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August 21, 2001

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**BUREAU OF AIR REGULATION**

Florida Department of Environmental Protection  
Bureau of Air Regulation, New Source Review Section  
2600 Blair Stone Road, MS 5500  
Tallahassee, Florida 32399-2400

Attention: Mr. A.A. Linero, P.E.

RE: OKEELANTA CORPORATION (ID NO. 0990005)  
OKEELANTA SUGAR AND REFINERY MILL  
CONVERSION OF BOILER NO. 16 TO GAS  
PERMIT NO. 0990005-009-AC; PSD-FL-169A

Dear Mr. Linero:

Okeelanta Corporation (Okeelanta) received the Draft Permit and Technical Evaluation and Preliminary Determination for the referenced Prevention of Significant Deterioration (PSD) permit application in early June. Subsequently, on July 3, 2001, representatives of Okeelanta [David Buff of Golder Associates Inc. (Golder) and David Dee of Landers & Parsons] met with representatives of Florida Department of Environmental Protection (FDEP) to discuss the draft permit. Based on this meeting, Golder has received a draft letter to Okeelanta presenting a summary of the changes that FDEP has agreed to and corresponding revisions to specific conditions in the draft permit. The proposed revisions are restated as follows:

1. The nitrogen oxides (NO<sub>x</sub>) emissions standards for Boiler No. 16 would be revised as follows:
  - The draft permit would be revised to include a "new and clean" NO<sub>x</sub> standard of 0.055 pound per million British thermal units (lb/MMBtu), per the manufacturer's [Coen Inc. (Coen) guarantee. Initial 3-hour tests will be required for each authorized fuel.
  - For the first 12 months after the initial NO<sub>x</sub> test, compliance with the NO<sub>x</sub> continuous emission monitoring standard (CEMS) will be demonstrated based on a 30-day rolling average. Thereafter, compliance with the NO<sub>x</sub> CEMS will be demonstrated based on a 24-hour (daily) average. This provides Okeelanta a period of actual operating experience for the modified unit before the more stringent averaging period becomes effective.
2. New Source Performance Standards (NSPS) Subpart Db specifies a particulate matter (PM) standard only for units firing oil and having a sulfur dioxide (SO<sub>2</sub>) control device. This boiler limits SO<sub>2</sub> emissions by using very low sulfur fuels without the use of additional controls. Therefore, no particulate matter test will be required.
3. FDEP will also correct Condition No. 14 to remove a reference to the ascarite trap used in U.S. Environmental Protection Agency (EPA) Method 10, which was incorrectly included for the boiler.

Based on discussions with Okeelanta and the results of our additional research, Okeelanta continues to have concerns regarding the proposed daily average NO<sub>x</sub> limit. Operating conditions for Boiler No. 16 will usually be dependent on the steam demand for the mill and sugar refining processes, which are inherently variable. For reasons supported in detail below, a daily average NO<sub>x</sub> limit of 0.06 lb/MMBtu is not achievable for each anticipated daily operating scenario that may be encountered. While this value is

appropriate for a 30-day rolling average NO<sub>x</sub> limit, we do not find it to be appropriate for a daily limit. The basis for this conclusion, along with the results of our additional research, are described below:

1. The anticipated future operation of Boiler No. 16 is that the boiler may be needed to supplement normal sugar mill and refinery operations by providing an average of 50,000 to 60,000 pounds per hour (lb/hr) steam. This estimate would represent a boiler load of 33 to 40 percent on average. However, it is also anticipated that the boiler will continue to experience days of both lower and higher steam demand, based on the inherent variability of sugar mill operations. The steam demand needed to operate the sugar mill and refinery is dependent on numerous factors, including multiple stages and batch operations which require the steam. For the mill and refining processes, adjustments are made to each stage of the process to optimize the overall operation. For example, the mill turbines for cane grinding and extraction is one of the largest stages affecting steam demand. The rate of operation of the two independent milling tandems at Okeelanta is dependent on the weather, which affects the rate that cane can be supplied to the mill. Too much rain will cease harvesting operations and shut down the mill entirely until the fields dry out. If rainfall is more isolated, it may slow down the cane harvesting and mill grinding rate for several days. This is one of many factors that affect the operations and make it inherently variable on a day-to-day basis.
2. Coen, the burner manufacturer, provides a NO<sub>x</sub> emission rate guarantee only for a 25-percent load or greater. The expected normal operation of Boiler No. 16 at close to this load, as well as anticipated operation at lower loads, greatly increases the potential to exceed a daily NO<sub>x</sub> standard based on the guaranteed emission limit. In our discussions with Coen, they have stated that the burner guarantee is only for steady-state conditions. When the boiler is starting up or shutting down, NO<sub>x</sub> emissions will actually increase. When the boiler is operating at a load of less than 25 percent, NO<sub>x</sub> emissions will increase. The primary reason for this is inferior mixing of the fuel and air, and higher excess air (O<sub>2</sub>) levels that occur under these conditions lead to higher NO<sub>x</sub> emissions. Furthermore, Coen only guarantees the performance of the burner up to completion of the initial compliance test, as clearly stated in their terms and conditions. This testing will not cover the scenarios of low and variable load conditions that will frequently be encountered.
3. Previous operating data for Boiler No. 16 showed variable NO<sub>x</sub> emissions, particularly during periods of relative infrequent use. The available NO<sub>x</sub> daily average emissions data for the period 1996 through 1999 are shown graphically in Figure 1. Note that NO<sub>x</sub> emissions data were not available for some periods due to instrument malfunction, breakdown, or repair; therefore, the boiler actually operated more than is indicated in the figure. However, operation of Boiler No. 16 in 1996 was considerably greater than in the period 1997–1999. The data indicate that as the boiler operation became more sporadic, the daily average NO<sub>x</sub> emissions increased (also indicating that the boiler was operating at lower loads). (Also note that the NO<sub>x</sub> RATA tests for 1996 and 1999 were very similar, indicating that the boiler was maintained properly.)

In addition, Golder's research has not found any Subpart Db boilers that have averaging times for NO<sub>x</sub> limits less than a 30-day rolling average (except California). We contacted all EPA Regional offices, as well as a number of state agencies, and inquired as to Subpart Db boilers. The results of our contacts are summarized in the attached Table 1. The only identification of a Subpart Db boiler with NO<sub>x</sub> limits based on an averaging time of less than 30 days was in California.

In 1998, the EPA revised Subparts Da and Db to incorporate several new and revised requirements into the NSPS. At that time, EPA chose not to revise the 30-day rolling average associated with the NO<sub>x</sub> emissions limit. In the summary of public comments and responses on the proposed changes (EPA-453/R-98-005, September 1998), EPA responded to comments concerning the 30-day rolling average for NO<sub>x</sub>. EPA's response stated, "The EPA has not proposed any change to the averaging period in the NSPS, and will not do so now. As demonstrated by the four facilities analyzed after proposal who all meet the revised output standards, 30 days is sufficient to account for operational variability." This statement

indicates that EPA was aware of the variability in NO<sub>x</sub> emissions from Subpart Db boilers and, therefore, elected not to reduce the averaging time associated with the NSPS.

Based on the above discussion, Okeelanta requests that a higher 24-hour daily average NO<sub>x</sub> limit be imposed on Boiler No. 16. Daily NO<sub>x</sub> data for Boiler No. 16 from 1996 is shown in Table 2. In 1996, when Boiler No. 16 was operating frequently, the average NO<sub>x</sub> emission rate was 0.15 lb/MMBtu while the maximum daily emission rate was about 0.24 lb/MMBtu. The 95-percent confidence level emission rate of the data is 0.25 lb/MMBtu (the mean plus two standard deviations). The ratio between the two is 0.25/0.15, or 1.7. It is anticipated that a very similar degree of variability in boiler operation and NO<sub>x</sub> emissions will occur during certain periods in the future. Applying this same ratio to the revised 30-day NO<sub>x</sub> limit of 0.06 lb/MMBtu results in a value of 0.10 lb/MMBtu. Therefore, Okeelanta proposes a 24-hour limit of 0.10 lb/MMBtu, while retaining the 30-day rolling average limit of 0.06 lb/MMBtu.

A related issue regarding the short-term NO<sub>x</sub> limit is the method of determining the 24-hour average emissions. The draft permit specifies a "24-hour (daily) average of available boiler operating hours." The permit requires mathematically averaging the hourly emission rate values recorded for each available boiler operating hour during the day. A boiler operating hour is defined as any 1-hour block of time during which the boiler combusted any fuel. At least three hourly emission rate values must be available to constitute a valid day.

Under such a scheme, the calculated daily average emission rate could be based on as little as 3 hours of operation, with each hour based on much less than 60 minutes of operation. For a boiler that may not operate on a continuous basis, this scheme would frequently penalize Okeelanta and not afford a full 24 hours over which to average the short-term NO<sub>x</sub> emissions for comparison to the short-term limit. Therefore, it is requested that the 24-hour limit be in terms of "hourly NO<sub>x</sub> emissions averaged over each 24-hour block of boiler operating hours."

Following are additional comments we have on the draft permit.

- **Page 2 of 10, Regulatory Classification**  
Title III. – The facility "may" be a major source of hazardous air pollutants (HAPs), consistent with the Title V permit for Okeelanta.
- **Page 5 of 10, Condition 4. Permitted Capacity:**  
Consistent with the request for the NO<sub>x</sub> emissions limit, specify the "24-hour (daily) average" instead of a "24-hour (block) average based on the last 24 hours of boiler operating hours".
- **Page 6 of 10, Condition 6. Emissions Standards:**
  - 6a. This note states that the carbon monoxide (CO) standards are "based on 3-hour test averages." Please clarify as "...based on the average of three test runs..."
  - 6b. Change "NO<sub>x</sub> limit of 0.06 lb/MMBtu, 30-day rolling average." to "NO<sub>x</sub> limit of 0.10 lb/MMBtu, 24-hour (block) average, based on the last 24 hours of boiler operating hours.
  - 6c. It is requested that the visible emissions (VE) exception of 20-percent opacity for one 6-minute period per hour be revised to 27-percent opacity, consistent with the NSPS Subpart Db. This will allow for boiler variability, as discussed above for NO<sub>x</sub>.
  - 6d. As agreed by FDEP that no PM testing will be required since the NSPS do not impose a PM limit. Also, FDEP states that the PM standard for distillate oil is "based on a 3-hour test average." Please clarify as "...based on the average of three test runs..." or delete, since no testing is required. FDEP should also consider deleting the PM limit in its entirety, since the NSPS do not require a limit, and the emissions are low.

- **Page 7 of 10, Condition 7. NO<sub>x</sub> CEMS:**
  - 7c. Revise to reflect the 30-day rolling average and the short-term limit based on a 24-hour block of operation..
  
- **Page 8 of 10, Condition 11. Excess Emissions – Defined:**
  - 11a. It is requested that during start-up conditions, VE shall not exceed 27-percent opacity, based on a 6-minute average and on the NSPS allowing up to 27-percent opacity during normal operation. Boiler No. 16 historically experienced opacity readings up to 41% opacity during startup (currently, no opacity limit applies for Boiler No. 16 during startup).
  12. It was agreed that PM testing would not be required. Also, it is requested that testing on fuel oil be delayed until 60 days after the firing of fuel oil in the boiler.
  
- **Appendix Db – NSPS Subpart Db Requirements for Boilers**

Please delete the references in Subpart Db that are not applicable to Boiler No. 16. Specifically, 60.43b(b) is not applicable since Boiler No. 16 does not use any conventional or emerging control technology to reduce SO<sub>2</sub> emissions. Additionally, to incorporate the previous changes, Appendices BD and SC will also need to be modified to be consistent with these revisions.

Thank you for consideration of these comments. Please call or write if you have any questions about this request.

Sincerely,

GOLDER ASSOCIATES INC.

*David A. Buff*

David A. Buff, P.E., Q.E.P.  
Principal Engineer  
Florida P. E. #19011  
SEAL

DB/SLW/nav

Enclosures

cc: M. Capone  
J. Meriwether  
S. Watson  
D. Dee  
B. Tarr

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*C. Holladay ✓*  
*D. Graziani, Palm Beach Co. ✓*  
*J. Goldmann, BEO ✓*  
*G. Wally, EPA ✓*  
*G. Bennett, NPS ✓*

**Table 1. State Survey on Supart Db Boilers**

<b>States/ Region</b>	<b>Contact Number</b>	<b>Contact Name</b>	<b>Information Given</b>
Alabama	(334) 271-7861	Jim Wilson	30-day period
Georgia	(404) 363-7022	John Ynpena	30-day period
Louisiana	(225) 765-0219		30-day period
S. Carolina	(803) 898-4105	Robbie Brown	30-day period
N. Carolina	(919)715-6283	Ed Martin	30-day period
Kentucky	(502) 573-3382	Don Nuall	30-day period
Mississippi	(601) 961-5746	Celina Sumrall	30-day period
Tennessee	(615) 532-6825	Randy Thompson	30-day period
Michigan	(517) 241-7468	John Tial	30-day period
California	(415) 771-6000	Alex Saschin	3-hour avg. period; 15 min. avg. period for South Coast
New York	((315) 793-2554	Craig Weill	30-day period
Region 1	(617) 918-1197	Steven Yee	Call states for info or look up web address
Region 2	(202) 564-7277		Call states for info
Region 3	(919) 541-5285		Call states for info
Region 4	(404) 562-9118	Jim Little	30-day period
Region 5	(312) 886-4447	Pam Blakley	Call states for info
Region 6	(214) 665-7212	Stanley Spriel	30-day period; call states for more info.
Region 7	(913) 551-7622	John Knodle	No Db boilers constructed or modified in 15 years
Region 8	(303) 312-6438	Mrs. Bond	30-day period
Region 9	(415) 744-1238	Karen Dzienkowski	1- or 3-hour avg. period
Region 10	(206) 553-4303	Elizabeth Waddell	Call states for info

Table 2. Daily NO<sub>x</sub> Averages for Boiler No. 16, 1996

Date	Average NO <sub>x</sub> Emissions (lb/MMBtu)
05/01/96	0.1238
05/02/96	0.1281
05/03/96	0.1234
05/04/96	0.1149
05/05/96	0.1255
05/06/96	0.1295
05/07/96	0.1349
05/08/96	0.1286
05/09/96	0.1293
05/21/96	0.1428
05/22/96	0.1445
05/23/96	0.0836
05/24/96	0.1129
05/25/96	0.1414
05/26/96	0.1381
05/27/96	0.1387
05/28/96	0.1389
05/29/96	0.1326
05/30/96	0.1324
05/31/96	0.1318
06/03/96	0.1430
06/04/96	0.1526
06/05/96	0.1553
06/06/96	0.1472
06/07/96	0.1537
06/08/96	0.1510
06/09/96	0.1516
06/10/96	0.1527
06/11/96	0.1486
06/12/96	0.1347
06/13/96	0.1328
06/14/96	0.1441
06/17/96	0.1360
06/18/96	0.1311
06/19/96	0.1523
06/20/96	0.1377
06/21/96	0.1493
06/22/96	0.1521
06/23/96	0.1521

Table 2. Daily NO<sub>x</sub> Averages for Boiler No. 16, 1996

Date	Average NO <sub>x</sub> Emissions (lb/MMBtu)
06/24/96	0.1636
06/25/96	0.1550
06/26/96	0.1497
06/27/96	0.1488
06/28/96	0.1694
06/29/96	0.1671
06/30/96	0.0387
08/01/96	0.0921
08/02/96	0.0842
08/12/96	0.1628
08/13/96	0.1541
08/14/96	0.1637
08/15/96	0.1734
08/16/96	0.1589
08/17/96	0.1584
08/18/96	0.1753
08/19/96	0.1682
08/20/96	0.1455
09/01/96	0.0354
09/02/96	0.0384
09/03/96	0.0554
09/04/96	0.0681
09/05/96	0.1054
09/06/96	0.1296
09/07/96	0.1251
09/09/96	0.1291
09/10/96	0.1104
09/11/96	0.0994
09/12/96	0.1163
09/13/96	0.1387
09/15/96	0.1601
09/16/96	0.1664
09/17/96	0.1559
09/18/96	0.1343
09/19/96	0.1164
09/20/96	0.1215
09/21/96	0.1236
09/22/96	0.1248
09/23/96	0.1250

Table 2. Daily NO<sub>x</sub> Averages for Boiler No. 16, 1996

Date	Average NO <sub>x</sub> Emissions (lb/MMBtu)
09/24/96	0.1204
09/25/96	0.1124
09/26/96	0.1406
09/27/96	0.0325
09/28/96	0.1258
09/29/96	0.1211
09/30/96	0.1240
10/01/96	0.1302
10/02/96	0.1263
10/03/96	0.1368
10/04/96	0.1478
10/05/96	0.1441
10/06/96	0.1473
10/07/96	0.1580
10/14/96	0.1685
10/15/96	0.1779
10/16/96	0.1600
10/22/96	0.1442
10/23/96	0.1498
10/24/96	0.1479
10/25/96	0.1232
10/26/96	0.1315
10/28/96	0.1692
10/29/96	0.1747
10/30/96	0.1689
11/18/96	0.2216
11/19/96	0.2118
11/20/96	0.1868
11/21/96	0.1312
11/22/96	0.1064
11/23/96	0.1267
11/24/96	0.1557
11/25/96	0.1468
11/26/96	0.1484
11/27/96	0.2359
11/28/96	0.1378
01/08/97	0.1730
01/09/97	0.1691
01/16/97	0.1506



Table 2. Daily NO<sub>x</sub> Averages for Boiler No. 16, 1996

Date	Average NO <sub>x</sub> Emissions (lb/MMBtu)
01/17/97	0.1885
05/16/97	0.2501
05/17/97	0.2627
01/09/98	0.1534
01/10/98	0.1468
02/24/98	0.2921
02/25/98	0.3099
02/26/98	0.2458
03/09/98	0.0470
03/16/98	0.2621
03/17/98	0.2593
03/18/98	0.2427
03/19/98	0.2582
03/25/98	0.3229
01/14/99	0.1340
<b>Average NO<sub>x</sub> Data</b>	<b>0.1479</b>
<b>Standard Deviation</b>	<b>0.0479</b>

Figure 1. Daily Average NO<sub>x</sub> Emissions for Okeelanta  
Boiler No. 16 (1996-1999)

