



South Coast  
AQMD

## **Part B, Section 1 - SCAQMD BACT Determination**

Source Type: **Major/LAER**

Application No.: **595485**

Equipment Category: **Gas Turbine**

Equipment Subcategory: **Combined Cycle, Digester Gas**

Date: **February 1, 2019**

### **1. EQUIPMENT INFORMATION**

A. MANUFACTURER: Solar Turbines		B. MODEL: Mars 100	
C. DESCRIPTION: Combined Cycle (No. 2) with SCR, Oxidation catalyst and Steam Turbine, equipped with a digester gas clean-up system			
D. FUNCTION: The City of Los Angeles, Department of Public Works, Bureau of Sanitation owns and operates the Hyperion Treatment Plant (HTP) wastewater facility which produces digester gas. This gas turbine is fired on HTP digester gas and generates electrical power for the facility.			
E. SIZE/DIMENSIONS/CAPACITY: Generator serving turbine is 11.35MW with two (2) common shared steam turbine generators 7.8MW and 1MW. Three Duct Burners each 14MMBtu/hr.			
<b>COMBUSTION SOURCES</b>			
F. MAXIMUM HEAT INPUT: 137.5 MMBtu/hr (ISO conditions) Gas Turbine			
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	
H. PRIMARY FUEL: DIGESTER GAS		I. OTHER FUEL: NATURAL GAS	
J. OPERATING SCHEDULE: Hours 24 Days 7 Weeks 52			
K. EQUIPMENT COST:			
L. EQUIPMENT INFORMATION COMMENTS: The gas turbine is equipped with a digester gas clean-up system for removal of siloxanes, sulfur and moisture.			

### **2. COMPANY INFORMATION**

A. COMPANY: LA City, Sanitation Bureau (HTP)		B. FAC ID: 800214	
C. ADDRESS: 12000 Vista Del Mar CITY: Playa Del Rey STATE: CA ZIP: 90293		D. NAICS CODE: 221112	
E. CONTACT PERSON: Jim Marchese		F. TITLE: Asst. Div. Manager	
G. PHONE NO.: (213) 847-5174		H. EMAIL: jim.marchese@lacity.org	

### 3. PERMIT INFORMATION

A. AGENCY: SCAQMD	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Ray Ronquillo	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 12/31/14 P/O NO.: G48571 PO ISSUANCE DATE: 10/4/2017	
E. START-UP DATE: 1/7/2017	
F. OPERATIONAL TIME: 1.5 years (Original Permit to Construct was issued on 12/31/14. Current applications Permit to Construct (A/N: 575376-8) were issued on 9/28/16.	

### 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 <sub>2</sub> , % CO <sub>2</sub> , 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.						
	<b>VOC</b>	<b>NOx</b>	<b>SOx</b>	<b>CO</b>	<b>PM OR PM<sub>10</sub></b>	<b>INORGANIC</b>
BACT Limit	25 PPMV	18.8 PPMV		60 PPMV		10 PPMV NH <sub>3</sub>
Averaging Time	1 HOUR	1 HOUR		1 HOUR		1 HOUR
Correction	@ 15% O <sub>2</sub>	@ 15% O <sub>2</sub>		@ 15% O <sub>2</sub>		@ 15% O <sub>2</sub>
B. OTHER BACT REQUIREMENTS: The emission limits shall not apply during turbine commissioning, start-up, shutdown and Ammonia Injection Grid Tuning (AIGT) periods.						
C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology						

#### 4. EMISSION INFORMATION

D. EMISSION INFORMATION COMMENTS: Although the following mass emission limits may be specific to this project they were also included in the permit:

Criteria pollutants from gas turbine/duct burners/HRSG train shall not exceed the following limits, except during start-up, shutdown and commissioning conditions:  
NOx: 18.8ppm (12.60 lbs/hr) @ 15%O<sub>2</sub> 24 hr. avg. and 25ppm (16.76 lbs/hr) @ 15%O<sub>2</sub> 1 hr. avg. {For period not to exceed 18 consecutive months starting from completion of commissioning}

NOx: 18.8ppm (12.60 lbs/hr) @ 15%O<sub>2</sub> 1 hr. avg. {After 18 month demonstration period}

VOC: 5.85 lbs/hr.

CO: 24.55 lbs/hr.

SOx: 1.28 lbs/hr

PM10: 4.05 lbs/hr.

Fuel Sulfur content: 40 ppm

## 5. CONTROL TECHNOLOGY

A. MANUFACTURER: Cormetech (SCR) & Johnson Matthey (Oxidation Catalyst)		B. MODEL: Unit 2 (SCR) & SC09 (Oxidation Catalyst)	
C. DESCRIPTION: Aqueous ammonia injection grid			
D. SIZE/DIMENSIONS/CAPACITY: SCR catalyst with three modules of homogeneous honeycomb-type mixed metal catalyst each 11'-8"L x 6'-10"W x 3'-11"H / Oxidation Catalyst with 30 metal foil monoliths of platinum group metals, total layer 12'-3"L x 0'-4"W x 13'-4"H with total weight of 3060 lbs..			
E. CONTROL EQUIPMENT PERMIT INFORMATION: APPLICATION NO. 586746 PC ISSUANCE DATE: 12/31/14 PO NO.: R-G42940 PO ISSUANCE DATE: 10/4/2017			
F. REQUIRED CONTROL EFFICIENCIES: NH <sub>3</sub> concentration at the outlet of the SCR shall not exceed 10ppm, 60 min. avg. @ 15% O <sub>2</sub> when SCR inlet temperature is above 525 degrees F except when NH <sub>3</sub> feed control system is being tuned.			
CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NO <sub>x</sub>	___%	___%	___%
SO <sub>x</sub>	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM <sub>10</sub>	___%	___%	___%
INORGANIC	___%	___%	___%
G. CONTROL TECHNOLOGY COMMENTS Minimum gas turbine exhaust gas temperature at inlet to SCR, post commissioning, shall be 525 degrees F. During start-up and shutdown temperatures less than 525 degrees F shall not exceed 60 minutes. Original P/C issuance date is 12/31/14. Current applications (A/N: 586745-7) P/C issuance date 9/28/16.			

## 6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test
B. DATE(S) OF SOURCE TEST: May 9, 2017
C. COLLECTION EFFICIENCY METHOD: N/A
D. COLLECTION EFFICIENCY PARAMETERS: N/A
E. SOURCE TEST/PERFORMANCE DATA: 13.0PPMV (NG/DG) and 15.9PPM (DG) NO <sub>x</sub> @15% O <sub>2</sub> ; 8.9PPMV (NG/DG) and 15.8PPM (DG) ROG @15% O <sub>2</sub> ; <18.6 PPMV (NG/DG & DG) CO @15% O <sub>2</sub> ; 1.8PPMV (NG/DG) and 1.1PPM (DG) NH <sub>3</sub> @15% O <sub>2</sub> ; 0.08 ppm Fuel Sulfur content as H <sub>2</sub> S
F. TEST OPERATING PARAMETERS AND CONDITIONS: All test performed at greater than 90% load.
G. TEST METHODS (SPECIFY AGENCY): SCAQMD Methods 100.1, 207.1 5.1, 25.3 and 307.91.
H. MONITORING AND TESTING REQUIREMENTS: Ammonia slip test once per year.

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

**7. ADDITIONAL SCAQMD REFERENCE DATA**

A. BCAT: 053058	B. CCAT: 81	C. APPLICATION TYPE CODE: 60	
D. RECLAIM FAC? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	E. TITLE V FAC: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	F. SOURCE TEST ID(S): PR16384	
G. SCAQMD SOURCE SPECIFIC RULES: <a href="#">Click here to enter text.</a>			
H. HEALTH RISK FOR PERMIT UNIT			
H1. MICR: <a href="#">Click here to enter text.</a>	H2. MICR DATE: <a href="#">Click here to enter a date.</a>	H3. CANCER BURDEN: <a href="#">Click here to enter text.</a>	H4. CB DATE: <a href="#">Click here to enter a date.</a>
H5: HIA: <a href="#">Click here to enter text.</a>	H6. HIA DATE: <a href="#">Click here to enter a date.</a>	H7. HIC: <a href="#">Click here to enter text.</a>	H8. HIC DATE: <a href="#">Click here to enter a date.</a>