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ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

February 20, 2018

Mr. Bhaskar Chandan, P.E.
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Subject: Stanton Energy Reliability Center (Facility ID# 183501) PDOC Comments

Dear Mr. Chandan;

Stanton Energy Reliability Center, LLC (SERC), has reviewed the Preliminary Determination of Compliance (PDOC), dated February 9th, 2018. We understand that comments will be accepted through March 15th, 2018. We are submitting these comments prior to the close of the comment period and would like to meet with you and your staff to discuss SERC's comments at your earliest convenience. Our comments on the PDOC are as follows.

Condition A63.1 SO_x emissions: We note that the single turbine monthly SO_x emission limit of 758 lbs in any calendar month exceeds the annual limit in A63.2 of 595 lbs per year for both turbines combined. While we understand that the difference between the two emissions limits is based on the fuel bound sulfur content of 0.25 grains/100 scf (annual) and 0.75 grains/100 scf (short-term), establishing the monthly limit with a higher amount of SO_x than the annual limit may lead to confusion in how to demonstrate compliance. We recognize the use of two sets of emission factors and limits that are used for compliance:

Short-term

- 0.75 grains/100 scf (emission factor)
- 1.02 lb/hr (short-term mass limit)
- 2.14 lb/mmscf (compliance monitoring limit)

Annual

- 0.25 grains/100 scf (emission factor)
- 0.33 lb/hr (long-term mass emission limit)
- 0.72 lb/mmscf (compliance monitoring limit)

We would propose that condition A63.1 references that the monthly emissions are based on the 0.75 grains/100 scf and propose that for Condition A63.2, the sulfur limit is referenced to 0.25 grains/100 scf.

Condition A63.1 Pre-Catalyst and Post-Catalyst Phases: The proposed Pre-Catalyst and Post-Catalyst Phases described in Condition A63.1 relied on the Commissioning Emissions Table provided by SERC. However, although the table correctly presented the Pre and Post-Catalyst Emissions Factors and associated fuel use for each phase, several cells in the table contained incorrect labels and therefore led to confusion when the Condition was drafted.



For the activities labeled “Subtotal – Pre-Catalyst Phases, hrs | lbs” and “Subtotal – Post-Catalyst Phase, hrs | lbs”, the column labeled “Step No.” provided an incorrect label to summarize the Pre and Post-Catalyst steps, and Steps 4 and 5 the column labeled “Notes” incorrectly indicated that the SCR and CO catalysts would not be installed. A marked-up version of the Commissioning Emissions Table is attached to this response letter as Exhibit A, and correctly labels the subtotal rows and shows that the catalysts will be installed prior to the commencement of Step 4. We note that the remainder of the table’s content and underlying analysis for the pre and post-catalyst phases are correct and were based on catalyst installation occurring prior to Step 4.

With the corrections to the table’s labels and notes, we propose the following correction to the pre and post-catalyst phases as referenced in this condition. The pre-catalyst phase ends with Step 3 (first synchronization) rather than Step 5 (full load operation with water injection and SPRINT in service), and the post-catalyst phase begins with Step 4 (synchronization and ramp to full load, tuning water, ammonia (rough), and AVR (as needed), gas compressor tuning). Correcting the condition’s description of the pre and post-catalyst phases will not change the compliance emission factors as summarized in A63.1. It will only change the number of steps in the pre and post-catalyst phases. Our proposed language is as follows:

*Pre-Catalyst Phase: CO, 155.08 lb/mmcf; VOC, 24.60 lb/mmcf; PM10/PM2.5, 32.09 lb/mmcf; and SO_x, 2.14 lb/mmcf. The pre-catalyst phase starts with step 1 of the commissioning activities (first fire and full speed, no load, not synchronized, no generator excitation) **and ends with step 3 (First synchronization)** ~~5 (full load operation with water injection and SPRINT in service)~~. The steps referenced herein are described in the Commissioning Emissions (per Turbine) table provided by Stanton Energy Reliability Center.*

*Post-Catalyst Phase: CO, 6.70 lb/mmcf; VOC, 3.42 lb/mmcf; PM10/PM2.5, 8.29 lb/mmcf; and SO_x, 2.14 lb/mmcf. The post-catalyst phase ~~is~~ are comprised of **steps 4 (Synchronization and ramp to full load, tuning water, ammonia (rough) and AVR (as needed), gas compressor tuning), 5 (Full load operation with water injection and SPRINT in service) and 6 (Full load operation with water injection and SPRINT in service and SCR/ammonia tuning)** of the commissioning activities. ~~(full load operation with water injection and SPRINT in service and SCR/ammonia tuning).~~*

Condition A63.2: SERC requests the following minor modifications to the second paragraph following the annual emission limit table in Condition A63.2 to avoid potential confusion between the term “emissions limits” and actual emissions as follows:

The ~~yearly~~ **annual** emissions ~~limits~~ **of the facility for purposes of demonstrating compliance with** in this condition shall be calculated from the monthly emissions, including emissions for the commissioning period, as required by condition A63.1, except the normal operation annual emission factor for SO_x is 0.72 lb/mmcf.

Condition B61.1: The condition language relating to the fuel composition could be confusing as it could be interpreted that the sulfur content cannot exceed 0.25 grains per 100 SCF for any averaging period. We would propose the following changes:



The operator shall ~~not~~ use natural gas containing the following specified compounds:

Compound	Range	grain per 100 scf
H ₂ S	Less than or equal to	0.25 (annual average)
H ₂ S	Less than or equal to	0.75 (monthly average)

Condition C1.1 and C1.2: SERC requests the District delete the daily limit on startups and on shutdowns in Conditions C1.1 and C1.2. The daily limits are not required to ensure compliance with any District Rule and are not required to ensure emissions compliance with any ambient air quality standard. The limits on monthly and annual startups and shutdowns, in combination with (i) the monthly and annual emissions limits, and (ii) the emission limits on startup and shutdown events, are sufficient to ensure that the facility, and each turbine, will not exceed its Potential to Emit. Although the PDOC (at page 38) states that SERC initially requested a maximum daily limit on startups and shutdowns of 6 per turbine, and subsequently requested a reduction to 4 daily starts/shutdowns per turbine, SERC did not provide these quantities to serve as limits, but instead used the number of startups and shutdowns (4 per day) to explain the derivation of maximum emissions utilized for the 8-hour and 24-hour dispersion modeling cases. When using these maximum assumed emissions, the resultant dispersion modeling outcomes indicated that no California or National Ambient Air Quality SILs would be exceeded. Additionally, the results of the dispersion modeling assessment would not be affected by the removal of this condition as the 24-hour standards for PM₁₀/2.5 and SO_x already assumed the worst-case operating condition of 24-hours of full load with no starts or shutdowns. The number of daily startups and shutdowns were not considered for the 24-hour modeling analyses.

Because the monthly and annual emission limits are all based on the total emissions and duration, rather than the number, of startup and shutdown events that may occur in any calendar day for each gas turbine, SERC proposes to eliminate the limitation on the total number of such daily events.

If the daily limits are deleted as requested, the District can still make the findings that the conditions of the PDOC will ensure compliance with all District Rules and will not result in violation of any ambient air quality standard.

The proposed language change is as follows:

C1.1 The operator shall limit the number of start-ups to no more than 124 in any one calendar month.

For the purposes of this condition, the limits are for one turbine, except the annual limit is the combined total for two turbines (D1 and D7). ~~The number of startups shall not exceed 4 startups in any one day.~~ The number of startups shall not exceed 1000 in any calendar year.

A startup shall not exceed 15 minutes. The NO_x emissions from a startup shall not exceed 3.6 lbs. The CO emissions from a startup shall not exceed 5.3 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.



The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

C1.2 The operator shall limit the number of shutdowns to no more than 124 in any one calendar month.

For the purposes of this condition, the limits are for one turbine, except the annual limit is the combined total for two turbines (D1 and D7). ~~The number of shutdowns shall not exceed 4 shutdowns in any one day.~~ The number of shutdowns shall not exceed 1000 in any calendar year.

Each shutdown shall not exceed 10 minutes. The NOx emissions from a shutdown event shall not exceed 0.55 lbs. The CO emissions from a shutdown event shall not exceed 0.24 lbs.

The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition and the records shall be made available to District personnel upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

Condition D29.1: This condition could be interpreted as requiring PM10 and PM2.5 source tests, of at least four (4) hours for each test, for turbine loads at 50, 75 and 100 percent loads. We note that PM source test results are well correlated to fuel flow and load. Our PM emission rates for all loads is 3.0 lbs/hr and the requirement to test each load (50, 75 and 100) would be excessive. We would propose to add in the language from D29.2 as follows:

The sampling time for the PM10 test(s) shall be 4 hours or longer as necessary to obtain a measurable amount of sample.

The test shall be conducted when the turbine is operating at 100 percent of maximum load.

Condition E193.3: As explained in the comments on Condition A63.1, several incorrect labels in the Commissioning Emissions Table created drafting confusion. As shown in [Exhibit A](#) to this comment letter, the pre-catalyst phase of commissioning will occur over 20 hours for Steps 1 through 3. We propose the following change to this condition:

Total commissioning hours shall not exceed 100 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 100 hours, commissioning hours without control (pre-catalyst phase as defined in condition A63.1) shall not exceed ~~38~~ 20 hours.



Thank you for the opportunity to review and submit these comments on the PDOC. Please contact me if you have any questions, please do not hesitate to call me at (831) 620-0481.

Regards,

Atmospheric Dynamics, Inc.

A handwritten signature in blue ink that reads "Gregory Darwin". The signature is fluid and cursive, with the first name being more prominent.

Gregory Darwin

Cc

Paul Cummins, SERC

Gary Franzen, SERC

Scott Galati, Dayzen, LLC



Exhibit A



Stanton 2x0

Commissioning Emissions (per Turbine)

Step No.	Description of Activity	Maximum Duration (hrs)	Average Fuel Use (MMBtu/hr) (HHV)	Average Emissions Rate (per Turbine) (lbs/hr)					Notes
				NO _x	CO	VOC	PM10	SO ₂	
1	First fire and full speed, no load (not synchronized), no generator excitation	8	95.0	32.3	14.5	2.30	3.0	0.2	SCR and CO catalyst not installed, water injection not enabled
2	First fire and full speed, no load (not synchronized), generator excitation checks	6	95.0	32.3	14.5	2.30	3.0	0.2	SCR and CO catalyst not installed, water injection not enabled
3	First synchronization	6	95.0	32.3	14.5	2.30	3.0	0.2	SCR and CO catalyst not installed, water injection not enabled
4	Synchronization and ramp to full load, tuning water, ammonia (rough), and AVR (as needed), gas compressor tuning	10	156.2	24.1	3.3	1.24	3.0	0.3	SCR and CO catalyst not installed, water injection to be enabled and tuned
5	Full load operation with water injection and SPRINT in service for exhaust duct curing	8	398.2	14.4	2.3	1.24	3.0	0.8	SCR and CO catalyst not installed, water injection operable
6	Full load operation with water injection and SPRINT in service and SCR/ammonia tuning	62	398.2	14.4	2.3	1.24	3.0	0.8	SCR and CO catalyst installed, testing of exhaust flow maldistribution and tuning of ammonia flows
1-3	Subtotal Prior to Installation of Catalysts, hrs, lbs	20		646	290	46	60	4	
4-6	Subtotal After Installation of Catalysts, hrs or lbs	80		1,249	194	99	240	62	
1-6	Total Commissioning Period, hrs or lbs	100		1,895	484	145	300	66	
	Average Emissions Factor Prior to Catalyst Installation, lbs/MMBtu (HHV)			0.3400	0.1526	0.0242	0.0316	0.0021	
	Average Emissions Factor After Catalyst Installation, lbs/MMBtu (HHV)			0.0424	0.0066	0.0034	0.0082	0.0021	
	Total Estimated Fuel Use Prior to Catalyst Installation, MMBtu (HHV) (per Turbine)	1,900							Assumes minimum load for Steps 1-3.
	Total Estimated Fuel Use After Catalyst Installation, MMBtu (HHV) (per Turbine)	29,436							Assumes 33% average load for Step 4, and 85% average load for Step 5 and 6.
	Total Estimated Fuel Use, MMBtu (HHV)	31,336							

