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RESOURCE MANAGEMENT

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Florida Department of Environmental Protection
Office of Permitting and Compliance
Division of Air Resources Management
2600 Blair Stone Road, MS # 5505
Tallahassee, Florida 32399-2400

**Re: NSPS, KKKK Applicability Determination for Combustion Turbine Improvements for Unit 5 at Turkey Point Florida Power & Light (FPL)
Permit No. 0250003-024-AC/PSD-FL-338B**

In accordance with the Permit No. 0250003-024-AC/PSD-FL-338B Section 3, Condition 4, FPL is providing the required information regarding NO_x Emission Rate Change due to Combustion Turbine Improvements for Unit 5.

FPL is using Continuous Emission Monitoring System (CEMS) data for determining the short-term NO_x emission rates (in pounds per hour), while operating in the normal combined cycle mode (140-175 MW) and burning natural gas.

Reviewing the data for Units 5A, 5B, 5C and 5D prior to and after improvements, the post change data indicates a slight decrease or no change in NO_x emissions on all four units.

Unit 5B was chosen for the NSPS, KKKK Applicability Determination since it showed the least downward trend in NO_x emissions.

The result of such testing for unit 5B using the 8 tests (three (3) hours per each test) average of the NO_x data prior to and after the permitted improvements shows that NO_x emissions are statistically unchanged with 95% confidence. The number (n) of runs used in the testing was 24 runs, each run of one (1) hour duration.

Please see below the Table 1, NO_x Emissions Summary Data.

Table 1. NOx Emissions Summary for Unit 5B

Date of the Testing	NOx (lbs/hr)Average of 8 Tests (3 hr each)	MWh Average of 8 Tests	NOx (lbs/MWh)
July of 2013	10.7	155.5	0.07
July of 2014	10.7	166.2	0.06

As you can see, the NOx emissions (lbs/MWh) average of 24 hours for July 2013 and July 2014 is well below the NSPS, Subpart KKKK, NOx emissions limit of 0.43 lb/MWh. for a modified or reconstructed turbine firing natural gas.

Therefore, based on FPL analysis of the post change NOx emissions data, these units are not subject to Subpart KKKK.

If you have any question or need additional information, please contact me at your convenience.

Sincerely,



Christian Kiernan
 PGD Technical Services Environmental General Manger
 Florida Power & Light Company
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Attachment

NOx Emissions for Unit 5B at Turkey Point FPL 2013 vs. 2014

Turkey Point KKKK Applicability - Unit 5B

GE7FA.03

Run	Date	Time	Max. lb/hr	MW	3 hr Avg Nox. lb/hr	3 hr Ave MW	3 hr Ave Nox. lb/MW				
1	7/12/2013	10:00	10.8	152.4	10.6	153.7	0.07				
	7/12/2013	11:00	10.6	155.6	10.6	153.7	0.07				
	7/12/2013	12:00	10.4	153.0	10.6	153.7	0.07				
2	7/12/2013	17:00	11.2	156.4	10.9	156.8	0.07				
	7/12/2013	18:00	10.8	156.7	10.9	156.8	0.07				
	7/12/2013	19:00	10.8	157.3	10.9	156.8	0.07				
3	7/13/2013	10:00	10.7	157.2	10.7	156.6	0.07				
	7/13/2013	11:00	10.7	156.6	10.7	156.6	0.07				
	7/13/2013	12:00	10.8	156.0	10.7	156.6	0.07				
4	7/13/2013	13:00	10.5	154.9	10.2	149.5	0.07				
	7/13/2013	14:00	10.1	149.5	10.2	149.5	0.07				
	7/13/2013	15:00	10.1	145.1	10.2	149.5	0.07				
5	7/14/2013	11:00	10.6	151.9	10.7	155.2	0.07				
	7/14/2013	12:00	10.8	156.5	10.7	155.2	0.07				
	7/14/2013	13:00	10.7	157.2	10.7	155.2	0.07				
6	7/14/2013	15:00	10.8	157.4	10.6	153.8	0.07				
	7/14/2013	16:00	10.7	157.5	10.6	153.8	0.07				
	7/14/2013	17:00	10.3	146.4	10.6	153.8	0.07				
7	7/16/2013	15:00	10.7	159.3	10.8	159.2	0.07				
	7/16/2013	16:00	10.8	159.3	10.8	159.2	0.07				
	7/16/2013	17:00	11.0	159.9	10.8	159.2	0.07				
8	7/16/2013	18:00	10.8	158.5	10.7	158.6	0.07				
	7/16/2013	19:00	10.5	160.1	10.7	158.6	0.07				
	7/16/2013	20:00	10.7	160.1	10.7	158.6	0.07				
Average of 8 runs							10.7	155.5	10.7	155.5	0.07

GE7FA.04

Run	Date	Time	Max. lb/hr	MW	3 hr Avg Nox. lb/hr	3 hr Ave MW	3 hr Ave Nox. lb/MW				
1	7/10/2014	11:00	10.9	161.7	10.8	164.7	0.07				
	7/10/2014	12:00	11.0	166.3	10.8	164.7	0.07				
	7/10/2014	13:00	10.6	166.1	10.8	164.7	0.07				
2	7/10/2014	14:00	10.9	166.1	10.8	166.5	0.06				
	7/10/2014	15:00	10.8	166.5	10.8	166.5	0.06				
	7/10/2014	16:00	10.7	166.8	10.8	166.5	0.06				
3	7/10/2014	17:00	11.0	167.1	10.9	167.3	0.07				
	7/10/2014	18:00	10.9	167.4	10.9	167.3	0.07				
	7/10/2014	19:00	10.9	167.4	10.9	167.3	0.07				
4	7/13/2014	11:00	10.8	166.0	10.8	165.9	0.07				
	7/13/2014	12:00	10.8	165.8	10.8	165.9	0.07				
	7/13/2014	13:00	10.8	166.0	10.8	165.9	0.07				
5	7/15/2014	12:00	10.1	163.6	10.2	163.8	0.06				
	7/15/2014	13:00	9.9	156.6	10.2	163.8	0.06				
	7/15/2014	14:00	10.7	169.1	10.2	163.8	0.06				
6	7/15/2014	15:00	10.4	167.8	10.4	166.8	0.06				
	7/15/2014	16:00	10.4	166.7	10.4	166.8	0.06				
	7/15/2014	17:00	10.3	166.0	10.4	166.8	0.06				
7	7/15/2014	18:00	10.9	166.4	10.9	167.4	0.07				
	7/15/2014	19:00	10.9	166.3	10.9	167.4	0.07				
	7/15/2014	20:00	10.9	167.6	10.9	167.4	0.07				
8	7/15/2014	21:00	10.9	167.5	10.9	167.2	0.07				
	7/15/2014	22:00	11.1	167.8	10.9	167.2	0.07				
	7/15/2014	23:00	10.7	166.2	10.9	167.2	0.07				
Average of 8 runs							10.7	166.2	10.7	166.2	0.06

UNIT 5B

Two-Sample T-Test and CI: Nox 2013 lb/hr 5B, Nox 2014 lb/hr 5B

Two-sample T for Nox 2013 lb/hr 5B vs Nox 2014 lb/hr 5B

N	Mean	StDev	SE Mean
Nox 2013 lb/hr 5B	24	10.7	0.252
Nox 2014 lb/hr 5B	24	10.7	0.308

Difference = mu (Nox 2013 lb/hr 5B) - mu (Nox 2014 lb/hr 5B)

Estimate for difference: -0.0500

95% upper bound for difference: 0.0864

T-Test of difference = 0 (vs <): T-Value = -0.62 P-Value = 0.271 DF = 46

Both use Pooled StDev = 0.2814

P>0.05, indicating that assumed null hypothesis is true, this is an observed sample size that supports null as plausible

2014

Date_2	Time_2	5B 2013 Nox lb/hr	Date_3	Time_3	5B 2014 Nox lb/hr
7/12/2013	10:00	10.8	7/10/2014	11:00	10.9
7/12/2013	11:00	10.6	7/10/2014	12:00	11.0
7/12/2013	12:00	10.4	7/10/2014	13:00	10.6
7/12/2013	17:00	11.2	7/10/2014	14:00	10.8
7/12/2013	18:00	10.8	7/10/2014	15:00	10.8
7/12/2013	19:00	10.8	7/10/2014	16:00	10.7
7/13/2013	10:00	10.7	7/10/2014	17:00	11.0
7/13/2013	11:00	10.7	7/10/2014	18:00	10.9
7/13/2013	12:00	10.8	7/10/2014	19:00	10.9
7/13/2013	13:00	10.5	7/13/2014	11:00	10.8
7/13/2013	14:00	10.1	7/13/2014	12:00	10.8
7/13/2013	15:00	10.1	7/13/2014	13:00	10.8
7/14/2013	11:00	10.6	7/15/2014	12:00	10.1
7/14/2013	12:00	10.8	7/15/2014	13:00	9.8
7/14/2013	13:00	10.7	7/15/2014	14:00	10.7
7/14/2013	15:00	10.8	7/15/2014	15:00	10.4
7/14/2013	16:00	10.7	7/15/2014	16:00	10.4
7/14/2013	17:00	10.3	7/15/2014	17:00	10.3
7/16/2013	15:00	10.7	7/15/2014	18:00	10.9
7/16/2013	16:00	10.8	7/15/2014	19:00	10.9
7/16/2013	17:00	11.0	7/15/2014	20:00	10.9
7/16/2013	18:00	10.8	7/15/2014	21:00	10.9
7/16/2013	19:00	10.5	7/15/2014	22:00	11.1
7/16/2013	20:00	10.7	7/15/2014	23:00	10.7