



**“When You Talk - We Listen!”**



MACKENZIE VALLEY LAND AND WATER BOARD

NORTHWEST TERRITORIES POWER CORPORATION

MV2019L1-0001

TECHNICAL SESSION

Facilitator

Chris Hotson

HELD AT:

Yellowknife, NT

May 2, 2019

Day 1 of 1

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APPEARANCES

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Rick Walbourne ) GNWT - ENR  
Heather Beck (by phone) )  
Nahum Lee (by phone) )  
Anne Wilson (by phone) ) ECCC  
Eva Walker (by phone) )  
Georgina Williston )

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1		LIST OF INFORMATION REQUESTS	
2	No.	Description	Page No.
3	1	Can NTPC provide a list of the	
4		parameters that the sump water,	
5		after being pumped through an oil-	
6		water separator, is analyzed for?	
7		Can NTPC clarify what criteria the	
8		sump water must meet prior to	
9		discharge at the City of Yellowknife	
10		Sewage Disposal Facilities?	58
11	2	Can NTPC clarify their response to	
12		ECCC Comment No. 8: "In the 2018	
13		calendar year, an average of 3,000	
14		gallons/month was circulated to the	
15		lake, with individual monthly volumes	
16		ranging from 2,705 gallons in March	
17		to 3,565 gallons in July."	76
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1 --- Upon commencing

2

3 THE FACILITATOR: Good morning,  
4 everyone. The bathrooms are strict -- straight out  
5 the door and to the left. We'll be having breaks  
6 periodically throughout the day as required. There's  
7 refreshments at the back of the room.

8 I think that everybody has signed the  
9 sheet but, if you haven't, please make sure you get to  
10 our sign-in sheet.

11 If you're interested in the password,  
12 it is 'bookdirect,' all lowercase, no spaces then a  
13 'N' and then the word 'save.' Again, no spaces and  
14 lower case. That's the password for the Wi-Fi.

15 For those online, thank you for joining  
16 us. The presentation that is going to be put on by  
17 NTPC is available on the ORS and on the registry so  
18 that you should be able to get those and follow along.

19 This is a technical session. The  
20 technical session, just be clear, and make sure  
21 everybody's here for the right meeting is for NTPC's  
22 Type A Water Licence for jackfish, if not, at least  
23 you got a free coffee and you can be on your way  
24 Everybody wants to leave; that's not a good sign.

25 The other -- the other thing to mention

1 is that we are recording these discussions and the  
2 discussions -- the intent of them is to make sure that  
3 there's dialogue and working towards consensus on  
4 outstanding comments and concerns that were made  
5 during the review period of the license application.

6           And when you do speak, if you're not  
7 familiar, just press -- when you press the button make  
8 sure you state your name before you speak. We're not  
9 being interpreted this morning. We have no need for  
10 that. So we do have a couple of signs up here that we  
11 do wave occasionally. If you don't say your name,  
12 we'll let you know to remind you to say your name and  
13 if you don't -- get speaking too quickly we won't have  
14 to use it but we'll give you the slow down signal  
15 here.

16           So just remember that there is a -- a  
17 person working, transcribing this, and so if we get a  
18 little too quick and -- and too back and forth without  
19 taking a break and -- and stating our name, it makes  
20 it very difficult for them to get through transcribing  
21 our conversations.

22           So with that, I would like to just do a  
23 roundtable of instruct -- introductions. We'll start  
24 with the people in the room and then go to the people  
25 online. Start with Board staff to my left.

1 MS. HEATHER SCOTT: Heather Scott,  
2 Senior Technical Advisor with the Board.

3 MS. TYREE MULLANE: Tyree Mullane,  
4 Regulatory Specialist with the Board.

5 MS. KATHERINE HARRIS: Katherine  
6 Harris, Senior Technical Advisor with the Board.

7 MS. ERICA JANES: I'm Erica Janes,  
8 Regulatory Specialist with the Board.

9 MS. KIMBERLY MURRAY: Kimberly Murray,  
10 Regulatory Specialist with the Board.

11 MS. EILEEN HENDRY: Eileen Hendry,  
12 System Control Manager for the Northwest Territories  
13 Power Corporation.

14 MR. COLIN STEED: Colin Steed,  
15 Director the Hydro Division, Northwest Territories  
16 Power Corporation.

17 MR. MATTHEW MILLER: Matt Miller,  
18 Senior Environmental Licensing Specialist with NTPC.

19 MS. TAMARA DARWISH: Tamara Darwish,  
20 Aquatic Biologist with Golder Associates.

21 MR. ZSOLT KOVATS: Zsolt Kovats,  
22 Aquatic Ecologist with Golder Associates.

23 MR. DAMIAN PANAYI: Damian Panayi with  
24 Golder Associates.

25 MS. GEORGINA WILLISTON: Georgina

1 Williston, I'm head of Environmental Assessment North  
2 in the Northwest Territories, Environment and Climate  
3 Change Canada.

4 MR. RICK WALBOURNE: Rick Walbourne,  
5 Acting Manager for the Water Management and Monitoring  
6 Division with GNWT ENR.

7 THE FACILITATOR: So that completes  
8 the introductions around the table. Can those joining  
9 us by phone, please pipe up with your name and  
10 organization.

11 MS. ANNE WILSON (by phone): Anne  
12 Wilson, ECCC.

13 MS. EVA WALKER (by phone): Eva  
14 Walker, E -- ECCC.

15 MS. HEATHER BECK (by phone): Heather  
16 Beck, Water Resource officer, and Nahum is going to be  
17 coming in after his appointment.

18 THE FACILITATOR: Can the last person  
19 online, just please repeat. We -- we couldn't make  
20 out much of what you said.

21 MS. HEATHER BECK (by phone): Heather  
22 Beck, Water Resource officer with the (INDISCERNIBLE),  
23 and Nahum is going to be coming in. He just has an  
24 appointment.

25 THE FACILITATOR: Great. Thank you,



1 Heather. Welcome everyone online. Eva, are you out  
2 of town or you just didn't want to make the walk this  
3 morning? It is cold -- it's a cold spring morning,  
4 so.

5 MS. EVA WALKER (by phone): I'm -- I'm  
6 teleworking actually.

7 THE FACILITATOR: Okay. Well, we're  
8 glad you can make it.

9 So the agenda is broken out today.  
10 There -- just to remind everybody there should be  
11 comment tables around the room, and agendas, if you  
12 don't have one just give a wave and we'll make sure  
13 you get one.

14 It's broken out by -- by topic and sort  
15 of comments that were grouped together from the  
16 registry. We'll try and work through it. It is a  
17 guideline. We're not really tied to those times. If  
18 we need a little more for -- for some items, we'll use  
19 it, and if -- if we don't need it we'll move on to the  
20 next -- the next issue.

21 We're going to start the day with a  
22 presentation from NTPC. And with that, I'll turn the  
23 board over -- or the -- the mic over to NTPC.

24

25 PRESENTATION BY NTPC:

1 MR. MATTHEW MILLER: All righty.  
2 Thank you very much. It's Matt here from NTPC and --  
3 and we'll go to our presentation with everyone. Can  
4 everyone hear me all right? Okay.

5 All right. So we got the slide up on  
6 the back there and we'll go through the slides and  
7 I'll give you some explanation why.

8 So as -- as we just discussed, we're  
9 here for the Type A Water Licence Renewal for the  
10 Jackfish Generating Station in Yellowknife.

11 So just a brief overview of -- of our  
12 presentation here, we're going to give you a brief  
13 introduction, provide some background on the facility,  
14 provide a high-level overview of some operational  
15 details, cooling system details, and operational  
16 details for the whole facility, and whole electrical  
17 grid actually, provide some detail on engagement, tell  
18 you about some monitoring that we have completed, and  
19 tell you about some monitoring that we're proposing.

20 So again, our objective through this  
21 process is to renew the Type A Water Licence for  
22 Jackfish Generating Station that we hold with the  
23 Mackenzie Valley Land and Water Board, and we  
24 currently have a water licence with the Mackenzie  
25 Valley Land and Water Board, N1L1 1632, and that

1 expires on December 31st, 2019, and that's why we are  
2 going through this process to renew.

3                   And as we know, this is the technical  
4 session, so this is a forum for discussion for the  
5 technical aspects of the water licence, and we're  
6 looking forward to see what we discuss today.

7                   So we just did the -- the  
8 introductions, so I won't even really stay on this one  
9 too long, but we have three (3) NTPC staff here, we  
10 have three (3) Golder: Colin, Eileen, myself, Tamara,  
11 Zsolt, and Damian as well, and, yeah, that's that --  
12 the team that we have here today.

13                   So we'll will start with the North  
14 Slave power system. So what's different from some  
15 electrical grids in the south is that this is -- in  
16 the NWT -- this is an isolated system, so there is  
17 back-up power that needs to be provided, and it's not  
18 connected to a -- a continental grid, say if we were  
19 in a province down south.

20                   So this gives an overview of the  
21 system. We don't want to go into it in too much  
22 detail, but it is important to set the stage for why  
23 the Jackfish facility exists. So you can see at the  
24 top there's Snare. So Snare is four (4) Hydro  
25 facilities in Cascade. There's the Rapids, Falls,

1 Cascades, and Forks, and that's about twenty-eight  
2 (28) megawatts of power. So that then runs down the  
3 L-199 line, which takes a left, goes over to Behchoko  
4 as well, so that provides power to Behchoko,  
5 Yellowknife, Dettah, and N'Dilo.

6                   And as part of that system, we also  
7 have Bluefish, which you can see over there, which is  
8 about six (6) megawatts, and then, yeah, and then  
9 there's a substation where all meets. So as part of  
10 that -- in the bottom is all of the Jackfish  
11 generators, and we'll get into that in a little more  
12 detail, but really what's important to see here is  
13 that the Jackfish system is used as a back-up power  
14 system because we're on our own.

15                   We don't have a grid, so if -- if that  
16 L-19 line goes down or we have to shut down one (1) of  
17 the facilities for maintenance, we still have to  
18 provide power to Yellowknife, N'Dilo, Dettah, and  
19 Behchoko.

20                   So that's basically at a very, very  
21 high level why the Jackfish facility exists. So it's  
22 used during periods of peak power demand, during Hydro  
23 maintenance shutdowns, or when Hydro is not available  
24 during the loss of that transmission line.

25                   And something to note too is the

1 capacity of the Jackfish facility is required by the  
2 Public Utilities Board, so we're required to have a  
3 certain amount of electrical generation capacity to  
4 ensure that if that line goes down, that facility can  
5 provide power for the customers up on that board.

6           So the facility itself, so you can see  
7 it's star there. It's on the north -- northeast shore  
8 of Jackfish Lake, sorry, and it -- lake has also been  
9 referred to as Stock Lake, but it is referred to  
10 Jackfish Lake as well, and that's what we call it,  
11 and again it's a back-up power generation for the  
12 North Slave electrical system.

13           So you can see there it's within the  
14 city limits of Yellowknife, it's northeast of the  
15 airport, northwest of downtown, and north of Frame  
16 Lake there too.

17           So as you mentioned, it's diesel  
18 generation. So there's three plants. You can see  
19 them along the lake there, there's the CAT Plant, the  
20 EMD Plant, and the K Plant, and that's moving from  
21 front to back. And there's also modular units in the  
22 back. The modular units do not use lake water to  
23 cool, so they're not part of the water licence, but  
24 they are part of the electrical generation make-up.

25           And the cooling systems for the diesel

1 generation within the plants uses water from Jackfish  
2 Lake, so that's why we have to have a water licence,  
3 because we are using water from the lake to cool the -  
4 - the generators.

5                   So again, there's three (3) plants.  
6 You can see on the slide here, it's a rough kind of  
7 slide, but you can see there's an intake and -- and a  
8 discharge for each plant.

9                   For K Plant, there's actually two (2)  
10 intakes, so the intakes are at the bottom. They're a  
11 grate at the bottom of the lake and the discharges are  
12 a pipe that are either on the surface or near the  
13 surface of the lake, and the water is used for cooling  
14 only, so it's a -- it's a separate system. We don't  
15 add anything to it. We just use it for cooling  
16 through heat transfer.

17                   So the first thing and the -- the  
18 oldest plant is the K Plant. If you look there,  
19 there's a -- a fairly old photo from 1978. There's  
20 actually -- there was a paving lot in the vicinity of  
21 the facility again, but -- so yeah, it was built in  
22 1969, it was expanded in 1988, and it consists of two  
23 (2) Mirrlees generators that are rated at five  
24 thousand (5,000) kilowatts each. Only one (1) of  
25 those is in service at this time, but, yeah, this is

1 the oldest plant and the oldest generators.

2                   And if you see -- okay. So then this  
3 is a -- just a rough diagram of the cooling system,  
4 again very rough, but it just shows the two (2)  
5 intakes. There is a separate pump house and a  
6 separate well for the K Plant, and there's four (4)  
7 pumps. They pump the -- the water through the system.  
8 There's the two (2) diesel units, and then back out to  
9 the lake. And there's a photo of the four (4) pumps  
10 on the right there.

11                   So the EMD Plant was built in '74. It  
12 was also expanded in 1998. It has four (4) generators  
13 in it. Two (2) are rated at twenty-five hundred  
14 (2,500) kilowatts, and two (2) are rated at twenty-  
15 eight fifty (2,850) kilowatts.

16                   And here's a quick diagram of the set-  
17 up of the EMD Plant cooling system. So there is no  
18 well in the EMD Plant. It's just the pumps are in the  
19 basement. They pull the water right from a -- a pipe,  
20 there's three (3) of them, and then they send them  
21 through the system, there's the four (4) diesel units,  
22 and then back out to the Lake. And there's a photo of  
23 the four (4) pumps on the right there too.

24                   So the CAT Plant is the newest plant.  
25 These are -- they're larger generators. There's two

1 (2) of them. They're rated at twenty-seven hundred  
2 (2,700) kilowatts each. And there's the set-up of the  
3 CAT Plant cooling system. There is a well but it's  
4 within the power house. There's three (3) pumps, and  
5 then there's the two (2) diesel units.

6 And just to let you know too, the pumps  
7 -- at least one (1) pump is always running, so we're  
8 always pumping water through to avoid freezing in the  
9 pipes. So that's another piece of information too.

10 So as far as mitigation for -- for  
11 temperature or in -- in the lake, I think -- or even  
12 just use of -- of the facility in general, at a very,  
13 very high level, we wanted to kind of start with the  
14 whole operational approach for the North Slave Power  
15 System, and Colin and Eileen can expand on this later,  
16 is to maximize Hydro input or output, but Hydro  
17 output/generation and minimize diesel use.

18 Diesel is expensive. So we don't want  
19 to use diesel, we want to use Hydro. So we don't want  
20 to use Jackfish. We only use it when we absolutely  
21 have to, as required by the PUB or as required by a  
22 maintenance shutdown or whatever that may be. But we  
23 just wanted to point out that this is not primary  
24 generation, it's secondary and backup.

25 So if you look on the slide there, that



1 is the -- the generation for 2017 and '18. The dark  
2 blue at the bottom is Snare, the light blue is  
3 Bluefish, and the orange is Jackfish and there's a  
4 little sliver that you can barely see that is the  
5 Frank (phonetic) channel diesel, but that's not even  
6 really there. But anyways, you can see dies -- it --  
7 overall diesel is relatively small makeup of our  
8 generation.

9                   And we also use heat recovery systems  
10 in the plants. So, various units throughout the  
11 plants have heat recovery to take recoverable heat off  
12 and we use it in the plants, administration buildings,  
13 and warehouses. So we wanted to point that out as  
14 well.

15                   So engagement, as per standard protocol  
16 with the water licencing, we've been working with all  
17 stakeholders and getting a lot of help from the Board  
18 as well, which is always appreciated. We started the  
19 process in 2018, and we engaged with all these parties  
20 up on the board there.

21                   So just briefly we sent out  
22 notification letters which included the engagement  
23 plan actually, as well, to all parties. We followed  
24 up with phone calls, teleconferences, in person  
25 meetings, we did public advertisements in the local

1 newspapers and on our websites and Facebook, Twitter,  
2 all that and we -- we have submitted a public  
3 engagement plan and engagement will continue  
4 throughout the water license, as a -- as it has  
5 through our current water license.

6 All right. So in preparation for this  
7 renewal we also in -- initiated a -- a monitoring  
8 program. So the objective was to collect one-year  
9 monitoring data to help us develop a -- a dataset for  
10 Jackfish Lake that we could go off of for this water  
11 licence and for future monitoring.

12 So we monitored water temperature,  
13 water level, water quality, phytoplankton, benthic  
14 invertebrates, fish community, and fish tissue. So it  
15 was a fairly in-depth monitoring program. And yeah,  
16 it went -- it went very well.

17 So I'm not going to go over all of  
18 these stations in detail, but it kind of just shows  
19 you how we set up our program, and basically what we  
20 did is we started at the outlets and moved our way  
21 across the lake. So, we have thermistors directly in  
22 the intakes and discharges, and we also have water  
23 temperature loggers five metres back from the  
24 discharges, and we did sampling -- we did sampling  
25 stations right around the discharges and then we did

1 them across the lake too.

2                   So we have Northwest Bay, Southwest  
3 Bay, Mid-lake, yeah, so that gives you an idea of some  
4 of the coverage of the sampling sites. And then the --  
5 the fishery sampling was throughout the entire lake.

6                   So this just gives a quick kind of idea  
7 of what the thermistor installations look like. So  
8 this -- we just wanted to show you this because the  
9 values that we're getting for the discharges and the  
10 intakes are right at the Pike.

11                   So as you can see, we put a thermos  
12 record right at the outlet and that's a diver right  
13 there installing it. And yeah, so those are installed  
14 in the -- in the outlets and the discharges.

15                   So this graph shows the water  
16 temperature, the facility uptime, which is basically  
17 the facility generation and the temperature at the  
18 intake and the temperature at the discharge.

19                   One (1) thing to point out too is  
20 you'll see there's some difference between the  
21 facility generation and maybe some of the results from  
22 the discharge.

23                   The facility generation is for the  
24 whole facility in this table, so -- but really,  
25 there's three (3) separate plants. So anyways, if

1 you're looking at that wondering why there might be  
2 some differences, the -- the overall generation is for  
3 the whole facility.

4           But anyways, you can see that -- yes,  
5 you can see some of the results there. Overall intake  
6 temperature range from 1 to 20 degrees, discharge  
7 temperatures range from 1 to 34.8 degrees.

8           When we weren't running the diesels,  
9 the -- the intake and discharge temperatures were  
10 generally within one degree. So there's essentially  
11 no impact to the temperature when we're not running  
12 the diesels.

13           And obviously, yes. So, there's over  
14 high rates of diesel power generation. We found --  
15 that's when we found the greatest difference in  
16 temperatures between the intake and discharge. And  
17 generally, those are very short periods as needed, but  
18 you can see the results there.

19           So water temperature in the lake, the  
20 temperatures range from 1 to 23 degrees and you can  
21 see an example of one of our logger strings there that  
22 we suspended loggers throughout the water, throughout  
23 the water column. There was summer stratification of  
24 temperatures in the lake and temperature decreased  
25 from the distances from discharges and the Mid-lake

1 bottom temperature remained significantly cooler than  
2 other areas.

3                   Okay, so water quality, we did quite a  
4 bit of water quality testing as well, I don't want to  
5 get too in detail here, but basically water quality  
6 samples were collected from Jackfish Lake five times.  
7 We analyze them from conventional parameters, major  
8 ions, nutrients, metals, hydrocarbons, overall  
9 Jackfish is a eutrophic to hypereutrophic lake and it  
10 is highly productive.

11                   A very likely reason for this is it's  
12 internal phosphorus loading from lake sediments during  
13 summer. Cumulative effects from various developments  
14 around Jackfish may have also influenced water  
15 quality, but we're only going off one year, so we're  
16 just -- yes, we're going off what we have.

17                   The lake is thermally stratified in  
18 summer and has vertical gradients of decreasing  
19 dissolved oxygen concentration in temperature with  
20 depth. So there is different DO as -- an -- and  
21 temperature as you move deeper in certain areas of the  
22 lake.

23                   And yeah, similar gradients were  
24 actually observed from field measurements that we  
25 found from 1980 from the full fish report.

1                   So a little more water quality here,  
2 concentrations -- I'm going to try and go as quick as  
3 I can through this, but concentrations of multiple --  
4 most water quality parameters were within Canadian  
5 water quality guidelines, with the exception of  
6 dissolved oxygen at the lake bottom during summer  
7 stratification, which I was just talking to there,  
8 nitrate on one occasion and arsenic, which is a common  
9 thing with lakes around Yellowknife. We also had a  
10 couple blips with the copper near one of the  
11 discharges, and zinc, which we found to be an  
12 anomalous result.

13                   So, we found not spacial gradients in  
14 water quality compared to our discharge, as well.

15                   So -- and although we did find a couple  
16 elevated copper concentrations that could have been  
17 related to the K Plant discharge, there also had been  
18 elevated copper concentrations observed historically,  
19 so we want to follow up on that a bit.

20                   So there's no clear changes over time  
21 on that one yet.

22                   So for phytoplankton you can see  
23 abundance on the left, composition on the right, and  
24 chlorophyl A on the bottom left. So for abundance it  
25 increased throughout the season, highest value in

1 September, lowest value in May, which is fairly  
2 standard for lakes across the north -- Northwest  
3 Territories. You can see in the composition that most  
4 of that -- those graphs are one colour, which means  
5 they're one species. So there was relatively little  
6 composition. Most of that one species is blue-green  
7 algae, but there was no -- there was no bloom  
8 conditions in 2018.

9                   And chlorophyll A at the bottom left is  
10 within the eutrophic range and what -- they peaked in  
11 August.

12                   So for the benthic invertebrates,  
13 again, there was fairly low density and -- and low  
14 richness, which is pretty consistent with other  
15 subarctic lakes. The Mid-lake in North East Bay  
16 sampling areas were deeper with less DO, and obviously  
17 they have much less benthic invertebrates as well.

18                   And at the bottom too, you can see  
19 there is relatively little composition, it's mostly  
20 one species with the exception of the Southwest Bay,  
21 meaning others -- there is relatively little diversity  
22 in species and that one (1) species is hearty to low  
23 DO conditions and it's a red blood worm. I didn't  
24 think -- it's not a scientific name, but...

25                   So we're almost done here. So as far

1 as fish, there was three (3) species in the lake, Lake  
2 Whitefish, Northern Pike and Trout Perch. Whitefish  
3 were the most abundant, from our sampling, and they  
4 were healthy. They were in very good condition. They  
5 had lots of food and their stomachs were very full.  
6 And we -- we caught mostly adults and most of them  
7 were of quite large size.

8                   The Northern Pike were the second most  
9 abundant, the adults were slender, but we also caught  
10 a juvenile, which suggests there's reproduction the  
11 lake.

12                   And we did catch four Trout Perch as  
13 well. As far as fish tissue sampling, this is the  
14 first dataset that we were aware of for Jackfish and  
15 mercury concentrations for all the fish were well  
16 below the guidelines as well.

17                   So for proposed monitoring we have  
18 proposed that the under the SNP to basically continue  
19 our reporting of flow under what we currently report  
20 under our water licence, but we've -- we've proposed  
21 to add continuous water temperature monitoring at the  
22 intakes and discharges for each facility as well.

23                   And then we've propose an aquatic  
24 effects monitoring program that we will complete  
25 within 90 days following the issuance of the license



1 and, yes.

2                   So yeah, that's it for now and we're  
3 looking forward to discussing some of the topics in  
4 more detail here and getting some feedback and going  
5 from there. So, thanks for your time.

6

7 QUESTION PERIOD:

8                   THE FACILITATOR: Thank you. It's  
9 Chris from the Board.

10                   Any questions on the presentation from  
11 around the room? Rick? Okay.

12                   MR. RICK WALBOURNE: Rick Walbourne  
13 here. Thanks for that presentation.

14                   I just have some questions, I ,guess  
15 just random, try to get some more information, nothing  
16 major, I don't think, just I think clarification, if  
17 anything. I'll try to dig into some of these a bit  
18 better.

19                   You did -- I know I looked this up but  
20 I don't recall, you did mention there's an area of  
21 cooler water available for fish species, because if --  
22 when they're warmer water.

23                   Can you just remind us what the depth  
24 of Jackfish Lake is and -- and how -- approximately  
25 what depth of area you're talking about for cooler

1 water? I'm just trying to give the group an  
2 understanding of, you know, what portion of the lake  
3 will be available. I -- I think it's -- well, I'll  
4 let you finish. Thanks.

5

6 (BRIEF PAUSE)

7

8 MR. ZSOLT KOVATS: It's Zsolt Kovats,  
9 from Golder Associates. So we have bathymetry for  
10 Jackfish Lake from way back. And I -- and I think  
11 we've looked, as well. Maximum depth has been  
12 reported as about 9 metres. That was under higher  
13 water levels than what we see now, so probably about 8  
14 metres or so. Our profile's extended down to about 7,  
15 I believe, so that's fairly close.

16 In terms of areas away from the thermal  
17 plume, basically, the -- the water temperatures were --  
18 -- we only found them elevated right near the thermal  
19 discharge, so all the other stations had -- had cooler  
20 temperatures across the lake.

21 So then -- so that leaves room for  
22 refuge from -- away from the plume to basically most  
23 of the lake. Okay.

24 MR. RICK WALBOURNE: Thanks for that.  
25 Rick Walbourne. I just have a couple more questions.

1                   You mentioned that Jackfish Lake was a  
2 eutrophic lake, based on the data you're seeing.

3                   Do you have any information? I  
4 understand it's specific to Jackfish Lake, but, based  
5 on our work, I think, in most of the North, we tend to  
6 see a lot of low productivity lakes and more  
7 oligotrophic.

8                   I'm curious if you are aware, are there  
9 any similar lakes in the area that are also eutrophic  
10 or is this something you see or think is specific to  
11 the Jackfish situation?

12                   Well, I guess, for starters, just to  
13 try to understand if this is, like, a site specific  
14 phenomenon we see in Jackfish, the causes of which  
15 could be debatable. I'm just trying to understand if  
16 that's something we've seen in other areas around si -  
17 - around Yellowknife.

18

19   (BRIEF PAUSE)

20

21                   MR. MATTHEW MILLER:    Thanks.  Matt  
22 Miller, here from NTPC.  So we'll give you two (2) --  
23 two (2) people to answer this question.  The first  
24 part of the answer would be, for the monitoring we've  
25 done to date we only focussed on Jackfish.

1                   So we wanted to -- our most important -  
2 - our objective was -- we didn't have really much data  
3 at all, so we wanted to focus specifically on  
4 Jackfish, so we have yet to actually do a regional  
5 comparison as part of our work.

6                   But I will pass you over to Zsolt here,  
7 and he might be able to give some regional context.  
8 But as -- formally, as part of our study, we haven't  
9 compared it to any regional other lakes yet.

10                   MR. ZSOLT KOVATS:    It's Zsolt Kovats,  
11 from Golder.  So I have to agree with you.  And -- and  
12 typically what we see in the Northwest Territories is  
13 very unproductive lakes with -- that tends to be well  
14 vertically mixed.

15                   I have looked around a bit but not  
16 extensively in -- in the local area.  And each -- and  
17 I really haven't seen much in terms of productivity-  
18 related data.  Most of the data sets that we've looked  
19 at are primarily for farther north.  And then they do  
20 tend to show that lakes are unproductive in general.

21                   What seems to be unique about this lake  
22 is its hydrology and -- and its generally base -- base  
23 in morphology.  It's basically a very -- if you look -  
24 - if you just drive by, you can see it's got steep  
25 sides, to wind turbine mixing may not be as -- as

1 great as -- as you'd expect in a similar size lake  
2 that's out on the open tundra. And -- but that --  
3 that seems to be the key.

4                   The -- the other one is, hydro  
5 logically, this lake doesn't have a lot of  
6 flowthrough. It's basically almost a closed system,  
7 as it -- as it is now. There may have been some  
8 hydrological changes in the past in that some flows  
9 that were coming in from -- from -- I don't know what  
10 direction, from the direction of the city landfill may  
11 have been cut off through some grading work and it  
12 resulted in very low flowthrough.

13                   So I -- I think the lake hasn't  
14 discharged in years, and that probably contributes to  
15 the situation, as well.

16

17                   (BRIEF PAUSE)

18

19                   MR. RICK WALBOURNE: Rick Walbourne.

20 Thanks for that. Yes, I -- I can see that playing a  
21 factor for sure on -- on areas like Frame Lake. Not a  
22 good comparison, but the water being cut off in -- in  
23 that term from the development of the city that's  
24 redirected water around, so I can understand that.

25                   Regarding the status as eutrophic, you

1 also mentioned that it could be cumulative based on  
2 developments in the area.

3                   Was -- are you referring to the same  
4 concept of, you know, the dump or the highway or  
5 anything in that area or were there other activities  
6 that you're referring to that you think might be  
7 contributing to that?

8                   MR. MATTHEW MILLER:     So Matt, from  
9 NTPC, here. As far as the direct -- like, as far as  
10 this is a result, this is exactly where it came from,  
11 that's been difficult to do because we're starting,  
12 well, however many years into this lake.

13                   Like, I think as you -- you spoke there  
14 about regional comparisons, and there's not really  
15 many because the lakes around -- other than some of  
16 the other lakes around Yellowknife.

17                   But it definitely is a unique in that  
18 facility -- especially in NWT because this facility  
19 has been here for so long, development has been here,  
20 roads. There was the paving plant, you know what I  
21 mean, runoff from roads, developments. There's a  
22 cemetery on the other side of the lake, the landfill,  
23 when they made the highway, there's a giant mine.

24                   So there's many influences on this  
25 lake. One (1) that would be simple would be the

1 arsenic, but other than that, we haven't got to the  
2 point yet where this exact -- or this result is  
3 directly from this.

4                   But we definitely are -- are sure of,  
5 and I'll -- I want this pass this over to see if I  
6 word this properly, is that this lake is most  
7 definitely impacted by cumulative impacts of the  
8 development around it and all of the developments  
9 around it that have been there for some time.

10                   And please jump in if I've missed  
11 anything.

12                   MR. ZSOLT KOVATS:    It's Zsolt -- Zsolt  
13 Kovats, from Golder.  I think Matt covered it off  
14 pretty well.  One (1) additional thing that's  
15 suggested by -- by a recent paleolimnological study is  
16 climate warming as possibly contributing to a tipping  
17 point in this lake whereby the algal blooms have  
18 become more frequent in recent years.

19                   MR. RICK WALBOURNE:   Rick Walbourne,  
20 ENR.  Thanks for that.  I just have a couple more  
21 questions, and one (1) very similar, so I'll -- I'll  
22 fit that in here because you did mention that there  
23 were some accedences, for lack of better words,  
24 regarding, I think, nitrite, copper, and zinc, but in  
25 comparison to guidelines, which, as we know from

1 working in the North, may not always be the best  
2 comparison because we do have a lot of elevated  
3 metals, for instance.

4                   And -- well, arsenic is a good example,  
5 but even things like zinc, copper, for instance, may  
6 be natural background. I know at the Diamond Mines we  
7 always have a lot of site-specific objectives because  
8 the CCME guidelines aren't always applicable.

9                   So I think it's the same answer because  
10 you might not have looked into regional, but have you  
11 considered whether or not some of those elevations or  
12 elevated concentrations like copper and zinc are a  
13 product of background metal concentrations in the area  
14 and are not specific to Jackfish?

15                   And, I guess, this goes back into a  
16 regional study, if you've -- if you've checked out any  
17 other lakes in the Yellowknife area to see if they had  
18 similar concentrations of copper and zinc or anything  
19 else that you've seen in Jackfish that might be a  
20 product of the geology of the area as opposed to  
21 specific to Jackfish.

22                   So I'm just wondering if you had  
23 thought about that at all.

24

25

(BRIEF PAUSE)



1 MR. MATTHEW MILLER: Matt here, from  
2 NTPC. So I guess to -- I'll start with the last  
3 point. We have not looked regionally yet. And we  
4 just wanted to focus on Jackfish. And kind of, again,  
5 a recurring that we'll -- we'll probably hear a lot  
6 today is we don't have baseline data, so.

7 And I think that was one (1) of the  
8 comments in the review, is that a couple times we said  
9 baseline data, and it's right, it's not baseline data,  
10 it's a data set for the conditions right now. But the  
11 conditions right now are sixty (60) years into various  
12 developments, so, really, that's going to be the  
13 interesting thing in this one.

14 But, yeah, that's a very good point on  
15 -- on some of those -- the Canadian water guidelines  
16 and -- and existing conditions in some of these lakes  
17 being different. I'm going to pass that over to  
18 Zsolt. But, yeah, I just wanted to say we haven't  
19 looked regionally yet. And I'll pass it over to Zsolt  
20 for the second part.

21 MR. ZSOLT KOVATS: It's Zsolt Kovats,  
22 from Golder Associates. I want to cover off zinc  
23 quickly. So zinc, as far as we could tell, was just  
24 an anomalous value and it didn't seem to be  
25 particularly elevated.

1                   With every water quality data set, you  
2 -- you end up with values you cannot explain that are  
3 well above what you normally see. Zinc is one (1) of  
4 those examples.

5                   For copper, a lot of the concentrations  
6 that we measured were sort of just below or hovering  
7 near the guideline, which would imply that its -- its  
8 background. And I -- I believe, and -- and I'm not  
9 entirely certain, I think we've looked back at  
10 previous data.

11                   There's one (1) previous data set from  
12 early 1980s, 19 -- or sometime in 1980s. And copper  
13 was elevated at that point, too, as well. And copper  
14 also had a couple of these anomalous elevated values,  
15 which one (1) of them was a duplicate value that was  
16 high.

17                   So there's uncertainty related to -- to  
18 high copper values, but, in general, copper  
19 concentrations were hovering near the guideline. And,  
20 yes, it -- it could very well be natural background.

21                   MR. RICK WALBOURNE: Rick Walbourne,  
22 ENR. Thanks for that. I had one (1) more question  
23 which could be in two (2) parts. Just to shift a  
24 little bit, regarding the timing of when you did the  
25 samples, you had mentioned May as a sample period, can

1 you confirm for me, was there still -- was that a May  
2 sample as in end of winter or was that open water in  
3 May?

4 I'll have a -- I'll have a followup  
5 question to that.

6 MR. MATTHEW MILLER: Matt here, from  
7 NTPC. It was open water.

8 MR. RICK WALBOURNE: Yeah, Rick  
9 Walbourne, ENR. So the final question or comment, I  
10 guess, is that I think the one (1) before that was in  
11 December. And then there was one (1) in May.

12 We'll have -- we can discuss this as we  
13 discuss, you know, AEMP for future monitoring because  
14 I think we'd like to see something, you know, a lot of  
15 times with the mines and other places, April or nearly  
16 end of the ice cover period because we could see  
17 additional stresses for -- like, tend to be the lowest  
18 time for dissolved oxygen and things like that.

19 So I just flagged that for future  
20 discussions that we might want to look at doing  
21 something under ice near the end of the ice cover  
22 period.

23 And yes, similar to that was because  
24 my -- my final question regarding dissolved oxygen  
25 because you did say you -- you saw some low dissolved

1 oxygen near the bottom in the -- in the summer period.

2 We often see dissolved oxygen issues in  
3 the winter near the -- near the end of the ice cover  
4 period. So you hadn't mentioned that but that might  
5 be if you hadn't done samples during the end of the  
6 ice cover period.

7 So maybe I'll just leave that there  
8 for -- for future discussion on AEMP or SMP that we'd  
9 probably look to see an inclusion of that. Yeah.  
10 That's -- those are all my questions for now. Thank  
11 you. Thank you very much. That was good information.

12 THE FACILITATOR: This is Chris with  
13 the Board. Any questions from ECCC?

14 MS. GEORGINA WILLISTON: Thank you.  
15 Georgina Williston with Environment and Climate Change  
16 Canada. Just maybe if you could provide a little bit  
17 of -- little bit of information it would help maybe  
18 further discussions that we have on the -- on the  
19 technical comments.

20 When you did the -- you did the fish  
21 sampling, and it seems like it was netting or -- I  
22 guess maybe that's what it was. So you've done the  
23 fish sampling. Have you looked around the lake  
24 and for -- I guess, for habitat features, knowing  
25 where the fish are spawning, rearing, nursery?

1                   For -- from our perspective, we're sort  
2 of interested in -- if any of these activities are  
3 happening near where the -- the water is being  
4 discharged into the lake 'cause that -- those are the  
5 time periods which would be sensitive to eggs, the  
6 embryo, when the -- the young ones or the eggs aren't  
7 able to move away.

8                   So I was wondering if, in addition to  
9 just the fish sampling, if you have any ideas of where  
10 the -- the spawning may occur, being a closest, and we  
11 know that the fish can't go elsewhere. So it would  
12 have to be somewhere in the lake. Thank you.

13                   MS. TAMARA DARWISH: Hi. Tamara  
14 Darwish with Golder Associates.

15                   So we didn't specifically do a spawning  
16 survey in 2018, and we were really interested in just,  
17 at this point, documenting even what fish species were  
18 in the lake 'cause we didn't even have that  
19 information readily available before we started.

20                   And -- but based on literature and what  
21 we know about the fish species that we did capture in  
22 the lake, the two large-bodied fish species being  
23 northern pike and lake whitefish. We can look up  
24 their spawning times.

25                   So let me just pull up my cheat sheet

1 of fish spawning times. So life history for lake  
2 whitefish -- so they'll spawn in the fall. They  
3 incubate through the winter with eggs hatching in the  
4 spring.

5                   And northern pike spawns shortly after  
6 ice-off in the spring, followed by a shorter  
7 incubation period before the eggs hatch later in the  
8 spring. So it would be around that May period.

9                   Northern pike will tend to spawn in  
10 more weedy, shallower areas versus lake whitefish that  
11 might be spawning more in the middle of the lake.

12                   MS. GEORGINA WILLISTON: Thank you.  
13 Yeah. I appreciate that. Yeah. You're just sort of  
14 getting started on the -- the baseline data collection  
15 and, yeah, knowing what fish is there is super  
16 helpful.

17                   Yeah. So we sort of, in our review,  
18 too, assumed that, yeah, the -- the pike were spawning  
19 sort of near the shorelines in the -- where the -- the  
20 cat tails are and stuff.

21                   So it was -- it was kind of, I guess,  
22 the lake whitefish which we were wondering about  
23 'cause I think our understanding is, yeah, near the  
24 outflow, it is sort of deeper water. So we were  
25 wondering, yeah, if that may be -- maybe they were

1 spawning shaols around there; maybe they're not.

2                   But I think maybe it's something for  
3 discussion later on in the day, too, about whether or  
4 not there could be an impact there, and I think that  
5 piece of the puzzle would be probably important to --  
6 to find out. So for -- just so for future questions  
7 and really assessing what your -- yeah -- what your  
8 zone of influence is and what your impact is on the --  
9 on the fish.

10                   THE FACILITATOR: Chris from the  
11 Board. Is there anyone on the phone that would like  
12 to ask any questions on the presentation of the  
13 project description?

14                   MS. ANNE WILSON: Thanks. It's Anne  
15 Wilson. I just have a -- a follow on the limnology  
16 question, and thanks to Rick for all his great  
17 questions.

18                   As far as the stratification in the  
19 lake, how persistent is that? Do we have any sense of  
20 that?

21

22                   (BRIEF PAUSE)

23

24                   MR. ZSOLT KOVATS: It's Zsolt Kovats  
25 from Golder. We have basically two (2) data sets, one

1 is 2018. 2018 we saw stratification in July and  
2 August, I believe. And so those two (2) months at  
3 least.

4                   We've also looked at some data from a  
5 previous report. I believe it was 1980 when it was  
6 sampled and people -- and at that time, some profiles  
7 were measured, and the same thing was shown. And I  
8 can't recall exactly the months, but it's -- having  
9 looked at the -- and all the data, it seems fairly  
10 consistent in the summer months, so June, July,  
11 August.

12                   In September, it was broken up but very  
13 quickly. So it -- it extended to about the end of  
14 August. So a summer -- basically a summer  
15 stratification, and it's likely to be quite consistent  
16 in this lake.

17                   MS. ANNE WILSON: Thanks, Zsolt. I'm  
18 just trying to wrap my head around the low dissolved  
19 oxygen in the summer because that wouldn't necessarily  
20 be expected unless the bottom was isolated. That's --  
21 that's helpful.

22                   I think that's all I've got for the  
23 moment. Thanks.

24                   THE FACILITATOR: It's Chris with the  
25 Board. Anyone else online with questions for NTPC?



1 All right. Hearing none, we shall go  
2 to Board staff for any questions.

3 And just like that, we're back on  
4 schedule. So that's awesome.

5 We're going to take a quick ten (10)  
6 minute break. And then we're going to get back into  
7 the agenda items, and the first agenda item will be  
8 water quality.

9 So just for those on the line, we'll be  
10 joining -- we'll be starting back up at 20 after  
11 10:00. Thanks, everyone.

12

13 --- Upon recessing

14 --- Upon resuming

15

16 (MISSING AUDIO)

17

18 TOPIC: INTAKE AND DISCHARGE TEMPERATURES:

19 MS. TAMARA DARWISH: ...that right  
20 now, we do have a limited data set. We have one (1)  
21 year's worth of data from 2018. So was a little bit  
22 tougher to set these criteria based on that one (1)  
23 year of data.

24 So as part of the water licence, we are  
25 recommending that intake and discharge temperatures

1 continue to be monitored through the SNP, and as well  
2 the AEMP, and that that temperature data will continue  
3 to be recorded and looked at as it is collected.

4           And then the last slide, just to -- to  
5 put a few points together in terms of temperature  
6 tolerances for fish species in Jackfish Lake, so  
7 again, we looked at temperature tolerances for the  
8 three (3) fish species that were captured, trout  
9 perch, as being a smaller bodied fish and, lake  
10 whitefish, and northern pike is the large bodied fish.  
11 We did look at a range of different thermal benchmarks  
12 that are typically used, two (2) of them being acute  
13 thermal benchmarks that are -- are most commonly used.  
14 One (1) of them as the upper incipient lethal  
15 temperature.

16           So that is essentially -- if you think  
17 in terms of toxicity, the acute -- the upper -- upper  
18 incipient lethal temperature is basically the  
19 temperature at which you would expect to be lethal to  
20 50 percent of the population. It's a very standard  
21 benchmark. There's a lot of literature out there for  
22 a variety of fish species on it.

23           The other thermal benchmark that we  
24 used was the critical thermal maximum, the CT maximum.  
25 What that looks at is essentially the temperature

1 where if a fish would be exposed to that temperature  
2 of water, it could get -- well, 'dizzy' is not quite  
3 the right word, but it would sort of lose its balance  
4 and it way -- may not be able to swim away, at which  
5 point it may be exposed to temperatures that may be  
6 lethal to it. The CT max is typically higher than  
7 your upper incipient legal temperature.

8                   So in 2018, the maximum recorded in-  
9 lake temperature was twenty-three point one (23.1).  
10 That was in May. Our upper incipient lethal  
11 temperatures, so our acute benchmarks for our two (2)  
12 large bodied fish were below that value. And as well,  
13 again, just to point out other fish are present in  
14 Jackfish Lake, and have likely acclimated to these  
15 temperatures at this point. Thank you.

16

17 QUESTION PERIOD:

18                   THE FACILITATOR: Thanks for that.  
19 I'll just maybe remind you guys, because we have  
20 people on the line. When you -- when you start a  
21 slide, sell -- tell them which slide you're on, just  
22 so they're on -- on the right page.

23                   And with that, I think we're back to  
24 questions from ECCC.

25                   MS. GEORGINA WILSON: Yes, thank you.

1 Georgina Wilson, with Environment and Climate Change  
2 Canada.

3                   So maybe just going through the agenda  
4 as it's listed. So for discharge temperatures, EC  
5 comment number 1, we don't have any additional  
6 comments or questions on that. That was answered to  
7 our satisfaction. The clarification of where the --  
8 the temperature was taken was helpful, I'm sure.

9                   EC number 2, related to thermal  
10 monitoring, that's also a satisfactory response. We  
11 don't have any further questions on that one.

12                   We will have a bit of a discussion,  
13 maybe, on the third one, EC comment number 3, the  
14 effluent discharge. So I'm going to pass this over to  
15 Anne. Hopefully we can hear her, and she can maybe  
16 start the discussion on that.

17                   MS. ANNE WILSON (by phone): Hi.  
18 Thanks, Georgina. How is that for the volume? Is  
19 that hearable?

20                   THE FACILITATOR: Yeah. That's much  
21 better. Thanks, Anne.

22                   MS. ANNE WILSON (by phone): Okay,  
23 great. So the idea of having some targets or  
24 objectives for the thermal effluent discharges hasn't  
25 quite been addressed. We agree for sure that it's

1 going to be useful to get more data, and to hopefully  
2 see the extent of any changes or any thermal plume  
3 within the lake.

4                   Part of the concern is that while we've  
5 evaluated the effect on the large bodied fish species  
6 in their adult stages, we aren't confident that there  
7 aren't going to be impact to the early life stages of  
8 the fish, and there really hasn't been much discussion  
9 of the trout perch, which will form a forage basis  
10 certainly for the pike, and probably an important part  
11 of the -- the lake ecosystem.

12                   Another aspect of what we're concerned  
13 about is that the rate of change of the temperature  
14 going up and down has not been analyzed. The idea  
15 being that yes, they are acclimated to the -- the  
16 temperatures over time, but the rate of change can  
17 induce thermal shock both going up and going down for  
18 the sensitive life stages of the fish.

19                   You know, I -- I think there's a little  
20 more work to be done, looking at -- as Georgina had  
21 outlined -- where the early life stages are to be  
22 found in the lake, and that will mainly be for the  
23 lake whitefish, I expect, because of the spawning  
24 timing and -- and deeper location, and just see if  
25 there are likely to be impacts on those life stages.

1                   So we would be asking NTCL to evaluate  
2 this as part of the monitoring going forward. And  
3 I'll just pause there.

4

5                                   (BRIEF PAUSE)

6

7                   MS. ANNE WILSON (by phone): Oh, dear.  
8 Dead silence. What have I done?

9                   THE FACILITATOR: There's some --  
10 there's some discussion, and I think there's a pending  
11 answer. Is there? Yeah, okay. Here we go.

12

13                                   (BRIEF PAUSE)

14

15                   MS. TAMARA DARWISH: Hi, Tamara  
16 Darwish, with Golder. So I try -- I tried to write  
17 down -- there was a few questions in one there, so  
18 just let me know if I -- if I miss any of them.

19                                   So the -- the first part of the  
20 question was in regards to trout perch. So based on  
21 literature searches, finding temperature tolerances  
22 for trout perch, it's -- it's not the most readily  
23 available fish species that has been studied.

24                                   We did find two (2) val -- two (2)  
25 published values for the critical thermal maximum

1 temperature, so that's that one that -- that one  
2 that's an acute benchmark that is higher than your  
3 upper incipient lethal temperature. So that's the one  
4 where they might lose equilibrium and not be able to  
5 escape from a thermal plume. And those, in terms of  
6 trout perch, was not done at different life stages.  
7 There was just one (1) value for all. So we -- we did  
8 compare to that value.

9                   And -- and the other part of it, too,  
10 was just in terms of the differing life stages for the  
11 large bodied fish. So we -- we did include the  
12 literature values that we were able to obtain for the  
13 differing life stages for are those acute thermal  
14 benchmarks for which the large bodied fish species for  
15 northern pike, for embryo fry, and the juvenile life  
16 stages, in 2018, we were below those values for the  
17 maximum recorded in-lake temperature at 5 metres from  
18 end of pipe, so that warmest point, again, in the  
19 lake.

20                   And same thing for Lake whitefish. We  
21 found fry and juvenile in addition to the adult life  
22 stages, and did compare to those for the acute thermal  
23 benchmarks.

24                   With regards to, I guess, the -- the  
25 second part of the question in terms of where early

1 life stages are found in the Lake, so reiterating on  
2 the earlier point, we -- we didn't do a spawning  
3 survey. This was a more presence/absence based type  
4 of program, just to figure out what was in the Lake to  
5 begin with.

6                   So we did survey using a variety of  
7 fish capture techniques throughout the lake, but a --  
8 an exact spawning survey to determine where fish are  
9 spawning and if they could be spawning immediately in  
10 that discharge plume was not completed. But based on  
11 the life histories that we do know about those fish  
12 species, they have other areas in the lake that they  
13 could be going to that are not as warm as the areas  
14 that we did compare the temperatures to.

15                   MS. ANNE WILSON (by phone): Tamara,  
16 it's Anne Wilson, again. Is there any -- any chance  
17 to do a -- a survey of the habitat types in the  
18 vicinity of the discharge?

19

20                   (BRIEF PAUSE)

21

22                   MR. MATTHEW MILLER: Yeah, if -- if  
23 there was a desire to -- to find some more information  
24 about that, we could definitely look into that, and  
25 again, yeah, we would be happy to -- with -- within



1 reason. Again, like, a scoped study, obviously, but  
2 definitely, if there's a desire to find those results,  
3 we'd -- we could look into that more.

4 Like you say, we -- we had no data. So  
5 we were -- just wanted to find out what was there. We  
6 have some habitat information, but yeah, we could do a  
7 -- some spawning work as well, if required.

8 MS. ANNE WILSON (by phone): That  
9 would be very helpful.

10 MR. MATTHEW MILLER: Sorry, that was  
11 Matt, from NTPC. I don't think I said my name.

12 THE FACILITATOR: This is Chris, from  
13 the Board. Anne, do you have anything more?

14 MS. ANNE WILSON (by phone): Well, I  
15 was just hoping that NTPC could say a bit about the  
16 idea of evaluating thermal shock.

17 With the rapid temperature change that  
18 can result in either cold shock or heat shock, and --  
19 and our thermal expert looked at those, and -- and the  
20 rate of change that's observed, and thinks that this  
21 may be something that could be occurring. So could  
22 there be an evaluation of the sensitive life stages  
23 for that, for thermal effect?

24 MS. TAMARA DARWISH: Tamara Darwish,  
25 with Golder. I agree, there -- there could be effects

1 of -- of thermal shock that maybe we're not aware of,  
2 but I guess the -- the message that I would want to  
3 pass on on that point is that the Jackfish facility  
4 has been operating since the late 1960s in this -- in  
5 a similar manner to how it is. So these temperature  
6 fluctuations have been occurring year after year for a  
7 lot of years, and there are still fish present in the  
8 lake and in similar species to -- to -- we -- we found  
9 -- we did have one (1) report from DFO that was --  
10 that was quite limited from the late 1980s.

11                   It was actually a report where they  
12 were looking to you, Jackfish Lake as a -- as a  
13 hatchery and a farming Lake for Arctic char, because  
14 the warmer waters being put into the lake where --  
15 it'd actually be seen at an advantage, because then  
16 you wouldn't have to introduce heat to get those fish  
17 to grow faster. So a cheaper form of -- of  
18 aquaculture.

19                   So we -- we do you have that one (1)  
20 report, and -- and there isn't a lot of information on  
21 a full fish presence/absence study, but the two (2)  
22 fish species that they do talk about in this report  
23 from the late 1980s were northern pike and lake  
24 whitefish being in the lake.

25                   So based on that anecdotal evidence in

1 the report, it -- it -- we could assume that the same  
2 two (2) fish species that were there from the late  
3 1980s are still there, reproducing, and would have  
4 experienced similar thermal socks year after year.

5 MS. ANNE WILSON (by phone): Thank  
6 you, Tamara. Anne Wilson again.

7 So the -- part of the mitigating factor  
8 may be the area that would be to those quick changes  
9 in temperature. Do we have a sense of how extensive  
10 any plume might be if we have more than one (1) of the  
11 generators going at a time?

12

13 (BRIEF PAUSE)

14

15 MS. TAMARA DARWISH: Tamara Darwish  
16 with Golder. So just to -- to clarify the question.

17 If we're talking in terms of  
18 temperature effects or not actually how far that  
19 discharge is travelling but just where we're seeing  
20 temperature effects, and we measure that again at that  
21 five (5) metre -- in lake at five (5) metres from end  
22 of discharge where we saw the most pronounced  
23 temperature effects.

24 And then our next closest station would  
25 be the Mid-Lake Station, where we are seeing some

1 variation in temperature, so we are seeing elevated  
2 temperatures at that location but not at the same  
3 magnitude as we are at that five-metre location. So  
4 we are seeing them to Mid-Lake but we have not done a  
5 detailed extent of effects modelling exercise with the  
6 data that we have to answer that in -- in detail.

7 MS. ANNE WILSON (by phone): Thanks  
8 Tamara. Anne Wilson here.

9 Would it be necessary to get more data  
10 to do that type of an exercise and have some  
11 temperature information that is in between the five-  
12 metre mark and the Mid-Lake sample?

13

14 (BRIEF PAUSE)

15

16 MS. TAMARA DARWISH: Tamara Darwish  
17 with Golder Associates.

18 There is modelling work that -- that  
19 could be done to figure out that in between  
20 temperature and the -- the challenges of it that --  
21 that we sort of are grappling with at the moment is  
22 that we would be doing modelling based on one (1) year  
23 of data, which may not be representative of -- of  
24 conditions over time.

25 So our intent is that, before we went

1 down that path, we looked at the data that we had.

2 There were no flags because we were not exceeding

3 those upper and those acute thermal benchmarks.

4                   So at this stage, we didn't -- we  
5 weren't recommending going down the path of modelling  
6 until needed. We collect more data, look at it in  
7 more detail, see again with another year do we -- do  
8 we pass those thresholds that we're looking at, and  
9 then go from there.

10                   MS. ANNE WILSON (by phone): Anne  
11 Wilson here. Thanks, Tamara.

12                   I think -- I'm thinking along a similar  
13 line in -- the two (2) pieces of information that  
14 would be helpful to have next are who's living here?  
15 Would they be -- is there even any habitat usage that  
16 would subject to the thermal effect in the immediate  
17 vicinity, and then see what future data looks like as  
18 far as were the temperatures in 2018 fairly typical or  
19 is it going to be higher or lower.

20                   So the -- I think the -- the next gauge  
21 of our concern is going to come when we have a little  
22 bit further data on those two (2) points.

23

24                   (BRIEF PAUSE)

25

1 THE FACILITATOR: This is Chris from  
2 the Board. That earned -- earned you some nods. Just  
3 because you're not in the room, I'll let you know. So  
4 there is agreement.

5 Anything further, Anne?

6 MS. ANNE WILSON (by phone): Not on  
7 Number 3 thanks, no. I'll let Georgina have the  
8 talking stick back.

9 MS. GEORGINA WILLISTON: Thanks Anne.  
10 So although it's going to be your turn again, I think,  
11 and I think we might have kind of -- you started a  
12 little bit, I think, into the next topic of mixing  
13 zones on EC Comment Number 4 about -- yeah, sort of  
14 maybe getting a bit of a -- a better understanding of  
15 the spatial extent of the -- the plumes. So I'll pass  
16 it back to you if you want to elaborate more.

17 MS. ANNE WILSON (by phone): Yeah.  
18 Anne Wilson. I think if further monitoring is planned  
19 for the immediate discharge area and to see how -- how  
20 the behaviour of the plume is, that would be very  
21 helpful, and it sounds like that -- that is what is in  
22 -- in mind. So, yeah, that covers it.

23

24 (BRIEF PAUSE)

25

1 MS. GEORGINA WILLISTON: Great.

2 Everyone is looking at me now. Georgina Williston,  
3 with Environment and Climate Change Canada.

4 And I think the next one (1) on the  
5 agenda was EC8, and we didn't have any additional --  
6 that was about the monitoring.

7 I don't think -- didn't think we have  
8 anything. Anne, if you could clarify.

9 MS. ANNE WILSON (by phone): No. We -  
10 - we just --

11 MS. GEORGINA WILLISTON: Yeah.

12 MS. ANNE WILSON (by phone): --  
13 wanted a little bit more information on how the  
14 discharges were run and they provided that, so there's  
15 nothing further on that one.

16 I think that the last part of the  
17 answer from NTPC there was just talking about how  
18 further receiving environment effects are going to be  
19 looked at through monitoring, and, you know, again  
20 that can go forward in the water licence and that will  
21 be very helpful.

22 I think we get to pass it over now to  
23 ENR.

24 MS. GEORGINA WILLISTON: Yeah, I think  
25 -- I'm Georgina Williston, with Environment and

1 Climate Change Canada. So I guess that's our last one  
2 (1) in that -- in that category, so we'll save the  
3 other ones, I guess, for the Topic 2 in the afternoon.

4 THE FACILITATOR: Rick, you're on deck.

5 MR. RICK WALBOURNE: Rick Walbourne,  
6 ENR. I just had one (1) question under water quality.

7 Regarding ENR4, we had asked some  
8 questions about sump discharge. The response was  
9 that, basically, when you reach a level that requires  
10 discharge, the water is pumped out through an oil-  
11 water separator into a vacuum truck, taken to the City  
12 of Yellowknife -- Yellowknife Water Treatment Plant.  
13 No sump water is discharged into the environment.

14 Two (2) questions. I just want you to  
15 confirm, did you mean by that that that goes to the  
16 lagoon, the Yellowknife sewage lagoon? You mentioned  
17 water treatment plant but I'm assuming you might mean  
18 the lagoon, but can you clarify where that water goes?

19

20 (BRIEF PAUSE)

21

22 MR. MATTHEW MILLER: Matt -- Matt from  
23 NTPC here. So we test the water and then once it's  
24 verified that it's okay, yeah, it goes to the lagoon.  
25 Sorry I gave mis-wording there.



1 MR. RICK WALBOURNE: Rick Walbourne,  
2 ENR. Thanks for that clarification.

3 So water is tested. What parameters or  
4 what are you guys looking for in that test water,  
5 because I know there are some -- I'll let Nahum  
6 correct me, but I think there are some non-sewage  
7 effluent guidelines that ENR has and there's also some  
8 -- if I'm not mistaken, the City has some effluent  
9 bylaw regarding what certain levels of parameters must  
10 be before it can go into the sewage lagoon.

11 So, can you just confirm what you guys  
12 are comparing those results to before that's  
13 discharged? Thank you.

14

15 (BRIEF PAUSE)

16

17 MR. MATTHEW MILLER: Matt, from NTPC  
18 here. We know we do test for hydrocarbons. As far as  
19 the full testing gamut, we might have to follow-up  
20 with that, but we could definitely follow-up on  
21 exactly what we're comparing that to, and if there is  
22 some different guidelines that we need to be  
23 implementing into our procedure, then definitely let  
24 us know too.

25 But we'll -- we'll get back to you. We

1 may already be doing it. Off the top of our heads,  
2 we're -- we're not sure. We -- we definitely test for  
3 hydrocarbons obviously because we want to make sure  
4 there's no hydrocarbons in it, but we can follow-up  
5 with you on the full testing gamut there as well.

6 MR. RICK WALBOURNE: Rick Walbourne,  
7 ENR. Just waiting for -- I think the Board is  
8 wondering about an IR. We would like to see that  
9 information, so it's -- if that's -- you want to do it  
10 as an IR, that will be fine.

11 THE FACILITATOR: So I'll note that as  
12 Information Request Number 1, and it'll be drafted up  
13 and everybody will get a chance to review it before  
14 the end of the day. Thank you. Anything else, Rick?

15

16 --- INFORMATION REQUEST NO. 1: Can NTPC provide  
17 list of the parameters that the  
18 sump water, after being pumped  
19 through an oil-water separator, is  
20 analyzed for? Can NTPC clarify what  
21 criteria the sump water must meet prior  
22 to discharge at the City of Yellowknife  
23 Sewage Disposal Facilities?

24

25 MR. RICK WALBOURNE: Rick Walbourne,

1 ENR. We have -- I don't have any additional questions  
2 on this topic. Thank you very much for that  
3 information.

4

5

(BRIEF PAUSE)

6

7

THE FACILITATOR: Turn it over to

8

Board staff.

9

10

(BRIEF PAUSE)

11

12

THE FACILITATOR: So nothing from Board

13

staff. Any other questions, either around the table,

14

in the room, or online in regards to what quality?

15

16

(BRIEF PAUSE)

17

18

THE FACILITATOR: All right,

19

excellent. So with that, we can actually jump ahead.

20

I foresee potentially being done by lunchtime at this

21

rate.

22

So we're going to move on to Topic 2,

23

Aquatic Effects Monitoring and General Monitoring, and

24

again I think we'll do the same rotation. We'll start

25

with ECCC and move on to ENR, followed by Board staff.

1 So ECCC, you have the floor.

2                   Sorry, my bad. This is Chris from the  
3 Board, we do have a slide from the Proponent.

4

5 TOPIC: AQUATIC EFFECTS MONITORING AND GENERAL  
6 MONITORING

7                   MR. MATTHEW MILLER: Pretty standard  
8 stuff. Matt here, from NTPC. Just to set the stage,  
9 we -- so we -- in -- in our application we did propose  
10 a surveillance network program, again, just a  
11 continuation of our -- our reporting of discharge with  
12 also adding continuous measurements of temperature at  
13 the discharges and intakes. And for the AEMP we -- we  
14 will submit that ninety (90) days after the water  
15 licence.

16                   We have acknowledged that there is the  
17 new guidelines for AEMP. We'll include all the  
18 standard -- all the standard aspects and, really, we  
19 were interested to hear the feedback from this, to get  
20 some information to take away to kind of base that  
21 AEMP design around, because this facility has been in  
22 operation for quite some time and it never has had an  
23 AEMP.

24                   So yeah, we really wanted to get some  
25 feedback from the regulators to see where their

1 interest was and I think we've already got some good  
2 feedback this morning that will help us kind of design  
3 a bit of an AEMP and -- and we just want to make --  
4 we're going to propose something that's scoped based  
5 on the history of the project, scale of the project  
6 and the size of the receiving environment too. So  
7 that just sets a bit of the stage for what we had  
8 proposed so far. Thanks.

9 THE FACILITATOR: Chris from the  
10 Board, go ahead.

11

12 QUESTION PERIOD:

13 MS. GEORGINA WILLISTON: Thank you,  
14 Georgina Williston, with Environment and Climate  
15 Change Canada.

16 So I'll just maybe go through the  
17 agenda like I did last time. So for EC Number 5, the  
18 -- the response provided was adequate. We don't have  
19 any further questions and I think the clarification  
20 that you -- little bit of the discussion we had  
21 earlier this morning was also helpful on the zinc and  
22 copper. I don't think we have anything further on  
23 that.

24 So for EC Number 6, the thermal  
25 discharge effects, that was just us providing a

1 document for your reference, so we don't have any --  
2 anything further on that one.

3 EC Number 7 was discharge objectives  
4 and we had a -- we were going to have a bit of a  
5 discussion on this one, I think. It will be probably  
6 a bit of a continuation of the discussion we had maybe  
7 linking back to EC 3 with the -- with the discharge.

8 So I'm not sure, Anne, if you wanted to  
9 chat a little bit about that one also or if you've  
10 covered it all off in your previous discussion, on EC  
11 3.

12 MS. ANNE WILSON (by phone): Thanks,  
13 it's Anne Wilson here.

14 I think that a lot of this come out in  
15 further monitoring work done and -- and habitat  
16 survey. And the one (1) question that hasn't really  
17 been looked at is the fish usage of the plume area,  
18 the idea that they can access the deeper, cooler  
19 waters is probably true, except if the developed  
20 oxygen is low in summer.

21 And I'm just wondering if, you know,  
22 how often those levels get below where fish would  
23 actually want to be using those thermal reviewed --  
24 refuges and if that can be monitored as well as far as  
25 a little more frequent DO measurements in the summer.

1 MR. MATTHEW MILLER: Matt here from  
2 NTPC, sorry.

3 We would gather more information on  
4 that if there's desire to -- to find more details on  
5 it.

6 MS. ANNE WILSON (by phone): Anne  
7 Wilson. Thanks, that would be helpful.

8 And I think as far as our input on an  
9 aquatic effects monitoring program, we would be very  
10 happy to review anything that was drafted and provide  
11 feedback on -- on a proposal, as opposed to having a  
12 lot to offer given what we've already asked for at  
13 this point.

14 So we'd be happy to participate along  
15 the way.

16 MR. MATTHEW MILLER: Matt here, from  
17 NTPC.

18 Yes, that would be great, and yes, for  
19 any of this stuff to follow up too after, we're more  
20 than happy to answer questions or provide information  
21 too. So yes, we'd be happy to include you in the  
22 development of that AEMP proposal.

23 MS. ANNE WILSON (by phone): I think  
24 that was it for number 7 for us.

25 MS. GEORGINA WILLISTON: Georgina

1 Williston, with Environment and Climate Change Canada.

2                   So I think that would, yes, that's the  
3 last one for us on the agenda. We have no further  
4 comments.

5                   THE FACILITATOR: Chris, with the  
6 Board. Anything from ENR?

7                   MR. RICK WALBOURNE: Rick Walbourne,  
8 ENR. Nothing specific on those comments. I think in  
9 most cases our comments were acknowledged by NTPC or  
10 they concurred.

11                   I'd just like to echo Anne's comment  
12 that any -- as you're developing the AEMP design, if  
13 you have any questions or would like feedback from us,  
14 we'd be -- we'd be happy to provide input.

15                   I think we've flagged some high level  
16 comments regarding the under ice sampling in April or  
17 early May. There might also want to be a  
18 consideration following up on that comment about  
19 background concentrations.

20                   To assume -- I -- I don't want to  
21 suggest a -- any kind of regional study, or anything  
22 extensive in other lakes, I know you want to focus on  
23 Jackfish, but it might not hurt to do some water  
24 sampling, at least, in some other areas to get an idea  
25 of background, more so for your benefit that I think



1 it will prove out that some of these metals might be,  
2 you know, elevated around. So that might just help  
3 understand what you're seeing in -- in Jackfish.

4                   But yes, nothing -- we didn't make a  
5 general comment about scoping the AEMP, as meant --  
6 mentioned as well. We -- we hear about AEMPs at the  
7 Boards and ourselves, we're used to dealing with, you  
8 know, diamond mines and -- and things like that which  
9 are very extensive based on the type of effluent  
10 that's coming out and some usually large level  
11 modifications of the area with open pits and those  
12 things.

13                   So, I don't have a lot of direction on  
14 that, but just that we all keep that in mind as we're  
15 developing it and what we're expecting here and how  
16 that information will be used to -- to scope it with  
17 the intent of understanding the Jackfish site.

18                   So that's just a general comment that  
19 we all keep in mind as we're developing it and  
20 reviewing. So, thank you.

21                   THE FACILITATOR: Thanks Rick, yes, I  
22 think -- I think the offer is from both ENR and ECCC  
23 are -- are pretty genuine and it is sort of a step  
24 away from our normal AEMP program, because it is a  
25 fairly finite little area that we're dealing with in a

1 fairly limited contaminant that is going in, which is  
2 heat.

3                   So, with that in mind I would be sure,  
4 Board staff would be sort of more than willing to be  
5 involved as well. But with that, I'll turn it over to  
6 questions from Board staff.

7                   MS. HEATHER SCOTT: Hi, it's Heather  
8 Scott, with the Board.

9                   So along those same lines I think Board  
10 staff are wondering what considerations you might use  
11 while drafting your AEMP with respect to other  
12 contributing factors to Jackfish Lake, particularly  
13 the City of Yellowknife Municipal Operations, whether  
14 it be landfill, storm water runoff, as well as impacts  
15 from the highway, because we realize, yes, I think  
16 Rick spoke to this, you're -- your scope is limited to  
17 Jackfish Lake itself, but you'll probably be parceling  
18 out impacts from -- from other operations.

19                   So we're wondering how are you going to  
20 do that as you start drafting your AEMP.

21                   MR. ZSOLT KOVATS: It's Zsolt Kovats,  
22 from Golder Associates.

23                   We totally agree with that comment.  
24 This lake is subject to a lot of influences, so our  
25 plan is to first really understand those cumulative

1 stressors as much as possible, and then attempt to  
2 develop a program that's -- that's focusing on NTPC's  
3 activities.

4                   And I think Matt may have something to  
5 add as well.

6                   MR. MATTHEW MILLER:     Matt, from NTPC.

7                   No, that's really it. Like, definitely  
8 in the information gathering stage we may, but we will  
9 inherently gather da -- data that's not directly  
10 related to our operations, but we -- we definitely  
11 think in the, what is it, action response, is that the  
12 word, that we should only have to respond to anything  
13 that is related to our impacts.

14                   So you know, that's basically just what  
15 Zsolt said as well.

16                   MS. HEATHER SCOTT:     It's Heather  
17 Scott, with the Board again.

18                   So looking more so at drafting the  
19 water licence, you could probably look to other water  
20 licenses previously issued by the Board to see the  
21 typical conditions for an AEMP, and they usually have  
22 a fairly rigorous reevaluation and redesign period.

23                   And I'm just wondering if you have  
24 thoughts about -- I notice your draft licence --  
25 basically there's a commitment to a design plan, a

1 response plan, but if you had thoughts about, you  
2 know, the -- the time period between reevaluations and  
3 whatnot compared to the typical AEMP schedule.

4

5 (BRIEF PAUSE)

6

7 MR. MATTHEW MILLER: Matt here, from  
8 NTPC. So yeah, we think that actually that framework  
9 will work quite well for this, the reevaluation,  
10 because at the front end of the AEMP there's going to  
11 be a lot more that we're going to need to look at,  
12 because there's not much data that we have for this  
13 lake.

14 So we've already got some direction  
15 here on things that we -- we -- well, I will say we  
16 will include to some degree based on interest here.  
17 And so the front-end of the AEMP we picture as being a  
18 little more intensive and maybe lake wide.

19 And then as that refines, I think that  
20 reassessment will fit well. And then, okay, well,  
21 this is what we found and we should continue with this  
22 and this is not related to us and we're going to leave  
23 that behind.

24 So that will fit well with kind of what  
25 we had planned for this and -- yeah. Hopefully, that

1 answers your question; if not, let me know.

2

3 (BRIEF PAUSE)

4

5 THE FACILITATOR: Chris, from the  
6 Board. I think that concludes the question on that.  
7 It seems like we're making some serious headway here.  
8 What time is it? Ten (10) after 11:00. Got two (2)  
9 issues left. These are the sort of smaller issues.

10 Yeah, I would say that the -- the  
11 reevaluation program will be something that'll come  
12 out through the review process when we get into the --  
13 the AMP itself and -- and getting it through the  
14 approval process.

15 But it will be somewhat different than  
16 most of what we've seen before just because, you know,  
17 the mines that are coming in and with a big AMP are  
18 built -- building something on years of baseline data  
19 and, you know, this is not the same situation, you  
20 don't have that luxury.

21 So that we would probably consider -- a  
22 shorter term reevaluation as something that we'd be  
23 looking at just based on how quickly you can  
24 accumulate the data that would be required. But,  
25 yeah, it looks like we've got some consensus and --

1 and you've got support to make that happen.

2 I expect you have a slide. This will  
3 be the one (1) time you don't. Do you have a slide  
4 before we get into the next one (1)? Yeah. Okay. Go  
5 ahead.

6

7 (BRIEF PAUSE)

8

9 TOPIC - WATER SOURCE AND WATER QUANTITY:

10 MR. MATTHEW MILLER: So this is for  
11 water source and water quantity. One (1) of the  
12 comments was just clarifying that the water source is  
13 Jackfish Lake. I fully agree with that. And then  
14 just a little followup on the quantity, as well.

15 So we had 50,000 cubic metres a day is  
16 our current water licence quantity, and that's based  
17 on full operating capacity. So, again, if we have to  
18 run all of the generators and the line from Snare goes  
19 down, that -- that would be the capacity, which that  
20 doesn't often happen. And, again, that's required by  
21 the Public Utilities Board.

22 The average water usage in 2018 was  
23 only 16,400 cubic metres a day, so that's  
24 significantly less. But we want to keep that same  
25 level because we need to have it as backup if we need

1 it.

2                   And another thing to note, too, we did  
3 update some of our pumping capacities, so we actually  
4 have been over reporting our water usage for a couple  
5 years. So we're going to go back and resubmit our  
6 water usage. And we included that in this year's  
7 annual report, that we found it as part of this  
8 process, actually.

9                   We did a review of everything and, oh,  
10 we'd been over reporting this. So that's why it's a  
11 little less in 2018, as well. if you were looking at  
12 the results and wondered all of the sudden why did it  
13 go down in 2018, that's why. And did I miss anything  
14 there?

15

16   (BRIEF PAUSE)

17

18                   MR. MATTHEW MILLER: Do you want to add  
19 anything? Okay. So, yeah, just that -- that number's  
20 based on if -- if we need it type thing, such as if  
21 the line goes down if there's a low water event or  
22 something like that, so that's why we want to keep it  
23 the same.

24

25 QUESTION PERIOD:

1 THE FACILITATOR: Thank you, Matt.

2 It's Chris, from the Board. I don't know that ECCC  
3 had comments. No. Okay. ENR...?

4 MR. RICK WALBOURNE: Rick Walbourne,  
5 ENR. Yeah, we just had a couple comments. One (1)  
6 was regarding the inclusion of the source in the water  
7 licence which NTPC has agreed to. That was just for  
8 clarification.

9 I think we all knew they were using  
10 Jackfish lake, but if it's not specified, they could  
11 do anything out there, so that -- that's fine.

12 The other question just needed a little  
13 bit of clarification. There was -- there has been a  
14 lot of discussion about quantities. So I understand  
15 the 50,000 cubes is based on what you guys might need  
16 onsite.

17 I was trying to understand. So there  
18 was a response to Environment Canada 8. And, for  
19 instance, you mentioned in the 2018 calendar year, an  
20 average of 3,000 gallons per month was circulated  
21 through the lake. And I'm just trying to understand.

22 There seems to be a discrepancy between  
23 how much water you're talking about circulated to the  
24 lake and how much water you're talking about using.  
25 So I'm not sure I'm not following what's being



1 discussed in each topic. I'm just trying to full  
2 understand.

3                   So I'm not sure if you're intaking  
4 water that's being circulated internally. It just  
5 seems that the numbers aren't fully matching up there.

6

7                   (BRIEF PAUSE)

8

9                   MR. MATTHEW MILLER: Matt, from NTPC.  
10 We're just going to have a look here. And then we'll  
11 let you know.

12                   MR. RICK WALBOURNE: Yeah, Rick, ENR.  
13 And this maybe my math or conversions as well, so, we  
14 can just check into that.

15

16                   (BRIEF PAUSE)

17

18                   MS. EILEEN HENDRY: It's Eileen, from  
19 NTPC. I was just wondering if you could clarify which  
20 -- which numbers it is you -- you're finding a  
21 mismatch with.

22                   MR. RICK WALBOURNE: Rick Walbourne,  
23 ENR. So in response to Environment Canada 8, you  
24 mentioned in 2018 an average of 3,000 gallons per  
25 month, which I'm assuming is about 12,000 cubes a

1 month. And you were talking about using 50,000 cubes  
2 per day.

3 That's -- I'm just -- I'm not sure if  
4 I'm missing something.

5 MS. EILEEN HENDRY: So the -- this is  
6 Eileen, from NTPC. The 50,000 cubic metres per day is  
7 based on the name plate rated capacity of all the  
8 pumps at Jackfish.

9 So in a circumstance where we had to  
10 run all of the generators to meet the -- the  
11 electrical demand of the -- the grid, we would have to  
12 have all those pumps running for -- for cooling of the  
13 -- the gen sets.

14 Our normal operation very rarely sees  
15 all of those units running simultaneously, so that's  
16 why our actual circulated volume of water is  
17 significantly lower than the -- the maximum that we  
18 could potentially put through the facility.

19

20 (BRIEF PAUSE)

21

22 MR. RICK WALBOURNE: Rick Walbourne,  
23 ENR. Thanks for that. I think I'm still having some  
24 trouble.

25 So 3,000 gallons per month -- so can

1 you just clarify if that is daily versus monthly? I'm  
2 still finding quite a discrepancy between the 3,000  
3 gallons per month and the -- even if it's 12,000 cubes  
4 per day, which is your operating, I'm just still not  
5 following.

6 So can you just confirm that 3,000  
7 gallons a month and if we need to convert that to  
8 cubes?

9

10 (BRIEF PAUSE)

11

12 MR. RICK WALBOURNE: Rick Walbourne,  
13 ENR. Yeah, so what I'm hearing is maybe if that 3,000  
14 gallons per month is actually a day because that looks  
15 like it's about 12 cubes. That might be the only  
16 problem.

17 So I think it's more with the -- yeah,  
18 the 3,000 gallons per month in the response is kind of  
19 what I'm trying to figure out.

20 MS. EILEEN HENDRY: This is Eileen,  
21 from NTPC. We might have to look at those.

22 Matt referred to a discrepancy that we  
23 had found in our historical reporting of the data, and  
24 it was -- it was based on a confusion between the  
25 gallons and the -- and the cubic metres that we do our

1 reporting in, and a conversion between them.

2 Our pumps are old and the nameplates  
3 are in gallons. So that was where the error had  
4 occurred, was in the conversation. So it's possible  
5 that in our response we've kind of perpetuated that  
6 error. So we'll just have to take that away and --  
7 and recheck the data on that.

8 MR. RICK WALBOURNE: Rick Walbourne,  
9 ENR. Sure, we can get a small error. I don't -- I  
10 don't think it's going to be very complicated. Just  
11 when I -- yeah, I -- I think that it might be just  
12 that that is a daily, monthly -- it might not be to  
13 gallons.

14 But if you can just, you know, look at  
15 that 3,000 gallons a month and how that translates to  
16 cubes per day. I don't think they're on the same  
17 level. So there -- I think there's something a little  
18 bit askew there.

19 So if we could just clarify that just  
20 to make sure we do understand the volumes because I  
21 just want -- I just want to make sure we know exactly  
22 if it's the -- which one (10) is act -- actually  
23 accurate, so just a confirmation on that. Thank you.

24

25 --- INFORMATION REQUEST NO. 2: Can NTPC clarify

1                   their response to ECCC Comment No. 8:  
2                   "In the 2018 calendar year, an average  
3                   of 3,000 gallons/month was circulated  
4                   to the lake, with individual monthly  
5                   volumes ranging from 2,705 gallons in  
6                   March to 3,565 gallons in July."

7  
8                   THE FACILITATOR:   Chris, with the  
9 Board. Any other questions from ENR? No. Board  
10 staff...?

11

12   (BRIEF PAUSE)

13

14                   THE FACILITATOR:   The final topic.  
15 And we'll take -- we'll -- we'll go through this short  
16 topic, which is really just Board staff, I think.  
17 We'll open it to the floor still.

18                                   But then we're going to take maybe a  
19 five (5) minute break just so we can ensure that we  
20 have these two (2) IRs drafted up. And then we'll  
21 maybe put them on the board for a review or something.  
22 Is that okay? Okay.

23                                   So we'll open it up. Do you have a  
24 slide on this one (1)? Yeah. Okay.

25

1 TOPIC - DRAFT WATER LICENSE

2 MR. MATTHEW MILLER: Matt here, from  
3 NTPC. Just a quick note on the terms. So in our  
4 draft water licence we requested a twenty (20) year  
5 term. And, again, that's just based on the longevity  
6 and stability of operations of the facility.

7 The current water licence term was  
8 twenty-five (25) years. And this term was just  
9 requested to help keep electricity rates as low as  
10 possible for customers by minimizing regulatory costs.

11

12 QUESTION PERIOD:

13 THE FACILITATOR: Thank you, Matt.  
14 This is Chris, for the Board. Any questions from  
15 ECCC?

16 MS. GEORGINA WILLISTON: Georgina  
17 Williston, with Environment and Climate Change Canada.  
18 Don't have any questions on the terms.

19 THE FACILITATOR: Any questions from  
20 ENR?

21

22 (BRIEF PAUSE)

23

24 MR. NAHUM LEE (by phone): I was just  
25 curious why only twenty (20) years. Nahum Lee, ENR.

1                   Just -- Nahum Lee, again, from ENR.  
2 Just curious -- I mean, with operations like this, we  
3 just had a -- a new licence issued for the Yellowknife  
4 Airport for twenty-five (25) years. These operation -  
5 - we're not going anywhere. Right? So the longer the  
6 term, the better for everyone here. I -- in my  
7 opinion. Food for thought.

8                   MR. MATTHEW MILLER: Matt, from NTPC.  
9 We -- we would -- yeah -- we would prefer twenty-five  
10 (25) or thirty (30) years. We -- the longer the term,  
11 the better for us, as well. So definitely if -- if  
12 the Board is open to increasing that term and there is  
13 other existing licences that are that term that are  
14 being issued, we would be more than happy with that,  
15 as well.

16                   We -- we issued twenty (20) just  
17 because that was a starting point for us. But if it  
18 could be increased again, that last -- that last line  
19 on that slide is -- is why we're requesting the long-  
20 term. And, yeah, the -- the longer the term, the  
21 better.

22                   THE FACILITATOR: Chris from the  
23 Board. Board staff questions? No? Oh, good.

24                   So before we -- before we take a quick  
25 five (5) minute break, any other questions around the

1 room? Anyone on the phone? My phone is talking to  
2 me.

3 Okay. Well, with that we'll take a  
4 quick break, and we'll get back together in  
5 five (5) minutes. We'll just give staff a chance to  
6 get these two (2) IRs typed up. Thank you.

7

8 --- Upon recessing

9 --- Upon resuming

10

11 (MISSING AUDIO)

12

13 UNIDENTIFIED SPEAKER:

14 "...with individual monthly volumes  
15 ranging from 2,705 gallons in March  
16 to 3,564 gallons in July."

17 It was an ECC comment.

18 THE FACILITATOR: Chris, with the  
19 Board. Any questions or comments on that wording from  
20 anyone? Nothing? Anyone online?

21 So hearing none, that will be the  
22 official record of what is going to be put on the  
23 public registry, ORS, for as far as Information  
24 Request. Do we have a deadline?

25



1 (BRIEF PAUSE)

2

3 MS. TYREE MULLANE: I'll distribute  
4 the IRs today.

5 THE FACILITATOR: Can you -- Tyree, can  
6 you use your mic?

7 MS. TYREE MULLANE: This is Tyree,  
8 with the Board. The IRs will be distributed by this  
9 afternoon. Responses are due on the 16th of May. If  
10 they come in sooner, so be it, but you have until the  
11 16th of May.

12

13 (BRIEF PAUSE)

14

15 THE FACILITATOR: Chris, with the  
16 Board. Anything outstanding? We're going to give  
17 people just a quick chance for some last comments.  
18 We'll go around the table. Rick...?

19 MR. RICK WALBOURNE: Rick Walbourne,  
20 ENR. We have no additional comments. Thank you to  
21 the Board for organizing. And thank you very much to  
22 NTPC and their consultants; that was a useful  
23 discussion and helpful information, so thank you very  
24 much.

25 MR. GEORGINA WILLISTON: Georgina

1 Williston, with Environment and Climate Change Canada.

2 We have no further questions or comments.

3 Thank you very much to the Board and  
4 the Proponent for the answers provided and the -- and  
5 the commitments made to -- to move forward on some of  
6 our -- our outstanding technical comments. Thank you.

7 MR. MATTHEW MILLER: It's Matt, from  
8 NTPC here. Yeah, I just want to thank everyone here.  
9 This was super helpful. And we really appreciate the  
10 feedback. And, yeah, looking forward to moving  
11 forward through the process.

12 THE FACILITATOR: Anyone online?

13 MS. ANNE WILSON (By phone): It's Anne  
14 Wilson. Just echo our thanks. It's been a very  
15 useful meeting. And I appreciate the willingness of  
16 everyone to work together on this. Thank you.

17 THE FACILITATOR: Anything from Board  
18 staff? Okay. So just a little bit of housekeeping to  
19 remind proposed dates going forward, IRs will be out  
20 when? Today probably? Yeah. Responses will be due  
21 the 16th. Is that what we're sticking with?

22 Okay. Prehearing conference is  
23 scheduled for May 28th. Details would be forthcoming  
24 on that. That will happen. There's, you know, this  
25 discussion as to whether or not there is a need for a

1 public hearing. The Board process is that it will be  
2 advertized, that's the law.

3 And the Board can make a call ten (10)  
4 days beforehand, before the date of the public  
5 hearing, as to whether or not it will go ahead if it's  
6 received no interventions and no public interest.

7 So if that were to happen, then that  
8 would be put out on the -- out -- out on the ORS. It  
9 would be announced as a cancelled meeting in the  
10 newspaper, but that is something that is to be  
11 determined in the future.

12 So, the pre-hearing conference May  
13 28th. Written interventions would be due June 11th.  
14 The Proponent's response to interventions would be the  
15 19th of June. Intervener public hearing presentations  
16 would be due the 26th of June and the Proponent's  
17 public hearing presentations due July the 3rd.

18 And the public hearing would happen on  
19 the 31st of July and the 1st of August; but  
20 potentially, if it did go ahead, it might only be a  
21 one (1) day, but that agenda would be determined at  
22 the time.

23 So that's the forward-looking plan. It  
24 remains to be seen if that'll actually play out that  
25 way. In -- in some respects, it would be nice not to,

1 but if it goes ahead, that's just the way it'll  
2 happen.

3                   So thank you to everyone for your  
4 participation. The proponent, thank you for your --  
5 your input and your willingness to listen. Thanks to  
6 the other presenters who brought their concerns  
7 forward and shared their -- their offers of  
8 assistance.

9                   Thank you to Board staff, and  
10 particularly Tyree. She's known in the office as a  
11 bit of a speed queen. She has the record of being  
12 able to get Board packages through and approved for  
13 land use permits in under ten (10) minutes, so I think  
14 this might be the quickest tech session on record.  
15 I'm not sure.

16                   We'll maybe put that out as an addendum  
17 to the Information Requests, thanks to all those  
18 invited, this was the fastest ever, if it is. We'll  
19 find out. That -- that's our own little personal  
20 commitment.

21                   So thank you, everyone. And we look  
22 forward to proceeding on this in the future. We're  
23 adjourned for today.

24

25 --- Upon Adjourning

1

2 Certified Correct,

3

4

5 \_\_\_\_\_

6 Wendy Woodworth, Ms.

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