

## Brian Lusher

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**From:** John\_Lague@URSCorp.com

**Sent:** Wednesday, May 26, 2010 8:53 AM

**To:** Brian Lusher

**Cc:** peter.landreth@mirant.com; chuck.hicklin@mirant.com; jon.sacks@mirant.com

Brian

Attached is the Siemens CO emissions guarantees you requested. As you know, the MLGS turbines will operate only between 60% and 100% load, so the relevant turbine exhaust concentration for CO is 4 ppmv@15% O<sub>2</sub>.

I am trying to get an answer to your question on where the 5 minute purge step fits into the turbine startup sequence. I believe it immediately precedes the 30 minute startup cycle we have described to you, but was not included in our description because it does not involve any fuel firing or pollutant emissions. If I find out this is not the case, I will let you know right away.

Regards - jsl

*(See attached file: Siemens Emissions.pdf)*

John Lague  
Senior Air Quality Consultant  
URS Corporation  
1615 Murray Canyon Road, Suite 1000  
San Diego, California 92108  
Direct Line (619) 243-2823  
Fax: (619) 293-7920

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6/24/2010

**EMISSIONS MPC DATA SHEET**

**SGT6-PAC 5000F Simple Cycle Gas Turbine**

<b>REFERENCE CONDITIONS</b>			
Fuel Type	Gas	Gas	Gas
Ambient Temperature Range (°F)	20 to 111	20 to 100	101 to 111
Gas Turbine Load (%)	60 to 100	50 to < 60	50 to < 60
<b>EMISSIONS MPC</b>			
NO <sub>x</sub> (ppmvd @ 15% O <sub>2</sub> )	[REDACTED]		
CO (ppmvd @ 15% O <sub>2</sub> )	4	10	20
VOC as CH <sub>4</sub> (ppmvd @ 15% O <sub>2</sub> )	[REDACTED]		
Particulate (lb <sub>m</sub> /hr)	[REDACTED]		

**Test Requirements**

The Emissions MPC will be demonstrated by performing testing prior to the SCR in accordance with the following United States Environmental Protection Agency (USEPA) Test Methods (modified for single-point sampling if no stratification, otherwise testing will be at exhaust stack without SCR in operation):

**NO<sub>x</sub> – USEPA Method 7E**

- Demonstration of the NO<sub>x</sub> guarantee is based on the average of three (3) test runs at each test point.

**CO – USEPA Method 10**

- Demonstration of the CO guarantee is based on the average of three (3) test runs at each test point.

**VOC – USEPA Methods 25A and 18**

- VOC are total hydrocarbons (THC) excluding methane and ethane and are expressed in terms of methane. Demonstration of the VOC guarantee is based on the average of three (3) test runs at each test point. If test results per USEPA Method 25A indicate THC values greater than the VOC guarantees, at least three (3) samples will be collected, analyzed and averaged for each test run.

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## Particulate – USEPA Methods 5 and 202

- Demonstration of the Particulate guarantee is based on the average of one (1) set of three (3) test runs at the maximum plant output available at the time of testing. The gas turbine shall be operating at steady state conditions at the test load level for at least two (2) hours prior to commencement of testing. Each test run shall be of sufficient length to collect a minimum sample volume of 150 cubic feet. A one-piece nozzle and probe assembly lined with borosilicate or quartz glass shall be utilized. The actual fuel flow rate during particulate testing shall be utilized to determine the exhaust gas flow rate per USEPA Method 19 when converting from units of concentration to the guaranteed emission rate. When testing for Particulate, the probe should be supported for stability during sampling. The test vendor shall ensure that the probe heating element and the medium used for attaching the heating element to the probe are not subjected to temperatures that exceed their temperature limitations.

## Guarantee Conditions

- The Emissions Test shall be performed on an individual gas turbine basis and do not include ambient air contributions.
- The Emissions Test shall be performed during steady state operation and not during startup, shutdown, transient plant or fuel conditions and/or initial commissioning activities.
- Natural gas fuel must comply with the Guarantee Fuel requirements in Schedule 14-A of the Contract.
- The Emissions Test for NO<sub>x</sub>, CO and VOC shall be performed on each Unit at 50% load, 60% load and 100% load to verify that the Emissions MPCs set forth herein are met at each loading.