IPRenewal NPEmails

From: Gray, Dara F [DGray@entergy.com]
Sent: Thursday, September 27, 2012 9:07 AM
To: Wentzel, Michael
Cc: Caputo, Charles; Curry, John J
Subject: RE: Meeting Summary
Attachments: Entergy_Responses_NMFS_PRD_Questions_26Sep2012_1 (dfg).docx

Hi Mike
Please see the attached. As indicated, we will be providing the additional requested data when our consultant is available.
Please let me know if you have questions.
Thanks

From: Wentzel, Michael [mailto:Michael.Wentzel@nrc.gov]
Sent: Wednesday, September 26, 2012 3:00 PM
To: Gray, Dara F
Cc: Caputo, Charles; Curry, John J
Subject: RE: Meeting Summary

Thanks for the update, Dara.

From: Gray, Dara F [mailto:DGray@entergy.com]
Sent: Wednesday, September 26, 2012 2:59 PM
To: Wentzel, Michael
Cc: Caputo, Charles; Curry, John J
Subject: RE: Meeting Summary

Hi Mike
We do have some comments and are currently corralling them all. I hope to have something for you tomorrow – with a follow-up of the additional data requested.
Thanks

From: Wentzel, Michael [mailto:Michael.Wentzel@nrc.gov]
Sent: Wednesday, September 26, 2012 2:33 PMup
To: Gray, Dara F
Cc: Caputo, Charles; Curry, John J
Subject: RE: Meeting Summary

Hi Dara, Charlie, and John,

I wanted to see if you had any comments on the NMFS summary I forwarded last week? If not, do you have any idea when you will?

Thanks,
Mike

From: Gray, Dara F [mailto:DGray@entergy.com]
Sent: Wednesday, September 19, 2012 4:00 PM
To: Wentzel, Michael
Cc: Caputo, Charles; Curry, John J
Subject: RE: Meeting Summary

Thanks Mike
I am traveling - so I asked Charlie and John (copied here) to provide any comments on Entergy's behalf.

From: Wentzel, Michael [mailto:Michael.Wentzel@nrc.gov]
Sent: Wednesday, September 19, 2012 3:30 PM
To: Gray, Dara F
Subject: Meeting Summary

Dara,

Can you take a look at the summary that NMFS prepared and let me know if you have any comments?

Thanks,
Mike

Michael Wentzel
Project Manager
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(301) 415-6459
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Hearing Identifier: IndianPointUnits2and3NonPublic_EX
Email Number: 3830

Mail Envelope Properties (DA94DFACF1201C4A91A21BD336C2520A085E0B1A)

Subject: RE: Meeting Summary
Sent Date: 9/27/2012 9:06:30 AM
Received Date: 9/27/2012 9:06:42 AM
From: Gray, Dara F

Created By: DGray@entergy.com

Recipients:
"Caputo, Charles" <ccapu90@entergy.com>
Tracking Status: None
"Curry, John J" <jcurry2@entergy.com>
Tracking Status: None
"Wentzel, Michael" <Michael.Wentzel@nrc.gov>
Tracking Status: None

Post Office: LITXMETSP003.etrsouth.corp.entergy.com

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MESSAGE	1991	9/27/2012 9:06:42 AM
Entergy_Responses_NMFS_PRD_Questions_26Sep2012_1 (dfg).docx	21858	

Options
Priority: Standard
Return Notification: Yes
Reply Requested: Yes
Sensitivity: Normal
Expiration Date:
Recipients Received:

September 10, 2012

NMFS PRD Questions related to Entergy's 7/23/12 "sturgeon report"

Entergy's Clarifications and Responses to Conference Call Notes: 26 September 2012

Conference call: September 12, 2012

Attendees: Nuclear Regulatory Commission - Dennis Logan, Briana Balsam, Mike Wentzel; NMFS – Julie Crocker; Entergy – Dara Gray, John Carnright; ASA – John Young; LWB Environmental - Larry Barnthouse; Normandeau – Mark Mattson; AKRF - Doug Heimbuch

Normal text are NMFS questions. Bold font are answers provided by Entergy or their consultants.

Red Bold Text indicates Entergy's edits or responses to embedded new questions.

Red Bold Text with green highlight indicates Entergy's answer will follow at a later date.

II. why was flow data from 1975 excluded from the data set?

Flow data that was readily available to Entergy started in 1976. In 1975 only unit 2 was operational.

Why does the flow data set used to predict future impingement start in 2001 and end in 2008?

These years are the ones that are included in the Enercon 2010 report so the data was readily available. Entergy believes that these years best represent current and future operating conditions and include years where there were operational differences such as outages, flow reductions, etc.

Are there any changes in future operations proposed that could result in different volumes of water being removed (power uprates etc.)?
There are no plans to change anything. 2001-2008 are good predictor of future

IIA1. Did you look at intake volume seasonally to see if the monthly differences in sturgeon impingement could be related to operational differences?

Prepared graph – figure 2 and figure 8 – but did not do quantitative analysis ; it does not appear that spike in April is attributable to increases in water intake or that the low levels of impingement in June or July are related to decreases in water intake.

IIA2a. Were there any annual differences in operations (shut downs, etc.) that could account for any of the annual variability 1976-1990? What about differences in how Unit 2 and Unit 3 are operated that could account for differences in impingement at the two units?

Yes – that is why the analysis considered impingement density (# fish/volume of water withdrawn) rather than just impingement numbers [New NMFS question - can you clarify for shortnose and Atlantics, what the impingement density calculated for 1976-1990 was and how you adjusted that for 2001-2008 (I know you made an 80% reduction for Atlantics and 400% increase for shortnose but how did you adjust for water withdrawal). 2nd part of my new question – because this includes cooling and service water does it include water withdrawn through the IP1 intake?]. **No, there are no apparent differences in how Unit 2 and Unit 3 are operated that would explain the differences in impingement. Unit 2 and 3 are operated in similar ways, 3 is variable speed pump, 2 is dual speed. Along the way there were different numbers of outages…impingement is higher at unit 2 but no obvious reason why densities would be different. However, one possible explanation is that given the physical design of the intakes, impingement may have been more readily detectable at one unit vs. the other.**

Yes – that is why the analysis considered impingement density (# fish/volume of water withdrawn) rather than just impingement numbers. We do not have an explanation for the differences in impingement densities between Unit 2 and Unit 3. The pattern of intake flow is similar between the two Units, with winter period flow reductions achieved by variable speed intake pumps at Unit 3 and two-speed pumps at Unit 2. There were differences in the methods for collecting the impingement samples between Unit 2 and Unit 3 during 1976-1990 (see below), but scaling of impingement counts using monthly collection efficiency test results for each Unit should have adjusted the counts for these collection method differences. Impingement sampling for both species of sturgeon at Unit 2 and Unit 3 was a total census from 1976 through 1990, with an impingement collection made for each date when at least one intake pump was operated at each Unit. Impingement collections were not made for the water withdrawn by Unit 1 during 1976 through 1990.

Impingement density values are shown for each year 1976 through 1990 for Atlantic sturgeon in Figure 1 and for shortnose sturgeon in Figure 7. Each of these two figures presents year on the horizontal axis and the vertical axis shows the annual sturgeon impingement density (sturgeon per million gpm) for Indian Point Unit 2 and Unit 3 combined. The annual sturgeon impingement density shown on the vertical axis of Figures 1 and 7 is calculated as the annual number (count) of sturgeon impinged and then scaled upward by monthly collection efficiency values for each Unit in each year and divided by the annual average cooling water withdrawal rate for that Unit and year in million gallons per minute. The impingement density values plotted on the vertical axis in Figures 1 and 7 represent the sum of each density value for Unit 2 and Unit 3 for each year.

The annual average water withdrawal rate for 2001-2008 is considered representative of future operations of the Indian Point cooling water intake structures and was used to predict the average annual number of Atlantic sturgeon and shortnose sturgeon impinged for future operations, after assuming an 80% reduction in future Atlantic sturgeon impingement density and a 400% increase in future shortnose sturgeon impingement density.

The consultant who performed this set of calculations was not available at this time to answer the second part of the embedded question about whether Unit 1 annual total intake flow was used to calculate the annual sturgeon impingement density values for either the historic (1976-1990) or current and future (2001-2008) periods. Entergy will supplement this answer when he returns.

IIA2b. Doesn't the reduction in impingement density (to 20% of historic) that is used to predict 2001-2008 contradict the statements made later that there is no correlation between the number of sturgeon in the river and the number of sturgeon impinged? If there really is no correlation, wouldn't your density be the same now as it was in the past? Is the calculated value of 11.5 Atlantic sturgeon per year from 2001-2008, Entergy's best guess for the number of Atlantic sturgeon to be impinged during the extended operating period?

Entergy stated that they understood the confusion expressed in this question. They are not saying that there is no likely relationship between the number of sturgeon in the river and the amount of impingement (more fish presumably equals more chances for impingement). But, because impingement is a rare event and because the major shift in abundance was not seen until after 1990, examining for a statistical correlation using 1974-1990 information did not reveal one which may not be unexpected given the rarity of impingement. The high interannual variability in impingement numbers would also impede the likelihood of seeing a statistical correlation. Entergy believes that if impingement sampling had continued through present, you would see a drop off related to the decrease in the number of Atlantic sturgeon in the river.

IIA3. Why did you use length-weight relationship for Atlantic sturgeon impinged at IP and not use fish caught in the Hudson River surveys or published length-weight relationship information? Is it valid to use this equation across all size classes/life stages? It will be important for us to establish the likely size of impinged Atlantic sturgeon because that will allow us to determine what life stage they are and then from what DPS they likely belong (i.e., all juveniles would be Hudson River origin but any subadults or adults could originate from multiple DPSs based on genetic sampling of subadults and adults captured in the Hudson River).

Felt that using the impinged fish was best - relationship to trawl was similar . Would be a different regression equation for smaller fish vs. larger fish; however, because it is a log-log relationship it allows for use of curvilinear relationship and this is not a major concern.

IIB2b. Same question as I had above for Atlantics, except related to 400% of historic and shortnose.

Sam answer.

IIB3. Is there any explanation for why larger shortnose sturgeon would only be impinged at Unit 2? Anything that is different (intake velocity?)?

We don't really know for sure. But during period of impingement sampling there was a difference in the way the fish were collected at Unit 2 compared to Unit 3. Each of the six traveling screens at Unit 2 has a fine mesh fixed screen (3/8 inch mesh) located closest to the river near the opening of the intake forebay that was washed once a day. Fish were washed off of each fixed screen at Unit 2 as it was lifted out of the water, and these impinged fish fell back into the intake flow and were drawn into the forebay for each circulating water pump where they passed through a vertical bar rack with 3 inches of clear space and were collected on the 3/8 inch mesh conventional traveling screen and washed into the Unit 2 sampling basket. Each forebay at Unit 2 was isolated by concrete partitions from the adjacent forebays. At Unit 3 there were 3 inch bar racks in front of a common plenum area, and no fine mesh fixed screens. At Unit 3, fish would first pass through these bar racks and enter this common plenum area, where they could swim across the front of the travelling screens and either exit

the intake structure through bar racks at the north and south ends, or eventually become impinged on one of the six conventional (3/8 inch mesh) traveling screens, and then washed into the Unit 3 sampling basket where they were collected once per day. However, regardless of the differences in intake structures and sampling methods, collection efficiency factors were determined from field tests at least once per month and separately for each Unit , thus allowing for adjusting the observed number of fish counted in each day's sample from each unit for fish not counted. Collection efficiency for unit 2 was typically lower than Unit 3. Figure 6 is based on an adjusted (for collection efficiency) number of impinged shown on the vertical axis.

III. Provide dates that correspond to weeks 18-26 and 31-42 and river miles that correspond to regions 8-12.

General 18-26 is May and June

31 – 42 late July to mid-October

Regions 8: rm 77-86

Region 9: 87-93

Region 10: 94-106

Region 11: 107-124

Region 12: 125-152

IP is at RM 42

Generally, I do not understand the numbers presented on the vertical axis for Figures 13, 14 and 15 (lower graph only), 16, 17 and 18 (lower graph only).

The numbers on the x axis are the estimated number of shortnose or Atlantic sturgeon in the river of a size that is vulnerable to capture in the sampling gear (so different life stages for shortnose vs. Atlantic sturgeon). They were able to generate estimates of riverwide abundance assuming 100% gear efficiency [NMFS additional question – is 100% gear efficiency a valid assumption? Please explain the factors associated with this assumption] **and adjusting for volume sampled – number of fish collected in trawl divided by the sample volume times the volume of the stratum – done for each region of the river and then added up. Then, the scale was adjusted for years that published population estimates were available.** [NMFS additional question – can you give us a "zoomed" in picture for the last 10 years (i.e., adjust the scale of the graph) or provide the estimates that are on the vertical axis in a table by year? Also, is it possible to take these estimates out through 2011? We see having these abundance estimates as possibly a powerful piece of information when conducting our jeopardy analysis (i.e., being able to compare the expected number of impingements to an abundance estimate**).**

The standing crop data, without adjusting for gear efficiency, are an abundance index, i.e. a metric that is believed to be proportional to the true abundance. Since we had a corresponding measure of the absolute abundance from the M/R estimates, the calibration factors that equilibrate the standing crop data with the M/R estimates are de facto estimates of the gear efficiency. There is no place in the analysis where an assumption that gear efficiency is 100% is used as a basis for an estimate of the absolute abundance of sturgeon.

The consultant who prepared Figures 13 through 18 was not available at this time to provide a table showing the values on the vertical axis for the last ten years. Entergy will provide the requested information when he returns.

IIIA3. Did you consider other factors that may be related to impingement or just the abundance of fish and the gillnet fishery? I am thinking about the location of the salt wedge (if it is high in the river at a time of year or in a particular year, that could keep juveniles out of the area during that time because they are relatively intolerant to salinity) or other environmental factors – not sure if there could be other things also?

Focused on factors that have caused fish to show up at IP dead; IP is really right at cusp of fresh/saltwater zone – at periods of low freshwater flow saltwedge so it is possible that location of saltwedge could be a factor but was not examined specifically.

V. Did you look at correlations between the abundance of Atlantic sturgeon and the bycatch in the gillnet fishery? Was there a correlation?

Didn't look at it

VI. Previously you establish that you expect very few, if any, of the impinged sturgeon to be healthy/uninjured. What is your assessment of survival upon impingmenet on the Ristroph screens for sturgeon that are already injured or otherwise unhealthy?

January 1985 – January 1986 did continuous sampling – never saw a sturgeon at unit 2.

Ristroph screens and screen wash – not likely to change their state (i.e., not likely to increase likelihood of mortality, decrease likelihood of recovering from illness or injury, etc.). Pretty gentle system, low spray wash pressures, no sharp edges, water buckets. 15 minute maximum collection time. Size of fish and water velocity at intake – they should have ability to avoid the intakes.

Looked for information or studies from other facilities with RIstroph screens and were not able to find anything. EPRI 2005 or 2006 – classification in "hardy class" as compared to other but nothing else.

Concluding paragraph or report : If you do not see a correlation between the abundance of sturgeon in the river and impingement, why do you expect fewer Atlantic sturgeon to be impinged in the future as compared to the past and more shortnose to be impinged in the future as compared to the past?

September 10, 2012

Addressed above.