Part B, Section II - Other LAER/BACT Determination

Source Type: **Major/LAER**

Application No.: **81391**

Equipment Category: **Gas Turbine**

Equipment Subcategory: **Combined Cycle**

Date: **February 1, 2019**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Mitsubishi	B. MODEL: M501 GAC
C. DESCRIPTION: Combined Cycle with Duct Burner HRSG, SCR, Oxidation catalyst and common Steam Turbine	
D. FUNCTION: In the state of Virginia, the Virginia Electric Power Company owns and operates the Warren County Power Plant. This project consists of three similar gas turbines with a common steam turbine generator.	
E. SIZE/DIMENSIONS/CAPACITY: Nominal 1,280MW electrical power generating facility consisting of three gas turbine generators each 299.6MW serving common steam turbine with 539MW generator.	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: 2,996 MMBtu/hr Gas Turbine and 500 MMBtu/hr Duct Burner	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
Make and model of burner	Rated heat input of single burner, in btu/hr	Number of burners
Enter additional burner types, as needed, add extra rows		

H. PRIMARY FUEL: NATURAL GAS	I. OTHER FUEL: N/A
J. OPERATING SCHEDULE: Hours 24 Days 7 Weeks 52	
K. EQUIPMENT COST:	
L. EQUIPMENT INFORMATION COMMENTS:	

2. COMPANY INFORMATION

A. COMPANY: Virginia Electric and Power Company	B. FAC ID: 51-187-0041
C. ADDRESS: Lots 3,5,6,7,8,9 and10 CITY: Warren Industrial Park STATE: VA ZIP: 22630	D. NAICS CODE: 221112
E. CONTACT PERSON: Jeffrey Zehner	F. TITLE: Env. Project Advisor
G. PHONE NO.: (804) 273-3145	H. EMAIL: Jeffrey.r.zehner@dom.com

3. PERMIT INFORMATION

A. AGENCY: Virginia State Air Polluting Control Board	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Janardan R. Pandey, P.E., Air Permit Manager	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 6/17/14 P/O NO.: 81391 PO ISSUANCE DATE: 6/17/2014	
E. START-UP DATE: 12/1/2014	
F. OPERATIONAL TIME: 4 years	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission limits, including facility limits, on the permit(s) that affects the equipment. Include units, averaging times and corrections ($\%O_2$, $\%CO_2$, dry, etc). For VOC, values must include if the concentration is reported as methane, hexane or any other compound. VOC mass emissions should include the molecular weight-to-carbon ratio, if applicable.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit		2 PPMV (with & w/o Duct Burner)		1.5 PPMV (without Duct Burner)		
Averaging Time		1 HOUR		1 HOUR		
Correction		@ 15% O_2		@ 15% O_2		

B. OTHER BACT REQUIREMENTS: The emission limits shall not apply during turbine commissioning, start-up, shutdown and malfunction.

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

4. EMISSION INFORMATION

D. EMISSION INFORMATION COMMENTS: Although the following annual mass emission limits from the operation of all three combined cycle power generating units including duct burners may be specific to this project they were also included in the permit:
NOx: 317.7 tons
CO: 348.6 tons
VOC: 181.0 tons
PM-10: 195.1 tons (includes condensable PM)

5. CONTROL TECHNOLOGY

A. MANUFACTURER: --	B. MODEL: --

C. DESCRIPTION: SCR with aqueous ammonia injection grid for NOx control and Oxidation Catalyst for CO and VOC control.

D. SIZE/DIMENSIONS/CAPACITY: --

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. Click here to enter text. PC ISSUANCE DATE: Click here to enter a date.
PO NO.: Click here to enter text. PO ISSUANCE DATE: Click here to enter a date.

F. REQUIRED CONTROL EFFICIENCIES: See Emission Information in Section 4.

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	--%	___%	___%
NOx	--%	___%	___%
SOx	--%	___%	___%
CO	--%	___%	___%
PM	--%	___%	___%
PM_{10}	--%	___%	___%
INORGANIC	--%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS Enter comments for additional information regarding Control Technology.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: CEMS data collected from 12/6/14 to 9/30/2016. Source Test

B. DATE(S) OF SOURCE TEST: An appropriate size parameter such as rated product throughput, usable volume, and/or one more characteristic dimensions.

C. COLLECTION EFFICIENCY METHOD: N/A

D. COLLECTION EFFICIENCY PARAMETERS: N/A

E. SOURCE TEST/PERFORMANCE DATA: 1.84 PPMV NOx @15% O2. 1.02 PPMV CO @15% O2. 2.8 PPMV NH3 @15% O2

F. TEST OPERATING PARAMETERS AND CONDITIONS: At any load condition within plus or minus 25% of 100% of peak load.

G. TEST METHODS (SPECIFY AGENCY): 40 CFR 60, Appendix A, Methods 7E or 20 (NOx); 40 CFR 60, Appendix A, Method 10 (CO); 40 CFR 60, Appendix A, Method 25A (VOC); 40 CFR 60, Appendix A, Methods 5 or 17 and 19, and 40 CFR 51, Appendix M, Method 202 (PM10); 40 CFR 60, Appendix A, Methods 6, 6C, 8 or 20 (SO_2).

H. MONITORING AND TESTING REQUIREMENTS: CEMS for NOx and CO. Initial performance test for NOx, CO, VOC, PM10 and SO_2. Annual performance test for SO_2 pursuant to Permit Condition 67.

I. DEMONSTRATION OF COMPLIANCE COMMENTS: Enter comments for additional information for Demonstration of Compliance.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: Click here to enter text.	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE:Click here to enter text.
D. RECLAIM FAC? YES ☐ NO ☐	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): Click here to enter text.
G. SCAQMD SOURCE SPECIFIC RULES: Click here to enter text.		
H. HEALTH RISK FOR PERMIT UNIT		

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.