



ONE BUCKEYE DRIVE
PERRY, FLORIDA 32348-7702

October 23, 2012

Jeff Koerner
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, MS 5500
Tallahassee, FL 32399-2400

RE: Taylor County – Air Permitting
Buckeye Florida Limited Partnership
AIRS ID No. 1230001
Air Permit No. PSD-FL-397

Dear Mr. Koerner,

This letter requests an extension of Permit No. PSD-FL-397 for Buckeye's Energy Independence Project.

This permit was originally issued in August 2008 for a multi-phased project that reduced the amount of electricity purchased from the grid and reduced the amount of fossil fuel used at Buckeye's Foley Plant. This permit has a current expiration date of November 1, 2012.

Phase I of the project included the conversion of the No. 2 Recovery Boiler from direct-contact evaporator units to low-odor non-direct contact units. This phase of the project was completed and started up in July 2010.

Phase II of the project included two parts:

1. The addition of a new condensing steam turbine – electrical generator. This part of the project was completed and started up in January 2011.
2. The conversion of the No. 3 Recovery Boiler from direct-contact evaporator units to low-odor non-direct contact units. This part of the project was completed in March 2012.

Subsequent to the conversion, the boiler has experienced an extreme rate of fouling of the upper furnace heat transfer surfaces. An increased rate of fouling was expected, but not at the levels currently being experienced. Due to this excessive fouling, the No. 3 Recovery Boiler has been required to shut down for cleaning approximately every 3

weeks, as compared to pre-conversion operation when the boiler required 6 months between shut downs.

There are multiple causes for the high fouling rate. First, higher combustion air flows are necessary to process the increased heat input rate to the boiler, since the black liquor oxidation process is no longer lowering the heating value of the black liquor. In addition, the oxygen that was previously chemically bound in the black liquor during the oxidation process is no longer available and must now be provided to the boiler by the forced-draft (FD) fans. Second, the new carbon monoxide (CO) permit limit has led to another small incremental air demand to provide slightly higher excess oxygen levels than pre-conversion to ensure compliance with the new requirement. These air demand changes have led to an air demand increase of approximately 10 percent over pre-conversion levels. Another change occurring as a result of the conversion was a significant increase in the droplet size of the black liquor, which has occurred for a number of reasons.

The combination of the higher air demand and the greater black liquor droplet size leads to a higher rate of liquor droplets being entrained and combusted higher in the furnace than pre-conversion. As a result, much higher temperatures are occurring in the upper furnace and the boiler is plugging in 3 weeks rather than the historical 5 to 6 months. The higher flue gas temperatures in the upper furnace also give serious risk of higher corrosion rates of the screen tubes and superheaters. Boiler tube leaks and safety impacts are expected to occur if the process problems are not addressed.

It is noted that while these problems have occurred, Buckeye has been able to maintain compliance with new emission limits for the boiler imposed by the air construction permit by lowering the operational rate of the boiler. However, Buckeye would like to implement changes to allow the boiler to achieve the previously planned (permitted), black liquor solids firing rate (which did not change from the pre-conversion permitted rate).

Buckeye proposes to implement additional physical changes to the No. 3 Recovery Boiler to allow the permitted black liquor solids rate to be achieved while maintaining compliance with all emission limits. To determine the physical changes which must be made, a computer modeling study of the No. 3 Recovery Boiler furnace has been initiated by the boiler manufacturer who performed the conversion in order to determine the modifications to the furnace that will provide the best combustion improvements. There is a reasonably high probability that the boiler configuration found by the modeling study will include the following components:

- Additional primary air ports near the furnace corners may be added, or air port sizes could change, etc.
- A true secondary air zone (just a few feet above the primary air zone) would likely be required. The configuration might be a two-wall interlaced arrangement with air ports on just two walls.

- The existing secondary air zone (one level above the liquor guns) would require modification and become the tertiary air zone. These changes would likely eliminate the existing air ports, in favor of a two-wall interlaced arrangement with air ports on just two walls.
- Since the new air system layout would introduce air more effectively in each combustion zone, and provide better mixing of oxygen and black liquor, the total air demand for the new system may be expected to be slightly lower at a given rate as compared to the existing system. It would also likely produce improved CO control capability.

Buckeye anticipates that this additional work on No. 3 Recovery Boiler will be accomplished in two phases. Some portion of the scope will be installed in the Spring of 2013 and the remainder of the scope will be installed in the Spring of 2014. Buckeye requests that Permit No. PSD-FL-397 be extended to allow for this additional project work to be completed, along with sufficient time to optimize the boiler operation and demonstrate compliance. We anticipate this will be accomplished by **August 1, 2014**.

If you have any questions or need any additional information, please contact me at (850) 584-1398.

Respectfully Submitted,



Dave Weeden
Environmental Program Manager

Cc: Khalid AlNahdy - NED
Jerry Woosley - NED