TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Polk Power Station Unit 1
Facility ID No. 1050233

PROJECT

Project No1050233-035-AC
Removal of Visible Emission Testing Requirements
for Solid Fuel Handling System (EU 005)

COUNTY

Polk County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

August 20, 2013

1. GENERAL PROJECT INFORMATION

1.1 Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring), F.A.C. Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

1.2 Facility Description and Location

The Tampa Electric Company (TEC) operates the existing Polk Power Station (PPS), which is an electric power plant consisting of five key electrical generating units (Units 1 to 5). The facility is categorized under Standard Industrial Classification Code No. 4911, for electrical services. The existing plant is located in Polk County at 9995 State Road 37 South in Mulberry, Florida. The UTM coordinates are Zone 17, 402.45 kilometers (km) East, and 3,067.35 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS). Figure 1 shows the location of Polk County while Figure 2 shows an aerial view of Unit 1 at the PPS. The current Title V Air Operation Permit under which the PPS operates is No. 1050233-028-AV.

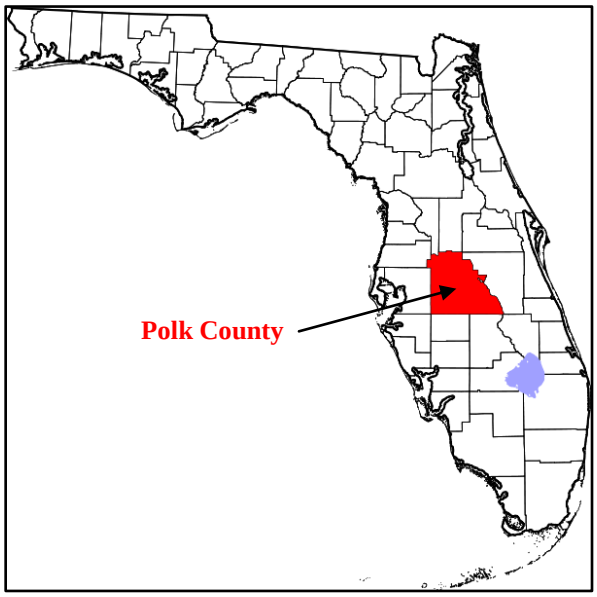

Figure 1 – Polk County in Florida

Figure 2 - TECO PPS Unit 1 IGCC Plant

Unit 1 consists of a nominal 260 megawatt (MW) solid fuel-based integrated gasification and combined cycle (IGCC) plant including: a nominal 192 MW (gross) syngas and natural gas fired General Electric (GE) 7FA combustion turbine-electrical generator (CCCT) designated as Emission Unit (EU) 001; a heat recovery steam generator (HRSG); a nominal 133 MW (gross) steam turbine-electrical generator (STEG); a solid fuel handling system designated as EU 005; an entrained flow solid fuel gasification system designated as EU 006; an oxygen plant; a synthetic gas (syngas) cleanup and sulfur recovery system; and a sulfuric acid plant (SAP) designated as EU 004. There is also a 120 million British thermal units per hour (MMBtu/hr) auxiliary boiler designated as EU-003. Approximately 65 MW are consumed by the oxygen plant and process auxiliary equipment which is the difference between net and gross power production (260 MW versus 325 MW). The startup fuel for the SAP and solid fuel gasifier is natural gas. Natural gas is used as the augmentation and backup fuel for the CCCT, while it is the only operational fuel used in the auxiliary boiler.

Currently, Units 2 and 3 (EU 009 and 010) at the facility are two 165 MW natural gas/fuel oil-fired GE 7FA simple cycle CTG, while Units 4 and 5 (EU 011 and 012) are two 165 MW natural gas-fired GE 7FA simple cycle CTG. These units recently received an air construction permit (No. 1050233-034-AC, PSD-FL-421) to be converted from individual simple cycle operation into a 4-on-1 combined cycle unit. After conversion, each CTG will be allowed to operate on natural gas with a limited amount of fuel oil use. In addition, each CTG will still be allowed to operate in simple cycle mode but with curtailed operational hours. Conversion of these CTG to combined cycle operation has not yet begun.

1.3 Facility Regulatory Categories

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility operates units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The facility operates units subject to the NSPS in Part 60, Title 40 of the CFR.
- The facility operates units subject to the NESHAP in Part 63, Title 40 of the CFR.

1.4 Project Description

This project involves the removal of the visible emission (VE) annual testing requirement for the dust suppression systems associated with the solid fuel handling system (EU 005) of Unit 1. According to TEC, the solid fuel used at PPS does not have any VE; therefore the dust suppression systems have never been needed. For dust control the solid fuel is sprayed with a water/surfactant spray before arriving at PPS and this level of control is sufficient to prevent VE. In addition, according to TEC, VE testing of the dust suppression systems used for the storage silos and bins associated with this emission unit would result in an administrative burden while having no environmental benefit due to negligible VE.

This revision requires changing several permit conditions and descriptions in a previously issued PSD permit (Project No. 1050233-029-AC, PSD-FL-194J). The applicant also submitted a request for a concurrent revision to its current Title V Air Operation Permit (No. 1050233-028-AV) to reflect these changes.

1.5 Processing Schedule

07/12/2013: Received an application for concurrent air construction permit revision and Title V air operation permit revision to remove the VE testing requirement for EU 005.

08/20/2013: Issued the draft air construction permit revision (No. 1050233-035-AC, PSD-FL-194K) and Title V air operation permit revision (No. 1050233-036-AV).

2. PSD APPLICABILITY

2.1 General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400, F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal AAQS or areas designated as "unclassifiable" for these regulated pollutants. PSD pollutants include: carbon monoxide (CO); NO_X; sulfur dioxide (SO_2); particulate matter (PM); PM smaller than 10 micrometers (PM_{10}); volatile organic compounds (VOC); lead (Pb); Fluorides (F); sulfuric acid mist (SAM); total reduced sulfur (TRS), including hydrogen sulfide (H_2S); municipal waste combustor (MWC) organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans (D/F); MWC metals measured as PM; MWC acid gases measured as SO_2 and hydrogen chloride (HCl); and mercury (Hg).

As defined in Rule 62-210.200(179)(a)1, F.A.C., a "major stationary source" is any of 28 listed stationary sources of air pollutants which emits, or has the potential to emit, 100 tons per year (TPY) or more of any PSD pollutant. Link to Rule 62-210, F.A.C. The list given in the citation includes the category of "fossil fuel-fired steam electric plants of more than 250 MMBtu/hr". The PPS is a major stationary source based on its actual emissions and its potential to emit PSD pollutants. The major stationary source threshold for source categories that is not one of the 28 listed stationary sources is 250 TPY or more of any PSD pollutant.

For major stationary sources, PSD applicability is based on emissions thresholds known as the significant emission rates (SER) as defined in Rule 62-210.200, (Definitions) F.A.C. Emissions of PSD pollutants from the project that equal or exceed these SER are considered "significant". Best Available Control Technology (BACT) must be employed to minimize emissions of each PSD pollutant and an air quality impact analysis must be conducted for the PSD pollutants for which AAQS are defined. SER also means any emissions rate or any net emissions increase of a PSD pollutant associated with a major stationary source or major modification which would construct within 10 km of a Class I area and have an impact on such area equal to or greater than 1 gram per cubic meter, 24-hour average.

Although a facility may be "major" for only one PSD pollutant, a project must include BACT controls for any PSD pollutant that exceeds the corresponding SER given in Table 1.

TABLE 1 – LIST OF SER BY PSD-POLLUTANT [1, 3]

Pollutant	SER (TPY)	Pollutant	SER (TPY)
CO	100	NO_X	40
$PM/PM_{10}/PM_{2.5}$	25/15/10	Ozone (VOC) [2]	40
Ozone (NO_X) [2]	40	SAM	7
SO_2	40	F	3
Pb	0.6	TRS	10
H_2S	10	Hg	0.1

1. Excluding those defined exclusively for MWC and MSW landfills.
2. Ozone (O_3) is regulated by its precursors (VOC and NO_X).
3. There is a federal SER of 75,000 TPY for Greenhouse Gases (GHG) as CO_2 equivalent (CO_2e) that has not been incorporated into Department rules. .

2.2 Applicants' PSD Applicability Analysis for the Project

The project will be located in Polk County, which is in an area that is currently in attainment with (or designated as unclassifiable for the state and federal AAQS. According to the applicant, no emission

increase of any regulated pollutant will result from the proposed project. Therefore, the project is not subject to PSD preconstruction review.

2.3 Departments' PSD Applicability Analysis for the Project

The Department agrees with the applicant that no emission increases of a regulated air pollutant will result from this project. The VE testing requirements contained in Permit No. 1050233-029-AC (PSD-FL-194J) related to EU 005 will be removed. The Department believes that **Specific Condition 9 of Section 2 – Administrative Requirements, Unconfined Emissions of Particulate Matter** of the revised construction permit (No. 1050233-035-AC, PSF-FL-194K) will suffice to minimize VE from EU 005 and thus annual VE testing of this emission unit is not required. **Specific Condition 9** specifies measure that shall be followed to control unconfined emissions of particulate matter.

In addition, per **Specific Condition 11 of Section 2 – Administrative Requirements, General Visible Emissions Standard** states that no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than 20 percent opacity (VE). This permit condition provides further reasonable assurance the VE will be minimized negating the requirement for annual VE testing.

Finally, per **Specific Condition 2 of Section 3, Subsection D - Solid Fuel Handling System (EU 005)**, indicates that Best Management Practices (BMP) shall be followed to minimize PM emissions from the handling of solid fuels. BMP shall consists of enclosing or covering all solid fuel storage, conveyors and conveyor transfer points and applying water sprays or chemical wetting agents and stabilizers to uncovered storage piles, roads, handling equipment, etc. during dry periods to minimize VE. This permit condition further provides reasonable assurance the VE will be minimized negating the requirement for annual VE testing.

3. APPLICABLE REGULATIONS

3.1 State Regulations

The facility will continue to operate under its existing air construction and facility Title V operation permits. The most recent applicable permit can be accessed by entering the Title V Permit No. 1050233-028-AV at the webpage at the following link:

http://appprod.dep.state.fl.us/air/emission/apds/default.asp

3.2 Federal Regulations Relating to the Project

3.2.1 NSPS Applicability

The solid fuel handling system is subject to NSPS 40 CFR 60 Subpart Y - Standards of Performance for Coal Preparation Plants and Processing Plants. The provisions of this subpart apply to affected facilities in coal preparation and processing plants that process more than 181 megagrams (Mg) (200 tons) of coal per day. The provisions in § 60.251, § 60.252(a), § 60.253(a), § 60.254(a), § 60.255(a), and § 60.256(a) of this subpart are applicable to any of the following affected facilities that commenced construction, reconstruction or modification after October 27, 1974, and on or before April 28, 2008: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), and coal storage systems, transfer and loading systems.

In addition, this emissions unit is subject to the applicable General Provisions of NSPS Subpart A.

3.2.2 NESHAP Applicability

NO NESHAP apply to EU 005 at the PPS.

4. REQUIRED PERMIT CHANGES

In **Section 3, Subsection D - Solid Fuel Handling System (EU 005)** of Permit No. 1050233-029-AC (PSD-FL-194J) Specific Conditions 6, 7 and 8 must be modified to eliminate the requirement for annual VE testing of EU 005. In addition, the descriptive language of this subsection must be changed for clarity and to indicate that annual VE testing is not required. In the permit enclosed with the technical evaluation document, these changes are reflected as follows: deletions in ~~strikethrough~~ text and additions in doubled underlined text. All changes are also highlighted in yellow.

5. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. David Read, P.E., is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.