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June 1, 2010
Project No. G080670A

Mr. Syed Arif, P.E.
Florida Department of Environmental Protection
Division of Air Resource Management - Bureau of Air Regulation
New Source Review Section
2600 Blair Stone Road, MS#5505
Tallahassee, FL 32399-2400

Re: Industrial Power Generating Company, LLC (INGENCO)
Air Permit No. PSD-FL-408
Project No. 0250623-007-AC
Request for Demonstration of Compliance with 1-Hour Nitrogen Dioxide (NO_2) National Ambient Air Quality Standard (NAAQS)

Dear Syed:

This letter is in response to your request made during our conference call on April 20, 2010, concerning the INGENCO proposed Generating Station at the Dade South Landfill. Fishbeck, Thompson, Carr & Huber, Inc. (FTC&H) has been retained by INGENCO to submit a demonstration showing that emissions from the proposed facility comply with the new 1-hour NO_2 NAAQS. The following describes the methodology used in this analysis.

MODEL SELECTION

The model selected for the NO_2 NAAQS analysis was AERMOD. This model was established as the U.S. Environmental Protection Agency (USEPA)-preferred air dispersion model, effective December 9, 2005, for steady-state operations. AERMOD is a modeling system that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources and both simple and complex terrain.

BEE-line software, which incorporates the USEPA algorithm for the AERMOD program, was used. The software, referred to as "BEEST", Version 9.82a, was developed by a Division of Bowman Environmental Engineering, Inc.

The non-default Plume Volume Molar Ratio Method (PVMRM) in AERMOD was used for this analysis. PVMRM determines the conversion rate for nitrous oxide (NO_x) to NO_2, based on a calculation of the NO_x moles emitted into the plume and the amount of ozone (O_3) moles contained within the volume of the plume between the source and the receptor.

MODEL INPUT PARAMETERS

Table 8 from the original permit application provides the source characteristics used in the model for the sources located at the INGENCO facility. The emission rate used in the model (combined 60 lbs/hr) is equivalent to INGENCO's normal operation emission rate operating at full capacity at 88% gas fraction (GF). When INGENCO operates at lower GF, emissions of NO_x per million British thermal units increase; however, the facility is typically operating at lower loads. INGENCO is proposing to limit emissions of NO_x to 60 pounds per hour (lbs/hr) for all but seven calendar days of the year, excluding start-up and shutdown. The duration of start-up and shutdown is less than 1-hour; therefore, it can be excluded from this analysis. This is equivalent to what the USEPA has determined to be the 98th percentile set forth on the NAAQS.

Since the USEPA has not issued a significant impact level for the 1-hour NO_2 standard, the significant impact radius was assumed to be no larger than it was for the annual standard. The significant impact radius from the annual NO_2 modeling was set as the limits for the grid used in the 1-hour NAAQS analysis.

The surrounding sources, provided by the FDEP that were included in the annual NO_2 NAAQS analysis in the permit application, were also included in the 1-hour NO_2 NAAQS analysis, except for the equipment that was designated as emergency equipment. If all of the emergency equipment in the surrounding area were operating, it is likely the entire electrical grid in the area is down. If the grid is down, INGENCO, and many other surrounding facilities, could not be operating. It is highly improbable that all emergency equipment and all production equipment in the area would ever simultaneously operate. A copy of the surrounding sources included in the analysis is provided in Attachment 1.

The model was run for a combined impact from all stacks; therefore, the model predicted ambient impact (PAI) is equal to the actual PAI in micrograms per cubic meter ($\mu g/m^3$).

The direction-specific building dimensions, which were calculated during the Good Engineering Practices stack height analysis, were input into the model.

Figure 3 from the PTI application shows the site topography. As shown in the figure, the modeling area is relatively flat. However, actual terrain data were used in the model.

The meteorological (MET) data used in the model were from Miami International Airport, Miami, 2001 through 2005 (Surface Station No. 12839, Upper Air Station No. 92803).

The equilibrium ratio used in the PVMRM was set equal to 0.75. This is equivalent to the annual equilibrium ratio recommended by the USEPA in 40 CFR 51 Appendix W. The USEPA default NO_2 to NO_x ratio in the stack of 0.1 was used in the modeling. Ozone monitoring data for Miami were used in the PVMRM for 2001 through 2005, the ozone monitoring data are provided electronically on the enclosed disk.

RESULTS OF MODELING ANALYSIS

The individual hourly modeling results at each receptor were saved into a post file. This post file was processed using a post processor developed by Mr. Jim Haywood of the Michigan Department of Natural Resources and Environment. The post processor adds the maximum 1-hour daily concentration from the modeling at each receptor to the hourly monitoring impact to determine the combined model and background impact. Since INGENCO is proposing to take a 7-day-per-year restriction on operations with emissions exceeding 60 lbs/hr, the maximum impact for each MET year was averaged at each receptor (see Attachment 2 on the enclosed disk). This maximum then represents the 98^{th} percentile impact pursuant to the NAAQS.

The NO_2 monitoring data used in the post processing were provided by Mr. Cleve Holladay of the FDEP. Mr. Holladay provided data from two monitors (Monitor IDs 0027 and 4002) in the Miami Dade area. The NO_2 values from the 0027 monitor were used. If there were four or less consecutive hours of data missing from the monitoring data, the gaps were filled in with the maximum monitored concentration on either side of the gap. If five or more consecutive hours of NO_2 ambient concentrations were missing, the gaps were filled in using information from the second monitor (4002). If gaps existed in both sets of data, the maximum on either side of the gap were used to fill in the remaining holes in the NO_2 monitoring data. The NO_2 monitoring data used in the analysis are provided electronically on the enclosed disk. The NO_2 monitoring data are provided electronically on the enclosed disk.

The maximum impact from the proposed INGENCO facility of 158.4 $\mu g/m^3$ is well below the 1-hour NAAQS for NO_2 188 $\mu g/m^3$. The model input and output files are provided electronically on the enclosed disk.

The signed/sealed Professional Engineer certification statement is included as Attachment 3.

FTC&H appreciates your continued effort regarding the INGENCO application. We trust that we have provided FDEP with sufficient detail to continue to review the Air Construction Permit Application. If you have any questions or require any additional information, please contact me at 616-464-3733 or slkuieck@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

Susan L. Kuieck, P.E.

lcr
Enclosures
By e-mail and U.S. Mail

cc/encs: Mr. Robert Greene – INGENCO
Mr. German Hernandez – Miami-Dade Solid Waste Management (By E-mail Only)
Mr. Cleve Holladay – FDEP
cc: Mr. James A. Susan, P.E. – FTC&H
Ms. Lynn Spurr – FTC&H

Attachment 1

Attachment 1 - Model Input Parameters - 1-Hour NO2 NAAQS Sources

Stack ID	Site Name	Emission Unit ID	Emission Unit Description	Easting (m)	Northing (m)	Stack Height (m)	Stack Temp (Deg K)	Exit Velocity (m/sec)	Stack Diameter (meters)	NO_x Emission Rate (g/sec)
2505201	MIAMI-DADE WATER AND SEWER DEPARTMENT	1	Digester gas-fired cogeneration Engine #1	565,901	2,825,260	12.19	688.71	20.97	0.46	2.65
2506232	MIAMI DADE SOLID WASTE MGMT	2	ENCLOSED FLARE	565,511	2,824,950	20.65	1273.00	20.00	1.09	0.52
1120952	WEEKLEY ASPHALT PAVING, INC.	2	DRUM MIX ASPHALT PLANT W/ BAGHOUSE	567,801	2,872,738	6.40	427.59	23.17	1.16	7.19
2500013	FLORIDA POWER & LIGHT (PCU)	3	Fossil Fuel Fired Steam Generator#5- Phase II Acid Rain Unit	569,741	2,834,789	45.72	413.71	15.45	4.27	23.70
2500014	FLORIDA POWER & LIGHT (PCU)	4	Fossil fuel Fired Steam Generator#6- Phase II Acid Rain Unit	569,741	2,834,789	45.72	413.71	18.50	4.27	40.90
2500031	FLORIDA POWER & LIGHT (PTF)	1	440 MW Boiler- Phase II, Acid Rain Unit 1 (Fossil Plant)	566,591	2,813,050	121.92	408.15	24.51	5.52	257.00
25000310	FLORIDA POWER & LIGHT (PTF)	10	Unit 5B Combustion Turbine (170 MW) with HRSG	566,591	2,813,050	39.93	294.26	17.98	5.79	10.00
25000311	FLORIDA POWER & LIGHT (PTF)	11	Unit 5C Combustion Turbine (170 MW) with HRSG	566,591	2,813,050	39.93	367.59	17.98	5.79	10.00
25000312	FLORIDA POWER & LIGHT (PTF)	12	Unit 5D Combustion Turbine (170 MW) with HRSG	566,591	2,813,050	39.93	367.59	17.98	5.79	10.00
2500032	FLORIDA POWER & LIGHT (PTF)	2	440 MW Boiler- Phase II, Acid Rain Unit 2 (Fossil Plant)	566,591	2,813,050	121.92	408.15	23.47	5.52	257.00
2500039	FLORIDA POWER & LIGHT (PTF)	9	Unit 5A Combustion Turbine (170 MW) with HRSG	566,591	2,813,050	39.93	367.59	17.98	5.79	10.00
2500051	GENERAL ASPHALT CO., INC.	1	ASPHALT BATCH PLANT W/25% RECYCLE & REPROCESSED FUEL	568,801	2,855,238	7.62	346.48	30.79	1.16	1.21
25001414	RINKER MATERIALS DBA CEMEX, INC.	14	25 TON/HR STONE DRYER & 40 TPH SOIL THERMAL TREATMENT FACIL.	557,491	2,851,888	24.38	699.82	11.58	1.37	0.01
25001418	RINKER MATERIALS DBA CEMEX, INC.	18	KILN SYSTEM(raw mill,kiln PH/PC and clinker cooler)	557,491	2,851,888	109.42	513.15	49.042	2.44	81.70
2500148	RINKER MATERIALS DBA CEMEX, INC.	8	KILN #1 & #2	557,491	2,851,888	41.76	399.82	7.62	4.57	32.90
25002021	TARMAC AMERICA LLC	21	INSUFFLATION SYSTEM - SERVING KILN SYSTEM 2 AND 3	562,271	2,861,538	6.10	505.37	27.86	0.69	0.94
25002028	TARMAC AMERICA LLC	28	Raw Mill & Pyroprocessing System	562,271	2,861,538	124.97	353.15	1.80	4.27	90.80
2500204	TARMAC AMERICA LLC	4	41 TPH KILN #2 W/DOUBLE CHAMBER E.S.P.	562,271	2,861,538	60.96	422.04	10.06	2.29	27.80
2500206	TARMAC AMERICA LLC	6	142 TPH KILN #3 W/DROPOUT BOX& DUAL CHAMBER E.S.P.	562,271	2,861,538	60.96	482.04	10.97	4.27	74.70
25023211	JACKSON MEMORIAL HOSPITAL	11	Natural gas chiller (York International)	578,031	2,852,578	9.14	394.26	9.08	0.46	0.00
2502326	JACKSON MEMORIAL HOSPITAL	6	ECOLAIRE MODEL 500 PE INCINERATOR	578,031	2,852,578	13.11	1366.48	10.97	0.52	0.25
2502328	JACKSON MEMORIAL HOSPITAL	8	600 hp (25.11 mmBtu/hr) Kewanee Scotch Marine Boiler B-1	578,031	2,852,578	17.07	502.04	7.833	0.61	0.08
2502329	JACKSON MEMORIAL HOSPITAL	9	600 hp (25.11 mmBtu/hr) Kewanee Scotch Marine Boiler B-2	578,031	2,852,578	17.07	502.04	7.833	0.61	0.08
2502501	PET HEAVEN MEMORIAL PARK	1	SIMONDS 404 INCINERATOR-400 LB/HR TYPE IV WASTE-DUAL CHAMBER	562,901	2,849,638	9.14	424.82	10.67	0.76	0.01
2502521	COMMUNITY ASPHALT CORPORATION	1	400 ASPHALT DRUM MIX PLANT W/ AERO PULSE MODEL M774 BAGHOUSE	557,001	2,869,138	7.62	294.26	0.00	0.76	0.39
2502578	RINKER MATERIALS OF FLORIDA, INC.	8	Portable Crusher Unit with Diesel Power Unit	550,171	2,842,239	0.00	294.26	0.00	0.00	2.34
2502811	MIAMI-DADE WATER AND SEWER DEPARTMENT	1	Lime recalc. kiln w/cooler,twin cyclone & scrubbing twr-8.9T	570,701	2,856,598	22.86	313.71	0.73	0.91	0.84

Attachment 1 - Model Input Parameters - 1-Hour NO2 NAAQS Sources

Stack ID	Site Name	Emission Unit ID	Emission Unit Description	Easting (m)	Northing (m)	Stack Height (m)	Stack Temp (Deg K)	Exit Velocity (m/sec)	Stack Diameter (meters)	NO_x Emission Rate (g/sec)
2503146	MIAMI-DADE WATER AND SEWER DEPARTMENT	6	ENGINE #6; 2113 HP DUAL-FUEL DRIVING 26000 GPM PUMP	565,921	2,843,169	8.53	394.26	0.00	0.37	8.23
2503147	MIAMI-DADE WATER AND SEWER DEPARTMENT	7	Rotary Lime Recalcining Kiln designed to produce 150 TPD CaO	565,921	2,843,169	0.00	349.82	50.60	0.91	2.37
2503481	MIAMI DADE RRF	1	RDF Spreader Stoker Combustor (Unit #1) & auxiliary burners	563,831	2,857,458	76.20	422.04	41.21	2.57	17.70
2503482	MIAMI DADE RRF	2	RDF Spreader Stoker Combustor (Unit #2) & auxiliary burners	563,831	2,857,458	76.20	422.04	41.209	2.57	17.70
2503483	MIAMI DADE RRF	3	RDF Spreader Stoker Combustor (Unit #3) & auxiliary burners	563,831	2,857,458	76.20	422.04	41.209	2.57	17.70
2503484	MIAMI DADE RRF	4	RDF Spreader Stoker Combustor (Unit #4) & auxiliary burners	563,831	2,857,458	76.20	422.04	41.21	2.57	17.70
2503902	U S DEPT OF AGRICULTURE	2	ADVANCED COMBUSTION SYS. MODEL CA 500 P - NAT.GAS FIRED	570,501	2,854,138	8.53	294.26	0.00	0.91	0.00
2503903	U S DEPT OF AGRICULTURE	3	One (1) Natural Gas Fired Biological Waste Incinerator	570,501	2,854,138	9.14	294.26	0.00	0.91	0.01
2503931	MIAMI-DADE AVIATION DEPARTMENT (MDAD)	1	CLEAN AIR MODEL CA2500 INCINERATOR #1, 2500 LB /HR.	570,611	2,853,218	11.58	1255.37	11.61	0.91	0.47
2503933	MIAMI-DADE AVIATION DEPARTMENT (MDAD)	3	CLEAN AIR MODEL CA2500 INCINERATOR #2, 2500 LB/HR	570,611	2,853,218	11.58	538.71	6.40	1.22	0.47
2504701	SOUTH FLORIDA COGENERATION ASSOCIATES	1	239 MBTU/HR GAS TURBINE	579,561	2,850,618	39.62	388.71	16.46	2.74	10.80
25047610	MIAMI-DADE WATER AND SEWER DEPARTMENT	10	1.2 MW Digester Gas Electric Generator; # 3	584,292	2,847,609	11.58	741.48	29.26	0.46	2.88
2504763	MIAMI-DADE WATER AND SEWER DEPARTMENT	3	BLOWER #2; 410 HP I.C.ENG;DGSTR GAS OR #2 F.O.FIRED	584,292	2,847,609	10.67	741.48	31.39	0.21	0.01
2504764	MIAMI-DADE WATER AND SEWER DEPARTMENT	4	BLOWER#3; 410 HP I.C.ENG;F.O.FIRED ONLY (SEE COMMENT)	584,292	2,847,609	10.67	741.48	31.39	0.21	0.36
2504766	MIAMI-DADE WATER AND SEWER DEPARTMENT	6	BLOWER #5; 950 HP(COMMENT) I.C.ENG;DGSTR GAS OR #2 F.O.FIRED	584,292	2,847,609	10.67	741.48	25.91	0.37	0.01
2505871	THE ASPHALT GROUP, LLC	1	300 TPH ASPHALT DRUM MIX PLANT W/ BAGHOUSE	563,501	2,806,740	12.50	410.93	22.860	1.37	1.36
2506081	110TH AVENUE INVESTMENTS, INC.	1	115 TPH ADM MODEL BH 308-8 DRUM MIX ASPHALT PLANT	563,811	2,851,978	4.88	422.04	23.774	0.67	0.52
2506082	110TH AVENUE INVESTMENTS, INC.	2	160 TPH Due-Drum Counterflow Asphalt Plant-Almix Baghouse	563,811	2,851,978	7.62	294.26	0.001	0.91	0.02
2506111	GE ENGINE SERVICES-MIAMI, INC.	1	THREE (3) JET ENGINE TEST CELLS	570,411	2,852,428	11.28	294.26	0.001	1.22	0.98
2506113	GE ENGINE SERVICES-MIAMI, INC.	3	miscellaneous sources of air emissions	570,411	2,852,428	0.00	294.26	0.001	0.00	0.01
2506151	WASTE MANAGEMENT INC. OF FLORIDA	1	FLARE #1 - open utility flare; 3,000 scfm.	565,041	2,859,858	15.24	294.26	0.001	0.15	0.00
2506155	WASTE MANAGEMENT INC. OF FLORIDA	5	Enclosed 6,000 scfm primary flare	565,041	2,859,858	16.76	294.26	0.001	3.96	1.03
2506241	GENERAL ASPHALT CO., INC.	1	300 TPH CNTR FLOW DRUM MIX ASPHALT PLANT/CEDARAPIDS BAGHOUSE	569,681	2,868,158	9.144	409.26	18.898	1.4	1.36
2511962	AVIATION ENGINE SERVICE, INC	2	Jet Engine Test Cell	566,641	2,859,468	0	294.26	0.001	0	1.35
77702503	RINKER MATERIALS OF FLORIDA	3	Diesel Engine Drive Unit	562,801	2,865,838	0	294.26	0.001	0	9.40E-01

Attachment 2

ATTACHMENT 2

FDEP COPY OF THIS LETTER INCLUDES THE ONLY DISK CONTAINING ALL THE MODELING INPUT/OUTPUT FILES

Attachment 3

Professional Engineer Certification

1. Professional Engineer Name: James A. Susan, P.E.
   Registration Number: 61237
2. Professional Engineer Mailing Address...
   Organization/Firm: Fishbeck, Thompson, Carr & Huber, Inc.
   Street Address: 1515 Arboretum Drive, SE
   City: Grand Rapids State: MI Zip Code: 49546
3. Professional Engineer Telephone Numbers...
   Telephone: (616) 575-3824 ext. 3734 Fax: (616) 575-8155
4. Professional Engineer E-mail Address: jasusan@ftch.com
5. Professional Engineer Statement:

   I, the undersigned, hereby certify, except as particularly noted herein, that:*

   (1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

   (2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

   (3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

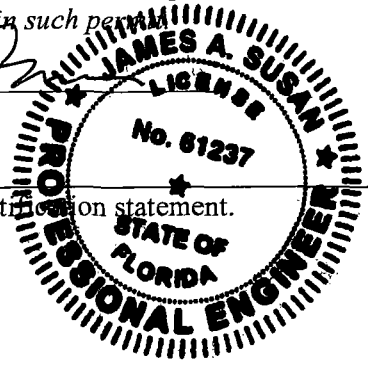
   (4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

   (5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

   Signature

   6/1/10
   Date

   (seal)



* Attach any exception to certification statement.