A2 551

{In Archive} Enercon Report #2 and More
John King to: palmeag 04/01/2010 10:17 AM

From: John King/R1/USEPA/US
To: palmeag@nu.com
Archive: This message is being viewed in an archive.

Allan,

Thank you for ensuring the 308 responses remain on schedule.

Concerning the question you posed on whether I felt, and by implication the EPA, pursuing an investigation of using the surface waters of the Hooksett Pool to cool Merrimack Stations effluent discharge was worth the effort .... well, we are still weighing to what extent the Regulatory Agency should reply. For us it is not a simple "Good idea" or "Bad idea" response.

As soon as Mark Stein reviews my reply you will have my response.

V/R, John
-----palmeag@nu.com wrote: -----

To: John King/R1/USEPA/US@EPA
From: palmeag@nu.com
Date: 03/31/2010 04:56PM
Cc: mmattson@normandeau.com
Subject: Enercon Report #2

John, A hardcopy is in overnight mail
to you. The third, and final, report is due June 24.

[attachment "March 31 2010 Cover Letter.pdf" removed by John King/R1/USEPA/US]
[attachment "Merrimack Report Revised 3-30-10.pdf" removed by John King/R1/USEPA/US]
[attachment "Attachment 1 3-30-10.pdf" removed by John King/R1/USEPA/US]

AR 551

{In Archive} Re: UMass-Dartmouth
John King to: palmeag
Cc: John King

10/25/2011 02:34 PM

From: John King/R1/USEPA/US
To: palmeag@nu.com
Bcc:
Archive: This message is being viewed in an archive.

Allan,

I must say the physics involved in Dr. MacDonald's article appears interesting.

I can not, as an EPA employee provide an opinion on whether PSNH should or should not expend funds on such a research project.

palmeag Your folks met with these guys back in 2007 (se... 03/30/2010 06:48:39 PM

From: palmeag@nu.com
To: John King/R1/USEPA/US@EPA
Date: 03/30/2010 06:48 PM
Subject: UMass-Dartmouth

Your folks met with these guys back in 2007 (see below). We have this scope of work to have them evaluate the plume and determine if it's a candidate for "enhanced surface cooling." Think we should give it a shot?

Background

The purpose of the proposed study is to assess the preliminary feasibility of Enhanced Surface Cooling (ESC) at the Merrimack Station facility in Bow, NH, owned and operated by Public Service of New Hampshire (PSNH). ESC is a method of discharging excess heat from industrial processes to a local water body in a manner optimized for the transfer of heat to the atmosphere. The preliminary study described here will assess the size of a surface plume that is required so that the rate of heat transferred to the atmosphere is equal to the heat output associated with the Merrimack Station facility. Calculations will be based on mean operating and meteorological data for specific time periods. Growth of the plume surface area during prolonged periods of low winds will also be considered.

Scope of Work

The proposed work includes tasks necessary to prepare a report on the preliminary feasibility of ESC at PSNH's Merrimack Station facility. The proposed project tasks are as follows:

1. Review of existing documentation

A review of the existing documentation will be performed to determine typical operating, meteorological, and environmental conditions associated with the plant

and the adjacent pool of the Merrimack River. Emphasis will be placed on summer conditions with low river flow, but other conditions will also be addressed for comparison. Existing data will be provided by PSNH, including, but not limited to, cooling system flow rates and temperatures (intake/discharge), design details of intake and discharge structures, bathymetry of the Merrimack River in the vicinity of the Merrimack Station facility, and the results of previous environmental studies, including temperature monitoring in the Merrimack River. In addition, local meteorological data will be obtained from nearby monitoring stations.

2. Development of methodology

Based on the above review, a methodology for the preliminary feasibility assessment will be developed. It is anticipated that the methodology will be similar to that presented in a recent paper entitled 'Enhanced Surface Cooling as an Alternative for Thermal Discharges' by Daniel MacDonald, published in the December 2009 issue of the Journal of Environmental Engineering (ASCE).

3. Preliminary Feasibility Analyses

After refinement of the methodology, preliminary analyses will be conducted to address the feasibility of ESC at the Merrimack Station facility. It is anticipated that the primary focus will be on low river flow summer conditions, but typical conditions for other seasons will also be analyzed for comparison. Analyses will address the surface area required for atmospheric heat transfer to match the heat output from the facility, but will not address the feasibility of creating and maintaining the required surface plume, or potential biological impacts associated with the required surface plume. We will also analyze local wind records to evaluate the likelihood and impact of extended periods of low winds on the required size of the surface plume.

4. Report Preparation

Upon completion of the analysis, a brief report will be prepared and submitted to PSNH documenting the findings of the preliminary feasibility assessment.

Project Deliverables

The deliverable associated with the proposed work is a completed report of the findings of the proposed study, which will be submitted to PSNH at the completion of the work.

----- Forwarded by Allan G. Palmer/NUS on 03/30/2010 06:42 PM -----

Dan MacDonald <dmacdonald@umassd.edu>

10/10/2008 02:41 PM

To: Allan G. Palmer/NUS@NU

cc: "Lyndon, William" <wlyndon@umassp.edu>

Subject: Re: Request for EPA meeting notes and attendees

Hi Allan,

Bill Lyndon has asked me to send you a summary of my EPA meeting last year, and to provide a brief description of how enhanced surface cooling (ESC) could provide benefits for entrainment.

I presented the ESC concept at EPA Region I headquarters in Boston on October 29, 2007. The meeting was attended by 8 technical staff from four different agencies, including:

Phil Colarusso, US EPA
Eric Nelson, US EPA
Gerry Szal, Mass DEP
Jack Schwartz, Mass DMF
Todd Callaghan, Mass CZM
John Nagle, US EPA
Danielle Gaito, US EPA
Sharon Demeo, US EPA

My presentation was focused on three separate scientific studies that tie in with the ESC concept, and then presented the ESC ideas focusing on one specific site, but stressing that we are hopeful the concept can be applied to other sites.

The response from the group was extremely receptive. The talk was originally scheduled for 45 minutes, but the meeting lasted for over two hours. Several at EPA specifically stated that they viewed the ESC concept to be an "innovative" and "out of the box" approach.

Merrimack Station actually came up briefly as we discussed other potential sites.

With regards to entrainment issues, the ESC concept could potentially reduce intake flows (and thus entrainment) in certain applications. The goal of ESC is to enhance heat loss to the atmosphere rather than reduction of temperatures through mixing and dilution. Heat loss to the atmosphere is driven by the excess temperature of the waste heat stream, so warmer discharge waters would allow heat to escape to the atmosphere more rapidly. Hence, a reduction in intake flow, by concentration of waste heat into a smaller volume of water, could potentially be realized, depending on plant operating parameters and discharge considerations.

Feel free to contact me if you have any questions.

Sincerely,
Dan MacDonald

Lyndon, William wrote:

> Dan,
>
> I just spoke with Allan Palmer about your EPA meeting.
>
> Would you please send him a summary of what was discussed and your
> thoughts about entrainment?
>
> Thanks for your help.
>
> Best regards, Bill
>
> Bill Lyndon
> CVIP Licensing Associate
> UMass Dartmouth
> 617-839-2851 Cell
> 508-910-9843 Office
> 508-999-9120 Fax
> wlyndon@umassp.edu <mailto:wlyndon@umassp.edu>
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