

## PMNorthAnna3COLPEmails Resource

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**From:** Vail, Lance W [lance.vail@pnl.gov]  
**Sent:** Wednesday, December 12, 2007 2:51 PM  
**To:** Christopher Cook  
**Subject:** RE: Re: Lake Anna concerns and forwarding of the PNNL report on Lake Anna

My understanding from discussions with VDEQ was the likely source for the PCB was not determined. However, they had found PCBs in an upstream tributary to the lake, which suggests the PCB were not from the plant. I think the PCBs also show up on the 303d list in the tribs.

How does NRC wish to continue this dialog with Mr. Ruth? His questions are reasonable but seem to be tied more to concerns about the existing units than the proposed Unit 3. Also my recollection is that it is PCBs sorbed to sediments and not PCBs in the water column that are the issue. So it is likely that the PCB release was in the past.

I was aware of the fire he mentioned. I believe there was some soil sampling for rad after that - but we could check to see if they sampled anything else.

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Lance W. Vail  
Pacific Northwest National Laboratory  
509 372-6237

-----Original Message-----

**From:** Christopher Cook [mailto:CBC1@nrc.gov]  
**Sent:** Wednesday, December 12, 2007 10:13 AM  
**To:** Vail, Lance W  
**Subject:** Fwd: Re: Lake Anna concerns and forwarding of the PNNL report on Lake Anna

>>> "Harry Ruth" <HC.RUTH@LOUISA.NET> 12/12/2007 9:59:43 AM >>>

Hi Chris,

1. If we interpreted your PNNL report correctly, it was produced prior to change of the 3rd reactor type from once-through-cooling to a combo

wet/dry cooling tower and therefore may have to be recalculated using the net result of all three reactors operating and the reduction of an additional 12.5 million gallons per day from the lake caused by the evaporation of the combo wet/dry cooling towers. Please advise. .

2. In addition to the items I identified in my November 16 email, I overlooked the PCB concerns at the lake which may or may not be coming from the power plant. The Virginia state health commissioner issued a fish

consumption advisory on August 31, 2007. The VDH advisory cautions:  
Do not  
eat any Lake Anna gizzard shad and do not eat more than two meals a month of carp, largemouth bass, striped bass, white perch, white

catfish, channel catfish or blue gill sunfish. The health advisory applies to the total

lake, both the main reservoir and cooling lagoons. Our understanding is that many (Lake Anna Civic Association and the Virginia Dept of Environmental Quality) have tried to find the source of the PCB's so they can be eliminated, but thus far have been unsuccessful and hence the reason for the fish advisory.

We further understand that in the late 1960's and/or early 1970's that there was a major fire at the North Anna Power plant construction site for the planned reactors at that time, where transformers, etc. were stored.

Possibly some PCB's were leached into the soil, which eventually found their way into the lake or underground water systems in the area. The clean-up requirements at that time may not have been as stringent as those currently imposed.

Possibly there are multiple sources. Do you have any information on that fire and what type of clean-up activities were imposed at that time?

Does

the NRC plan to investigate and determine the source of the PCB's in all of Lake Anna so the public can eat the fish in the lake?

3. We will look forward to a timely response. Thanks in advance for your help.

Sincerely,

Harry

----- Original Message -----

From: "Christopher Cook" <CBC1@nrc.gov>

To: "Harry Ruth" <HC.RUTH@LOUISA.NET>

Cc: "Alicia Williamson" <ARW1@nrc.gov>; "Michael Masnik" <MTM2@nrc.gov>

Sent: Tuesday, December 11, 2007 5:38 PM

Subject: Re: Lake Anna concerns and forwarding of the PNNL report onLake Anna

> Dear Mr. Ruth,

> I wanted to let you know that I received your email (and phone call > today), and that we are working on a response. Part of the delay is

a

> result of Mike Masnik not receiving your email. I have since forwarded

> your email to him - regrettably after some delay. Alicia Williamson, the

> COL Project Manager, is included on this email and should also be

> included on future email correspondence with us.

>

> The other part of the delay is due to the North Anna Combined Operating

> License (COL) being submitted to the NRC soon after your email arrived.

> We are currently in the process of reviewing the application for

> completeness and technical sufficiency. If you are interested in viewing

> the application, it is available on the NRC web site at

> <http://www.nrc.gov/reactors/new-licensing/col/north-anna.html> .

>

> Best regards,

> Chris

>

>

>>>> "Harry Ruth" <HC.RUTH@LOUISA.NET> 11/16/2007 1:16:28 PM >>>>

> Hi Michael and Chris,

> Thanks for sending the report. We will look at the report and try

> to

> understand the equilibrium temperature you were referring to

>

> 1. Based on our conversation yesterday, it seems that you

> confirmed

> that with the planned Unit 3 (with a combination of wet/dry cooling)

> that the Lake Anna water level will decrease much faster at approximately

> 12.5

> million gallons per days due to evaporation, which will cause the

> overall water temperatures to increase at a more rapid rate. Logic

> says

> that

> if you

> are going to increase the average drought period from 21 to 40 days

> (most likely during the summer months) that the overall lake

> temperature

> will

>

> increase more rapidly and to a higher level then previously

> experienced.

>

> Can you with your Lake Model give a comparison of today's water levels

> and

> water temperatures during the summer months, versus the predicted water

>

> levels and water temperatures with Unit 3 operating recognizing that

> 99% of

> the water is re-circulated and gets hotter and hotter as the summer

> months progress ?

>

> 2. Can you also forward some basic data on the Clinton, Illinois

> nuclear plant that you referred to where their is recreation on the

> water

> and

> residential development around the lake. If I understood you

> correctly, the associated lake also re-circulates its heated water

> discharge.

>

> 3. Has the NRC invested into any type of research on how the "HEAT ENERGY" that is discharged into the nation's waters could be recaptured

>

> before the discharge and used in some beneficial manner to produce needed energy that can be used by human's to reduce the amount of dependency

> on

> foreign oil? At a recent meeting, I was told that the nuclear reactors

> are

> only about 30 to 35% efficient. If this is true it would appear that

> if the

> "HEAT Energy" at each of the nation's nuclear power plants could be effectively utilized that it would solve many problems, including

> adding much less heat to the nations waters which in turn would mitigate many

> of

> our concerns with humans, fish, mussels, aquatic life, etc. .

>

> 4. We would also like to re-emphasize our concern that Unit 3 was

>

> looked at during the ESP cycle as an independent unit, as opposed to being a

> new unit added to a plant that currently has 2 operating units. As we

>

> indicated yesterday, we request that you insure that the NRC, during the COL phase, looks in depth at the totality of the environmental impacts

of

> Units

> 1, 2 and 3 and how the Unit 3 cooling methodology can assist with mitigating the overall impacts currently being experienced with Units

> 1 and 2.

>

> 5. Re the Clam/Mussel Survey requested by VA Dept of Game and Inland Fisheries. Brian Watson (phone 434-525-7522 is the DGIF Wildlife Diversity Biologist/Malacologist who requested a total Lake Anna clam/mussel survey be conducted by a Virginia State certified malacologist within the last

2

> year

> time period. If you are aware of such a survey, could you please forward a copy to Brian and myself. Brian has identified that the

> Asian clam (*Corbicula fluminea*), Eastern elliptio (*Elliptio complanata*), Paper pondshell (*Uterbackia imbecillis*) and Eastern Floater (*Pyganodon*

> cataracta)

> are resident in Lake Anna. In addition, he is concerned over the  
 > potential impacts of elevated water temperatures upon native  
 > freshwater  
 mussels  
 > and  
 > that other freshwater rare species mussels (Yellow  
 lampmussel-lampsills  
 >  
 > cariosa), (eastern lampmussel\_lampsills radiata radiata), Eastern  
 > pondmussel-liguimia nasuta) and the (Tidewater mucket-leptodea  
 > ochracea)  
 > which are rare species may also be present in Lake Anna.  
 >  
 > 6. Re the Naegleria Fowleri (NF) (brain eating amoeba) study  
 > being conducted by the Virginia Commonwealth University in Lake Anna..  
 The  
 > initial studies have confirmed that the NF amoeba is present at the  
 > upper end of the lake above the 208 bridge in addition to various  
 > other locations throughout the entire lake. We expect the study will  
 > be completed within the next month and will forward a copy upon its  
 > completion. As you  
 are  
 >  
 > aware the NF amoeba is proliferated by water temperatures above the  
 > mid-80's  
 > (F) and our understanding is that the hotter the temperatures, the  
 more  
 > the  
 > amoeba will proliferate. This coupled with 99% of the water being  
 > re-circulated within Lake Anna, coupled with the potential hotter  
 water  
 >  
 > temperatures due to increased drought rates with the 12.5 million  
 > gallons per day of evaporation from Unit 3, coupled with the water  
 > getting hotter faster, which in turn will last for a longer period of  
 > time in turn appears to provide the environment with overall hotter  
 > lake temperatures throughout which will enhance the NF population for  
 > a longer time. We measured  
 > 106 (F)  
 > at the end of the discharge canal last year. What is your forecast  
 > using your Unit 3 model and actual data recorded by the Lake Anna Civic  
  
 > Association for upper water temperatures we could experience in the  
 > future with Unit 3 operating?  
 >  
 > 7. We look forward to working with you in the future and sharing  
 > data.  
 > We are also reminded with the NRC mission statement "To protect the  
 > public health and safety, promote the common defense and security and  
 protect  
 > the  
 > environment" and also the role that the NRC has with the National  
 > Environmental Policy Act (NEPA) for similar activities. We are  
 hopeful  
 > that  
 > you will exercise the federal oversight that you have at your

disposal  
> with  
> both your mission statement and the NEPA Act and not let politics  
sway  
> your  
> responsibilities to the U.S. public in protecting Lake Anna's  
> environment (reducing water temperatures), while still regulating  
> nuclear activities.  
> We believe that both can be accomplished successfully using  
available  
>  
> technology. Thanks in advance for your help.

>  
> Sincerely,

>  
> Harry

> Harry Ruth  
> for the Friends of Lake Anna  
> C/O 230 Heather Drive, Bumpass, Va. 23024 Phone 540-872-3632

>  
>  
>  
>  
> ----- Original Message -----  
> From: "Christopher Cook" <CBC1@nrc.gov>  
> To: <hc.ruth@louisiana.net>  
> Cc: "Alicia Williamson" <ARW1@nrc.gov>; "Michael Masnik"  
> <MTM2@nrc.gov>;  
> "Mark Thaggard" <MXT3@nrc.gov>  
> Sent: Friday, November 16, 2007 7:42 AM  
> Subject: PNNL report on Lake Anna

>  
>  
>> Dear Mr. Ruth,  
>> Attached is the report I mentioned yesterday. The report was  
> produced  
>> in early 2005, when once-through Unit 3 cooling was still being  
>> considered by Dominion. I think the report will still be of  
interest  
> to  
>> you, especially Section 2.3 which discusses equilibrium  
temperature.  
>> The report also provides several additional references on the  
topic.

>>  
>> Regards,  
>> Chris

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>>  
>> \*\*\*\*\*

>> Christopher B. Cook, Ph.D.  
>> Senior Hydrologist

>> Hydrologic Engineering Branch, Office of New Reactors  
>> U.S. Nuclear Regulatory Commission  
>> 11454 Rockville Pike, Rockville, MD 20852  
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>>

**Hearing Identifier:** NorthAnna3\_Public\_EX  
**Email Number:** 157

**Mail Envelope Properties** (3AF7DEF82ADA8944AD8247B7ED7FD6511F7EF1BA1D)

**Subject:** RE: Re: Lake Anna concerns and forwarding of the PNNL report on Lake Anna  
**Sent Date:** 12/12/2007 2:51:10 PM  
**Received Date:** 12/12/2007 2:51:10 PM  
**From:** Vail, Lance W

**Created By:** lance.vail@pnl.gov

**Recipients:**  
"Christopher Cook" <Christopher.Cook@nrc.gov>  
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	12183	12/12/2007 2:51:10 PM

**Options**  
**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**