



Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

December 12, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Rodney Williams
Plant Manager
Wheelabrator Ridge Energy, Inc.
3131 K-Ville Avenue
Auburndale, Florida 33823

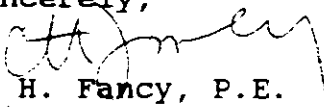
Dear Mr. Williams:

RE: Revised BACT Limits (PSD-FL-183)

Enclosed is a draft of the revised permit limits proposed by the Department as required by Specific Condition No. 17 of the subject permit along with the basis for the revised limits. After we receive your preliminary comments, we will finalize the permit conditions and send the proposed final permit to you. At that time you will need to publish a notice as you have for prior notices concerning this permit. As before, the Department's final action will be issued after the 30-day comment period expires.

If you have questions, please contact me or Al Linero at 904-488-1344.

Sincerely,


C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

Enclosures

CHF/JR

c: W. Thomas, SWD
R. Harwood, Polk County
J. Harper, EPA
J. Bunyak, NPS
S. Smallwood, P.E.

DRAFT

Best Available Control Technology (BACT) Determination
Ridge Generating Station
Polk County
(REVISED FOR FINAL PERMIT LIMITS)

In 1992 the Department issued a permit to construct a 50 MW power generation facility named the Ridge Generating Station (RGS) and located near Auburndale in Polk County, Florida. The facility consists of a solid fuel boiler, steam turbine, generator and associated equipment. Fuel for the facility consists of a mixture of waste wood and scrap tires.

A BACT determination was required for all regulated air pollutants emitted in amounts equal to or greater than the significant emission rates listed in Table 500-2 of Florida Administrative Code (F.A.C.) Rule 17-2.500. The Department issued the construction permit with preliminary emission limits under the condition that final emission limits would be established following completion of a comprehensive emissions testing program conducted by the permittee. This revised BACT determination is pursuant to that permit condition.

The permittee proposed final emission limits based on a statistical analysis of the comprehensive test program results covering the period from September 1, 1994, through April 30, 1995. During this period, the full range of permitted fuels were fired ranging from 100% wood-0% tires to 60% wood-40% tires. Compared to those proposed limits below are the current "interim" permitted limits based on maximum emissions for the worst case fuel mix of 60% wood-40% tires. Also shown are the average actual and maximum emissions determined by the Department from the RGS data for operation under the worst-case condition of firing 60% wood-40% tires at 90-100% of permitted capacity (45-50 MW) during the period from March 1, 1995 through April 30, 1995.

| Pollutant | <u>Maximum Allowable Emissions (All Fuels)</u> | | | | <u>60% Wood-40% Tires</u> | | |
|-----------|--|----------------|--------------------------|----------------|-----------------------------|--------------|----------------|
| | <u>RGS Proposed Final*</u> | | <u>Interim Permitted</u> | | <u>Test Program Actuals</u> | | |
| | <u>lb/hr</u> | <u>tons/yr</u> | <u>lb/hr</u> | <u>tons/yr</u> | <u>lb/hr</u> | <u>lb/hr</u> | <u>tons/yr</u> |
| PM/PM10 | 12.6 | 55.2 | 12.6 | 55.2 | 1.2~ | 2.1~ | 5.3~ |
| SO2 | 96.0 | 420.5 | 72.0** | 315.4 | 75.0^ | 213.5^ | 328.5^ |
| NOx | 94.5 | 413.9 | 94.5 | 413.9 | 83.2^ | 153.1^ | 364.4^ |
| CO | 230.0 | 1,007.4 | 315.0 | 1,379.7 | 76.4^ | 447.2^ | 334.6^ |
| VOC | 22.1 | 96.8 | 22.1 | 96.8 | 1.4~ | 1.7~ | 6.1~ |
| HCL | 5.0 | 22.1 | 5.0 | 22.1 | 0.4~ | 0.7~ | 1.8~ |
| Hg | 0.022 | 0.097 | 0.022 | 0.097 | 8.6~" | 9.1~" | 37.7~" |
| Pb | 0.25 | 1.1 | 0.25 | 1.1 | 9.3~" | 40.0~" | 40.7~" |
| Be | 0.0063 | 0.03 | 0.0063 | 0.03 | 1.8~' | 1.8~' | 7.9~' |

* Based on 24 hr. block averages of CEMS data over 8 month period.

** 30-day rolling average (amended for firing of 60% wood-40% tires).

- Based on averages of two quarterly manual stack tests.

^ Based on total CEMS average for worst-case operation over 2 month period.

" Multiply by 0.0001.

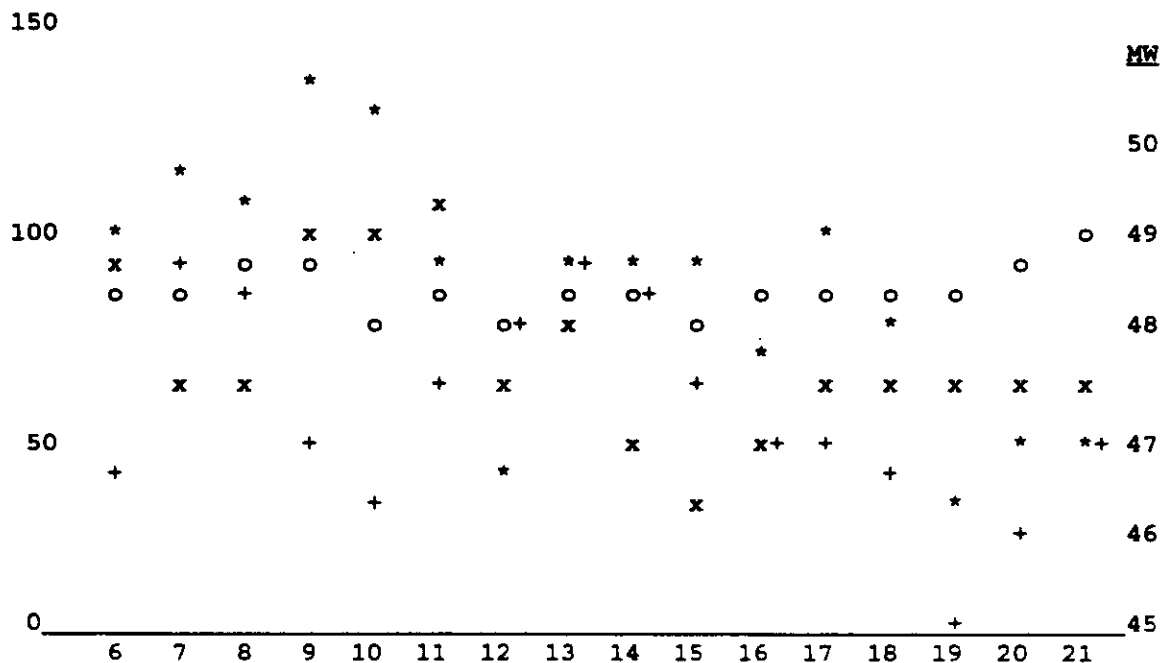
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CONTENTS SUBJECT TO CHANGE

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The SO2 emissions varied greatly compared to the fluctuations in NOx emissions, indicating far better response and control for the SNCR system relative to the Spray Dryer-Absorber/Fabric Filter system. Wide variation in CO emissions occurred but this was expected due to the nature of the feed. The response of the SO2 control system appears to lag considerably behind changes in megawatts produced. This can be seen below from the operating data for the longest sustained operating period at 90-100% of capacity while firing 60% wood-40% tires (about 16 hours). Other operating cycles of less duration showed similar variations:

EMISSION RATES (LBS/HR)



HOUR # - CEMS DATA FOR 3/1/95
 (*) - SO2 (o) - NOx (x) - CO (+) - MW

In establishing initial limits based on 24-hour averages, the Department did not know that the fluctuation in emissions would be great enough to justify longer-term averages in setting final limits. Also, it was not known initially that periods of continuous operation of the RGS boiler at full capacity would be so short relative to boilers firing more conventional fuels. For these reasons, the Department has proposed final emission limits based on 30-day rolling averages. Listed below are the 30-day rolling averages calculated by the Department for the worst case condition (60% wood-40% tires), assuming that no interruptions had occurred in normal operation during the 30 days following initial firing with 40% tires through the final day of the test program on April 30.

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30-DAY ROLLING AVERAGE EMISSION RATE (LBS/HR)
FOR 3/30/95 - 4/30/95 (60% WOOD-40% TIRES)

| <u>DATE</u> | <u>SO2</u> | <u>NOx</u> | <u>CO</u> |
|-------------|------------|-------------|-----------|
| 3/30 | 57.9 | 80.1 | 98.4 |
| 3/31 | 57.1 | 80.3 | 99.0 |
| 4/1 | 57.9 | 80.8 | 101.6 |
| 4/2 | | BOILER DOWN | |
| 4/3 | | " " | |
| 4/4 | | " " | |
| 4/5 | | " " | |
| 4/6 | | " " | |
| 4/7 | | " " | |
| 4/8 | | " " | |
| 4/9 | | " " | |
| 4/10 | 57.3* | 79.1* | 101.3* |
| 4/11 | 56.3 | 78.1 | 99.1 |
| 4/12 | 56.9 | 76.3 | 98.6 |
| 4/13 | 56.4 | 74.5 | 95.3 |
| 4/14 | 54.8 | 73.5 | 94.3 |
| 4/15 | 54.3 | 72.8 | 95.7 |
| 4/16 | 53.1 | 71.7 | 95.5 |
| 4/17 | 52.6 | 70.7 | 93.8 |
| 4/18 | 52.7 | 69.9 | 91.1 |
| 4/19 | 53.9 | 69.6 | 89.6 |
| 4/20 | 53.6 | 68.7 | 88.6 |
| 4/21 | 52.6 | 68.2 | 89.4 |
| 4/22 | 52.4 | 67.7 | 89.7 |
| 4/23 | 52.7 | 67.6 | 89.9 |
| 4/24 | 52.3 | 67.0 | 92.1 |
| 4/25 | 51.7 | 67.1 | 95.3 |
| 4/26 | 52.1 | 67.8 | 95.7 |
| 4/27 | 51.3 | 67.1 | 94.7 |
| 4/28 | | BOILER DOWN | |
| 4/29 | | " " | |
| 4/30 | 51.6* | 66.5* | 93.9* |

* Assumes that operation was essentially continuous over the previous 30 days.

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The Department believes that final BACT emission limits should be based on the highest of the above CEMS data plus a margin for compliance. The following shows how these final limits for SO₂ and NO_x compare on the basis of heat input with the 40 CFR 60 Subpart Db limits for boilers:

| Pollutant | Highest 30-DRA | Final Limit 30-DRA | | Subpart Db |
|-----------------|----------------|--------------------|-----------|--------------------|
| | lb/hr | lb/hr | lb/MMBTU* | lb/MMBTU |
| SO ₂ | 57.9 | 65.0 | 0.10 | 0.5 (oil>0.5%) |
| NO _x | 80.8 | 90.0 | 0.14 | 0.3 (gas-wood-MSW) |
| PM | 2.1^ | 4.0^ | 0.006^ | 0.1 (>30% wood) |
| VE | - | 10% opacity | | 20% opacity |

- * Based on an average factor for MMBTU/MW of 12.8. This is presented for comparison only and is not a limit to be enforced.
- ^ Not a 30-DRA. EPA Method 5 test to be required if VE exceeded.

It should be noted that the final SO₂ limit is about 10% below the revised interim limit of 72 lb/hr and about 13% below the 75 lb/hr "continuous operation" average for 90-100% capacity utilization during the 60%-40% test period. This assumes that normal operation will follow the same pattern shown during the test program and will average less than 90-100% of full capacity on a continuous basis. If for some reason the plant operates at substantially higher average rates, the permittee has the capability of increasing lime injection rates to further control SO₂ emissions.

All of the final BACT emission limits are presented in the following table. In view of the extremely low emissions of VOCs, HCl, Hg, Pb, and Be relative to the interim limits, and the fact no control measures appear to be warranted for them at this time, the Department accepts the permittee's proposal to maintain the interim limits as the final limits for these pollutants. The Department found insufficient justification for including final limits for other pollutants such as ammonia, arsenic, benzene, cadmium, chromium, PCBs, dioxins/furans, zinc oxide, and sulfuric acid.

| Pollutant | Final BACT Limit | Basis for Compliance |
|---------------------|------------------|-------------------------------------|
| SO ₂ | 65.0 lb/hr | 30-Day Rolling Average CEMS* |
| NO _x | 90.0 lb/hr | 30-Day Rolling Average CEMS* |
| CO | 114.0 lb/hr | 30-Day Rolling Average CEMS* |
| PM/PM ₁₀ | 4.0 lb/hr | EPA Method 5 if VE>10% |
| VOC | 22.1 lb/hr | EPA Method 25A^--only if requested |
| HCl | 5.0 lb/hr | EPA Method 26^--only if requested |
| Hg | 0.022 lb/hr | EPA Method 101A^--only if requested |
| Pb | 0.25 lb/hr | EPA Method 12^--only if requested |
| Be | 0.0063 lb/hr | EPA Method 104^--only if requested |
| VE | 10% Opacity | EPA Method 9--annual basis |

- * A new 30-day rolling average emission rate is calculated each steam generating unit operating day as the average of all of the hourly emission data for the preceding 30 steam generating unit operating days.
- ^ As performed during test program.

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Contact For Further Information:

John Reynolds
Permit Engineer
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400
Telephone 904-488-1344

Recommended By:

C.H. Fancy, P.E., Chief
Bureau of Air Regulation

Date

Approved By:

Howard L. Rhodes, P.E., Director
Division of Air Resources Management

Date