

DOCKETED

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Project Title:	Stanton Energy Reliability Center
TN #:	221721
Document Title:	Stanton Energy Reliability Center, LLC Supplemental Response to SCAQMD October 16, 2017 Letter RE Emission Gaurantees
Description:	N/A
Filer:	Marie Fleming
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ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

November 7, 2017

Mr. Andrew Y. Lee
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Subject: Emissions Guarantees for Stanton Energy Reliability Center (NO_x, CO, VOC, and NH₃)

Dear Mr. Lee,

As referenced in our response letter dated October 31, 2107, attached is the Mitsubishi Hitachi Power Systems Americas, Inc. (MHPS) emissions guarantee for the Stanton Energy Reliability Center Project (SERC).

The basis for MHPS's guarantees is the General Electric (GE) turbine performance data cases (APP Cases) that were previously provided to the South Coast Air Quality Management District (SCAQMD) and to the California Energy Commission (CEC) and referenced as Table 5.1A-1a Rev 3, page 19 of 19 in the application materials.

The submittal of the MHPS guarantee letter is in response to questions 11.c.i, 13.a.vi, and 13.b.i in the SCAQMD's letter dated 10/6/17.

Please let me know as soon as possible if any additional information or clarifications are needed.

Sincerely,
Atmospheric Dynamics, Inc.

Gregory Darwin

Attachments:



November 7, 2017

Mr. Andrew Y. Lee
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Subject: Emissions Guarantees for Stanton Energy Reliability Center (NOx, CO, VOC, and NH3)

Dear Mr. Lee,

Mitsubishi Hitachi Power Systems Americas, Inc. (MHPS) has been diligently working with Stanton Energy Reliability Center, LLC to finalize a Purchase Agreement for supply of two emissions reduction units (ERUs) to the Stanton Energy Reliability Center Project (SERC). The ERU systems to be supplied by MHPS will be guaranteed to reduce raw emissions from each of SERC's GE LM6000 gas turbines to levels which will meet or exceed the requirements for BACT emission rates for NOx, CO, VOC, and NH3, as shown below.

The basis for our guarantee is the attached General Electric (GE) turbine performance data output (APP Cases) for the loads and temperature ranges as specified to GE.

As a result of technical and design discussions with SERC, MHPS can verify for SCAQMD that the ERU systems provided to SERC are designed to limit the exhaust gases from the LM6000s to comply with the following concentrations:

1. NOx @ 15% O2 = 2.5 ppmvd
2. CO @ 15% O2 = 4.0 ppmvd
3. VOC @ 15% O2 = 2.0 ppmvd
4. NH3 @ 15% O2 = 5.0 ppmvd

Additionally, the NOx and CO catalysts supplied with the ERUs will be warrantied to perform at the above limits for a period of five (5) years each.

MHPS looks forward to its participation in the Stanton Energy Reliability Center Project, and is happy to work with SERC to answer any questions from SCAQMD or CEC staff.

Sincerely,

A handwritten signature in black ink, appearing to read 'Thomas Cornell', is written over a horizontal line.

Thomas Cornell
Vice President Sales & Commercial Operations
Mitsubishi Hitachi Power Systems Americas, Inc.

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Power & Water

Performance By:
Project Info:

Engine: **LM6000 PC-SPRINT w/ FIGV at -5 Degrees**
Deck Info: **G0125P_V2 - 8fk.scp**
Generator: **BDAX 7-290ERJT 60Hz, 12.47kV, 0.9PF (EffCurve#: 32381; CapCurve#: 32379)**
Fuel: **Gas Fuel #10-1, 19000 Btu/lb,LHV**

Date: **06/21/2016**
Time: **5:20:03 PM**
Version: **4.1.2**

* Multi-Engine Average Performance has been provided. Refer to XNENG.

Case #	100	101	102	103	104	105	106	107	108
Ambient Conditions									
Dry Bulb, °F	102.7	102.7	102.7	65.0	65.0	65.0	40.0	40.0	40.0
Wet Bulb, °F	69.1	69.0	69.0	59.3	59.3	59.3	36.4	36.4	36.4
RH, %	17.0	17.0	17.0	72.0	72.0	72.0	71.4	71.4	71.4
Altitude, ft	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0
Ambient Pressure, psia	14.657	14.657	14.657	14.657	14.657	14.657	14.657	14.657	14.657
Engine Inlet									
Comp Inlet Temp, °F	69.1	102.7	102.7	59.3	65.0	65.0	40.0	40.0	40.0
RH, %	100.0	17.0	17.0	100.0	72.0	72.0	71.4	71.4	71.4
Conditioning	EVAP	NONE	NONE	EVAP	NONE	NONE	NONE	NONE	NONE
Tons(Chilling) or kBtu/hr(Heating)	0	0	0	0	0	0	0	0	0
Pressure Losses									
Inlet Loss, inH2O	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Volute Loss, inH2O	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Exhaust Loss, inH2O	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
Partload %	100	50	21	100	50	21	100	50	20
kW, Gen Terms	47252	23649	10148	49058	24532	10074	51049	25530	10074
Est. Btu/kW-hr, LHV	8651	10488	16425	8616	10318	16270	8559	10178	16358
XNENG	7 Eng Avg 7 Eng Avg 7 Eng Avg 7 Eng Avg 7 Eng Avg 7 Eng Avg 7 Eng Avg 7 Eng Avg 7 Eng Avg								
Fuel Flow									
MMBtu/hr, LHV	408.8	248.0	166.7	422.7	253.1	163.9	436.9	259.8	164.8
lb/hr	21514	13055	8773	22247	13323	8627	22997	13676	8673
NOx Control									
	Water	Water	Water	Water	Water	Water	Water	Water	Water
Water Injection									
lb/hr	16699	11647	5712	18324	10217	4421	23557	10725	4548
Temperature, °F	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SPRINT									
	LPC	OFF	OFF	LPC	OFF	OFF	HPC	OFF	OFF
lb/hr	9323	0	0	9571	0	0	3792	0	0
Control Parameters									
HP Speed, RPM	10540	10143	9659	10503	9854	9378	10479	9683	9194
LP Speed, RPM	3600	3600	3600	3600	3600	3600	3600	3600	3600
PS3 - CDP, psia	439.1	312.7	228.4	450.7	327.7	238.3	466.2	344.1	248.2
P3, psia	443.74	316.55	230.46	455.41	331.84	240.74	471.23	348.74	250.99
T3CRF - CDT, °F	986.97	993.49	880.82	980.42	913.72	805.60	994.21	870.71	766.37
T48IN, °R	2046	1895	1774	2046	1821	1663	2045	1765	1597
T48IN, °F	1587	1436	1314	1587	1361	1204	1586	1305	1137
Exhaust Parameters									
Temperature, °F	863.5	837.7	841.9	856.4	772.6	747.5	845.2	721.1	687.3
lb/sec	284.0	212.6	161.0	291.8	227.2	173.2	303.0	242.7	184.2
lb/hr	1022406	765246	579702	1050435	818056	623443	1090776	873638	663262
Energy, Btu/s- Ref 0 °R	98062	70416	53133	99940	71132	52612	102137	72192	52715
Energy, Btu/s- Ref T2 °F	60031	40677	30753	61682	41537	30219	64151	42265	30162
Cp, Btu/lb-R	0.2797	0.2724	0.2702	0.2788	0.2694	0.2660	0.2763	0.2659	0.2622
Emissions (ESTIMATED, NOT FOR GUARANTEE)									
NOx ppmvd Ref 15% O2	25	25	25	25	25	25	25	25	25
NOx as NO2, lb/hr	41	25	17	43	26	16	44	26	17
CO ppmvd Ref 15% O2	7	14	13	11	18	15	33	37	31
CO, lb/hr	7.30	8.60	5.16	11.65	11.22	6.01	35.39	23.83	12.35
CO2, lb/hr	54369.64	33071.90	22257.99	56213.18	33765.18	21910.94	58089.32	34657.96	22037.88
HC ppmvd Ref 15% O2	2	2	2	2	2	2	4	4	3
HC, lb/hr	1.29	0.78	0.53	1.33	0.80	0.52	2.25	1.53	0.78
SOX as SO2, lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00