions are directed primarily at Mr. Assu. Can you explain what the First Nations Marine Society was?

MR. ASSU: The society was originally formed to harvest fish for the south Island bands, mainly because they didn't have the capacity to harvest their own FSC, and A-Tlegay, another group out of Campbell River, I believe they've got something like 45 vessels available for harvesting FSC, and that was really the main objective of society when it was formed.

Q And was there a test fishing component to the fishing done by the First Nations Marine Society?

MR. ASSU: Yes. Originally, we did set it up to try to replicate the test fisheries in Area 12, 13 and Area 20. I think we ran it that way for the first three years, I believe. It was two or three years that we ran it, trying to replicate the test fishery.

Q Did you do it two or three years in Area 20, or just one year in Area 20?

MR. ASSU: We did it one year in Area 20 for certain, and that was because of a high diversion rate down Juan de Fuca that year. I can't recall if it was done two years out there or not.

Q Sorry, you said the other ones were 12 and 11 or 12 and 13?

MR. ASSU: No, 12/13.

Q And earlier in your testimony you referred to the Gordon Group test fishery. Is that in one of

these two areas, 12 or 13?
MR. ASSU: Gordon Group is the upper portion of Area 12, and we did have one vessel working up there for, I think it was, about anywhere from eight to 12 days while they harvested FSC fish. We originally picked the site because it was just out of convenience for ice and off-loading and trucking of the fish to the south Island, because of the location. But over time people began to recognize that the information that was being collected there was actually useful, and that's what I had mentioned earlier about there was consideration given to turning it into an actual test fishery.
Q Is it further north from the current test fisheries in Areas 12 and 13?
MR. ASSU: Yes, it is. I'm not sure how much further, Jim, but it's got to be all of 35, 40 miles, I guess.
MR. CAVE: Yes, I think it's probably almost a day seaward of Round Island, itself, so that puts it two days seaward of the Robson Bights or the Blinkhorn test fishery, and it would provide, conducted properly, would really be useful for us, yes.
Q Now, those test fisheries ceased operations, as I understand it, in 2006; is that right?
MR. ASSU: Yes, that's correct.
Q What happened? Why did they discontinue in 2006?
MR. ASSU: Well, the test fishing component of the FSC fishery, I guess, based on the recommendations of the skippers that were doing the fishery for us, they were saying that it would be more cost-effective for them to be able to just go out there and focus on the main body of fish that they could work on, rather than trying to replicate what the test fishery was doing. So at the end of the day we did abandon the, I wouldn't call it structured, it's somewhat structured, anyway, the test fishery, but we ended up having to leave that just so that they could focus on getting as much of the fish out of the water as quick as they could.
Q So that leads me to another question. Did you find, in the operation of that society and the test fishing done by that society, that there was a conflict between the FSC goal, to catch fish for food, social, ceremonial, harvest, and then the

test fishing goal, which is to go through a routine of fishing on a set pattern? Were those two goals incompatible? Is that what you were describing?

MR. ASSU: Yeah, because the objective of the FSC harvest was to -- I mean, the whole thing was -- the society was torn, because what the south Island bands were experiencing was the very high cost of hiring an individual on their own and it was just an idea that we, myself and one of the councillors from Nanaimo, had come up with, that if we got a large group together and focused on catching a lot of fish, I thought we could reduce the cost substantially, which, you know, during the time of operation we were successful at doing that. We were able to take the cost from, I think they were paying $5.00 a fish at that time, and we took it down to between $1.50 and $2.00. It all depended on the price of fuel.

Q But how was that, that objective, I guess, to catch fish for FSC purposes, was that -- did that work well with the goal of the test fishing program, which was to fish in a set place on a set schedule, not necessarily where the fish were, but where the test fishing program designated you were to go?

MR. ASSU: In terms of the FSC doing the tests?

Q Mm-hmm.

MR. ASSU: No, that's what I was saying earlier. I mean, don't get me wrong here, I mean, part of it was some of the people that were doing the FSC fishery, as we called it back then, they didn't have experience in the overall area of the test fishing sites, and that is just the nature of the beast where we come from in the Johnstone Straits, we grow up in certain geographic areas, and the ones that we had hired were mainly -- they were fishing upper 13, if I could call it that, and the test fishery doesn't go that far up.

Q You've answered the question of whether the Gordon Group test fishery did provide improved seaward information, Mr. Cave, you answered that. Did you answer that question, Mr. Assu? Did you think that the Gordon Group provided improved seaward information?

MR. ASSU: Oh yes, definitely.

Q Okay. I just want to move, now, to some other

recommendations that have been made by other commissions, and that Exhibit 14 is a binder that you will see up there. Page 254, recommendation number 5 from the Williams Inquiry made a recommendation that:

> The use of First Nations FSC harvest in marine waters should be incorporated as part of the test fishing program on a long-term basis. This requires secure long-term funding for the catch monitoring carried out during the First Nations Marine Society FSC fishery.

And there was agreement from DFO on that point. Why was that program not continued, Mr. Ryall?

MR. RYALL: Well, I think you've heard from Brian. My recollection is that it was ran in 2005 and 2006, and there was an assessment done by the PSC that showed that there was some promise to it, but more work would need to be done.

And I think one of those years, 2006, probably only had six days of test fishing and the other year had quite a bit more, I forget how many, but quite a few more. So there was some promise that it would provide some additional information. It comes back to, I think, in this particular case, what more information are we getting from that test fishery that we aren't getting from other ones, and is it having a big advantage to meet the goals that we're trying to achieve on Conservation International and FSC and domestic allocation really need it. At that time the judgment was that it was not.

Q So there is no current FSC fishery that is being used as a test fishery at the moment?

MR. RYALL: Currently, not that I'm aware of. I mean, each one of these things is not static in time, either. One could go back and do the same analysis again and maybe come out with a different outcome.

Q Page 207 of Exhibit 14 sets out a recommendation from the Wappel Inquiry in 2003, or report, I guess, in 2003. The recommendation, and similarly, there was a similar recommendation by Chamut in 2003, on page 217, recommendation number 10. These recommendations were that the DFO

should invest in more research to improve the run forecast system, including the test fishing system.

We've talked a little bit about the First Nations Marine Society, but what other responses has DFO -- sorry, what other test fishing research has been done by, or development of new programs has DFO done since these recommendations were made? I think some of them are set out -- it might be easier, just for today's purposes, if I go through some of these and you can give me the feedback on them. And one of them is the Area B Seine Small Fleet Assessment Fishery in the Strait of Juan de Fuca and Johnstone Strait. I don't know who's best to answer this. Maybe we'll start with you, Mr. Ryall. What work has been done on that?

MR. RYALL: Well, that assessment fishery would require a commercial TAC to operate, and my recollection is it either operated for three years or two years, hence, similarly, with the Area E one. I think the Area E one operated two years.

Q And why did they not continue; because there was no TAC, or was there some other reason?

MR. RYALL: It might be a combination. In recent years there's really not been a lot of TAC, and it goes back to, you know, some of my other comments, earlier, about some regulatory challenges of these types of assessment fisheries. Currently, if you have vessels licensed to fish in an area, you can't open it just for a few of them; you're really opening it for all of them, and it's really by agreement whether all fish or don't fish. So you're taking some risks there by opening an area without that agreement.

Q Do you have anything to add, Mr. Cave?

MR. CAVE: Well, it's my understanding that both the Area D and the Area Gillnet Assessment Fisheries fell victim to the ***Larocque*** -- the issues arising from ***Larocque*** and s. 52. I understood that there were problems, and Paul can probably speak more to this, but my recollection was that, certainly for Area D, they could not use the sale of that fish to fund the Area D operations, and same with Area E. So the catch in those two fisheries was to fund their operations, and that is not a -- that was not possible under the decisions under

Larocque.

Q Okay. And the Area D Gillnet Fishery was the one that we looked at. There was a PowerPoint presentation we looked at, earlier, with respect to that?

MR. CAVE: That's correct, yes.

Q Is that a program which provided valuable information that was useful to the commission in its work?

MR. CAVE: Well, I think the review that you saw, I think the general conclusion was that it was not as useful for run-size estimation as we had hoped, in part because of its intermittent nature of these things and trying to -- you need to get these things at the peak of the run in order -- consistent part of the run in order to get a proper dataset, and if it's too early or too late, it just creates greater uncertainty in the model that you're using.

The Area E gillnet assessment fishery was -- they had one at Brownsville Bar and then there was another location down river, and the idea was they would provide additional information for abundance estimation in the lower river, but we never used those data, and I've actually not really looked at them carefully.

Q All right. Was there any other fisheries that were implemented to replace the Area D 10-vessel gillnet fishery?

MR. CAVE: There was a test fishery at Naka Creek that has been operated for the past two years, I believe, and that's -- I think it operated for between 10 and 14 days in the past two years.

Q Is that a useful test fishery?

MR. CAVE: It's too early to say. It's hard to evaluate a test fishery with only a handful of days of observations.

Q Okay.

MR. CAVE: That said, it is taking place in the exact same place as the existing purse seine test fishery that has a higher catchability. And, as a result, and also it's not an independent estimate of abundance, because they're fishing on the same fish.

Q Do you have greater confidence in the -- this is the Round Island gillnet you're talking about?

MR. CAVE: Well, no, I'm talking about the -- well, the

Naka Creek test fishery occurred at Naka Creek, at approximately the same location as this Area D assessment fishery, and they did use the same vessels as the Round Island boats. The same individuals were used. But if I were to choose between Naka Creek and the Blinkhorn or Robson Bight seine fishery, I would choose the Robson Bight seine test fishery. The time series of data is longer, it's useful right now, and it's, I think, a more powerful predictor of abundance.

Q So you have greater confidence in that as a data collecting source?

MR. CAVE: That's correct.

MR. RYALL: My understanding, too, is over this period of time there was some promise from the Area D assessment fishery, "promise" meaning in assessment capabilities, which then has evolved into the Naka Creek test fishery that Jim was just talking about. They're one and the same, but with less vessels, but fishing more days. One of the challenges with the Area D 10-boat assessment fishery was that it was all fishing on one day. Trying to estimate where that 50-point -- the median point was where you see 50 percent of the run. Sometimes you might hit it, sometimes you might be before, which means that you're going to underestimate the run. Sometimes it might be after; you overestimate the run. And that happened a couple of years.

So the other alternative was they reduced the number of boats, increased the number of days to increase the amount of information, but it's only been operating a few years and that's, as Jim says, I would say the jury's out to see just how that's going to perform. But the view coming back from the panel was that there was some promise in this information and let's modify it and then collect more information over a larger timeframe than just a one-day shot that we're kind of guessing where that midpoint might be.

Q All right. So that test fishery that you're describing, either the Area D 10-vessel or the Naka Creek, neither of those are panel-approved test fisheries at the moment; is that right?

MR. RYALL: They are panel approved, is what I understand, for the Naka Creek one. The Area D assessment fishery was not panel approved, which

also -- and goes back to some of the regulatory challenges that we had. So the Naka Creek one is licensed under s. 52. Am I right, Jim?

MR. CAVE: That's correct.

Q All right. Area B Seine and small fleet assessment fisheries in the Strait of Juan de Fuca and Johnstone Strait, are those panel approved fisheries, now?

MR. CAVE: They're not panel approved. These are like the small bite or the assessment fisheries. They'd explored these and, again, there's so few observations that -- and it's tough to evaluate the data.

Q Okay. And the Area E Gillnet test fisheries, the new ones that you've described, have those become panel-approved test fisheries?

MR. CAVE: No, they have not.

Q Okay. Moving to a new topic here, looking at First Nations food, social and ceremonial fisheries and test fishing itself, is there any concern in implementing test fishing that test fishers are permitted to keep and sell their portions of their catch in accordance with their s. 52 licenses at times when there may not be an FSC opening? First, I'll ask that of Mr. Assu; does that raise any concerns for you?

MR. ASSU: If I understood you correctly, the answer would be, "No."

Q Okay. Mr. Ryall?

MR. RYALL: Are you asking me if there's any concerns or concerns being expressed by people that --

Q I'm asking you, does the department have any concerns about that?

MR. RYALL: We view these test fisheries as essential to gather the information to assess the runs as they return.

Q So you don't think there's any concerns there?

MR. RYALL: No, I don't. I think in our Salmon Allocation Policy it does contain the view that I just expressed.

Q All right. Now, if a test fishing -- fish that are retained were to be distributed to First Nations for FSC, is there any logistical problems with that, or concerns in doing that kind of a distribution, Mr. Assu?

MR. ASSU: Yes, I believe there would be. There's a number of agreements just in the Johnstone Strait

corridor, and if I remember correctly, the FSC number for that is, I think, somewhere in the order of 80,000. And with the samples that you're talking about that are harvested on a daily basis, to try and distribute that amongst all of those bands, I mean, how do you decide who goes first and who gets what? I mean, just within the local community with A-Tlegay, we have five bands being represented there with, I think, something like 2,700 people.

Q And how many fish would be retained on a yearly basis?

MR. ASSU: Well, there's 100 a day that are retained for samples. And I want to be clear on this. You're getting a full sample set on years of what I'll say you've got relatively high abundance. In years of low abundance, we've come in, you know, in days with maybe 40 fish on board. Now, part of the reason is because I didn't just get 40 fish for the day. You're making six sets across the entire test fishing area, and out of each one of those sets you'll be taking some samples, ideally 15 to 20 out of every one of those sets, so you're getting a better cross-section of sample.

So the concern I've heard expressed, or when I first encountered somebody floating the idea of maybe the sample fish should go to the First Nations, you know, in years of low abundance, I mean, we're talking very few samples at times, and that is a real problem.

Q Mr. Cave, if there was a change to more in-river fisheries, would that require a change in management from the test fisheries perspective?

MR. CAVE: Probably.

Q In what way?

MR. CAVE: I would suspect that if you were to increase the allocations within the river, you would potentially be looking at test fisheries up river of Mission currently than where you're at. But the question that might be asked is, would you say it would be okay to give up the information gains that you have by conducting these marine programs and then just rely on a terminally-based assessment? We're already looking for more seaward estimates to manage the commercial fisheries and we'd like to, in 12 and in the marine areas now. You'd have those assessments

that are in existing marine areas that go to benefit managing the fisheries in the lower river, now.

One of the most important pieces of information or important analysis that I have been asked to provide Canada is the expectation for escapements at Mission over the next six days. So they use those assessments to manage the fisheries in Musqueam, Tsawwassen, Sto:lo areas, now. So I don't see that information need going away any time soon.

Q So you may need additional test fisheries in the river, but it's unlikely that there would be any reductions in the marine test fisheries?

MR. CAVE: I think that the panel would want to consider that, but at the end of the day the panel doesn't manage those fisheries in-river, either, so that decision may rest, you know, Canada may have greater weight on that decision.

MS. BAKER: Okay. Those are my questions, Mr. Commissioner.

I understand that the order for the cross-examination will be Canada, and then is it Mr. Hickling, and then the Salmon Commission, to start.

MR. SPIEGELMAN: Good afternoon, Mr. Commissioner. For the record, Spiegelman, first initial J., counsel for Canada.

CROSS-EXAMINATION BY MR. SPIEGELMAN:

Q I'm going to be as brief as possible, under the circumstances this afternoon, and I am going to begin by drawing your attention, Mr. Ryall, to Policy and Practice Report 5. And, in particular, paragraph 174, which is on page 68, and I'm just going to make a few factual corrections on the record regarding this PPR. Paragraph 174 reads:

> The Fraser River Panel authorised test fishing is not included in the yearly calculation of TAC.

Mr. Ryall, is that a correct statement?

MR. RYALL: No. Within the chapter 4, annex 4, for the Pacific Salmon Commission, there's a formula for starting with the run size, taking off the

escapement, taking off the test fishery, and then it's -- so what I'm saying is it's included in the TAC calculations. After you take off test fishery and then there's a sharing arrangement between Canada and the U.S., there are some other complications, or not complications, but other aspects that are laid out within the chapter, chapter 4, annex 4.

Q Okay. And moving forward to page 70, paragraph 179, this paragraph reads:

> Until and including the 2006 fishing season, in addition to allowing the sale of fish that were killed during test fishing and that were not needed for scientific purposes, DFO also used to authorise s. 52 license-holders to catch and sell a certain amount of other fish in order to pay for test fishing. The catch and sale of these fish was counted as part of Canada's commercial TAC.

Is that a correct statement?

MR. RYALL: No. Similar to my earlier comments, this would come off before commercial TAC is calculated; that is, that the test fishing that's under section -- or the licence, s. 52, that would come off and not be included within the commercial TAC. Maybe the confusion is, I think I've seen some of these reported within our commercial database, but they're not commercial TAC.

Q Okay. So those fish would come off the international TAC and not be attributed to Canada?

MR. RYALL: Those would come off before the international TAC is calculated.

Q All right. Okay, thank you, that's all I have on the PPR.

Perhaps, Mr. Lunn, you can pull up Exhibit 366. This is the policy that was agreed to bilaterally that sets out the operational parameters for running the test fisheries; that's correct?

MR. CAVE: That's correct.

Q And on page 2 of this document, under number 1, this page 2 has the, it says, the key elements of test fishing operations. And I'll just draw your attention to item number 1, and on the final sentence of that it states that:

Consistency in operation is vital to preserve the integrity of the long term database.

You agree that data consistency is one of the key elements of running a defensible or credible test fishing operation?

MR. CAVE: That's correct.

Q And how is that data consistency objective operationalized in terms of planning and executing a test fishing?

MR. CAVE: Well, the most important feature is that we maintain the effort that is done so that you don't go test fishing one way at one site one year and then do something entirely different another year. So, for example, we've operated a gillnet test fishery in Area 20 since the '70s. We use the same gear, the same fish and the same locations, the same hours every night, and have done so since the '70s. That's what I call a consistent test fishery.

If we do make a change, like we have in the river, where we've gone to different nets, we've made that change with our eyes open, but that said, it's been to get better data, and we don't rely on the -- when we change those nets over to different nets, we knew that -- did that with the understanding that we have the Mission hydroacoustics site, which is our primary estimator of abundance.

So consistency in operation is key. The timeframe is generally we've been fishing under the same timeframe, but if you lose a few days on either of the run, generally that's during low abundance, so maybe there's been some tweaking of the schedule changes. They're small-scale changes. But by and large, that test fishery has been operated and consistent. That's our goal.

When sometimes people want to make a change, that's where I start to resist, because I know that it's a slippery slope and it's hard to get a test fishery back to where it should be if somebody does make a change.

Q And you testified, earlier, also about the importance of the crew actually conducting the test fisheries and their level of expertise with both the area and the gear as being an important consideration.

MR. CAVE: When you make a change, there's a -- in a fishery statistic, there's one called vessel power. Vessel power is a combination of the experience, the skipper, the electronics on the boat, the net, how fast the boat goes. All kinds of things go into vessel power, and it's folded up in the calculation of catchability. So when you do change individuals there are subtle, perhaps hard to measure, changes in catchability that are known. Some guys are better fishermen than others, and that's encapsulated in the term "vessel power". When you change fishermen, it's inevitable that you have -- you're changing that.

Q Right. And so the idea of adding a new test fishery location or changing the way one is operated, that will impact your decision, or that will impact the data quality and, for example, the first couple of years you run a new test fishery location, there won't be any value added by that date if there's a period of breaking in; is that correct?

MR. CAVE: That's correct.

Q And you stated in your evidence, earlier, that from your perspective, you're always looking for more data?

MR. CAVE: That's correct.

Q And every additional fish within a run that you can catch in a test fishery operation will reduce the uncertainty?

MR. CAVE: That's correct.

Q But clearly there's a line to be drawn somewhere between catching all the fish in one extreme in a test fishing, so you know exactly how many fish there were, and foregoing any other purpose for the fish, either spawning or harvest, and on the other hand, going too far the other way and not doing enough test fishing; you've got to try and find that balance somewhere?

MR. CAVE: That decay in the increase in information can actually be quantified, would fit some sort of a decay function.

Q So as you conduct more test fishing operations, you reduce that uncertainty, but clearly there's an incremental cost to every day, every boat you send out into the water to do test fishing?

MR. CAVE: That's correct.

Q And the Pacific Salmon Commission administers the

contracts, but they don't actually pay for the -- they don't fund, out of their own purse, the cost of these test fishing operations; is that correct?

MR. CAVE: That's correct.

Q And so there's a value, from your perspective, of a challenge function, in this case offered by Canada, to test the validity and make sure that every dollar spent on test fishing is appropriate under the circumstances?

MR. CAVE: Yes, and I will add to that. I've been through inquiries since 1992, and every one of them deals with our ability or inability to estimate run size or estimate abundance. Those inquiries cost a lot of money, and we're in one right now. Whether it's right or wrong, that discussion is personal. It's my rear-end out there that generates these estimates, and sometimes I'm wrong, and sometimes I'm very wrong. So you can understand where I'm coming from when people say, "Why were you wrong, Mr. Cave, in 1994, when you were estimating the abundance of late run sockeye to the Gulf?" Well, I was wrong because I didn't have the tools, or I was too arrogant to understand or think that I knew more than I actually did. And so I really do believe in the concept of understanding uncertainty and taking steps to minimize that.

So part of what drives me, and I will always ask for more, and I will never have enough. So that's kind of where I come from, and I'll be doing that for the next two years, probably.

MR. SPIEGELMAN: Thank you. Those are my questions.

MR. HICKLING: For the record, my name is James Hickling, spelled H-i-c-k-l-i-n-g, and I'm counsel to the standing group which is comprised of the Laich-kwil-tach Treaty Society, the Aboriginal Aquaculture Society, and Chief Harold Sewid.

CROSS-EXAMINATION BY MR. HICKLING:

Q The Commissioner asked what is a test fishery, and Mr. Assu, I think you're the only person in the room who has actually conducted test fisheries. I wonder if you could briefly describe what actually happens on the deck of a test fishery vessel?

MR. ASSU: Well, we make six sets a day throughout the test fishery, and throughout those six sets the

samples are generally being done with the observer and the crew. At the end of the day, they bring all of the samples, usually into the airport in Campbell River.

Q So when you set your net, you pull the net in, and then you count the fish that are in the net. How do you go about doing that?

MR. ASSU: Well, we release them either from the side of the boat, depending on the size of the set, or off of the stern, or we let them go over what's called our gable, and they just automatically swim out on their own. And the observer is counting, along with another crew member, especially when you have a year like this upcoming year where you've got lots of pinks and sockeye in the set.

Q So they're using counting mechanisms to --

MR. ASSU: Yes.

Q -- keep track of the fish as they leave the net?

MR. ASSU: Yes.

Q And to distinguish between different species?

MR. ASSU: Yes.

Q And have you ever tested the accuracy of that counting method?

MR. ASSU: I can't remember if it was 1995 or '97, Carmen McConnell actually did that, I think it was for a period of four weeks he was on the boat, and he would ask every one of us, individually, what we actually thought was in the set before we'd count them out and then, at the end of the day, he gave us a summary report on it that we were actually hitting 95 percent on our estimation.

Q And Carmen McConnell's a DFO technician?

MR. ASSU: Technician, yes.

Q I've got a question about how contracts are allocated to test fisheries in the marine test fishery, and I think this might be best answered by Mr. Ryall. So you use a competitive bidding process?

MR. RYALL: There has been a competitive bidding process. Generally, the test fishery has been -- or the contract, excuse me, has been awarded for four years, I think.

Q So you put them out to tender and you receive multiple bids?

MR. RYALL: That's right.

Q And cost would be one of the criteria you use. Can you speak to the other criteria?

MR. RYALL: Some of the other criteria would be the ones that Jim was talking about, about experience of the skipper, the type of vessel. You're looking for someone that has a lot of experience fishing in that area, well respected within the fishing community, that they're a good fisherman, that they have a good vessel, have the appropriate gear, the appropriate safety equipment. So when you're assessing these, you go through a ranking of who submitted bids.

Q And focusing on the marine test fishers, do you know what proportion of those test fishers are First Nations people?

MR. RYALL: I can't answer that question, no. I have not been involved in, well, probably 20 years, in looking at those sort of things, so I can't help you on that.

Q Mr. Cave?

MR. CAVE: Well, Brian's First Nations, and I think the two individuals who run the seine boats, Norm Stauffer and Gordie Watson, they're both First Nations. I think the two gillnet people in Round Island are not. One is, okay, correction. And we have, ourselves, we charter the Sumas -- some members from the Sumas Band to do the test fishery at Mission. And we have a tribal test fisherman in Area 5 in the U.S.

Q So those contract allocations are made on the basis of experience and reliability, and they're not a concession to First Nations people for the priority of Aboriginal rights?

MR. CAVE: Well, I think Brian Assu may be the finest test fisherman I've ever worked with. And it doesn't matter to me the colour of the individual's skin or their background. We need good people. So, no, there's been no attempt to say, "We have to hire a First Nations person here." No, the best fishermen in Johnstone Straits, it turns out, are usually First Nations fishermen.

Q Okay, I have a series of quick questions about the administration of the test fishing or, if you want, the assessment fishing that was conducted by the First Nations Marine Society and the A-Tlegay Fisheries Society, so these are directed to Mr. Assu. Am I right in saying that the First Nations Marine Society and the A-Tlegay Fisheries Society

perform similar functions?
MR. ASSU: Yes. After the Marine Society closed its doors, A-Tlegay took over the coordinated fishery portion from there, basically just to try to ensure that whatever bands required the help, that we could give it to them, just by introducing them to the various fishermen in our area that were interested in doing that.
Q And the First Nations Marine Society, did it use the e-log technology?
MR. ASSU: Yes, it did. Because we had it on board the test boats, we thought we'd try it, and it did, it worked great. It was a good system.
Q How many First Nations members were in that First Nations Marine Society, and how many are in the A-Tlegay Fisheries Society?
MR. ASSU: Well there's five bands in A-Tlegay. The First Nations Marine Society, I think there was something like 14 to -- it varied between 14 and 18 bands at times. It changed from year to year.
Q And just in terms of the administration of those organizations, how do you establish the mandate for those types of organizations?
MR. ASSU: Well, what ended up happening, as far as the Marine Society was concerned, we did receive a small amount of AFS dollars to help coordinate the FSC fishery. But then along came AAROM, and AAROM required us to have a BCR from each individual First Nation in order to make the application and receive funding.
Q I understand the First Nations Marine Society test or assessment fishery ended in 2006?
MR. ASSU: Yes.
Q And was that because the Marine Society closed its doors?
MR. ASSU: No, not at that time. The test fishing component of the coordinated fishery was dropped. It became more just for the boats just to try to harvest as quick as they could on the largest abundance that they could work on. And we still supplied DFO with the catch information on a daily basis.
Q A-Tlegay does?
MR. ASSU: And A-Tlegay does that, also.
Q Right. I understand that the FSC fishery moved from a more structured test fishery body to seeking out the abundance. Is it the same with

other types of assessment fisheries, like the commercial small bites, do they go out -- do those boats go out and seek the abundance and see what they can get in a short opening? In other words, is the Marine Society's test fishery equivalent to the commercial assessment fishery?

MR. RYALL: No, I don't think they're quite equivalent. The Marine Society tests -- I would call it a test fishery in that there was a couple of boats that were trying to collect the information. And then maybe where your analogy is more accurate, is where there was more boats going out doing FSC fishing, was also supplying some information that maybe that was more similar to an assessment fishery.

Q Right. And Mr. Assu, why did the Marine Society end up closing its doors?

MR. ASSU: Basically, it was politics. There was a large range of bands starting up in Port Hardy, down through mid Vancouver Island, there was ourselves, and then down in the south. The real breakdown was through the introduction of the AAROM dollars and what was trying to be done under AAROM, bringing a large aggregate First Nation body together, and it was just impossible. We've got a number of Douglas Treaty Bands on the east coast of Vancouver Island, and we've got a number of groups already established, like A-Tlegay, that are already working together, and it really did make the job of trying to bring the aggregate together impossible.

Q Just a couple of points of clarification. So A-Tlegay doesn't run a test fishery, but you do catch monitoring through your FSC fishery?

MR. ASSU: Yes, we do. We've done catch monitoring, and I think we've had the database for FSC fishery now, I think it's been since 1999.

Q And you provide that data to DFO. And is the data used in any management decision-making processes?

MR. ASSU: I don't know.

MR. RYALL: Well, as far as assessment goes, I would say, "No." But as far as getting improved catch information, it's certainly the objective of DFO, and I say the work that the Marine Society and A-Tlegay has done has furthered meeting that objective, getting that information in a timely fashion and improved information.

Q Mr. Assu, does A-Tlegay use the e-log system?
MR. ASSU: Yes, they do. And the way that's used, it's not installed on all of the private vessels; it's on our two guardian vessels, who are on the grounds during the fishery, and they take hails and they send in the information from the grounds. And it helps us in a number of ways. We know how many observers we need to have down at the dock when they come in, because we are guardians, validate the catch as it's going out and distribute it accordingly across all five nations.
Q Okay. I just have one more question about funding. I wonder if there's a role for pre-***Larocque***-type funding arrangements in the test fishery, today; for example, in years of high abundance?
MR. RYALL: I'm sorry, I didn't follow your question.
Q I wonder if you can use, in years of high abundance, if you can use sale of fish to help fund test fisheries or other programs?
MR. RYALL: No. The decision that came down out of the ***Larocque*** is that the minister did not have authority to use sale of fish to fund test fishing.
Q Right. But if there was a change in legislation or regulations?
MR. RYALL: Yes. I'm sorry, that was when I misunderstood you. That was one of the options that I was talking about earlier, what one could explore. One could look at going back and changing the legislation to use of fish --
Q Right.
MR. RYALL: -- is one of the things that could be done, but that would require change to legislation.
MR. HICKLING: Those are my questions.
THE COMMISSIONER: Just to follow up from Mr. Assu. You talked about the counting of the fish. What is the process for the selection of the samples?
MR. ASSU: When we're releasing the catch, we take the -- actually the last, probably, when we think 15 to 20 is there in the net, that's the one we take aboard. We've had a large debate amongst ourselves and observers, and Carmen McConnell, in particular, because we used to actually dip net them out. You'd get two or three in a dip net at a time. So the debate was around whether or not that was being selective, and found it better just

to take the sample just with what remains.
THE COMMISSIONER: And you mentioned you take to the Campbell River Airport. Those would be the fish you take to the Campbell River Airport?
MR. ASSU: Oh no, just the samples, the DNA samples, the scales, just what's being taken off of the fish is actually taken to the airport.
THE COMMISSIONER: Okay. And where is that done?
MR. ASSU: The sample is all done aboard the boat.
THE COMMISSIONER: Everything's done aboard the boat?
MR. ASSU: Yes.
THE COMMISSIONER: And it's done by DFO...?
MR. ASSU: Observer, yes.
THE COMMISSIONER: Right.
MR. ASSU: And the actual fish will actually go into a buyer. They send a packer out every second day to pick up the -- if there's 200, if you've managed to --
THE COMMISSIONER: I see.
MR. ASSU: Yes.
THE COMMISSIONER: I see. Thank you. I'm sorry, you had something to add?
MR. HICKLING: And just to follow up on that:
Q The buyer credits the value of the fish to your account, and then Pacific Salmon Commission deducts that from the contract payments?
MR. ASSU: Yes, that's right.
Q So the Pacific Salmon Commission receives the benefit of the sample fish?
MR. ASSU: Yes.
MR. BOYAR: It's Tam Boyar, B-o-y-a-r, first initial T., counsel for the Pacific Salmon Commission. I just have a point of clarification for Mr. Cave.

CROSS-EXAMINATION BY MR. BOYAR:

Q Test fisheries data is used for the purposes of in-season assessments as distinguished from pre-season forecast or post-season assessments; is that correct?
MR. CAVE: That is correct, yes.
Q And can you just briefly, in general terms, describe the importance of in-season assessments?
MR. CAVE: We have a pre-season forecast, as I think there's been some discussion on this, and there's also a pre-season planning where they come up with escapement of goals based on that pre-season

forecast. But we know, and I'm sure everyone knows in this room, that we get an entirely different result once we start getting into the season. We start actually collecting the data. The pre-season forecast isn't forgotten, it's actually kept in the back of our minds. It's used as a standard by which we measure how we're achieving in-season.

So we collect data in-season. That includes our stock identification program, our hydroacoustics program, our test fishing program, and the collection of commercial catch and other catch data outside of our own programs. So test fishing is one of those pillars, I guess, in our in-season assessments.

Without test fishing you don't have an indication of which stocks are migrating at what strength, and without test fishing you don't know what the proportion of sockeye are in the salmon that are migrating upstream. So all you would have would be catch data, which would be known as sockeye. And you can't translate -- you will not know how you are doing in your conservation objective unless you go test fishing and break down that daily estimate of salmon passage into sockeye and then, within the sockeye, the different component stocks which make up, our understanding, and I guess you could break it down further into CUs, but we're not able to do that with our in-season methods right now.

On top of that, we're estimating how many fish are en route from our test fisheries, from the marine test fisheries, before they reach Mission. So we break down the Mission escapement into the Chilko migration.

On top of that, we add the catches, which come -- which are broken down to Chilko, based on the sampling of those catches. Then we're also making projections of what is coming in between Mission and those seaward assessment areas. That comes entirely from test fishing. Without test fishing we wouldn't get very far in our in-season salmon management. It would be impossible. And in order to conduct those test fisheries, fish are sacrificed; they are killed. It would be difficult to do otherwise.

MR. BOYAR: Thank you.

MS. BAKER: The next counsel would be Mr. Leadem.
THE COMMISSIONER: Mr. Leadem, unless you're going to be just five minutes, I prefer to give you tomorrow morning, if that's...
MR. LEADEM: I think I can finish in five minutes, thank you, Mr. Commissioner.

CROSS-EXAMINATION BY MR. LEADEM:

Q In part, this is hopefully to address a question that the Commissioner asked, but I am going to suggest to you that the main purpose of a test fishery is to answer this question: How many fish can be harvested commercially while still ensuring that sufficient fish are available for conservation purposes and for FSC; would you agree with me, that that's the main purpose of test fisheries?
MR. RYALL: I would not agree with that assessment. I would say that the test fisheries provide information for all fisheries and to -- I was talking about, earlier, how we're going to meet our conservation objectives, how we're going to meet our international obligations, how we'll meet our FSC obligations and, as well, as you point out, commercial?
Q Would you agree with that proposition, Mr. Cave?
MR. CAVE: Could you repeat that for me, again, so I hear all of the elements of that, please?
Q Sure. How many fish can be harvested, commercially, while still ensuring that sufficient fish area available for conservation purposes and FSC?
MR. CAVE: I look at it, the purpose of test fisheries are primarily to get a better understanding of the total return of stocks. And once you get those into the individual stock components, you can then reassess your escapement targets, because those escapement targets change with run size. And the TAC ultimately flows from that.
Q Okay.
MR. CAVE: But it's not strictly to estimate the commercial TAC. I think it's to get ourselves to a different point than the pre-season forecast. Without test fisheries, okay, we would have gone -- and if we had ignored everything, we would have gone fishing in 2007 and 2008 and 2009, and

if we would have put our blinders on, we would have had to go fishing to understand the run was small without those component programs, like Mission hydroacoustics and test fishing.

As it was, those commercial fisheries were never opened, so it's not just to get nets in the water; it turned out that it got nets from going into the water in those years.

Q All right. I appreciate that. Do you have any views on this, Mr. Assu?

MR. ASSU: I guess the only thing I'll say about it is I have always viewed the test fishery as being key to all users. It's been very noticeable in the most recent years when it's kind of unusual to see the recreational fishery actually closed down, and they're desperate to see the test fishery start to perform, because they know then they're going to open up.

MR. LEADEM: Thank you. Those are my questions, Mr. Commissioner.

MS. BAKER: Mr. Commissioner I guess we need to just talk quickly about scheduling. Tomorrow, we were planning to do a panel on decision-making, so we had three witnesses coming for that, and I had hoped to also have two witnesses, short witnesses, on stock assessment in the afternoon. It's important that we keep that decision-making panel going ahead tomorrow, because of scheduling of those witnesses. However, I don't think we will need the whole day for it, so, on balance, I don't know if my friends -- the people I've noted who have indicated they are going to cross-examine these witnesses are Ms. Gaertner, Ms. Fong, and Mr. Dickson, so I wonder if they could just give me an idea of their time estimates, and then we can decide if it makes sense to just continue these witnesses in the morning, which I think would be my preference, if we could limit it to a short amount of time.

Ms. Gaertner, what is your estimate for tomorrow?

MS. GAERTNER: My estimate is the same.

MS. BAKER: Which is 15.

MS. FONG: (Inaudible - away from microphone).

MS. BAKER: Fifteen and...?

MR. DICKSON: I'll just be five, maybe maximum 10, but probably five.

MS. BAKER: Five. And I think that's everybody in the room. So that would be a half hour, roughly, in the morning. I think I prefer -- 45 minutes, my friend whispers to me. If we can keep it at around sort of half an hour, that would be great, and that would be my preference, I think, to come back and complete these witnesses before we start the decision-making panel, and if we have to make an adjustment on the two stock assessment witnesses in the afternoon, I think I would prefer to do that.

And one other point is that we had, on our hearing schedule, a tentative counsel meeting tomorrow, but we won't be proceeding with that, because we had the one last week. So we're not going to proceed with that tomorrow morning. We'll start at 10:00, I think, with these witnesses, then.

THE COMMISSIONER: I am going to further complicate your life, Ms. Baker. I think I mentioned to you last week that I have a commitment tomorrow morning at 9:00. I should be here by 10:00, but I don't want to keep counsel waiting around. I think I would like to err on the side of a 10:15 start, just so I don't have counsel standing around, waiting for the start time. And the same thing on Wednesday morning. I have another commitment at 9:00 on Wednesday morning. Again, I'm hopeful it will all be in place so I can be here at 10:00, but I just don't want counsel waiting around.

MS. BAKER: All right. Is there any opportunity, on either of those days, to make up those 15 minutes, either at lunch or at the end of the day?

THE COMMISSIONER: Tomorrow for sure not. I'm not sure about Wednesday, but tomorrow for sure not.

MS. BAKER: Okay.

THE COMMISSIONER: No, I can't do it at lunch on Wednesday. I have a meeting at lunch on Wednesday, but tomorrow I can't sit later than 4:00.

MS. BAKER: Okay. And Wednesday possibly we could sit a little bit later, if we needed to?

THE COMMISSIONER: I believe so, but I can't recall now. I'll just have to check.

MS. BAKER: All right. Now, we had also tentatively suggested to counsel we might start at 9:30 on

Thursday to deal with Mr. Patterson's evidence, and I don't know if we've confirmed that with you, Mr. Commissioner.

THE COMMISSIONER: Yes, I'll check again.

MS. BAKER: Okay.

THE COMMISSIONER: I'd forgotten about that.

MS. BAKER: All right. Okay, well, we'll start tomorrow at 10:15 --

THE COMMISSIONER: Yes, okay.

MS. BAKER: -- and we will start with these witnesses and hopefully be done in half an hour, if possible. Sorry, is that a problem for somebody in the room?

MR. RYALL: It's a bit of a challenge for me. I have something that will be a challenge to move that I've already scheduled. I didn't think I was needed tomorrow, and it starts at 9:00, and I think it might go till as late as 10:30.

THE COMMISSIONER: Well we could start the panel at 10:15 and --

MS. BAKER: And Mr. Ryall could just join us.

THE COMMISSIONER: -- Ms. Gaertner or whomever, and when Mr. Ryall joins us, we could have him questioned as well, unless Ms. Gaertner has another suggestion?

MS. GAERTNER: Well, I'll just add to the complexities. If I'm starting tomorrow morning, my questions are primarily for Mr. Ryall.

THE COMMISSIONER: All right. Well, then we could perhaps work with counsel to reverse that around so Ms. Gaertner can have her opportunity to question Mr. Ryall.

MS. BAKER: Ms. Fong, are your questions directed to Mr. Cave or Mr. Ryall?

MS. FONG: (Inaudible - away from microphone)

MS. BAKER: Yes, that's one possibility, that we could start with the decision-making panel, as scheduled, and then have these witnesses come back in the afternoon. Is that possible?

THE COMMISSIONER: That looks like it might work a bit better --

MS. BAKER: Okay.

THE COMMISSIONER: -- so that all counsel will have a chance --

MS. BAKER: All right.

THE COMMISSIONER: -- to ask questions of the witnesses they want to ask questions of the witnesses they

want to ask questions of.
MS. BAKER: Yes. We'll work it out with the witnesses --
THE COMMISSIONER: All right.
MS. BAKER: Okay, thank you very much. So that at least gets us for 10:15 we know what we're doing.
THE REGISTRAR: The hearing is now adjourned for the day and will resume at 10:15 tomorrow morning.

(PROCEEDINGS ADJOURNED AT 4:32 P.M. TO TUESDAY, FEBRUARY 1, 2011, AT 10:15 A.M.)

I HEREBY CERTIFY the foregoing to be a true and accurate transcript of the evidence recorded on a sound recording apparatus, transcribed to the best of my skill and ability, and in accordance with applicable standards.

Pat Neumann

I HEREBY CERTIFY the foregoing to be a true and accurate transcript of the evidence recorded on a sound recording apparatus, transcribed to the best of my skill and ability, and in accordance with applicable standards.

Susan Osborne

I HEREBY CERTIFY the foregoing to be a true and accurate transcript of the evidence recorded on a sound recording apparatus, transcribed to the best of my skill and ability, and in accordance with applicable standards.

Diane Rochfort

I HEREBY CERTIFY the foregoing to be a true and accurate transcript of the evidence recorded on a sound recording apparatus, transcribed to the best of my skill and ability, and in accordance with applicable standards.

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Karen Hefferland