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Bureau of Air Monitoring
& Mobile Sources

May 17, 2007

063-7650

Florida Department of Environmental Protection
Bureau of Air Regulation
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attention: Mr. Ed Svec

**SUBJECT: SOUTHERN GARDENS CITRUS PROCESSING CORPORATION
PILOT TEST OF HIGHER SULFUR FUEL ON NO. 1 PEEL DRYER**

Dear Mr. Svec:

Southern Gardens Citrus Processing Corporation (SGCPC) is planning to conduct a pilot test of higher sulfur fuel oil in the No. 1 Peel Dryer at the Clewiston citrus processing facility, as authorized by pending Air Construction Permit No. 0510015-018-AC. The purpose of the test is to determine if the SO₂ emission limit for the No. 1 Peel Dryer can be met while burning higher sulfur content fuel oil. It is also for the purpose of determining the feasibility of using a continuous emissions monitoring system (CEM) for SO₂.

Please find attached, at your request, a test protocol for the study. The protocol addresses the CEM to be used, and the quality assurance/quality control procedures to be used.

Please call or email if you have any questions or comments on the protocol. If the protocol is acceptable, please confirm in writing or via email. Thanks for your assistance in this matter.

Sincerely,

GOLDER ASSOCIATES INC.

David A. Buff
David A. Buff, P. E., Q. E. P.
Florida P. E. #19011

Enclosure

DB/all

Cc: J. Maldonado, SGCPC

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**SITE-SPECIFIC TEST PLAN
FOR
JUNE 2007 TESTING OF NO. 1 PEEL DRYER
BURNING HIGH SULFUR FUEL OIL**

**SOUTHERN GARDENS CITRUS PROCESSING CORPORATION
*CLEWISTON, FLORIDA***

Prepared For:

**Southern Gardens Citrus Processing Corporation
Clewiston, Florida**

Prepared By:

**Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500**

May 2007

0637650-0800

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1.0 INTRODUCTION

Southern Gardens Citrus Processing Corporation (SGCPC) operates a citrus processing facility located in Hendry County, west of Clewiston, Florida. SGCPC was issued a draft air construction and a draft Title V permit (Nos. 0510015-016-AC/PSD-FL-368 and 0510015-017-AV, respectively,) on February 6, 2007. When finalized, these permits will establish sulfur dioxide (SO₂), particulate matter (PM), and nitrogen oxides (NO_x) emissions limits for Citrus Peel Dryer No. 1 and No. 2.

If SGCPC elects to burn compliance fuel oil to meet the SO₂ emission limit, then only fuel oil with a maximum sulfur content of 0.1 percent by weight can be fired in the dryers. If SGCPC desires to burn a higher sulfur content fuel oil in the dryers, then they must first install a continuous emissions monitoring system (CEMS) for SO₂, and during the first 180 days of using the CEMS, must meet an SO₂ emission limit of 0.11 pound per million British thermal units (lb/MMBtu) on a 30-day rolling average. After the first 180 days of operation of the CEMS, the emission limit becomes 0.11 lb/MMBtu on a 24-hour rolling average basis.

SGCPC will be conducting a pilot test while burning higher sulfur fuel oil in the Peel Dryer No. 1. The testing will be conducted during June 2007. The purpose of the testing is two-fold:

1. To determine if the SO₂ emission limit can be met with the use of higher sulfur fuel oil, or alternatively, the maximum sulfur content of fuel oil that can be burned while meeting the emission limit; and
2. To determine the efficacy of the SO₂ CEMS.

SGCPC will be conducting the pilot test using a rented CEMS. A test protocol for the pilot test program is described in the following sections, and includes a quality assurance plan.

2.0 TEST PLAN

A 30-day test period will be used for testing the operation of the CEMS unit and to determine if the SO₂ emission limit can be met while burning higher sulfur fuel oil, or alternatively, the maximum sulfur content of fuel oil that can be burned while meeting the emission limit. The CEMS unit will be brought onsite in a trailer and remain for the 30-day period. A sample probe will be inserted into the Peel Dryer No. 1 stack at the location where current stack testing is conducted, i.e., one of the existing

sample ports located on the stack. A sample line will be run from the stack down to the CEMS unit located in the trailer.

During the pilot testing period, No. 6, or better grade fuel oil with a maximum sulfur content of 1.0 percent, will be burned in the No. 1 Peel Dryer. SGPCPC will obtain fuel analysis receipts for each delivery from the fuel oil supplier that show the actual sulfur content and heating value of the fuel being burned. Records of fuel oil usage in the Peel Dryer, obtained from fuel flow monitors, will also be maintained during this period. An integrator reading will be taken at least once every 3 hours during the testing period. SGPCPC may test fuel oils with different sulfur contents during this period to evaluate the effect on compliance with the emission limit for SO₂.

To provide quality assurance data for the SO₂ CEMS, a relative accuracy test audit (RATA) will be conducted during the initial week of operation of the CEMS unit. In addition, a 7-day drift test will be performed. During the RATA and the 7-day drift test, if the data indicate unsatisfactory operation, the testing will be stopped and adjustments will be made or attempted to the CEMS system. Additional RATA runs and drift testing will be resumed after any necessary adjustments are made.

3.0 TEST PROCEDURES

3.1 Peel Dryer Flue Gas Measurements

SGPCPC will conduct testing using the following methods and procedures:

1. The CEMS measurement location will meet the criteria of Title 40, Part 60 of the Code of Federal Regulations [Title 40, Part 60 of the Code of Federal Regulations (40 CFR 60)], Appendix B, Performance Specification 2 (PS-2). The location will be at, or near, the existing stack sampling ports SGPCPC utilizes for compliance testing of the peel dryer.
2. A dilution extractive system will be used for stack gas sampling. A sample line will be run from the test point location down to the analyzer located at the ground. The stack gas sample will be maintained above the dew point to prevent condensation in the sample line.
3. SO₂ concentrations will be measured using an instrumental method, according to 40 CFR 60, Appendix B, PS-2.

- a. SO₂ concentrations in the Peel Dryer No. 1 flue gas will be monitored continuously during the testing period, except during CEMS calibration, breakdown, or repair.
 - b. A Thermo Electron pulsed-fluorescence SO₂ monitor will be utilized. The SO₂ CEMS span values will be set appropriately, considering the expected range of emissions and the emission standard. The CEMS unit will undergo daily calibration error checks, according to 40 CFR 60, Appendix F, and recalibrations conducted as needed, to ensure accurate data are collected. All CEMS concentration data will be reduced to 1-hour averages for further evaluation.
4. Diluent content [carbon dioxide (CO₂)] of the flue gas will also be continuously measured according to 40 CFR 60, Appendix B, Performance Specification 3 (PS-3). The gas sample will be taken at the same time and at the same location as the SO₂ concentration measurement.

3.2 Peel Dryer Operational Data

The following peel dryer operational data will be obtained throughout the testing period.

1. Fuel oil usage will be measured by fuel oil meters, and continuously recorded by the rental CEMS Data Acquisition System (DAS). Data will be reduced to hourly averages.
2. Wet peel input to the dryer will be measured on a daily basis, using the methodology in SGPCPC's draft Title V permit.
3. The peel dryer operating temperature (recirculation gas temperature) will be monitored and recorded at least once per shift.
4. The water flow rate to the waste heat evaporator scrubbers will be monitored and recorded at least once per shift.

3.3 Quality Assurance Procedures

A RATA will be performed on the CEMS unit during the first week of operation. The RATA will be performed according to 40 CFR 60, Appendix B, PS-2. The sampling location for the RATA will be the existing sampling ports on the peel dryer/waste heat evaporator stack. These coincide essentially with the proposed sample location for the CEMS.

The RATA will consist of a minimum of nine 21-minute runs, performed while the CEMS is obtaining continuous SO₂ concentration data. The RATA will be performed using U.S. Environmental Protection Agency (EPA) Method 6C for SO₂ and EPA Method 3A for stack CO₂.

In addition to the RATA, a 7-day drift test will be performed on the SO₂ CEMS unit. The 7-day drift test will be performed according to the requirements of PS-2.

3.4 Calculations

The SO₂ concentrations measured at the stack by the CEMS will be converted to lb/MMBtu units using the following equations:

LHV check HHV. Excess Air

Heat Input (MMBtu/hr) = gal/hr x HHV / 1,000,000 *- why this is not LHV - stack temp @ 177° F*

where: Heat Input = the heat input to the peel dryer based on fuel usage, in MMBtu/hr
gal/hr = gallons per hour fuel oil consumption
HHV = high heating value of fuel oil, Btu/gal

*- Burner box
- recycle streams*

V (scfh) = Heat Input (MMBtu/hr) * Fc * [100 / %CO₂] *142°* 5 7

where: V = flue gas flow rate, standard cubic feet per hour
Fc = F-Factor for fuel oil (scf/MMBtu)
%CO₂, dry = percent carbon dioxide in stack gas, *dry* wet basis

*flow
Air diagrams*

E_m (lb/hr) = C x V x 1.66x10⁻⁷ *→ [MW x 2.59x10⁻⁹]*

where: E_m = hourly SO₂ emission rate in lb/hr
C = hourly concentration of SO₂ measured by the CEMS (ppmvw)

E (lb/MMBtu) = E_m / Heat Input

4.0 DATA QUALITY OBJECTIVES

SGCPC expects to follow the precision and accuracy that is required in EPA reference methods and in Florida Department of Environmental Protection (FDEP) rules. The following sections describe in more detail the quality assurance procedures that will be followed throughout the test program.

4.1 Internal Quality Assurance

SGCPC has implemented the following internal quality assurance (QA) procedures, which will also be followed during the pilot test:

- Equipment is calibrated at least annually,
- Gauges are checked at least annually,
- Systems are inspected prior to testing,
- Flow meters are calibrated at least annually, and
- Malfunctioning equipment is repaired and recalibrated as soon as practicable.

4.2 External Quality Assurance

The stack testing company that will be performing the testing is C.E.M. Solutions, Inc. (C.E.M. Solutions) The C.E.M. Solutions QA program will follow the procedures outlined in 40 CFR 60, Appendix F.

4.3 Reports

C.E.M. Solutions uses a report format that is acceptable to all regulatory agencies. C.E.M. Solutions reports are written by a principal or engineer (of C.E.M. Solutions) and are reviewed by a designated QA professional for data and document accuracy. Each report contains a signed statement by a principal or engineer of C.E.M. Solutions attesting to the authenticity of the test and the report.

4.4 Reporting

The results of the pilot testing will be submitted to the FDEP within 45 days of completion of the tests. The report will include:

- The SO₂ emissions results for peel dryer determined from the pilot testing;
- The calculations and supporting documentation used to determine the SO₂ emission rates; and
- Data and information demonstrating good quality assurance.

Jeremy Johnson

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