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Mr. Andrew D. Dehoff
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**BELL BEND NUCLEAR POWER PLANT
RESPONSE TO COMMENTS CONCERNING SEASONAL
AVAILABILITY AND WATER USE
BNP-2012-044 Docket No. 52-039**

- References:
- 1) Terry L. Harpster, PPL Bell Bend, LLC to James Richenderfer, Susquehanna River Basin Commission, SRBC Notice of Application Review response – Seasonal Availability and Water Use, dated July 8, 2010 [BNP-2010-165].
 - 2) Terry L. Harpster, PPL Bell Bend, LLC to James Richenderfer, Susquehanna River Basin Commission, Application for Surface Water Withdrawal Application for Consumptive Water Use, dated January 14, 2011 [BNP-2011-005].
 - 3) Andrew D. Dehoff, Susquehanna River Basin Commission, to M. J. Caverly, PPL Bell Bend LLC., “Re: Bell Bend Nuclear Power Plant; BNP-2010-165; Seasonal Availability and Water Use; Salem Township, Luzerne County, Pennsylvania”, dated January 6, 2012.

As Enclosure 1 please find the PPL Bell Bend, LLC (PPL) response to the Commission’s letter (Reference 2).

Should you have any questions please feel free to contact me.

Respectfully,

Gary Petrewski

GP/kw

Enclosure: 1) PPL Response to SRBC Letter Comments dated January 6, 2012

cc: (w/ Enclosure)

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Enclosure

PPL Response to SRBC Letter Comments dated January 6, 2012

SRBC Comment #1:

In the last bullet on page 2, titled "ESWS Cooling Tower Evaporation," the evaporation from simultaneous operation of two Essential Service Water System (ESWS) towers is indicated as 324 gallons per minute (gpm) average evaporation and 512 gpm peak evaporation. In BNP-2011-005, page 4 of 8, the peak evaporation is indicated as slightly less at 480 gpm. Additionally, in BNP-2011-025 sent to the Nuclear Regulatory Commission on January 28, 2011, the average evaporation rate for two ESWS towers is indicated as 1,142 gpm, and the peak evaporation is related to four-tower operation and is not relevant. These evaporation rates should be consistently defined and quantified for each operating mode.

PPL Response:

The approach used by PPL to determine the Maximum Daily (Peak Day) Surface Water Withdrawal and Maximum Daily (Peak Day) Surface Water Consumptive Use was to calculate the maximum expected daily evaporation rate from the entire Bell Bend Nuclear Power Plant. The primary sources of evaporation for the plant are the two natural draft Circulating Water System (CWS) cooling towers operating with the unit at 100% power. Additionally, with the unit at 100% power, two mechanical draft Emergency Service Water System (ESWS) cooling towers will also be in service. The evaporation rate from the two natural draft CWS cooling towers is the dominant factor in determining the maximum expected daily evaporation rate.

Therefore, to determine a maximum expected daily evaporation rate, the worst case meteorological conditions that result in the maximum evaporation rate for the two natural draft CWS cooling towers was determined from meteorological records from Wilkes-Barre from 1949 through 2009. That day was determined to be July 15, 1995 when the daily average wet bulb temperature was 66.2 °F and the daily average relative humidity was 77.8%. On this day with these meteorological conditions an ESWS two tower evaporation rate was calculated to be 480 gpm as described in BNP-2011-005.

To determine a maximum expected daily evaporation rate for use in ultimately determining the Maximum Daily (Peak Use) Surface Water Consumptive Use for our permit application the value of 480 gpm for the ESWS two tower evaporation rate was added to the 16,723 gpm for the CWS two tower evaporation to obtain the maximum expected daily evaporation rate of 17,203 gpm.

The other three evaporation rates for the ESWS Cooling Towers referenced in your question were calculated for other reasons and were not used to serve as a basis for the surface water consumptive use values presented in our permit application. Each of these three values is explained as follows:

- 324 gpm identified in BNP-2010-165 is an average daily ESWS two tower evaporation rate with the plant at full load. The ESWS two tower evaporation rate was calculated for each day from meteorological records from Wilkes-Barre from 1949 through 2009, the values summed and then divided by the number of days to derive the value of 324 gpm. This is a reference value and is not used to determine any SRBC-related limiting values.

- 512 gpm identified in BNP-2010-165 is the peak day ESWS two tower evaporation rate with the plant at full load. The ESWS two tower evaporation rate was calculated for each day from meteorological records from Wilkes-Barre from 1949 through 2009 and the worst day was determined to be April 27, 2009 when the daily average wet bulb temperature was 59.4 °F and the daily average relative humidity was 34.2%. This is a reference value and is not used to determine any SRBC-related limiting values.
- 1142 gpm identified in BNP-2011-025 is the ESWS two tower evaporation rate used in the BBNPP COLA and actually comes from the US EPR™ FSAR Table 9.2.5-2. This ESWS evaporation value represents the maximum evaporation loss from two ESWS cooling towers at peak heat load and design ambient conditions during the 72 hour period after the Design Basis Accident (DBA). The evaluation assumes that only two of the four normally available ESWS towers are available. The US EPR™ design concept is only two ESWS towers are available for post accident cooling. The assumptions during the accident scenario apply this principle of a loss of two towers based on a combination of a single failure along with a tower being unavailable due to maintenance. This ESWS evaporation rate of 1142 gpm is a bounding value of maximum ESWS evaporation rate for DBA conditions, generic for all US EPR plants and is used in all US EPR™ COLA applications. Other than specification in the BBNPP COLA as a generic EPR maximum design ESWS evaporation rate for DBA conditions, this ESWS value is not utilized in any SRBC-related applications or PPL BBNPP calculations.

The above information is summarized in the following table.

ESWS TWO TOWER VALUE	BASIS	SRBC-RELATED USE
480 gpm	Evaporation rate with the plant at full load that coincides with the peak day natural draft cooling tower maximum evaporation rate	BBNPP design value used to determine Maximum Daily (Peak Day) Surface Water Withdrawal and Maximum Daily (Peak Day) Surface Water Consumptive Use
324 gpm	Average daily ESWS evaporation rate with the plant at full load.	BBNPP reference value - not used to determine any SRBC-related limiting values.
512 gpm	Peak-day ESWS evaporation rate with the plant at full load.	BBNPP reference value - not used to determine any SRBC-related limiting values.
1142 gpm	U.S. EPR™ evaporation rate during a accident scenario	US EPR™ generic design bounding value applied to all US plants - not used to determine any SRBC-related limiting values.

In conclusion:

- All three PPL calculated values are correct and consistent for the BBNPP site meteorological conditions for which they are calculated. These values are realistic operating range values based on historical meteorological data.

- The US EPR™ generic maximum ESWS evaporation rate for DBA conditions is correct and is not inconsistent with the other values given the meteorological conditions for which it is calculated.
- NRC-related values are often generic or site-specific bounding values. PPL will continue to provide applicable values for permitting application review and approval that meet SRBC regulations and requests.

SRBC Comment #2:

The commission does not agree with the conclusion in the second paragraph on page 7 that "The monthly comparisons in Table 3 clearly demonstrate the adequacy of supply at BBNPP". The adequacy of water supply will be determined by careful review of aquatic studies, plans for consumptive use mitigation, and compliance to Commission policies and regulations.

PPL Response:

We acknowledge that the Commission will arrive at its own conclusion with respect to the adequacy of water supply. In BNP-2010-165, Enclosure 1, Page 7 PPL was drawing a conclusion based on our evaluation of the studies and data presented to date. We will be more careful in the future so as not to appear to be trying to draw a conclusion for the SRBC.