CALPINE

CALPINE CENTER
717 TEXAS AVENUE
SUITE 1000
HOUSTON, TEXAS 77002
713.830.2000
713.830.2001 (FAX)

September 24, 2007

Mr. Jeff Koerner, P.E.
Florida Department of Environmental Protection
Bureau of Air Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Application for Air Construction Permit Modification and Associated Title V Modification
Auburndale Power Partners, L.P.
Facility ID 1050221

Dear Mr. Koerner:

Per a conversation on September 20, 2007 between Heidi Whidden of Calpine and Bruce Thomas of FDEP, Auburndale Power Partners, L.P. (APP) approves the decoupling of the Auburndale Energy Complex Title V renewal application and the associated heat input modifications. It is APP's understanding that no additional paperwork is required to complete this decoupling.

APP hopes that this letter will allow the department to proceed with processing these applications. Please do not hesitate to contact Heidi Whidden, Manager - EHS, if you have additional questions or need additional information. Heidi Whidden may be reached by telephone at (713) 570-4829 or by email at hwhidden@calpine.com.

Sincerely,
Calpine Corporation

Jason M. Goodwin, P.E.
Director – Environmental, Health & Safety
Eastern Power Region

c: Bob Callery
Heidi Whidden
Andrew Martin
Steve Wunderlich
File: AU-A161

CALPINE

CALPINE CENTER
717 TEXAS AVENUE
SUITE 1000
HOUSTON, TEXAS 77002
713.830.2000
713.830.2001 (FAX)

1275
1669

RECEIVED
SEP 25 2007
BUREAU OF AIR REGULATION

September 24, 2007

Mr. Jeff Koerner, P.E.
Florida Department of Environmental Protection
Bureau of Air Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Application for Air Construction Permit Modification
Request for Additional Information
Auburndale Power Partners, L.P.
Facility ID 1050221

Dear Mr. Koerner:

This letter follows our July 5, 2007 letter to request a minor modification to the Air Construction Permit (PSD-FL-185 and subsequent modifications) for the Auburndale Cogeneration Unit, owned by Auburndale Power Partners, L.P. (APP), and your subsequent request for additional information dated August 9, 2007. We are pleased to respond directly to the five items listed in your letter as follows here.

DEP Comment:

1. *Please provide actual capacity information for the combined cycle gas turbine to support your request for an increase in the permitted heat input rate. Provide actual short-term heat input rates that validate the curve in Figure 1.*

APP Response:

As discussed in the July 5, 2007 letter, APP has analyzed a large quantity of operating data to confirm the basis for the operating curves with and without the operation of the wet compression system.

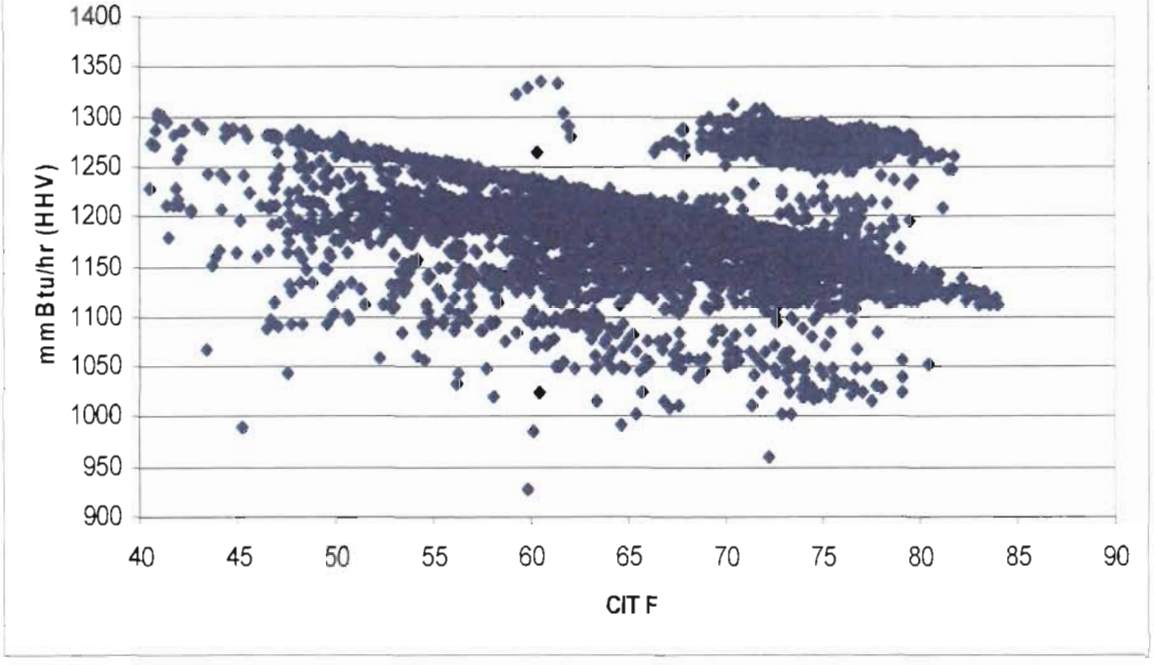
In our review, a total of more than 5,300 data points, each representing the average operating data for 30 minute increments between August 1, 2006 and March 31, 2007 were considered. The data was identified for operation of wet compression (water flow rate). A major unit overhaul also took place during this time period and this was reflected in the data segregation.

The figures below display the results of this data analysis. In addition, APP has provided as Enclosure 1, the correction curve supplied to DEP in the 1997 PSD permit (0150221-002AV) and as Enclosure 2, an engineering memorandum showing the methodology used to develop the data presented here. It should be noted that the correction curve

developed in Enclosure 2 is marginally different from the curve shown in the 1997 permit and that presented as Equation A in our July 2007 letter. Given that the two curves are very similar, APP has proposed to continue to use the curve presented in the 1997 permit and approximated by the Equation A in the July 5 letter as our compliance correction curve.

Figure 1 shows the total universe of data considered.

Figure 1
Collected Operationg Data 08/06 - 03/07



In this figure data is shown for a variety of operating conditions both before and after the overhaul. Baseload data collected after the overhaul forms the defined line along the upper edge of the main data group. Because of the effects of performance degradation, the pre-overhaul data forms a less defined data "cloud" below and around this.

In Figure 2, the data collected before the overhaul was excluded from consideration. To best model the new and clean operation of the unit, baseload data, with wet compression off, collected after the overhaul was used in the curve fit to the equation. This data is shown in Figure 2.

Figure 2
Baseload Operating Data, Dry Operation, Post-Overhaul

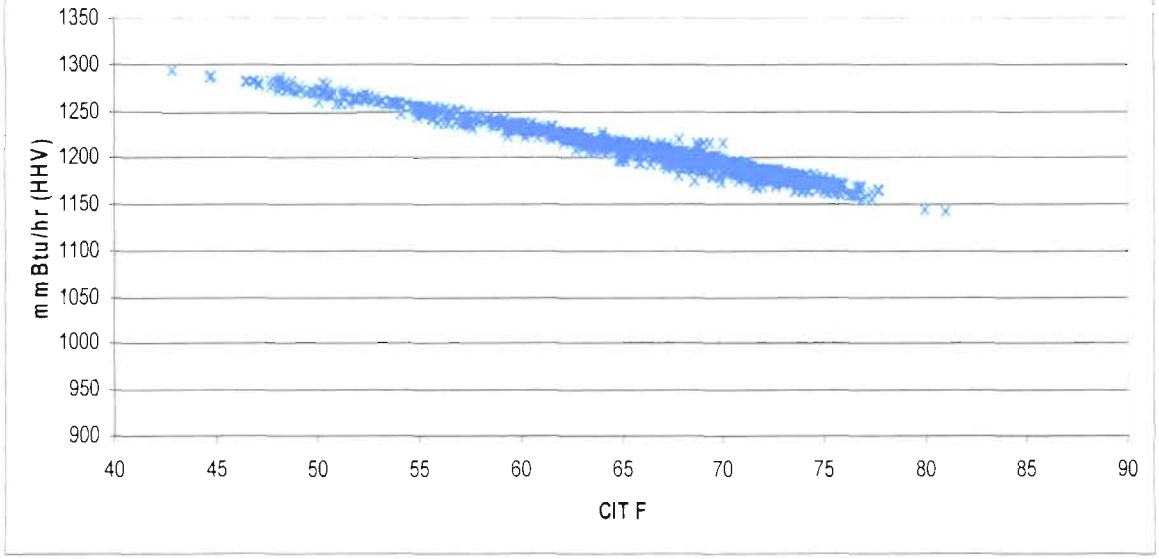
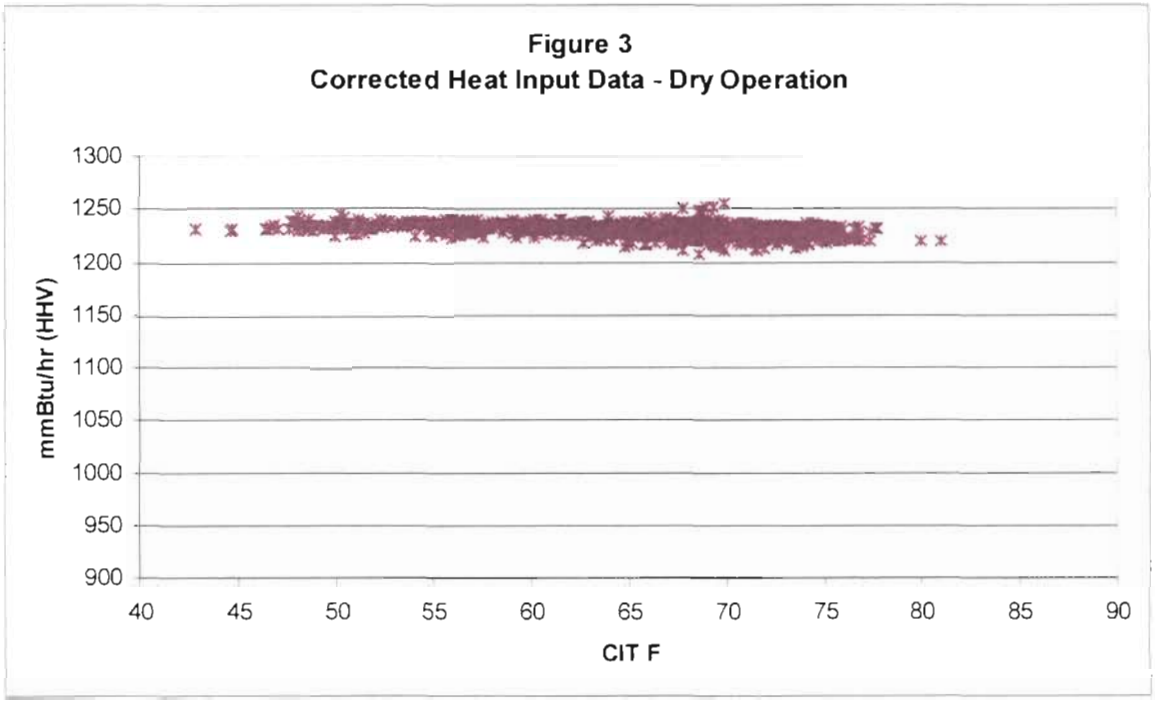


Figure 3 shows the same data presented in Figure 2 corrected to ISO conditions using the correction equation presented in our letter of July 5, 2007. As you can see the line of the data is now essentially flat, indicating that the correction produces a constant measurement over the operating range of temperatures measured. For each data point in Figure 2, the corresponding data point in Figure 3 is the result of the calculation

HIc =HIm / [1.1794-0.003*CIT]

Where: HIc is the ISO corrected value shown in Figure 3
HIm is the measured heat input value shown in Figure 2
CIT is the compressor inlet temperature measured for that data point.

Figure 3
Corrected Heat Input Data - Dry Operation



Based on the permit limit of 1214 mmBtu (LHV) at ISO conditions, APP uses this equation to check the measured data for compliance. Operation in compliance are conditions in which HIc is less than or equal to 1214 mmBtu LHV. Note that the data presented in this figure is mmBtu per hour in HHV and thus is below the equivalent HHV permit limit of 1,347.5 mmBtu/hour HHV.

Figure 4 shows the data collected with the wet compression in operation. In this plot, the wet compression data has been segregated by the amount of water injected. For the purposes of permitting, the equation was fit to the data greater than 99 gallons per minute water flow, i.e. greater than 90 percent of the maximum flow.

Figure 4
Data with Wet Compression in Operation - Uncorrected

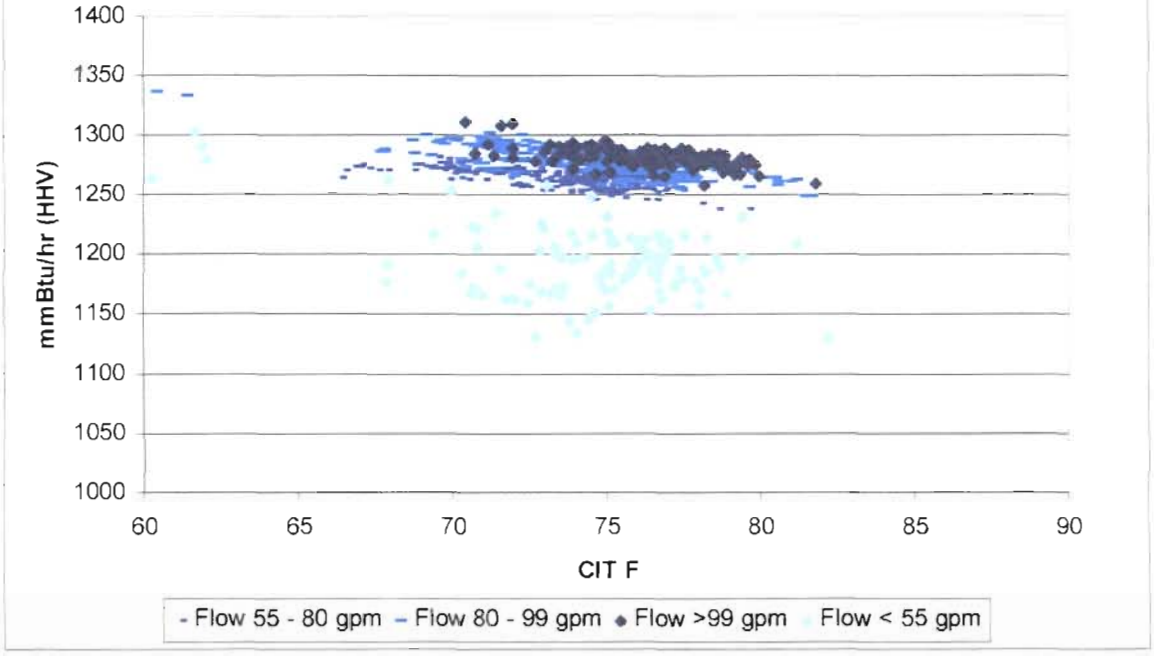
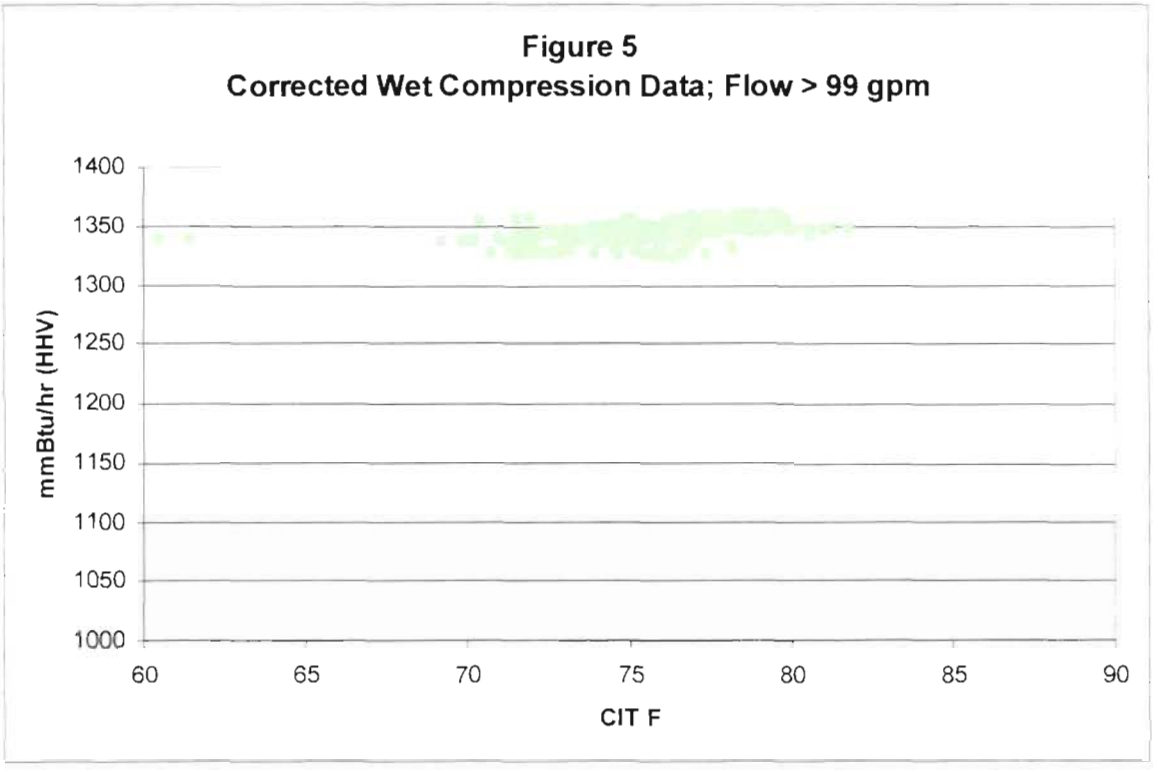


Figure 5 shows the wet compression data greater than 90 percent of the flow corrected to the ISO conditions. Because nearly all of this data was collected prior to the overhaul (there was relatively little wet compression operation after the overhaul in the study period), the data is not as tightly gathered as the dry operation data. As shown in this figure, the data clusters in a range between 1,350 and 1,380 mmBtu/hr HHV.

Figure 5
Corrected Wet Compression Data; Flow > 99 gpm



As stated in our letter of July 5, the operation of the wet compression allows the input of approximately 150 additional mmBtu/hr compared to the "dry" operation. This is demonstrated in comparison of the wet compression data in Figure 5 to the dry operation data in Figure 3. Wet compression data shows heat inputs up to 1,380 mmBtu/hr HHV corrected vs. approximately 1,230 mmBtu/hr HHV corrected for the dry operation data. Based on this differential, APP has requested that the permit limit for operation with the wet compression be 1,364 mmBtu LHV, 150 mmBtu/hr greater than permitted for the dry operation.

DEP Comment:

2. *Provide actual annual fuel firing rates and heat input rates for the combined cycle gas turbine for the last 5 years of operation*

APP Response:
Table 1 shows the requested data.

TABLE 1

YEAR	NATURAL GAS FUEL FLOW (MM CUBIC FEET)	NATURAL GAS HEAT INPUT (MMBTU)	OIL FUEL FLOW (GALLONS)	OIL HEAT INPUT (MMBTU)
2002	7885.9	8,248,651.4	0.0	0.0
2003	8931	9,341,826.0	119,000.0	16,541.0
2004	6634.77	6,886,891.3	60,120.0	8,416.8
2005	5338.32	5,583,882.7	133,600.0	18,303.2
2006	5319.92	5,564,639.3	22,280.0	3,030.1

DEP Comment:

3. *Summarize the actual NOx emissions based on CEMS data and CO emission based on test data from the combined cycle gas turbine for the last 5 years.*

APP Response:
Table 2 shows the requested data.

TABLE 2

YEAR	NOx EMISSIONS (TPY)[1]	CO EMISSIONS NATURAL GAS (TPY)[2]	CO EMISSIONS OIL (TPY)[2]	TOTAL NOx EMISSIONS (TPY)	TOTAL CO EMISSIONS (TPY)
2002	152.60	12.37	0	152.60	12.37
2003	145.05	32.70	0.63	145.05	33.33
2004	124.12	6.94	0.32	124.12	7.26
2005	145.67	5.63	0.71	145.67	6.34
2006	153.17	4.18	0.11	153.17	4.29

[1]NOx emissions are taken from total annual values as recorded by the CEMS. Emissions have not been differentiated by fuel type.
[2]CO emissions are calculated by applying the measured emissions rate from each compliance test to the annual heat input by fuel type.

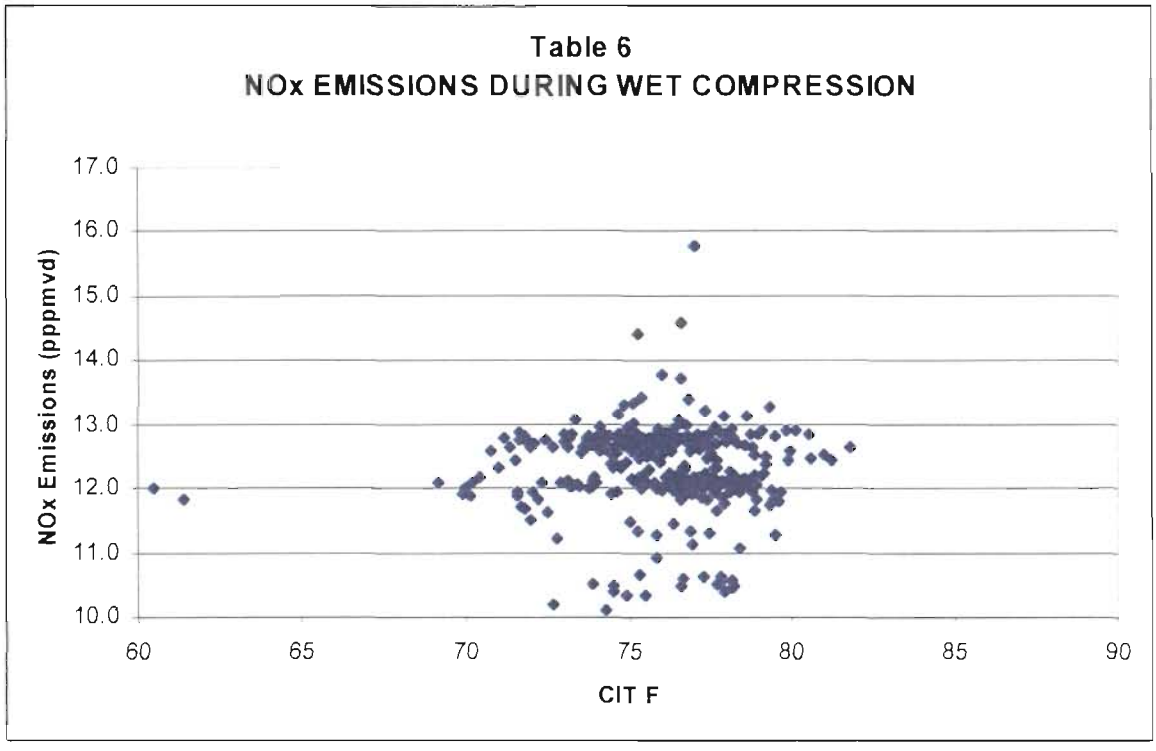
DEP Comment:

4. Provide actual NOx data supporting operation at the increased heat input rate.

APP Response:

Table 6 shows NOx emissions data for the same set of data shown in Figure 5. All data points except one are below the permitted emissions concentration limit of 15 ppmvd corrected to 15% O_2. Note that the data shown is for individual hours and is therefore indicative of the ability of the unit to meet the required emissions rate, not of specific compliance which is measured based on 24 hour averages. APP is not requesting any change in the pollutant emissions concentrations or mass emissions rates.

Table 6
NOx EMISSIONS DURING WET COMPRESSION



DEP Comment:

5. Please estimate the emissions increases expected from the increase in heat input. Compare the projected actual emissions to baseline emissions as defined in 62-210.200, 62-210.370, and 62-212.300, F.A.C. Will the predicted increases exceed the PSD significant emissions rates?

APP Response:

During the 2001 permit revision that allowed the construction of Unit 6 (the peaker), APP performed a past actual to future potential test for the purpose of "netting out" to allow for the construction of the peaker without exceeding the PSD significant emissions threshold. As a result of this permitting, the cogeneration unit (EU001) has an annual

limit on NOx emissions of 177 tons per year. APP is not requesting an increase in that limit at the time of this permitting. As a result, the future potential NOx emissions for the cogeneration unit are 177 tons per year.

The baseline emissions for NOx based on the last five years emissions (as shown in Table 2) are 149.42 tons per year. The potential emissions of 177 tons per year exceed the baseline emissions by 27.58 tons per year. This is less than the PSD significant emissions threshold of 40 tons per year.

The increase in CO emissions has been calculated by a comparison of the CO emissions rates for two recent CO compliance tests and the potential increase in heat input with the proposed modification. As established in the initial permitting of the wet compression system, climate data for the Auburndale, Florida area shows that the number of hours with temperatures 60°F and above is expected to be 7,000 per year. However, since this value is an estimate we have used the maximum potential number of hours (8760) in these calculations. The requested heat input increase from the operation of the wet compression will be 150 mmBtu/hr.

The dry operation emissions rate is taken from the year 2000 compliance test, the most recent completed without wet compression. That rate is 0.0012 lb/mmBtu. The wet compression emissions rate used is the average value from the compliance tests for 2001 – 2007, all of which were conducted with wet compression. That value is 0.0020 lb/mmBtu. For reference, the value from the year 2007 compliance test, the most recent completed with wet compression is 0.0017 lb/mmBtu. The difference is 0.0008 lb/mmBtu (.0020 - .0012) which is the increase in emissions rate resulting from the operation of wet compression.

0.0008 lb/mmBtu * 150 mmBtu/hr * 8760 hr/yr / 2000 lb/ton = 0.53 TPY (CO).

This is less than the significant emissions rate threshold.

APP hopes that the responses above are sufficient to allow the department to proceed with processing of this application. Please do not hesitate to contact Heidi Whidden, Manager—EHS, if you have additional questions or need additional information. Heidi Whidden may be reached by telephone at (713) 570-4829 or by email at hwhidden@calpine.com.

Sincerely,
Calpine Corporation

Jason M. Goodwin, P.E.
Director – Environmental, Health & Safety
Eastern Power Region

Enclosures

c: Bob Callery
Heidi Whidden
Andrew Martin
Steve Wunderlich
File: AU-A161

Enclosure 1

W501D5 ECONOPAC SYSTEM PERFORMANCE

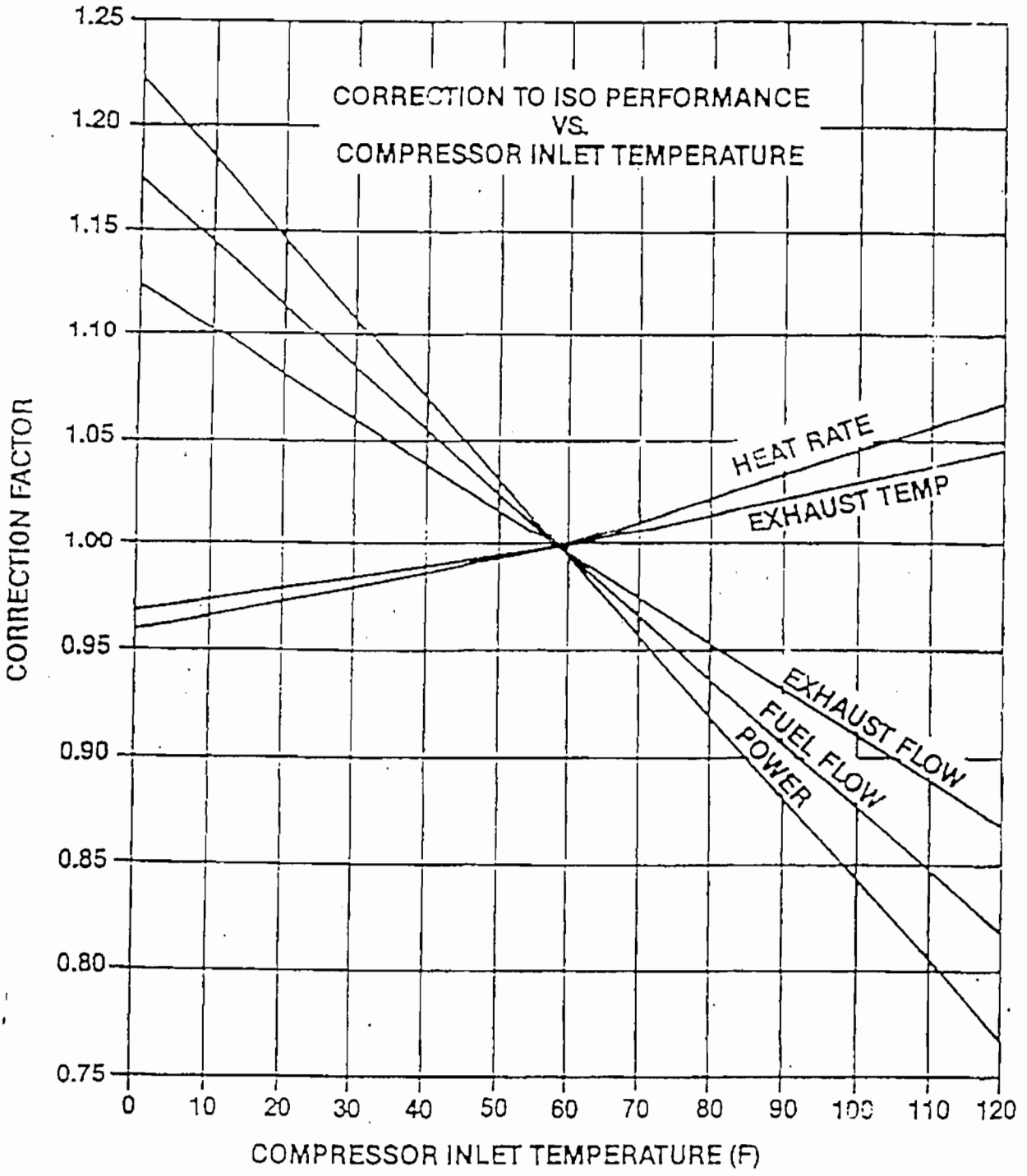


FIGURE 8

Enclosure 2

CALPINE

MEMORANDUM

April 5, 2007

To: Steve Wunderlich
Copy: Heidi Whidden, Bob Callery
From: Timothy Dierauf
Subject: Auburndale Cogen Fuel ISO Correction Curves

Rev 1, 3/21/07, initial publishing. TimD.

Rev 2, 4/5/07, Added additional step in curve fit derivation.

Auburndale Cogen Curve Fits (RFE#10762780):

Recommend using for all modes of operation (including wet compression):

```
GTFuel_ISOcorr = (14.68/Patm_meas)*(GTFuel_meas)/(CorrFact_GTFuel)
```

Where:

```
GTFuel_ISOcorr    = ISO corrected GT fuel [MMBtu/hr LHV]
Patm_meas         = measured ambient pressure [psia]
GTFuel_meas       = measured GT fuel [MMBtu/hr LHV]
```

```
CorrFact_GTFuel = 1.1909 - 0.0032359*(CITcalc)
```

Where:

```
CorrFact_GTFuel   = ISO correction factor from equation
CITcalc           = calculated compressor inlet temperature [F]
```

CITcalc can be determined by the following equations:

```
If Evap-Cooler Operating:
      CITcalc = 0.2*AmbientDryBulb + 0.8*AmbientWetBulb

If Evap-Cooler Off:
      CITcalc = AmbientDryBulb
```

Where:

```
AmbientDryBulb    = measured ambient temperature [F]
AmbientWetBulb    = measured ambient wet-bulb temperature [F]
```

The wet-bulb temperature is determined from the ambient humidity.

Development:

The math equation to model evaporative cooling is very simple:

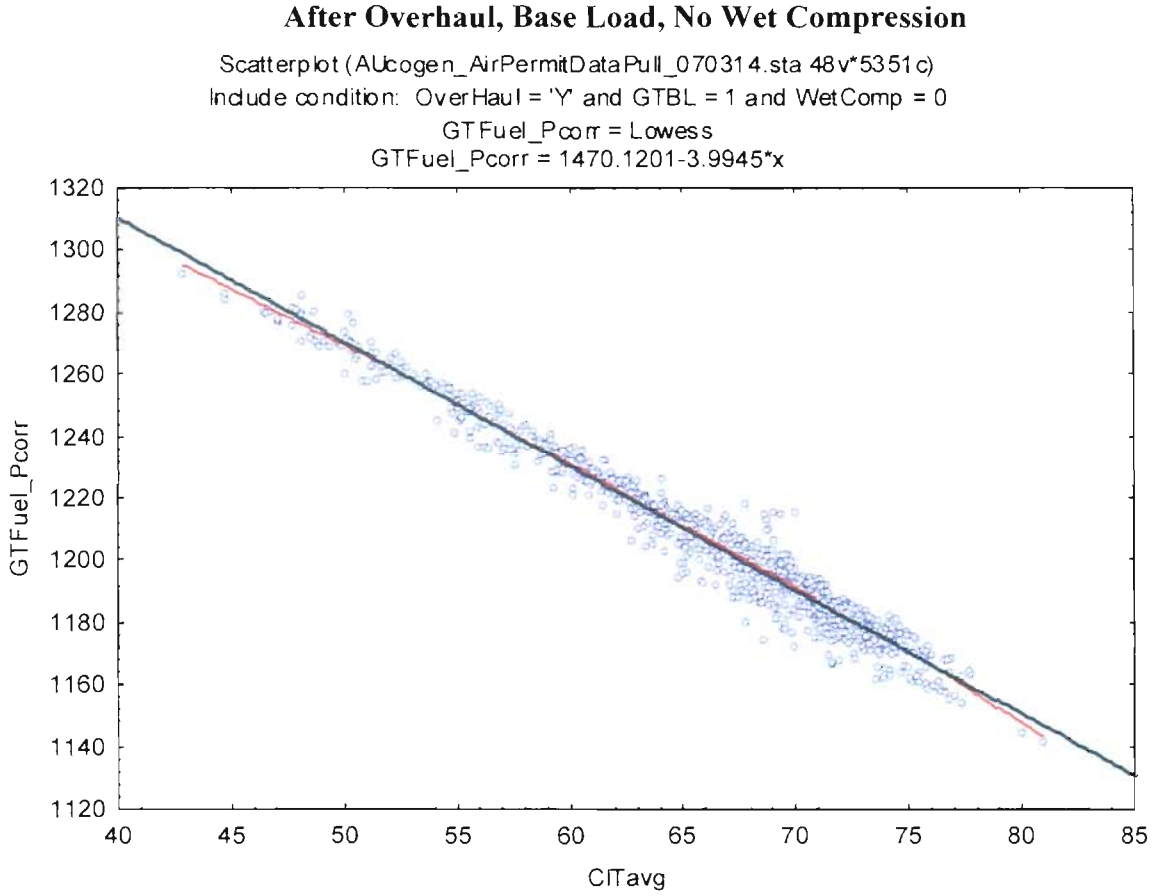
$$\text{Effectiveness} = \frac{(\text{AmbientDryBulb} - \text{CITcalc})}{(\text{AmbientDryBulb} - \text{AmbientWetBulb})}$$

(AmbientDryBulb - AmbientWetBulb)

Where:
Effectiveness = saturation effectiveness

Given the age of Auburn Cogen, an effectiveness assumption is 80% is sufficient. Solving this equation for CITcalc results in the above equation.

Curve Fit Development



From above plot:

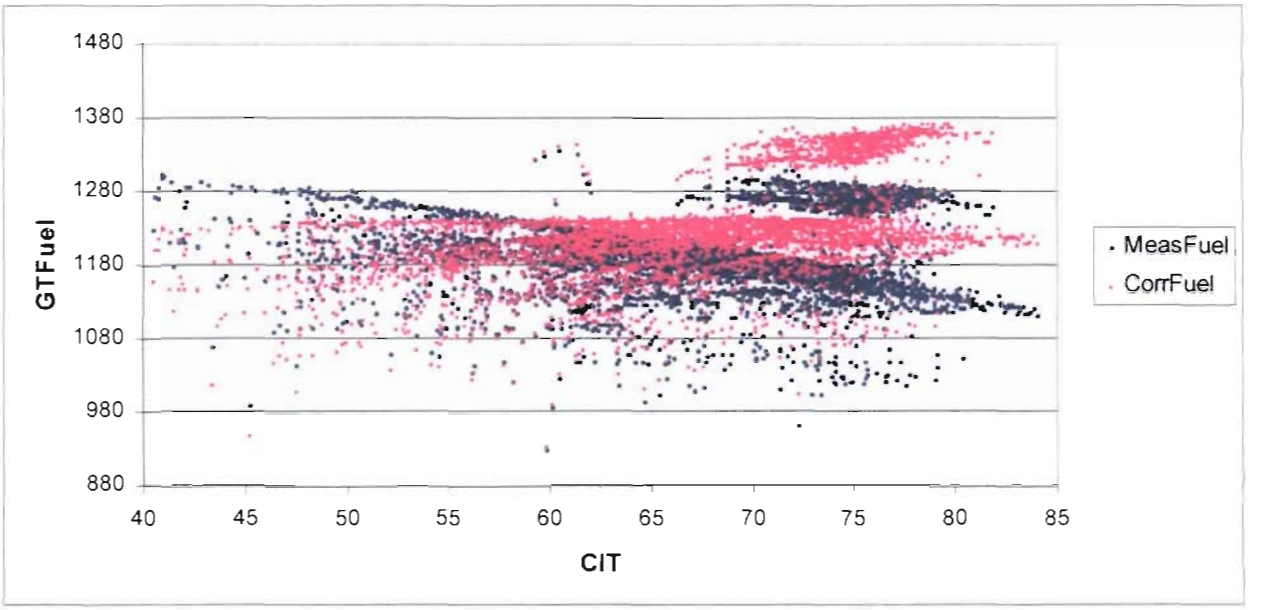
(a) GTfuel = 1470.1201 - 3.9945* CIT

At 59F, the predicted fuel is 1234.4446 MMBtu/hr. Dividing Equation (a) by this value results in:

(b) CorrFact_GTFuel = 1.1909 - 0.0032359*(CITcalc)

And this is the presented equation.

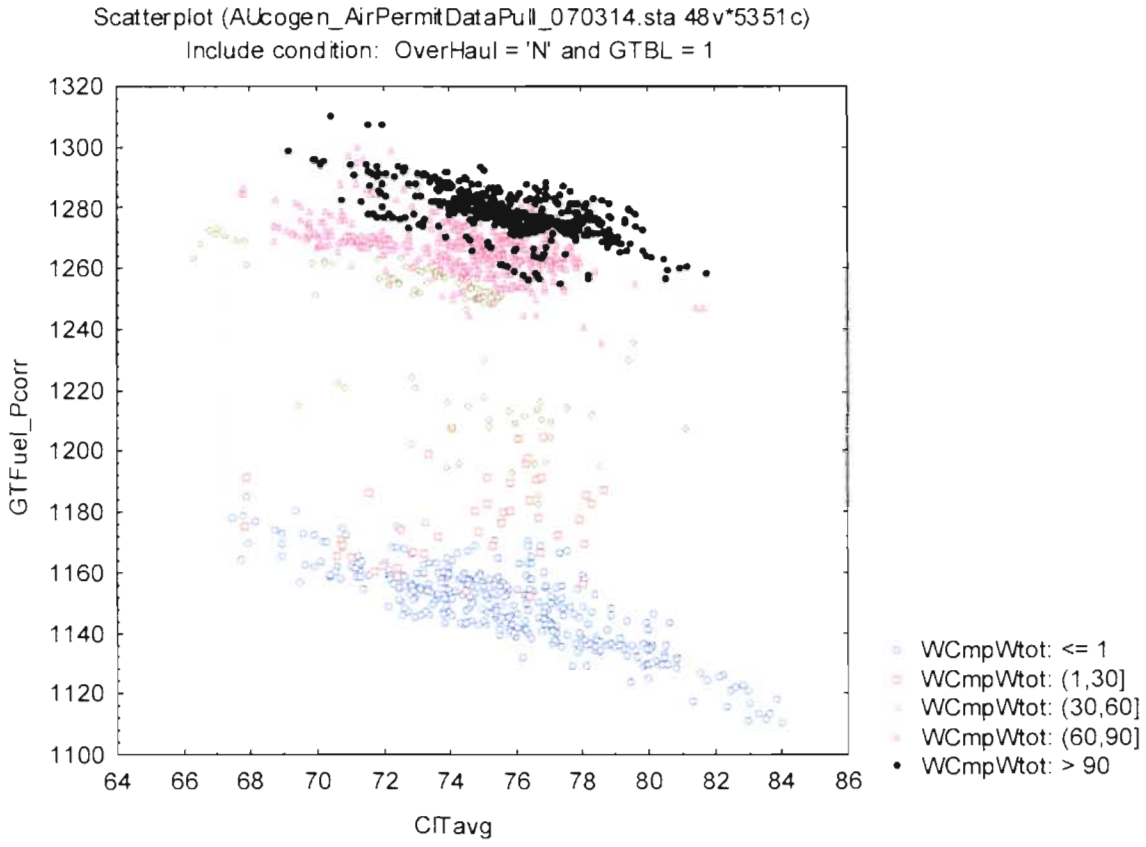
Significant data was collected to build this correction equation. The following plot shows the un-corrected and ISO corrected fuel measurements.



Notice that the top edge of the non-wet-compression data flattens out confirming quality of methods.

I could not build a simple correction curve for Wet Compression because the wet compression water flows changes depending on desired MW output.

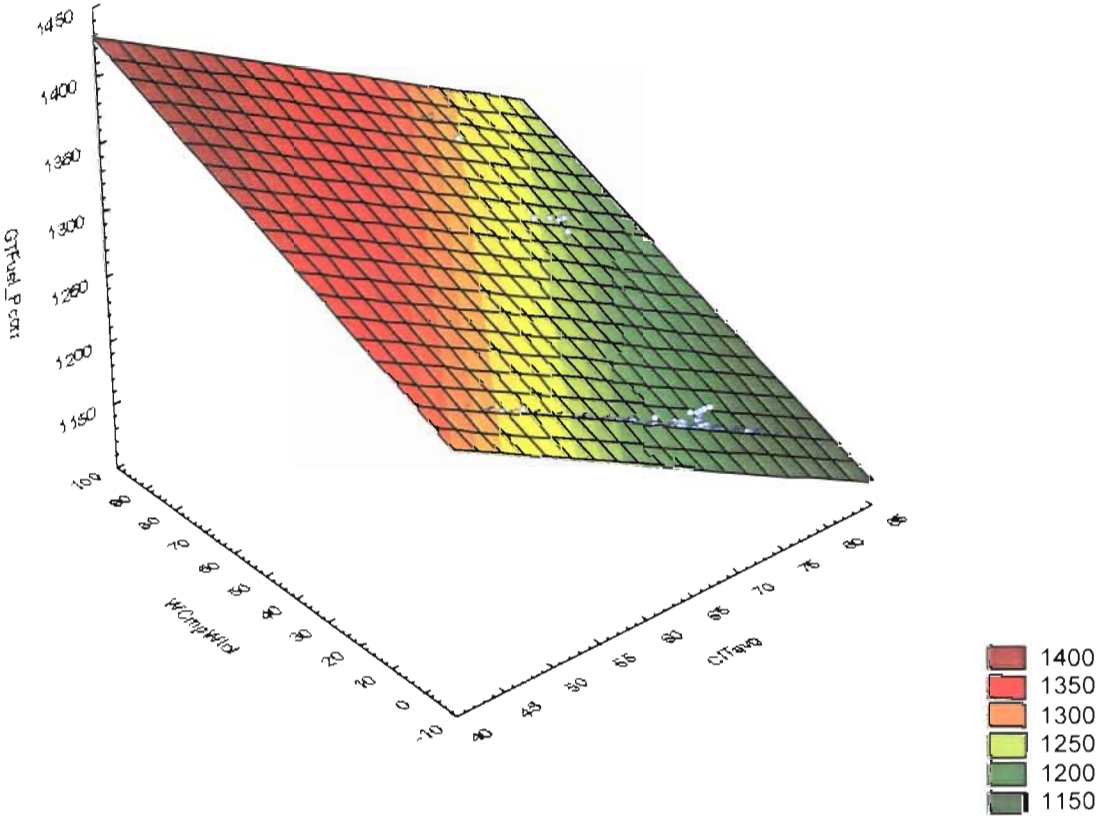
Before Overhaul, Base Load



But slopes look similar. Thus, I am confident that dry curve will work.

After Overhaul, Base Load

3D Surface Plot (AUcogen_AirPermitDataPull_070314.sta 48v*5351c)
Include condition: OverHaul = 'Y' and GTBL = 1
GTFuel_Pcorr = 1471.0845-3.9944*x+1.1752*y



Plant data used to build these curves can be found in the workbook *AUcogen_AirPermitDataPull_070321_v2.xls*