TAMPA ELECTRIC

June 21, 2002

Via FedEx
Tracking No. 7904 6034 3119

Mr. Bill Proses
Florida Department of Environmental Protection
Southwest District
3804 Cocunut Palm Drive
Tampa, FL 33619

Re: Tampa Electric Company (TEC)
Polk Power Station Unit 3
Initial Natural Gas and No. 2 Fuel Oil Compliance Stack Test
FDEP File No. PSD-FL-263 (PA92-32)

Dear Mr. Proses:

As required by 62-297.310(8) and Condition 3 and 6 of permit PSD-FL-263, TEC is required to submit the initial compliance test results to the DEP's Southwest District no later than 45 days after completion of the last test run. Please find enclosed the test report addressing the initial compliance test of Polk Unit 3 while firing natural gas and No. 2 fuel oil.

If you have any questions or comments, please telephone Raiza Calderon or me at (813) 641-5261.

Sincerely,

Laura R. Crouch

Laura R. Crouch
Manager - Air Programs
Environmental Affairs

EA/bmr/RC131

c/enc: Mr. J. Kissel - FDEP SW
Mr. A. Linero - FDEP
Mr. H. Oven - FDEP
Mr. S. Sheplak - FDEP

PERMIT COMPLIANCE TEST REPORT

For

TURBINE STACK EMISSIONS

1050233
PSD-FL-263
6-19-02

On

UNIT 3, A GENERAL ELECTRIC MODEL PG7241FA COMBUSTION GAS TURBINE GENERATOR SET

At the

POLK POWER STATION

In

MULBERRY, POLK COUNTY, FLORIDA

Prepared for

TAMPA ELECTRIC COMPANY

Test Date: May 7th-9th, 2002
Report Preparation Date: June 19th, 2002

Cubix Project No. 6949-FL1

Prepared by

Cubix Corporation
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INTRODUCTION

Emission testing was conducted on a 165-megawatt (MW) General Electric (GE) PG7241FA combustion gas turbine generator set. The unit consists of a simple-cycle combustion turbine directly coupled to a 60-Hertz generator and may be fueled by either natural gas or distillate oil. This unit, used to generate power, was recently installed at the Polk Power Station located in Mulberry, Polk County, Florida. Tampa Electric Company (Tampa Electric) owns and operates this facility. Cubix Corporation, Southeast Regional Office conducted this testing on May 7th through May 9th, 2002.

The purpose of this testing was to determine the status of initial compliance for Polk Unit 3 combustion turbine emissions with environmental limits. The environmental limits for emissions are US EPA "Standards of Performance for Stationary Gas Turbines" set forth in the Code of Federal Regulations, Title 40, Part 60 (40 CFR 60), Subpart GG and the permit limits set forth by the Florida Department of Environmental Protection (FDEP) Permit Numbers PSD-FL-263 and PA92-32. The tests followed the procedures set forth in 40 CFR 60, Appendix A, Methods 1, 3a, 9, 10, 19, 20, and 25a.

The turbine exhaust was analyzed for oxides of nitrogen (NO_X), oxygen (O_2), and carbon dioxide (CO_2) using continuous instrumental monitors. Twenty-four test runs were conducted on the turbine, three test runs at each of four operating load conditions consisting of three reduced loads and full load for both natural gas and distillate oil fuels. Carbon monoxide (CO), and total unburned hydrocarbon compounds (UHC or THC) emissions were also monitored during the full load testing on each fuel using continuous instrumental monitors. UHC emissions were used to report concentrations of volatile organic compounds (VOC). Additionally, a visible emissions (VE) test was conducted to determine opacity during one of the full load test runs on each fuel. Core Laboratories of Houston, Texas performed analyses on the natural gas and distillate oil fuel samples. Table 1 provides background data pertinent to these tests.

This test report has been reviewed and is approved for submittal by the following representatives:

Cubix Corporation

Tampa Electric Company

TABLE 1
BACKGROUND DATA

Owner/Operator:	**Tampa Electric Company** 5010 Causeway Boulevard Tampa, Florida 33619 Attn: David A. Smith (813) 630-7382 Phone (813) 630-7350 Facsimile Email: dasmith@tecoenergy.com
Testing Organization:	**Cubix Corporation, SE Regional Office** 3709 SW 42nd Avenue, Suite 2 Gainesville, Florida 32608 Attn: Leonard Brenner, Project Manager (352) 378-0332 Phone (352) 378-0354 Facsimile Email: lbrenner@cubixcorp.com
Test Participants:	**Tampa Electric Company** Robert Barthelette, Jr. Ted Wenning Raiza Calderon Ray McDarby **Florida Dept. of Environmental Protection** Russeu A. Wider **Cubix Corporation** Leonard Brenner Roger Paul Osier Sean Barrett
Test Dates:	May 7th through May 9th, 2002
Facility Location:	Tampa Electric Company Polk Power Station 9995 State Road 37 South Mulberry, Florida 33860

Process Description:

A dual-fuel, simple-cycle combustion turbine (CT) is used to generate electrical power. The unit, a General Electric Model 7EA PG7241FA gas turbine generator, consists of a single-shaft gas combustion turbine directly connected to a 60 Hz power generator. The facility is designed and permitted to provide natural gas fuel or distillate oil (No. 2 fuel oil or better) to the combustion turbine. The turbine uses dry, low-NO_x combustors for natural gas firing and water injection for distillate oil firing to control NO_x emissions.

Regulatory Application:

The Polk Unit 3 turbine is operated under the State of Florida, Florida Department of Environmental Protection (FDEP) Permit Nos. PSD-FL-263 and PA92-32 and federally regulated under EPA New Source Performance Standards (NSPS) 40 CFR 60, Subpart GG.

Emission Sampling Points:

Tampa Electric designates this emissions source as Polk Unit 3, designated by FDEP as ARMS Emissions Unit 010(CTG-3). The exhaust stack is a circular stack, approximately 114 feet tall with an internal diameter of 216 inches. Four 6-inch diameter sample ports are located perpendicular to each other in a horizontal plane of the stack at approximately 106 feet above grade; see Appendix A for a diagram. Access to the sample ports was provided through caged safety ladders to a permanently installed platform.

Test Methods:

EPA Method 1 was used to select oxygen (O_2) traverse point locations.

EPA Method 3a was used to measure carbon dioxide (CO_2) concentrations.

EPA Method 4 was used to determine stack gas moisture content.

EPA Method 9 was used to determine visible emissions (VE) measurements determined as opacity from a certified observer.

EPA Method 10 was used to measure carbon monoxide (CO) concentrations.

Test Methods (Continued):

EPA Method 19 was used for calculation of stack flow and pollutant mass emission rates.

EPA Method 20 was used to measure oxides of nitrogen (NO_X) and oxygen (O_2) concentrations.

EPA Method 25a was used to measure total unburned hydrocarbon compound (UHC or THC) concentrations.

American Society of Testing and Materials (ASTM) Method D3246 was used to determine the total reduced sulfur in the natural gas fuel.

Gas Processors Association (GPA) Method 2261 was used to determine the composition of the natural gas fuel.

ASTM Method D3588 was used to determine heating value and specific gravity of the natural gas fuel.

ASTM Method D4294 was used to determine the total sulfur in the distillate oil fuel.

ASTM Method D4629 was used to determine the fuel bound nitrogen in the distillate oil fuel.

ASTM Method D5291 was used to determine the carbon, hydrogen, and oxygen (by difference) in the distillate oil fuel.

ASTM Method D240 was used to determine the heating value of the distillate oil fuel.

SUMMARY OF RESULTS

Tampa Electric Company owns and operates the Polk Power Station in Mulberry, Florida. At this facility a recently installed General Electric simple-cycle combustion turbine is used to generate electrical power. Tampa Electric designates the combustion turbine as Polk Unit 3. Stack emissions from this unit, while fueled with natural gas and then distillate oil, are the subject of this report.

The first step in the test matrix for the unit consisted of conducting an initial sampling traverse of the combustion turbine (CT) exhaust stack. The purpose of this sampling traverse was to check for changes in O_2 concentration (stratification) within the exhaust stack. O_2 concentrations were measured at 48 traverse points within the CT stack to determine the eight points of lowest O_2 concentration. All subsequent tests were conducted at the eight traverse points of lowest O_2 on the CT stack. This initial traverse was conducted on the CT stack while firing with both natural gas and distillate oil fuel.

Following the O_2-traverse on Polk Unit 3, Cubix conducted three test runs at each of four load conditions, expressed as electrical output in MW, across the operational range of the combustion turbine for both natural gas and distillate oil fuel. The loads were approximately 80 MW, 105 MW, 130 MW, and base load at 156 MW while operating with natural gas. The loads were approximately 80 MW, 110 MW, 137 MW, and base load at 166 MW while operating with distillate oil. Each reduced load test run was 20 minutes in duration (8 sample points, 150 seconds per point) and included measurements of NO_X, O_2, and CO_2 concentrations using continuous instrumental monitors. Additional full load measurements included measurements of CO and UHC as volatile organic compounds (VOC) concentrations using continuous instrumental monitors. The full load test runs were 1 hour in duration for all gaseous constituents. A one-hour VE test was conducted with one of the full load test runs while firing with each fuel.

Table 2, the executive summary, signifies the performance for the unit during the testing. These performance results are an average of the three test runs at each load condition. Unit load is expressed as percent of the maximum heat input of the fuel to the turbine as based upon ambient conditions, expressed as compressor inlet temperature. Mass emission rates of NO_X, CO, VOC, and SO_2 are compared to applicable environmental limits as based upon ambient conditions. Performance and emission curves for both natural gas and distillate oil fuels are in Appendix H.

TABLE 2
Executive Summary

Parameter	Unit 3 - ARMS Emissions Unit 010(CTG-3) GE Frame 7FA Combustion Turbine				EPA GG/FDEP Emissions and Permit Limits†
	Natural Gas Fuel Testing				
Generator Output (MW)	79.6	105.1	129.4	156.0	na
Load (% of Capacity as Heat Input, LHV)	69.0%	77.6%	86.8%	99.7%	1600 MMBtu/hr, ISO
NO_x (ppmv @ 15% excess O_2)	7.84	7.16	6.86	7.75	9.0
NO_x (ppmv @ 15% excess O_2 ISO Day)	7.77	7.17	6.93	8.20	109.8
NO_x (lbs/hr)	30.9	32.7	35.6	46.4	54.5
CO (ppmv)	na	na	na	0.23	12.0
CO (lbs/hr)	na	na	na	0.69	45.3
UHC as VOC (ppmv, wet as methane)	na	na	na	0.51	1.4
UHC as VOC (lbs/hr, includes methane)	na	na	na	0.97	2.66
Total Sulfur in Fuel (grains S/100 scf fuel)	< 0.032	< 0.032	< 0.032	< 0.032	2.0
SO_2 (lbs/hr)	< 0.093	< 0.11	< 0.12	< 0.14	8.52
Visible Emissions (% opacity)	na	na	na	0%	10%
Parameter	**Distillate Oil Testing (No. 2 Fuel Oil)**				
Generator Output (MW)	80.5	110.5	137.1	166.3	na
Load (% of Capacity as Heat Input, LHV)	66.3	76.8	84.6	98.1%	1800 MMBtu/hr, ISO
NO_x (ppmv @ 15% excess O_2)	36.5	36.3	36.6	36.8	42.0
NO_x (ppmv @ 15% excess O_2 ISO Day)	36.5	37.0	37.9	37.8	104.2
NO_x (lbs/hr)	156	187	213	247	291
CO (ppmv)	na	na	na	0.58	33.0
CO (lbs/hr)	na	na	na	1.68	96.8
UHC as VOC (ppmv, wet as methane)	na	na	na	0.09	3.5
UHC as VOC (lbs/hr, includes methane)	na	na	na	0.18	6.42
Total Sulfur in Fuel (% weight)	0.039%	0.039%	0.039%	0.039%	0.05%
SO_2 (lbs/hr)	43.9	52.8	59.7	69.0	89.8
Visible Emissions (% opacity)	na	na	na	0%	10%

† Permit limits in lbs/hr for NO_x, CO, VOC, and SO_2 are based upon ambient conditions from full load tests.

Tables 3 through 6 represent the full load (base load) and reduced load tests results while firing with natural gas and distillate oil, respectively. These tabular summaries contain all pertinent operational parameters, ambient conditions, measured emissions, corrected concentrations, and calculated emission rates. NO_X emissions are reported in units of parts per million by volume (ppmv) on a dry basis, ppmv corrected to 15% excess O_2, and ppmv corrected to 15% excess O_2 and ISO conditions. The EPA defines ISO conditions as ambient atmospheric conditions of 59 degrees Fahrenheit (°F) temperature, 101.3 kilopascals (kPa) pressure, and 60% relative humidity. CO concentrations were determined on ppmv, dry basis. Volatile organic compound (VOC) concentrations were determined from UHC measurements and were determined on a ppmv wet basis as methane. Mass emission rates for NO_X, CO, and UHC as VOC are reported in terms of pounds per hour (lbs/hr).

Volumetric flow and mass emission rates were determined by stoichiometric

calculation (EPA Method 19) based on measurements of diluent gas (O_2 or CO_2) concentrations, "F-factors" and fuel heating values determined from fuel composition, and unit fuel flow rates. Examples of emission rate calculations and other calculations necessary for the presentation of the results of this section are contained in Appendix B. The fuel meters, used to measure fuel flow to the turbine, were calibrated prior to testing. A report of this calibration is included with the fuel analyses in Appendix C.

The fuel analyses are contained in Appendix C of this report. Core Laboratories of Houston, Texas conducted the analyses using ASTM and GPA test methods. Both natural gas and fuel oil samples were collected and analyzed for various components. Two samples were collected during the natural gas testing and one sample was collected during the distillate oil testing. The natural gas total sulfur content was reported in terms of ppmv weight and grains of sulfur per 100 standard cubic feet of natural gas fuel. The distillate oil total sulfur content was reported in terms of % weight. Stack emissions of SO_2, reported in terms of lbs/hr in the summary tables, were determined using fuel flow rates and fuel sulfur content data. Reports of these fuel analyses as well as fuel composition and heating value analysis sheets are in Appendix C.

EPA Method 9 observers, certified by Eastern Technical Associates of Raleigh, North Carolina, performed visible emission observations of the CT exhaust stack. Roger Osier with Cubix Corporation conducted the natural gas VE test. Ray McDarby with Tampa Electric conducted the distillate oil VE test. A one-hour visible emissions test run was conducted at full load with the turbine firing on each fuel per EPA Method 9. VE were an average of 0% opacity in the highest six-minute average for each test and no VE greater than 0% opacity was observed during the tests.

Appendix A contains all field data sheets used during these tests. Appendix B contains examples of all calculations necessary for the reduction of the data presented in this report. Appendix C contains the fuel analyses and Cubix's fuel calculation worksheet. Quality Assurance Activities are documented in Appendix D. Certificates of calibrations are contained in Appendix E of this report. Appendix F contains the records of logged data in one-minute intervals used to record the NO_x, CO, UHC, O_2, and CO_2 concentrations; it also includes a running and final average of raw data. Appendix G contains the "Visible Emissions Observation Forms" and the observer certifications. Appendix H contains the operational data provided by Tampa Electric personnel during the test runs. The FDEP permit is presented in Appendix I for reference purposes.

Company: Tampa Electric Company
Plant: Polk Power Station
Location: Mulberry, Polk County, Florida
Technicians: LJB, RPO, SBB
Source: Unit 3, a GE Frame 7FA Combustion Turbine

TABLE 3: Summary of Results
Full Load Testing
Unit 3 Natural Gas

Test Number	U3-NG-100%-1	U3-NG-100%-2	U3-NG-100%-3		
Date	5/7/02	5/7/02	5/7/02		
Start Time (CEMS Time)	10:17	11:30	12:47		**FDEP**
Stop Time (CEMS Time)	11:17	12:30	13:47		**Permit**
Power Turbine Operation	**Base Load**			*Averages*	**Limits†**
Generator Output (MW, DWATT)	157.3	155.9	154.8	***156.0***	
Turbine Capacity (MMBtu/hr, LHV)	1489.9	1479.5	1472.9	***1480.8***	**1481**
Turbine Load (% of maximum site rated capacity)	99.6%	99.7%	99.7%	***99.7%***	
Barometric Pressure ("Hg, AFPAP)	30.01	30.00	30.00	***30.00***	
Compressor Inlet Temperature (°F, CTIM)	85.0	87.2	88.6	***86.9***	
Air Inlet Duct Losses ("H_2O)	2.29	2.30	2.30	**23.61**	
Inlet Guide Vane Angle (degrees, CSGV)	82.0	82.0	82.0	***82.0***	
Engine Compressor Discharge Pressure (psia, CPD)	202.5	201.6	200.6	***201.6***	
Compressor Discharge Temperature (°F, CTD)	762.3	764.6	765.8	***764.2***	
Mean Turbine Exhaust Temperature (°F, TTXM)	1132.8	1134.3	1135.7	***1134.3***	
Turbine Fuel Data (Natural Gas)					
Fuel Heating Value (Btu/lb, Gross)	23068	23068	23068	***23068***	
Fuel Specific Gravity	0.5901	0.5901	0.5901	***0.5901***	
Sulfur in Fuel (grains S/100 scf of gas)	< 0.032	< 0.032	< 0.032	***< 0.032***	**2.0**
O_2 "F_d Factor" (DSCFex/MMBtu @ 0% excess air)	8645	8645	8645	***8645***	
CO_2 "F_c Factor" (DSCFex/MMBtu @ 0% excess air)	1029	1029	1029	***1029***	
Gas Fuel Flow (FQG, lbs/hr)	71379	70912	70565	***70952***	
Heat Input (MMBtu/hr, Higher Heating Value)	1646.6	1635.8	1627.8	***1636.7***	
Heat Input (MMBtu/hr, Lower Heating Value)	1484.7	1475.0	1467.7	***1475.8***	
Ambient Conditions					
Atmospheric Pressure ("Hg)	29.99	29.97	29.96	***29.97***	
Temperature (°F): Dry bulb	86.3	90.3	90.9	***89.2***	
(°F): Wet bulb	73.2	73.4	73.3	***73.3***	
Humidity (lbs moisture/lb of air)	0.0141	0.0133	0.0131	***0.0135***	
Measured Emissions					
NO_x (ppmv, dry basis)	9.43	9.42	9.39	***9.41***	
NO_x (ppmv, dry @ 15% excess O_2)	**7.75**	**7.74**	**7.75**	***7.75***	**9.0**
NO_x (ppmv @ 15% O_2, ISO Day)	8.33	8.16	8.10	***8.20***	
CO (ppmv, dry basis)	**0.26**	**0.22**	**0.21**	***0.23***	**12.0**
UHC as VOC (ppmv, wet basis)	**0.57**	**0.57**	**0.40**	***0.51***	**1.4**
VE (% opacity)	-	-	**0**	***0***	**10**
O_2 (% volume, dry basis)	13.72	13.72	13.75	***13.73***	
CO_2 (% volume, dry basis)	4.19	4.16	4.16	***4.17***	
F_o (fuel factor, range = 1.600-1.836 for NG)	1.71	1.73	1.72	***1.72***	
H_2O (% volume)	8.71	8.59	8.53	***8.61***	
Stack Volumetric Flow Rates (via EPA Method 19)					
via O_2 "F_d Factor" (SCFH, dry basis)	4.14E+07	4.12E+07	4.11E+07	***4.12E+07***	
via CO_2 "F_c Factor" (SCFH, dry basis)	4.04E+07	4.05E+07	4.03E+07	***4.04E+07***	
Calculated Emission Rates (via M-19 O_2 or CO_2 "F-factor")					
NO_x (lbs/hr)	**46.7**	**46.3**	**46.1**	***46.4***	**54.5**
CO (lbs/hr)	**0.78**	**0.66**	**0.63**	***0.69***	**45.3**
UHC as VOC (lbs/hr)	**1.08**	**1.07**	**0.75**	***0.97***	**2.66**
SO_2 (lbs/hr, based on fuel flow and fuel sulfur)	**< 0.14**	**< 0.14**	**< 0.14**	***< 0.14***	**8.52**

† Permitted capacity and lbs/hr emission permit limits for NO_x, CO, VOC, and SO_2 have been converted from ISO to ambient conditions.

Company: Tampa Electric Company
Plant: Polk Power Station
Location: Mulberry, Polk County, Florida
Technicians: LJB, RPO
Source: Unit 3, a GE Frame 7FA Combustion Turbine

TABLE 4: Summary of Results
Reduced Load Testing
Unit 3 Natural Gas

Test Number	U3-50%-1	U3-50%-2	U3-50%-3	U3-65%-1	U3-65%-2	U3-65%-3	U3-80%-1	U3-80%-2	U3-80%-3
Date	5/9/02	5/9/02	5/9/02	5/9/02	5/9/02	5/9/02	5/9/02	5/9/02	5/9/02
Start Time	10:11	10:39	11:07	11:34	12:01	12:28	12:56	13:22	13:49
Stop Time	10:31	10:59	11:27	11:54	12:21	12:48	13:16	13:42	14:09
Turbine Operation	**Low Load, ~80 MW**			**Mid-Low Load, ~105 MW**			**Mid-High Load, ~130 MW**		
Generator Output (MW, DWATT)	79.0	79.2	80.5	105.2	104.9	105.1	130.0	129.4	128.8
Turbine Capacity (MMBtu/hr, LHV)	1418.5	1410.8	1405.2	1458.9	1454.7	1450.8	1480.9	1475.3	1473.2
Turbine Load (% of maximum site rated capacity)	68.4%	68.9%	69.7%	77.5%	77.5%	77.8%	86.8%	86.9%	86.9%
Barometric Pressure ("Hg, AFPAP)	29.98	29.98	29.97	29.98	29.98	29.98	29.98	29.97	29.97
Compressor Inlet Temperature (°F, CTIM)	99.3	100.7	101.8	91.4	92.3	93.1	86.9	88.1	88.5
Air Inlet Duct Losses ("H_2O)	1.63	1.61	1.77	1.79	1.82	1.82	1.86	1.73	1.66
Inlet Guide Vane Angle (degrees, CSGV)	50.9	50.9	51.4	56.6	56.8	57.1	64.4	64.2	63.8
Compressor Discharge Pressure (psia, CPD)	129.9	129.9	130.9	149.9	149.5	149.9	173.1	172.4	172.0
Compressor Discharge Temperature (°F, CTD)	686.1	687.6	690.3	705.3	706.1	707.4	726.7	727.2	727.9
Mean Turbine Exhaust Temperature (°F, TTXM)	1199.9	1200.0	1199.8	1184.0	1184.8	1184.6	1157.2	1158.3	1158.7
Turbine Fuel Data (Natural Gas)									
Fuel Heating Value (Btu/lb, Gross)	23067	23067	23067	23067	23067	23067	23067	23067	23067
Fuel Specific Gravity	0.5923	0.5923	0.5923	0.5923	0.5923	0.5923	0.5923	0.5923	0.5923
Sulfur in Fuel (grains S/100 scf of gas)	< 0.032	< 0.032	< 0.032	< 0.032	< 0.032	< 0.032	< 0.032	< 0.032	< 0.032
O_2 "F_d Factor" (DSCFex/MMBtu @ 0% excess air)	8646	8646	8646	8646	8646	8646	8646	8646	8646
CO_2 "F_c Factor" (DSCFex/MMBtu @ 0% excess air)	1030	1030	1030	1030	1030	1030	1030	1030	1030
Gas Fuel Flow (FQG, lbs/hr)	46548	46633	46979	54225	54085	54128	61671	61469	61382
Heat Input (MMBtu/hr, Higher Heating Value)	1073.7	1075.7	1083.7	1250.8	1247.6	1248.6	1422.6	1417.9	1415.9
Heat Input (MMBtu/hr, Lower Heating Value)	970.4	972.2	979.4	1130.5	1127.6	1128.5	1285.7	1281.5	1279.7
Ambient Conditions									
Atmospheric Pressure ("Hg)	29.92	29.92	29.92	29.93	29.93	29.93	29.92	29.92	29.91
Temperature (°F): Dry bulb	82.2	84.0	86.0	86.5	87.7	89.0	90.3	90.8	92.1
(°F): Wet bulb	69.6	70.0	70.1	69.7	70.2	70.5	71.1	70.7	71.1
Humidity (lbs moisture/lb of air)	0.0123	0.0122	0.0118	0.0113	0.0115	0.0114	0.0115	0.0111	0.0111
Measured Emissions									
NO_x (ppmv, dry basis)	9.17	9.04	9.12	8.65	8.63	8.67	8.30	8.28	8.28
O_2 (% volume, dry basis)	14.05	14.05	14.02	13.76	13.78	13.78	13.77	13.77	13.78
CO_2 (% volume, dry basis)	4.02	4.01	4.01	4.15	4.16	4.14	4.15	4.15	4.14
F_o (fuel factor, range = 1.600-1.836 for NG)	1.70	1.71	1.72	1.72	1.71	1.72	1.72	1.72	1.72
Stack Volumetric Flow Rates (via EPA Method 19)									
via O_2 "F_d Factor" (SCFH, dry basis)	2.83E+07	2.84E+07	2.85E+07	3.17E+07	3.17E+07	3.17E+07	3.61E+07	3.59E+07	3.59E+07
via CO_2 "F_c Factor" (SCFH, dry basis)	2.75E+07	2.76E+07	2.78E+07	3.10E+07	3.09E+07	3.11E+07	3.53E+07	3.52E+07	3.52E+07
Calculated Emission Rates (via M-19 O_2 "F-factor")									
NO_x (ppmv, dry @ 15% excess O_2)	**7.90**	**7.79**	**7.82**	**7.15**	**7.15**	**7.18**	**6.87**	**6.85**	**6.86**
NO_x (ppmv @ 15% O_2, ISO Day)	7.88	7.73	7.68	7.16	7.17	7.17	7.00	6.90	6.90
NO_x (lbs/hr)	**31.0**	**30.6**	**31.0**	**32.7**	**32.6**	**32.8**	**35.7**	**35.5**	**35.5**
SO_2 (lbs/hr, based on fuel flow and fuel sulfur)	< 0.093	< 0.093	< 0.094	< 0.11	< 0.11	< 0.11	< 0.12	< 0.12	< 0.12

TABLE 5: Summary of Results
Full Load Testing
Unit 3 Distillate Oil

Company: Tampa Electric Company
Plant: Polk Power Station
Location: Mulberry, Polk County, Florida
Technicians: LJB, RPO
Source: Unit 3, a GE Frame 7FA Combustion Turbine

Test Number	U3-Oil-100%-1	U3-Oil-100%-2	U3-Oil-100%-3		
Date	5/8/02	5/8/02	5/8/02		
Start Time	15:55	17:10	18:22		**FDEP**
Stop Time	16:55	18:10	19:22		**Permit**
Power Turbine Operation				*Averages*	**Limits†**
Generator Output (MW, DWATT)	166.2	165.9	166.8	***166.3***	
Turbine Capacity (Mfg.'s Curve, Heat Input vs. T-1)	1,641.9	1,642.6	1,649.3	***1,644.6***	**1645**
Percent Load (% of maximum heat input at inlet temp)	98.0%	97.9%	98.4%	***98.1%***	
Barometric Pressure ("Hg, AFPAP)	29.93	29.91	29.91	***29.92***	
Compressor Inlet Temperature (°F, CTIM)	91.3	91.2	90.0	***90.8***	
Air Inlet Duct Losses ("H_2O)	2.31	2.32	2.34	***2.33***	
Engine Compressor Discharge Pressure (psia, CPD)	205.9	205.8	206.4	***206.0***	
Compressor Discharge Temperature (°F, CTD)	781.1	780.8	779.1	***780.3***	
Mean Turbine Exhaust Temperature (°F, TTXM)	1125.4	1125.4	1124.4	***1125.1***	
Inlet Guide Vane Angle (degrees, CSGV)	82.0	82.0	82.0	***82.0***	
Water Injection Rate (WQ, lbs/sec)	33.6549	33.4534	33.4536	***33.5206***	
Water to Fuel Ratio (WQJ, unitless)	1.37	1.36	1.35	***1.36***	
Turbine Fuel Data (Distillate Oil Fuel)					
Fuel Heating Value (Btu/lb, Gross)	19366	19366	19366	***19366***	
Fuel Heating Value (Btu/lb, Net)	18210	18210	18210	***18210***	
Sulfur in Fuel (% weight, from ASTM D4294 analysis)	0.039	0.039	0.039	***0.039***	**0.05**
O_2 "F_d Factor" (DSCFex/MMBtu @ 0% excess air)	9257	9257	9257	***9257***	
CO_2 "F_c Factor" (DSCFex/MMBtu @ 0% excess air)	1443	1443	1443	***1443***	
Oil Fuel Flow (FQG, lbs/sec)	24.5480	24.5299	24.7623	***24.6134***	
Heat Input (MMBtu/hr, Higher Heating Value)	1711.4	1710.2	1726.4	***1716.0***	
Heat Input (MMBtu/hr, Lower Heating Value)	1,609.3	1,608.1	1,623.3	***1,613.6***	
Ambient Conditions					
Atmospheric Pressure ("Hg)	29.87	29.86	29.86	***29.86***	
Temperature (°F): Dry bulb	92.4	92.6	89.9	***91.6***	
(°F): Wet bulb	72.6	73.0	72.6	***72.7***	
Humidity (lbs moisture/lb of air)	0.0122	0.0125	0.0128	***0.0125***	
Measured Emissions					
NO_x (ppmv, dry basis)	52.14	52.08	51.80	***52.01***	
NO_x (ppmv, dry @ 15% excess O_2)	**36.8**	**36.9**	**36.6**	***36.8***	**42.0**
NO_x (ppmv @ 15% O_2, ISO Day)	37.6	37.9	38.0	***37.8***	
CO (ppmv, dry basis)	**0.54**	**0.59**	**0.61**	***0.58***	**33.0**
UHC as VOC (ppmv, wet basis)	**0.12**	**0.12**	**0.04**	***0.09***	**3.5**
Visible Emissions (% opacity)	**0**	**-**	**-**	**0**	**10**
O_2 (% volume, dry basis)	12.54	12.57	12.55	***12.55***	
CO_2 (% volume, dry basis)	6.34	6.33	6.34	***6.34***	
F_o (fuel factor, range = 1.260 to 1.413 for FO)	1.32	1.32	1.32	***1.32***	
H_2O (% volume)	12.53	12.51	12.53	**12.52**	
Stack Volumetric Flow Rates					
via O_2 "F_d Factor" (SCFH, dry basis)	3.96E+07	3.97E+07	4.00E+07	***3.98E+07***	
via CO_2 "F_c Factor" (SCFH, dry basis)	3.90E+07	3.90E+07	3.93E+07	***3.91E+07***	
Calculated Emission Rates (via M-19 O_2 "F-factor")					
NO_x (lbs/hr)	**247**	**247**	**247**	***247***	**291**
CO (lbs/hr)	**1.56**	**1.70**	**1.77**	***1.68***	**96.8**
UHC as VOC (lbs/hr)	**0.23**	**0.23**	**0.08**	***0.18***	**6.42**
SO_2 (lbs/hr, based on fuel flow and fuel sulfur)	**68.9**	**68.8**	**69.5**	***69.0***	**89.8**

† Permitted capacity and lbs/hr emission permit limits for NO_x, CO, VOC, and SO_2 have been converted from ISO to ambient conditions.

Company: Tampa Electric Company
Plant: Polk Power Station
Location: Mulberry, Polk County, Florida
Technicians: LJB, RPO
Source: Unit 3, a GE Frame 7FA Combustion Turbine

TABLE 6: Summary of Results
Reduced Load Testing
Unit 3 Distillate Oil

Test Number	U3-Oil-50%-1	U3-Oil-50%-2	U3-Oil-50%-3	U3-Oil-65%-1	U3-Oil-65%-2	U3-Oil-65%-3	U3-Oil-80%-1	U3-Oil-80%-2	U3-Oil-80%-3
Date	5/8/02	5/8/02	5/8/02	5/8/02	5/8/02	5/8/02	5/8/02	5/8/02	5/8/02
Start Time	11:25	11:53	12:24	12:53	13:21	13:49	14:18	14:47	15:17
Stop Time	11:45	12:13	12:44	13:13	13:41	14:09	14:38	15:07	15:37
Turbine Operation	**Low Load, ~80 MW**			**Mid Load-1, ~110 MW**			**Mid Load-2, ~137 MW**		
Generator Output (MW, DWATT)	79.9	80.2	81.3	110.6	110.3	110.7	136.2	136.7	138.4
Turbine Capacity (MMBtu/hr LHV, heat input vs. inlet temp)	1,548.2	1,544.6	1,542.1	1,606.9	1,606.5	1,607.0	1,654.0	1,649.3	1,645.2
Percent Load (% of maximum heat input at inlet temp)	65.1	66.2	67.8	76.1	76.8	77.7	84.1	84.9	84.8
Barometric Pressure ("Hg, AFPAP)	29.97	29.96	29.96	29.96	29.96	29.95	29.94	29.94	29.94
Compressor Inlet Temperature (°F, CTIM)	107.2	107.7	108.1	97.5	97.5	97.4	89.1	90.0	90.7
Air Inlet Duct Losses ("H_2O)	0.82	1.15	1.27	1.33	1.47	1.60	1.91	2.05	2.20
Engine Compressor Discharge Pressure (psia, CPD)	128.1	128.3	129.4	150.8	150.6	151.0	173.1	173.6	175.0
Compressor Discharge Temperature (°F, CTD)	696.2	697.3	699.1	720.4	720.3	720.8	736.1	738.2	741.1
Mean Turbine Exhaust Temperature (°F, TTXM)	1200.0	1200.2	1199.8	1185.6	1186.3	1185.8	1158.1	1158.0	1157.0
Inlet Guide Vane Angle (degrees, CSGV)	50.2	50.5	50.7	55.6	55.7	56.1	62.5	62.9	63.8
Water Injection Rate (WQ, lbs/sec)	17.7909	17.9332	18.2066	22.8568	23.0341	23.2735	27.4031	27.3201	28.1869
Water to Fuel Ratio (WQJ, unitless)	1.16	1.15	1.14	1.23	1.22	1.22	1.29	1.28	1.32
Turbine Fuel Data (Distillate Oil Fuel)									
Fuel Heating Value (Btu/lb, Gross)	19366	19366	19366	19366	19366	19366	19366	19366	19366
Fuel Heating Value (Btu/lb, Net)	18210	18210	18210	18210	18210	18210	18210	18210	18210
Sulfur in Fuel (% weight, from ASTM D4294 analysis)	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039
O_2 "F_d Factor" (DSCFex/MMBtu @ 0% excess air)	9257	9257	9257	9257	9257	9257	9257	9257	9257
CO_2 "F_c Factor" (DSCFex/MMBtu @ 0% excess air)	1443	1443	1443	1443	1443	1443	1443	1443	1443
Oil Fuel Flow (FQL1, lbs/sec)	15.3732	15.5890	15.9461	18.6422	18.8244	19.0382	21.2169	21.3660	21.2822
Heat Input (MMBtu/hr, Higher Heating Value)	1071.8	1086.8	1111.7	1299.7	1312.4	1327.3	1479.2	1489.6	1483.7
Heat Input (MMBtu/hr, Lower Heating Value)	1007.8	1022.0	1045.4	1222.1	1234.1	1248.1	1390.9	1400.7	1395.2
Ambient Conditions									
Atmospheric Pressure ("Hg)	29.94	29.94	29.94	29.94	29.93	29.92	29.90	29.90	29.89
Temperature (°F): Dry bulb	86.2	87.0	89.7	91.8	91.0	91.4	92.1	92.6	92.9
(°F): Wet bulb	72.6	72.9	73.2	74.1	72.6	73.4	73.8	73.4	72.9
Humidity (lbs moisture/lb of air)	0.0136	0.0137	0.0133	0.0136	0.0125	0.0131	0.0132	0.0128	0.0124
Measured Emissions									
NO_x (ppmv, dry basis)	48.84	48.61	48.54	51.00	51.03	50.88	51.62	52.28	52.20
O_2 (% volume, dry basis)	13.05	13.02	13.05	12.61	12.64	12.63	12.52	12.51	12.51
CO_2 (% volume, dry basis)	5.94	5.93	5.94	6.28	6.27	6.27	6.34	6.35	6.35
F_o (fuel factor, range = 1.260 to 1.413 for FO)	1.32	1.33	1.32	1.32	1.32	1.32	1.32	1.32	1.32
Stack Volumetric Flow Rates									
via O_2 "F_d Factor" (SCFH, dry basis) (Mark V meter)	2.64E+07	2.67E+07	2.74E+07	3.03E+07	3.07E+07	3.11E+07	3.42E+07	3.43E+07	3.42E+07
via CO_2 "F_c Factor" (SCFH, dry basis) (Mark V meter)	2.60E+07	2.64E+07	2.70E+07	2.99E+07	3.02E+07	3.05E+07	3.37E+07	3.39E+07	3.37E+07
Calculated Emission Rates (via M-19 O_2 "F-factor")									
NO_x (ppmv, dry @ 15% excess O_2)	**36.7**	**36.4**	**36.5**	**36.3**	**36.5**	**36.3**	**36.3**	**36.8**	**36.7**
NO_x (ppmv @ 15% O_2, ISO Day)	36.8	36.5	36.3	37.3	36.8	37.0	38.0	38.1	37.6
NO_x (lbs/hr)	**154**	**155**	**159**	**185**	**187**	**189**	**211**	**215**	**213**
SO_2 (lbs/hr, based on fuel flow and fuel sulfur)	43.1	43.7	44.7	52.3	52.8	53.4	59.5	59.9	59.7

PROCESS DESCRIPTION

Tampa Electric owns and operates the Polk Power Station in Mulberry, Florida. A recently installed simple-cycle power generation unit, manufactured by General Electric, consists of a duel fuel combustion turbine directly coupled to an electric generator. Emission testing was conducted on the unit to determine the compliance status with state and federal regulations. This section of the test report provides a brief description of the unit.

Polk Unit 3 is designed to produce a nominal 165 MW of electrical power. The State of Florida designates this unit as ARMS Emissions Unit 010(CTG-3). The main body of the unit consists of single shaft General Electric Frame 7FA combustion turbine directly coupled to a 60 Hz synchronous generator. The FDEP permitted capacity for the unit is 1600 million British thermal units per hour (MMBtu/hr) of heat input from firing natural gas or 1800 MMBtu/hr of heat input from firing low sulfur distillate oil. Based upon performance curves, the turbine can produce 171.57 MW of power while firing with natural gas and 183.05 MW of power while firing with distillate oil. The rated heat input and power output is based upon the lower heating value (LHV) of each fuel while operating at a compressor inlet temperature of 59°F, a relative humidity of 60%, an absolute ambient air pressure of 14.7 pounds per square inch (psi), and 100% of base load. Performance and emission curves for differing ambient conditions are in Appendix H. The turbine uses water injection to control NO_X emissions while firing with No. 2 fuel oil (or a superior grade). GE dry, low-NO_X DLN combustion technology is used to control NO_X emissions while firing with natural gas.

Unit 3 exhaust gases are vented to the atmosphere through a 114-foot tall stack. The sampling ports are approximately 86 feet (~ 4.8 stack diameters) downstream from the nearest flow disturbance, i.e., the horizontal portion of the exhaust duct. The sampling ports are approximately 8 feet (~ 0.4 stack diameters) upstream from the nearest flow disturbance, i.e., before venting to atmosphere. Access to the stack was made available via a permanent steel frame platform equipped with a caged safety ladder. The internal diameter of the stack at the sample port location was 216 inches.

Tampa Electric personnel obtained operational data from control panel instrumentation. Data was collected from the control system in one-minute intervals into a text file, converted into a Microsoft Excel spreadsheet, and averaged over each test run. All operational data sheets are located in Appendix H.

ANALYTICAL TECHNIQUES

Emissions from a combustion turbine were measured at the Tampa Electric Polk Power Station located in Mulberry, Florida. Cubix Corporation performed these tests on May 7th through 9th, 2002 in order to determine the status of compliance with regard to permitted emission limits. This section of the report describes the analytical techniques and procedures used during these tests.

The sampling and analysis procedures used during these tests conformed with those outlined in The Code of Federal Regulations, 40 CFR 60, Appendix A, Methods 1, 3a, 9, 10, 19, 20, and 25a. The stack gas analyses for NO_X, CO, UHC/THC, O_2 and CO_2 were performed using continuous instrumental monitors. Exhaust gas analyses were performed on a dry basis for all compounds except UHC/THC. Table 7 lists the instruments and detection principles used for these analyses.

The test matrix for the turbine consisted of three sixty-minute test runs at full load and three twenty-minute test runs at each of three reduced loads for each fuel fired in the turbine. Per EPA Method 20 requirements, an initial O_2-traverse was conducted prior to the tests on the CT stack for each fuel used to fire the turbine. Forty-eight points in the stack cross section, twelve sample points in each of four ports, were measured for 150 seconds at each point. The sampling time at each point was determined from the sampling systems response time (see *Quality Assurance Activities).* No significant stratification was present in the CT stack; therefore, eight representative sample points used in the original traverse were sampled in the subsequent test runs. Stack gases were analyzed for NO_X, O_2, and CO_2 by continuous instrumental monitors during each test run. Additionally, CO, UHC concentrations were continuously monitored during each full load test run. A 60-minute VE test was conducted concurrently with one of the full load test runs for both fuels tested.

Provisions were made to introduce the calibration gases to the instrumental monitors via two paths: 1) directly to the instruments via the sample manifold quick-connects and rotameters, and 2) through the complete sampling system including the sample probe, filter, heat trace, condenser, manifold, and rotameters. The former method was used for quick, convenient calibration checks. The latter method was used to demonstrate that the sample was not altered due to leakage, reactions, or adsorption within the sampling system (sample system bias check). A NO_X standard calibration gas was introduced into the NO_X analyzer directly. Then the response from the NO_X analyzer was noted as the calibration gas was introduced at the probe. Any difference between the two responses in the instrument was attributed to the bias of the sample system. Following the span gas bias check, a

zero gas bias check was performed on the NO_x analyzer using nitrogen, or another calibration gas as a zero, to check for any zero bias of the sample system. In accordance with EPA Method 3a this span and zero bias check procedure was repeated for the CO_2 and O_2 analyzers. This procedure was also used for CO and UHC (although not required by their respective EPA methods).

As shown in Figure 1, a 1-inch diameter stainless steel probe was inserted into the sample port of the stack. The gas sample was continuously pulled through the probe and transported via a 220-foot long, $^3/_8$-inch diameter heat-traced Teflon® tubing to the mobile laboratory through Teflon® tubing via a stainless steel/Teflon® diaphragm pump and into a heated sample manifold. From the heated manifold, the sample was partitioned to the hydrocarbon analyzer through heated lines. The bulk of the gas stream then passed to a stainless steel minimum contact condenser to dry the sample stream and into the (dry) sample manifold. From the manifold, the sample was partitioned to the analyzers through glass and stainless steel rotameters for flow control of the sample.

All instruments were housed in an air-conditioned trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e., NO_x calibration gases).

EPA Method 1 procedures were used to determine the O_2-traverse point locations for sampling per the requirements of EPA Method 20. The stack diagram in Appendix A denotes the location of the sample ports and the traverse point distances for the turbine.

The stack gas analyses for CO_2 and O_2 concentrations were performed in accordance with procedures set forth in EPA Method 3a and Method 20, respectively. Instrumental analyses were used in lieu of an Orsat or a Fyrite procedure due to the greater accuracy and precision provided by the instruments. The CO_2 analyzer was based on the principle of infrared absorption; the O_2 analyzer operated using a paramagnetic cell detector.

The F_O calculation of EPA Method 3b (Section 3.4.1.1) was used to verify that the ratio of O_2 to CO_2 were within an acceptable range during the test runs. In all cases, the F_O fell within the expected values for natural gas and distillate oil.

Opacity was determined via EPA Method 9. A one-hour opacity test run was performed on the unit for each fuel type by a visible emissions observer who was certified by Eastern Technical Associates of Raleigh, North Carolina. Appendix G provides both the opacity observation sheets as well as observer certification documentation.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous non-dispersive infrared (NDIR) analyzer

was used for this purpose. This reference method analyzer was equipped with a gas correlation filter that removes most interference from moisture, CO_2, and other combustion products.

EPA Method 20 procedures were used to determine concentrations of NO_X (via chemiluminescence). NO_X mass emission rates were calculated as if all the NO_X was in the form of NO_2. This approach corresponds to EPA's convention, however, it tends to overestimate the actual NO_X mass emission rates since the majority of NO_X is in the form of NO which has less mass per unit volume (i.e., lbs. of emissions per ppmv concentration) than NO_2.

UHC/THC concentrations were quantified during the testing using Method 25a. These UHC concentrations were used for determination of VOC; therefore, the methane fraction was included in these results. Unburned hydrocarbons were continuously measured using a flame ionization detector (FID). The UHC continuous analyzer was calibrated on methane standards in an air matrix. Thus, the results included in this report are presented on a methane basis. Having the calibration standards in an air basis (i.e., 20.9% O_2) more closely matches the background matrix of the turbine exhaust and helps to reduce the effect of O_2 synergism on flame ionization detectors.

All data from the continuous monitoring instruments were logged into a computer file in one-minute intervals. A data logger with a computer generated display screen monitored, recorded and averaged the emission concentrations. The program controlling the logging of data was also used to log QA data. See Appendix F of this report for copies of the raw data and Appendix D for the QA data.

Fuel samples were collected daily during the emissions test. Two natural gas samples were collected in duplicate into 300-milliliter Teflon® lined stainless steel sample cylinders. These samples were collected downstream of the fuel system scrubbers and heaters. In addition, onsite fuel analyses were conducted for hydrogen sulfide and moisture content of the natural gas using a Sensidyne™ pump sampler. A distillate oil sample was collected into a 1-liter amber glass sample bottle in duplicate.

The stoichiometric calculations of EPA Method 19 were used to calculate the stack volumetric flow rates and mass emission rates. These calculations are based on the heating value and the O_2 and CO_2 "F-factors" (DSCF of exhaust per MMBtu of fuel burned) for natural gas. Method 19 flow rate determinations are also based on the excess air (as measured from the exhaust diluent concentrations) and the fuel flow rates. Core Laboratories of Houston, Texas analyzed the fuel samples for composition and heating value. Appendix C contains these analyses as well as Cubix's fuel calculations for the O_2 and CO_2 "F Factors". Due to high

levels of turbulence typically present in gas turbines, pitot tube flow rates are unsuitable for determining volumetric flow and mass emissions.

The state and federal permits required additional analyses of the turbine fuels. Core Laboratories of Houston, Texas determined the natural gas total reduced sulfur concentration on a ppm by weight basis and converter to grains of sulfur per 100-scf of natural gas using the American Society of Testing and Materials (ASTM) Method D3246. The distillate oil sulfur was determined on a % weight basis using ASTM Method D4294. The distillate oil fuel bound nitrogen was determined on a ppm by weight basis using ASTM Method D4629. Copies of the fuel analyses are located in Appendix C of this report.

Cubix personnel collected ambient absolute pressure, temperature, and humidity data during each test run. A battery-operated psychrometer that used a fan to continuously pull air through the system was used to determine ambient temperature and humidity conditions. An aircraft-type aneroid barometer (altimeter) was used to measure atmospheric pressure.

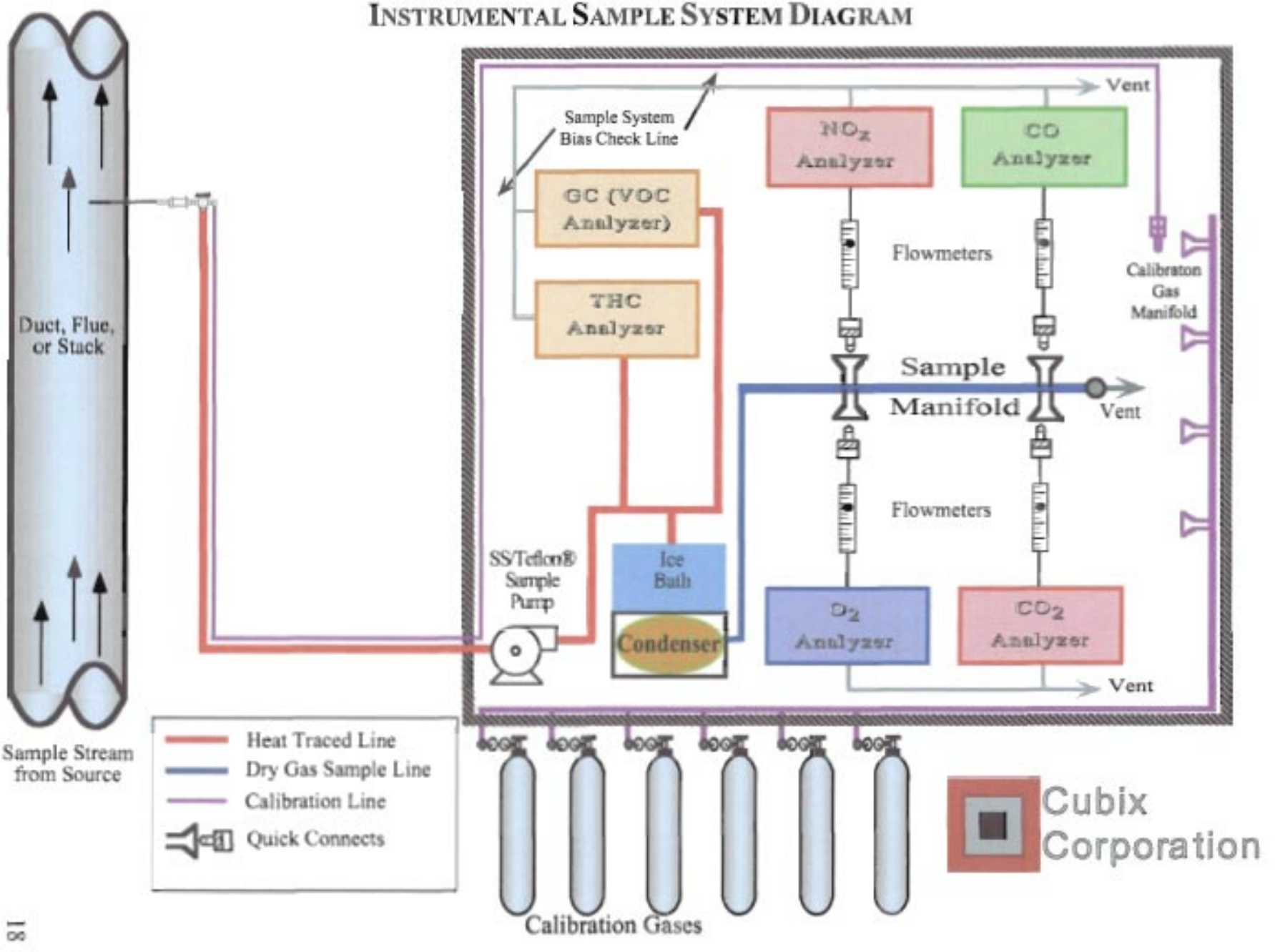
All emission calculations were conducted by a computer spreadsheet as shown in Tables 2 through 6 of this report. Example calculations were performed manually using a hand-held calculator in order to verify the spreadsheet formulas. Example calculations are in Appendix B of this report.

TABLE 7
ANALYTICAL INSTRUMENTATION

Parameter	Model and Manufacturer	Common Use Ranges	Sensitivity	Response Time (sec.)	Detection Principle
NO_X	TECO Model 42CHL	0-10 ppm 0-25 ppm 0-50, 0-100 ppm 0-200, 500 ppm 0-1,000 ppm 0-5,000 ppm	0.1 ppm	1.7	Thermal reduction of NO_2 to NO. Chemiluminescence of reaction of NO with O_3. Detection by PMT. Inherently linear within 1% of full scale.
CO	TECO Model 48C	0-1 ppm 0-10 ppm 0-30 ppm 0-50, 0-100 ppm 0-200 ppm 0-500 ppm 0-1000 ppm	0.1 ppm	60	Infrared absorption, gas filter correlation detector, micro-processor based linearization.
CO_2	Servomex 1400	0-5% 0-10% 0-15%	0.025% 0.05% 0.075%	< 10	Non-dispersive infrared absorption, electronic linearization of a logarithmic signal (Beer's Law)
O_2	Servomex 1400	0-5% 0-10% 0-25%	0.02% 0.02% 0.02%	< 10	Paramagnetic cell detector, inherently linear.
THC	JUM Model 3-300	0-10, 0-100, 0-1000, 0-10000 0-100,000 ppm	10 ppb	2.0	Flame ionization of hydrocarbons inherently linear within 1% over the range of the analyzer.

NOTE: Higher ranges available by sample dilution.
Other ranges available via signal attenuation.

FIGURE 1
INSTRUMENTAL SAMPLE SYSTEM DIAGRAM



QUALITY ASSURANCE ACTIVITIES

A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendices D and E describe each of those activities.

A multi-point calibration was performed for each instrument in the field prior to the collection of data. The instrument's linearity was checked by first adjusting the instrument's zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration. The instrument's response was accepted as being linear if the response of the other calibration gases agreed within ± 2 percent of range from the predicted values. The response of the infrared absorption type CO and CO_2 analyzers is made linear through electronic suppression.

System bias checks were performed both before and after the sampling system was used for emissions testing. The sampling system's integrity was tested by comparing the responses of the NO_X analyzer to a calibration gas (and a zero gas) introduced via two paths as previously described in the *Analytical Techniques* section of this report. This system bias test was performed to assure that no alteration of the sample had occurred during the test due to leakage, reactions, or absorption. Similarly, system bias checks were performed with UHC/THC, CO, O_2, and CO_2 for added assurance of sample system integrity. The results of the system bias checks are available in Appendix D.

The efficiency of the NO_2 to NO converter in the NO_X analyzer was checked by monitoring a mixture of NO in N_2 standard gas and zero grade air from a Tedlar® bag. When this bag is mixed and exposed to sunlight, the NO is oxidized to NO_2. If the NO_X instrument's converter is 100% efficient, then the total NO_X response does not decrease as the NO in the bag is converted to NO_2. The criterion for acceptability is demonstrable NO_X converter efficiency greater than 90%; this is demonstrated if the concentration of NO_X does not decrease by more than 2% of the highest read value over a 30-minute period. This test was conducted both before the start of the natural gas and the distillate oil tests although not specified by the method. Quality assurance worksheets, found in Appendix D, summarize the results of the converter efficiency test.

The residence time of the sampling and measurement system was estimated using the pump flow rate and the sampling system volume. The pump's rated flow rate is 0.8 scfm at 5 psig. The sampling system volume was approximately 0.34 scf. Therefore, the minimum sample residence time was ~ 26 seconds.

The NO_X and O_2 sampling and analysis system was checked for response time per the procedures outlined in EPA's Method 20, Section 5.5. The average NO_X analyzer's response times were 74 seconds upscale and 63 seconds downscale. The O_2 analyzer's average response times were 43 seconds upscale and 46.7 seconds downscale. The results of these response time tests are contained in Appendix D.

Cubix Corporation and instrument vendors conducted interference response tests on the NO_X, CO, and O_2 analyzers. The sum of the interference responses for H_2O, C_3H_8, CO, CO_2 and O_2 is less than 2 percent of the applicable full-scale span value. The instruments used for the tests meet the performance specifications for EPA Methods 3a, 7e, 10, and 20. The results of the interference tests are available in Appendix D of this report.

The sampling system was leak checked by demonstrating that it could hold a vacuum greater than 15 inches of mercury ("Hg) (>22 "Hg actual) for at least 1 minute with a decline of less than 1 "Hg. A leak test was conducted after the sample system was set up and before testing began, at the beginning and end of each test day, and after testing was completed before dismantling the system. This test was conducted to insure that ambient air was not diluting the sampling system. No leakage was detected.

As a minimum, before and after each test run, the analyzers were checked for zero and span drift. This allows test runs to be bracketed by calibrations and documents the precision of the data just collected. Calibration gases were introduced to the analyzers through the entire sampling system. Appendix D contains quality assurance tables that summarize the zero and span checks that were performed for each test run. The worksheets also contain the data used to correct the data for drift per EPA Method 6c, Equation 6c-1. NO_X, O_2, and CO_2 data were corrected for drift as required by the test methods. Although not required by the test methods, UHC/THC and CO concentrations were also corrected for drift to maintain consistency in results reporting.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to ±1 % accuracy for all calibration gases. EPA Protocol No. 1 was used, where applicable (i.e., NO_X gases), to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix E.

Appendix E also contains calibration data ancillary equipment used during this testing. An altimeter/barometer was used for determination of barometric pressure. A fan-operated psychrometer with NIST traceable thermometers was used to determine ambient and dew point temperatures.

During the testing, fuel samples were collected in duplicate as insurance. The

samples were shipped to Core Laboratories of Houston, Texas with a chain-of-custody form. Sample custody was maintained from the sampling location to the analytical lab. Only one of the duplicate samples was analyzed. After the sample analysis, Cubix reviewed the sample results. Since results of the fuel samples were within the expected values for the fuels sampled, the duplicate samples were not analyzed.

Cubix collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Cubix makes no warranty as to the suitability of the test methods. Cubix assumes no liability relating to the interpretation and use of the test data by others.

APPENDIX A:
FIELD DATA SHEETS

Sign In Sheet

Job Name: Tampa Electric Polk 3

Date(s): May 7-9, 2002

Job Number: 6949-FL1

PSD Permit No. PSD-FL-263(PA92-3

Plant Name/Location: Polk Power Station / Mulberry, Polk County, Florida

Emission Source(s): Unit 3, a GE frame 7FA (Model PG7241FA) Combustion Gas Turbine Generator Set

PARTICIPANTS:

Cubix Corporation	Test Contractor
Tampa Electric Company	Owner/Operator
Florida Dept. of Environmental Protection	Regulatory Agency

Name	Affiliation	Position	Phone Number	Job Safety Review(Y/N)
Leonard Brenner	Cubix Corp	Director 1	(352) 378-0332	Y
Roger Osler	Cubix Corp	Project Foreman 3	(352) 378-0332	Y
Sean Barrett	Cubix Corp	Field Tech 1	(352) 378-0332	Y
TED WENNING	TECO	Coord, CEM Prgm	(813) 641-5778	Y
ROBERT BARTHELMETTE JR.	TECO	ENV. TECH.	813-630-7358	Y
Raiza Calderón	TECO	Engineer	813-641-5261	Y
Russell A. WIDER	DEP	Engineer	850-921-9513	N

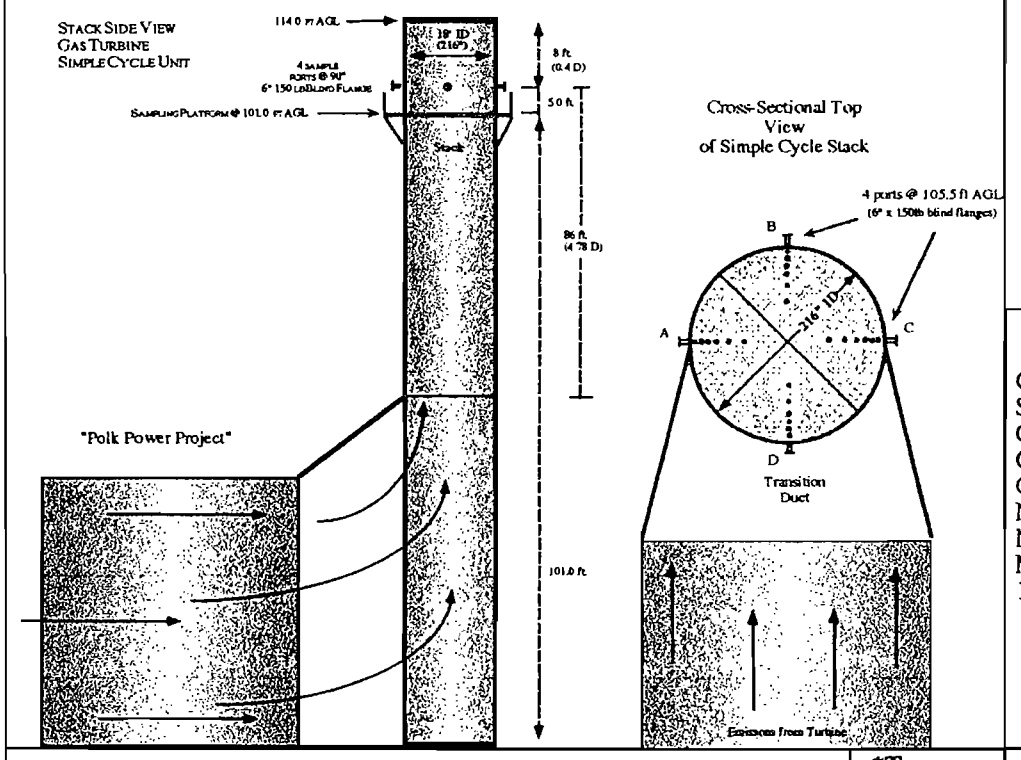
Circular Stack Sampling Traverse Point Layout
(EPA Method 1, Stratification Traverse Points)

Date: May 6th, 2002
Client: Tampa Electric Company
Plant: Polk Power Station
Source: Unit 3, a GE Frame 7FA
Technician(s): LJB, RPO, SBB

Port + Stack ID (in):	236
Port Extension (in):	20
Stack ID (in):	216.00
Stack Area (ft²):	254.46
Duct Diameters **upstream** from flow disturbance (A):	0.40
Duct Diameters **downstream** from flow disturbance (B):	4.78
Total Required Traverse Points:	48
No. of Traverse Points per Diameter:	24

Stack Diagram

(Draw side view showing major components, dimensions, upstream/downstream flow disturbances)



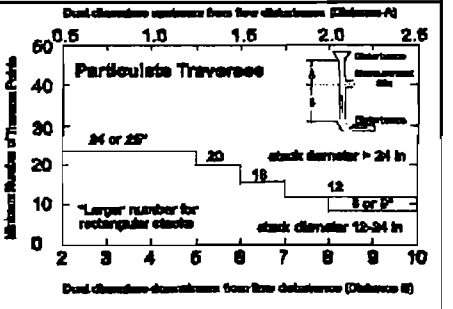
CEMS Information

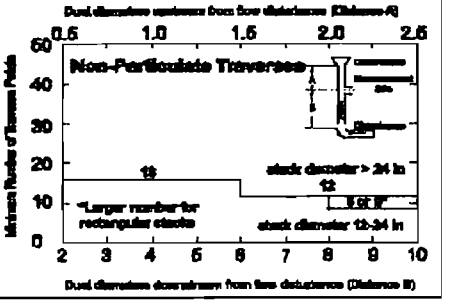
Spetrum CEMS Package
Spectrum Systems Inc. DAHS
Model 20/20, S/N 2020POLK3
Thermo Environmental NO_x Analyzer
Model 42C, S/N 42C-70630-366
Siemens CO_2 Analyzer, Model
Ultramat 6E, S/N F-NR.N1-N5-0675
M&C Gas Dilution Probe, Model
SP2000-H, S/N 7314/10026611

Unit Information

General Electric Power Systems
Simple-Cycle Model PG7241
Combustion Gas Turbine Generator Set
CT Serial No. 297956
Generator Serial No. 337X252
Nominally rated to produce 165-MW.
Nominally permitted to fire with 1600
MMBtu/hr (LHV) Natural Gas or with
1800 MMBtu/hr (LHV) No. 2 Fuel Oil.

Traverse Point Number	Number of Traverse Points on a Diameter 4	6	8	12	†Other	*Calculated Traverse Point	*Traverse Point with Port Extension
1	6.7	4.4	3.2	2.1	1.1	2.38	22.38
2	25.0	14.6	10.5	6.7	3.2	6.91	26.91
3	75.0	29.6	19.4	11.8	5.5	11.88	31.88
4	93.3	70.4	32.3	17.7	7.9	17.06	37.06
5		85.4	67.7	25.0	10.5	22.68	42.68
6		95.6	80.6	35.6	13.2	28.51	48.51
7			89.5	64.4	16.1	34.78	54.78
8			96.8	75.0	19.4	41.90	61.90
9				82.3	23.0	49.68	69.68
10				88.2	27.2	58.75	78.75
11				93.3	32.3	69.77	89.77
12				97.9	39.8	85.97	105.97





Stack diameters > 24 in shall have no traverse points located within 1-inch of the stack wall
Stack diameters ≤ 24 in shall have no traverse points located within 0.5-inch of the stack wall
† *24 traverse points per diameter used for sampling with 12 points used in each of 4 ports*

Cubix Corporation
Air Emission Testing Job Safety Analysis

Date:	May 6-9, 2002
Mobile Lab/Cubix Crew:	FL1/LJB, RPO, SBB
Client:	Tampa Electric Company
Job #/Contact:	6949-Mike Perkins
Plant Name:	Polk Power Station
Unit Name(s):	Unit 3
Location (city/state):	Mulberry, Florida

Description of Testing Activities:

Compliance emissions testing on Unit 3, a newly installed GE Frame 7FA combustion turbine. Natural Gas and Fuel Oil Testing. Additionally, some brief tuning was conducted for GE due to low load NG emission problems.

Permits Required		Comments
Hot Work	☐ Check	Additionally required was CO monitors in the area we were testing. CO moniors and escape packs were supplied by Polk Power Station. 1 hour safety orientation.
Cold Work	☐ Check	
Lock & Tag	☐ Check	
Scaffolding	☐ Check	
Crane/Lift	☐ Check	
Liue Break	☐ Check	

Personal Protective Equipment Required			
hard hat	☒ Check	acid suit	☐ Check
ear plugs/muffs	☒ Check	rubber boots	☐ Check
safety glasses	☒ Check	monogoggles	☐ Check
steel toed shoes	☒ Check	face shield	☐ Check
gloves	☒ Check	safety harness	☐ Check
hot gloves	☒ Check	respirator	☐ Check

Emergency Response		
Safe Haven:	assembly point and South West gate	*(Control room? Plant office?*
Wind Direction:	SE	*N NE E SE S SW W NW*
Evacuation Route:	South West Gate	*front gate? Back gate? Crosswind?*
Assembly Points:	by CM trailer and 1st aid building	*office? Down the road?*
Plant Map Reviewed:	YES	*Yes or No or Not Applicable*

Phone No's. & Alarm Knowledge (list type of sound)			
Plant Contact Ph.:	863-428-5132	Evacuate:	continuous blast
Control Room Ph.:	39132	Fire:	
Emergency Ph.:	control room	All Clear:	continuous warbel
Other:		Poison Gas:	

If facility has no alarms, verify communication with control room

Emergency Equipment Locations Identified			
Emergency Shut Off	☐ Located	☒ Not Applicable	*manual emergency trip*
Fire Extinguisher	☒ Located	☐ Not Applicable	*Cubix Mobile Lab & Plant Ext.*
Safety Showers	☒ Located	☐ Not Applicable	*required for plant?*
Escape Air Pack	☒ Located	☐ Not Applicable	*required for plant?*

JOB HAZARD IDENTIFIED

Hazardous Material (in plant area)

(flammability, reactivity, health hazards)

hydrogen sulfide, carbon monoxide, sulfur oxides, syngas, compressed gases, natural gas (compressed), fuel oil, coal dust

Environmental Hazards

airborne particulate	☒ Present	☐ No Hazard	Comments: Unseasonally warm weather. Sean Barrett couldn't handle the weather and quit after 2 days.
burn hazard	☒ Present	☐ No Hazard	
rain / fog	☐ Present	☒ No Hazard	
electrical shock	☒ Present	☐ No Hazard	
heat stress	☒ Present	☐ No Hazard	
cold weather/frostbite	☐ Present	☒ No Hazard	
inadequate lighting	☐ Present	☒ No Hazard	
noise	☒ Present	☐ No Hazard	
poor access/egress	☐ Present	☒ No Hazard	

Chemical Hazards (check hazards that are present at jobsite)

asfixiation	☒ Check	carcinogen	☐ Check
poison gas	☒ Check	chemical burns	☐ Check
chemical eye exposure	☐ Check	chemical skin exposure	☐ Check
flammable gas	☒ Check	flamable liquid	☒ Check
strong acid	☐ Check	strong base	☐ Check
OTHER, coal dust	☒ Check		

Equipment Lifting & Fall Hazard

test equipment hoisting (pulley/boom)	☒ Required	☐ Not Applicable
portable ladder	☐ Required	☒ Not Applicable
man lift (cherry picker)	☐ Required	☒ Not Applicable
personnel basket (crane)	☐ Required	☒ Not Applicable
Plant Stairs & Ladders	☒ Required	☐ Not Applicable
rigging sample lines, umbilicle	☒ Required	☐ Not Applicable
scaffold	☐ Required	☒ Not Applicable

PRECAUTIONS TO BE IMPLEMENTED

Cubix MSDS in Mobile Lab	☒ Yes	☐ No
Plant MSDS reviewed???	☒ Yes	☐ Not Available

Protective Equipment		Protective Actions	
respirator	☐ Check	OTHER	☐ Check
work gloves	☒ Check	shade/cool breaks	☒ Check
rain protect elect. equip.	☐ Check	rain gear	☐ Check
inspect extension cords	☐ Check	secure/protect ext.cords	☐ Check
hot gloves	☒ Check	warm up breaks	☐ Check
cold weather clothing	☐ Check	liquid intake	☐ Check
flash light/head lamp	☐ Check	night lighting	☐ Check
hearing protection	☒ Check	hard hat liner	☐ Check
housekeeping	☒ Check	alternate route	☒ Check

Respiratory Safety Equip		Protective Clothing	
supplied fresh air	☐ Check	fire suit	☐ Check
SCBA	☐ Check	acid suit	☐ Check
respirator (correct type?)	☐ Check	rubber boots	☐ Check
escape pack	☒ Check	monogoggles	☐ Check
exposure dosiometer	☐ Check	face shield	☐ Check
OTHER	☐ Check	OTHER	☐ Check

Inspections and Protective Actions

equipment secure	☒ Check	clear lift zone	☒ Check
operator certification	☐ Check	rope inspection	☒ Check
guy lines	☐ Check	body harness	☐ Check
radios/handsignals	☒ Check	guard rails, toe plates	☒ Check
housekeeping	☒ Check	ladder tie-off	☐ Check
lines secure	☒ Check	monorails secure	☐ Check
secure tools	☒ Check	hard hats	☒ Check

APPENDIX B:
EXAMPLE CALCULATIONS

EXAMPLE TURBINE GASEOUS CALCULATIONS
NATURAL GAS EMISSIONS TESTING

Moisture Content (via Humidity and H20 F Factor)

Refers to Test Run #U3-NG-100%-1

H_{amb} = ambient humidity (lbs H_2O/ lb air) = 0.0141 lbs/lb air
C_{O2} = concentration of O_2 = 13.72% (from analyzer)
F_{stoi} = stoichiometric moisture @ 0% O_2 = 18.78% vol.
$F_{hum.}$ = humidity moisture = H_{amb} x 1.61 x 100
$F_{com.}$ = combustion moisture (% volume)

$\mathbf{F_W}$ = moisture fraction by % volume

$$F_W = F_{com.} + F_{hum.}$$

$$F_W = F_{stoi} \times \left(\frac{20.9 - \%O_2}{20.9}\right) + (H_{amb} \times 1.61 \times 100)$$

$$F_W = 18.78 \times \left(\frac{20.9 - 13.72}{20.9}\right) + (0.0141 \times 1.61 \times 100)$$

F_W = 8.72 % moisture (differences due to rounding)

Stack Gas Flow Rates via F-factors (Qd)

refers to Test Run #U3-NG-100%-1

Convert mass fuel flow to volumetric fuel flow:
Hg = heating value of nat. gas = 23068 Btu/lb (gross) from fuel analysis
F = fuel flow = 71379 (lbs/hr) from Control Panel
H = heat input (MMBTU/hr)
= Hg x F/(1 x 10^6) = 1646.57 MMBtu/hr

Calculate flow rate using **O_2 F-factor**:
C_{O2} = O_2 concentration in exhaust = 13.72 by vol, dry
O_2 F_d Factor = 8645 DSCF of Exhaust/MMBtu of fuel burned @ 0% excess air

Qd_1 = Stack Exhaust Gas Flow Rate via O_2 F-factor

$$Qd_1 = \frac{H \times O_2\ F_d\ Factor \times 20.9}{20.9 - C_{O2}}$$

$$Qd_1 = \frac{1646.57 \times 8645 \times 20.9}{20.9 - 13.72}$$

Qd_1 = 4.14(3) x 10^7 DSCFH

Calculate flow rate using **CO_2 F-factor:**
Using same data as above, except:
C_{CO2} = Concentration of CO_2 in exhuast = 4.19 % vol,dry (stack ave)
CO_2 F_c Factor = 1029 DSCF of CO2/ MMBtu of fuel burned @ 0% excess air

Qd_2 = Stack Exhaust Gas Flow Rate via CO_2 F-factor

$$Qd2 = \frac{H \times CO_2\ F_c\ Factor \times 100}{C_{CO2}}$$

$$Qd2 = \frac{1646.57 \times 1029 \times 100}{4.19}$$

Qd_2 = 4.04(4) x 10^7 DSCFH

F_O Calculation to Verify O_2/CO_2 Measurements

refers to Test Run #U3-NG-100%-1

C_{CO_2} = concentration of carbon dioxide = 4.19% (from analyzer, ave.)
C_{O_2} = concentration of oxygen = 13.72% (from analyzer, ave.)

F_O = fuel factor for natural gas combustion by-products

$$= \frac{20.9 - \%\ O_2}{\%\ CO_2}$$

$$F_O = \frac{20.9 - 13.72}{4.19}$$

F_O = 1.71*(acceptable F_O values for nat gas = 1.600 to 1.836)*

Correction of NO_x Gas Concentrations, C_{NO_x}

Refers to Test Run #U3-NG-100%-1

The logged datarecords were used for continuous instrumental monitor data. Analytical instruments tend to drift in their calibrations over time and with changes in atmospheric conditions. Span and zero gas bias drift checks (calibrations) were conducted prior to and following each test. The results of these calibrations were used to bracket and thus correct the raw gas concentrations into corrected (more accurate) gas concentrations. The calculation used for these correction is 40 CFR 60, Appendix A, Method 6c, Equation 6c-1. This correction is required for NO_x, O_2, and CO_2 exhaust concentrations. Cubix also conducts this correction for EPA Methods 10 and 25a, CO and THC monitoring, in order to present more accurate and consistent test results.

U_{NOx} = 9.22 ppmv, uncorrected
C_O = Average of initial/final zero gas concentrations
= 0.10 ppmv
C_m = Average of initial/final span gas concentrations
= 8.415 ppmv
C_{ma} = Actual upscale cylinder span gas concentrations
= 8.60 ppmv

C_{NOx} = Effluent NO_x gas concentration, ppmv corrected

$$= (U_{NOx} - C_o) \times \frac{C_{ma}}{C_m - C_o}$$

$$= (9.22 - (0.10)) \times \frac{8.60}{8.415 - (0.10)}$$

C_{NOx} = 9.43(3) ppmv NO_x, dry basis corrected

<u>NOx Correction to 15% O_2</u>
refers to Test Run #U3-NG-100%-1

C_{NOx} = observed NOx concentration = 9.433 ppmv (from analyzer)
C_{O2} = concentration of oxygen = 13.72 % volume (from analyzer)

NOx @15% O_2 = NO_x emission concentration, corrected to 15% excess oxygen

$$= \frac{(C_{NOx} \times (20.9 - 15.0\%\ O_2))}{20.9 - C_{O2}}$$

$$= \frac{9.433 \times 5.9}{20.9 - 13.72}$$

NOx @15% O_2 = 7.75(1) ppmv @ 15% excess O_2

<u>EPA ISO-day Correction for NOx</u>
refers to Test Run #U3-NG-100%-1

H_{obs}	= observed humidity of ambient air	= 0.0141 (lbs / lb air)
$NO_{x(@15\%O2)}$	= concentration of NOx @ 15% O_2	= 7.751 ppmv @15% O_2
P_{ref}	= reference combustor inlet pressure	= 101.3 kpa
P_{obs}	= observed combustor inlet pressure	
	= P_{bar} - Inlet Air Duct Loss/13.6	
	= 30.01 - 2.29/13.6	
	= 29.842 "Hg x 3.3864 kpa/"Hg	= 101.057 kpa
T_{CTIM}	= compressor inlet temperature	
	= (85.0 °F - 32 °F) x (5/9) + 273.15 °C	= 302.59 °K

NO_X(EPA) = NO_x emission concentration, corrected to ISO conditions

$$= NO_X(@15\%O2) \times \sqrt{\frac{P_{ref}}{P_{obs}}} \times \left(\frac{288°K}{T_{CTIM}}\right)^{1.53} \times 2.718^{19(H - 0.00633)}$$

$$= 7.751 \times \sqrt{\frac{101.3}{101.057}} \times \left(\frac{288}{302.59}\right)^{1.53} \times 2.718^{19(0.0141 - 0.00633)}$$

NO_X(EPA) = 8.34 ppmv @ ISO Day Conditions (Differences due to rounding)

NOx Mass Emission Rate (lbs/hr)
Refers to Test Run #U3-NG-100%-1

C_{NOx} = observed concentration of NOx = 9.433 ppmv (average)
MW_{NOx} = 46.01 lb/lb-mole for nitrogen dioxide
for an ideal gas, 385.15 SCF = 1.0 lb/mole
Q_{d1} = 4.143×10^7 SCFH, dry (from O_2, higher "F-factor" calculated from ex. flow)

E_{NOx} = mass emission rate of NOx in (lb/hr)

$$= C_{NOx} \times 10^{-6} \times Q_{d1} \times \frac{MW_{NOx}}{385.15}$$

$$= 9.433 \times 10^{-6} \times 4.143 \times 10^7 \times \frac{46.01}{385.15}$$

E_{NOx} = 46.7 lbs/hr

CO Mass Emission Rate (lbs/hr)
Refers to Test Run #U3-NG-100%-1

C_{CO} = observed concentration of CO = 0.26 ppmv (average)
MW_{CO} = 28.01 lb/lb-mole for carbon monoxide
using same formula as for NOx mass emission rate
Q_{d1} = 4.143×10^7 SCFH, dry (from O_2, higher "F-factor" calculated from ex. flow)

E_{CO} = mass emission rate of CO in (lb/hr)

$$= 0.26 \times 10^{-6} \times 4.143 \times 10^7 \times \frac{28.01}{385.15}$$

E_{CO} = 0.78 lbs/hr

UHC as VOC Mass Emission Rate (lbs/hr)
Refers to Test Run #U3-NG-100%-1

C_{UHC} = observed concentration of UHC = 0.57 ppmv as CH_4, wet
B_{WS} = stack gas moisture mole fraction = 0.0872
Q_{d1} = 4.143×10^7 SCFH, dry (from O_2, higher "F-factor" calculated from ex. flow)
MW_{CH4} = 16.04 lb/lb-mole for methane
using same formula as for NOx mass emission rate (w/ moisture correction)

E_{VOC} = mass emission rate of VOC in (lb/hr), including UHC (e.g, methane)

$$= C_{UHC} \times 10^{-6} \times \frac{1}{1 - B_{WS}} \times Q_{d1} \times \frac{MW_{CH4}}{385.15}$$

$$= 0.57 \times 10^{-6} \times \frac{1}{1 - 0.0872} \times 4.143 \times 10^7 \times \frac{16.04}{385.15}$$

E_{VOC} = 1.08 lbs/hr

SO_2 Mass Emission Rate (lbs/hr)

Refers to Test Run #U3-NG-100%-1

S	= concentration of sulfur	= < 1.0 ppm, weight
F	= fuel flow from fuel meter	= 71,379 lbs/hr
MW_S	= molecular weight of sulfur	= 32.06 g/mol
MW_{SO2}	= molecular weight of sulfur dioxide	= 64.06 g/mol

Note: Formula assumes all sulfur in fuel is converted to SO_2

E_{SO2} = mass emission rate of SO_2 in (lbs/hr)

$$= S \times F \times \left(\frac{MW_{SO2}}{MW_S}\right)$$

$$= < 1.0 \times 10^{-6} \times 71379 \text{ lbs/hr} \times \left(\frac{64.06}{32.06}\right)$$

E_{SO2} = **< 0.14 lbs/hr**

EXAMPLE TURBINE GASEOUS CALCULATIONS
DISTILLATE OIL EMISSIONS TESTING

Stack Gas Flow Rates via F-factors (Qd)
refers to Test Run #U3-Oil-100%-1

Convert mass fuel flow to volumetric fuel flow:
Hg = heating value of Fuel Oil = 19366 Btu/lb (gross) from fuel analysis
F = fuel flow = 24.5480 lbs/sec from Control Panel
H = heat input (MMBTU/hr)
= Hg x F x 3600/(1 x 10^6) = 1711.43 MMBtu/hr

Calculate flow rate using **O_2 F-factor**:
C_{O2} = O_2 concentration in exhaust = 12.54% vol, dry (stack ave)
O_2 F_d Factor = 9257 DSCF of Exhaust/MMBtu of fuel burned @ 0% excess air

Qd1 = Stack Exhaust Gas Flow Rate via O_2 F-factor

$$Qd1 = \frac{H \times O_2\ F_d\ Factor \times 20.9}{20.9 - C_{O2}}$$

$$Qd1 = \frac{1711.43 \times 9257 \times 20.9}{20.9 - 12.54}$$

Qd1 = 3.96(1) x 10^7 DSCFH

Calculate flow rate using **CO_2 F-factor:**
Using same data as above, except:
C_{CO2} = Concentration of CO_2 in exhuast = 6.34% vol,dry (stack ave)
CO_2 F_c Factor = 1443 DSCF of CO2/ MMBtu of fuel burned @ 0% excess air

Qd2 = Stack Exhaust Gas Flow Rate via CO_2 F-factor

$$Qd2 = \frac{H \times CO_2\ F_c\ Factor \times 100}{C_{CO2}}$$

$$Qd2 = \frac{1711.43 \times 1443 \times 100}{6.34}$$

Qd2 = 3.89(5) x 10^7 DSCFH

F_O Calculation to Verify O_2/CO_2 Measurements

refers to Test Run #U3-Oil-100%-1

C_{CO2} = concentration of carbon dioxide = 6.34% (from analyzer, ave.)
C_{O2} = concentration of oxygen = 12.54% (from analyzer, ave.)

F_O = fuel factor for fuel oil combustion by-products

$$= \frac{20.9 - \%\ O_2}{\%\ CO_2}$$

$$F_O = \frac{20.9 - 12.54}{6.34}$$

F_O = 1.32 *(acceptable F_O values for distillate oil = 1.260 to 1.413)*

Correction of NO_X Gas Concentrations, CNO_X

Refers to Test Run #U3-Oil-100%-1

The logged data records were used for continuous instrumental monitor data. Analytical instruments tend to drift in their calibrations over time and with changes in atmospheric conditions. Span and zero gas drift checks (calibrations) were conducted prior to and following each test. The results of these calibrations were used to bracket and thus correct the raw gas concentrations into corrected (more accurate) gas concentrations. The calculation used for these correction is 40 CFR 60, Appendix A, Method 6c, Equation 6c-1.

U_{NOx} = 50.30 ppmv, uncorrected
C_O = Average of initial/final zero gas concentrations
= 0.20 ppmv
C_m = Average of initial/final span gas concentrations
= 44.595 ppmv
C_{ma} = Actual upscale cylinder span gas concentrations
= 46.20 ppmv
C_{NOx} = Effluent NO_X gas concentration, ppmv corrected

$$= (U_{NOx} - C_o) \times \frac{C_{ma}}{C_m - C_o}$$

$$= (50.30 - (0.20)) \times \frac{46.20}{44.595 - (0.20)}$$

C_{NOx} = 52.13(7) ppmv NO_X, dry basis corrected

NOx Correction to 15% O_2

refers to Test Run #U3-Oil-100%-1

C_{NOx} = observed NOx concentration = 52.137 ppmv (from analyzer)
C_{O2} = concentration of oxygen = 12.54% volume (from analyzer)

NOx @15% O_2 = NO_X emission concentration, corrected to 15% excess oxygen

$$= \frac{(C_{NOx} \times (20.9 - 15.0\%\ O_2))}{20.9 - C_{O2}}$$

$$= \frac{52.137 \times 5.9}{20.9 - 12.54}$$

NOx @15% O_2 = 36.8(0) ppmv @ 15% excess O_2

EPA ISO-day Correction for NOx

refers to Test Run #U3-Oil-100%-1

H_{obs}	= humidity at compressor inlet	= 0.0122 (lbs / lb air)
$NO_X(@15\%O_2)$	= concentration of NOx @ 15% O_2	= 36.80 ppmv @15% O_2
P_{ref}	= reference combustor inlet pressure	= 101.3 psia
P_{obs}	= observed combustor inlet pressure	
	= P_{bar} - Inlet Air Duct Loss/13.6	
	= 29.93 - 2.31/13.6	
	= 29.760 "Hg x 3.3864 kpa/"Hg	= 100.779 kpa
T_{CTIM}	= compressor inlet temperature	
	= (91.3 °F - 32 °F) x (5/9) + 273.15 °C	= 306.09 °K

NO_X(EPA) = NO_X emission concentration, corrected to ISO conditions

$$= NO_X(@15\%O_2) \times \sqrt{\frac{P_{ref}}{P_{obs}}} \times \left(\frac{288°K}{T_{CTIM}}\right)^{1.53} \times 2.718^{19(H - 0.00633)}$$

$$= 36.80 \times \sqrt{\frac{101.3}{100.779}} \times \left(\frac{288}{306.09}\right)^{1.53} \times 2.718^{19(0.0122 - 0.00633)}$$

NO_X(EPA) = 37.6 ppmv @ ISO Day Conditions

NOx Mass Emission Rate (lbs/hr)
Refers to Test Run #U3-Oil-100%-1

C_{NOx} = observed concentration of NOx = 52.137 ppmv
K_{NOx} = conversion factor for NOx from ppmv to lbs/dscf
= 1.194×10^{-7} (from EPA Method 19)
Q_{d1} = 3.961×10^{7} SCFH, dry (from O_2, higher "F-factor" calculated from ex. flow)

$\mathbf{E_{NOx}}$ = mass emission rate of NOx in (lb/hr)

$$= C_{NOx} \times Q_{d1} \times K_{NOx}$$

$$= 52.137 \times 3.961 \times 10^{7} \times 1.194 \times 10^{-7}$$

$\mathbf{E_{NOx}}$ = **247 lbs/hr**

CO Mass Emission Rate (lbs/hr)
Refers to Test Run #U3-Oil-100%-1

C_{CO} = observed concentration of CO = 0.54 ppmv (average)
MW_{CO} = 28.01 lb/lb•mole for carbon monoxide
385.15 = volume one lb•mole of gas occuplies in scf, dry
Q_{d1} = 3.961×10^{7} SCFH, dry (from O_2, higher "F-factor" calculated from ex. flow)

$\mathbf{E_{CO}}$ = mass emission rate of CO in (lb/hr)

$$= C_{CO} \times 10^{-6} \times Q_{d1} \times \frac{MW_{CO}}{385.15 \text{ scf/lb•mol}}$$

$$= 0.54 \times 10^{-6} \times 3.961 \times 10^{7} \times \frac{28.01 \text{ lb/lb•mol}}{385.15 \text{ scf/lb•mol}}$$

$\mathbf{E_{CO}}$ = **1.56 lbs/hr**

Stack Gas Moisture by H2O factor
refers to Test Run #U3-Oil-100%-1

F_{H2O}	= "F Factor" for combustion moisture	= 1263 (SCF H2O/ MMBtu Fuel)
F_{O2}	= "F Factor" for dry combustion products	= 9257 (DSCF exhaust/ MMBtu Fuel)
C_{O2}	= concentration of O2 in stack	= 12.54% (dry basis)
H_a	= combustion air humidity	= 0.0122 (lbs water/ lb dry air)
W_i	= water injection rate	= 121,158 (lbs/hr)
Q_{d1}	= stack volumetric flow	= 3.961×10^{7} (DSCFH)
Molecular weight of H_2O		= 18.01 (lb/lb-mole)
Molecular weight of dry air		= 28.95 (lb/lb-mole)
Concentration of O_2 in dry air		= 20.9 (volume %)

$$\% \text{ Combustion Moisture} = \frac{F_{H2O}}{(F_{H2O} + F_{O2})} \times \frac{(20.9 - C_{O2})}{20.9} \times 100$$

$$= \frac{1263}{(1263 + 9257)} \times \frac{(20.9 - 12.54)}{20.9} \times 100$$

$$= 4.802$$

$$\% \text{ Ambient Moisture} = \frac{28.95}{18.01} \times H_a \times 100$$

$$= 1.61 \times 0.0122 \times 100$$

$$= 1.964$$

$$\% \text{ Water Injection} = \frac{100 \times 385.15 \text{ ft}^3\text{/lb-mole} \times W_i \times F_{O2}}{18.01 \text{ lbs/lb-mole} \times Qd1 \times (F_{H2O} + F_{O2})}$$

$$= \frac{100 \times 385.15 \text{ ft}^3\text{/lb-mole} \times 121158 \times 9257}{18.01 \text{ lbs/lb-mole} \times 3.961 \times 10^7 \times (1263 + 9257)}$$

$$= 5.756$$

F_W = (% Combustion Moisture) + (% Ambient Moisture) + (% Water Injection)

F_W = 4.802 + 1.964 + 5.756

F_W = 12.52 % Moisture (Differences due to rounding)

<u>UHC as VOC Mass Emission Rate (lbs/hr)</u>
Refers to Test Run #U3-Oil-100%-1

C_{UHC} = observed concentration of UHC (THC) = 0.12 ppmv as CH_4, wet
F_w = stack gas moisture content = 12.52 % volume
MW_{CH4} = 16.04 lb/lb-mole for methane
$Qd1$ = 3.961×10^7 SCFH, dry (from O_2, higher "F-factor" calculated from ex. flow) using same formula as for NOx mass emission rate (w/ moisture correction)

E_{VOC} = mass emission rate of VOC in (lb/hr), including methane

$$= C_{UHC} \times 10^{-6} \times Qd1 \times \frac{MW_{CH4}}{385.15}$$

$$= 0.12 \times 10^{-6} \times 3.961 \times 10^7 \times \frac{16.04}{385.15} \times \frac{100}{(100 - 12.52)}$$

E_{VOC} = 0.23 lbs/hr

SO_2 Mass Emission Rate (lbs/hr)

Refers to Test Run #U3-Oil-100%-1

S	= concentration of sulfur	= 0.039 % by weight
F	= fuel flow from fuel meter	= 88372.8 lbs/hr
MW_{SO2}	= molecular weight of sulfur dioxide	= 64.06 lb/lb•mol
MW_S	= molecular weight of sulfur	= 32.06 lb/lb•mol

Note: Equation assumes at sulfur in fuel is converter to SO2 in the stack

E_{SO2} = mass emission rate of SO_2 in (lbs/hr)

$$= \frac{S}{100} \times F \times \left(\frac{MW_{SO2}}{MW_S}\right)$$

$$= \frac{0.039}{100} \times 88372.8 \times \left(\frac{64.06}{32.06}\right)$$

E_{SO2} = **68.09 lbs/hr**

APPENDIX C:
FUEL ANALYSES

Client: Tampa Electric Company
Facility: Polk Power Station
Location: Mulberry, Florida
Project: Rubix Job # 6949-FLI

5-7-02

Natural Gas Water Vapor
① 5 lbs/MMCF
② 5 lbs/MMCF
Natural Gas Hydrogen Sulfide
① Non-detected after 5 draws on sampler
② Non-detected after 5 draws on sampler
Sampled by: Roger Paul Osier

5-9-02

Natural Gas Water Vapor
① 6 lbs/MMCF
② 7 lbs/MMCF
Natural Gas Hydrogen Sulfide
① Non-detected after 5 draws on sampler
② Non-detected after 5 draws on sampler
Sampled by: Robert Berthelette, Jr.

Note: minimum detectable limit is 0.3 ppmv for H_2S with 1 draw on sampler. Therefore, H_2S concentration was $\leq$ 0.06 ppm

Core Lab
PETROLEUM SERVICES

8210 Mosley Rd.
Houston, TX 77075
713 943-9776 Telephone
713 943-3846 Facsimile

CORE LABORATORIES

LEONARD BRENNER
CUBIX CORPORATION

4536 NW 20TH DRIVE
GAINSVILLE, FL 32605

Sample Number: 122081-001
Sample Date: 5/7/02
Date Reported: 5/23/02
Date Received: 5/15/02
Sample ID: Sample # 1A
Description: Natural Gas
#1696/1793

Analytical Report

Test	Result	Units	Method	Date	Analyst
Natural Gas Analysis					
Nitrogen	0.292	Mol %	GPA 2261	5/22/02	TH
Oxygen	0.008	Mol %			
Carbon Dioxide	0.876	Mol %			
Methane	95.303	Mol %			
Ethane	2.499	Mol %			
Propane	0.597	Mol %			
Isobutane	0.162	Mol %			
n-Butane	0.088	Mol %			
Isopentane	0.046	Mol %			
n-Pentane	0.026	Mol %			
Hexanes Plus	0.103	Mol %			
Total	100.00	Mol %			
Molar Mass Ratio	0.58924		ASTM D-3588		
Relative Density	0.59015				
Compressibility Factor	0.99778				
Gross Heating Value (Dry)	1038.0	BTU/CF (Ideal			
Gross Heating Value (Dry)	1040.4	BTU/CF (Real			
Net Heating Value (Dry)	936.0	BTU/CF (Ideal			
Net Heating Value (Dry)	938.1	BTU/CF (Real			
Pressure Base	14.696	psia			
Sulfur, Total in Gas by Micro.	<1	ppm wt	ASTM D-3246	5/16/02	JT

Approved By: Jean Waits
Supervising Chemist

Gas Fuel F Factor & Heating Value Calculation

Company: Tampa Eletric Company
Location: Mulberry, Polk County, Florida
Sample Identification: Unit 3 Sample 1A, Core Sample No. 122081-001
Sample Date: May 7, 2002
Analysis Date: May 22, 2002

CALCULATION OF DENSITY AND HEATING VALUE @ 60°F and 30 in Hg

Component	% Volume	Molecular Wt.	Density (lb/ft3)	% volume x Density	weight %	Component Gross Btu/lb	Weight Fract. Btu	Gross Heating Value (Btu/SCF)	Volume Fract. Btu
Hydrogen		2.016	0.0053	0.00000	0.0000	61100	0.00	319.1	0
Oxygen	0.008	32.000	0.0846	0.00001	0.0150	0	0.00	0.0	0
Nitrogen	0.292	28.016	0.0744	0.00022	0.4812	0	0.00	0.0	0
CO2	0.876	44.010	0.1170	0.00102	2.2703	0	0.00	0.0	0
CO		28.010	0.0740	0.00000	0.0000	4347	0.00	322.0	0
Methane	95.303	16.041	0.0424	0.04041	89.5083	23879	21373.70	996.7	949.895
Ethane	2.499	30.067	0.0803	0.00201	4.4450	22320	992.13	1756.1	43.8837
Ethylene		28.051	0.0746	0.00000	0.0000	21644	0.00	1614.0	0
Propane	0.597	44.092	0.1196	0.00071	1.5816	21661	342.59	2518.4	15.0346
propylene		42.077	0.1110	0.00000	0.0000	21041	0.00	2336.0	0
Isobutane	0.162	58.118	0.1582	0.00026	0.5677	21308	120.96	3303.3	5.35136
n-butane	0.088	58.118	0.1582	0.00014	0.3084	21257	65.55	3318.1	2.91991
Isobutene		56.102	0.1480	0.00000	0.0000	20840	0.00	3068.0	0
Isopentane	0.046	72.144	0.1904	0.00009	0.1940	21091	40.92	3940.5	1.81264
n-pentane	0.026	72.144	0.1904	0.00005	0.1097	21052	23.08	3948.4	1.02659
n-hexane	0.103	86.169	0.2274	0.00023	0.5188	20940	108.64	4684.1	4.82464
n-heptane		86.169	0.2274	0.00000	0.0000	20940	0.00	5419.8	0
H2S		34.076	0.0911	0.00000	0.0000	7100	0.00	647.0	0
total	100.00	Average Density		0.04514	100.0000	Gross Heating Value Btu/lb	23068	Gross Heating Value Btu/SCF	1040.6
		Specific Gravity		0.59013					

CALCULATION OF F FACTORS

Component	Mol. Wt.	C Factor	H Factor	% volume	Fract. Wt.	Weight Percents Carbon	Hydrogen	Nitrogen	Oxygen
Hydrogen	2.016	0	1	0.00	0.0000		0		
Oxygen	32.000	0	0	0.01	0.2560				0.01509
Nitrogen	28.016	0	0	0.29	8.1807			0.482086853	
CO2	44.010	0.272273	0	0.88	38.5528	0.618580691			1.65168
CO	28.010	0.42587	0	0.00	0.0000	0			0
Methane	16.041	0.75	0.25	95.30	1528.7554	67.56714708	22.5223824		
Ethane	30.067	0.8	0.2	2.50	75.1374	3.542278054	0.88556951		
Ethylene	28.051	0.85714	0.14286	0.00	0.0000	0	0		
Propane	44.092	0.81818	0.181818	0.60	26.3229	1.269168536	0.2820378		
Propene	42.077	0.85714	0.14286	0.00	0.0000	0	0		
Isobutane	58.118	0.82759	0.17247	0.16	9.4151	0.459173924	0.09569198		
n-butane	58.118	0.82759	0.17247	0.09	5.1144	0.249427811	0.05198083		
Isobutene	56.102	0.85714	0.14286	0.00	0.0000	0	0		
Isopentane	72.144	0.83333	0.16667	0.05	3.3186	0.162971392	0.03259506		
n-pentane	72.144	0.83333	0.16667	0.03	1.8757	0.092114265	0.0184233		
n-hexane	86.169	0.83721	0.16279	0.00	0.0000	0	0		
H2S	34.076	0	0.058692	0.00	0.0000	0	0		
Totals				99.89700	1696.9291	73.96086175	23.89	0.482086853	1.66677

CALCULATED VALUES		
O2 F Factor (dry)	**8645**	DSCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
O2 F Factor (wet)	**10644**	SCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
Moisture F Factor	**1999**	SCF of Water/MM Btu of Fuel Burned @ 0% excess air
Combust. Moisture	**18.78**	volume % water in flue gas @ 0% excess air
CO2 F Factor	**1029**	DSCF of CO2/MM Btu of Fuel Burned @ 0% excess air
Carbon Dioxide	**11.91**	volume % CO2 in flue gas @ 0% O2
Predicted Fo Factor	**1.76**	EPA Method 3a Fo value
Fuel VOC % (non-C1)	**7.95%**	non-methane fuel VOC content
Fuel VOC % (non-C1,C2)	**3.43%**	non-methane non-ethane fuel VOC content

Testing By Cubix Corporation - Austin, Texas - Gainesville, Florida

8210 Mosley Rd.
Houston, TX 77075
713 943-9776 Telephone
713 943-3846 Facsimile

CORE LABORATORIES

LEONARD BRENNER
CUBIX CORPORATION

4536 NW 20TH DRIVE
GAINSVILLE, FL 32605

Sample Number:	122081-002
Sample Date:	5/9/02
Date Reported:	5/23/02
Date Received:	5/15/02
Sample ID:	Sample # 2A
Description:	Natural Gas #1841/1600

Analytical Report

Test	Result	Units	Method	Date	Analyst
Natural Gas Analysis					
Nitrogen	0.321	Mol %	GPA 2261		
Oxygen	0.010	Mol %			
Carbon Dioxide	0.840	Mol %			
Methane	94.999	Mol %			
Ethane	2.695	Mol %		5/22/02	TH
Propane	0.647	Mol %			
Isobutane	0.173	Mol %			
n-Butane	0.140	Mol %			
Isopentane	0.048	Mol %			
n-Pentane	0.025	Mol %			
Hexanes Plus	0.101	Mol %			
Total	100.00	Mol %			
Molar Mass Ratio	0.59134		ASTM D-3588		
Relative Density	0.59226				
Compressibility Factor	0.99777				
Gross Heating Value (Dry)	1041.7	BTU/CF (Ideal			
Gross Heating Value (Dry)	1044.0	BTU/CF (Real			
Net Heating Value (Dry)	939.4	BTU/CF (Ideal			
Net Heating Value (Dry)	941.5	BTU/CF (Real			
Pressure Base	14.696	psia			
Sulfur, Total in Gas by Micro.	<1	ppm wt	ASTM D-3246	5/16/02	JT

Approved By: Jean Waits
Supervising Chemist

Gas Fuel F Factor & Heating Value Calculation

Company: Tampa Eletric Company
Location: Mulberry, Polk County, Florida
Sample Identification: Unit 3 Sample 2A, Core Sample No. 122081-002
Sample Date: May 9, 2002
Analysis Date: May 22, 2002

CALCULATION OF DENSITY AND HEATING VALUE @ 60°F and 30 in Hg

Component	% Volume	Molecular Wt.	Density (lb/ft3)	% volume x Density	weight %	Component Gross Btu/lb	Weight Fract. Btu	Gross Heating Value (Btu/SCF)	Volume Fract. Btu
Hydrogen		2.016	0.0053	0.00000	0.0000	61100	0.00	319.1	0
Oxygen	0.010	32.000	0.0846	0.00001	0.0187	0	0.00	0.0	0
Nitrogen	0.321	28.016	0.0744	0.00024	0.5271	0	0.00	0.0	0
CO2	0.840	44.010	0.1170	0.00098	2.1690	0	0.00	0.0	0
CO		28.010	0.0740	0.00000	0.0000	4347	0.00	322.0	0
Methane	94.999	16.041	0.0424	0.04028	88.8950	23879	21227.25	996.7	946.865
Ethane	2.695	30.067	0.0803	0.00216	4.7760	22320	1066.01	1756.1	47.3255
Ethylene		28.051	0.0746	0.00000	0.0000	21644	0.00	1614.0	0
Propane	0.647	44.092	0.1196	0.00077	1.7078	21661	369.92	2518.4	16.2938
propylene		42.077	0.1110	0.00000	0.0000	21041	0.00	2336.0	0
Isobutane	0.173	58.118	0.1582	0.00027	0.6040	21308	128.70	3303.3	5.71473
n-butane	0.140	58.118	0.1582	0.00022	0.4888	21257	103.90	3318.1	4.64531
Isobutene		56.102	0.1480	0.00000	0.0000	20840	0.00	3068.0	0
Isopentane	0.048	72.144	0.1904	0.00009	0.2017	21091	42.54	3940.5	1.89145
n-pentane	0.025	72.144	0.1904	0.00005	0.1051	21052	22.12	3948.4	0.9871
n-hexane	0.101	86.169	0.2274	0.00023	0.5069	20940	106.14	4684.1	4.73096
n-heptane		86.169	0.2274	0.00000	0.0000	20940	0.00	5419.8	0
H2S		34.076	0.0911	0.00000	0.0000	7100	0.00	647.0	0
total	100.00	Average Density		0.04531	100.0000	Gross Heating Value		Gross Heating Value	
		Specific Gravity		0.59231		Btu/lb	23067	Btu/SCF	1044.3

CALCULATION OF F FACTORS

Component	Mol. Wt.	C Factor	H Factor	% volume	Fract. Wt.	Weight Percents Carbon	Hydrogen	Nitrogen	Oxygen
Hydrogen	2.016	0	1	0.00	0.0000		0		
Oxygen	32.000	0	0	0.01	0.3200				0.01879
Nitrogen	28.016	0	0	0.32	8.9931			0.528021522	
CO2	44.010	0.272273	0	0.84	36.9684	0.590983961			1.57799
CO	28.010	0.42587	0	0.00	0.0000	0			0
Methane	16.041	0.75	0.25	95.00	1523.8790	67.10458573	22.3681952		
Ethane	30.067	0.8	0.2	2.70	81.0306	3.806092316	0.95152308		
Ethylene	28.051	0.85714	0.14286	0.00	0.0000	0	0		
Propane	44.092	0.81818	0.181818	0.65	28.5275	1.370419098	0.30453795		
Propene	42.077	0.85714	0.14286	0.00	0.0000	0	0		
Isobutane	58.118	0.82759	0.17247	0.17	10.0544	0.488553874	0.10181477		
n-butane	58.118	0.82759	0.17247	0.14	8.1365	0.395361517	0.08239346		
Isobutene	56.102	0.85714	0.14286	0.00	0.0000	0	0		
Isopentane	72.144	0.83333	0.16667	0.05	3.4629	0.169433365	0.03388749		
n-pentane	72.144	0.83333	0.16667	0.03	1.8036	0.088246544	0.01764973		
n-hexane	86.169	0.83721	0.16279	0.00	0.0000	0	0		
H2S	34.076	0	0.058692	0.00	0.0000	0	0		
Totals				99.89800	1703.1760	74.01367641	23.86	0.528021522	1.59678

CALCULATED VALUES		
O2 F Factor (dry)	**8646**	DSCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
O2 F Factor (wet)	**10642**	SCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
Moisture F Factor	**1996**	SCF of Water/MM Btu of Fuel Burned @ 0% excess air
Combust. Moisture	**18.76**	volume % water in flue gas @ 0% excess air
CO2 F Factor	**1030**	DSCF of CO2/MM Btu of Fuel Burned @ 0% excess air
Carbon Dioxide	**11.91**	volume % CO2 in flue gas @ 0% O2
Predicted Fo Factor	**1.75**	EPA Method 3a Fo value
Fuel VOC % (non-C1)	**8.63%**	non-methane fuel VOC content
Fuel VOC % (non-C1,C2)	**3.78%**	non-methane non-ethane fuel VOC content

Testing By Cubix Corporation - Austin, Texas - Gainesville, Florida

Chain Of Custody Record

Report To: Cubix Corporation, SE Regional Office
Lab Contact: Leonard Brenner
3709 SW 42nd Avenue, Suite 2
Gainesville, Florida 32608
Telephone: (352) 378-0332

Bill To: Cubix Corporation
9225 Lockhart Highway
Austin, Texas 78747
Project Reference: 6574-FL1
P.O. No.: 2002185

Sample ID	Sample Description	Date Collected	Container Type	Required Analyses	Special Instructions
Sample #1A Cylinder # 1696	Natural Gas	5/7/02	300ml S.S. Cylinder	3588 ASTM D3246, D~~4888~~ & GPA 2261 5/15/02	ONLY RUN THE DUPLICATES IF THERE IS A PROBLEM WITH THE ORIGINAL SAMPLE
Sample #1B Duplicate Cylinder # 1793	Natural Gas	5/7/02	300ml S.S. Cylinder	3588 ASTM D3246, D~~4888~~ & GPA 2261 5/15/02	
Sample #2A Cylinder # 1841	Natural Gas	5/9/02	300ml S.S. Cylinder	3588 ASTM D3246, D~~4888~~ & GPA 2261 5/15/02	
Sample #2B Duplicate Cylinder # 1600	Natural Gas	5/9/02	300ml S.S. Cylinder	3588 ASTM D3246, D~~4888~~ & GPA 2261 5/15/02	

Turnaround Time Required: (Normal) Rush Report By: _____

Hazard Identification:

Relinquished by: [signature] Date: 5/13/02
Affiliation: Cubix Corporation, SE Regional Office

Other Instructions:

Received by: A. Moolaton Date: 5-15-02
Affiliation: Core

Cubix Corporation
9225 Lockhart Highway, Austin, Texas 78747
(512) 243-0202
4536 NW 20th Drive, Gainesville, Florida 32605
(352) 378-0332

FISHER-ROSEMOUNT
Managing The Process Better™

Rosemount Measurement
8200 Market Boulevard
Chanhassen, MN 55317-9687
Phone: 1-800-999-9307

May 13, 2002

Calibration Certificate Consistent with ISO 10474 3.1B

Polk Unit 3
Natural Gas

Sales Order: 913731 Line Item: 2
Equipment Name: Multi Variable Transmitter
Model No: 3095MA2CA0A12AA000ABC2Q4N508
Serial No: 0072748
Tag No: 3-FGS-FT-904
Purchase Order: 91509
Calibration Range DP (Differential Pressure): 0 To 250 IN H2O
Calibration Range SP (Static Pressure): 0 To 600 PSI
Calibration Range PT (Process Temperature): 0 To 500 DEG F
Date of Calibration: 1/21/2002

Calibration Data - DP

% of Span	Target Pressure	Measured Pressure
100	250	250.002
80	200	200.046
60	150	150.000
40	100	100.114
20	50	50.050
0	0	0.020

Calibration Data - SP

% of Span	Target Pressure	Measured Pressure
100	800	800.023
80	640	639.997
60	480	479.958
40	320	320.029
20.001	160.008	160.112
0	0	0.068

Calibration Data - PT

% of Span	Target Temperature	Measured Temperature
100	499.998	500.040
80	399.999	399.962
60	300.000	299.886
40	199.997	199.807
20	100.000	99.815
0	0.001	-0.021

CERTIFICATION

FISHER-ROSEMOUNT

Managing The Process Better™

Rosemount Measurement
8200 Market Boulevard
Chanhassen, MN 55317-9687
Phone: 1-800-999-9307

This is to certify that the listed above product meets the applicable Rosemount Specifications. Measuring and test equipment used in the manufacture and inspection of the above product listed are traceable to the National Institute of Standards and Technology. The calibration system was designed to meet the intent of ANSI Z540-1-1994.

Desiree K. Anderson

Desiree Anderson
ROSEMOUNT REPRESENTATIVE

8210 Mosley Rd.
Houston, TX 77075
713 943-9776 Telephone
713 943-3846 Facsimile

CORE LABORATORIES

LEONARD BRENNER
CUBIX CORPORATION

4536 NW 20TH DRIVE
GAINSVILLE, FL 32605

Sample Number: 122081-003
Sample Date: 5/8/02
Date Reported: 5/23/02
Date Received: 5/15/02
Sample ID: Sample # Unit 3
Description: Fuel Oil

Analytical Report

Test	Result	Units	Method	Date	Analyst
BTU, Gross	19366	BTU/lb	ASTM D-240	5/17/02	VS
Carbon/Hydrogen Content					
Carbon Content	87.07	WT %	ASTM D-5291	5/17/02	JT
Hydrogen Content	12.67	WT %		5/17/02	JT
Nitrogen Total by Chemilum.	126	ppm wt	ASTM D-4629	5/17/02	JT
Sulfur, Total by X-Ray Fluoresc.	0.039	WT %	ASTM D-4294	5/16/02	CB

Approved By: Jean Waits
Supervising Chemist

Fuel Oil F Factor Calculation

Client: Tampa Electric Company
Sample ID: Unit 3, Polk Power Station
Laboratory ID: 122081-003
Date Collected: May 8, 2002
Date Analyzed: May 16-17, 2002
Lab: Core Laboratories

Heating Value	19,366	Btu/lb gross
Heating Value	18,210	Btu/lb, net

	Fuel Analysis Data		K	Fractional K
Component	ppm weight	Weight %	(scf/lb-%)	(wt.% x K)
Carbon	-	87.07	1.53	133.217
Hydrogen	-	12.67	3.64	46.119
Nitrogen	-	0.01	0.14	0.000
Oxygen	-	0.21	0.46	0.096
Sulfur	-	0.039	0.57	0.022
Total Volume	-	100.0		

O_2 F_d-factor	9257	DSCF of Flue Gas/MMBtu @ 0% excess air
O_2 F_w-factor	10519	SCF of Flue Gas (wet)/MMBtu @ 0% excess air
CO_2 F_c-factor	1443	SCF of CO_2/MMBtu @ 0% excess air
H_2O F factor	1263	SCF of H_20/MMBtu @ 0% excess air

Chain Of Custody Record

Report To: Cubix Corporation, SE Regional Office
Lab Contact: Leonard Brenner
3709 SW 42nd Avenue, Suite 2
Gainesville, Florida 32608
Telephone: (352) 378-0332

Bill To: Cubix Corporation
9225 Lockhart Highway
Austin, Texas 78747
Project Reference: 6574-FL1
P.O. No.: 2002185

Sample ID	Sample Description	Date Collected	Container Type	Required Analyses	Special Instructions
Sample #Unit 3	Fuel Oil	5/8/02	1 liter glass jar	ASTM D4294, D4629, D5291, D240	

Turnaround Time Required: (Normal) Rush Report By: _____

Hazard Identification:

Relinquished by: _____ Date: _____
Affiliation: Cubix Corporation, SE Regional Office

Other Instructions:

Received by: A-M. [illegible] Date: 5-15-02
Affiliation: Cow

Cubix Corporation
9225 Lockhart Highway, Austin, Texas 78747
(512) 243-0202
4536 NW 20th Drive, Gainesville, Florida 32605
(352) 378-0332

Bobo Barthdette
fax 38220

FUEL OIL, Polk Unit 3

ABB

Vortex Flowmeter Calibration Test Report

Sales Order No.:306965 Date :3 OCT 2001
Serial No.:01W034112 Line Item:2
Meter Size :4 inch Model No.:1CVM111186
Sec. Serial No.:01W034113 Sec Model No.:50VM1301
Flow: 44.100 to 1100.000 GPM
SP.GR.: 1.000
Viscosity : 1 CPS Temp. :70°F
Starting K 1300 Cyc/m3
Middle K 1348 Cyc/m3 @ 70°F
Max Freq. 101.03 Hz
Total Linearity 1.3495

Calibration Data

Run#	Rig Std.	Master Meter Hertz	K-Cyc/Gal	Actual GPM	4-20ma	Test Meter Ind GPM	Hz/cSt	K-Cyc/m3	Rate
01	3-T1-C44	433.55	51.269	507.390	17.90	521.34	40.574	1335.7	-.913
02	3-T1-C44	247.49	51.301	289.456	12.04	301.69	23.480	1354.9	+.516
03	3-T1-C44	152.61	51.347	178.322	8.98	186.77	14.536	1361.5	+1.000
04	2-T1-C46	290.50	126.370	137.926	7.85	144.20	11.224	1359.1	+.823
05	2-T1-C46	140.00	126.322	66.498	5.85	69.40	5.402	1356.8	+.653
06	2-T1-C46	99.38	126.381	44.331	5.24	46.37	3.609	1359.7	+.865

Note: Test Meter K-Cyc/m3 are @ 70°F

Rig Visc. :1.05366 cSt Test Performed by :G. Myers

Linearization Factors At Operating Temperature

F1=	1.0	K1=	1367.2
F2=	5.0	K2=	1357.0
F3=	14.0	K3=	1361.7
F4=	40.0	K4=	1336.5
F5=	550.0	K5=	1336.5

Comparison of Calibration K-factors to Linearization K-factors

Run#	Hertz	K-Cyc/m3	Est. k	Rate
01	40.61	1335.7	1336.5	+.056
02	23.50	1354.9	1352.5	-.182
03	14.55	1361.5	1361.1	-.030
04	11.23	1359.1	1360.2	+.083
05	5.41	1356.8	1357.2	+.033
06	3.61	1359.7	1360.6	+.063

The Measurement and Test equipment, used in the calibration of this meter, is traceable to NIST and is controlled by a
Quality System designed to meet the requirements of ANSI/Z540 and ISO 9001.

Customer's Tag(s) :3)10U

3-FOY-FOIT-901

TEST EQUIPMENT
QC # Description
E3222 VOLTMETER E3233 RELAY MULTIPLEXER
E3072 4H FREQ. COUNTER T*137 THERMISTOR

ABB Inc.
Automation Technology
Products Division
Business Unit Instrumentation
125 East County Line Road
Warminster PA 18974-4995
USA
Telephone
(215) 674-6000
Fax
(215) 674-7183
Internet
www.abb.com/instrumentation
E-mail
instrumentation@us.abb.com

APPENDIX D:
QUALITY ASSURANCE ACTIVITIES

Calibration Error, Bias, and Drift Checks

Linearity Check	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppmv), O_2 & CO_2 in % vol	16.00	30.00	25.00	15.00	30.00
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Low Level Certified Value (ppm or % vol)	5.05	8.92	4.53	4.54	9.06
Mid Level Certified Value (ppm or % vol)	8.60	15.26	11.91	8.00	15.36
High Level Certified Value (ppm or % vol)	14.82	25.80	20.90	12.62	25.60
Zero Target (% Chart)	2.0	5.0	10.0	2.0	5.0
Low Level Target (% Chart)	33.6	34.7	28.1	32.3	35.2
Mid Level Target (% Chart)	55.8	55.9	57.6	55.4	56.2
High Level Target (% Chart)	94.6	91.0	93.6	86.1	90.3
Zero Observed (% Chart)	2.1	5.0	10.0	2.0	5.0
Low Level Observed (% Chart)	32.9	35.4	28.1	32.3	35.9
Mid Level Observed (% Chart)	55.2	55.8	57.8	55.5	56.3
High Level Observed (% Chart)	94.9	91.1	93.6	86.1	90.5
Zero Observed (ppm or % vol)	0.02	0.00	0.00	0.00	0.01
Low Level Observed (ppm or % vol)	4.94	9.11	4.52	4.55	9.26
Mid Level Observed (ppm or % vol)	8.51	15.23	11.95	8.03	15.38
High Level Observed (ppm or % vol)	14.86	25.82	20.91	12.62	25.65
% Difference From Zero to Target	-0.1	0.0	0.0	0.0	0.0
% Difference From Low to Target	0.7	-0.6	0.0	-0.1	-2.2
% Difference From Mid to Target	0.6	0.1	-0.2	-0.2	-0.1
% Difference. From High to Target	-0.3	-0.1	0.0	0.0	-0.2
EPA Allowable % Difference from Target	±2% Span	±2% Span	±2% Span	±2% Span	±5% Cal Gas

Run U3-NG-O_2-Traverse	NO_X		O_2	CO_2	
Analyzer Range (ppm), O_2 & CO_2 in %	16.0		25.00	15.00	
Calibration Gas Certified Value (ppm or %)	8.60		20.90	4.54	
Strip Chart Offset	2.0		10.0	2.0	
Target Calibration Gas (Chart %)	55.8		93.6	32.3	
Actual Zero Gas from Direct (Chart %)	2.1		10.0	2.0	
Actual Calibration Gas from Direct (Chart %)	55.2		93.6	32.3	
Initial Readings					
Zero Gas (chart %)	2.5		10.1	2.0	
Calibration Gas (chart %)	55.6		93.3	32.1	
Zero Gas (ppmv)	0.08		0.03	0.00	
Calibration Gas (ppmv)	8.57		20.82	4.51	
Final Readings					
Zero Gas (chart %)	2.8		10.1	2.1	
Calibration Gas (chart %)	54.7		93.2	32.1	
Zero Gas (ppmv)	0.12		0.03	0.01	
Calibration Gas (ppmv)	8.43		20.81	4.52	
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.6		0.1	0.1	
Calibration Bias (% Chart) ≤5%	-0.5		-0.4	-0.2	
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	-0.3		0.0	-0.1	
Calibration Drift (Chart %) ≤2 or 3%	0.9		0.0	-0.1	
Run Results					
Raw Results (chart %)	72.7		65.2	29.2	
Raw Results (ppmv or % vol)	11.31		13.80	4.09	
Corrected Results (ppmv or % vol) from % chart	11.47		13.85	4.11	

Calibration Error, Bias, and Drift Checks

Run U3-NG-100%-1/U3-RA-1	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	30.0	25.00	15.00	30.00
Calibration Gas Certified Value (ppm or %)	8.60	15.26	20.90	4.54	15.36
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	55.8	55.9	93.6	32.3	56.2
Actual Zero Gas from Direct (Chart %)	2.1	5.0	10.0	2.0	5.0
Actual Calibration Gas from Direct (Chart %)	55.2	55.8	93.6	32.3	56.3
Initial Readings					
Zero Gas (chart %)	2.8	5.6	10.1	2.1	4.9
Calibration Gas (chart %)	54.7	56.2	93.2	32.1	55.5
Zero Gas (ppmv)	0.12	0.18	0.03	0.01	-0.02
Calibration Gas (ppmv)	8.43	15.35	20.81	4.52	15.16
Final Readings					
Zero Gas (chart %)	2.5	5.5	10.1	2.1	4.8
Calibration Gas (chart %)	54.5	56.2	93.2	32.2	56.3
Zero Gas (ppmv)	0.08	0.15	0.02	0.01	-0.05
Calibration Gas (ppmv)	8.40	15.35	20.79	4.53	15.38
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.4	0.5	0.1	0.1	-0.2
Calibration Bias (% Chart) ≤5%	-0.7	0:4	-0.5	-0.1	0.0
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.3	0.1	0.0	0.0	0.1
Calibration Drift (Chart %) ≤2 or 3%	0.2	0.0	0.1	-0.1	-0.7
Run Results					
Raw Results (chart %)	59.6	6.4	64.6	29.9	6.8
Raw Results (ppmv or % vol)	9.22	0.42	13.66	4.18	0.53
Corrected Results (ppmv or % vol) from % chart	9.43	0.26	13.72	4.19	0.57

Run U3-NG-100%-2/U3-RA-2	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	30.0	25.00	15.00	30.00
Calibration Gas Certified Value (ppm or %)	8.60	15.26	20.90	4.54	15.36
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	55.8	55.9	93.6	32.3	56.2
Actual Zero Gas from Direct (Chart %)	2.1	5.0	10.0	2.0	5.0
Actual Calibration Gas from Direct (Chart %)	55.2	55.8	93.6	32.3	56.3
Initial Readings					
Zero Gas (chart %)	2.5	5.5	10.1	2.1	4.8
Calibration Gas (chart %)	54.5	56.2	93.2	32.2	56.3
Zero Gas (ppmv)	0.08	0.15	0.02	0.01	-0.05
Calibration Gas (ppmv)	8.40	15.35	20.79	4.53	15.38
Final Readings					
Zero Gas (chart %)	2.4	5.6	10.0	2.0	5.2
Calibration Gas (chart %)	53.7	56.1	93.0	32.1	55.0
Zero Gas (ppmv)	0.07	0.18	0.01	0.00	0.07
Calibration Gas (ppmv)	8.27	15.32	20.75	4.52	15.01
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	0.6	0.0	0.0	0.2
Calibration Bias (% Chart) ≤5%	-1.5	0.3	-0.6	-0.2	-1.2
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.1	-0.1	0.0	0.1	-0.4
Calibration Drift (Chart %) ≤2 or 3%	0.8	0.1	0.2	0.1	1.2
Run Results					
Raw Results (chart %)	59.0	6.3	64.6	29.7	6.9
Raw Results (ppmv or % vol)	9.12	0.38	13.64	4.15	0.57
Corrected Results (ppmv or % vol) from % chart	9.42	0.22	13.72	4.16	0.57

Calibration Error, Bias, and Drift Checks

Run U3-NG-100%-3/U3-RA-3	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	30.0	25.00	15.00	30.00
Calibration Gas Certified Value (ppm or %)	8.60	15.26	20.90	4.54	15.36
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	55.8	55.9	93.6	32.3	56.2
Actual Zero Gas from Direct (Chart %)	2.1	5.0	10.0	2.0	5.0
Actual Calibration Gas from Direct (Chart %)	55.2	55.8	93.6	32.3	56.3
Initial Readings					
Zero Gas (chart %)	2.4	5.6	10.0	2.0	5.2
Calibration Gas (chart %)	53.7	56.1	93.0	32.1	55.0
Zero Gas (ppmv)	0.07	0.18	0.01	0.00	0.07
Calibration Gas (ppmv)	8.27	15.32	20.75	4.52	15.01
Final Readings					
Zero Gas (chart %)	2.3	5.5	10.0	2.0	5.2
Calibration Gas (chart %)	53.3	55.9	93.0	32.1	54.5
Zero Gas (ppmv)	0.05	0.15	0.01	0.00	0.05
Calibration Gas (ppmv)	8.20	15.26	20.75	4.51	14.86
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	0.5	0.0	0.0	0.1
Calibration Bias (% Chart) ≤5%	-1.9	0.1	-0.6	-0.3	-1.7
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.1	0.1	0.0	0.0	0.1
Calibration Drift (Chart %) ≤2 or 3%	0.4	0.2	0.0	0.1	0.5
Run Results					
Raw Results (chart %)	58.2	6.2	64.6	29.6	6.5
Raw Results (ppmv or % vol)	8.99	0.37	13.65	4.14	0.45
Corrected Results (ppmv or % vol) from % chart	9.39	0.21	13.75	4.16	0.40

Linearity Check	NO_X		O_2	CO_2	
Analyzer Range (ppmv), O_2 & CO_2 in % vol	16.00		25.00	15.00	
Strip Chart Offset	2.0		10.0	2.0	
Low Level Certified Value (ppm or % vol)	5.05		4.53	4.54	
Mid Level Certified Value (ppm or % vol)	8.60		11.91	8.00	
High Level Certified Value (ppm or % vol)	14.82		20.90	12.62	
Zero Target (% Chart)	2.0		10.0	2.0	
Low Level Target (% Chart)	33.6		28.1	32.3	
Mid Level Target (% Chart)	55.8		57.6	55.4	
High Level Target (% Chart)	94.6		93.6	86.1	
Zero Observed (% Chart)	2.1		10.0	2.0	
Low Level Observed (% Chart)	32.8		28.2	32.3	
Mid Level Observed (% Chart)	55.8		57.8	55.3	
High Level Observed (% Chart)	94.0		93.6	86.1	
Zero Observed (ppm or % vol)	0.02		0.00	0.00	
Low Level Observed (ppm or % vol)	4.93		4.54	4.54	
Mid Level Observed (ppm or % vol)	8.60		11.95	8.00	
High Level Observed (ppm or % vol)	14.72		20.91	12.62	
% Difference From Zero to Target	-0.1		0.0	0.0	
% Difference From Low to Target	0.8		0.0	0.0	
% Difference From Mid to Target	0.0		-0.2	0.0	
% Difference. From High to Target	0.6		0.0	0.0	
EPA Allowable % Difference from Target	±2% Span		±2% Span	±2% Span	

Calibration Error, Bias, and Drift Checks

Run U3-NG-50%-1	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	8.60	20.90	4.54
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)	2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	55.2	93.6	32.3
Initial Readings			
Zero Gas (chart %)	2.2	10.0	2.1
Calibration Gas (chart %)	53.4	93.2	32.1
Zero Gas (ppmv)	0.03	0.00	0.02
Calibration Gas (ppmv)	8.23	20.80	4.51
Final Readings			
Zero Gas (chart %)	2.5	10.1	2.1
Calibration Gas (chart %)	53.1	93.2	32.2
Zero Gas (ppmv)	0.08	0.02	0.02
Calibration Gas (ppmv)	8.17	20.79	4.53
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.4	0.1	0.1
Calibration Bias (% Chart) ≤5%	-2.1	-0.5	-0.1
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	-0.3	-0.1	0.0
Calibration Drift (Chart %) ≤2 or 3%	0.4	0.0	-0.1
Run Results			
Raw Results (chart %)	56.6	65.9	28.7
Raw Results (ppmv or % vol)	8.74	13.98	4.00
Corrected Results (ppmv or % vol) from % chart	9.17	14.05	4.02

Run U3-NG-50%-2	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	8.60	20.90	4.54
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)	2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	55.2	93.6	32.3
Initial Readings			
Zero Gas (chart %)	2.5	10.1	2.1
Calibration Gas (chart %)	53.1	93.2	32.2
Zero Gas (ppmv)	0.08	0.02	0.02
Calibration Gas (ppmv)	8.17	20.79	4.53
Final Readings			
Zero Gas (chart %)	2.6	10.0	2.1
Calibration Gas (chart %)	53.3	93.3	32.1
Zero Gas (ppmv)	0.10	0.01	0.02
Calibration Gas (ppmv)	8.20	20.83	4.52
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.5	0.0	0.1
Calibration Bias (% Chart) ≤5%	-1.9	-0.3	-0.2
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	-0.1	0.0	0.0
Calibration Drift (Chart %) ≤2 or 3%	-0.2	-0.2	0.1
Run Results			
Raw Results (chart %)	55.8	66.0	28.7
Raw Results (ppmv or % vol)	8.60	13.99	4.00
Corrected Results (ppmv or % vol) from % chart	9.04	14.05	4.01

Calibration Error, Bias, and Drift Checks

Run U3-NG-50%-3	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	8.60	20.90	4.54
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)	2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	55.2	93.6	32.3
Initial Readings			
Zero Gas (chart %)	2.6	10.0	2.1
Calibration Gas (chart %)	53.3	93.3	32.1
Zero Gas (ppmv)	0.10	0.01	0.02
Calibration Gas (ppmv)	8.20	20.83	4.52
Final Readings			
Zero Gas (chart %)	2.5	10.1	2.2
Calibration Gas (chart %)	52.9	93.3	32.2
Zero Gas (ppmv)	0.08	0.02	0.03
Calibration Gas (ppmv)	8.14	20.82	4.53
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.4	0.1	0.2
Calibration Bias (% Chart) ≤5%	-2.3	-0.4	-0.1
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.1	0.0	-0.1
Calibration Drift (Chart %) ≤2 or 3%	0.4	0.0	-0.1
Run Results			
Raw Results (chart %)	56.1	65.9	28.7
Raw Results (ppmv or % vol)	8.66	13.97	4.00
Corrected Results (ppmv or % vol) from % chart	9.12	14.02	4.01

Run U3-NG-65%-1	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	8.60	20.90	4.54
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)	2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	55.2	93.6	32.3
Initial Readings			
Zero Gas (chart %)	2.5	10.1	2.2
Calibration Gas (chart %)	52.9	93.3	32.2
Zero Gas (ppmv)	0.08	0.02	0.03
Calibration Gas (ppmv)	8.14	20.82	4.53
Final Readings			
Zero Gas (chart %)	2.4	10.0	2.1
Calibration Gas (chart %)	52.3	93.2	32.1
Zero Gas (ppmv)	0.07	0.01	0.02
Calibration Gas (ppmv)	8.04	20.80	4.52
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	0.0	0.1
Calibration Bias (% Chart) ≤5%	-2.9	-0.4	-0.2
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.1	0.0	0.1
Calibration Drift (Chart %) ≤2 or 3%	0.6	0.1	0.1
Run Results			
Raw Results (chart %)	52.9	64.8	29.6
Raw Results (ppmv or % vol)	8.14	13.71	4.14
Corrected Results (ppmv or % vol) from % chart	8.65	13.76	4.15

Calibration Error, Bias, and Drift Checks

Run U3-NG-65%-2		NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %		16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)		8.60	20.90	4.54
Strip Chart Offset		2.0	10.0	2.0
Target Calibration Gas (Chart %)		55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)		2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)		55.2	93.6	32.3
Initial Readings				
Zero Gas (chart %)		2.4	10.0	2.1
Calibration Gas (chart %)		52.3	93.2	32.1
Zero Gas (ppmv)		0.07	0.01	0.02
Calibration Gas (ppmv)		8.04	20.80	4.52
Final Readings				
Zero Gas (chart %)		2.4	10.0	2.1
Calibration Gas (chart %)		51.9	93.2	32.1
Zero Gas (ppmv)		0.07	0.01	0.02
Calibration Gas (ppmv)		7.99	20.81	4.52
Bias and Drift Calculations				
Zero Bias (% Chart) (Run-Direct Cal)	≤5%	0.3	0.0	0.1
Calibration Bias (% Chart)	≤5%	-3.3	-0.4	-0.2
Zero Drift (Chart %) (Run-Run)	≤2 or 3%	0.0	0.0	0.0
Calibration Drift (Chart %)	≤2 or 3%	0.3	0.0	0.0
Run Results				
Raw Results (chart %)		52.3	64.9	29.6
Raw Results (ppmv or % vol)		8.04	13.72	4.14
Corrected Results (ppmv or % vol) from % chart		8.63	13.78	4.16

Run U3-NG-65%-3		NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %		16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)		8.60	20.90	4.54
Strip Chart Offset		2.0	10.0	2.0
Target Calibration Gas (Chart %)		55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)		2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)		55.2	93.6	32.3
Initial Readings				
Zero Gas (chart %)		2.4	10.0	2.1
Calibration Gas (chart %)		51.9	93.2	32.1
Zero Gas (ppmv)		0.07	0.01	0.02
Calibration Gas (ppmv)		7.99	20.81	4.52
Final Readings				
Zero Gas (chart %)		2.5	10.0	2.2
Calibration Gas (chart %)		52.1	93.2	32.2
Zero Gas (ppmv)		0.08	0.01	0.03
Calibration Gas (ppmv)		8.01	20.80	4.53
Bias and Drift Calculations				
Zero Bias (% Chart) (Run-Direct Cal)	≤5%	0.4	0.0	0.2
Calibration Bias (% Chart)	≤5%	-3.1	-0.4	-0.1
Zero Drift (Chart %) (Run-Run)	≤2 or 3%	-0.1	0.0	-0.1
Calibration Drift (Chart %)	≤2 or 3%	-0.1	0.0	-0.1
Run Results				
Raw Results (chart %)		52.4	64.9	29.5
Raw Results (ppmv or % vol)		8.06	13.72	4.13
Corrected Results (ppmv or % vol) from % chart		8.67	13.78	4.14

Calibration Error, Bias, and Drift Checks

Run U3-NG-80%-1	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	8.60	20.90	4.54
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)	2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	55.2	93.6	32.3
Initial Readings			
Zero Gas (chart %)	2.5	10.0	2.2
Calibration Gas (chart %)	52.1	93.2	32.2
Zero Gas (ppmv)	0.08	0.01	0.03
Calibration Gas (ppmv)	8.01	20.80	4.53
Final Readings			
Zero Gas (chart %)	2.3	10.0	2.2
Calibration Gas (chart %)	52.1	93.2	32.1
Zero Gas (ppmv)	0.05	0.01	0.03
Calibration Gas (ppmv)	8.02	20.81	4.52
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	0.0	0.2
Calibration Bias (% Chart) ≤5%	-3.1	-0.4	-0.2
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.2	0.0	0.0
Calibration Drift (Chart %) ≤2 or 3%	-0.1	0.0	0.1
Run Results			
Raw Results (chart %)	50.4	64.8	29.6
Raw Results (ppmv or % vol)	7.74	13.71	4.14
Corrected Results (ppmv or % vol) from % chart	8.30	13.77	4.15

Run U3-NG-80%-2	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	8.60	20.90	4.54
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)	2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	55.2	93.6	32.3
Initial Readings			
Zero Gas (chart %)	2.3	10.0	2.2
Calibration Gas (chart %)	52.1	93.2	32.1
Zero Gas (ppmv)	0.05	0.01	0.03
Calibration Gas (ppmv)	8.02	20.81	4.52
Final Readings			
Zero Gas (chart %)	2.3	10.0	2.1
Calibration Gas (chart %)	51.6	93.1	32.1
Zero Gas (ppmv)	0.05	0.01	0.02
Calibration Gas (ppmv)	7.93	20.77	4.52
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	0.0	0.1
Calibration Bias (% Chart) ≤5%	-3.6	-0.6	-0.2
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.0	0.1
Calibration Drift (Chart %) ≤2 or 3%	0.6	0.2	0.0
Run Results			
Raw Results (chart %)	50.0	64.8	29.5
Raw Results (ppmv or % vol)	7.68	13.70	4.13
Corrected Results (ppmv or % vol) from % chart	8.28	13.77	4.15

Calibration Error, Bias, and Drift Checks

Run U3-NG-80%-3	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	16.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	8.60	20.90	4.54
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	55.8	93.6	32.3
Actual Zero Gas from Direct (Chart %)	2.1	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	55.2	93.6	32.3
Initial Readings			
Zero Gas (chart %)	2.3	10.0	2.1
Calibration Gas (chart %)	51.6	93.1	32.1
Zero Gas (ppmv)	0.05	0.01	0.02
Calibration Gas (ppmv)	7.93	20.77	4.52
Final Readings			
Zero Gas (chart %)	2.2	10.0	2.1
Calibration Gas (chart %)	51.6	93.2	32.1
Zero Gas (ppmv)	0.03	0.00	0.01
Calibration Gas (ppmv)	7.94	20.79	4.51
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.1	0.0	0.1
Calibration Bias (% Chart) ≤5%	-3.6	-0.5	-0.3
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.1	0.0	0.1
Calibration Drift (Chart %) ≤2 or 3%	-0.1	-0.1	0.1
Run Results			
Raw Results (chart %)	49.8	64.8	29.5
Raw Results (ppmv or % vol)	7.64	13.70	4.12
Corrected Results (ppmv or % vol) from % chart	8.28	13.78	4.14

Linearity Check	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppmv), O_2 & CO_2 in % vol	100.00	30.00	25.00	15.00	30.00
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Low Level Certified Value (ppm or % vol)	23.0	8.92	4.53	4.54	9.06
Mid Level Certified Value (ppm or % vol)	46.2	15.26	11.91	8.00	15.36
High Level Certified Value (ppm or % vol)	85.1	25.80	20.90	12.62	25.60
Zero Target (% Chart)	2.0	5.0	10.0	2.0	5.0
Low Level Target (% Chart)	25.0	34.7	28.1	32.3	35.2
Mid Level Target (% Chart)	48.2	55.9	57.6	55.4	56.2
High Level Target (% Chart)	87.1	91.0	93.6	86.1	90.3
Zero Observed (% Chart)	2.0	5.0	10.0	2.0	4.9
Low Level Observed (% Chart)	24.8	35.5	28.1	32.3	35.7
Mid Level Observed (% Chart)	48.2	55.8	57.7	55.3	56.2
High Level Observed (% Chart)	88.4	91.0	93.6	86.0	90.3
Zero Observed (ppm or % vol)	0.01	0.00	0.00	0.00	-0.02
Low Level Observed (ppm or % vol)	22.84	9.14	4.53	4.54	9.21
Mid Level Observed (ppm or % vol)	46.15	15.25	11.93	7.99	15.35
High Level Observed (ppm or % vol)	86.39	25.81	20.89	12.60	25.59
% Difference From Zero to Target	0.0	0.0	0.0	0.0	0.1
% Difference From Low to Target	0.2	-0.7	0.0	0.0	-1.7
% Difference From Mid to Target	0.1	0.0	-0.1	0.1	0.1
% Difference. From High to Target	-1.3	0.0	0.0	0.1	0.0
EPA Allowable % Difference from Target	±2% Span	±2% Span	±2% Span	±2% Span	±5% Cal Gas

Run U3-Oil-O_2-Traverse	NO_X		O_2	CO_2	
Analyzer Range (ppm), O_2 & CO_2 in %	100.0		25.00	15.00	
Calibration Gas Certified Value (ppm or %)	46.20		20.90	4.54	
Strip Chart Offset	2.0		10.0	2.0	
Target Calibration Gas (Chart %)	48.2		93.6	32.3	
Actual Zero Gas from Direct (Chart %)	2.0		10.0	2.0	
Actual Calibration Gas from Direct (Chart %)	48.2		93.6	32.3	
Initial Readings					
Zero Gas (chart %)	2.2		10.1	2.2	
Calibration Gas (chart %)	48.1		93.0	32.1	
Zero Gas (ppmv)	0.21		0.02	0.03	
Calibration Gas (ppmv)	46.05		20.75	4.52	
Final Readings					
Zero Gas (chart %)	2.2		10.1	2.3	
Calibration Gas (chart %)	47.8		93.1	32.2	
Zero Gas (ppmv)	0.21		0.03	0.05	
Calibration Gas (ppmv)	45.75		20.78	4.53	
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2		0.1	0.3	
Calibration Bias (% Chart) ≤5%	-0.4		-0.4	-0.1	
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0		0.0	-0.1	
Calibration Drift (Chart %) ≤2 or 3%	0.3		-0.1	-0.1	
Run Results					
Raw Results (chart %)	50.3		61.9	41.6	
Raw Results (ppmv or % vol)	48.26		12.96	5.94	
Corrected Results (ppmv or % vol) from % chart	48.58		13.04	5.97	

Calibration Error, Bias, and Drift Checks

Run U3-Oil-50%-1	NO_x	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.2	10.1	2.3
Calibration Gas (chart %)	47.8	57.4	55.0
Zero Gas (ppmv)	0.21	0.03	0.05
Calibration Gas (ppmv)	45.75	11.85	7.95
Final Readings			
Zero Gas (chart %)	2.2	10.1	2.4
Calibration Gas (chart %)	47.6	57.5	55.2
Zero Gas (ppmv)	0.21	0.02	0.06
Calibration Gas (ppmv)	45.55	11.87	7.98
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	0.1	0.4
Calibration Bias (% Chart) ≤5%	-0.6	-0.2	-0.1
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.0	-0.1
Calibration Drift (Chart %) ≤2 or 3%	0.2	-0.1	-0.2
Run Results			
Raw Results (chart %)	50.3	62.0	41.5
Raw Results (ppmv or % vol)	48.25	12.99	5.93
Corrected Results (ppmv or % vol) from % chart	48.84	13.05	5.94

Run U3-Oil-50%-2	NO_x	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.2	10.1	2.4
Calibration Gas (chart %)	47.6	57.5	55.2
Zero Gas (ppmv)	0.21	0.02	0.06
Calibration Gas (ppmv)	45.55	11.87	7.98
Final Readings			
Zero Gas (chart %)	2.2	10.0	2.3
Calibration Gas (chart %)	47.4	57.4	55.1
Zero Gas (ppmv)	0.21	0.01	0.05
Calibration Gas (ppmv)	45.35	11.86	7.97
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	0.0	0.3
Calibration Bias (% Chart) ≤5%	-0.8	-0.3	-0.1
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.0	0.1
Calibration Drift (Chart %) ≤2 or 3%	0.2	0.0	0.1
Run Results			
Raw Results (chart %)	49.8	61.9	41.5
Raw Results (ppmv or % vol)	47.81	12.97	5.93
Corrected Results (ppmv or % vol) from % chart	48.61	13.02	5.93

Calibration Error, Bias, and Drift Checks

Run U3-Oil-50%-3	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.2	10.0	2.3
Calibration Gas (chart %)	47.4	57.4	55.1
Zero Gas (ppmv)	0.21	0.01	0.05
Calibration Gas (ppmv)	45.35	11.86	7.97
Final Readings			
Zero Gas (chart %)	2.2	10.2	2.5
Calibration Gas (chart %)	47.2	57.4	55.1
Zero Gas (ppmv)	0.21	0.04	0.07
Calibration Gas (ppmv)	45.15	11.86	7.96
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	0.2	0.5
Calibration Bias (% Chart) ≤5%	-1.0	-0.3	-0.2
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	-0.1	-0.1
Calibration Drift (Chart %) ≤2 or 3%	0.2	0.0	0.1
Run Results			
Raw Results (chart %)	49.5	62.0	41.5
Raw Results (ppmv or % vol)	47.53	12.99	5.93
Corrected Results (ppmv or % vol) from % chart	48.54	13.05	5.94

Run U3-Oil-65%-1	NO_X	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.2	10.2	2.5
Calibration Gas (chart %)	47.2	57.4	55.1
Zero Gas (ppmv)	0.21	0.04	0.07
Calibration Gas (ppmv)	45.15	11.86	7.96
Final Readings			
Zero Gas (chart %)	2.3	10.2	2.6
Calibration Gas (chart %)	47.2	57.4	55.0
Zero Gas (ppmv)	0.31	0.05	0.09
Calibration Gas (ppmv)	45.16	11.85	7.95
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	0.2	0.6
Calibration Bias (% Chart) ≤5%	-1.0	-0.3	-0.3
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	-0.1	0.0	-0.1
Calibration Drift (Chart %) ≤2 or 3%	0.0	0.0	0.1
Run Results			
Raw Results (chart %)	51.8	60.2	43.7
Raw Results (ppmv or % vol)	49.82	12.55	6.26
Corrected Results (ppmv or % vol) from % chart	51.00	12.61	6.28

Calibration Error, Bias, and Drift Checks

Run U3-Oil-65%-2	NO_x	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.3	10.2	2.6
Calibration Gas (chart %)	47.2	57.4	55.0
Zero Gas (ppmv)	0.31	0.05	0.09
Calibration Gas (ppmv)	45.16	11.85	7.95
Final Readings			
Zero Gas (chart %)	2.3	10.2	2.5
Calibration Gas (chart %)	46.9	57.3	55.0
Zero Gas (ppmv)	0.31	0.04	0.07
Calibration Gas (ppmv)	44.85	11.83	7.95
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	0.2	0.5
Calibration Bias (% Chart) ≤5%	-1.3	-0.4	-0.3
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.0	0.1
Calibration Drift (Chart %) ≤2 or 3%	0.3	0.1	0.0
Run Results			
Raw Results (chart %)	51.7	60.2	43.7
Raw Results (ppmv or % vol)	49.68	12.56	6.25
Corrected Results (ppmv or % vol) from % chart	51.03	12.64	6.27

Run U3-Oil-65%-3	NO_x	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.3	10.2	2.5
Calibration Gas (chart %)	46.9	57.3	55.0
Zero Gas (ppmv)	0.31	0.04	0.07
Calibration Gas (ppmv)	44.85	11.83	7.95
Final Readings			
Zero Gas (chart %)	2.3	10.1	2.4
Calibration Gas (chart %)	47.2	57.3	55.0
Zero Gas (ppmv)	0.31	0.02	0.06
Calibration Gas (ppmv)	45.15	11.83	7.95
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	0.1	0.4
Calibration Bias (% Chart) ≤5%	-1.0	-0.4	-0.3
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.1	0.1
Calibration Drift (Chart %) ≤2 or 3%	-0.3	0.0	0.0
Run Results			
Raw Results (chart %)	51.5	60.2	43.6
Raw Results (ppmv or % vol)	49.53	12.54	6.24
Corrected Results (ppmv or % vol) from % chart	50.88	12.63	6.27

Calibration Error, Bias, and Drift Checks

Run U3-Oil-80%-1	NO_x	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.3	10.1	2.4
Calibration Gas (chart %)	47.2	57.3	55.0
Zero Gas (ppmv)	0.31	0.02	0.06
Calibration Gas (ppmv)	45.15	11.83	7.95
Final Readings			
Zero Gas (chart %)	2.3	10.0	2.3
Calibration Gas (chart %)	47.4	57.4	54.9
Zero Gas (ppmv)	0.33	0.00	0.05
Calibration Gas (ppmv)	45.35	11.84	7.94
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	0.0	0.3
Calibration Bias (% Chart) ≤5%	-0.8	-0.4	-0.3
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.1	0.1
Calibration Drift (Chart %) ≤2 or 3%	-0.2	0.0	0.1
Run Results			
Raw Results (chart %)	52.5	59.8	44.1
Raw Results (ppmv or % vol)	50.52	12.44	6.31
Corrected Results (ppmv or % vol) from % chart	51.62	12.52	6.34

Run U3-Oil-80%-2	NO_x	O_2	CO_2
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	25.00	15.00
Calibration Gas Certified Value (ppm or %)	46.20	11.91	8.00
Strip Chart Offset	2.0	10.0	2.0
Target Calibration Gas (Chart %)	48.2	57.6	55.3
Actual Zero Gas from Direct (Chart %)	2.0	10.0	2.0
Actual Calibration Gas from Direct (Chart %)	48.2	57.7	55.3
Initial Readings			
Zero Gas (chart %)	2.3	10.0	2.3
Calibration Gas (chart %)	47.4	57.4	54.9
Zero Gas (ppmv)	0.33	0.00	0.05
Calibration Gas (ppmv)	45.35	11.84	7.94
Final Readings			
Zero Gas (chart %)	2.3	10.0	2.4
Calibration Gas (chart %)	46.7	57.4	54.9
Zero Gas (ppmv)	0.31	0.01	0.06
Calibration Gas (ppmv)	44.74	11.84	7.94
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	0.0	0.4
Calibration Bias (% Chart) ≤5%	-1.4	-0.4	-0.3
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.0	-0.1
Calibration Drift (Chart %) ≤2 or 3%	0.6	0.0	0.0
Run Results			
Raw Results (chart %)	52.9	59.8	44.1
Raw Results (ppmv or % vol)	50.93	12.44	6.31
Corrected Results (ppmv or % vol) from % chart	52.28	12.51	6.35

Calibration Error, Bias, and Drift Checks

Run U3-Oil-80%-3	NO_X		O_2	CO_2	
Analyzer Range (ppm), O_2 & CO_2 in %	100.0		25.00	15.00	
Calibration Gas Certified Value (ppm or %)	46.20		11.91	8.00	
Strip Chart Offset	2.0		10.0	2.0	
Target Calibration Gas (Chart %)	48.2		57.6	55.3	
Actual Zero Gas from Direct (Chart %)	2.0		10.0	2.0	
Actual Calibration Gas from Direct (Chart %)	48.2		57.7	55.3	
Initial Readings					
Zero Gas (chart %)	2.3		10.0	2.4	
Calibration Gas (chart %)	46.7		57.4	54.9	
Zero Gas (ppmv)	0.31		0.01	0.06	
Calibration Gas (ppmv)	44.74		11.84	7.94	
Final Readings					
Zero Gas (chart %)	2.1		10.2	2.0	
Calibration Gas (chart %)	46.5		57.2	54.9	
Zero Gas (ppmv)	0.10		0.04	0.00	
Calibration Gas (ppmv)	44.54		11.81	7.94	
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.1		0.2	0.0	
Calibration Bias (% Chart) ≤5%	-1.6		-0.5	-0.3	
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.2		-0.1	0.4	
Calibration Drift (Chart %) ≤2 or 3%	0.2		0.1	0.0	
Run Results					
Raw Results (chart %)	52.4		59.7	44.1	
Raw Results (ppmv or % vol)	50.41		12.42	6.31	
Corrected Results (ppmv or % vol) from % chart	52.20		12.51	6.35	

Run U3-Oil-100%-1	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	30.0	25.00	15.00	30.00
Calibration Gas Certified Value (ppm or %)	46.20	15.26	11.91	8.00	15.36
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	48.2	55.9	57.6	55.3	56.2
Actual Zero Gas from Direct (Chart %)	2.0	5.0	10.0	2.0	4.9
Actual Calibration Gas from Direct (Chart %)	48.2	55.8	57.7	55.3	56.2
Initial Readings					
Zero Gas (chart %)	2.1	6.9	10.2	2.0	5.0
Calibration Gas (chart %)	46.5	56.6	57.2	54.9	55.5
Zero Gas (ppmv)	0.10	0.56	0.04	0.00	0.00
Calibration Gas (ppmv)	44.54	15.49	11.81	7.94	15.16
Final Readings					
Zero Gas (chart %)	2.3	6.8	10.1	2.1	5.1
Calibration Gas (chart %)	46.7	56.2	57.2	54.9	56.1
Zero Gas (ppmv)	0.30	0.53	0.03	0.02	0.02
Calibration Gas (ppmv)	44.65	15.37	11.80	7.93	15.34
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.3	1.8	0.1	0.1	0.1
Calibration Bias (% Chart) ≤5%	-1.5	0.4	-0.5	-0.4	0.0
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	-0.2	0.1	0.0	-0.1	-0.1
Calibration Drift (Chart %) ≤2 or 3%	-0.1	0.4	0.0	0.1	-0.6
Run Results					
Raw Results (chart %)	52.3	8.6	59.7	43.9	5.4
Raw Results (ppmv or % vol)	50.30	1.07	12.43	6.29	0.13
Corrected Results (ppmv or % vol) from % chart	52.14	0.54	12.54	6.34	0.12

Calibration Error, Bias, and Drift Checks

Run U3-Oil-100%-2	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	30.0	25.00	15.00	30.00
Calibration Gas Certified Value (ppm or %)	46.20	15.26	11.91	8.00	15.36
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	48.2	55.9	57.6	55.3	56.2
Actual Zero Gas from Direct (Chart %)	2.0	5.0	10.0	2.0	4.9
Actual Calibration Gas from Direct (Chart %)	48.2	55.8	57.7	55.3	56.2
Initial Readings					
Zero Gas (chart %)	2.3	6.8	10.1	2.1	5.1
Calibration Gas (chart %)	46.7	56.2	57.2	54.9	56.1
Zero Gas (ppmv)	0.30	0.53	0.03	0.02	0.02
Calibration Gas (ppmv)	44.65	15.37	11.80	7.93	15.34
Final Readings					
Zero Gas (chart %)	2.2	6.7	10.1	2.1	5.1
Calibration Gas (chart %)	46.8	56.3	57.2	54.9	56.6
Zero Gas (ppmv)	0.20	0.50	0.03	0.02	0.03
Calibration Gas (ppmv)	44.84	15.38	11.79	7.94	15.47
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	1.7	0.1	0.1	0.2
Calibration Bias (% Chart) ≤5%	-1.3	0.4	-0.6	-0.3	0.4
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.1	0.1	0.0	0.0	0.0
Calibration Drift (Chart %) ≤2 or 3%	-0.2	0.0	0.0	-0.1	-0.4
Run Results					
Raw Results (chart %)	52.4	8.6	59.8	43.9	5.5
Raw Results (ppmv or % vol)	50.41	1.09	12.45	6.28	0.15
Corrected Results (ppmv or % vol) from % chart	52.08	0.59	12.57	6.33	0.12

Run U3-Oil-100%-3	NO_X	CO	O_2	CO_2	THC
Analyzer Range (ppm), O_2 & CO_2 in %	100.0	30.0	25.00	15.00	30.00
Calibration Gas Certified Value (ppm or %)	46.20	15.26	11.91	8.00	15.36
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	48.2	55.9	57.6	55.3	56.2
Actual Zero Gas from Direct (Chart %)	2.0	5.0	10.0	2.0	4.9
Actual Calibration Gas from Direct (Chart %)	48.2	55.8	57.7	55.3	56.2
Initial Readings					
Zero Gas (chart %)	2.2	6.7	10.1	2.1	5.1
Calibration Gas (chart %)	46.8	56.3	57.2	54.9	56.6
Zero Gas (ppmv)	0.20	0.50	0.03	0.02	0.03
Calibration Gas (ppmv)	44.84	15.38	11.79	7.94	15.47
Final Readings					
Zero Gas (chart %)	2.2	6.6	10.0	2.1	5.1
Calibration Gas (chart %)	47.2	56.1	57.2	54.9	57.6
Zero Gas (ppmv)	0.21	0.47	0.01	0.02	0.02
Calibration Gas (ppmv)	45.15	15.32	11.81	7.93	15.79
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	1.6	0.0	0.1	0.1
Calibration Bias (% Chart) ≤5%	-1.0	0.2	-0.5	-0.4	1.5
Zero Drift (Chart %) (Run-Run) ≤2 or 3%	0.0	0.1	0.1	0.0	0.0
Calibration Drift (Chart %) ≤2 or 3%	-0.3	0.2	-0.1	0.1	-1.1
Run Results					
Raw Results (chart %)	52.4	8.6	59.7	43.9	5.2
Raw Results (ppmv or % vol)	50.42	1.08	12.43	6.29	0.07
Corrected Results (ppmv or % vol) from % chart	51.80	0.61	12.55	6.34	0.04

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-NG-O2-Trav, W Port 5/7/02 7:29:01 7:59:01

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.94	14.86	8.51	0.71	-0.28	0.59
O2 (% vol)	0	4.52	11.95	20.91	0.05	-0.15	-0.02
CO2 (% vol)	0	8.03	12.62	4.55	-0.19	-0.01	-0.07

Initial and Final Bias and Drift	I-Zero	I-Span
NOx (ppmv)	0.08	8.57
O2 (% vol)	0.03	20.82
CO2 (% vol)	0	4.51

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	11.71	16	5.05	14.82	8.6
O2 (% vol)	13.78	25	4.53	11.91	20.9
CO2 (% vol)	4.1	15	8	12.62	4.54

Run U3-NG-O2-Trav, S Port 5/7/02 8:03:09 8:33:09

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.94	14.86	8.51	0.71	-0.28	0.59
O2 (% vol)	0	4.52	11.95	20.91	0.05	-0.15	-0.02
CO2 (% vol)	0	8.03	12.62	4.55	-0.19	-0.01	-0.07

Initial and Final Bias and Drift	I-Zero	I-Span
NOx (ppmv)	0.08	8.57
O2 (% vol)	0.03	20.82
CO2 (% vol)	0	4.51

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	11.07	16	5.05	14.82	8.6
O2 (% vol)	13.79	25	4.53	11.91	20.9
CO2 (% vol)	4.09	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-NG-O2-Trav, E Port 5/7/02 8:41:10 9:11:10

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.94	14.86	8.51	0.71	-0.28	0.59
O2 (% vol)	0	4.52	11.95	20.91	0.05	-0.15	-0.02
CO2 (% vol)	0	8.03	12.62	4.55	-0.19	-0.01	-0.07

Initial and Final Bias and Drift	I-Zero	I-Span
NOx (ppmv)	0.08	8.57
O2 (% vol)	0.03	20.82
CO2 (% vol)	0	4.51

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	11.08	16	5.05	14.82	8.6
O2 (% vol)	13.81	25	4.53	11.91	20.9
CO2 (% vol)	4.08	15	8	12.62	4.54

Run U3-NG-O2-Trav, N Port 5/7/02 9:14:00 9:44:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.94	14.86	8.51	0.71	-0.28	0.59
O2 (% vol)	0	4.52	11.95	20.91	0.05	-0.15	-0.02
CO2 (% vol)	0	8.03	12.62	4.55	-0.19	-0.01	-0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.08	8.57	0.12	8.43	0.63	-0.5	-0.25	0.88
O2 (% vol)	0.03	20.82	0.03	20.81	0.12	-0.4	0	0.04
CO2 (% vol)	0	4.51	0.01	4.52	0.07	-0.2	-0.07	-0.07

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	11.36	16	5.05	14.82	8.6
O2 (% vol)	13.83	25	4.53	11.91	20.9
CO2 (% vol)	4.07	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-100%-1/U3-RA-1 5/7/02 10:17:00 11:17:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.94	14.86	8.51	0.71	-0.28	0.59
CO (ppmv)	0	9.11	25.82	15.23	-0.65	-0.05	0.1
O2 (% vol)	0	4.52	11.95	20.91	0.05	-0.15	-0.02
CO2 (% vol)	0	8.03	12.62	4.55	-0.19	-0.01	-0.07
THC (ppmv)	0.01	9.26	25.65	15.38	-0.67	-0.17	-0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.12	8.43	0.08	8.4	0.4	-0.69	0.21	0.2
CO (ppmv)	0.18	15.35	0.15	15.35	0.49	0.4	0.1	0
O2 (% vol)	0.03	20.81	0.02	20.79	0.07	-0.46	0.03	0.08
CO2 (% vol)	0.01	4.52	0.01	4.53	0.07	-0.11	0	-0.09
THC (ppmv)	-0.02	15.16	-0.05	15.38	-0.2	0	0.1	-0.73

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	9.22	9.43	16	5.05	14.82	8.6
CO (ppmv)	0.42	0.26	30	8.92	25.8	15.26
O2 (% vol)	13.66	13.72	25	4.53	11.91	20.9
CO2 (% vol)	4.18	4.19	15	8	12.62	4.54
THC (ppmv)	0.53	0.57	30	9.06	25.6	15.36

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-100%-2/U3-RA-2 5/7/02 11:30:05 12:30:05

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.94	14.86	8.51	0.71	-0.28	0.59
CO (ppmv)	0	9.11	25.82	15.23	-0.65	-0.05	0.1
O2 (% vol)	0	4.52	11.95	20.91	0.05	-0.15	-0.02
CO2 (% vol)	0	8.03	12.62	4.55	-0.19	-0.01	-0.07
THC (ppmv)	0.01	9.26	25.65	15.38	-0.67	-0.17	-0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.08	8.4	0.07	8.27	0.31	-1.5	0.09	0.81
CO (ppmv)	0.15	15.35	0.18	15.32	0.59	0.29	-0.1	0.11
O2 (% vol)	0.02	20.79	0.01	20.75	0.05	-0.64	0.02	0.18
CO2 (% vol)	0.01	4.53	0	4.52	0.01	-0.19	0.05	0.08
THC (ppmv)	-0.05	15.38	0.07	15.01	0.2	-1.23	-0.4	1.23

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	9.12	9.42	16	5.05	14.82	8.6
CO (ppmv)	0.38	0.22	30	8.92	25.8	15.26
O2 (% vol)	13.64	13.72	25	4.53	11.91	20.9
CO2 (% vol)	4.15	4.16	15	8	12.62	4.54
THC (ppmv)	0.57	0.57	30	9.06	25.6	15.36

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-100%-3/U3-RA-3 5/7/02 12:47:01 13:47:01

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.94	14.86	8.51	0.71	-0.28	0.59
CO (ppmv)	0	9.11	25.82	15.23	-0.65	-0.05	0.1
O2 (% vol)	0	4.52	11.95	20.91	0.05	-0.15	-0.02
CO2 (% vol)	0	8.03	12.62	4.55	-0.19	-0.01	-0.07
THC (ppmv)	0.01	9.26	25.65	15.38	-0.67	-0.17	-0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.07	8.27	0.05	8.2	0.2	-1.9	0.11	0.4
CO (ppmv)	0.18	15.32	0.15	15.26	0.49	0.09	0.1	0.2
O2 (% vol)	0.01	20.75	0.01	20.75	0.04	-0.62	0.01	-0.02
CO2 (% vol)	0	4.52	0	4.51	0	-0.24	0.01	0.05
THC (ppmv)	0.07	15.01	0.05	14.86	0.13	-1.73	0.07	0.5

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	8.99	9.39	16	5.05	14.82	8.6
CO (ppmv)	0.37	0.21	30	8.92	25.8	15.26
O2 (% vol)	13.65	13.75	25	4.53	11.91	20.9
CO2 (% vol)	4.14	4.16	15	8	12.62	4.54
THC (ppmv)	0.45	0.40	30	9.06	25.6	15.36

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-NG-50%-1 5/9/02 10:11:21 10:31:21

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.03	8.23	0.08	8.17	0.39	-2.72	-0.3	0.41
O2 (% vol)	0	20.8	0.02	20.79	0.09	-0.49	-0.09	0.04
CO2 (% vol)	0.02	4.51	0.02	4.53	0.11	-0.12	0	-0.09

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	8.74	9.17	16	5.05	14.82	8.6
O2 (% vol)	13.98	14.05	25	4.53	11.91	20.9
CO2 (% vol)	4	4.02	15	8	12.62	4.54

Run U3-NG-50%-2 5/9/02 10:39:00 10:59:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.08	8.17	0.1	8.2	0.48	-2.52	-0.1	-0.2
O2 (% vol)	0.02	20.79	0.01	20.83	0.03	-0.32	0.06	-0.17
CO2 (% vol)	0.02	4.53	0.02	4.52	0.12	-0.15	-0.01	0.03

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	8.6	9.04	16	5.05	14.82	8.6
O2 (% vol)	13.99	14.05	25	4.53	11.91	20.9
CO2 (% vol)	4	4.01	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-NG-50%-3 5/9/02 11:07:08 11:27:08

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.1	8.2	0.08	8.14	0.39	-2.92	0.1	0.4
O2 (% vol)	0.01	20.83	0.02	20.82	0.08	-0.39	-0.05	0.07
CO2 (% vol)	0.02	4.52	0.03	4.53	0.17	-0.11	-0.05	-0.04

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	8.66	9.12	16	5.05	14.82	8.6
O2 (% vol)	13.97	14.02	25	4.53	11.91	20.9
CO2 (% vol)	4	4.01	15	8	12.62	4.54

Run U3-NG-65%-1 5/9/02 11:34:10 11:54:10

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.08	8.14	0.07	8.04	0.29	-3.52	0.1	0.6
O2 (% vol)	0.02	20.82	0.01	20.8	0.04	-0.45	0.04	0.06
CO2 (% vol)	0.03	4.53	0.02	4.52	0.13	-0.13	0.04	0.03

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	8.14	8.65	16	5.05	14.82	8.6
O2 (% vol)	13.71	13.76	25	4.53	11.91	20.9
CO2 (% vol)	4.14	4.15	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-NG-65%-2 5/9/02 12:01:06 12:21:06

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.07	8.04	0.07	7.99	0.29	-3.81	0	0.29
O2 (% vol)	0.01	20.8	0.01	20.81	0.05	-0.41	-0.01	-0.04
CO2 (% vol)	0.02	4.52	0.02	4.52	0.15	-0.13	-0.01	0

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	8.04	8.63	16	5.05	14.82	8.6
O2 (% vol)	13.72	13.78	25	4.53	11.91	20.9
CO2 (% vol)	4.14	4.16	15	8	12.62	4.54

Run U3-NG-65%-3 5/9/02 12:28:01 12:48:01

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.07	7.99	0.08	8.01	0.39	-3.72	-0.1	-0.09
O2 (% vol)	0.01	20.81	0.01	20.8	0.06	-0.46	-0.01	0.05
CO2 (% vol)	0.02	4.52	0.03	4.53	0.17	-0.12	-0.03	-0.01

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	8.06	8.67	16	5.05	14.82	8.6
O2 (% vol)	13.72	13.78	25	4.53	11.91	20.9
CO2 (% vol)	4.13	4.14	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-NG-80%-1 5/9/02 12:56:00 13:16:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.08	8.01	0.05	8.02	0.18	-3.62	0.2	-0.1
O2 (% vol)	0.01	20.8	0.01	20.81	0.06	-0.42	0	-0.04
CO2 (% vol)	0.03	4.53	0.03	4.52	0.17	-0.16	0	0.04

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	7.74	8.30	16	5.05	14.82	8.6
O2 (% vol)	13.71	13.77	25	4.53	11.91	20.9
CO2 (% vol)	4.14	4.15	15	8	12.62	4.54

Run U3-NG-80%-2 5/9/02 13:22:07 13:42:07

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.05	8.02	0.05	7.93	0.18	-4.22	0	0.6
O2 (% vol)	0.01	20.81	0.01	20.77	0.02	-0.56	0.04	0.14
CO2 (% vol)	0.03	4.52	0.02	4.52	0.13	-0.16	0.04	0

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	7.68	8.28	16	5.05	14.82	8.6
O2 (% vol)	13.7	13.77	25	4.53	11.91	20.9
CO2 (% vol)	4.13	4.15	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Nat. Gas Testing, Logged QA Calibration Records

Run U3-NG-80%-3 5/9/02 13:49:13 14:09:13

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.02	4.93	14.72	8.6	0.72	0.63	-0.02
O2 (% vol)	0	4.54	11.95	20.91	-0.02	-0.16	-0.05
CO2 (% vol)	0	8	12.62	4.54	-0.03	0.01	-0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.05	7.93	0.03	7.94	0.07	-4.12	0.11	-0.1
O2 (% vol)	0.01	20.77	0	20.79	0	-0.47	0.02	-0.09
CO2 (% vol)	0.02	4.52	0.01	4.51	0.09	-0.21	0.04	0.05

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	7.64	8.28	16	5.05	14.82	8.6
O2 (% vol)	13.7	13.78	25	4.53	11.91	20.9
CO2 (% vol)	4.12	4.14	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-O2-Trav, N Port 5/8/02 9:03:00 9:33:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	11.93	20.89	0.01	-0.09	0.04
CO2 (% vol)	0	7.99	12.6	4.54	0.07	0.16	0.01

Initial and Final Bias and Drift	I-Zero	I-Span
NOx (ppmv)	0.21	46.05
O2 (% vol)	0.02	20.75
CO2 (% vol)	0.03	4.52

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	48.58	100	23	85.1	46.2
O2 (% vol)	12.94	25	4.53	11.91	20.9
CO2 (% vol)	5.92	15	8	12.62	4.54

Run U3-Oil-O2-Trav, S Port 5/8/02 9:36:00 10:06:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	11.93	20.89	0.01	-0.09	0.04
CO2 (% vol)	0	7.99	12.6	4.54	0.07	0.16	0.01

Initial and Final Bias and Drift	I-Zero	I-Span
NOx (ppmv)	0.21	46.05
O2 (% vol)	0.02	20.75
CO2 (% vol)	0.03	4.52

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	47.96	100	23	85.1	46.2
O2 (% vol)	12.94	25	4.53	11.91	20.9
CO2 (% vol)	5.96	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-O2-Trav, E Port 5/8/02 10:09:05 10:39:05

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	11.93	20.89	0.01	-0.09	0.04
CO2 (% vol)	0	7.99	12.6	4.54	0.07	0.16	0.01

Initial and Final Bias and Drift	I-Zero	I-Span
NOx (ppmv)	0.21	46.05
O2 (% vol)	0.02	20.75
CO2 (% vol)	0.03	4.52

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	47.76	100	23	85.1	46.2
O2 (% vol)	12.95	25	4.53	11.91	20.9
CO2 (% vol)	5.96	15	8	12.62	4.54

Run U3-Oil-O2-Trav, W Port 5/8/02 10:42:00 11:12:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	11.93	20.89	0.01	-0.09	0.04
CO2 (% vol)	0	7.99	12.6	4.54	0.07	0.16	0.01

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.21	46.05	0.21	45.75	0.2	-0.4	0	0.3
O2 (% vol)	0.02	20.75	0.03	20.78	0.12	-0.43	-0.03	-0.12
CO2 (% vol)	0.03	4.52	0.05	4.53	0.29	-0.05	-0.13	-0.09

Run Results and Cal Gases Used	Raw	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	48.73	100	23	85.1	46.2
O2 (% vol)	13.02	25	4.53	11.91	20.9
CO2 (% vol)	5.9	15	8	12.62	4.54

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-50%-1 5/8/02 11:25:00 11:45:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.21	45.75	0.21	45.55	0.2	-0.6	0	0.2
O2 (% vol)	0.03	11.85	0.02	11.87	0.09	-0.24	0.03	-0.09
CO2 (% vol)	0.05	7.95	0.06	7.98	0.37	-0.09	-0.08	-0.17

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	48.25	48.84	100	23	85.1	46.2
O2 (% vol)	12.99	13.05	25	4.53	20.9	11.91
CO2 (% vol)	5.93	5.94	15	4.54	12.62	8

Run U3-Oil-50%-2 5/8/02 11:53:00 12:13:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.21	45.55	0.21	45.35	0.2	-0.8	0	0.2
O2 (% vol)	0.02	11.87	0.01	11.86	0.04	-0.29	0.05	0.05
CO2 (% vol)	0.06	7.98	0.05	7.97	0.31	-0.16	0.07	0.07

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	47.81	48.61	100	23	85.1	46.2
O2 (% vol)	12.97	13.02	25	4.53	20.9	11.91
CO2 (% vol)	5.93	5.93	15	4.54	12.62	8

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-50%-3 5/8/02 12:24:07 12:44:07

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.21	45.35	0.21	45.15	0.2	-1	0	0.2
O2 (% vol)	0.01	11.86	0.04	11.86	0.17	-0.29	-0.13	0
CO2 (% vol)	0.05	7.97	0.07	7.96	0.47	-0.2	-0.16	0.04

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	47.53	48.54	100	23	85.1	46.2
O2 (% vol)	12.99	13.05	25	4.53	20.9	11.91
CO2 (% vol)	5.93	5.94	15	4.54	12.62	8

Run U3-Oil-65%-1 5/8/02 12:53:07 13:13:07

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.21	45.15	0.31	45.16	0.3	-0.99	-0.1	-0.01
O2 (% vol)	0.04	11.86	0.05	11.85	0.21	-0.32	-0.04	0.03
CO2 (% vol)	0.07	7.96	0.09	7.95	0.59	-0.27	-0.12	0.07

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	49.82	51.00	100	23	85.1	46.2
O2 (% vol)	12.55	12.61	25	4.53	20.9	11.91
CO2 (% vol)	6.26	6.28	15	4.54	12.62	8

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-65%-2 5/8/02 13:21:00 13:41:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.31	45.16	0.31	44.85	0.3	-1.3	0	0.31
O2 (% vol)	0.05	11.85	0.04	11.83	0.15	-0.39	0.06	0.07
CO2 (% vol)	0.09	7.95	0.07	7.95	0.43	-0.29	0.16	0.03

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	49.68	51.03	100	23	85.1	46.2
O2 (% vol)	12.56	12.64	25	4.53	20.9	11.91
CO2 (% vol)	6.25	6.27	15	4.54	12.62	8

Run U3-Oil-65%-3 5/8/02 13:49:01 14:09:01

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.31	44.85	0.31	45.15	0.3	-1	0	-0.3
O2 (% vol)	0.04	11.83	0.02	11.83	0.08	-0.39	0.07	0
CO2 (% vol)	0.07	7.95	0.06	7.95	0.4	-0.29	0.03	0

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	49.53	50.88	100	23	85.1	46.2
O2 (% vol)	12.54	12.63	25	4.53	20.9	11.91
CO2 (% vol)	6.24	6.27	15	4.54	12.62	8

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-80%-1 5/8/02 14:18:00 14:38:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.31	45.15	0.33	45.35	0.32	-0.8	-0.02	-0.2
O2 (% vol)	0.02	11.83	0	11.84	0.01	-0.37	0.07	-0.02
CO2 (% vol)	0.06	7.95	0.05	7.94	0.31	-0.35	0.09	0.05

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	50.52	51.62	100	23	85.1	46.2
O2 (% vol)	12.44	12.52	25	4.53	20.9	11.91
CO2 (% vol)	6.31	6.34	15	4.54	12.62	8

Run U3-Oil-80%-2 5/8/02 14:47:02 15:07:02

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.33	45.35	0.31	44.74	0.3	-1.41	0.02	0.61
O2 (% vol)	0	11.84	0.01	11.84	0.03	-0.36	-0.02	-0.01
CO2 (% vol)	0.05	7.94	0.06	7.94	0.37	-0.36	-0.07	0.01

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	50.93	52.28	100	23	85.1	46.2
O2 (% vol)	12.44	12.51	25	4.53	20.9	11.91
CO2 (% vol)	6.31	6.35	15	4.54	12.62	8

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-80%-3 5/8/02 15:17:00 15:37:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.31	44.74	0.1	44.54	0.09	-1.61	0.21	0.2
O2 (% vol)	0.01	11.84	0.04	11.81	0.17	-0.47	-0.14	0.11
CO2 (% vol)	0.06	7.94	0	7.94	-0.01	-0.32	0.39	-0.04

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	50.41	52.20	100	23	85.1	46.2
O2 (% vol)	12.42	12.51	25	4.53	20.9	11.91
CO2 (% vol)	6.31	6.35	15	4.54	12.62	8

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-100%-1 5/8/02 15:55:02 16:55:02

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
CO (ppmv)	0	9.14	25.81	15.25	-0.73	-0.03	0.03
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07
THC (ppmv)	-0.02	9.21	25.59	15.35	-0.5	0.03	0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.1	44.54	0.3	44.65	0.29	-1.5	-0.2	-0.11
CO (ppmv)	0.56	15.49	0.53	15.37	1.78	0.42	0.09	0.4
O2 (% vol)	0.04	11.81	0.03	11.8	0.1	-0.52	0.07	0.05
CO2 (% vol)	0	7.94	0.02	7.93	0.09	-0.43	-0.11	0.11
THC (ppmv)	0	15.16	0.02	15.34	0.13	-0.03	-0.07	-0.6

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	50.3	52.14	100	23	85.1	46.2
CO (ppmv)	1.07	0.54	30	8.92	25.8	15.26
O2 (% vol)	12.43	12.54	25	4.53	20.9	11.91
CO2 (% vol)	6.29	6.34	15	4.54	12.62	8
THC (ppmv)	0.13	0.12	30	9.06	25.6	15.36

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-100%-2 5/8/02 17:10:00 18:10:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
CO (ppmv)	0	9.14	25.81	15.25	-0.73	-0.03	0.03
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07
THC (ppmv)	-0.02	9.21	25.59	15.35	-0.5	0.03	0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.3	44.65	0.2	44.84	0.19	-1.31	0.1	-0.19
CO (ppmv)	0.53	15.37	0.5	15.38	1.67	0.43	0.11	-0.01
O2 (% vol)	0.03	11.8	0.03	11.79	0.11	-0.58	-0.01	0.06
CO2 (% vol)	0.02	7.93	0.02	7.94	0.12	-0.35	-0.03	-0.08
THC (ppmv)	0.02	15.34	0.03	15.47	0.17	0.4	-0.03	-0.43

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	50.41	52.08	100	23	85.1	46.2
CO (ppmv)	1.09	0.59	30	8.92	25.8	15.26
O2 (% vol)	12.45	12.57	25	4.53	20.9	11.91
CO2 (% vol)	6.28	6.33	15	4.54	12.62	8
THC (ppmv)	0.15	0.12	30	9.06	25.6	15.36

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged QA Calibration Records

Run U3-Oil-100%-3 5/8/02 18:22:00 19:22:00

Initial Linearity Test	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin
NOx (ppmv)	0.01	22.84	86.39	46.15	0.16	-1.29	0.05
CO (ppmv)	0	9.14	25.81	15.25	-0.73	-0.03	0.03
O2 (% vol)	0	4.53	20.89	11.93	0.01	0.04	-0.08
CO2 (% vol)	0	4.54	12.6	7.99	0	0.16	0.07
THC (ppmv)	-0.02	9.21	25.59	15.35	-0.5	0.03	0.03

Initial and Final Bias and Drift	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	0.2	44.84	0.21	45.15	0.2	-1	-0.01	-0.31
CO (ppmv)	0.5	15.38	0.47	15.32	1.58	0.23	0.09	0.2
O2 (% vol)	0.03	11.79	0.01	11.81	0.04	-0.49	0.07	-0.09
CO2 (% vol)	0.02	7.94	0.02	7.93	0.09	-0.43	0.03	0.08
THC (ppmv)	0.03	15.47	0.02	15.79	0.13	1.47	0.03	-1.07

Run Results and Cal Gases Used	Raw	Corrected	Ranges	Low Gas	Mid Gas	Span Gas
NOx (ppmv)	50.42	51.80	100	23	85.1	46.2
CO (ppmv)	1.08	0.61	30	8.92	25.8	15.26
O2 (% vol)	12.43	12.55	25	4.53	20.9	11.91
CO2 (% vol)	6.29	6.34	15	4.54	12.62	8
THC (ppmv)	0.07	0.04	30	9.06	25.6	15.36

Instrumental Analyses
Quality Assurance Data

Date: May 6, 2002
Company: Tampa Electric Company
Facility: Polk Power Station
Source ID: Unit 3, a GE Frame 7FA Combustion Turbine
Location: Mulberry, Polk County, Florida
Technicians: LJB, RPO, SBB

NO_x Analyzer: NO_2 to NO Converter Efficiency Test - NG

NO_x Calibration Gas: 8.60 ppmv
Diluent Gas: Air
Date: 5/6/02

	NO_x conc. (ppmv)	% Decrease from Highest conc.	NO conc. (ppmv)
Highest NO_x Concentration:	6.216		
Initial Concentration:	6.136	1.29	6.13
10 minute Concentration:	6.152	1.03	6.11
20 minute Concentration:	6.216	0.00	6.09
30 minute Concentration:	6.168	0.77	6.03
Lowest NO_x Concentration:	6.136	1.29	

Converter efficiency criteria is less than 2% decrease from highest read value.

NO_x Analyzer: NO_2 to NO Converter Efficiency Test - Oil

NO_x Calibration Gas: 46.20 ppmv
Diluent Gas: Air
Date: 5/8/02

	NO_x conc. (ppmv)	% Decrease from Highest conc.	NO conc. (ppmv)
Highest NO_x Concentration:	27.33		
Initial Concentration:	27.24	0.33	25.8
10 minute Concentration:	27.14	0.70	24.9
20 minute Concentration:	27.14	0.70	24.2
30 minute Concentration:	27.33	0.00	23.7
Lowest NO_x Concentration:	27.13	0.73	

Converter efficiency criteria is less than 2% decrease from highest read value.

Instrumental Sample System Leak Checks

Date	Run Number	Vacuum (inches Hg)	Leak Rate (inches Hg/min)	Pass
5/7/02	pre U3-NG-O_2-Trav	23.2	0.4	yes
5/7/02	post U3-RA-9	22.4	0.5	yes
5/8/02	pre U3-Oil-O_2-Trav	24.2	0.4	yes
5/8/02	post U3-Oil-100%-3	23.3	0.3	yes
5/9/02	pre U3-NG-50%-1	23.5	0.5	yes
5/9/02	post U3-NG-80%-3	23.9	0.3	yes

Leak check criteria less than 1.0" Hg Vac. Decline at greater than 15.0" Hg Vac.

NOx Converter Efficiency Test
Unit 3
Natural Gas Testing

Run Number	MODE	Date	Time	NOx (ppmv)
START NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:05:00	6.136
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:06:00	6.136
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:07:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:08:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:09:00	6.136
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:10:00	6.152
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:11:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:12:00	6.152
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:13:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:14:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:15:00	6.152
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:16:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:17:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:18:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:19:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:20:00	6.152
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:21:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:22:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:23:00	6.184
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:24:00	6.184
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:25:00	6.216
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:26:00	6.200
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:27:00	6.184
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:28:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:29:00	6.184
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:30:00	6.200
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:31:00	6.184
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:32:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:33:00	6.168
NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:34:00	6.166
END NOx Converter, Unit 3 (NG)	Total NOx	5/6/02	16:35:00	6.168

NOx Converter Efficiency Test
Unit 3
No. 2 Fuel Oil Testing

Run Number	MODE	Date	Time	NOx (ppmv)
START NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:37:01	27.24
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:38:01	27.23
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:39:01	27.24
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:40:01	27.24
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:41:01	27.24
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:42:01	27.24
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:43:01	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:44:01	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:45:01	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:46:01	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:47:01	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:48:01	27.24
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:49:01	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:50:01	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:51:01	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:52:00	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:53:00	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:54:00	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:55:00	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:56:00	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:57:00	27.14
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:58:00	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	6:59:00	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:00:00	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:01:00	27.23
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:02:00	27.13
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:03:00	27.23
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:04:00	27.23
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:05:00	27.23
NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:06:00	27.23
END NOx Converter, Unit 3 (Oil)	Total NOx	5/8/02	7:07:00	27.33

Continuous Emission Analyzer
Interference Response Tests

Analyzer Interference Response Checks

(Frequency: Prior to initial use of sampling system or after alteration or modification.)

Test Date: *March 4, 2002* *Technician:* *LJB*
Mobile Lab: *T-10* *Location:* *Gainesville, Florida*

Analyzer	Manufacturer	Model	Serial Number	Detection Method/Comments
NO_x Analyzer	TECO	42C	42CHL-69541-363	Chemiluminescence with Ozone
CO Analyzer	TECO	48C	48-51488-288	Infrared Absorption/GFC Detector
O_2 Analyzer	Servomex	1440	1420C/2647	Paramagnetic
CO_2 Analyzer	Servomex	1440	01415/2537	Infrared Absorption/ Solid State Detector
THC	JUM	3-300	9405393-33	Flame Ionization Detector

Interferrent Test Gases		Analyzer Response (ppmv or % as applicable)				
Type Gas	Conc.	NO_x 0-25 ppmv	CO 0-50 ppmv	O_2 0-25% vol	CO_2 0-15% vol	THC 0-100 ppmv
CO/Methane in air	885/919	0.1 ppmv			0.00 %	
Propane in air	2000	0.1 ppmv	0.4 ppmv		0.03 %	
SO_2 in N_2	4400	0.2 ppmv	-0.3 ppmv	0.00 %	0.00 %	0.0 ppmv
Air	dry instrument	< 0.1 ppmv	0.4 ppmv		0.03 %	0.6 ppmv
Nitrogen	pre-purified	0.0 ppmv	0.3 ppmv	0.00 %	0.00 %	0.4 ppmv
Air	UHC, CO free	0.0 ppmv	0.0 ppmv		0.01 %	0.0 ppmv
CO_2/ O_2	4.54%/20.8%	< 0.1 ppmv	-0.2 ppmv			-0.2 ppmv
CO_2/ O_2	8.004%/11.91%	< 0.1 ppmv	-0.4 ppmv			-0.3 ppmv
CO_2/ O_2	12.62%/4.53%	< 0.1 ppmv	-0.6 ppmv			-0.3 ppmv
NO_x in N_2	1209		0.4 ppmv	0.18 %	0.03 %	0.0 ppmv

Quality Assurance Report
EPA Method 20 NO_x and O_2 Response Time Test

Date: March 10, 2002
Technicians: LJB, JAS
As Applicable per the requirements of EPA Methods 3a, 7e, and 20
Cubix Mobile Unit #: T-10

Test Instrumentation

Analyzer	Make	Model	Serial Number	Detection Method
NO_x Analyzer	Thermo Envirnmental	42C	42CHL-69541-363	Photodetection (photomultiplier) of a chemi-luminescent reaction of nitric oxide and ozone
O_2 Analyzer	Servomex	1440	1420C/2647	Paramagnetic detection

Test Conditions

Chart Speed	30 cm/minute
Data Logger	1-minute averages
Sample Line Vacuum	5 "Hg
Sample Manifold Pressure	5 psi
Analyzer Flow Meter Setting	7 mm
Gas Standard Pressure	5 psi
Sample System Configuration:	120 ft. Heat Trace, 100 ft. Heat Trace, and Minimum Contact Condensor

Response Time Test Data — **Response Time (seconds to 95% of stable value)**

	NO_x (ppmv)	O_2 (% vol)
Zero Gas Concentration	0.00	0.00
Upscale Calibration Gas Concentration	12.26	20.80
Stack Gas Concentration (average values, values varied over test)	9.95	13.84
Analyzer Full Scale Span	15.00	25.00
Upscale Response		
Test # 1	73.0	39.0
Test # 2	80.0	45.0
Test # 3	69.0	45.0
Average Upscale Response	74.0	43.0
Downscale Response		
Test # 1	58.0	46.0
Test # 2	68.0	46.0
Test # 3	63.0	47.0
Average Downscale Response	63.0	46.3

Minimum System Response Time (seconds)	**74.0**	**seconds**
Minmum Sampling Time Each Traverse Point	**134.0**	**seconds**

APPENDIX E:
CALIBRATION CERTIFICATIONS

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 0016012
ITEM# : 6
P.O.# : 2002014ROGER

CYLINDER # : CC-133035
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 1/28/2002
EXPIRATION DATE: 1/28/2004

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	1/21/2002 1/28/2002	5.070 ppm 5.028 ppm	5.05 ppm	+/- 1%
NOx			5.05 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC-127534	15.12 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Thermo 42C	42C-64942-345	Chemi	1/8/2002

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ DATE: 1/28/2002
REX JOHNSON

SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.. (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 0019339
ITEM# : 1
P.O.# : 2002179 T10LENO

CYLINDER # : CC-133286
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 4/2/2002
EXPIRATION DATE: 4/2/2004

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	3/25/2002 4/2/2002	8.616 ppm 8.577 ppm	8.60 ppm	+/- 1%
NOx			8.60 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC-133063	19.86 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Thermo 42C	42C-64942-345	Cheml	3/13/2002

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
FRED PIKULA

DATE: 4/2/2002

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: CUBIX c/o HAMAKUA ENERGY
SGI ORDER # : 0012763
ITEM# : 5
P.O.# : 2001530 T10 TON

CYLINDER # : CC-133383
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 10/27/2001
EXPIRATION DATE: 10/27/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	10/16/2001 10/27/2001	14.80 ppm 14.84 ppm	14.82 ppm	+/- 1%
NOx			14.82 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC-131019	20.13 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Thermo 42C	42C-64942-345	Cheml	10/10/2001

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: REX JOHNSON

DATE: 10/27/2001

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 0003556
ITEM# : 1
P.O.# : 2001089 T10 LENO

CYLINDER # : CC126771
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 3/26/2001
EXPIRATION DATE: 3/26/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	3/19/2001 3/26/2001	23.02 ppm 23.05 ppm	23.0 ppm	+/- 1%
NOx			23.0 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81684	CC65912	98.6 ppm

INSTRUMENTATION

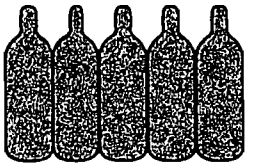
COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	CAI-400-CLD	6L09004	Chemi	3/23/2001

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 3/26/2001

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: CUBIX c/o HAMAKUA ENERGY
SGI ORDER # : 0012763
ITEM# : 7
P.O.# : 2001530 T10 TON

CYLINDER # : CC-118596
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 10/24/2001
EXPIRATION DATE: 10/24/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	10/16/2001 10/24/2001	46.45 ppm 46.03 ppm	46.2 ppm	+/- 1%
NOx			46.2 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC-131206	86.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	CAI-400 CLD	6L 09004	Chemi	10/5/2001

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ DATE: 10/24/2001
REX JOHNSON

SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: CUBIX c/o HAMAKUA ENERGY
SGI ORDER # : 0012763
ITEM# : 8
P.O.# : 2001530 T10 TON

CYLINDER # : CC-118392
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 10/24/2001
EXPIRATION DATE: 10/24/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	10/16/2001 10/24/2001	85.47 ppm 84.72 ppm	85.1 ppm	+/- 1%
NOx			85.1 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC-131206	86.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	CAI-400 CLD	6L 09004	Chemi	10/5/2001

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
REX JOHNSON

DATE: 10/24/2001

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 153396
ITEM# : 2
P.O.# : 2000131

CYLINDER # : CC63266
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 5/2/2000
EXPIRATION DATE: 5/2/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	4/25/2000 5/2/2000	8.946 ppm 8.904 ppm	8.92 ppm	+/- 1%
Methane	5/2/2000	9.06 ppm	9.06 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC88476	10.04 ppm
Methane	GMIS-1	CC60179	50.10 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Nicolet 560	ADL9600109	FTIR	4/10/2000
Methane	H. Packard 6890	US00001434	GC - FID	5/2/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
FRED PIKULA

DATE: 5/2/2000

SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: CUBIX c/o HAMAKUA ENERGY
SGI ORDER # : 0012763
ITEM# : 3
P.O.# : 2001530 T10 TON

CYLINDER # : CC-113992
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/29/2001
EXPIRATION DATE: 10/26/2004

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	10/16/2001 10/26/2001	15.23 ppm 15.29 ppm	15.26 ppm	+/- 1%
Methane	10/29/2001	15.36 ppm	15.36 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC-109837	20.4 ppm
Methane	GMIS-1	CC60179	50.06 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	10/08/2001
Methane	H. Packard 6890	US00001434	GC - FID	10/08/2001

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
TED NEEME

DATE: 10/29/2001

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: CUBIX c/o HAMAKUA ENERGY
SGI ORDER # : 0012763
ITEM# : 2
P.O.# : 2001530 T10 TON

CYLINDER # : CC-88212
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/29/2001
EXPIRATION DATE: 10/26/2004

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	10/18/2001 10/26/2001	25.9 ppm 25.71 ppm	25.8 ppm	+/- 1%
Methane	10/29/2001	25.6 ppm	25.6 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC-88447	97.4 ppm
Methane	GMIS-1	CC60179	50.06 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	10/26/2001
Methane	H. Packard 6890	US00001434	GC - FID	10/08/2001

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
TED NEEME

DATE: 10/29/2001

Scott Specialty Gases

RATA CLASS

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: G-1291
Project No.: 04-85228-002

Customer

CUBIX CORPORATION

4536 NW 20TH DRIVE
GAINESVILLE FL 32605

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: ALM009152 **Certification Date:** 4/03/00 **Exp. Date:** 4/03/2003
Cylinder Pressure*:** 1883 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	12.62 %	+/- 1%	Direct NIST and NMi
OXYGEN	4.53 %	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocal procedure G1, September 1997.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM	1/01/03	ALM042032	13.96 %	CO2/N2
NTRM 2658	12/19/01	ALM031738	9.680 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR System/8220A/AAB9400260	03/28/00	Scott Enhanced FTIR
MTI-A/M200/171109	03/21/00	GAS CHROMATOGRAPHY

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis **Second Triad Analysis** **Calibration Curve**

CARBON DIOXIDE

Date:04/03/00	Response Unit:%	
Z1 = 0.0220	R1 = 13.956	T1 = 12.629
R2 = 13.966	Z2 = 0.0178	T2 = 12.617
Z3 = 0.0276	T3 = 12.620	R3 = 13.959
Avg. Concentration:	12.62	%

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990

Constants:	A = 0.000000
B = 1.000000	C = 0.000000
D = 0.000000	E = 0.000000

OXYGEN

Date:04/06/00	Response Unit:AREA	
Z1 = 114.00	R1 = 35455.	T1 = 16619.
R2 = 35183.	Z2 = 141.00	T2 = 16552.
Z3 = 118.00	T3 = 16573.	R3 = 35179.
Avg. Concentration:	4.530	%

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999999418

Constants:	A = -0.03442397
B = 0.000275952	C =
D =	E =

APPROVED BY: _____
John Hunnicutt

Scott Specialty Gases

RATA CLASS

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: G-1291
Project No.: 04-85228-001

Customer

CUBIX CORPORATION

4536 NW 20TH DRIVE
GAINESVILLE FL 32605

ORDER ON-LINE • WWW.SCOTTGAS.COM

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: AAL17665 **Certification Date:** 4/10/00 **Exp. Date:** 4/10/2003

Cylinder Pressure*:** 1945 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	8.004 %	+/- 1%	Direct NIST and NMi
OXYGEN	11.91 %	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocal procedure G1, September 1997.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM	1/01/03	ALM016777	13.96 %	CO2/N2
NTRM 2658	1/02/01	ALM031726	9.680 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR System/8220A/AAB9400260	03/28/00	Scott Enhanced FTIR
MTI-A/M200/171109	03/21/00	GAS CHROMATOGRAPHY

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis | **Second Triad Analysis** | **Calibration Curve**

CARBON DIOXIDE

Date:04/10/00	Response Unit:%	
Z1 = 0.0142	R1 = 13.954	T1 = 8.0050
R2 = 13.972	Z2 = 0.0301	T2 = 8.0039
Z3 = 0.0231	T3 = 8.0034	R3 = 13.953
Avg. Concentration:	8.004	%

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

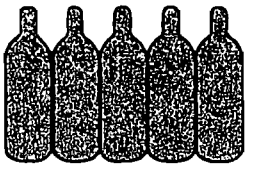
OXYGEN

Date:04/12/00	Response Unit:AREA	
Z1 = 43.000	R1 = 35084.	T1 = 43102.
R2 = 34965.	Z2 = 101.00	T2 = 43033.
Z3 = 91.000	T3 = 43023.	R3 = 35009.
Avg. Concentration:	11.91	%

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999999418
Constants: A = -0.03442397
B = 0.000275952 C =
D = E =

APPROVED BY: _____
John Hunnicutt

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 0016029
ITEM# : 1
P.O.# : 2002014 ROGER

CYLINDER # : CC-79844
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 1/22/2002
EXPIRATION DATE: 1/22/2005

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Dioxide	1/22/2002	4.54 %	4.54 %	+/- 1%
Oxygen	1/22/2002	20.9 %	20.9 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Dioxide	GMIS-1	CC-90832	9.98 %
Oxygen	NTRM-82659x	CC83917	22.8 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	1/15/2002
Oxygen	Horiba MPA-510	570694081	PM	1/9/2002

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
FRED PIKULA

DATE: 1/22/2002

ALTIMETER TEST RECORD

This unit was tested and inspected IAW FAR Part 43,
Appendix E, and is approved for return to service.

DATE: 3-8-02

WORK ORDER #: 3501

SCALE ERROR

-1000	-15
0	Ø
+ 500	Ø
+1000	+10
+1500	Ø
+2000	+10
+3000	+5
+4000	Ø
+6000	-5
+8000	+5
+10,000	+15
+12,000	+20
+14,000	+20
+16,000	+15
+18,000	Ø
+20,000	-10
+22,000	
+25,000	
+30,000	
+35,000	
+40,000	
+45,000	
+50,000	

START PRESSURE 30.06

FINAL PRESSURE 30.06

BAROMETRIC SCALE ERROR TEST

28.10	Ø	30.50	+5
28.50	-5	30.90	Ø
29.00	Ø	30.99	Ø
29.50	Ø		
29.92	Ø		

FRICTION TEST

1000	30	20,000	50
2000	30	25,000	
3000	30	30,000	
5000	30	35,000	
10,000	40	40,000	
15,000	45	50,000	

CASE LEAK TEST @ 18,000 Ø

CASE LEAK TEST @ 1,200 Ø

HYSTERESIS TEST @ 50% 20

HYSTERESIS TEST @ 40% 15

AFTER EFFECT 15

SERIAL NUMBER J5924

INSPECTOR [signature]

TRAILER 10
ALTIMETER/BAROMETER CALIBRATION SHEET

BFG/C 9001

BFGoodrich
Aerospace

Component Overhaul & Repair

817 Dessau Road
Austin, Texas 78753
512-251-3441
FAX 512-990-1271

FAA Repair Station No. UZ2R232L

CASTLEBERRY AERCOR

Serviceable Part Tag

COMPONENT Altimeter
PART NO. 5934P-1A-83
SERIAL NO. J5924
MFG United Instr. WORK ORDER # V7071

☒ Overhaul ☐ Repair ☐ Bench Check & Test ☐ Other _____

The Aircraft Appliance identified above was overhauled, repaired, or bench tested (as per block marked) and inspected, in accordance with current Federal Aviation Administration Regulations, and is approved for return to service. Details of this component are on file at this repair station.

AUTHORIZED SIGNATURE

JAN 16 1995
DATE

ALTIMETER SCALE ERROR					
PART NO. 5934P1A83		SERIAL NO. J5924			
ALTIMETER PRESSURE					
TEST PT (FT)	INDICATOR READINGS AT + 25°C	TEST PT (FT)	INDICATOR READINGS AT + 25°C	TEST PT (FT)	INDICATOR READINGS AT + 25°C
-1000	+5	8,000	+5	30,000	
0 0	0	10,000	+10	35,000	
500	0	12,000	+15	40,000	
1000	0	14,000	+15	45,000	
1500	0	16,000	+5	50,000	
2000	0	18,000	0	55,000	
3000	-5	20,000	-5	60,000	
4000	-10	22,000		70,000	
6000	-10	25,000		80,000	

BFG/C9102

Certification

Psychrometer Certificate

COLE-PARMER® INSTRUMENT COMPANY
625 East Bunker, Vernon Hills IL•60061
Phone No.: 800-323-4340
Fax No.: 847-327-2929

Meter Under Test No. 03312-20 Serial Number: 57778

Catalog No. 17005-00 Received Condition: New

NIST TRACEABLE REPORT OF CALIBRATION

Dry Bulb			Wet Bulb		
Test Point °F	Reading °F	Deviation °F	Test Point °F	Reading °F	Deviation °F
32.00	32.0	0.0	32.00	32.0	0.0
59.94	60.0	0.1	59.94	60.0	0.1
100.07	100.0	-0.1	100.07	100.0	-0.1

Room Temperature: 21°C Room Humidity: 38%
Instrument tolerance is: ±3% full-scale
Instrument is within tolerance.

Cole-Parmer Instrument Co. certifies that the calibration of the above unit used Procedure number MWI-17005-00 and equipment traceable to the National Institute of Standards and Technology (NIST), and this test was performed in accordance with ANSI/NCSL Z540-1.

CALIBRATION STANDARDS

Hart Scientific Model No. 5614 platinum probe Serial No. 403541, 360810, 395508.Calibration due October 21, 2001.
Hart Scientific Model No. 850(C) Digital meter Serial numbers 4B185, 67609, 85307, 79014. Calibration due November 9, 2001.

Measurement Uncertainty = 0.08°C at k=2.
Listed uncertainties represent the best measurement uncertainty expressed at 95% confidence level.

CUSTOMER: Cubix Corp Purchase Order No. 2001398
Certificate No. 3611876-00

Calibrated by 321 Metrology Lab Tech
Calibration Date: September 14, 2001 **Suggested re-calibration date: September 14, 2002**

APPENDIX F:
RECORDS OF LOGGED DATA
ONE-MINUTE AVERAGES

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-O2-Trav, W Port	5/7/02	7:29:01	12.03		13.72	4.10		12.03		13.72	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:29:31	12.04		13.72	4.10		12.06		13.72	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:30:01	11.96		13.73	4.10		12.03		13.72	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:30:31	11.98		13.74	4.10		12.02		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:31:01	11.96		13.73	4.10		12.00		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:31:31	11.88		13.73	4.10		11.99		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:32:01	11.92		13.73	4.10		11.97		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:32:31	11.87		13.75	4.10		11.96		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:33:01	11.84		13.74	4.10		11.94		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:33:31	11.79		13.74	4.10		11.93		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:34:01	11.87		13.74	4.11		11.92		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:34:31	11.85		13.73	4.11		11.91		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:35:01	11.88		13.75	4.11		11.91		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:35:31	11.79		13.74	4.11		11.90		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:36:01	11.71		13.71	4.11		11.89		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:36:31	11.72		13.75	4.11		11.88		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:37:01	11.82		13.77	4.10		11.87		13.73	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:37:31	11.87		13.78	4.10		11.87		13.74	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:38:01	11.82		13.78	4.10		11.87		13.74	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:38:31	11.66		13.79	4.10		11.86		13.74	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:39:01	11.60		13.77	4.10		11.85		13.74	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:39:31	11.69		13.78	4.10		11.84		13.75	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:40:01	11.80		13.79	4.10		11.84		13.75	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:40:31	11.77		13.78	4.10		11.83		13.75	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:41:01	11.69		13.78	4.09		11.83		13.75	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:41:31	11.66		13.79	4.10		11.82		13.75	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:42:01	11.66		13.79	4.10		11.82		13.75	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:42:31	11.72		13.79	4.10		11.81		13.75	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:43:01	11.74		13.78	4.10		11.81		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:43:31	11.76		13.79	4.09		11.81		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:44:01	11.79		13.79	4.09		11.81		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:44:31	11.77		13.78	4.10		11.81		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:45:01	11.79		13.79	4.10		11.81		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:45:31	11.71		13.79	4.10		11.80		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:46:01	11.66		13.78	4.10		11.80		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:46:31	11.66		13.78	4.10		11.80		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:47:01	11.69		13.79	4.10		11.79		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:47:31	11.74		13.78	4.10		11.79		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:48:01	11.71		13.78	4.10		11.79		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:48:31	11.58		13.78	4.10		11.78		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:49:01	11.52		13.79	4.10		11.78		13.76	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:49:31	11.50		13.78	4.10		11.77		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:50:01	11.60		13.78	4.10		11.77		13.77	4.10	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-NG-O2-Trav, W Port	5/7/02	7:50:31	11.64		13.78	4.10		11.76		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:51:01	11.55		13.78	4.10		11.76		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:51:31	11.53		13.77	4.10		11.75		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:52:01	11.45		13.78	4.10		11.75		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:52:31	11.53		13.79	4.09		11.74		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:53:01	11.60		13.79	4.10		11.74		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:53:31	11.66		13.78	4.10		11.74		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:54:01	11.61		13.80	4.10		11.74		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:54:31	11.56		13.79	4.10		11.73		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:55:01	11.68		13.79	4.10		11.73		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:55:31	11.64		13.79	4.10		11.73		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:56:01	11.66		13.80	4.10		11.73		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:56:31	11.66		13.79	4.10		11.73		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:57:01	11.64		13.78	4.10		11.73		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:57:31	11.60		13.84	4.08		11.72		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:58:01	11.48		13.85	4.07		11.72		13.77	4.10	
Run U3-NG-O2-Trav, W Port	5/7/02	7:58:31	11.45		13.84	4.06		11.72		13.77	4.10	
END Run U3-NG-O2-Trav, W Port	5/7/02	7:59:01	11.42		13.84	4.07		**11.71**		**13.78**	**4.10**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-O2-Trav, S Port	5/7/02	8:03:09	11.48		13.81	4.10		11.48		13.81	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:03:39	11.39		13.81	4.09		11.43		13.81	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:04:09	11.50		13.81	4.09		11.44		13.81	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:04:39	11.56		13.81	4.09		11.48		13.81	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:05:09	11.56		13.81	4.10		11.50		13.81	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:05:39	11.58		13.79	4.09		11.52		13.81	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:06:09	11.53		13.77	4.10		11.52		13.81	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:06:39	11.48		13.78	4.10		11.52		13.80	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:07:09	11.44		13.78	4.10		11.51		13.80	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:07:39	11.34		13.77	4.10		11.50		13.80	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:08:09	11.28		13.78	4.10		11.48		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:08:39	11.32		13.78	4.10		11.46		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:09:09	11.28		13.79	4.10		11.45		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:09:39	11.23		13.78	4.10		11.43		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:10:09	11.16		13.79	4.10		11.41		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:10:39	11.18		13.78	4.10		11.40		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:11:09	11.24		13.78	4.10		11.39		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:11:39	11.26		13.78	4.10		11.38		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:12:09	11.21		13.78	4.10		11.37		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:12:39	11.08		13.79	4.09		11.36		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:13:09	11.13		13.79	4.09		11.35		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:13:39	11.21		13.80	4.09		11.34		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:14:09	11.21		13.79	4.09		11.33		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:14:39	11.12		13.79	4.09		11.33		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:15:09	11.05		13.80	4.09		11.31		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:15:39	11.08		13.80	4.10		11.31		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:16:09	11.21		13.80	4.09		11.30		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:16:39	11.26		13.79	4.09		11.30		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:17:09	11.16		13.77	4.10		11.29		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:17:39	11.21		13.78	4.10		11.29		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:18:09	11.15		13.78	4.09		11.29		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:18:39	11.24		13.79	4.09		11.28		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:19:09	11.29		13.79	4.09		11.28		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:19:39	11.21		13.79	4.09		11.28		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:20:09	11.10		13.78	4.09		11.28		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:20:39	11.04		13.80	4.08		11.27		13.79	4.10	
Run U3-NG-O2-Trav, S Port	5/7/02	8:21:09	10.91		13.79	4.09		11.26		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:21:39	10.86		13.80	4.09		11.25		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:22:09	10.76		13.80	4.09		11.24		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:22:39	10.70		13.80	4.09		11.23		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:23:09	10.72		13.81	4.09		11.21		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:23:39	10.76		13.80	4.09		11.20		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:24:09	10.83		13.80	4.08		11.19		13.79	4.09	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-NG-O2-Trav, S Port	5/7/02	8:24:39	10.83		13.80	4.09		11.19		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:25:09	10.81		13.81	4.09		11.18		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:25:39	10.78		13.81	4.08		11.17		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:26:09	10.78		13.80	4.09		11.16		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:26:39	10.72		13.80	4.09		11.15		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:27:09	10.73		13.80	4.09		11.14		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:27:39	10.70		13.80	4.08		11.13		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:28:09	10.68		13.80	4.09		11.12		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:28:39	10.72		13.80	4.09		11.12		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:29:09	10.78		13.81	4.08		11.11		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:29:39	10.84		13.81	4.09		11.10		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:30:09	10.76		13.80	4.09		11.10		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:30:39	10.80		13.81	4.08		11.09		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:31:09	10.81		13.81	4.08		11.09		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:31:39	10.83		13.82	4.08		11.08		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:32:09	10.89		13.83	4.08		11.08		13.79	4.09	
Run U3-NG-O2-Trav, S Port	5/7/02	8:32:39	10.78		13.81	4.08		11.08		13.79	4.09	
END Run U3-NG-O2-Trav, S Port	5/7/02	8:33:09	10.78		13.81	4.08		**11.07**		**13.79**	**4.09**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-O2-Trav, E Port	5/7/02	8:41:10	11.37		13.79	4.10		11.37		13.79	4.10	
Run U3-NG-O2-Trav, E Port	5/7/02	8:41:40	11.37		13.78	4.09		11.38		13.78	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:42:10	11.42		13.78	4.09		11.38		13.78	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:42:40	11.47		13.79	4.09		11.40		13.78	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:43:10	11.53		13.78	4.09		11.42		13.78	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:43:40	11.47		13.79	4.09		11.44		13.78	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:44:10	11.37		13.79	4.09		11.44		13.78	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:44:40	11.29		13.80	4.09		11.43		13.78	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:45:10	11.18		13.80	4.09		11.40		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:45:40	11.15		13.79	4.09		11.38		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:46:10	11.21		13.79	4.10		11.36		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:46:40	11.15		13.80	4.09		11.34		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:47:09	11.08		13.80	4.09		11.32		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:47:40	10.97		13.79	4.09		11.30		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:48:10	10.96		13.80	4.09		11.28		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:48:40	11.00		13.81	4.09		11.25		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:49:10	11.07		13.80	4.09		11.24		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:49:40	11.05		13.81	4.09		11.23		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:50:10	10.91		13.81	4.09		11.22		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:50:40	10.92		13.81	4.08		11.20		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:51:10	10.97		13.80	4.08		11.19		13.79	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:51:40	11.02		13.82	4.08		11.18		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:52:10	11.00		13.80	4.08		11.17		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:52:40	10.94		13.81	4.08		11.16		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:53:10	10.94		13.82	4.09		11.15		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:53:40	11.00		13.80	4.08		11.15		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:54:10	11.08		13.82	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:54:40	11.16		13.81	4.09		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:55:10	11.15		13.81	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:55:40	11.12		13.81	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:56:10	11.16		13.81	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:56:40	11.20		13.81	4.09		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:57:10	11.15		13.81	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:57:40	11.12		13.81	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:58:10	11.02		13.81	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:58:40	11.02		13.81	4.09		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:59:10	11.04		13.81	4.08		11.14		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	8:59:40	11.12		13.80	4.08		11.13		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:00:10	11.12		13.80	4.09		11.13		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:00:40	11.07		13.81	4.08		11.13		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:01:10	10.99		13.82	4.08		11.13		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:01:40	11.04		13.80	4.08		11.13		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:02:10	11.10		13.81	4.08		11.13		13.80	4.09	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-NG-O2-Trav, E Port	5/7/02	9:02:40	11.07		13.81	4.08		11.12		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:03:10	10.99		13.80	4.08		11.12		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:03:40	11.00		13.82	4.08		11.12		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:04:10	10.96		13.81	4.08		11.12		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:04:40	10.84		13.81	4.08		11.11		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:05:10	10.84		13.82	4.08		11.11		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:05:40	10.99		13.82	4.08		11.10		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:06:10	11.02		13.81	4.08		11.10		13.80	4.09	
Run U3-NG-O2-Trav, E Port	5/7/02	9:06:40	11.00		13.82	4.08		11.10		13.80	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:07:10	11.02		13.83	4.07		11.10		13.80	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:07:40	11.00		13.83	4.08		11.10		13.80	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:08:10	11.08		13.83	4.07		11.09		13.81	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:08:40	11.12		13.83	4.07		11.09		13.81	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:09:10	11.10		13.83	4.07		11.09		13.81	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:09:40	10.97		13.93	4.02		11.09		13.81	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:10:10	10.83		13.89	4.04		11.09		13.81	4.08	
Run U3-NG-O2-Trav, E Port	5/7/02	9:10:40	10.86		13.85	4.06		11.09		13.81	4.08	
END Run U3-NG-O2-Trav, E Port	5/7/02	9:11:09	10.94		13.84	4.07		**11.08**		**13.81**	**4.08**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-O2-Trav, N Port	5/7/02	9:14:01	11.45		13.82	4.07		11.45		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:14:31	11.40		13.82	4.07		11.43		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:15:01	11.36		13.81	4.07		11.41		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:15:31	11.28		13.82	4.07		11.38		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:16:01	11.34		13.82	4.07		11.36		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:16:30	11.36		13.82	4.07		11.36		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:17:00	11.36		13.83	4.07		11.36		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:17:30	11.28		13.82	4.07		11.36		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:18:00	11.16		13.82	4.07		11.34		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:18:30	11.08		13.82	4.07		11.32		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:19:00	11.21		13.83	4.07		11.30		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:19:30	11.26		13.82	4.07		11.29		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:20:00	11.23		13.82	4.07		11.29		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:20:30	11.21		13.83	4.07		11.29		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:21:00	11.16		13.83	4.08		11.28		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:21:30	11.20		13.83	4.07		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:22:00	11.28		13.83	4.08		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:22:30	11.32		13.83	4.08		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:23:00	11.24		13.82	4.08		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:23:30	11.15		13.83	4.08		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:24:00	11.18		13.82	4.08		11.26		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:24:30	11.26		13.81	4.08		11.26		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:25:00	11.29		13.82	4.08		11.26		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:25:30	11.42		13.83	4.07		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:26:00	11.32		13.82	4.08		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:26:30	11.24		13.82	4.07		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:27:00	11.36		13.82	4.08		11.27		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:27:30	11.52		13.82	4.08		11.28		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:28:00	11.47		13.82	4.07		11.29		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:28:30	11.32		13.83	4.08		11.29		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:29:00	11.32		13.84	4.08		11.29		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:29:30	11.50		13.82	4.08		11.29		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:30:00	11.52		13.83	4.08		11.30		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:30:30	11.52		13.84	4.08		11.31		13.82	4.07	
Run U3-NG-O2-Trav, N Port	5/7/02	9:31:00	11.39		13.82	4.08		11.31		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:31:30	11.34		13.84	4.08		11.31		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:32:00	11.34		13.84	4.08		11.31		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:32:30	11.37		13.84	4.08		11.31		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:33:00	11.39		13.84	4.07		11.32		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:33:30	11.42		13.85	4.07		11.32		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:34:00	11.34		13.84	4.08		11.32		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:34:30	11.34		13.85	4.08		11.32		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:34:59	11.50		13.83	4.07		11.32		13.82	4.08	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-NG-O2-Trav, N Port	5/7/02	9:35:30	11.50		13.83	4.08		11.33		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:36:00	11.48		13.83	4.08		11.33		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:36:30	11.50		13.82	4.08		11.33		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:37:00	11.52		13.83	4.08		11.34		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:37:30	11.55		13.83	4.08		11.34		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:38:00	11.48		13.83	4.08		11.34		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:38:30	11.40		13.83	4.08		11.35		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:39:00	11.37		13.83	4.08		11.35		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:39:30	11.45		13.82	4.08		11.35		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:40:00	11.48		13.83	4.07		11.35		13.82	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:40:30	11.40		13.83	4.07		11.35		13.83	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:41:00	11.40		13.83	4.08		11.35		13.83	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:41:30	11.45		13.83	4.08		11.36		13.83	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:42:00	11.40		13.83	4.07		11.36		13.83	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:42:30	11.42		13.86	4.06		11.36		13.83	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:43:00	11.44		13.88	4.05		11.36		13.83	4.08	
Run U3-NG-O2-Trav, N Port	5/7/02	9:43:30	11.40		13.89	4.05		11.36		13.83	4.08	
END Run U3-NG-O2-Trav, N Port	5/7/02	9:44:00	11.34		13.89	4.04		**11.36**		**13.83**	**4.07**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-100%-1/U3-RA-1	5/7/02	10:17:01	9.53	0.42	13.64	4.18	0.98	9.53	0.42	13.64	4.18	0.98
Run U3-100%-1/U3-RA-1	5/7/02	10:18:01	9.53	0.42	13.64	4.18	0.94	9.54	0.41	13.64	4.18	0.99
Run U3-100%-1/U3-RA-1	5/7/02	10:19:00	9.52	0.36	13.65	4.18	0.83	9.54	0.39	13.64	4.18	0.92
Run U3-100%-1/U3-RA-1	5/7/02	10:20:00	9.44	0.36	13.67	4.18	0.78	9.51	0.38	13.65	4.18	0.88
Run U3-100%-1/U3-RA-1	5/7/02	10:21:00	9.45	0.33	13.63	4.18	0.73	9.50	0.37	13.65	4.18	0.85
Run U3-100%-1/U3-RA-1	5/7/02	10:22:00	9.40	0.30	13.63	4.19	0.71	9.48	0.36	13.64	4.18	0.83
Run U3-100%-1/U3-RA-1	5/7/02	10:23:00	9.37	0.33	13.62	4.19	0.70	9.47	0.36	13.64	4.18	0.81
Run U3-100%-1/U3-RA-1	5/7/02	10:24:00	9.34	0.30	13.63	4.18	0.66	9.45	0.35	13.64	4.18	0.79
Run U3-100%-1/U3-RA-1	5/7/02	10:25:00	9.36	0.30	13.63	4.18	0.69	9.43	0.35	13.64	4.18	0.77
Run U3-100%-1/U3-RA-1	5/7/02	10:26:00	9.26	0.33	13.63	4.19	0.65	9.42	0.34	13.64	4.18	0.76
Run U3-100%-1/U3-RA-1	5/7/02	10:27:00	9.18	0.30	13.64	4.19	0.63	9.40	0.34	13.64	4.18	0.75
Run U3-100%-1/U3-RA-1	5/7/02	10:28:00	9.18	0.30	13.64	4.19	0.60	9.38	0.33	13.64	4.19	0.74
Run U3-100%-1/U3-RA-1	5/7/02	10:29:00	9.16	0.30	13.64	4.18	0.58	9.37	0.33	13.64	4.19	0.72
Run U3-100%-1/U3-RA-1	5/7/02	10:30:00	9.16	0.33	13.64	4.18	0.58	9.35	0.33	13.64	4.19	0.71
Run U3-100%-1/U3-RA-1	5/7/02	10:31:00	9.18	0.30	13.64	4.19	0.58	9.34	0.33	13.64	4.19	0.70
Run U3-100%-1/U3-RA-1	5/7/02	10:32:00	9.15	0.30	13.65	4.19	0.58	9.33	0.33	13.64	4.19	0.70
Run U3-100%-1/U3-RA-1	5/7/02	10:33:00	9.10	0.30	13.65	4.18	0.57	9.31	0.32	13.64	4.19	0.69
Run U3-100%-1/U3-RA-1	5/7/02	10:34:00	8.97	0.30	13.64	4.18	0.56	9.30	0.32	13.64	4.19	0.68
Run U3-100%-1/U3-RA-1	5/7/02	10:35:00	9.02	0.33	13.65	4.19	0.55	9.28	0.32	13.64	4.19	0.68
Run U3-100%-1/U3-RA-1	5/7/02	10:36:00	9.05	0.33	13.65	4.18	0.55	9.27	0.32	13.64	4.19	0.67
Run U3-100%-1/U3-RA-1	5/7/02	10:37:00	9.07	0.33	13.64	4.18	0.55	9.26	0.32	13.64	4.18	0.66
Run U3-100%-1/U3-RA-1	5/7/02	10:38:00	9.16	0.30	13.65	4.18	0.55	9.25	0.32	13.64	4.18	0.66
Run U3-100%-1/U3-RA-1	5/7/02	10:39:00	9.15	0.30	13.65	4.19	0.58	9.25	0.32	13.64	4.18	0.65
Run U3-100%-1/U3-RA-1	5/7/02	10:40:00	9.18	0.36	13.65	4.18	0.55	9.25	0.32	13.64	4.18	0.65
Run U3-100%-1/U3-RA-1	5/7/02	10:41:00	9.12	0.33	13.65	4.18	0.54	9.24	0.32	13.64	4.18	0.65
Run U3-100%-1/U3-RA-1	5/7/02	10:42:00	9.10	0.36	13.65	4.18	0.53	9.24	0.32	13.64	4.18	0.64
Run U3-100%-1/U3-RA-1	5/7/02	10:43:00	9.11	0.36	13.66	4.18	0.53	9.23	0.32	13.64	4.18	0.64
Run U3-100%-1/U3-RA-1	5/7/02	10:44:00	9.13	0.32	13.67	4.17	0.51	9.23	0.33	13.64	4.18	0.63
Run U3-100%-1/U3-RA-1	5/7/02	10:45:00	9.15	0.36	13.67	4.17	0.49	9.22	0.33	13.64	4.18	0.63
Run U3-100%-1/U3-RA-1	5/7/02	10:46:00	9.16	0.36	13.67	4.17	0.48	9.22	0.33	13.64	4.18	0.62
Run U3-100%-1/U3-RA-1	5/7/02	10:47:00	9.12	0.39	13.67	4.17	0.47	9.22	0.33	13.64	4.18	0.62
Run U3-100%-1/U3-RA-1	5/7/02	10:48:00	9.16	0.36	13.67	4.17	0.48	9.22	0.33	13.65	4.18	0.61
Run U3-100%-1/U3-RA-1	5/7/02	10:49:00	9.15	0.39	13.67	4.16	0.46	9.21	0.33	13.65	4.18	0.61
Run U3-100%-1/U3-RA-1	5/7/02	10:50:00	9.15	0.39	13.67	4.17	0.47	9.21	0.33	13.65	4.18	0.61
Run U3-100%-1/U3-RA-1	5/7/02	10:51:00	9.21	0.45	13.67	4.17	0.46	9.21	0.34	13.65	4.18	0.60
Run U3-100%-1/U3-RA-1	5/7/02	10:52:00	9.20	0.42	13.67	4.17	0.49	9.21	0.34	13.65	4.18	0.60
Run U3-100%-1/U3-RA-1	5/7/02	10:53:00	9.24	0.42	13.68	4.17	0.47	9.21	0.34	13.65	4.18	0.59
Run U3-100%-1/U3-RA-1	5/7/02	10:54:00	9.26	0.42	13.66	4.18	0.51	9.21	0.34	13.65	4.18	0.59
Run U3-100%-1/U3-RA-1	5/7/02	10:55:00	9.26	0.42	13.66	4.18	0.53	9.21	0.35	13.65	4.18	0.59
Run U3-100%-1/U3-RA-1	5/7/02	10:56:00	9.24	0.45	13.65	4.17	0.48	9.21	0.35	13.65	4.18	0.59
Run U3-100%-1/U3-RA-1	5/7/02	10:57:00	9.31	0.45	13.66	4.17	0.47	9.22	0.35	13.65	4.18	0.58
Run U3-100%-1/U3-RA-1	5/7/02	10:58:00	9.26	0.48	13.67	4.17	0.48	9.22	0.35	13.65	4.18	0.58
Run U3-100%-1/U3-RA-1	5/7/02	10:59:00	9.20	0.51	13.67	4.17	0.49	9.22	0.36	13.65	4.18	0.58

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-100%-1/U3-RA-1	5/7/02	11:00:00	9.16	0.48	13.67	4.17	0.48	9.22	0.36	13.65	4.18	0.58
Run U3-100%-1/U3-RA-1	5/7/02	11:01:00	9.15	0.48	13.68	4.16	0.48	9.21	0.36	13.65	4.18	0.57
Run U3-100%-1/U3-RA-1	5/7/02	11:02:00	9.20	0.48	13.68	4.16	0.46	9.21	0.36	13.65	4.18	0.57
Run U3-100%-1/U3-RA-1	5/7/02	11:03:00	9.18	0.51	13.67	4.16	0.46	9.21	0.37	13.65	4.18	0.57
Run U3-100%-1/U3-RA-1	5/7/02	11:04:00	9.19	0.51	13.67	4.17	0.44	9.21	0.37	13.65	4.18	0.57
Run U3-100%-1/U3-RA-1	5/7/02	11:05:00	9.18	0.54	13.70	4.17	0.44	9.21	0.37	13.65	4.18	0.56
Run U3-100%-1/U3-RA-1	5/7/02	11:06:00	9.21	0.57	13.67	4.17	0.43	9.21	0.38	13.65	4.18	0.56
Run U3-100%-1/U3-RA-1	5/7/02	11:07:00	9.21	0.57	13.69	4.17	0.44	9.21	0.38	13.65	4.18	0.56
Run U3-100%-1/U3-RA-1	5/7/02	11:08:00	9.26	0.57	13.67	4.17	0.45	9.21	0.39	13.65	4.18	0.56
Run U3-100%-1/U3-RA-1	5/7/02	11:09:00	9.26	0.57	13.67	4.17	0.42	9.21	0.39	13.65	4.18	0.55
Run U3-100%-1/U3-RA-1	5/7/02	11:10:00	9.21	0.57	13.68	4.17	0.44	9.21	0.39	13.66	4.18	0.55
Run U3-100%-1/U3-RA-1	5/7/02	11:11:00	9.27	0.57	13.66	4.17	0.41	9.21	0.40	13.66	4.18	0.55
Run U3-100%-1/U3-RA-1	5/7/02	11:12:00	9.27	0.60	13.67	4.17	0.40	9.21	0.40	13.66	4.18	0.55
Run U3-100%-1/U3-RA-1	5/7/02	11:13:00	9.29	0.63	13.68	4.16	0.41	9.22	0.40	13.66	4.18	0.54
Run U3-100%-1/U3-RA-1	5/7/02	11:14:00	9.26	0.63	13.69	4.16	0.40	9.22	0.41	13.66	4.18	0.54
Run U3-100%-1/U3-RA-1	5/7/02	11:15:00	9.18	0.63	13.69	4.16	0.40	9.22	0.41	13.66	4.18	0.54
Run U3-100%-1/U3-RA-1	5/7/02	11:16:00	9.16	0.63	13.68	4.16	0.39	9.22	0.41	13.66	4.18	0.54
END Run U3-100%-1/U3-RA-1	5/7/02	11:17:00	9.16	0.63	13.67	4.16	0.40	**9.22**	**0.42**	**13.66**	**4.18**	**0.53**

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-100%-2/U3-RA-2	5/7/02	11:30:06	9.24	0.27	13.62	4.13	1.00	9.24	0.27	13.62	4.13	1.00
Run U3-100%-2/U3-RA-2	5/7/02	11:31:06	9.16	0.27	13.64	4.14	0.89	9.19	0.26	13.63	4.14	0.92
Run U3-100%-2/U3-RA-2	5/7/02	11:32:06	9.13	0.24	13.63	4.15	0.79	9.17	0.26	13.63	4.14	0.89
Run U3-100%-2/U3-RA-2	5/7/02	11:33:06	9.21	0.27	13.64	4.15	0.75	9.17	0.25	13.63	4.15	0.85
Run U3-100%-2/U3-RA-2	5/7/02	11:34:06	9.23	0.24	13.64	4.16	0.72	9.18	0.25	13.64	4.15	0.82
Run U3-100%-2/U3-RA-2	5/7/02	11:35:06	9.28	0.24	13.64	4.16	0.68	9.19	0.25	13.64	4.15	0.80
Run U3-100%-2/U3-RA-2	5/7/02	11:36:06	9.26	0.27	13.63	4.16	0.63	9.21	0.25	13.64	4.15	0.77
Run U3-100%-2/U3-RA-2	5/7/02	11:37:06	9.29	0.24	13.62	4.16	0.62	9.22	0.25	13.63	4.15	0.75
Run U3-100%-2/U3-RA-2	5/7/02	11:38:06	9.31	0.24	13.63	4.16	0.74	9.23	0.25	13.63	4.15	0.74
Run U3-100%-2/U3-RA-2	5/7/02	11:39:06	9.20	0.24	13.62	4.16	0.65	9.23	0.25	13.63	4.15	0.74
Run U3-100%-2/U3-RA-2	5/7/02	11:40:06	9.13	0.27	13.64	4.16	0.60	9.22	0.25	13.63	4.15	0.73
Run U3-100%-2/U3-RA-2	5/7/02	11:41:06	9.21	0.27	13.63	4.17	0.61	9.22	0.25	13.63	4.15	0.72
Run U3-100%-2/U3-RA-2	5/7/02	11:42:06	9.24	0.27	13.63	4.16	0.61	9.22	0.25	13.63	4.16	0.71
Run U3-100%-2/U3-RA-2	5/7/02	11:43:06	9.23	0.24	13.64	4.16	0.61	9.22	0.25	13.63	4.16	0.70
Run U3-100%-2/U3-RA-2	5/7/02	11:44:06	9.19	0.27	13.64	4.16	0.63	9.22	0.25	13.63	4.16	0.69
Run U3-100%-2/U3-RA-2	5/7/02	11:45:06	9.18	0.27	13.64	4.16	0.60	9.22	0.25	13.63	4.16	0.69
Run U3-100%-2/U3-RA-2	5/7/02	11:46:06	9.10	0.27	13.64	4.16	0.59	9.21	0.25	13.63	4.16	0.68
Run U3-100%-2/U3-RA-2	5/7/02	11:47:06	9.02	0.27	13.64	4.16	0.59	9.20	0.26	13.63	4.16	0.68
Run U3-100%-2/U3-RA-2	5/7/02	11:48:06	9.08	0.26	13.64	4.16	0.60	9.19	0.26	13.63	4.16	0.67
Run U3-100%-2/U3-RA-2	5/7/02	11:49:06	9.10	0.30	13.63	4.16	0.62	9.19	0.26	13.63	4.16	0.67
Run U3-100%-2/U3-RA-2	5/7/02	11:50:06	9.10	0.30	13.64	4.16	0.62	9.19	0.26	13.63	4.16	0.67
Run U3-100%-2/U3-RA-2	5/7/02	11:51:05	9.13	0.29	13.64	4.16	0.61	9.18	0.26	13.63	4.16	0.67
Run U3-100%-2/U3-RA-2	5/7/02	11:52:05	9.02	0.33	13.65	4.16	0.64	9.18	0.27	13.63	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	11:53:05	9.13	0.33	13.64	4.16	0.72	9.18	0.27	13.63	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	11:54:05	9.13	0.33	13.64	4.16	0.65	9.17	0.27	13.63	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	11:55:05	9.10	0.36	13.63	4.16	0.64	9.17	0.27	13.63	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	11:56:05	9.18	0.33	13.65	4.16	0.65	9.17	0.28	13.64	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	11:57:05	9.28	0.36	13.65	4.16	0.62	9.17	0.28	13.64	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	11:58:05	9.23	0.33	13.65	4.16	0.61	9.17	0.28	13.64	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	11:59:05	9.13	0.36	13.65	4.15	0.62	9.17	0.28	13.64	4.16	0.66
Run U3-100%-2/U3-RA-2	5/7/02	12:00:05	9.05	0.36	13.66	4.16	0.56	9.17	0.28	13.64	4.16	0.65
Run U3-100%-2/U3-RA-2	5/7/02	12:01:05	9.05	0.35	13.66	4.15	0.56	9.17	0.29	13.64	4.16	0.65
Run U3-100%-2/U3-RA-2	5/7/02	12:02:05	8.97	0.39	13.66	4.15	0.55	9.16	0.29	13.64	4.16	0.65
Run U3-100%-2/U3-RA-2	5/7/02	12:03:05	8.99	0.39	13.66	4.15	0.54	9.16	0.29	13.64	4.16	0.65
Run U3-100%-2/U3-RA-2	5/7/02	12:04:05	9.00	0.42	13.65	4.16	0.54	9.15	0.30	13.64	4.16	0.64
Run U3-100%-2/U3-RA-2	5/7/02	12:05:05	8.97	0.42	13.65	4.15	0.52	9.14	0.30	13.64	4.16	0.64
Run U3-100%-2/U3-RA-2	5/7/02	12:06:05	9.03	0.42	13.66	4.16	0.52	9.14	0.30	13.64	4.16	0.64
Run U3-100%-2/U3-RA-2	5/7/02	12:07:05	9.05	0.42	13.65	4.15	0.49	9.14	0.31	13.64	4.16	0.63
Run U3-100%-2/U3-RA-2	5/7/02	12:08:05	9.05	0.42	13.66	4.15	0.51	9.14	0.31	13.64	4.16	0.63
Run U3-100%-2/U3-RA-2	5/7/02	12:09:05	9.07	0.41	13.65	4.15	0.48	9.13	0.31	13.64	4.16	0.63
Run U3-100%-2/U3-RA-2	5/7/02	12:10:05	9.08	0.45	13.65	4.16	0.47	9.13	0.31	13.64	4.16	0.62
Run U3-100%-2/U3-RA-2	5/7/02	12:11:05	9.13	0.45	13.65	4.16	0.46	9.13	0.32	13.64	4.16	0.62
Run U3-100%-2/U3-RA-2	5/7/02	12:12:05	9.18	0.45	13.65	4.15	0.45	9.13	0.32	13.64	4.16	0.61

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-100%-2/U3-RA-2	5/7/02	12:13:05	9.13	0.45	13.65	4.15	0.46	9.13	0.32	13.64	4.16	0.61
Run U3-100%-2/U3-RA-2	5/7/02	12:14:05	9.11	0.45	13.65	4.16	0.45	9.13	0.33	13.64	4.16	0.61
Run U3-100%-2/U3-RA-2	5/7/02	12:15:05	9.05	0.45	13.64	4.16	0.44	9.13	0.33	13.64	4.16	0.60
Run U3-100%-2/U3-RA-2	5/7/02	12:16:05	9.02	0.48	13.66	4.15	0.43	9.13	0.33	13.64	4.16	0.60
Run U3-100%-2/U3-RA-2	5/7/02	12:17:05	9.03	0.44	13.65	4.15	0.44	9.13	0.33	13.64	4.16	0.60
Run U3-100%-2/U3-RA-2	5/7/02	12:18:05	9.02	0.51	13.65	4.15	0.44	9.13	0.34	13.64	4.16	0.59
Run U3-100%-2/U3-RA-2	5/7/02	12:19:05	9.05	0.54	13.66	4.14	0.43	9.12	0.34	13.64	4.16	0.59
Run U3-100%-2/U3-RA-2	5/7/02	12:20:05	9.08	0.51	13.66	4.15	0.42	9.12	0.34	13.64	4.16	0.59
Run U3-100%-2/U3-RA-2	5/7/02	12:21:05	9.10	0.50	13.65	4.15	0.45	9.12	0.35	13.64	4.16	0.58
Run U3-100%-2/U3-RA-2	5/7/02	12:22:05	9.10	0.53	13.65	4.15	0.46	9.12	0.35	13.64	4.16	0.58
Run U3-100%-2/U3-RA-2	5/7/02	12:23:04	9.13	0.54	13.65	4.15	0.48	9.12	0.35	13.64	4.16	0.58
Run U3-100%-2/U3-RA-2	5/7/02	12:24:05	9.13	0.51	13.64	4.15	0.48	9.12	0.36	13.64	4.15	0.58
Run U3-100%-2/U3-RA-2	5/7/02	12:25:05	9.11	0.60	13.63	4.15	0.48	9.12	0.36	13.64	4.15	0.58
Run U3-100%-2/U3-RA-2	5/7/02	12:26:05	9.08	0.60	13.63	4.15	0.49	9.12	0.37	13.64	4.15	0.57
Run U3-100%-2/U3-RA-2	5/7/02	12:27:05	9.15	0.60	13.64	4.15	0.52	9.12	0.37	13.64	4.15	0.57
Run U3-100%-2/U3-RA-2	5/7/02	12:28:05	9.16	0.60	13.66	4.16	0.51	9.12	0.37	13.64	4.15	0.57
Run U3-100%-2/U3-RA-2	5/7/02	12:29:05	9.16	0.60	13.66	4.16	0.53	9.12	0.38	13.64	4.15	0.57
END Run U3-100%-2/U3-RA-2	5/7/02	12:30:05	9.05	0.65	13.66	4.15	0.52	**9.12**	**0.38**	**13.64**	**4.15**	**0.57**

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-100%-3/U3-RA-3	5/7/02	12:47:01	9.10	0.27	13.64	4.15	0.86	9.10	0.27	13.64	4.15	0.86
Run U3-100%-3/U3-RA-3	5/7/02	12:48:01	9.05	0.27	13.64	4.15	0.83	9.07	0.27	13.64	4.15	0.85
Run U3-100%-3/U3-RA-3	5/7/02	12:49:01	8.99	0.24	13.66	4.14	0.78	9.04	0.26	13.65	4.14	0.83
Run U3-100%-3/U3-RA-3	5/7/02	12:50:01	9.08	0.24	13.66	4.14	0.77	9.04	0.26	13.65	4.14	0.81
Run U3-100%-3/U3-RA-3	5/7/02	12:51:01	9.05	0.24	13.65	4.14	0.73	9.05	0.25	13.65	4.14	0.80
Run U3-100%-3/U3-RA-3	5/7/02	12:52:01	9.10	0.24	13.64	4.14	0.85	9.06	0.25	13.65	4.14	0.80
Run U3-100%-3/U3-RA-3	5/7/02	12:53:01	9.11	0.27	13.64	4.14	0.80	9.07	0.25	13.65	4.14	0.80
Run U3-100%-3/U3-RA-3	5/7/02	12:54:01	9.10	0.23	13.65	4.14	0.66	9.07	0.25	13.65	4.14	0.79
Run U3-100%-3/U3-RA-3	5/7/02	12:55:01	9.03	0.24	13.66	4.14	0.71	9.07	0.25	13.65	4.14	0.77
Run U3-100%-3/U3-RA-3	5/7/02	12:56:01	8.99	0.24	13.64	4.15	0.63	9.06	0.25	13.65	4.14	0.76
Run U3-100%-3/U3-RA-3	5/7/02	12:57:01	8.94	0.27	13.66	4.14	0.62	9.05	0.25	13.65	4.14	0.75
Run U3-100%-3/U3-RA-3	5/7/02	12:58:01	8.89	0.27	13.65	4.15	0.60	9.04	0.25	13.65	4.14	0.74
Run U3-100%-3/U3-RA-3	5/7/02	12:59:01	8.91	0.23	13.66	4.14	0.59	9.02	0.25	13.65	4.14	0.72
Run U3-100%-3/U3-RA-3	5/7/02	13:00:01	8.95	0.27	13.65	4.15	0.57	9.02	0.25	13.65	4.14	0.71
Run U3-100%-3/U3-RA-3	5/7/02	13:01:01	8.97	0.24	13.64	4.15	0.55	9.01	0.25	13.65	4.14	0.70
Run U3-100%-3/U3-RA-3	5/7/02	13:02:01	9.03	0.27	13.65	4.15	0.52	9.01	0.25	13.65	4.14	0.69
Run U3-100%-3/U3-RA-3	5/7/02	13:03:01	9.07	0.27	13.65	4.15	0.51	9.01	0.25	13.65	4.14	0.68
Run U3-100%-3/U3-RA-3	5/7/02	13:04:01	9.02	0.26	13.65	4.15	0.47	9.02	0.25	13.65	4.14	0.67
Run U3-100%-3/U3-RA-3	5/7/02	13:05:01	9.07	0.30	13.64	4.15	0.46	9.02	0.25	13.65	4.15	0.66
Run U3-100%-3/U3-RA-3	5/7/02	13:06:01	9.08	0.27	13.65	4.15	0.42	9.02	0.26	13.65	4.15	0.65
Run U3-100%-3/U3-RA-3	5/7/02	13:07:01	9.11	0.26	13.64	4.16	0.41	9.03	0.26	13.65	4.15	0.64
Run U3-100%-3/U3-RA-3	5/7/02	13:08:01	9.13	0.30	13.65	4.15	0.39	9.03	0.26	13.65	4.15	0.62
Run U3-100%-3/U3-RA-3	5/7/02	13:09:01	9.11	0.27	13.66	4.14	0.38	9.03	0.26	13.65	4.15	0.61
Run U3-100%-3/U3-RA-3	5/7/02	13:10:01	9.04	0.29	13.66	4.14	0.45	9.04	0.26	13.65	4.15	0.60
Run U3-100%-3/U3-RA-3	5/7/02	13:11:01	8.99	0.26	13.66	4.14	0.38	9.04	0.26	13.65	4.15	0.60
Run U3-100%-3/U3-RA-3	5/7/02	13:12:01	8.95	0.29	13.67	4.14	0.37	9.03	0.26	13.65	4.15	0.59
Run U3-100%-3/U3-RA-3	5/7/02	13:13:01	8.92	0.33	13.66	4.14	0.35	9.03	0.26	13.65	4.15	0.58
Run U3-100%-3/U3-RA-3	5/7/02	13:14:01	8.95	0.33	13.66	4.14	0.37	9.03	0.27	13.65	4.15	0.57
Run U3-100%-3/U3-RA-3	5/7/02	13:15:01	8.99	0.29	13.65	4.15	0.36	9.02	0.27	13.65	4.15	0.56
Run U3-100%-3/U3-RA-3	5/7/02	13:16:01	8.99	0.29	13.66	4.14	0.38	9.02	0.27	13.65	4.14	0.56
Run U3-100%-3/U3-RA-3	5/7/02	13:17:01	9.03	0.32	13.65	4.14	0.40	9.02	0.27	13.65	4.14	0.55
Run U3-100%-3/U3-RA-3	5/7/02	13:18:01	9.03	0.29	13.67	4.15	0.40	9.02	0.27	13.65	4.14	0.55
Run U3-100%-3/U3-RA-3	5/7/02	13:19:01	9.07	0.35	13.65	4.14	0.40	9.02	0.27	13.65	4.14	0.54
Run U3-100%-3/U3-RA-3	5/7/02	13:20:01	9.07	0.36	13.64	4.15	0.41	9.02	0.28	13.65	4.14	0.54
Run U3-100%-3/U3-RA-3	5/7/02	13:21:01	9.10	0.39	13.65	4.14	0.39	9.03	0.28	13.65	4.14	0.53
Run U3-100%-3/U3-RA-3	5/7/02	13:22:01	9.07	0.39	13.65	4.14	0.41	9.03	0.28	13.65	4.14	0.53
Run U3-100%-3/U3-RA-3	5/7/02	13:23:01	9.08	0.39	13.65	4.15	0.39	9.03	0.29	13.65	4.14	0.53
Run U3-100%-3/U3-RA-3	5/7/02	13:24:01	9.11	0.39	13.65	4.14	0.39	9.03	0.29	13.65	4.14	0.52
Run U3-100%-3/U3-RA-3	5/7/02	13:25:00	9.06	0.38	13.66	4.14	0.39	9.03	0.29	13.65	4.14	0.52
Run U3-100%-3/U3-RA-3	5/7/02	13:26:00	9.00	0.39	13.66	4.14	0.37	9.03	0.29	13.65	4.14	0.51
Run U3-100%-3/U3-RA-3	5/7/02	13:27:00	8.95	0.45	13.66	4.13	0.40	9.03	0.30	13.65	4.14	0.51
Run U3-100%-3/U3-RA-3	5/7/02	13:28:00	8.97	0.45	13.67	4.14	0.36	9.03	0.30	13.65	4.14	0.51
Run U3-100%-3/U3-RA-3	5/7/02	13:29:00	8.92	0.48	13.66	4.14	0.37	9.03	0.30	13.65	4.14	0.50

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-100%-3/U3-RA-3	5/7/02	13:30:00	8.99	0.48	13.66	4.14	0.37	9.03	0.31	13.65	4.14	0.50
Run U3-100%-3/U3-RA-3	5/7/02	13:31:00	8.94	0.44	13.66	4.14	0.35	9.02	0.31	13.65	4.14	0.50
Run U3-100%-3/U3-RA-3	5/7/02	13:32:00	8.84	0.51	13.66	4.14	0.35	9.02	0.32	13.65	4.14	0.49
Run U3-100%-3/U3-RA-3	5/7/02	13:33:00	8.86	0.48	13.66	4.14	0.36	9.02	0.32	13.65	4.14	0.49
Run U3-100%-3/U3-RA-3	5/7/02	13:34:00	8.86	0.47	13.66	4.14	0.35	9.01	0.32	13.65	4.14	0.49
Run U3-100%-3/U3-RA-3	5/7/02	13:35:00	8.89	0.53	13.66	4.14	0.34	9.01	0.33	13.65	4.14	0.49
Run U3-100%-3/U3-RA-3	5/7/02	13:36:00	8.94	0.53	13.66	4.15	0.33	9.01	0.33	13.65	4.14	0.48
Run U3-100%-3/U3-RA-3	5/7/02	13:37:00	8.94	0.51	13.65	4.14	0.33	9.01	0.33	13.65	4.14	0.48
Run U3-100%-3/U3-RA-3	5/7/02	13:38:00	8.94	0.53	13.66	4.14	0.31	9.01	0.34	13.65	4.14	0.48
Run U3-100%-3/U3-RA-3	5/7/02	13:39:00	8.97	0.53	13.65	4.14	0.32	9.01	0.34	13.65	4.14	0.47
Run U3-100%-3/U3-RA-3	5/7/02	13:40:00	8.92	0.56	13.66	4.14	0.32	9.00	0.35	13.65	4.14	0.47
Run U3-100%-3/U3-RA-3	5/7/02	13:41:00	8.91	0.56	13.66	4.14	0.32	9.00	0.35	13.65	4.14	0.47
Run U3-100%-3/U3-RA-3	5/7/02	13:42:00	8.89	0.57	13.66	4.14	0.31	9.00	0.35	13.65	4.14	0.47
Run U3-100%-3/U3-RA-3	5/7/02	13:43:00	8.89	0.59	13.67	4.14	0.32	9.00	0.36	13.65	4.14	0.46
Run U3-100%-3/U3-RA-3	5/7/02	13:44:00	8.84	0.59	13.67	4.13	0.31	9.00	0.36	13.65	4.14	0.46
Run U3-100%-3/U3-RA-3	5/7/02	13:45:00	8.84	0.63	13.67	4.14	0.33	8.99	0.37	13.65	4.14	0.46
Run U3-100%-3/U3-RA-3	5/7/02	13:46:00	8.86	0.59	13.66	4.14	0.33	8.99	0.37	13.65	4.14	0.46
END Run U3-100%-3/U3-RA-3	5/7/02	13:47:00	8.86	0.59	13.66	4.14	0.32	**8.99**	**0.37**	**13.65**	**4.14**	**0.45**

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-50%-1	5/9/02	10:11:21	9.11		13.94	4.01		9.11		13.94	4.01	
Run U3-NG-50%-1	5/9/02	10:12:21	9.07		13.96	4.00		9.09		13.95	4.00	
Run U3-NG-50%-1	5/9/02	10:13:21	8.89		13.99	4.00		9.04		13.97	4.00	
Run U3-NG-50%-1	5/9/02	10:14:21	8.87		13.97	4.00		8.99		13.97	4.00	
Run U3-NG-50%-1	5/9/02	10:15:21	8.84		14.00	4.00		8.95		13.97	4.00	
Run U3-NG-50%-1	5/9/02	10:16:21	8.81		14.00	4.00		8.93		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:17:21	8.71		14.00	4.00		8.90		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:18:21	8.68		14.00	4.00		8.87		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:19:21	8.78		13.99	4.00		8.85		13.99	4.00	
Run U3-NG-50%-1	5/9/02	10:20:21	8.73		13.97	4.00		8.84		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:21:21	8.71		13.98	4.01		8.83		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:22:21	8.67		13.99	4.00		8.82		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:23:21	8.73		13.98	4.00		8.80		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:24:21	8.83		13.96	4.01		8.80		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:25:21	8.62		13.97	4.00		8.80		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:26:21	8.62		13.97	4.01		8.78		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:27:21	8.66		13.97	4.01		8.77		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:28:21	8.65		13.96	4.01		8.77		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:29:21	8.67		13.96	4.01		8.76		13.98	4.00	
Run U3-NG-50%-1	5/9/02	10:30:21	8.47		13.97	4.00		8.75		13.98	4.00	
END Run U3-NG-50%-1	5/9/02	10:31:21	8.62		13.96	4.01		**8.74**		**13.98**	**4.00**	
START Run U3-NG-50%-2	5/9/02	10:39:01	8.73		13.98	3.99		8.73		13.98	3.99	
Run U3-NG-50%-2	5/9/02	10:40:01	8.67		13.99	3.99		8.70		13.98	3.99	
Run U3-NG-50%-2	5/9/02	10:41:01	8.63		13.99	3.99		8.65		13.98	3.99	
Run U3-NG-50%-2	5/9/02	10:42:01	8.66		13.99	4.00		8.65		13.99	3.99	
Run U3-NG-50%-2	5/9/02	10:43:01	8.82		14.00	4.00		8.68		13.99	3.99	
Run U3-NG-50%-2	5/9/02	10:44:01	8.68		14.00	4.00		8.69		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:45:01	8.58		14.01	4.00		8.68		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:46:01	8.70		14.00	4.00		8.67		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:47:01	8.81		13.99	4.00		8.68		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:48:01	8.65		14.00	4.00		8.68		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:49:01	8.52		14.01	3.99		8.68		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:50:01	8.50		14.00	4.00		8.66		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:51:00	8.58		13.99	4.00		8.65		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:52:00	8.54		14.00	4.00		8.65		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:53:00	8.43		14.00	4.00		8.63		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:54:00	8.54		14.00	3.99		8.62		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:55:00	8.52		13.99	4.00		8.61		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:56:00	8.52		13.99	4.00		8.61		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:57:00	8.52		13.98	4.00		8.60		13.99	4.00	
Run U3-NG-50%-2	5/9/02	10:58:00	8.63		13.99	4.00		8.60		13.99	4.00	
END Run U3-NG-50%-2	5/9/02	10:59:00	8.52		13.98	4.00		**8.60**		**13.99**	**4.00**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-50%-3	5/9/02	11:07:09	8.89		13.97	4.00		8.89		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:08:09	8.94		13.97	4.01		8.94		13.97	4.01	
Run U3-NG-50%-3	5/9/02	11:09:09	8.79		13.98	4.01		8.89		13.97	4.01	
Run U3-NG-50%-3	5/9/02	11:10:09	8.84		13.94	4.01		8.88		13.96	4.01	
Run U3-NG-50%-3	5/9/02	11:11:09	8.75		13.94	4.01		8.85		13.96	4.01	
Run U3-NG-50%-3	5/9/02	11:12:09	8.79		13.96	4.00		8.84		13.95	4.01	
Run U3-NG-50%-3	5/9/02	11:13:09	8.70		13.97	3.99		8.82		13.96	4.01	
Run U3-NG-50%-3	5/9/02	11:14:09	8.55		13.97	4.00		8.80		13.96	4.01	
Run U3-NG-50%-3	5/9/02	11:15:09	8.55		13.99	3.99		8.76		13.96	4.00	
Run U3-NG-50%-3	5/9/02	11:16:09	8.57		13.99	3.99		8.74		13.96	4.00	
Run U3-NG-50%-3	5/9/02	11:17:09	8.60		14.00	3.99		8.73		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:18:09	8.65		13.99	3.99		8.72		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:19:09	8.49		13.99	3.99		8.70		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:20:09	8.62		13.94	3.99		8.69		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:21:09	8.52		13.96	3.99		8.68		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:22:08	8.52		13.98	3.99		8.67		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:23:08	8.65		13.97	3.99		8.67		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:24:08	8.62		13.98	3.99		8.67		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:25:08	8.65		13.98	3.99		8.66		13.97	4.00	
Run U3-NG-50%-3	5/9/02	11:26:08	8.62		13.98	3.99		8.66		13.97	4.00	
END Run U3-NG-50%-3	5/9/02	11:27:08	8.62		13.98	3.99		**8.66**		**13.97**	**4.00**	
START Run U3-NG-65%-1	5/9/02	11:34:11	7.96		13.71	4.14		7.96		13.71	4.14	
Run U3-NG-65%-1	5/9/02	11:35:11	7.96		13.73	4.13		7.96		13.72	4.13	
Run U3-NG-65%-1	5/9/02	11:36:11	8.04		13.71	4.14		7.99		13.71	4.13	
Run U3-NG-65%-1	5/9/02	11:37:11	8.02		13.72	4.13		8.00		13.71	4.14	
Run U3-NG-65%-1	5/9/02	11:38:11	8.10		13.72	4.13		8.02		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:39:11	8.07		13.72	4.14		8.04		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:40:11	8.06		13.72	4.14		8.04		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:41:11	8.07		13.71	4.14		8.04		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:42:11	8.23		13.73	4.13		8.06		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:43:11	8.23		13.72	4.14		8.08		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:44:11	8.10		13.72	4.14		8.09		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:45:10	8.14		13.72	4.14		8.09		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:46:11	8.18		13.72	4.14		8.09		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:47:11	8.26		13.69	4.14		8.11		13.72	4.14	
Run U3-NG-65%-1	5/9/02	11:48:11	8.25		13.68	4.14		8.12		13.71	4.14	
Run U3-NG-65%-1	5/9/02	11:49:11	8.18		13.69	4.14		8.12		13.71	4.14	
Run U3-NG-65%-1	5/9/02	11:50:11	8.18		13.69	4.14		8.12		13.71	4.14	
Run U3-NG-65%-1	5/9/02	11:51:11	8.14		13.70	4.14		8.13		13.71	4.14	
Run U3-NG-65%-1	5/9/02	11:52:11	8.18		13.75	4.14		8.14		13.71	4.14	
Run U3-NG-65%-1	5/9/02	11:53:10	8.20		13.73	4.15		8.14		13.71	4.14	
END Run U3-NG-65%-1	5/9/02	11:54:10	8.15		13.73	4.13		**8.14**		**13.71**	**4.14**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-65%-2	5/9/02	12:01:06	8.06		13.73	4.12		8.06		13.73	4.12	
Run U3-NG-65%-2	5/9/02	12:02:06	8.10		13.72	4.13		8.05		13.72	4.13	
Run U3-NG-65%-2	5/9/02	12:03:06	8.01		13.72	4.14		8.06		13.72	4.13	
Run U3-NG-65%-2	5/9/02	12:04:06	7.99		13.73	4.14		8.03		13.72	4.13	
Run U3-NG-65%-2	5/9/02	12:05:06	8.09		13.74	4.13		8.04		13.72	4.13	
Run U3-NG-65%-2	5/9/02	12:06:06	8.06		13.73	4.14		8.05		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:07:06	8.02		13.72	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:08:06	8.06		13.73	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:09:06	8.07		13.72	4.14		8.05		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:10:06	8.01		13.73	4.15		8.05		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:11:06	8.01		13.73	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:12:06	8.02		13.72	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:13:06	8.06		13.73	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:14:06	8.01		13.73	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:15:06	8.09		13.69	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:16:06	7.96		13.70	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:17:06	7.99		13.72	4.14		8.03		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:18:06	8.07		13.72	4.14		8.03		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:19:06	8.07		13.72	4.14		8.04		13.72	4.14	
Run U3-NG-65%-2	5/9/02	12:20:06	8.06		13.72	4.14		8.04		13.72	4.14	
END Run U3-NG-65%-2	5/9/02	12:21:06	8.09		13.70	4.13		**8.04**		**13.72**	**4.14**	
START Run U3-NG-65%-3	5/9/02	12:28:01	8.07		13.72	4.12		8.07		13.72	4.12	
Run U3-NG-65%-3	5/9/02	12:29:01	8.07		13.71	4.13		8.09		13.71	4.13	
Run U3-NG-65%-3	5/9/02	12:30:01	8.14		13.72	4.13		8.09		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:31:01	8.04		13.72	4.13		8.09		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:32:01	8.06		13.73	4.14		8.08		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:33:01	8.10		13.74	4.13		8.08		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:34:01	7.99		13.73	4.13		8.08		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:35:01	7.91		13.73	4.13		8.06		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:36:01	7.96		13.73	4.13		8.05		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:37:01	7.98		13.73	4.13		8.04		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:38:01	8.06		13.73	4.13		8.04		13.73	4.13	
Run U3-NG-65%-3	5/9/02	12:39:01	8.02		13.72	4.14		8.04		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:40:01	7.99		13.72	4.14		8.03		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:41:01	8.14		13.71	4.13		8.03		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:42:01	8.06		13.71	4.13		8.04		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:43:01	8.06		13.72	4.13		8.04		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:44:01	8.15		13.72	4.13		8.04		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:45:01	8.09		13.72	4.13		8.05		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:46:01	8.09		13.72	4.13		8.05		13.72	4.13	
Run U3-NG-65%-3	5/9/02	12:47:01	8.17		13.73	4.14		8.05		13.72	4.13	
END Run U3-NG-65%-3	5/9/02	12:48:01	8.07		13.71	4.13		**8.06**		**13.72**	**4.13**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-80%-1	5/9/02	12:56:00	7.66		13.70	4.13		7.66		13.70	4.13	
Run U3-NG-80%-1	5/9/02	12:57:00	7.69		13.70	4.13		7.68		13.70	4.13	
Run U3-NG-80%-1	5/9/02	12:58:00	7.70		13.70	4.14		7.69		13.70	4.14	
Run U3-NG-80%-1	5/9/02	12:59:00	7.75		13.70	4.14		7.70		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:00:00	7.78		13.70	4.14		7.72		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:01:00	7.82		13.70	4.15		7.73		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:02:00	7.78		13.71	4.14		7.75		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:03:00	7.75		13.70	4.14		7.76		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:04:01	7.77		13.72	4.13		7.75		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:05:00	7.82		13.71	4.14		7.76		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:06:00	7.77		13.71	4.14		7.76		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:07:00	7.78		13.71	4.13		7.76		13.70	4.14	
Run U3-NG-80%-1	5/9/02	13:08:00	7.72		13.72	4.13		7.76		13.71	4.14	
Run U3-NG-80%-1	5/9/02	13:09:00	7.70		13.72	4.14		7.75		13.71	4.14	
Run U3-NG-80%-1	5/9/02	13:10:00	7.67		13.72	4.14		7.75		13.71	4.14	
Run U3-NG-80%-1	5/9/02	13:11:00	7.72		13.73	4.13		7.75		13.71	4.14	
Run U3-NG-80%-1	5/9/02	13:12:00	7.74		13.72	4.14		7.75		13.71	4.14	
Run U3-NG-80%-1	5/9/02	13:13:00	7.70		13.72	4.14		7.74		13.71	4.14	
Run U3-NG-80%-1	5/9/02	13:14:00	7.74		13.70	4.13		7.74		13.71	4.14	
Run U3-NG-80%-1	5/9/02	13:15:00	7.70		13.70	4.13		7.74		13.71	4.14	
END Run U3-NG-80%-1	5/9/02	13:16:00	7.74		13.69	4.13		**7.74**		**13.71**	**4.14**	
START Run U3-NG-80%-2	5/9/02	13:22:07	7.88		13.72	4.11		7.88		13.72	4.11	
Run U3-NG-80%-2	5/9/02	13:23:07	7.86		13.70	4.12		7.86		13.70	4.12	
Run U3-NG-80%-2	5/9/02	13:24:07	7.86		13.70	4.13		7.86		13.70	4.12	
Run U3-NG-80%-2	5/9/02	13:25:07	7.86		13.70	4.13		7.86		13.70	4.12	
Run U3-NG-80%-2	5/9/02	13:26:07	7.78		13.70	4.12		7.86		13.70	4.12	
Run U3-NG-80%-2	5/9/02	13:27:07	7.80		13.70	4.13		7.85		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:28:07	7.75		13.70	4.12		7.84		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:29:07	7.62		13.70	4.12		7.81		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:30:07	7.54		13.70	4.12		7.79		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:31:07	7.54		13.70	4.12		7.76		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:32:07	7.54		13.71	4.13		7.74		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:33:07	7.58		13.71	4.13		7.73		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:34:07	7.62		13.70	4.13		7.72		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:35:07	7.62		13.71	4.13		7.71		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:36:07	7.62		13.71	4.13		7.70		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:37:07	7.60		13.71	4.12		7.70		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:38:07	7.67		13.71	4.12		7.69		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:39:07	7.66		13.72	4.12		7.69		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:40:07	7.69		13.71	4.12		7.69		13.70	4.13	
Run U3-NG-80%-2	5/9/02	13:41:07	7.70		13.72	4.13		7.69		13.70	4.13	
END Run U3-NG-80%-2	5/9/02	13:42:07	7.66		13.71	4.13		**7.68**		**13.70**	**4.13**	

Tampa Electric Polk Power Station, Unit 3 Natural Gas Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-NG-80%-3	5/9/02	13:49:13	7.74		13.71	4.11		7.74		13.71	4.11	
Run U3-NG-80%-3	5/9/02	13:50:13	7.70		13.71	4.12		7.70		13.71	4.11	
Run U3-NG-80%-3	5/9/02	13:51:13	7.77		13.69	4.11		7.70		13.70	4.12	
Run U3-NG-80%-3	5/9/02	13:52:13	7.74		13.67	4.12		7.70		13.69	4.12	
Run U3-NG-80%-3	5/9/02	13:53:13	7.75		13.68	4.12		7.71		13.69	4.12	
Run U3-NG-80%-3	5/9/02	13:54:13	7.77		13.68	4.12		7.71		13.69	4.12	
Run U3-NG-80%-3	5/9/02	13:55:13	7.75		13.68	4.13		7.72		13.68	4.12	
Run U3-NG-80%-3	5/9/02	13:56:13	7.69		13.69	4.12		7.72		13.68	4.12	
Run U3-NG-80%-3	5/9/02	13:57:13	7.61		13.69	4.12		7.71		13.69	4.12	
Run U3-NG-80%-3	5/9/02	13:58:13	7.59		13.70	4.12		7.70		13.69	4.12	
Run U3-NG-80%-3	5/9/02	13:59:13	7.50		13.70	4.12		7.68		13.69	4.12	
Run U3-NG-80%-3	5/9/02	14:00:13	7.48		13.70	4.12		7.67		13.69	4.12	
Run U3-NG-80%-3	5/9/02	14:01:13	7.56		13.71	4.12		7.65		13.69	4.12	
Run U3-NG-80%-3	5/9/02	14:02:13	7.54		13.70	4.12		7.64		13.69	4.12	
Run U3-NG-80%-3	5/9/02	14:03:13	7.61		13.70	4.12		7.64		13.69	4.12	
Run U3-NG-80%-3	5/9/02	14:04:13	7.62		13.69	4.12		7.64		13.69	4.12	
Run U3-NG-80%-3	5/9/02	14:05:13	7.64		13.71	4.12		7.63		13.69	4.12	
Run U3-NG-80%-3	5/9/02	14:06:13	7.66		13.71	4.11		7.63		13.70	4.12	
Run U3-NG-80%-3	5/9/02	14:07:13	7.69		13.70	4.11		7.63		13.70	4.12	
Run U3-NG-80%-3	5/9/02	14:08:13	7.64		13.71	4.12		7.63		13.70	4.12	
END Run U3-NG-80%-3	5/9/02	14:09:13	7.65		13.70	4.12		**7.64**		**13.70**	**4.12**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-O2-Trav, N Port	5/8/02	9:03:01	48.05		12.92	5.95		48.05		12.92	5.95	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:04:01	48.95		12.91	5.96		48.74		12.91	5.95	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:05:01	48.95		12.93	5.93		48.67		12.92	5.95	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:06:01	49.35		12.95	5.94		48.86		12.92	5.94	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:07:01	49.05		12.94	5.94		48.95		12.93	5.94	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:08:01	49.05		12.97	5.93		48.94		12.93	5.94	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:09:01	48.95		12.95	5.93		48.97		12.94	5.94	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:10:01	49.05		12.96	5.92		48.96		12.94	5.94	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:11:01	49.05		12.92	5.93		48.99		12.94	5.94	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:12:01	49.15		12.93	5.93		49.00		12.94	5.94	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:13:01	48.75		12.95	5.93		48.99		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:14:01	49.05		12.89	5.93		48.98		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:15:01	48.95		12.93	5.91		48.98		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:16:01	49.25		12.95	5.92		48.98		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:17:01	48.85		12.95	5.92		48.98		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:18:01	48.65		12.96	5.93		48.97		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:19:01	48.95		12.94	5.93		48.96		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:20:01	48.65		12.96	5.93		48.95		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:21:01	48.35		12.95	5.93		48.92		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:22:01	48.25		12.95	5.92		48.89		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:23:01	48.45		12.96	5.91		48.86		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:24:01	48.35		12.97	5.91		48.84		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:25:01	48.25		12.96	5.92		48.82		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:26:01	48.25		12.96	5.93		48.79		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:27:01	48.15		12.95	5.93		48.77		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:28:00	48.25		12.93	5.93		48.75		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:29:00	48.25		12.95	5.93		48.73		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:30:00	47.95		12.94	5.93		48.70		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:31:00	48.05		12.94	5.93		48.68		12.94	5.93	
Run U3-Oil-O2-Trav, N Port	5/8/02	9:32:00	47.15		12.93	5.92		48.64		12.94	5.93	
END Run U3-Oil-O2-Trav, N Port	5/8/02	9:33:00	46.95		12.98	5.91		**48.58**		**12.94**	**5.92**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-O2-Trav, S Port	5/8/02	9:36:01	50.25		12.95	5.91		50.25		12.95	5.91	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:37:01	50.06		12.95	5.91		50.09		12.97	5.91	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:38:01	49.35		12.93	5.96		50.00		12.95	5.92	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:39:01	48.55		12.94	5.96		49.53		12.95	5.93	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:40:01	48.35		12.95	5.96		49.26		12.94	5.94	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:41:01	48.35		12.96	5.96		49.08		12.94	5.95	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:42:01	48.55		12.95	5.96		48.98		12.94	5.95	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:43:01	48.35		12.94	5.97		48.88		12.95	5.95	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:44:01	48.35		12.94	5.97		48.82		12.95	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:45:01	48.25		12.93	5.98		48.76		12.95	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:46:01	48.05		12.95	5.97		48.69		12.95	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:47:01	48.35		12.94	5.98		48.65		12.95	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:48:01	47.95		12.94	5.98		48.61		12.95	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:49:01	47.65		12.89	5.96		48.55		12.95	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:50:01	47.45		12.90	5.96		48.48		12.94	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:51:01	47.55		12.92	5.96		48.41		12.94	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:52:01	47.35		12.92	5.96		48.35		12.94	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:53:01	47.45		12.92	5.97		48.30		12.94	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:54:01	47.75		12.92	5.97		48.25		12.94	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:55:01	47.35		12.92	5.98		48.22		12.93	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:56:01	47.55		12.92	5.98		48.18		12.93	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:57:01	47.65		12.92	5.97		48.15		12.93	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:58:01	47.45		12.92	5.97		48.12		12.93	5.97	
Run U3-Oil-O2-Trav, S Port	5/8/02	9:59:00	47.75		12.92	5.97		48.10		12.93	5.97	
Run U3-Oil-O2-Trav, S Port	5/8/02	10:00:00	47.71		12.92	5.97		48.08		12.93	5.97	
Run U3-Oil-O2-Trav, S Port	5/8/02	10:01:00	47.65		12.95	5.95		48.06		12.93	5.97	
Run U3-Oil-O2-Trav, S Port	5/8/02	10:02:00	48.25		12.97	5.93		48.06		12.93	5.97	
Run U3-Oil-O2-Trav, S Port	5/8/02	10:03:00	47.85		12.93	5.95		48.05		12.93	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	10:04:00	48.05		12.92	5.97		48.03		12.93	5.96	
Run U3-Oil-O2-Trav, S Port	5/8/02	10:05:00	46.45		13.08	5.86		48.01		12.94	5.96	
END Run U3-Oil-O2-Trav, S Port	5/8/02	10:06:00	46.25		13.10	5.85		**47.96**		**12.94**	**5.96**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-O2-Trav, E Port	5/8/02	10:09:05	48.25		12.94	5.94		48.25		12.94	5.94	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:10:05	48.35		12.97	5.94		48.32		12.96	5.94	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:11:05	48.55		12.96	5.95		48.38		12.97	5.94	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:12:05	48.55		12.94	5.95		48.41		12.97	5.94	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:13:05	48.15		12.97	5.95		48.39		12.96	5.94	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:14:05	48.25		12.98	5.95		48.34		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:15:05	48.05		12.98	5.95		48.31		12.97	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:16:05	47.55		12.97	5.95		48.23		12.97	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:17:05	47.75		12.97	5.95		48.15		12.97	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:18:05	47.45		12.96	5.96		48.10		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:19:05	47.95		12.97	5.95		48.06		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:20:05	48.25		12.97	5.96		48.07		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:21:05	47.75		12.96	5.96		48.06		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:22:05	47.95		12.95	5.97		48.06		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:23:05	47.95		12.96	5.97		48.04		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:24:05	48.05		12.97	5.96		48.04		12.96	5.95	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:25:05	47.94		12.97	5.96		48.04		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:26:05	47.65		12.97	5.96		48.01		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:27:05	47.55		12.97	5.95		47.98		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:28:05	47.35		12.95	5.97		47.96		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:29:05	47.55		12.94	5.97		47.94		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:30:05	47.35		12.89	5.97		47.92		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:31:05	47.65		12.93	5.96		47.89		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:32:05	47.45		12.93	5.95		47.88		12.96	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:33:05	47.55		12.92	5.96		47.86		12.95	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:34:05	47.55		12.92	5.96		47.85		12.95	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:35:05	47.45		12.91	5.97		47.83		12.95	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:36:05	47.45		12.91	5.97		47.82		12.95	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:37:05	47.35		12.93	5.96		47.81		12.95	5.96	
Run U3-Oil-O2-Trav, E Port	5/8/02	10:38:05	47.05		12.95	5.94		47.79		12.95	5.96	
END Run U3-Oil-O2-Trav, E Port	5/8/02	10:39:05	46.85		12.94	5.94		**47.76**		**12.95**	**5.96**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-O2-Trav, N Port	5/8/02	10:42:01	49.15		13.00	5.88		49.15		13.00	5.88	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:43:01	49.55		13.03	5.90		49.38		13.02	5.89	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:44:01	49.35		13.06	5.89		49.43		13.03	5.89	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:45:01	49.35		12.97	5.90		49.44		13.03	5.89	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:46:01	49.15		13.00	5.92		49.41		13.02	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:47:01	48.65		13.01	5.91		49.29		13.02	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:48:01	48.55		13.01	5.91		49.17		13.01	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:49:01	48.35		13.00	5.92		49.08		13.01	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:50:01	48.85		13.03	5.91		49.05		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:51:01	48.45		13.02	5.91		49.03		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:52:01	48.85		13.01	5.92		48.98		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:53:01	48.75		12.96	5.91		48.96		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:54:01	48.95		12.98	5.90		48.94		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:55:01	48.65		13.00	5.91		48.93		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:56:01	48.85		13.02	5.91		48.90		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:57:01	48.65		13.02	5.90		48.89		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:58:01	48.65		13.01	5.91		48.87		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	10:59:01	49.05		13.02	5.91		48.87		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:00:01	49.35		13.02	5.90		48.88		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:01:00	48.85		13.03	5.90		48.90		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:02:00	48.45		13.03	5.90		48.89		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:03:00	48.85		13.02	5.91		48.88		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:04:00	48.75		13.04	5.90		48.88		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:05:00	48.95		13.04	5.89		48.88		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:06:00	48.44		13.03	5.89		48.87		13.01	5.91	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:07:00	48.45		13.04	5.89		48.85		13.02	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:08:00	48.35		13.07	5.86		48.84		13.02	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:09:00	48.05		13.05	5.88		48.81		13.02	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:10:00	48.25		13.05	5.87		48.79		13.02	5.90	
Run U3-Oil-O2-Trav, N Port	5/8/02	11:11:00	47.95		13.10	5.83		48.76		13.02	5.90	
END Run U3-Oil-O2-Trav, N Port	5/8/02	11:12:00	47.75		13.10	5.82		**48.73**		**13.02**	**5.90**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-50%-1	5/8/02	11:25:01	48.54		13.07	5.92		48.54		13.07	5.92	
Run U3-Oil-50%-1	5/8/02	11:26:01	48.62		13.07	5.92		48.77		13.06	5.92	
Run U3-Oil-50%-1	5/8/02	11:27:01	48.95		12.99	5.92		48.83		13.03	5.92	
Run U3-Oil-50%-1	5/8/02	11:28:01	48.25		12.98	5.93		48.85		13.02	5.92	
Run U3-Oil-50%-1	5/8/02	11:29:01	48.65		13.02	5.91		48.67		13.01	5.92	
Run U3-Oil-50%-1	5/8/02	11:30:01	48.45		13.00	5.92		48.66		13.01	5.92	
Run U3-Oil-50%-1	5/8/02	11:31:01	47.95		12.99	5.93		48.56		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:32:00	47.55		12.99	5.93		48.47		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:33:00	47.65		12.98	5.93		48.36		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:34:00	48.05		12.99	5.92		48.31		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:35:00	47.95		12.99	5.93		48.28		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:36:00	48.15		13.00	5.92		48.28		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:37:00	48.35		12.99	5.93		48.30		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:38:00	48.55		13.00	5.93		48.30		13.00	5.92	
Run U3-Oil-50%-1	5/8/02	11:39:00	47.75		13.00	5.93		48.28		13.00	5.93	
Run U3-Oil-50%-1	5/8/02	11:40:00	48.35		13.00	5.92		48.27		13.00	5.93	
Run U3-Oil-50%-1	5/8/02	11:41:00	47.95		12.97	5.94		48.29		13.00	5.93	
Run U3-Oil-50%-1	5/8/02	11:42:00	48.65		12.98	5.94		48.29		13.00	5.93	
Run U3-Oil-50%-1	5/8/02	11:43:00	47.75		12.96	5.95		48.28		13.00	5.93	
Run U3-Oil-50%-1	5/8/02	11:44:00	47.85		12.96	5.95		48.26		12.99	5.93	
END Run U3-Oil-50%-1	5/8/02	11:45:00	47.95		12.98	5.95		**48.25**		**12.99**	**5.93**	
START Run U3-Oil-50%-2	5/8/02	11:53:01	47.95		12.92	5.93		47.95		12.92	5.93	
Run U3-Oil-50%-2	5/8/02	11:54:01	47.65		12.95	5.92		47.78		12.93	5.92	
Run U3-Oil-50%-2	5/8/02	11:55:01	48.05		13.00	5.91		47.77		12.95	5.92	
Run U3-Oil-50%-2	5/8/02	11:56:01	48.25		12.97	5.91		47.85		12.96	5.92	
Run U3-Oil-50%-2	5/8/02	11:57:01	47.45		12.99	5.91		47.89		12.97	5.92	
Run U3-Oil-50%-2	5/8/02	11:58:01	47.65		13.00	5.91		47.82		12.98	5.92	
Run U3-Oil-50%-2	5/8/02	11:59:01	47.55		13.01	5.91		47.78		12.98	5.92	
Run U3-Oil-50%-2	5/8/02	12:00:01	47.35		12.99	5.93		47.76		12.98	5.92	
Run U3-Oil-50%-2	5/8/02	12:01:01	47.85		12.99	5.92		47.70		12.99	5.92	
Run U3-Oil-50%-2	5/8/02	12:02:01	48.25		13.01	5.90		47.73		12.99	5.92	
Run U3-Oil-50%-2	5/8/02	12:03:01	48.85		13.03	5.91		47.82		12.99	5.92	
Run U3-Oil-50%-2	5/8/02	12:04:00	48.95		13.02	5.91		47.92		12.99	5.92	
Run U3-Oil-50%-2	5/8/02	12:05:00	47.85		12.96	5.94		47.97		12.99	5.92	
Run U3-Oil-50%-2	5/8/02	12:06:00	47.75		12.95	5.95		47.95		12.99	5.92	
Run U3-Oil-50%-2	5/8/02	12:07:00	47.55		12.94	5.95		47.93		12.99	5.92	
Run U3-Oil-50%-2	5/8/02	12:08:00	47.35		12.93	5.95		47.90		12.98	5.92	
Run U3-Oil-50%-2	5/8/02	12:09:00	47.45		12.93	5.96		47.87		12.98	5.93	
Run U3-Oil-50%-2	5/8/02	12:10:00	47.55		12.94	5.95		47.84		12.98	5.93	
Run U3-Oil-50%-2	5/8/02	12:11:00	47.65		12.95	5.95		47.83		12.98	5.93	
Run U3-Oil-50%-2	5/8/02	12:12:00	47.45		12.95	5.96		47.82		12.97	5.93	
END Run U3-Oil-50%-2	5/8/02	12:13:00	47.35		12.95	5.95		**47.81**		**12.97**	**5.93**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-50%-3	5/8/02	12:24:07	48.15		13.11	5.90		48.15		13.11	5.90	
Run U3-Oil-50%-3	5/8/02	12:25:07	48.55		13.10	5.90		48.27		13.11	5.90	
Run U3-Oil-50%-3	5/8/02	12:26:07	47.45		13.09	5.92		48.14		13.10	5.91	
Run U3-Oil-50%-3	5/8/02	12:27:07	47.25		13.06	5.92		47.86		13.09	5.91	
Run U3-Oil-50%-3	5/8/02	12:28:07	47.14		12.98	5.93		47.67		13.06	5.92	
Run U3-Oil-50%-3	5/8/02	12:29:07	47.25		12.99	5.93		47.57		13.05	5.92	
Run U3-Oil-50%-3	5/8/02	12:30:07	47.15		12.98	5.93		47.53		13.04	5.92	
Run U3-Oil-50%-3	5/8/02	12:31:07	47.65		12.99	5.93		47.51		13.03	5.92	
Run U3-Oil-50%-3	5/8/02	12:32:07	47.45		12.96	5.94		47.51		13.02	5.92	
Run U3-Oil-50%-3	5/8/02	12:33:07	47.55		12.98	5.94		47.50		13.02	5.92	
Run U3-Oil-50%-3	5/8/02	12:34:07	47.65		12.97	5.94		47.53		13.01	5.93	
Run U3-Oil-50%-3	5/8/02	12:35:07	47.75		12.97	5.94		47.53		13.01	5.93	
Run U3-Oil-50%-3	5/8/02	12:36:07	47.55		12.98	5.93		47.54		13.01	5.93	
Run U3-Oil-50%-3	5/8/02	12:37:07	48.05		12.98	5.94		47.55		13.00	5.93	
Run U3-Oil-50%-3	5/8/02	12:38:07	47.85		12.98	5.94		47.58		13.00	5.93	
Run U3-Oil-50%-3	5/8/02	12:39:07	47.65		12.96	5.95		47.59		13.00	5.93	
Run U3-Oil-50%-3	5/8/02	12:40:07	47.55		12.96	5.93		47.59		13.00	5.93	
Run U3-Oil-50%-3	5/8/02	12:41:07	47.15		12.96	5.95		47.58		12.99	5.93	
Run U3-Oil-50%-3	5/8/02	12:42:07	47.25		12.96	5.93		47.56		12.99	5.93	
Run U3-Oil-50%-3	5/8/02	12:43:07	47.25		12.95	5.94		47.55		12.99	5.93	
END Run U3-Oil-50%-3	5/8/02	12:44:07	47.15		12.96	5.93		**47.53**		**12.99**	**5.93**	
START Run U3-Oil-65%-1	5/8/02	12:53:07	49.45		12.47	6.27		49.45		12.47	6.27	
Run U3-Oil-65%-1	5/8/02	12:54:07	49.85		12.47	6.26		49.68		12.46	6.27	
Run U3-Oil-65%-1	5/8/02	12:55:07	49.95		12.53	6.26		49.84		12.49	6.27	
Run U3-Oil-65%-1	5/8/02	12:56:07	50.05		12.54	6.26		49.88		12.50	6.27	
Run U3-Oil-65%-1	5/8/02	12:57:07	49.85		12.55	6.26		49.89		12.51	6.27	
Run U3-Oil-65%-1	5/8/02	12:58:07	49.85		12.52	6.27		49.90		12.51	6.27	
Run U3-Oil-65%-1	5/8/02	12:59:07	49.65		12.53	6.28		49.86		12.52	6.27	
Run U3-Oil-65%-1	5/8/02	13:00:07	49.85		12.55	6.27		49.83		12.52	6.27	
Run U3-Oil-65%-1	5/8/02	13:01:07	50.15		12.54	6.27		49.85		12.53	6.27	
Run U3-Oil-65%-1	5/8/02	13:02:07	49.82		12.55	6.27		49.87		12.53	6.27	
Run U3-Oil-65%-1	5/8/02	13:03:07	49.95		12.57	6.26		49.86		12.53	6.27	
Run U3-Oil-65%-1	5/8/02	13:04:07	50.06		12.55	6.26		49.87		12.53	6.27	
Run U3-Oil-65%-1	5/8/02	13:05:07	49.75		12.57	6.25		49.88		12.53	6.27	
Run U3-Oil-65%-1	5/8/02	13:06:07	49.95		12.56	6.25		49.87		12.54	6.26	
Run U3-Oil-65%-1	5/8/02	13:07:07	49.75		12.55	6.26		49.86		12.54	6.26	
Run U3-Oil-65%-1	5/8/02	13:08:07	49.66		12.56	6.26		49.85		12.54	6.26	
Run U3-Oil-65%-1	5/8/02	13:09:07	49.45		12.57	6.25		49.83		12.54	6.26	
Run U3-Oil-65%-1	5/8/02	13:10:07	49.85		12.57	6.25		49.82		12.54	6.26	
Run U3-Oil-65%-1	5/8/02	13:11:07	49.86		12.55	6.26		49.83		12.54	6.26	
Run U3-Oil-65%-1	5/8/02	13:12:07	49.75		12.57	6.24		49.82		12.54	6.26	
END Run U3-Oil-65%-1	5/8/02	13:13:07	50.06		12.57	6.24		**49.82**		**12.55**	**6.26**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-65%-2	5/8/02	13:21:01	50.15		12.62	6.25		50.15		12.62	6.25	
Run U3-Oil-65%-2	5/8/02	13:22:01	50.52		12.62	6.25		50.33		12.62	6.24	
Run U3-Oil-65%-2	5/8/02	13:23:01	50.15		12.52	6.26		50.34		12.60	6.25	
Run U3-Oil-65%-2	5/8/02	13:24:01	50.25		12.50	6.26		50.27		12.58	6.25	
Run U3-Oil-65%-2	5/8/02	13:25:01	50.05		12.55	6.24		50.25		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:26:01	50.05		12.56	6.25		50.21		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:27:01	50.05		12.57	6.26		50.17		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:28:01	49.95		12.57	6.26		50.15		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:29:01	50.15		12.57	6.24		50.14		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:30:01	49.16		12.56	6.25		50.07		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:31:01	49.65		12.56	6.24		50.01		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:32:01	49.26		12.54	6.26		49.96		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:33:01	49.35		12.57	6.24		49.90		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:34:01	49.25		12.54	6.25		49.86		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:35:01	49.15		12.56	6.25		49.81		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:36:01	49.45		12.57	6.24		49.78		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:37:00	49.35		12.56	6.25		49.76		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:38:00	49.35		12.58	6.24		49.73		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:39:00	49.45		12.57	6.24		49.72		12.56	6.25	
Run U3-Oil-65%-2	5/8/02	13:40:00	49.25		12.56	6.25		49.70		12.56	6.25	
END Run U3-Oil-65%-2	5/8/02	13:41:00	49.45		12.58	6.23		**49.68**		**12.56**	**6.25**	
START Run U3-Oil-65%-3	5/8/02	13:49:01	49.65		12.51	6.24		49.65		12.51	6.24	
Run U3-Oil-65%-3	5/8/02	13:50:01	49.45		12.52	6.25		49.54		12.51	6.24	
Run U3-Oil-65%-3	5/8/02	13:51:01	49.55		12.53	6.25		49.49		12.52	6.24	
Run U3-Oil-65%-3	5/8/02	13:52:01	49.65		12.53	6.24		49.52		12.52	6.24	
Run U3-Oil-65%-3	5/8/02	13:53:01	49.75		12.53	6.24		49.56		12.53	6.24	
Run U3-Oil-65%-3	5/8/02	13:54:01	49.55		12.55	6.25		49.58		12.53	6.24	
Run U3-Oil-65%-3	5/8/02	13:55:01	49.75		12.53	6.24		49.60		12.53	6.24	
Run U3-Oil-65%-3	5/8/02	13:56:01	49.45		12.54	6.25		49.58		12.53	6.24	
Run U3-Oil-65%-3	5/8/02	13:57:01	49.45		12.55	6.24		49.56		12.53	6.24	
Run U3-Oil-65%-3	5/8/02	13:58:01	49.55		12.53	6.24		49.56		12.53	6.24	
Run U3-Oil-65%-3	5/8/02	13:59:01	49.35		12.56	6.25		49.54		12.53	6.25	
Run U3-Oil-65%-3	5/8/02	14:00:01	49.75		12.55	6.24		49.54		12.54	6.25	
Run U3-Oil-65%-3	5/8/02	14:01:01	49.25		12.55	6.25		49.54		12.54	6.25	
Run U3-Oil-65%-3	5/8/02	14:02:01	49.45		12.57	6.24		49.52		12.54	6.24	
Run U3-Oil-65%-3	5/8/02	14:03:01	49.55		12.56	6.23		49.52		12.54	6.24	
Run U3-Oil-65%-3	5/8/02	14:04:01	49.45		12.55	6.25		49.52		12.54	6.24	
Run U3-Oil-65%-3	5/8/02	14:05:01	49.45		12.55	6.25		49.51		12.54	6.24	
Run U3-Oil-65%-3	5/8/02	14:06:01	49.55		12.57	6.24		49.51		12.54	6.24	
Run U3-Oil-65%-3	5/8/02	14:07:01	49.55		12.58	6.23		49.52		12.54	6.24	
Run U3-Oil-65%-3	5/8/02	14:08:01	49.65		12.55	6.25		49.53		12.54	6.24	
END Run U3-Oil-65%-3	5/8/02	14:09:01	49.45		12.57	6.24		**49.53**		**12.54**	**6.24**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-80%-1	5/8/02	14:18:01	50.35		12.40	6.31		50.35		12.40	6.31	
Run U3-Oil-80%-1	5/8/02	14:19:01	50.26		12.42	6.31		50.31		12.41	6.32	
Run U3-Oil-80%-1	5/8/02	14:20:01	50.46		12.44	6.31		50.32		12.42	6.32	
Run U3-Oil-80%-1	5/8/02	14:21:01	50.75		12.43	6.31		50.42		12.42	6.32	
Run U3-Oil-80%-1	5/8/02	14:22:01	50.75		12.46	6.30		50.51		12.43	6.31	
Run U3-Oil-80%-1	5/8/02	14:23:01	50.75		12.45	6.31		50.56		12.43	6.31	
Run U3-Oil-80%-1	5/8/02	14:24:01	50.75		12.45	6.31		50.59		12.44	6.31	
Run U3-Oil-80%-1	5/8/02	14:25:01	50.55		12.46	6.31		50.59		12.44	6.31	
Run U3-Oil-80%-1	5/8/02	14:26:01	50.66		12.47	6.30		50.60		12.44	6.31	
Run U3-Oil-80%-1	5/8/02	14:27:01	50.45		12.46	6.31		50.59		12.44	6.31	
Run U3-Oil-80%-1	5/8/02	14:28:01	50.55		12.46	6.31		50.58		12.45	6.31	
Run U3-Oil-80%-1	5/8/02	14:29:01	50.45		12.46	6.32		50.57		12.45	6.31	
Run U3-Oil-80%-1	5/8/02	14:30:01	50.36		12.47	6.31		50.55		12.45	6.31	
Run U3-Oil-80%-1	5/8/02	14:31:01	50.45		12.44	6.31		50.54		12.45	6.31	
Run U3-Oil-80%-1	5/8/02	14:32:01	50.45		12.43	6.31		50.53		12.45	6.31	
Run U3-Oil-80%-1	5/8/02	14:33:01	50.65		12.43	6.31		50.53		12.45	6.31	
Run U3-Oil-80%-1	5/8/02	14:34:01	50.45		12.41	6.32		50.53		12.44	6.31	
Run U3-Oil-80%-1	5/8/02	14:35:01	50.25		12.42	6.31		50.53		12.44	6.31	
Run U3-Oil-80%-1	5/8/02	14:36:01	50.66		12.42	6.31		50.52		12.44	6.31	
Run U3-Oil-80%-1	5/8/02	14:37:01	50.45		12.41	6.31		50.52		12.44	6.31	
END Run U3-Oil-80%-1	5/8/02	14:38:00	50.45		12.42	6.31		**50.52**		**12.44**	**6.31**	
START Run U3-Oil-80%-2	5/8/02	14:47:02	51.35		12.40	6.31		51.35		12.40	6.31	
Run U3-Oil-80%-2	5/8/02	14:48:02	51.15		12.41	6.30		51.08		12.41	6.30	
Run U3-Oil-80%-2	5/8/02	14:49:02	51.25		12.42	6.31		51.18		12.41	6.30	
Run U3-Oil-80%-2	5/8/02	14:50:02	51.05		12.42	6.31		51.16		12.41	6.31	
Run U3-Oil-80%-2	5/8/02	14:51:02	51.25		12.43	6.30		51.17		12.41	6.31	
Run U3-Oil-80%-2	5/8/02	14:52:02	51.05		12.42	6.31		51.17		12.41	6.31	
Run U3-Oil-80%-2	5/8/02	14:53:02	51.25		12.46	6.30		51.17		12.42	6.31	
Run U3-Oil-80%-2	5/8/02	14:54:02	50.65		12.46	6.31		51.12		12.42	6.31	
Run U3-Oil-80%-2	5/8/02	14:55:02	51.05		12.47	6.31		51.09		12.43	6.31	
Run U3-Oil-80%-2	5/8/02	14:56:02	50.85		12.47	6.31		51.08		12.43	6.31	
Run U3-Oil-80%-2	5/8/02	14:57:02	50.65		12.48	6.31		51.04		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	14:58:02	50.95		12.44	6.30		51.03		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	14:59:02	50.65		12.45	6.30		51.01		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	15:00:02	50.85		12.44	6.31		51.00		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	15:01:02	50.75		12.45	6.30		50.98		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	15:02:02	50.85		12.44	6.31		50.97		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	15:03:02	50.95		12.43	6.31		50.96		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	15:04:02	50.85		12.43	6.31		50.96		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	15:05:02	50.65		12.43	6.31		50.95		12.44	6.31	
Run U3-Oil-80%-2	5/8/02	15:06:02	50.85		12.45	6.30		50.93		12.44	6.31	
END Run U3-Oil-80%-2	5/8/02	15:07:02	50.85		12.43	6.32		**50.93**		**12.44**	**6.31**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-80%-3	5/8/02	15:17:01	50.15		12.43	6.28		50.15		12.43	6.28	
Run U3-Oil-80%-3	5/8/02	15:18:01	50.75		12.42	6.30		50.63		12.43	6.29	
Run U3-Oil-80%-3	5/8/02	15:19:01	50.55		12.43	6.30		50.65		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:20:01	50.55		12.42	6.31		50.61		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:21:01	50.52		12.43	6.30		50.60		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:22:01	50.75		12.43	6.30		50.62		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:23:01	50.35		12.43	6.31		50.61		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:24:01	50.55		12.43	6.31		50.59		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:25:01	50.55		12.42	6.31		50.58		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:26:01	50.25		12.43	6.31		50.56		12.43	6.30	
Run U3-Oil-80%-3	5/8/02	15:27:01	50.35		12.43	6.31		50.52		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:28:01	50.35		12.41	6.31		50.51		12.42	6.30	
Run U3-Oil-80%-3	5/8/02	15:29:01	50.35		12.42	6.31		50.49		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:30:01	50.35		12.42	6.31		50.48		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:31:01	50.25		12.42	6.31		50.46		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:32:01	50.25		12.42	6.31		50.45		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:33:01	50.25		12.42	6.32		50.44		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:34:01	50.14		12.43	6.30		50.43		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:35:01	50.45		12.43	6.31		50.43		12.42	6.31	
Run U3-Oil-80%-3	5/8/02	15:36:01	50.25		12.42	6.31		50.42		12.42	6.31	
END Run U3-Oil-80%-3	5/8/02	15:37:00	50.25		12.42	6.30		**50.41**		**12.42**	**6.31**	

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-100%-1	5/8/02	15:55:02	50.34	0.95	12.42	6.28	0.36	50.34	0.95	12.42	6.28	0.36
Run U3-Oil-100%-1	5/8/02	15:56:02	50.24	0.92	12.41	6.28	0.33	50.29	0.94	12.42	6.28	0.34
Run U3-Oil-100%-1	5/8/02	15:57:02	50.24	0.89	12.42	6.29	0.40	50.27	0.92	12.42	6.28	0.34
Run U3-Oil-100%-1	5/8/02	15:58:02	50.35	0.89	12.42	6.29	0.29	50.29	0.91	12.42	6.28	0.33
Run U3-Oil-100%-1	5/8/02	15:59:02	50.22	0.92	12.41	6.29	0.29	50.27	0.91	12.42	6.29	0.32
Run U3-Oil-100%-1	5/8/02	16:00:02	50.15	0.95	12.41	6.29	0.26	50.25	0.91	12.41	6.29	0.31
Run U3-Oil-100%-1	5/8/02	16:01:02	50.05	0.89	12.41	6.30	0.24	50.23	0.91	12.41	6.29	0.30
Run U3-Oil-100%-1	5/8/02	16:02:02	49.85	0.89	12.41	6.30	0.24	50.18	0.91	12.41	6.29	0.30
Run U3-Oil-100%-1	5/8/02	16:03:02	49.85	0.92	12.42	6.29	0.21	50.14	0.91	12.41	6.29	0.29
Run U3-Oil-100%-1	5/8/02	16:04:02	50.05	0.92	12.41	6.30	0.20	50.13	0.91	12.41	6.29	0.28
Run U3-Oil-100%-1	5/8/02	16:05:02	50.25	0.92	12.41	6.30	0.17	50.13	0.91	12.41	6.29	0.27
Run U3-Oil-100%-1	5/8/02	16:06:02	50.05	0.89	12.41	6.30	0.18	50.13	0.91	12.41	6.29	0.26
Run U3-Oil-100%-1	5/8/02	16:07:02	50.25	0.92	12.40	6.30	0.18	50.14	0.91	12.41	6.29	0.26
Run U3-Oil-100%-1	5/8/02	16:08:02	50.35	0.89	12.41	6.30	0.19	50.16	0.91	12.41	6.29	0.25
Run U3-Oil-100%-1	5/8/02	16:09:02	50.44	0.92	12.40	6.30	0.20	50.17	0.91	12.41	6.29	0.25
Run U3-Oil-100%-1	5/8/02	16:10:02	50.15	0.95	12.40	6.30	0.15	50.19	0.91	12.41	6.30	0.24
Run U3-Oil-100%-1	5/8/02	16:11:02	49.94	0.95	12.41	6.30	0.16	50.18	0.91	12.41	6.30	0.24
Run U3-Oil-100%-1	5/8/02	16:12:02	49.85	0.95	12.43	6.29	0.14	50.17	0.92	12.41	6.30	0.23
Run U3-Oil-100%-1	5/8/02	16:13:02	50.15	0.95	12.43	6.28	0.13	50.16	0.92	12.41	6.30	0.23
Run U3-Oil-100%-1	5/8/02	16:14:02	49.95	0.95	12.43	6.30	0.13	50.16	0.92	12.41	6.29	0.22
Run U3-Oil-100%-1	5/8/02	16:15:02	50.55	0.95	12.42	6.30	0.13	50.15	0.92	12.41	6.29	0.22
Run U3-Oil-100%-1	5/8/02	16:16:02	49.55	0.95	12.44	6.28	0.13	50.14	0.92	12.41	6.29	0.21
Run U3-Oil-100%-1	5/8/02	16:17:02	49.95	0.95	12.43	6.28	0.13	50.13	0.93	12.41	6.29	0.21
Run U3-Oil-100%-1	5/8/02	16:18:02	50.74	0.95	12.46	6.27	0.12	50.15	0.93	12.42	6.29	0.20
Run U3-Oil-100%-1	5/8/02	16:19:02	50.95	0.98	12.45	6.27	0.13	50.19	0.93	12.42	6.29	0.20
Run U3-Oil-100%-1	5/8/02	16:20:02	51.25	1.04	12.46	6.27	0.11	50.23	0.93	12.42	6.29	0.20
Run U3-Oil-100%-1	5/8/02	16:21:02	51.25	1.07	12.46	6.27	0.11	50.27	0.94	12.42	6.29	0.20
Run U3-Oil-100%-1	5/8/02	16:22:02	50.84	1.04	12.45	6.27	0.10	50.30	0.94	12.42	6.29	0.19
Run U3-Oil-100%-1	5/8/02	16:23:02	50.75	1.04	12.43	6.29	0.10	50.32	0.94	12.42	6.29	0.19
Run U3-Oil-100%-1	5/8/02	16:24:02	49.94	1.10	12.43	6.29	0.09	50.32	0.95	12.42	6.29	0.19
Run U3-Oil-100%-1	5/8/02	16:25:02	50.25	1.04	12.43	6.30	0.09	50.32	0.95	12.42	6.29	0.18
Run U3-Oil-100%-1	5/8/02	16:26:02	50.14	1.07	12.42	6.29	0.09	50.31	0.96	12.42	6.29	0.18
Run U3-Oil-100%-1	5/8/02	16:27:02	49.95	1.10	12.43	6.29	0.08	50.30	0.96	12.42	6.29	0.18
Run U3-Oil-100%-1	5/8/02	16:28:02	50.05	1.13	12.43	6.29	0.09	50.30	0.96	12.42	6.29	0.17
Run U3-Oil-100%-1	5/8/02	16:29:02	50.05	1.10	12.43	6.29	0.09	50.29	0.97	12.42	6.29	0.17
Run U3-Oil-100%-1	5/8/02	16:30:02	50.25	1.13	12.44	6.28	0.08	50.28	0.97	12.42	6.29	0.17
Run U3-Oil-100%-1	5/8/02	16:31:02	51.15	1.10	12.44	6.28	0.08	50.30	0.98	12.42	6.29	0.17
Run U3-Oil-100%-1	5/8/02	16:32:02	50.35	1.10	12.44	6.29	0.08	50.32	0.98	12.42	6.29	0.16
Run U3-Oil-100%-1	5/8/02	16:33:02	50.25	1.10	12.42	6.29	0.09	50.32	0.98	12.42	6.29	0.16
Run U3-Oil-100%-1	5/8/02	16:34:02	50.85	1.16	12.43	6.28	0.09	50.33	0.99	12.42	6.29	0.16
Run U3-Oil-100%-1	5/8/02	16:35:02	50.65	1.16	12.42	6.29	0.10	50.34	0.99	12.42	6.29	0.16
Run U3-Oil-100%-1	5/8/02	16:36:02	50.04	1.16	12.41	6.30	0.09	50.34	1.00	12.42	6.29	0.16

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-Oil-100%-1	5/8/02	16:37:02	49.75	1.16	12.41	6.29	0.10	50.32	1.00	12.42	6.29	0.16
Run U3-Oil-100%-1	5/8/02	16:38:02	49.65	1.16	12.42	6.29	0.09	50.31	1.00	12.42	6.29	0.15
Run U3-Oil-100%-1	5/8/02	16:39:02	50.65	1.19	12.44	6.27	0.09	50.31	1.01	12.42	6.29	0.15
Run U3-Oil-100%-1	5/8/02	16:40:02	50.75	1.16	12.45	6.27	0.08	50.32	1.01	12.42	6.29	0.15
Run U3-Oil-100%-1	5/8/02	16:41:02	50.14	1.16	12.45	6.28	0.08	50.32	1.01	12.42	6.29	0.15
Run U3-Oil-100%-1	5/8/02	16:42:02	50.25	1.19	12.46	6.27	0.08	50.32	1.02	12.42	6.29	0.15
Run U3-Oil-100%-1	5/8/02	16:43:01	50.15	1.22	12.45	6.28	0.06	50.32	1.02	12.42	6.29	0.15
Run U3-Oil-100%-1	5/8/02	16:44:01	50.45	1.19	12.44	6.28	0.07	50.32	1.03	12.43	6.29	0.15
Run U3-Oil-100%-1	5/8/02	16:45:01	49.45	1.22	12.43	6.29	0.06	50.32	1.03	12.43	6.29	0.14
Run U3-Oil-100%-1	5/8/02	16:46:01	50.25	1.19	12.45	6.27	0.06	50.30	1.03	12.43	6.29	0.14
Run U3-Oil-100%-1	5/8/02	16:47:01	50.54	1.22	12.46	6.27	0.06	50.31	1.04	12.43	6.29	0.14
Run U3-Oil-100%-1	5/8/02	16:48:01	50.74	1.25	12.45	6.28	0.07	50.32	1.04	12.43	6.29	0.14
Run U3-Oil-100%-1	5/8/02	16:49:01	50.55	1.25	12.45	6.27	0.07	50.32	1.04	12.43	6.29	0.14
Run U3-Oil-100%-1	5/8/02	16:50:01	50.25	1.25	12.44	6.28	0.07	50.32	1.05	12.43	6.29	0.14
Run U3-Oil-100%-1	5/8/02	16:51:01	49.94	1.25	12.43	6.28	0.06	50.32	1.05	12.43	6.29	0.14
Run U3-Oil-100%-1	5/8/02	16:52:01	49.85	1.25	12.44	6.28	0.06	50.31	1.06	12.43	6.29	0.13
Run U3-Oil-100%-1	5/8/02	16:53:01	49.64	1.25	12.44	6.28	0.08	50.30	1.06	12.43	6.29	0.13
Run U3-Oil-100%-1	5/8/02	16:54:01	50.15	1.28	12.38	6.28	0.08	50.30	1.06	12.43	6.29	0.13
END Run U3-Oil-100%-1	5/8/02	16:55:01	50.85	1.25	12.44	6.28	0.09	**50.30**	**1.07**	**12.43**	**6.29**	**0.13**

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-100%-2	5/8/02	17:10:01	49.95	0.95	12.43	6.27	0.26	49.95	0.95	12.43	6.27	0.26
Run U3-Oil-100%-2	5/8/02	17:11:01	49.85	0.95	12.41	6.28	0.26	49.99	0.94	12.43	6.27	0.28
Run U3-Oil-100%-2	5/8/02	17:12:01	49.95	0.95	12.43	6.28	0.23	49.92	0.94	12.43	6.28	0.26
Run U3-Oil-100%-2	5/8/02	17:13:00	50.05	0.95	12.43	6.28	0.23	49.92	0.95	12.43	6.28	0.25
Run U3-Oil-100%-2	5/8/02	17:14:00	50.65	0.95	12.44	6.27	0.22	50.05	0.94	12.43	6.28	0.25
Run U3-Oil-100%-2	5/8/02	17:15:00	49.44	0.92	12.44	6.28	0.22	50.08	0.94	12.43	6.28	0.24
Run U3-Oil-100%-2	5/8/02	17:16:00	50.34	0.92	12.46	6.27	0.21	50.07	0.94	12.43	6.28	0.24
Run U3-Oil-100%-2	5/8/02	17:17:00	50.75	0.92	12.47	6.27	0.22	50.13	0.94	12.44	6.28	0.23
Run U3-Oil-100%-2	5/8/02	17:18:00	50.35	0.89	12.46	6.28	0.21	50.17	0.93	12.44	6.28	0.23
Run U3-Oil-100%-2	5/8/02	17:19:00	50.25	0.92	12.48	6.26	0.20	50.15	0.93	12.44	6.28	0.23
Run U3-Oil-100%-2	5/8/02	17:20:00	50.05	0.89	12.46	6.27	0.21	50.18	0.93	12.44	6.27	0.23
Run U3-Oil-100%-2	5/8/02	17:21:00	49.75	0.95	12.44	6.29	0.22	50.18	0.93	12.45	6.28	0.22
Run U3-Oil-100%-2	5/8/02	17:22:00	49.65	0.89	12.45	6.28	0.19	50.14	0.93	12.45	6.28	0.22
Run U3-Oil-100%-2	5/8/02	17:23:00	50.25	0.92	12.45	6.28	0.17	50.13	0.93	12.45	6.28	0.22
Run U3-Oil-100%-2	5/8/02	17:24:00	50.85	0.92	12.47	6.27	0.18	50.14	0.93	12.45	6.28	0.22
Run U3-Oil-100%-2	5/8/02	17:25:00	50.45	0.92	12.47	6.27	0.17	50.18	0.93	12.45	6.28	0.21
Run U3-Oil-100%-2	5/8/02	17:26:00	50.55	0.95	12.46	6.27	0.17	50.22	0.93	12.45	6.28	0.21
Run U3-Oil-100%-2	5/8/02	17:27:00	50.65	0.98	12.46	6.27	0.16	50.24	0.93	12.45	6.28	0.21
Run U3-Oil-100%-2	5/8/02	17:28:00	51.15	1.01	12.46	6.27	0.14	50.28	0.93	12.45	6.28	0.20
Run U3-Oil-100%-2	5/8/02	17:29:00	50.65	0.98	12.45	6.28	0.13	50.31	0.94	12.45	6.28	0.20
Run U3-Oil-100%-2	5/8/02	17:30:00	50.35	0.98	12.45	6.29	0.14	50.31	0.94	12.45	6.28	0.20
Run U3-Oil-100%-2	5/8/02	17:31:00	50.25	0.98	12.44	6.29	0.13	50.31	0.94	12.45	6.28	0.20
Run U3-Oil-100%-2	5/8/02	17:32:00	50.45	0.98	12.45	6.29	0.12	50.32	0.94	12.45	6.28	0.19
Run U3-Oil-100%-2	5/8/02	17:33:00	51.05	0.98	12.47	6.28	0.13	50.34	0.94	12.45	6.28	0.19
Run U3-Oil-100%-2	5/8/02	17:34:00	50.55	0.98	12.45	6.28	0.11	50.36	0.94	12.45	6.28	0.19
Run U3-Oil-100%-2	5/8/02	17:35:00	50.35	1.04	12.45	6.29	0.12	50.36	0.95	12.45	6.28	0.18
Run U3-Oil-100%-2	5/8/02	17:36:00	50.85	1.10	12.45	6.29	0.11	50.37	0.95	12.45	6.28	0.18
Run U3-Oil-100%-2	5/8/02	17:37:00	50.35	1.10	12.44	6.29	0.11	50.37	0.96	12.45	6.28	0.18
Run U3-Oil-100%-2	5/8/02	17:38:00	51.04	1.07	12.46	6.28	0.10	50.38	0.96	12.45	6.28	0.18
Run U3-Oil-100%-2	5/8/02	17:39:00	51.05	1.10	12.45	6.28	0.11	50.40	0.97	12.45	6.28	0.17
Run U3-Oil-100%-2	5/8/02	17:40:00	51.15	1.10	12.44	6.28	0.11	50.42	0.97	12.45	6.28	0.17
Run U3-Oil-100%-2	5/8/02	17:41:00	50.84	1.07	12.45	6.29	0.13	50.43	0.97	12.45	6.28	0.17
Run U3-Oil-100%-2	5/8/02	17:42:00	50.15	1.13	12.47	6.27	0.12	50.43	0.98	12.45	6.28	0.17
Run U3-Oil-100%-2	5/8/02	17:43:00	50.05	1.13	12.45	6.28	0.12	50.43	0.98	12.45	6.28	0.17
Run U3-Oil-100%-2	5/8/02	17:44:00	50.15	1.13	12.45	6.28	0.12	50.42	0.99	12.45	6.28	0.17
Run U3-Oil-100%-2	5/8/02	17:45:00	49.25	1.13	12.45	6.28	0.11	50.40	0.99	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:46:00	50.65	1.13	12.45	6.28	0.12	50.39	0.99	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:47:00	49.95	1.13	12.45	6.28	0.10	50.38	1.00	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:48:00	50.05	1.16	12.44	6.28	0.13	50.37	1.00	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:49:00	49.55	1.19	12.44	6.29	0.12	50.36	1.01	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:50:00	50.05	1.19	12.44	6.29	0.12	50.35	1.01	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:51:00	49.65	1.19	12.45	6.28	0.12	50.33	1.02	12.45	6.28	0.16

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-Oil-100%-2	5/8/02	17:52:00	50.95	1.19	12.45	6.27	0.12	50.33	1.02	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:53:00	50.75	1.22	12.45	6.28	0.12	50.35	1.02	12.45	6.28	0.16
Run U3-Oil-100%-2	5/8/02	17:54:00	50.45	1.19	12.45	6.28	0.13	50.35	1.03	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	17:55:00	50.65	1.19	12.45	6.28	0.13	50.36	1.03	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	17:56:00	50.45	1.22	12.44	6.28	0.15	50.36	1.03	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	17:57:00	50.65	1.22	12.46	6.28	0.13	50.37	1.04	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	17:58:00	50.14	1.25	12.45	6.28	0.13	50.37	1.04	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	17:59:00	50.05	1.25	12.46	6.27	0.12	50.36	1.05	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:00:00	50.45	1.22	12.45	6.28	0.12	50.36	1.05	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:01:00	49.45	1.22	12.46	6.28	0.12	50.35	1.05	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:02:00	49.85	1.25	12.45	6.29	0.13	50.34	1.06	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:03:00	50.05	1.25	12.47	6.28	0.12	50.33	1.06	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:04:00	51.05	1.22	12.46	6.28	0.13	50.34	1.06	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:05:00	50.85	1.25	12.48	6.27	0.12	50.35	1.07	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:06:00	51.45	1.28	12.47	6.28	0.13	50.36	1.07	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:07:00	51.45	1.31	12.46	6.28	0.12	50.38	1.07	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:08:00	51.05	1.28	12.47	6.27	0.11	50.39	1.08	12.45	6.28	0.15
Run U3-Oil-100%-2	5/8/02	18:09:00	51.45	1.25	12.45	6.29	0.11	50.40	1.08	12.45	6.28	0.15
END Run U3-Oil-100%-2	5/8/02	18:10:00	50.15	1.28	12.43	6.30	0.10	**50.41**	**1.09**	**12.45**	**6.28**	**0.15**

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
START Run U3-Oil-100%-3	5/8/02	18:22:01	51.05	1.01	12.39	6.25	0.22	51.05	1.01	12.39	6.25	0.22
Run U3-Oil-100%-3	5/8/02	18:23:01	51.15	0.98	12.38	6.27	0.18	50.97	1.00	12.39	6.26	0.19
Run U3-Oil-100%-3	5/8/02	18:24:01	50.65	0.98	12.38	6.29	0.16	50.90	0.99	12.39	6.27	0.17
Run U3-Oil-100%-3	5/8/02	18:25:01	51.45	0.95	12.40	6.27	0.16	50.90	0.98	12.39	6.27	0.17
Run U3-Oil-100%-3	5/8/02	18:26:01	51.35	0.95	12.40	6.28	0.14	51.06	0.98	12.40	6.27	0.16
Run U3-Oil-100%-3	5/8/02	18:27:01	51.25	0.95	12.38	6.29	0.14	51.05	0.97	12.40	6.27	0.16
Run U3-Oil-100%-3	5/8/02	18:28:01	50.95	0.95	12.40	6.29	0.13	51.00	0.97	12.39	6.28	0.15
Run U3-Oil-100%-3	5/8/02	18:29:01	50.95	0.92	12.42	6.28	0.12	50.97	0.97	12.40	6.28	0.14
Run U3-Oil-100%-3	5/8/02	18:30:01	50.95	0.92	12.44	6.28	0.10	50.96	0.96	12.40	6.28	0.14
Run U3-Oil-100%-3	5/8/02	18:31:01	49.75	0.92	12.42	6.28	0.10	50.92	0.96	12.40	6.28	0.14
Run U3-Oil-100%-3	5/8/02	18:32:01	50.55	0.92	12.43	6.28	0.10	50.86	0.95	12.41	6.28	0.13
Run U3-Oil-100%-3	5/8/02	18:33:01	50.55	0.92	12.42	6.28	0.09	50.85	0.95	12.41	6.28	0.13
Run U3-Oil-100%-3	5/8/02	18:34:01	49.95	0.92	12.41	6.30	0.09	50.81	0.95	12.41	6.28	0.13
Run U3-Oil-100%-3	5/8/02	18:35:01	49.75	0.89	12.43	6.28	0.09	50.74	0.94	12.41	6.28	0.13
Run U3-Oil-100%-3	5/8/02	18:36:01	50.85	0.92	12.42	6.30	0.07	50.74	0.94	12.41	6.28	0.12
Run U3-Oil-100%-3	5/8/02	18:37:01	50.55	0.92	12.42	6.29	0.08	50.72	0.94	12.41	6.28	0.12
Run U3-Oil-100%-3	5/8/02	18:38:01	50.35	0.89	12.41	6.29	0.10	50.70	0.94	12.41	6.28	0.12
Run U3-Oil-100%-3	5/8/02	18:39:01	49.75	0.98	12.43	6.29	0.08	50.66	0.94	12.41	6.28	0.12
Run U3-Oil-100%-3	5/8/02	18:40:01	50.25	1.04	12.43	6.29	0.07	50.62	0.94	12.41	6.28	0.11
Run U3-Oil-100%-3	5/8/02	18:41:01	50.05	1.04	12.43	6.28	0.07	50.59	0.95	12.41	6.28	0.11
Run U3-Oil-100%-3	5/8/02	18:42:01	50.25	1.04	12.43	6.30	0.06	50.57	0.95	12.41	6.28	0.11
Run U3-Oil-100%-3	5/8/02	18:43:01	50.45	1.04	12.43	6.29	0.07	50.56	0.96	12.42	6.28	0.11
Run U3-Oil-100%-3	5/8/02	18:44:01	50.14	1.07	12.43	6.29	0.05	50.55	0.96	12.42	6.28	0.10
Run U3-Oil-100%-3	5/8/02	18:45:01	50.35	1.04	12.44	6.29	0.04	50.53	0.97	12.42	6.28	0.10
Run U3-Oil-100%-3	5/8/02	18:46:00	49.94	1.07	12.43	6.29	0.04	50.52	0.97	12.42	6.28	0.10
Run U3-Oil-100%-3	5/8/02	18:47:00	50.34	1.04	12.44	6.28	0.05	50.50	0.97	12.42	6.28	0.10
Run U3-Oil-100%-3	5/8/02	18:48:00	50.05	1.07	12.43	6.29	0.04	50.49	0.98	12.42	6.28	0.10
Run U3-Oil-100%-3	5/8/02	18:49:00	50.35	1.07	12.44	6.29	0.04	50.47	0.98	12.42	6.28	0.09
Run U3-Oil-100%-3	5/8/02	18:50:00	49.95	1.04	12.44	6.29	0.03	50.46	0.98	12.42	6.28	0.09
Run U3-Oil-100%-3	5/8/02	18:51:00	50.05	1.04	12.43	6.29	0.05	50.45	0.99	12.42	6.28	0.09
Run U3-Oil-100%-3	5/8/02	18:52:00	50.15	1.07	12.44	6.28	0.04	50.43	0.99	12.42	6.28	0.09
Run U3-Oil-100%-3	5/8/02	18:53:00	50.15	1.07	12.52	6.29	0.04	50.43	0.99	12.42	6.28	0.09
Run U3-Oil-100%-3	5/8/02	18:54:00	49.85	1.10	12.44	6.28	0.06	50.42	0.99	12.42	6.28	0.09
Run U3-Oil-100%-3	5/8/02	18:55:00	50.45	1.10	12.45	6.28	0.04	50.41	1.00	12.42	6.28	0.08
Run U3-Oil-100%-3	5/8/02	18:56:00	50.25	1.10	12.43	6.28	0.04	50.41	1.00	12.42	6.28	0.08
Run U3-Oil-100%-3	5/8/02	18:57:00	50.25	1.10	12.43	6.29	0.04	50.40	1.00	12.42	6.28	0.08
Run U3-Oil-100%-3	5/8/02	18:58:00	50.15	1.13	12.44	6.29	0.04	50.40	1.01	12.42	6.28	0.08
Run U3-Oil-100%-3	5/8/02	18:59:00	50.55	1.13	12.44	6.29	0.04	50.40	1.01	12.42	6.28	0.08
Run U3-Oil-100%-3	5/8/02	19:00:00	50.44	1.13	12.43	6.29	0.04	50.40	1.01	12.42	6.28	0.08
Run U3-Oil-100%-3	5/8/02	19:01:00	50.35	1.13	12.45	6.29	0.04	50.40	1.02	12.43	6.28	0.08
Run U3-Oil-100%-3	5/8/02	19:02:00	50.25	1.19	12.44	6.29	0.04	50.40	1.02	12.43	6.28	0.08
Run U3-Oil-100%-3	5/8/02	19:03:00	50.25	1.22	12.44	6.28	0.04	50.39	1.02	12.43	6.28	0.08

Tampa Electric Polk Power Station, Unit 3 Fuel Oil Testing, Logged Data Records

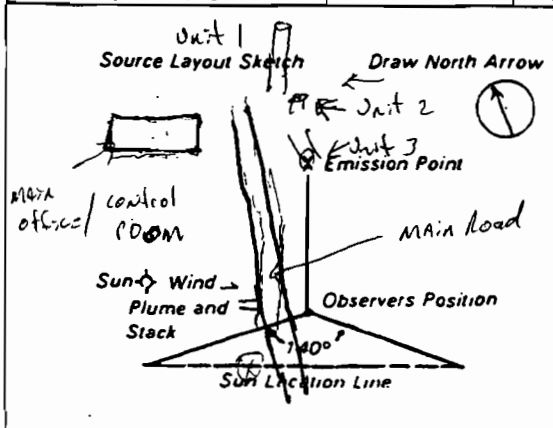
Run Number	Date	Time	NOx (ppmv)	CO (ppmv)	O2 (% vol)	CO2 (% vol)	THC (ppmv)	AVE NOx (ppmv)	AVE CO (ppmv)	AVE O2 (% vol)	AVE CO2 (% vol)	AVE THC (ppmv)
Run U3-Oil-100%-3	5/8/02	19:04:00	50.75	1.19	12.45	6.29	0.04	50.40	1.03	12.43	6.28	0.08
Run U3-Oil-100%-3	5/8/02	19:05:00	50.56	1.22	12.44	6.29	0.03	50.40	1.03	12.43	6.29	0.07
Run U3-Oil-100%-3	5/8/02	19:06:00	50.55	1.19	12.46	6.28	0.05	50.41	1.04	12.43	6.29	0.07
Run U3-Oil-100%-3	5/8/02	19:07:00	50.25	1.19	12.45	6.28	0.05	50.41	1.04	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:08:00	50.35	1.19	12.43	6.28	0.06	50.41	1.04	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:09:00	50.45	1.19	12.43	6.28	0.04	50.40	1.05	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:10:00	50.15	1.19	12.42	6.29	0.06	50.40	1.05	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:11:00	50.45	1.19	12.42	6.29	0.05	50.40	1.05	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:12:00	50.45	1.19	12.42	6.28	0.05	50.40	1.06	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:13:00	50.55	1.19	12.43	6.28	0.05	50.40	1.06	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:14:00	50.55	1.22	12.41	6.30	0.05	50.41	1.06	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:15:00	50.65	1.22	12.42	6.28	0.06	50.41	1.06	12.43	6.28	0.07
Run U3-Oil-100%-3	5/8/02	19:16:00	50.25	1.22	12.41	6.29	0.06	50.41	1.07	12.43	6.29	0.07
Run U3-Oil-100%-3	5/8/02	19:17:00	50.55	1.25	12.42	6.29	0.06	50.41	1.07	12.43	6.29	0.07
Run U3-Oil-100%-3	5/8/02	19:18:00	50.65	1.25	12.43	6.28	0.05	50.41	1.07	12.43	6.29	0.07
Run U3-Oil-100%-3	5/8/02	19:19:00	50.75	1.22	12.42	6.29	0.06	50.42	1.08	12.43	6.29	0.07
Run U3-Oil-100%-3	5/8/02	19:20:00	50.54	1.22	12.42	6.29	0.06	50.42	1.08	12.43	6.29	0.07
Run U3-Oil-100%-3	5/8/02	19:21:00	50.65	1.22	12.42	6.28	0.05	50.42	1.08	12.43	6.29	0.07
END Run U3-Oil-100%-3	5/8/02	19:22:00	50.25	1.25	12.42	6.29	0.05	**50.42**	**1.08**	**12.43**	**6.29**	**0.07**

APPENDIX G:
OPACITY OBSERVATIONS

T 3/90.5

Visible Emission Observation Form

SOURCE NAME: Polk Power Station	OBSERVATION DATE: 5/7/02
ADDRESS: 9995 SR 37 South	START TIME: 12:47
	STOP TIME: 13:47
CITY: Mulberry	STATE: FL
ZIP: 33860	
PHONE: (941) 428-5914	SOURCE ID NUMBER: 010 (CT6-3)
PROCESS EQUIPMENT: Combustion turbine	OPERATING MODE: 99.7% load
CONTROL EQUIPMENT: DLN 2.6 combustors	OPERATING MODE: normal
DESCRIBE EMISSION POINT: START ~120' round stack. STOP 1st stack when viewed from South. Dark gray in color	
HEIGHT ABOVE GROUND LEVEL: START ~120' STOP ~120'	HEIGHT RELATIVE TO OBSERVER: START ~120' STOP ~120'
DISTANCE FROM OBSERVER: START ~360' STOP ~360'	DIRECTION FROM OBSERVER: START 22° STOP 22°
DESCRIBE EMISSIONS: START none seen STOP same	
EMISSION COLOR: START N/A STOP N/A	PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START stack exit STOP same	
DESCRIBE BACKGROUND: START sky STOP same	
BACKGROUND COLOR: START Blue/white STOP same	SKY CONDITIONS: START Blue/clear STOP same
WIND SPEED: START ~1-2 m/l STOP 2-6 mph	WIND DIRECTION: START E STOP E
AMBIENT TEMP: START 91.2 STOP 90.5	WET BULB TEMP: 73.5 RH percent: 31%



SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE: 10 % WERE
RANGE OF OPACITY READINGS: 0 MINIMUM	0 MAXIMUM
OBSERVER'S NAME (PRINT): Roger Paul Oster	
OBSERVER'S SIGNATURE: [signature]	DATE: 5/7/02
ORGANIZATION: Cubix Corporation	
CERTIFIED BY: ETA	DATE: 12/5/01
VERIFIED BY: ~~ETA~~ RP N/A	DATE: N/A

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE N/A

TITLE N/A DATE N/A

VISIBLE EMISSIONS EVALUATOR

This is to certify that

Roger Osier

met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.

291694	*Jacksonville, Florida*	*December 5, 2001*
Certificate Number	Location	Date of Issue

Thomas Hoel
President

Michael W. Sandford
Director of Training

VISIBLE EMISSIONS EVALUATION

This is to certify that

Roger Osier

did complete a course in the methods of determining opacity of visible emissions from sources as specified by Federal Reference Method 9 conducted by Eastern Technical Associates of Raleigh, North Carolina.

Evan Wainright
Course Moderator

Jacksonville, Florida
Location

June 8, 1999
Date

LITHO. IN U.S.A.

EASTERN
TECHNICAL
ASSOCIATES

919-878-3188

DATE: JULY 8, 1999

TO: FIELD CERTIFIERS

FROM: EASTERN TECHNICAL ASSOCIATES

REGARDING: JACKSONVILLE, FLORIDA
VISIBLE EMISSIONS TRAINING PROGRAM

ETA is enclosing your certificates for Field Certification (Visible Emissions Evaluator) and/or Classroom Lecture attendance (Visible Emissions Evaluation). For your convenience, we have also enclosed a wallet card to indicate certification in the Field.

The following person(s) achieved a written test grade of 88% or more and therefore, if they maintain continuous field certification, are not required to attend the lecture again until thirty-six (36) months from this school. If an individual fails to recertify on any six (6) months anniversary, they would need to take the lecture at the next smoke school.

CUBIX CORPORATION- ROGER OSIER

We wish to congratulate you and invite you to recertify with us again. If we can be of further assistance, please do not hesitate to call.

Sincerely,

Sheila Weathersbee

Sheila Weathersbee
Administration
Visible Emissions Program

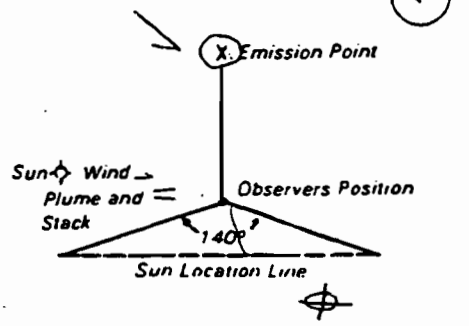
Enclosure

P.O. BOX 58495
RALEIGH, NC 27658

Visible Emission Observation Form — 1655 DST

SOURCE NAME: Polk Power Station - Unit #3	OBSERVATION DATE: 5/8/2002
ADDRESS: 9995 SR 37 South	START TIME: ~~1355pm~~ 1655 DST
CITY: Mulberry	STATE: FL
ZIP: 33860	
PHONE: (941) 428-5914	SOURCE ID NUMBER: 010 (GT6-3)
PROCESS EQUIPMENT: Combustion Turbine - firing oil	OPERATING MODE: Base loaded ~~1842~~ 1642
CONTROL EQUIPMENT: water injection DLN burners no PM controls	OPERATING MODE: W/F Ratio 1.35
DESCRIBE EMISSION POINT: START metal stack	STOP same
HEIGHT ABOVE GROUND LEVEL: START 114'	STOP same
HEIGHT RELATIVE TO OBSERVER: START 114'	STOP same
DISTANCE FROM OBSERVER: START ~400'	STOP same
DIRECTION FROM OBSERVER: START E	STOP same
DESCRIBE EMISSIONS: START ND*	STOP same
EMISSION COLOR: START ND	STOP same
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START ~20' above exit	STOP same
DESCRIBE BACKGROUND: START broken skies	STOP same
BACKGROUND COLOR: START blue/white	STOP same
SKY CONDITIONS: START broken	STOP same
WIND SPEED: START gentle/mod	STOP same
WIND DIRECTION: START NE to NNE	STOP same
AMBIENT TEMP: START ~~91~~ 92	STOP 93
WET BULB TEMP: 71.8	RH percent: ~38%

Source Layout Sketch — Draw North Arrow



SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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2	Ø	Ø	Ø	Ø	32	Ø	Ø	Ø	Ø
3	Ø	Ø	Ø	Ø	33	Ø	Ø	Ø	Ø
4	Ø	Ø	Ø	Ø	34	Ø	Ø	Ø	Ø
5	Ø	Ø	Ø	Ø	35	Ø	Ø	Ø	Ø
6	Ø	Ø	Ø	Ø	36	Ø	Ø	Ø	Ø
7	Ø	Ø	Ø	Ø	37	Ø	Ø	Ø	Ø
8	Ø	Ø	Ø	Ø	38	Ø	Ø	Ø	Ø
9	Ø	Ø	Ø	Ø	39	Ø	Ø	Ø	Ø
10	Ø	Ø	Ø	Ø	40	Ø	Ø	Ø	Ø
11	Ø	Ø	Ø	Ø	41	Ø	Ø	Ø	Ø
12	Ø	Ø	Ø	Ø	42	Ø	Ø	Ø	Ø
13	Ø	Ø	Ø	Ø	43	Ø	Ø	Ø	Ø
14	Ø	Ø	Ø	Ø	44	Ø	Ø	Ø	Ø
15	Ø	Ø	Ø	Ø	45	Ø	Ø	Ø	Ø
16	Ø	Ø	Ø	Ø	46	Ø	Ø	Ø	Ø
17	Ø	Ø	Ø	Ø	47	Ø	Ø	Ø	Ø
18	Ø	Ø	Ø	Ø	48	Ø	Ø	Ø	Ø
19	Ø	Ø	Ø	Ø	49	Ø	Ø	Ø	Ø
20	Ø	Ø	Ø	Ø	50	Ø	Ø	Ø	Ø
21	Ø	Ø	Ø	Ø	51	Ø	Ø	Ø	Ø
22	Ø	Ø	Ø	Ø	52	Ø	Ø	Ø	Ø
23	Ø	Ø	Ø	Ø	53	Ø	Ø	Ø	Ø
24	Ø	Ø	Ø	Ø	54	Ø	Ø	Ø	Ø
25	Ø	Ø	Ø	Ø	55	Ø	Ø	Ø	Ø
26	Ø	Ø	Ø	Ø	56	Ø	Ø	Ø	Ø
27	Ø	Ø	Ø	Ø	57	Ø	Ø	Ø	Ø
28	Ø	Ø	Ø	Ø	58	Ø	Ø	Ø	Ø
29	Ø	Ø	Ø	Ø	59	Ø	Ø	Ø	Ø
30	Ø	Ø	Ø	Ø	60	Ø	Ø	Ø	Ø

AVERAGE OPACITY FOR HIGHEST PERIOD: Ø

NUMBER OF READINGS ABOVE ___ % WERE

RANGE OF OPACITY READINGS: MINIMUM ___ MAXIMUM ___

OBSERVER'S NAME (PRINT): Raymond A. McDarby

COMMENTS: *ND = none detected

OBSERVER'S SIGNATURE: R A McDarby — DATE: 5/8/2002

certification number 292695

ORGANIZATION: Tampa Electric Company

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE

TITLE — DATE

CERTIFIED BY: ETA — DATE: 2/21/02

VERIFIED BY: LJB — DATE: 6/14/02

RAY MCDARBY

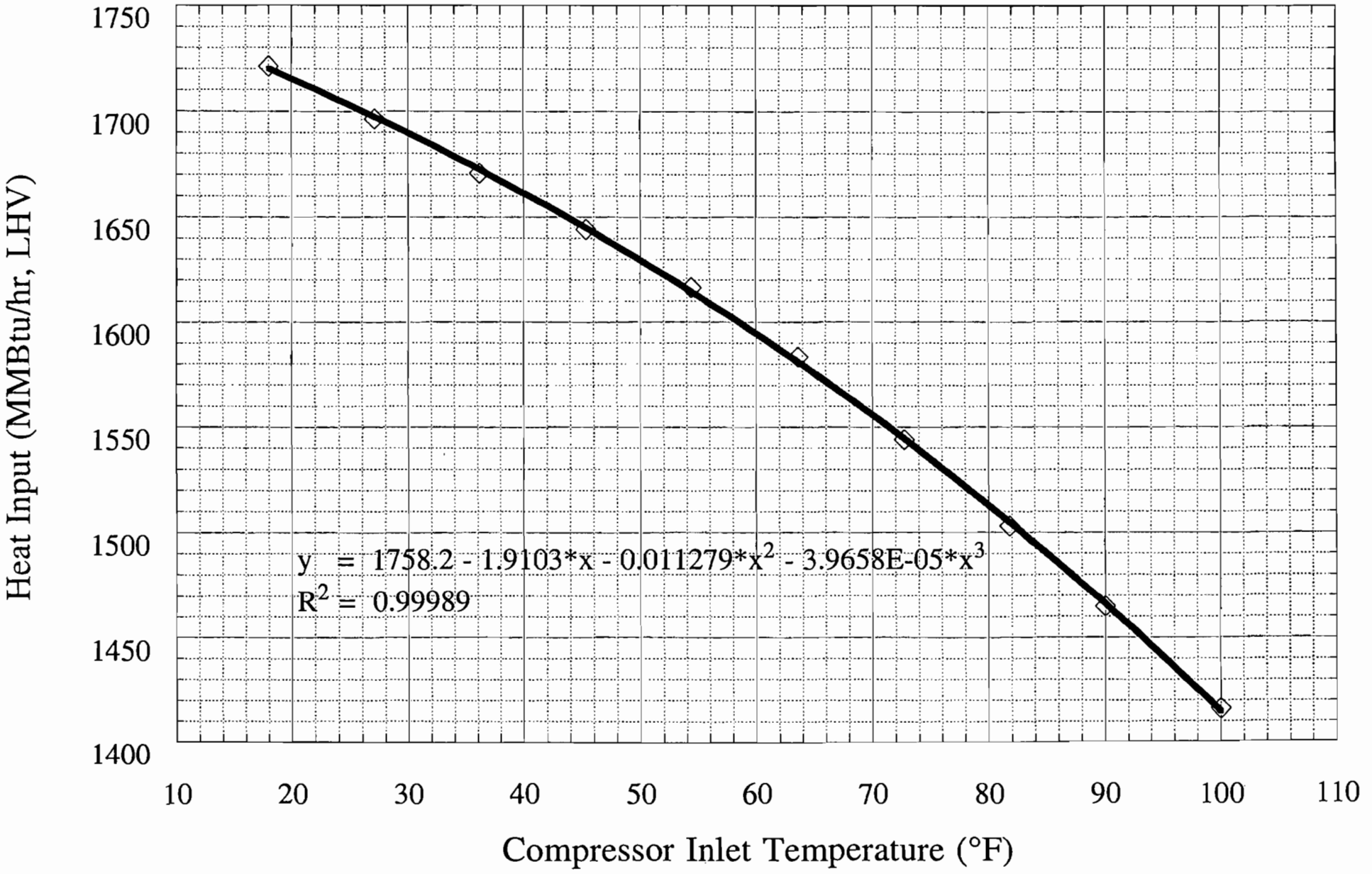
has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA Reference Method 9.

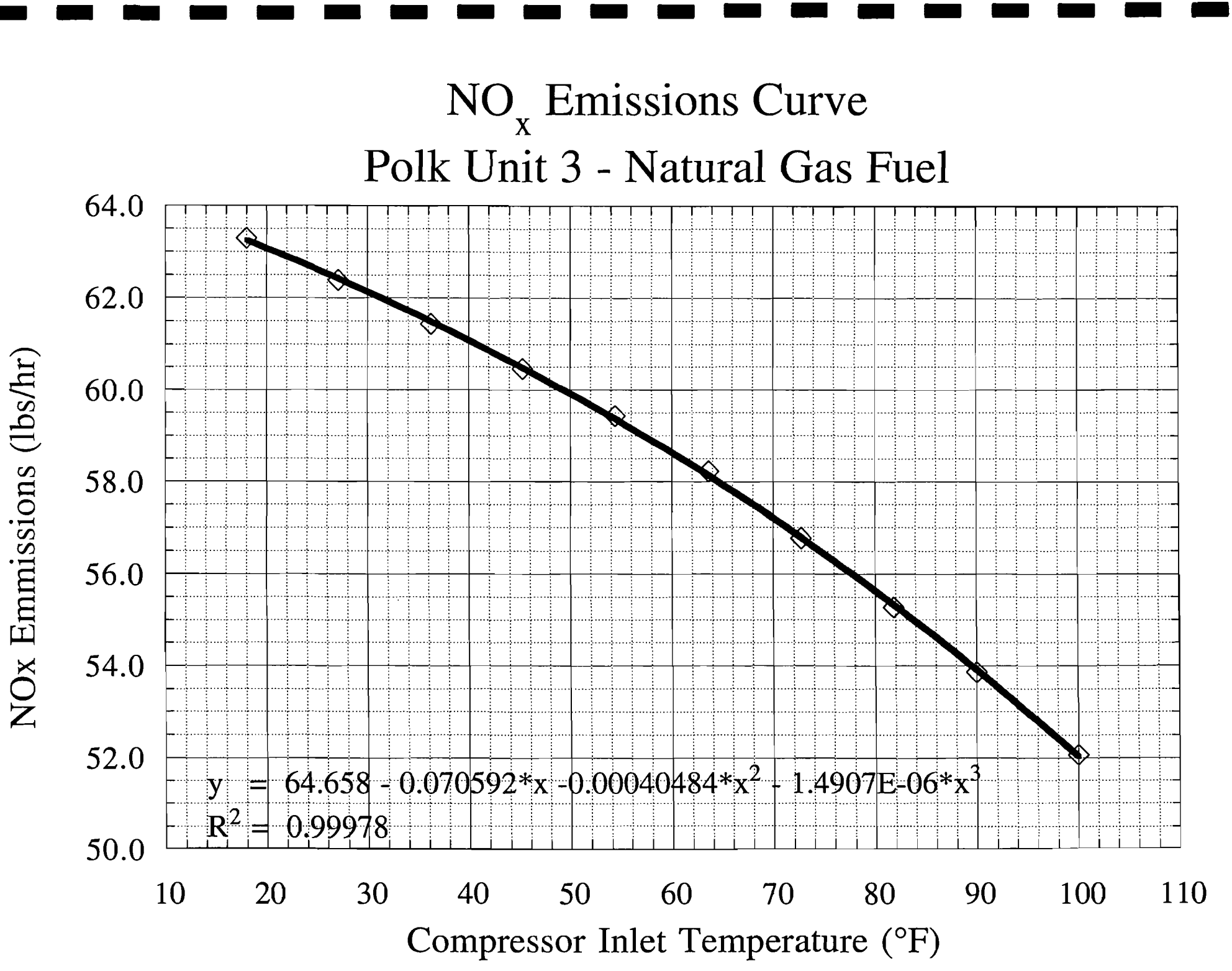
8/21/2002	TMPF04
FIELD EXPIRATION DATE	LECTURE EXPIRATION DATE
292695	
CERTIFICATION NUMBER	BEARER'S SIGNATURE

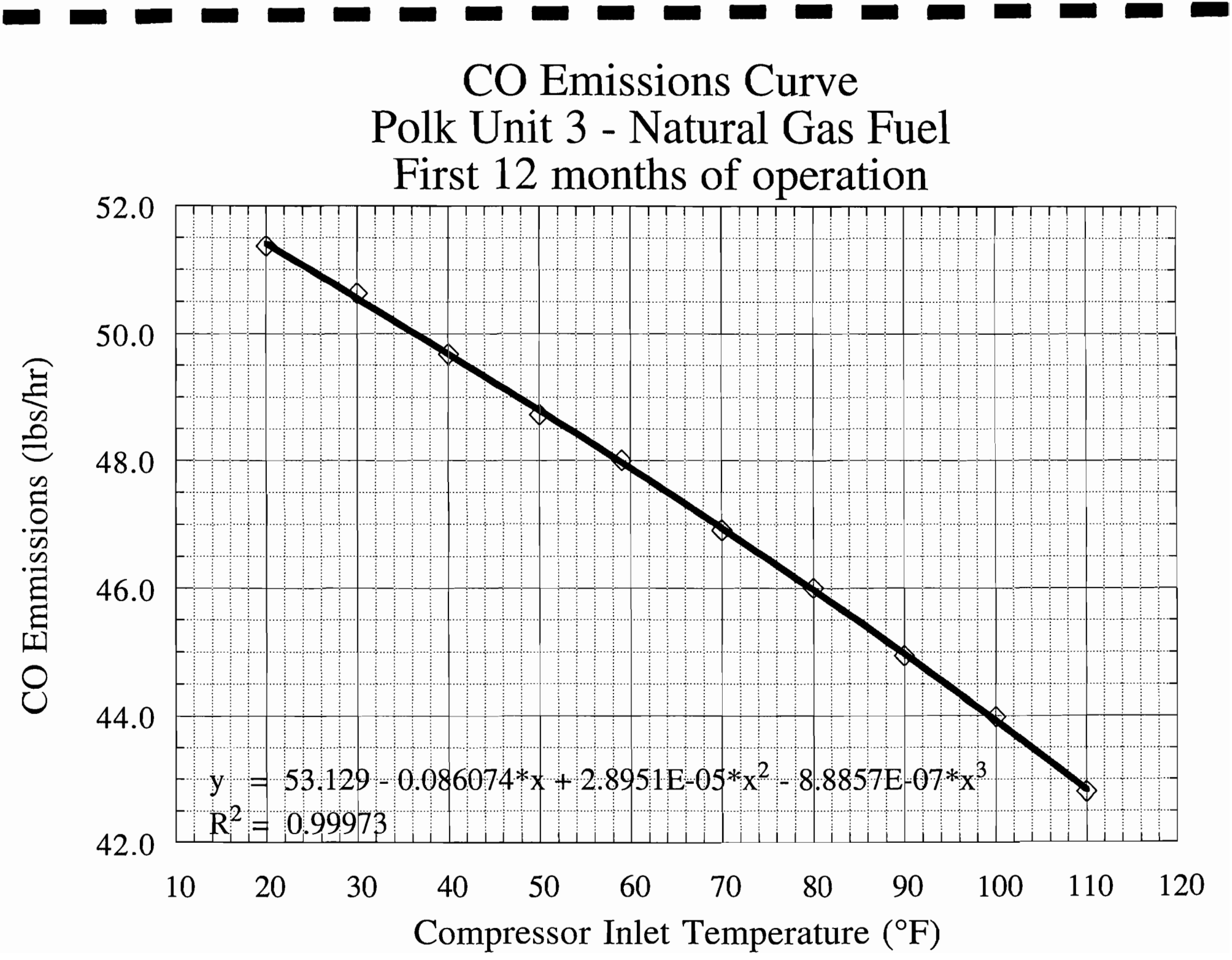
APPENDIX H:
OPERATIONAL DATA

UNIT OPERATIONAL AND EMISSION CURVES

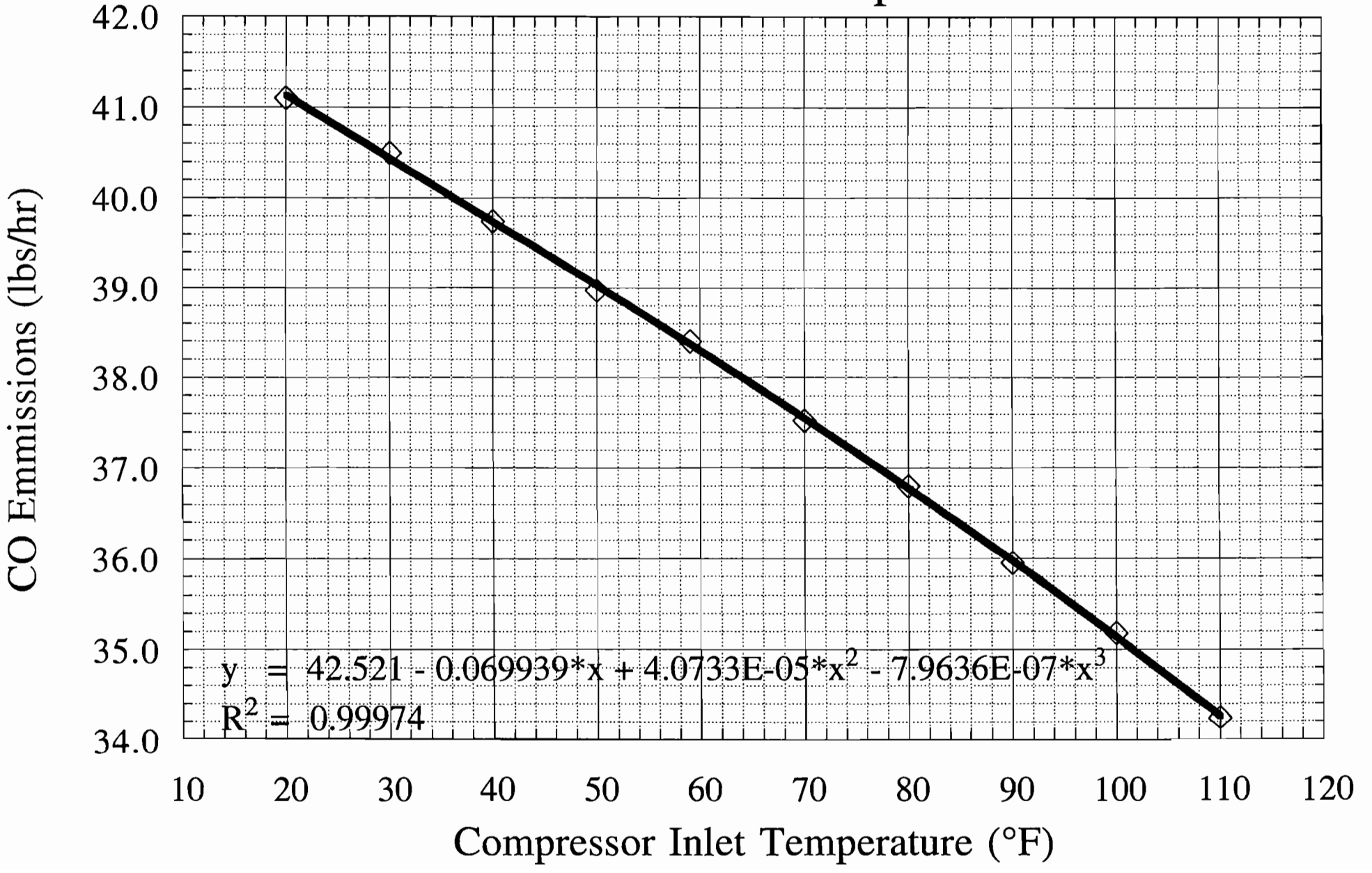
General Eletric Model PG7241 Gas Turbine
Polk Unit 3 S/N 297953
Natural Gas Performance Curve



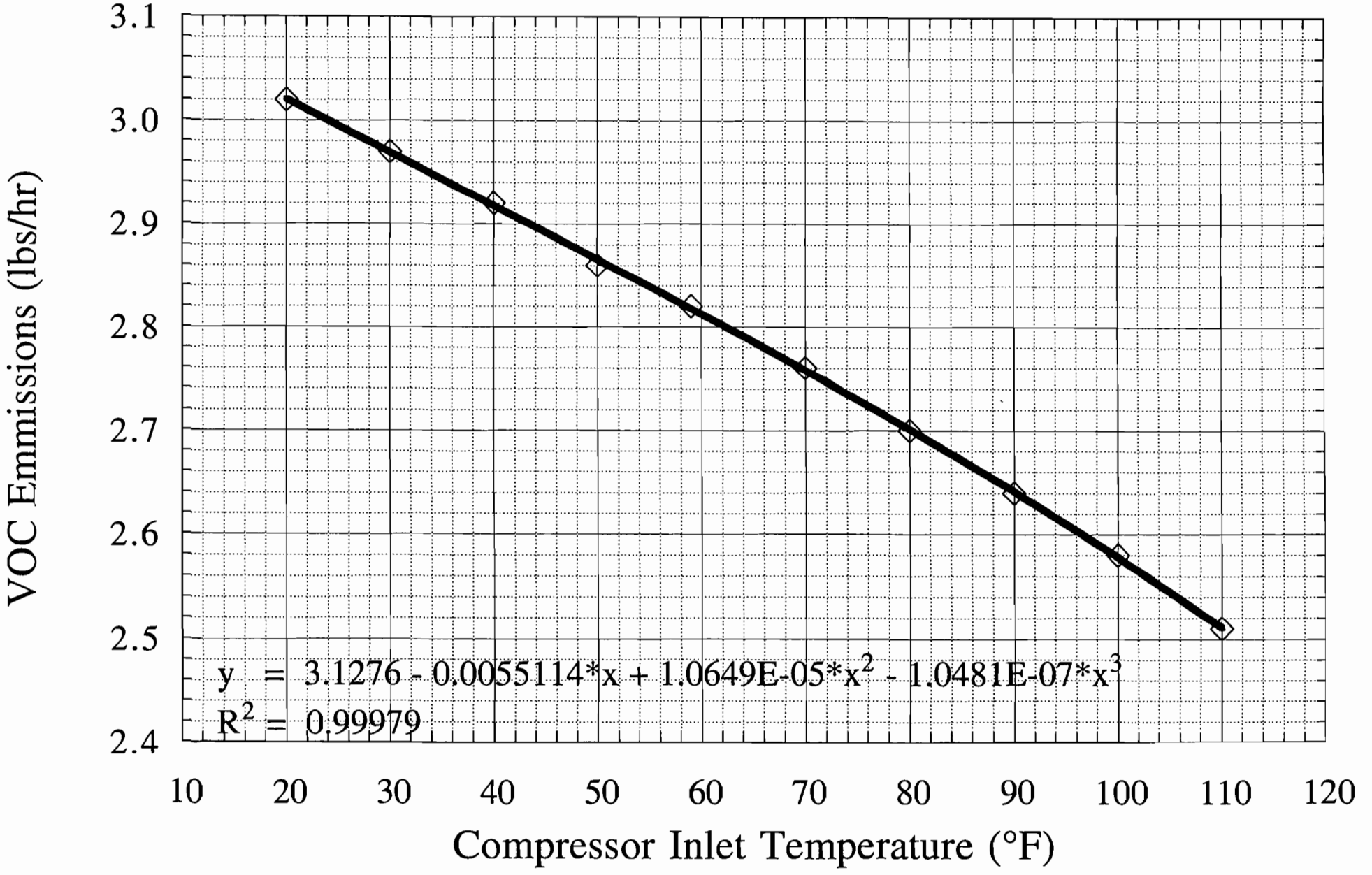

NO_x Emissions Curve
Polk Unit 3 - Natural Gas Fuel
NOx Emmissions (lbs/hr)
64.0
62.0
60.0
58.0
56.0
54.0
52.0
50.0
y = 64.658 - 0.070592*x -0.00040484*x^2 - 1.4907E-06*x^3
R^2 = 0.99978
10
20
30
40
50
60
70
80
90
100
110
Compressor Inlet Temperature (°F)

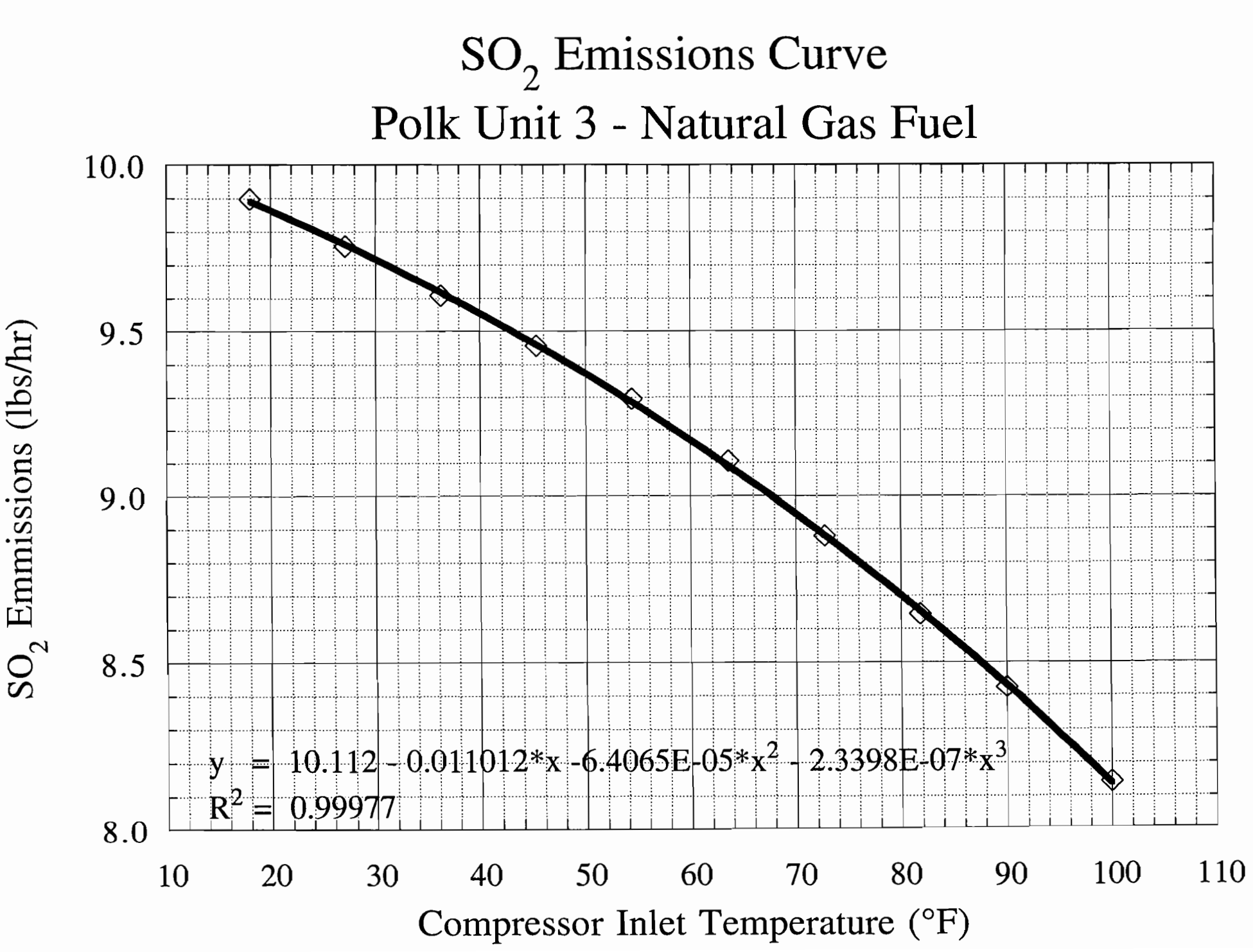

CO Emissions Curve
Polk Unit 3 - Natural Gas Fuel
First 12 months of operation
CO Emmissions (lbs/hr)
52.0
50.0
48.0
46.0
44.0
42.0
y = 53.129 - 0.086074*x + 2.8951E-05*x^2 - 8.8857E-07*x^3
R^2 = 0.99973
10
20
30
40
50
60
70
80
90
100
110
120
Compressor Inlet Temperature (°F)

CO Emissions Curve
Polk Unit 3 - Natural Gas Fuel
After 12 months of operation



VOC Emissions Curve
Polk Unit 3 - Natural Gas Fuel

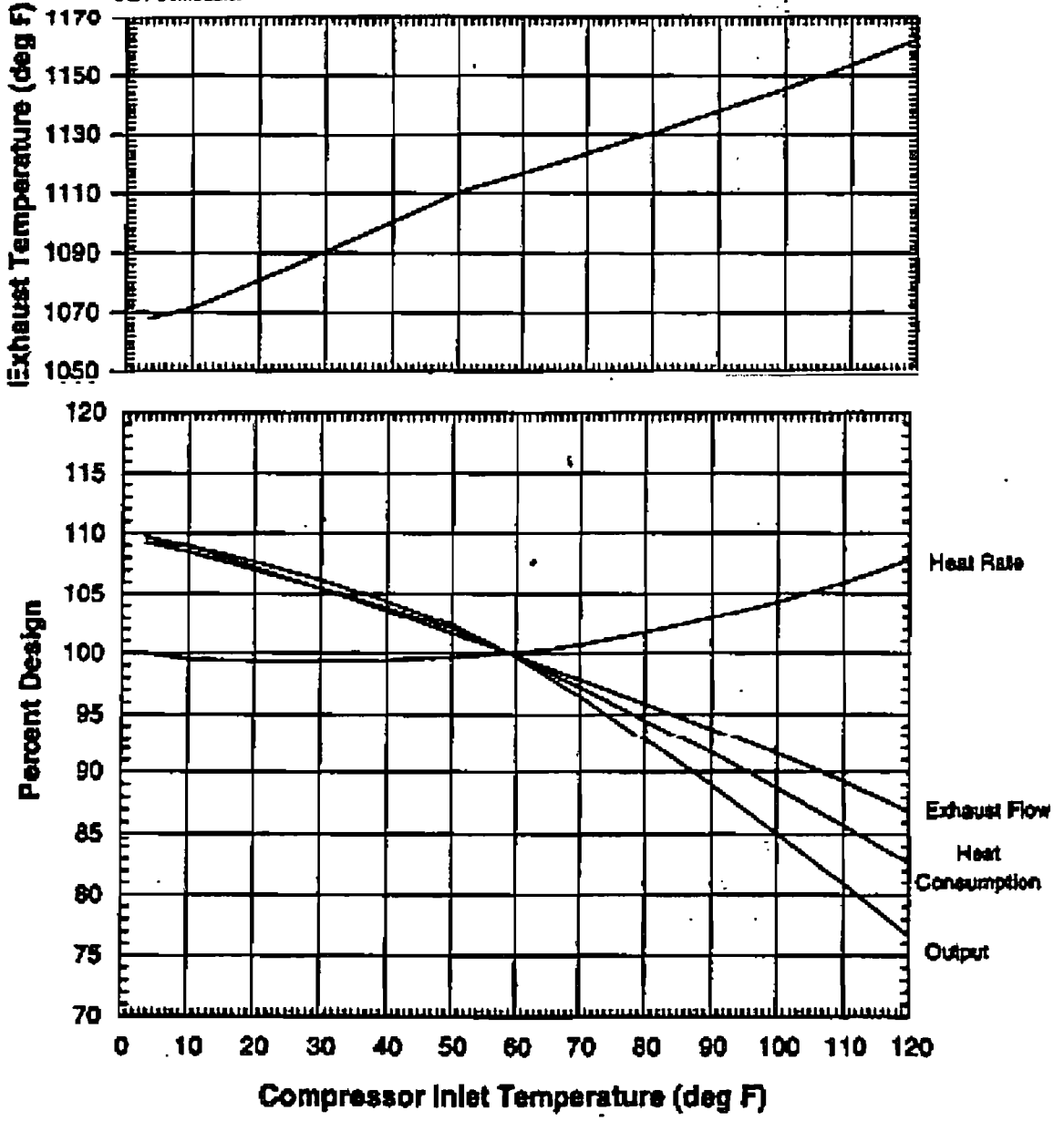



SO2 Emissions Curve
Polk Unit 3 - Natural Gas Fuel
SO2 Emmissions (lbs/hr)
10.0
9.5
9.0
8.5
8.0
y = 10.112 - 0.011012*x -6.4065E-05*x2 - 2.3398E-07*x3
R2 = 0.99977
10
20
30
40
50
60
70
80
90
100
110
Compressor Inlet Temperature (°F)

GENERAL ELECTRIC MODEL PG7241(FA) GAS TURBINE

Effect of Compressor Inlet Temperature on Output, Heat Rate, Heat Consumption, Exhaust Flow And Exhaust Temperature at Baseload

Fuel: Natural Gas
Design Values on Curve 5221HA851 Rev A
DLN Combustor



J. Van Deusen
4/17/98

5221HA852
Rev - A

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697
Estimated Performance
Gas Turbine Generator(s) 297956 ONLY

Design Conditions and Corresponding Correction Curves

	Units	
Fuel		Natural Gas
Fuel LHV	Btu/lb	See Gas Constituents
Load		Base
IGV Angle	degrees	82
Diluent Injection Fluid		None
Generator Frequency	hertz	60
Generator Power Factor	ratio	0.90

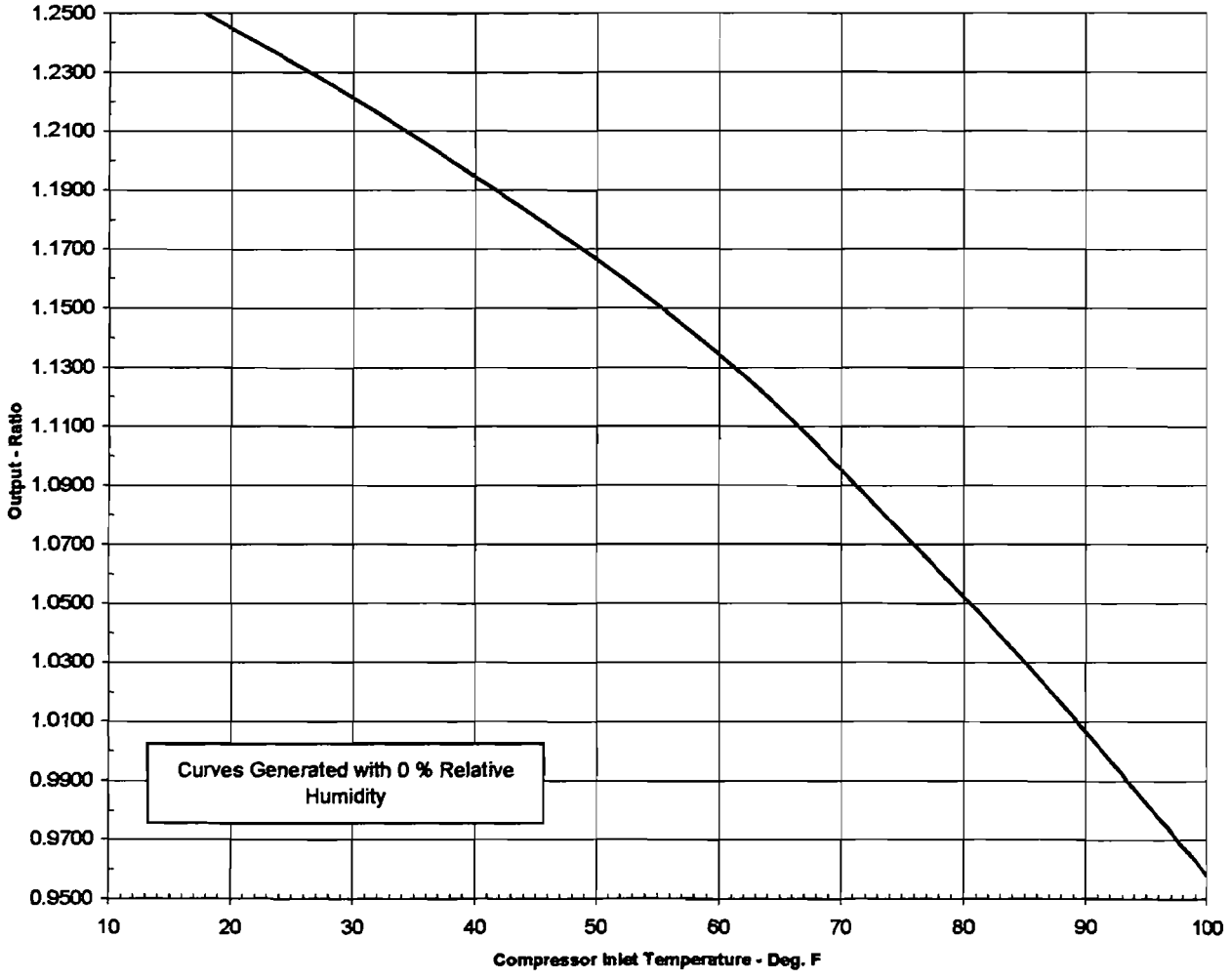
	Units		Applicable Correction Curve Drawing Numbers				
			Output	Heat Rate	Exhaust Flow	Exhaust Temp	Heat Consumption
Compressor Inlet Temperature	F	90.00	Sheet 1	Sheet 2	N/A	N/A	N/A
Compressor Inlet Relative Humidity		51%	Sheet 3	Sheet 4	N/A	N/A	N/A
Ambient Temperature & Humidity		N/A	N/A	N/A	N/A	N/A	N/A
Shaft Speed	rpm	3600	N/A	N/A	N/A	N/A	N/A
Fuel Temperature	F	80	N/A	N/A	N/A	N/A	N/A
Inlet Pressure Loss	in H_2O	4.00	N/A	N/A	N/A	N/A	N/A
Exhaust Pressure Loss	in H_2O	5.50	N/A	N/A	N/A	N/A	N/A
Barometric Pressure	psia	14.63	Sheet 5	Sheet 6	N/A	N/A	N/A
Diluent Injection	lb/sec	0	N/A	N/A	N/A	N/A	N/A
Gas Fuel Composition		See Gas Constituents	N/A	N/A	N/A	N/A	N/A

Gas Fuel Composition	Units	
Methane (CH4)	Mole Frac	0.9620
Ethane (C2H6)	Mole Frac	0.0238
Propane (C3H8)	Mole Frac	0.0019
Isobutane (C4H10)	Mole Frac	0.0001
N-Butane (C4H10)	Mole Frac	0.0001
Isopentane (C5H12)	Mole Frac	0.0000
N-Pentane (C5H12)	Mole Frac	0.0000
Hexanes, Avg. (C6H14)	Mole Frac	0.0002
Heptanes, Avg. (C7H16)	Mole Frac	0.0000
Carbon Monoxide (CO)	Mole Frac	0.0000
Carbon Dioxide (CO2)	Mole Frac	0.0067
Hydrogen Sulfide (H2S)	Mole Frac	0.0000
Air (N2O2)	Mole Frac	0.0000
Hydrogen (H2)	Mole Frac	0.0000
Oxygen (O2)	Mole Frac	0.0000
Nitrogen (N2)	Mole Frac	0.0053
Water (H2O)	Mole Frac	0.0000
Gas Fuel LHV	Btu/lb	20886
Gas Fuel H/C Ratio	ratio	3.94

Additional Notes:

No inlet air treatment

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697
Estimated Performance
Effect of Compressor Inlet Temperature on Output
Design Values Referenced on 553HA3460 Rev A
Fuel: Natural Gas
Mode: Base



	Units										
Compressor Inlet Temperature	F	18.00	27.10	36.20	45.30	54.40	63.60	72.70	81.80	90.00	100.00
Output Ratio		1.24958	1.22827	1.20485	1.1799	1.1531	1.1212934	1.0838	1.04433935	1.0066	0.95772

C. Banares
04/23/02

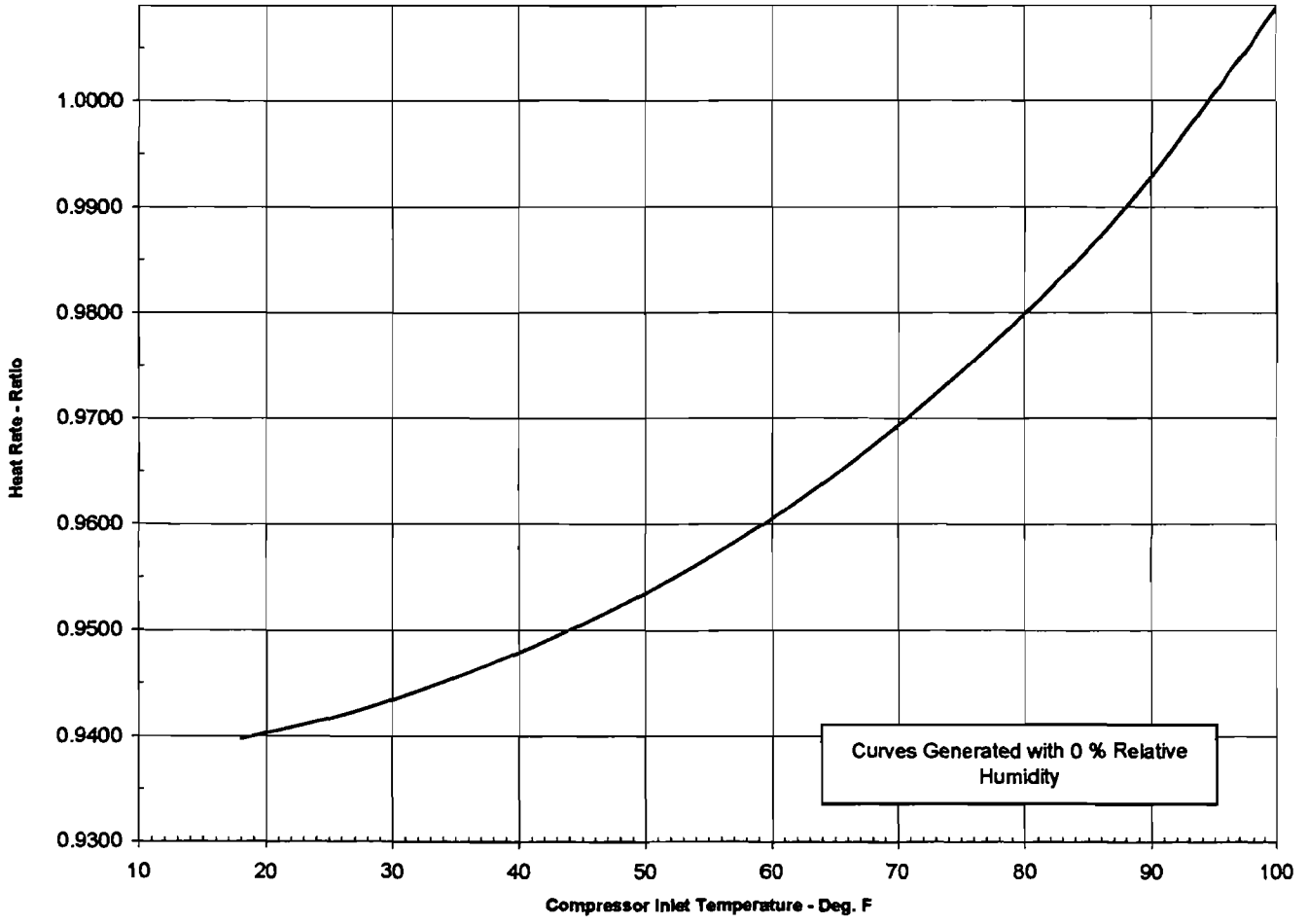
553HA3460 Rev A
Sheet 1

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Compressor Inlet Temperature on Heat Rate

Design Values Referenced on 553HA3460 Rev A
Fuel: Natural Gas
Mode: Base



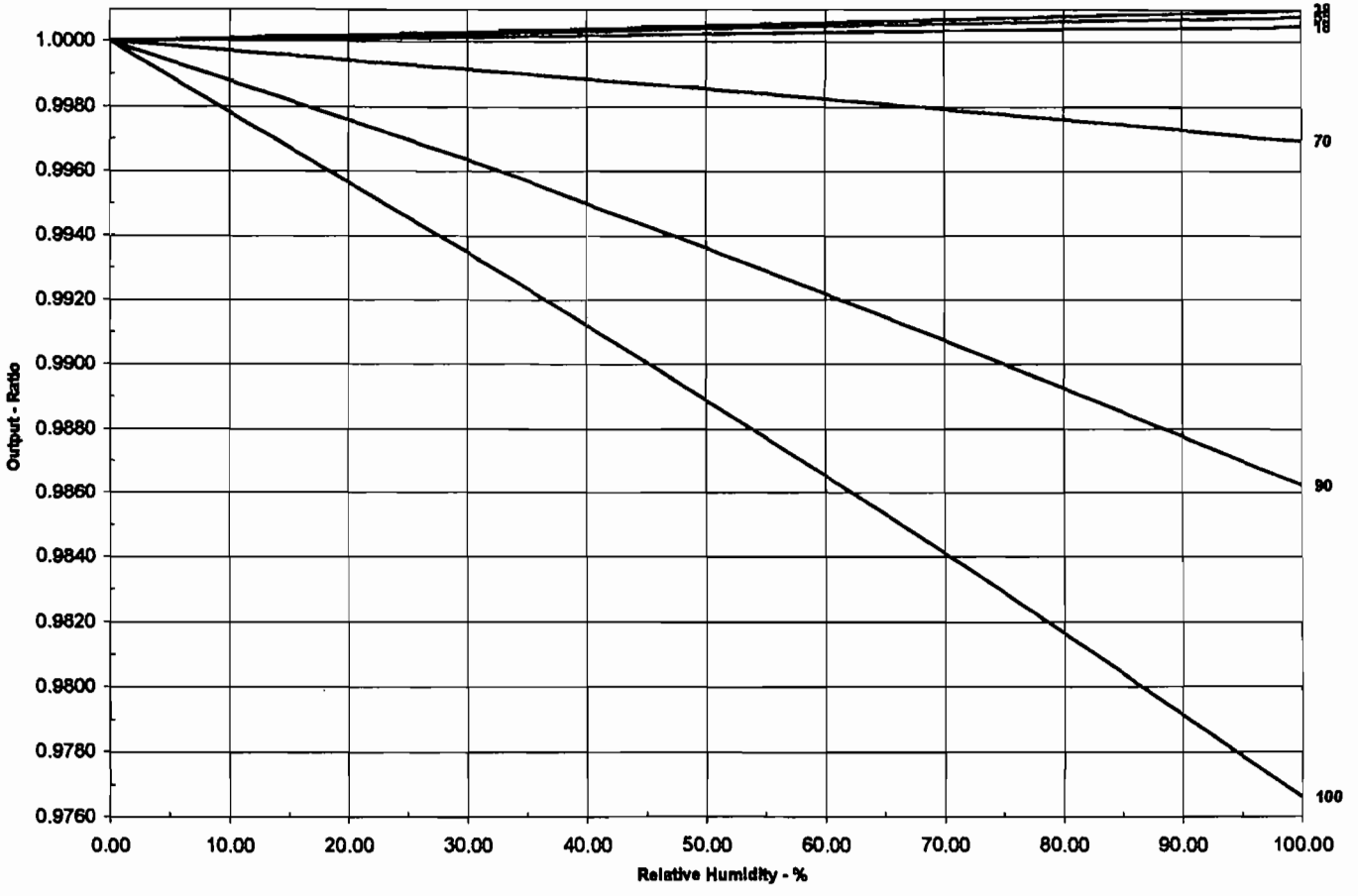
	Units										
Compressor Inlet Temperature	F	18.00	27.10	36.20	45.30	54.40	63.60	72.70	81.80	90.00	100.00
Heat Rate Ratio		0.939708	0.942329	0.94604	0.950722	0.956354	0.963409	0.971982	0.981978	0.992824	1.008745

C. Banares
04/23/02

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Relative Humidity on Output at Different Compressor Inlet Temperatures
Design Values Referenced on 553HA3460 Rev A
Fuel: Natural Gas
Mode: Base



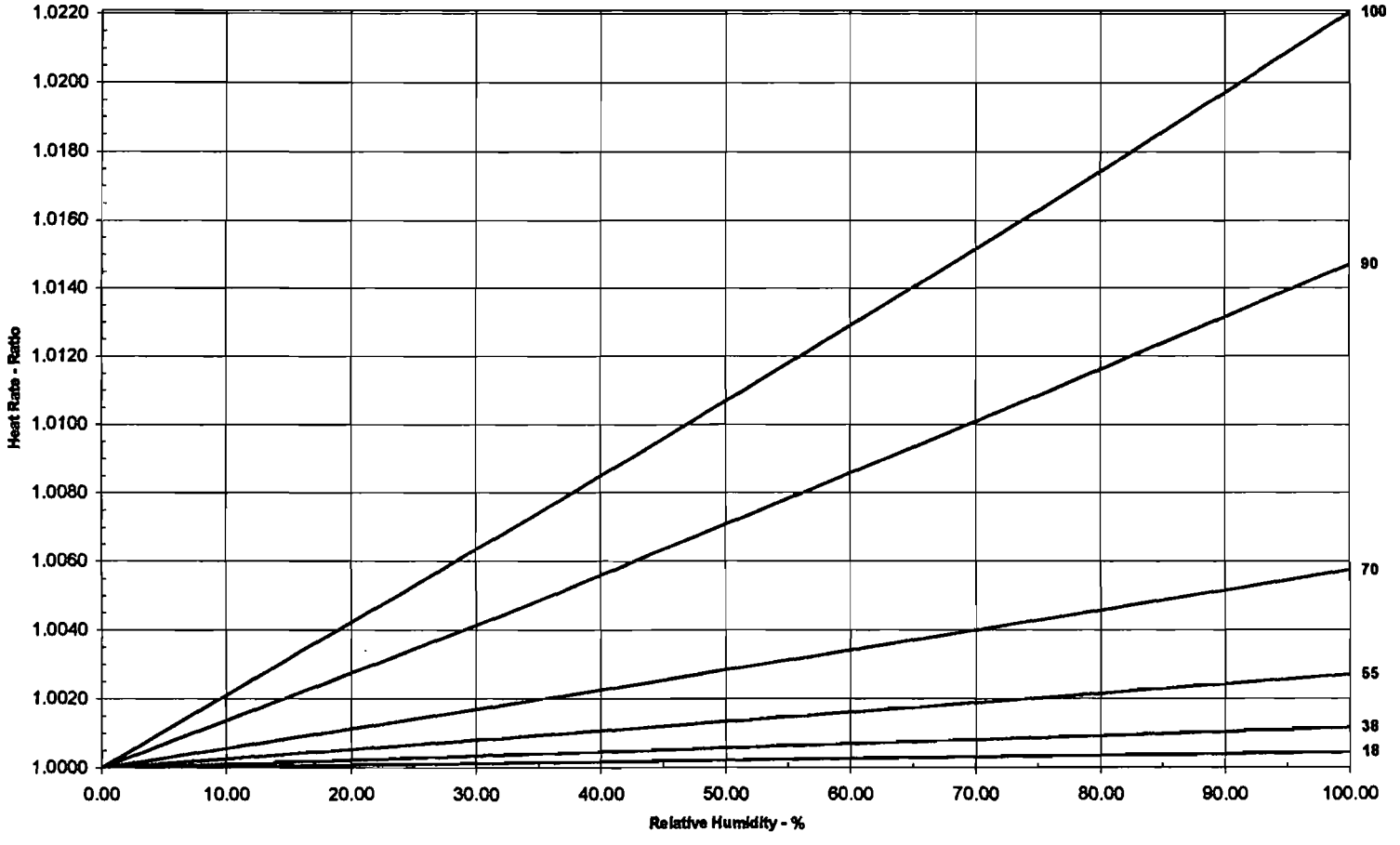
Compressor Inlet Temperature (F)

Relative Humidity - %	18.0	38.0	55.0	70.0	90.0	100.0
0	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30	1.00014	1.00030	1.00025	0.99915	0.99636	0.99348
40	1.00019	1.00040	1.00033	0.99885	0.99500	0.99121
50	1.00024	1.00049	1.00041	0.99855	0.99361	0.98890
60	1.00028	1.00059	1.00048	0.99824	0.99219	0.98653
70	1.00033	1.00069	1.00056	0.99793	0.99074	0.98412
80	1.00038	1.00079	1.00063	0.99761	0.98926	0.98165
90	1.00042	1.00088	1.00070	0.99728	0.98776	0.97914
100	1.00047	1.00098	1.00077	0.99694	0.98622	0.97659

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Relative Humidity on Heat Rate at Different Compressor Inlet Temperatures
Design Values Referenced on 553HA3460 Rev A
Fuel: Natural Gas
Mode: Base



Compressor Inlet Temperature (F)

Relative Humidity - %	18.0	38.0	55.0	70.0	90.0	100.0
0	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30	1.00013	1.00035	1.00080	1.00169	1.00413	1.00633
40	1.00018	1.00046	1.00107	1.00226	1.00560	1.00849
50	1.00022	1.00058	1.00134	1.00283	1.00708	1.01068
60	1.00026	1.00069	1.00161	1.00341	1.00857	1.01289
70	1.00031	1.00081	1.00188	1.00399	1.01008	1.01514
80	1.00035	1.00092	1.00215	1.00457	1.01160	1.01741
90	1.00040	1.00104	1.00243	1.00515	1.01314	1.01972
100	1.00044	1.00116	1.00270	1.00574	1.01469	1.02205

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

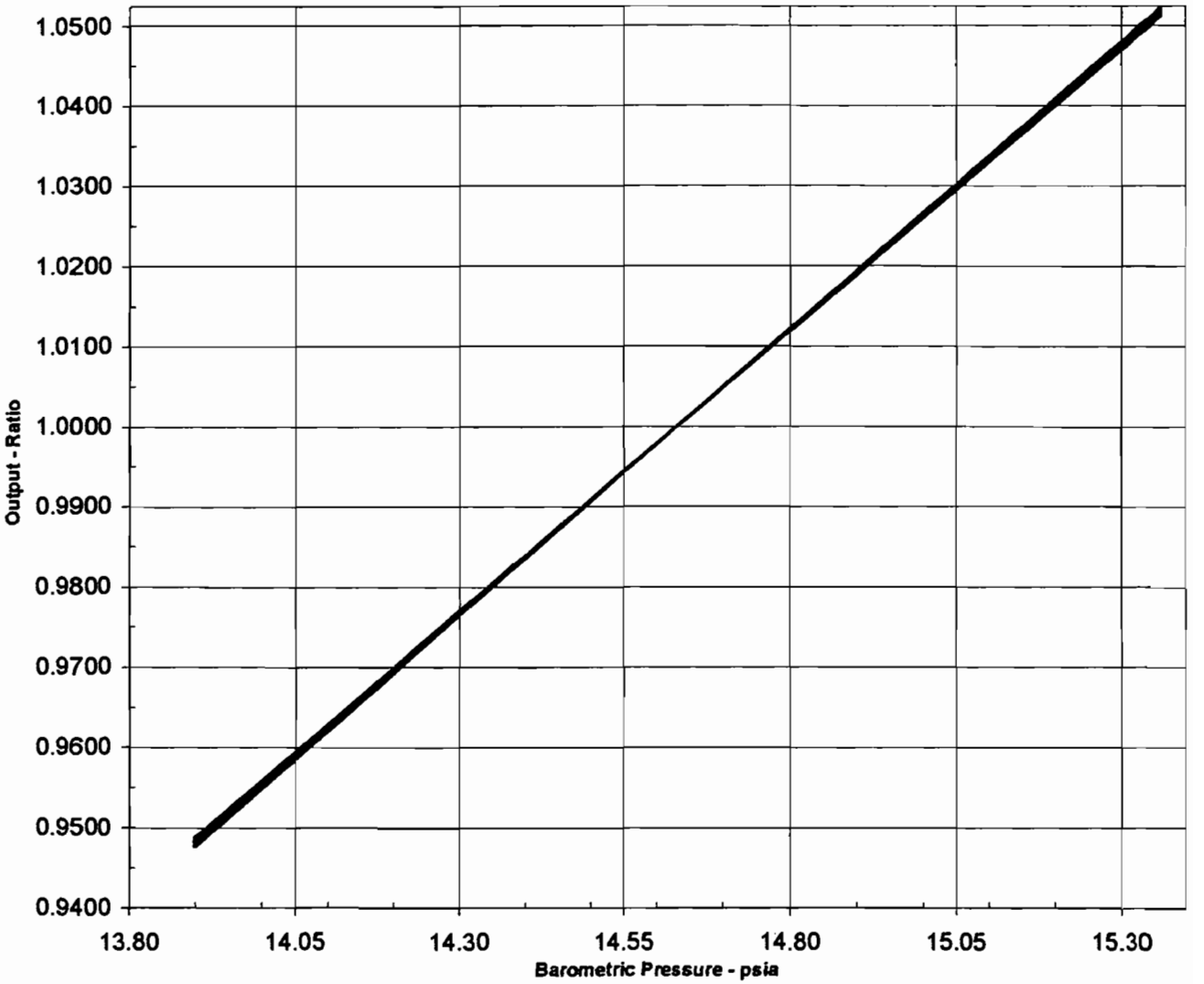
Estimated Performance

Effect of Barometric Pressure on Output at Different Compressor Inlet Temps

Design Values Referenced on 553HA3460 Rev A

Fuel: Natural Gas

Mode: Base



Compressor Inlet Temperature (F)

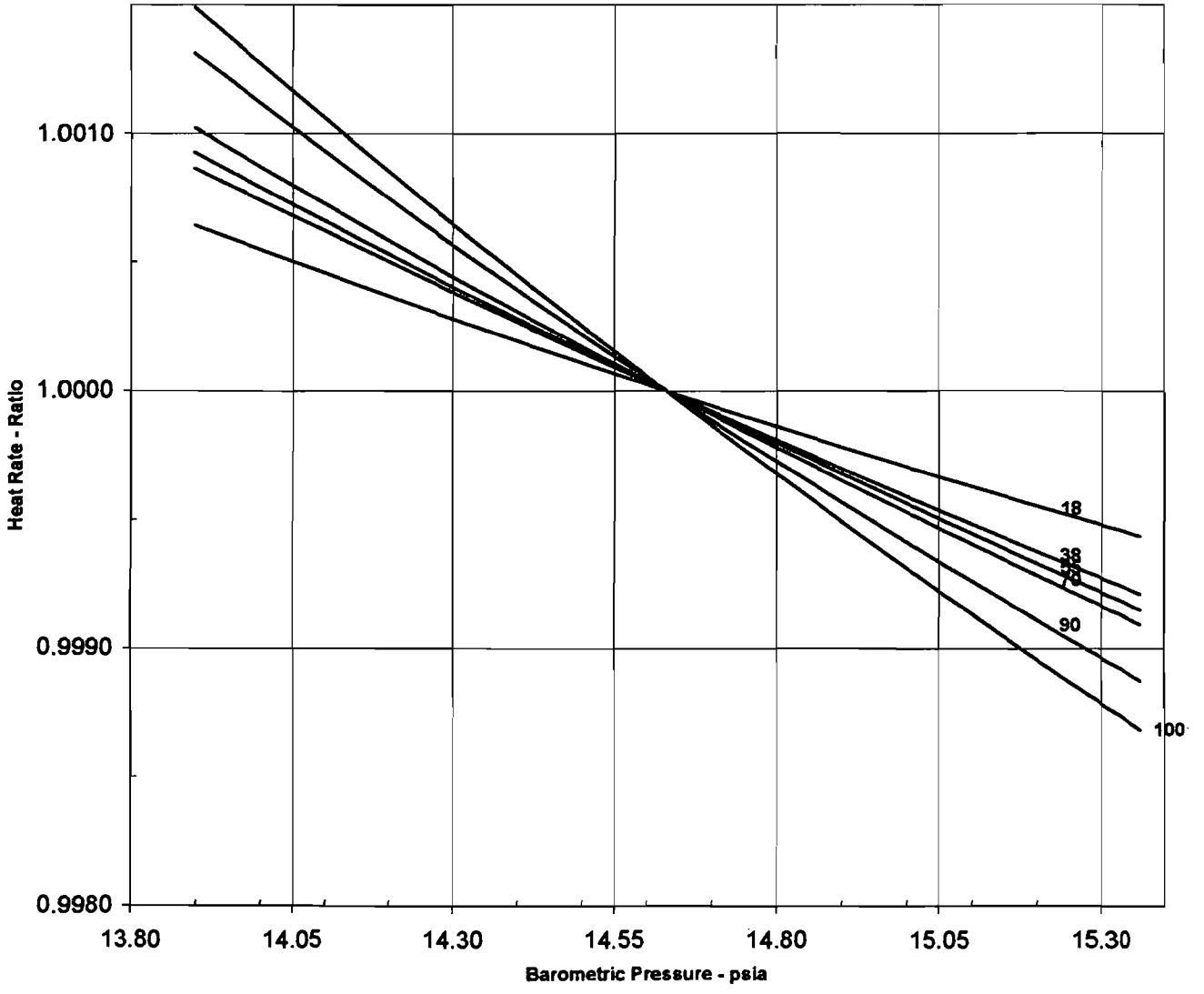
Barometric Pressure (psia)	18.0	38.0	55.0	70.0	90.0	100.0
13.90	0.948734	0.948409	0.948323	0.948187	0.947832	0.947611
14.04	0.958991	0.958723	0.958660	0.958551	0.958268	0.958090
14.19	0.969244	0.969040	0.968994	0.968915	0.968705	0.968568
14.34	0.979498	0.979359	0.979330	0.979277	0.979139	0.979047
14.63	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
14.92	1.020500	1.020639	1.020671	1.020719	1.020844	1.020950
15.07	1.030749	1.030959	1.031010	1.031078	1.031264	1.031419
15.22	1.040998	1.041281	1.041350	1.041438	1.041684	1.041890
15.36	1.051243	1.051599	1.051689	1.051796	1.052103	1.052356

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Barometric Pressure on Heat Rate at Different Compressor Inlet Temps

Design Values Referenced on 553HA3460 Rev A
Fuel: Natural Gas
Mode: Base



Compressor Inlet Temperature (F)

Barometric Pressure (psia)	18.0	38.0	55.0	70.0	90.0	100.0
13.90	1.000644	1.000865	1.000927	1.001022	1.001312	1.001490
14.04	1.000509	1.000688	1.000732	1.000807	1.001035	1.001178
14.19	1.000377	1.000514	1.000543	1.000597	1.000765	1.000872
14.34	1.000248	1.000341	1.000358	1.000393	1.000502	1.000575
14.63	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
14.92	0.999765	0.999674	0.999654	0.999625	0.999533	0.999452
15.07	0.999652	0.999516	0.999482	0.999444	0.999308	0.999189
15.22	0.999542	0.999362	0.999314	0.999267	0.999089	0.998932
15.36	0.999435	0.999211	0.999149	0.999093	0.998876	0.998686

TECO Polk Unit 3
Preliminary Performance Test Results
4/25/02

Performance @ Contract Conditions		Test Point 1	Test Point 2	Test Point 3
Performance Margins				
Output Margin	%	0.71	0.68	0.77
Heat Rate Margin	%	1.82	1.74	1.61
Performance Results				
Generator Gross Output	kW	152499.28	152462.18	152591.81
Generator Net Output (Gross - Excitation)	kW	152321.66	152283.59	152411.81
Equipment Net Output (Generator Net - Aux)	kW	152026.57	151980.95	152112.95
Heat Consumption(LHV)	Mbtu/hr	1449.27	1450.06	1453.28
Generator Gross Heat Rate (LHV)	BTU/kWh	9503.44	9510.95	9523.97
Generator Net Heat Rate (LHV)	BTU/kWh	9514.53	9522.10	9535.22
Equipment Net Heat Rate (LHV)	BTU/kWh	9532.99	9541.07	9553.95
Contract Conditions (Basis of Guarantee)				
Guarantee Parameters				
Output	kW	150950	150950	150950
Heat Rate	BTU/kWh	9710	9710	9710
Test Tolerances				
Output Test Tolerance	%	2.09	2.09	2.09
Heat Rate Test Tolerance	%	1.94	1.94	1.94
Turbine Definition				
Frame Size	alpha	7FA+e	7FA+e	7FA+e
Turbine Serial Number	none	297956	297956	297956
Type of Combustion	alpha	DLN	DLN	DLN
Basis of Guarantee				
Load Condition (Base)	alpha	Base	Base	Base
Point of Output Guarantee (EquipNet)	alpha	EquipNet	EquipNet	EquipNet
Ambient Pressure	psia	14.63	14.63	14.63
Ambient Temperature	F	90.00	90.00	90
Ambient Specific Humidity	lb/lb	0.02	0.02	0.02
Compressor Inlet Temperature	°F	90	90	90
Compressor Inlet Specific Humidity	°F	0.02	0.02	0.02
Shaft Speed	rpm	3600	3600	3600
Power Factor	ratio	0.90	0.90	0.90
Inlet Pressure Loss	"H2O	4.00	4.00	4.00
Exhaust DP Measurement Location: (AO42OUT)	alpha	AO42OUT	AO42OUT	AO42OUT
Exhaust Pressure Loss F-Class AO42 Outlet	"H2O	5.50	5.50	5.5
Type Of Power Metering	alpha	Precision	Precision	Precision
Type Of Fuel (Gas, Oil)	alpha	Gas	Gas	Gas
Type Of Heating Value Used For Guarantee	alpha	LHV	LHV	LHV
Fuel Pressure	psia	450	450	450
Fuel Temperature	F	80	80	80
Evaporative Cooler Installed? (Yes, No)	alpha	No	No	No
Fired Hours Allowance	hours	100	100	100
Contract Gas Fuel Composition				
Methane (CH4)	Mole Frac	0.9620	0.9620	0.9620

GE Performance Evaluation Services

GE Performance Engineer:
Christopher Banares

TECO Polk Unit 3
Preliminary Performance Test Results
4/25/02

Ethane (C2H6)	Mole Frac	0.0238	0.0238	0.0238
Propane (C3H8)	Mole Frac	0.0019	0.0019	0.0019
Isobutane (C4H10)	Mole Frac	0.0001	0.0001	0.0001
N-Butane (C4H10)	Mole Frac	0.0001	0.0001	0.0001
Isopentane (C5H12)	Mole Frac	0.0000	0.0000	0.0000
N-Pentane (C5H12)	Mole Frac	0.0000	0.0000	0.0000
Hexanes, Avg. (C6H14)	Mole Frac	0.0002	0.0002	0.0002
Heptanes, Avg. (C7H16)	Mole Frac	0.0000	0.0000	0.0000
Carbon Monoxide (CO)	Mole Frac	0.0000	0.0000	0.0000
Carbon Dioxide (CO2)	Mole Frac	0.0067	0.0067	0.0067
Hydrogen Sulfide (H2S)	Mole Frac	0.0000	0.0000	0.0000
Air (N2O2)	Mole Frac	0.0000	0.0000	0.0000
Hydrogen (H2)	Mole Frac	0.0000	0.0000	0.0000
Oxygen (O2)	Mole Frac	0.0000	0.0000	0.0000
Nitrogen (N2)	Mole Frac	0.0053	0.0053	0.0053
Water (H2O)	Mole Frac	0.0000	0.0000	0.0000
Test Measurements				
Conditions				
Test Date	mm/dd/yy	23-Apr-02	23-Apr-02	23-Apr-02
Time at Start of Test	24hr	15:01:00	15:47:00	16:35:00
Test Duration	minutes	30	30	30
Test Point Designation	alpha	TP1	TP2	TP3
Performance Engineer		CRB	CRB	CRB
Setup				
Type of Humidity Sensor (Psych or EHS)	alpha	EHS	EHS	EHS
Evaporative Coolers In Service? (Yes, No)	alpha	No	No	No
Fired Hours Since Offline Water Wash	hours	19.0	19.75	20.5
Combustion Mode	alpha	Pre-Mix	Pre-Mix	Pre-Mix
Precision GT Measurements				
Ambient Pressure	psia	14.67	14.66	14.66
Ambient Dry Bulb Temperature	F	87.39	88.15	88.27
Ambient Relative Humidity	%	40.916	40.270	38.655
Inlet Air Total Pressure Drop	"H2O	2.57	2.57	2.56
Inlet Air Total Temperature	F	87.39	88.15	88.27
Bellmouth Throat Wall Static Air Pressure	"H2O	74.74	74.50	74.46
Compressor Discharge Pressure (CPD)	psig	201	200	200
Exhaust DP, Turbine AO42 Exit Flange	"H2O	1.55	1.52	1.49
Control System GT Measurements				
Fired Hours	hours	67.3	68.1	68.8
Atmospheric Pressure	in Hg	29.9	29.9	29.9
Inlet Pressure Drop	"H2O	2.40	2.41	2.41
Compressor Inlet Temperature	F	89.00	89.71	89.68
Compressor Inlet Specific Humidity	lb/lb	0.0139	0.0139	0.0135
Bellmouth Pressure Depression	"H2O	75.42	75.12	75.19
Airflow	lb/s	914.70	912.41	912.71
Inlet Guide Vane Angle	degrees	82.1	82.1	82.1
Shaft Speed	rpm	3600	3599	3600
Compressor Discharge Pressure	psig	200.25	199.81	199.76
Compressor Pressure Ratio	psia/psia	14.73	14.70	14.70
Compressor Discharge Temperature	F	765.65	766.39	766.74
Cprs Inlet Bleed Heat Extraction Valve Position	%	-1.00	-1.01	-1.01

GE Performance Engineer:
Christopher Banares

TECO Polk Unit 3
Preliminary Performance Test Results
4/25/02

Gaseous Fuel Flow	lb/s	19.69	19.63	19.65
Combustion Reference Temperature	F	2390.10	2390.06	2389.77
Wheelspace Temp, 1st Fwd Inner Left (FLA)	F	887.26	888.71	888.19
Wheelspace Temp, 1st Fwd Inner Right	F	882.97	884.39	883.97
Wheelspace Temp, 1st Aft Left	F	928.74	929.77	929.65
Wheelspace Temp, 1st Aft Right	F	931.52	932.81	932.68
Wheelspace Temp, 2nd Fwd Left	F	940.58	942.13	942.23
Wheelspace Temp, 2nd Fwd Right	F	943.13	944.13	944.06
Wheelspace Temp, 2nd Aft Left	F	779.29	779.29	779.29
Wheelspace Temp, 2nd Aft Right	F	771.65	773.23	773.13
Wheelspace Temp, 3rd Fwd Left	F	808.87	811.35	811.94
Wheelspace Temp, 3rd Fwd Right	F	785.77	789.55	789.94
Wheelspace Temp, 3rd Aft Left	F	305.03	306.52	307.16
Wheelspace Temp, 3rd Aft Right	F	258.97	259.77	260.00
Exhaust Temperature Demand (Primary)	F	1134.55	1135.10	1135.55
Exhaust Temperature Demand (Secondary)	F	1187.94	1188.77	1188.84
Exhaust Temperature (TTXM)	F	1134.61	1135.35	1135.61
Exhaust Temperature Spread	F	45.58	45.81	47.19
Exhaust Pressure	"H2O	1.90	1.89	1.91
Engineering Test Measurements				
Generator Measurements				
Gross Output (Precision Metering)	kW	155340	154685	154715
Gross Output (Station Metering)	kW	155626	154964	155052
Gross Output (Control System Metering)	kW	155090	154410	154432
Generator Output (Other Metering)	kW			
Power Factor (Precision Metering)	ratio	0.991	0.991	0.990
Power Factor (Station Metering)	ratio	0.991	0.991	0.990
Power Factor (Control System Metering)	ratio	0.991	0.991	0.991
Power Factor (Other Metering)	ratio			
Excitation (Amount After Power Metering)	kW	178	179	180
GT Equipment Aux Power	kW	295	303	299
Transformer Losses	kW			
Gas Fuel Temperature				
Flowing Temperature (at Contract Boundary Point)	°F	98.76	98.81	98.69
Flowing Temperature (At Final Inlet to GT)	°F	98.76	98.81	98.69
Primary Gas Fuel Metering				
Type Of Meter (Vortex, Turbine, Annubar, or DP)	alpha	DP	DP	DP
Flowing Pressure (Absolute)	psia	465.00	464.86	464.92
Flowing Temperature (at Metering)	°F	98.76	98.81	98.69
Type of DP Flow Element	—	AGA_orifice	AGA_orifice	AGA_orifice
Differential Pressure	"H2O68°F	93.35	92.95	93.20
Pipe Diameter	inches	7.986	7.986	7.986
Throat Diameter	inches	5.120	5.120	5.120
Flowing Fluid	—	natgas	natgas	natgas
Pipe Meas. Temp	°F	50	50	50
Pipe Alpha	in/in-°F	9.25E-06	9.25E-06	9.25E-06
Throat Meas. Temp	°F	50	50	50
Throat Alpha	in/in-°F	9.25E-06	9.25E-06	9.25E-06
Gas Fuel Composition				
Basis		Contract	Contract	Contract

Methane (CH4)	Mole Frac	0.9620	0.9620	0.9620
Ethane (C2H6)	Mole Frac	0.0238	0.0238	0.0238
Propane (C3H8)	Mole Frac	0.0019	0.0019	0.0019
Isobutane (C4H10)	Mole Frac	0.0001	0.0001	0.0001
N-Butane (C4H10)	Mole Frac	0.0001	0.0001	0.0001
Isopentane (C5H12)	Mole Frac	0.0000	0.0000	0.0000
N-Pentane (C5H12)	Mole Frac	0.0000	0.0000	0.0000
Hexanes, Avg. (C6H14)	Mole Frac	0.0002	0.0002	0.0002
Heptanes, Avg. (C7H16)	Mole Frac	0.0000	0.0000	0.0000
Carbon Monoxide (CO)	Mole Frac	0.0000	0.0000	0.0000
Carbon Dioxide (CO2)	Mole Frac	0.0067	0.0067	0.0067
Hydrogen Sulfide (H2S)	Mole Frac	0.0000	0.0000	0.0000
Air (N2O2)	Mole Frac	0.0000	0.0000	0.0000
Hydrogen (H2)	Mole Frac	0.0000	0.0000	0.0000
Oxygen (O2)	Mole Frac	0.0000	0.0000	0.0000
Nitrogen (N2)	Mole Frac	0.0053	0.0053	0.0053
Water (H2O)	Mole Frac	0.0000	0.0000	0.0000

Corrections

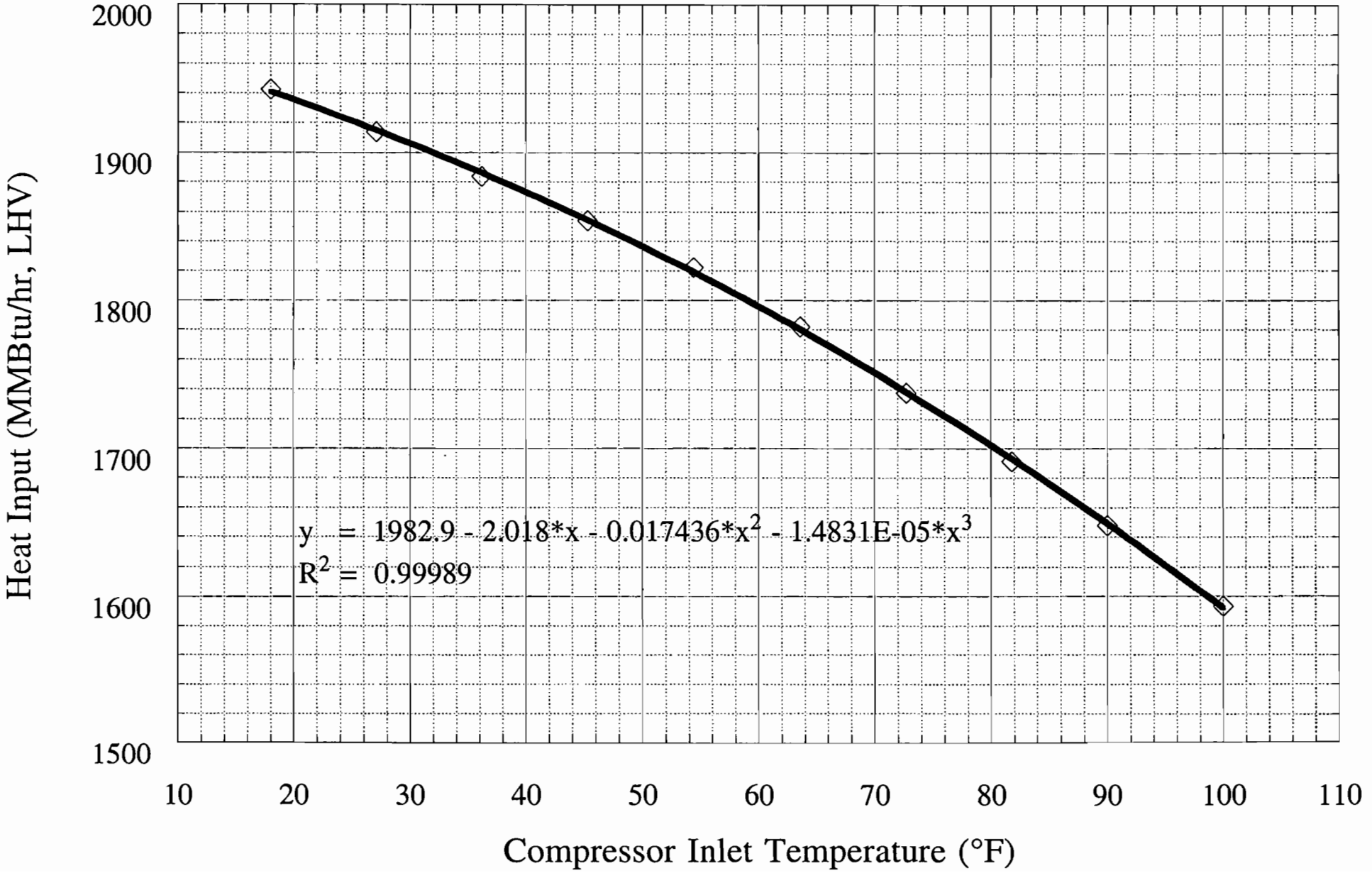
Output

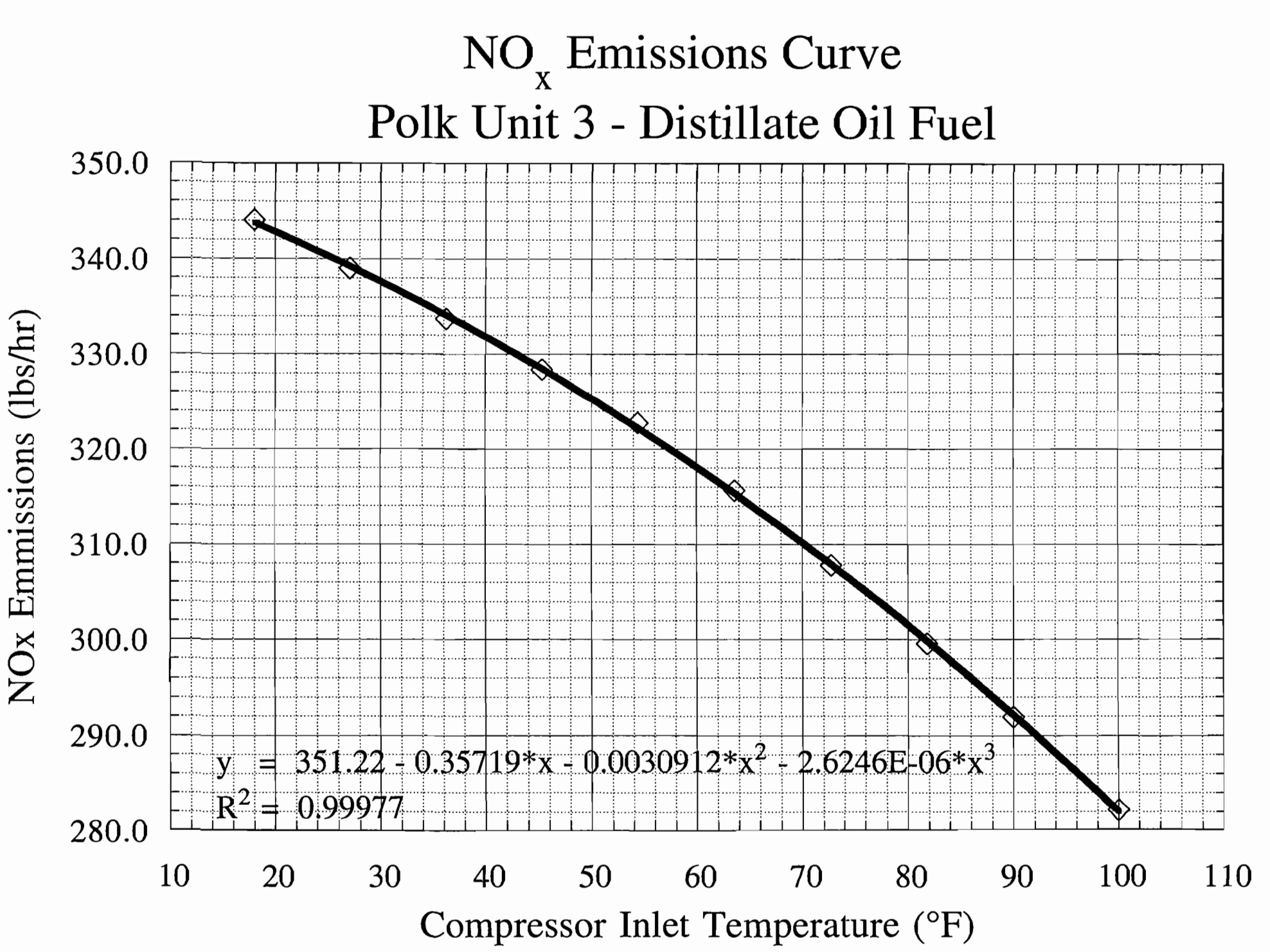
Inlet Temperature	ratio	0.9873	0.9908	0.9914
Inlet Humidity	ratio	0.9983	0.9983	0.9981
Ambient Pressure	ratio	0.9972	0.9977	0.9979
Generator Power Factor	ratio	0.9988	0.9988	0.9988
Fuel Composition	ratio	1.0000	1.0000	1.0000
Degradation	ratio	1.0000	1.0000	1.0000
Total Contract Correction	ratio	0.9817	0.9856	0.9863
Contract Corrected Generator Net Output	kW	152322	152284	152412

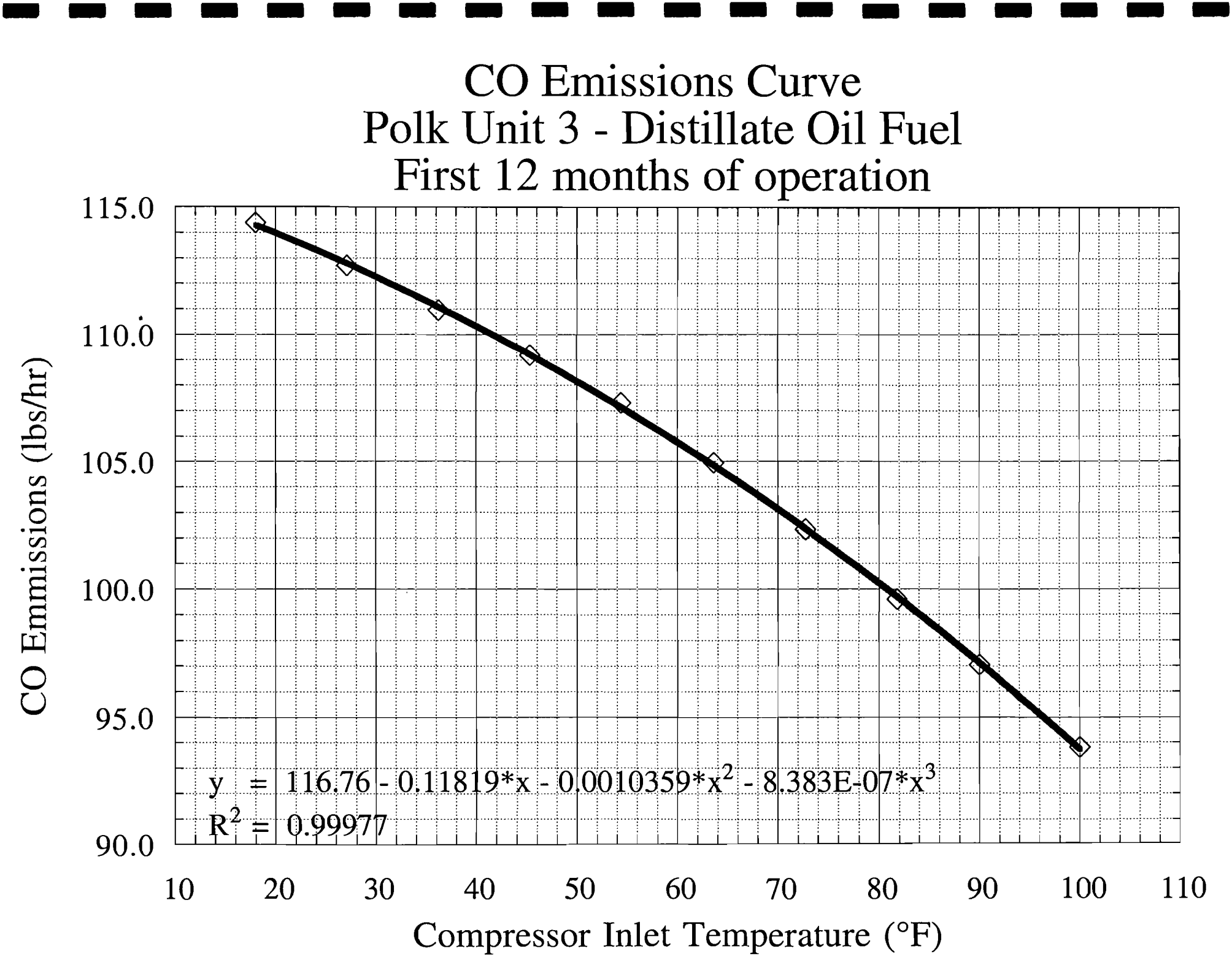
Heat Rate

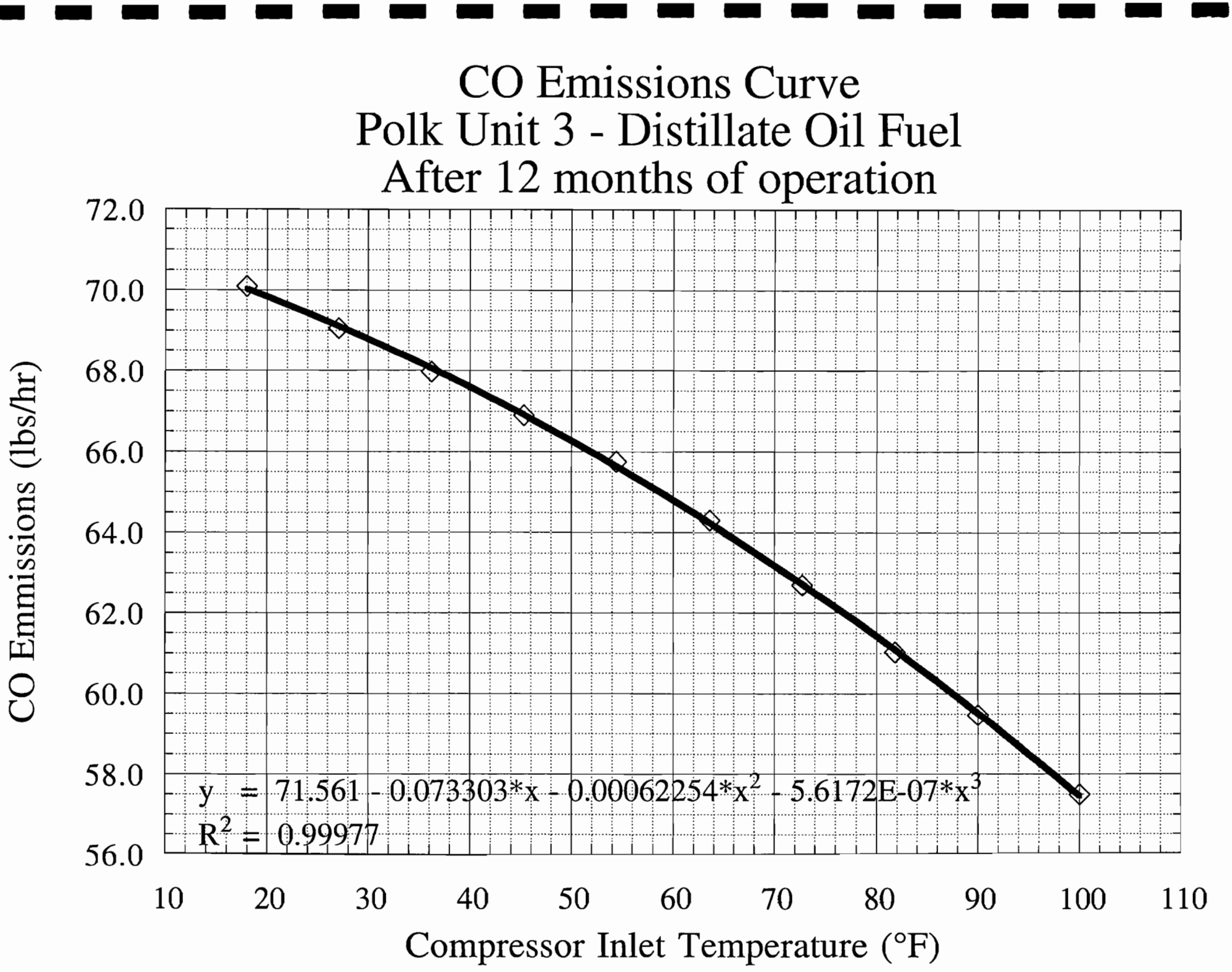
Inlet Temperature	ratio	1.0040	1.0030	1.0028
Inlet Humidity	ratio	1.0019	1.0019	1.0021
Ambient Pressure	ratio	1.0001	1.0001	1.0000
Generator Power Factor	ratio	1.0012	1.0012	1.0012
Fuel Composition	ratio	1.0000	1.0000	1.0000
Degradation	ratio	1.0000	1.0000	1.0000
Total Contract Correction	ratio	1.0073	1.0062	1.0062
Contract Corrected Generator Net Heat Rate (LHV)	BTU/kWh	9515	9522	9535

General Eletric Model PG7241 Gas Turbine
Polk Unit 3 S/N 297953
Distillate Oil Performance Curve

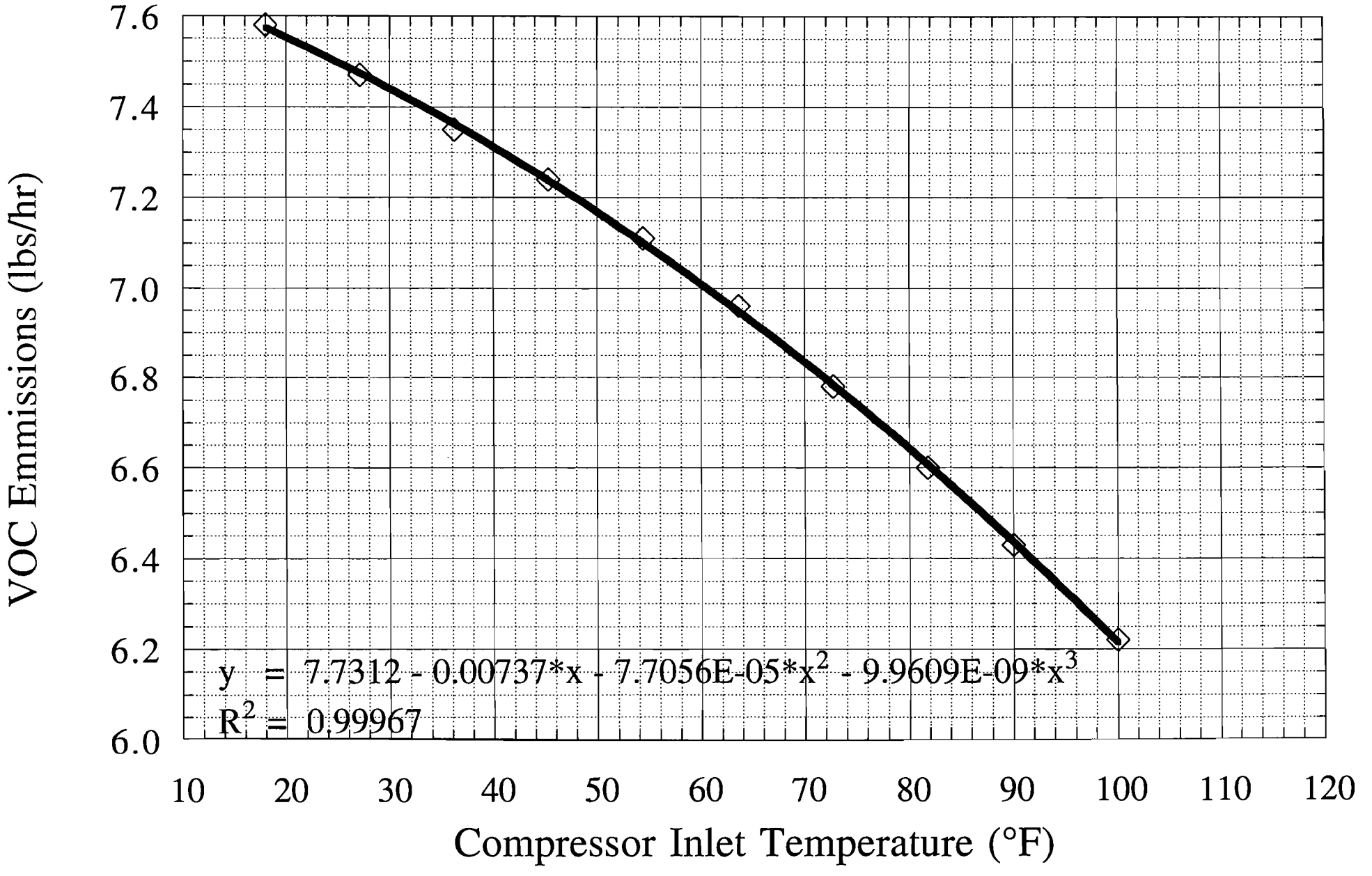


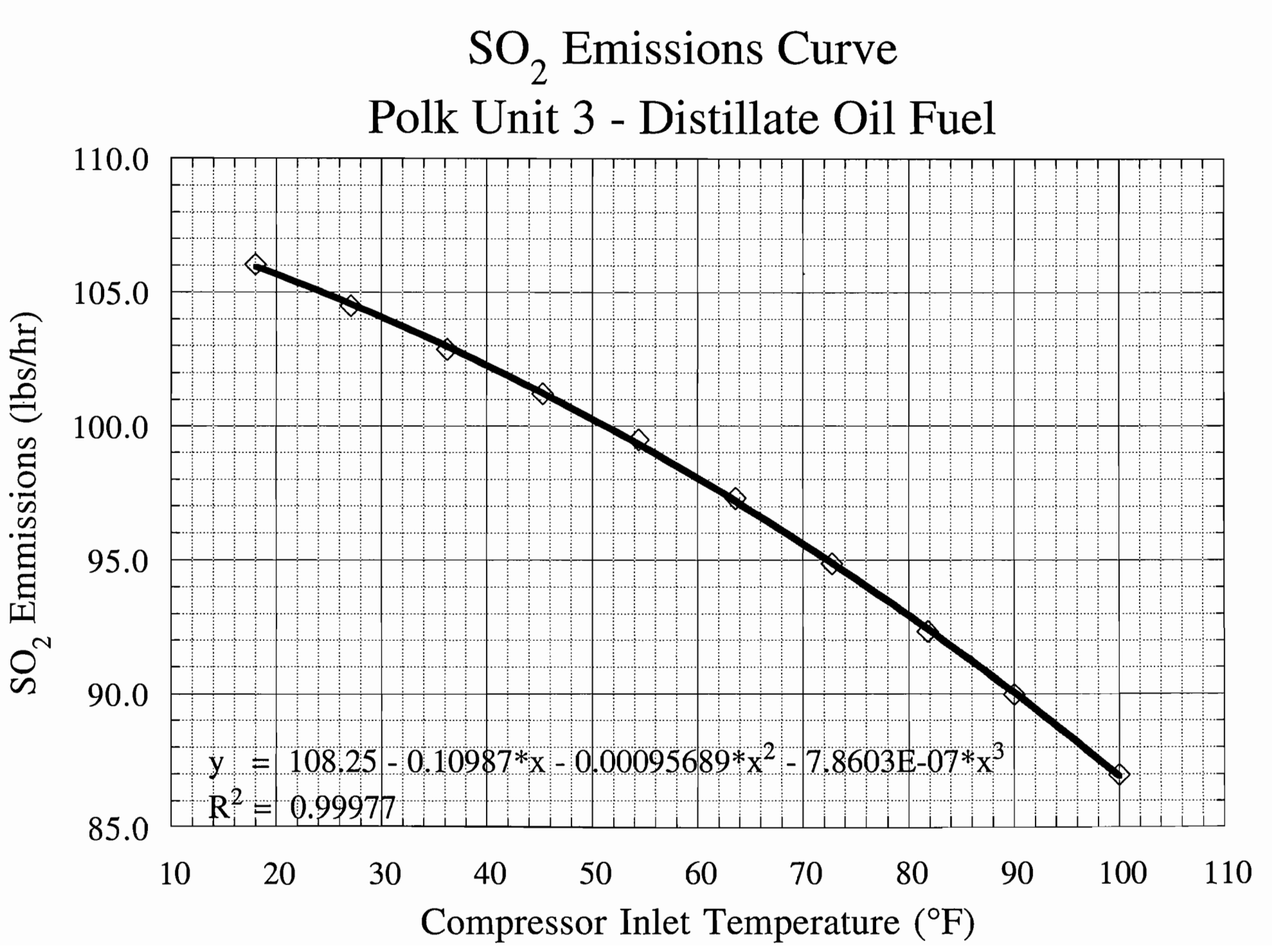

NO$_x$ Emissions Curve
Polk Unit 3 - Distillate Oil Fuel
NOx Emmissions (lbs/hr)
350.0
340.0
330.0
320.0
310.0
300.0
290.0
280.0
y = 351.22 - 0.35719*x - 0.0030912*x^2 - 2.6246E-06*x^3
R^2 = 0.99977
10
20
30
40
50
60
70
80
90
100
110
Compressor Inlet Temperature (°F)


CO Emissions Curve
Polk Unit 3 - Distillate Oil Fuel
First 12 months of operation
CO Emmissions (lbs/hr)
115.0
110.0
105.0
100.0
95.0
90.0
y = 116.76 - 0.11819*x - 0.0010359*x^2 - 8.383E-07*x^3
R^2 = 0.99977
10
20
30
40
50
60
70
80
90
100
110
Compressor Inlet Temperature (°F)


CO Emissions Curve
Polk Unit 3 - Distillate Oil Fuel
After 12 months of operation
CO Emmissions (lbs/hr)
72.0
70.0
68.0
66.0
64.0
62.0
60.0
58.0
56.0
y = 71.561 - 0.073303*x - 0.00062254*x^2 - 5.6172E-07*x^3
R^2 = 0.99977
10
20
30
40
50
60
70
80
90
100
110
Compressor Inlet Temperature (°F)

VOC Emissions Curve
Polk Unit 3 - Distillate Oil Fuel




SO2 Emissions Curve
Polk Unit 3 - Distillate Oil Fuel
SO2 Emmissions (lbs/hr)
110.0
105.0
100.0
95.0
90.0
85.0
y = 108.25 - 0.10987*x - 0.00095689*x2 - 7.8603E-07*x3
R2 = 0.99977
10
20
30
40
50
60
70
80
90
100
110
Compressor Inlet Temperature (°F)

General Electric Model PG7241 Gas Turbine

Tampa Electric Company GR0697

Estimated Performance

Gas Turbine Generator(s) 297956 ONLY

Design Conditions and Corresponding Correction Curves

	Units	
Fuel		Distillate Oil
Fuel LHV	Btu/lb	18300
Load		Base
IGV Angle	degrees	82
Diluent Injection Fluid		Water
Generator Frequency	hertz	60
Generator Power Factor	ratio	0.90

			Applicable Correction Curve Drawing Numbers				
	Units		Output	Heat Rate	Exhaust Flow	Exhaust Temp	Heat Consumption
Compressor Inlet Temperature	F	90.00	Sheet 2	Sheet 3	N/A	N/A	N/A
Compressor Inlet Relative Humidity		51%	Sheet 4	Sheet 5	N/A	N/A	N/A
Ambient Temperature & Humidity		N/A	N/A	N/A	N/A	N/A	N/A
Shaft Speed	rpm	3600	N/A	N/A	N/A	N/A	N/A
Fuel Temperature	F	60	N/A	N/A	N/A	N/A	N/A
Inlet Pressure Loss	in H_2O	4.00	N/A	N/A	N/A	N/A	N/A
Exhaust Pressure Loss	in H_2O	5.50	N/A	N/A	N/A	N/A	N/A
Barometric Pressure	psia	14.63	Sheet 6	Sheet 7	N/A	N/A	N/A
Diluent Injection	lb/sec	28.461	Sheet 8	Sheet 9	N/A	N/A	N/A
Gas Fuel Composition		N/A	N/A	N/A	N/A	N/A	N/A

Gas Fuel Composition	Units	
Methane (CH4)	Mole Frac	N/A
Ethane (C2H6)	Mole Frac	N/A
Propane (C3H8)	Mole Frac	N/A
Isobutane (C4H10)	Mole Frac	N/A
N-Butane (C4H10)	Mole Frac	N/A
Isopentane (C5H12)	Mole Frac	N/A
N-Pentane (C5H12)	Mole Frac	N/A
Hexanes, Avg. (C6H14)	Mole Frac	N/A
Heptanes, Avg. (C7H16)	Mole Frac	N/A
Carbon Monoxide (CO)	Mole Frac	N/A
Carbon Dioxide (CO2)	Mole Frac	N/A
Hydrogen Sulfide (H2S)	Mole Frac	N/A
Air (N2O2)	Mole Frac	N/A
Hydrogen (H2)	Mole Frac	N/A
Oxygen (O2)	Mole Frac	N/A
Nitrogen (N2)	Mole Frac	N/A
Water (H2O)	Mole Frac	N/A
Gas Fuel LHV	Btu/lb	18300
Gas Fuel H/C Ratio	ratio	#DIV/0!

Additional Notes:

No inlet air treatment

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

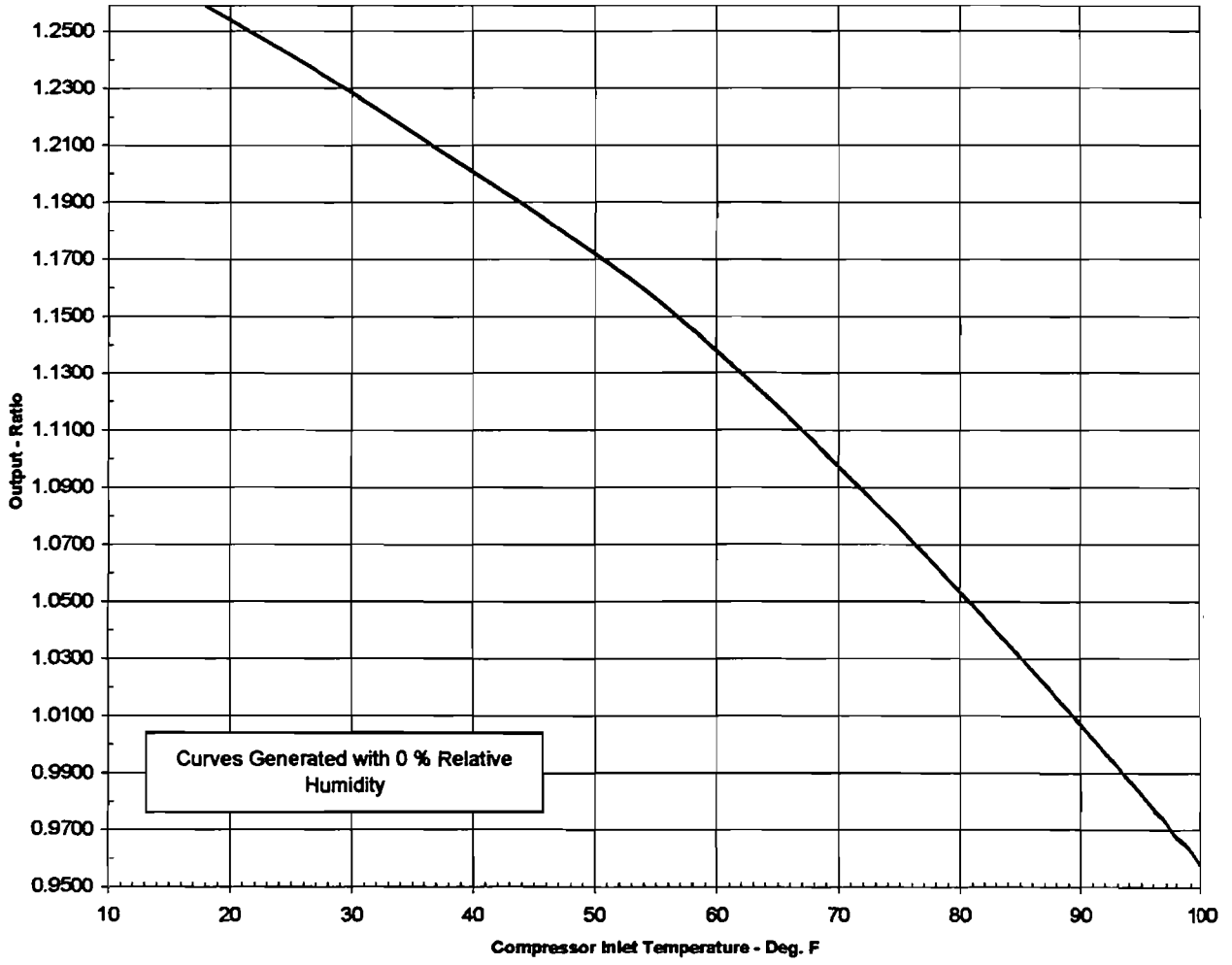
Estimated Performance

Effect of Compressor Inlet Temperature on Output

Design Values Referenced on 553HA3461 Rev A

Fuel: Distillate Oil

Mode: Base



	Units										
Compressor Inlet Temperature	F	18.00	27.10	36.20	45.30	54.40	63.60	72.70	81.80	90.00	100.00
Output Ratio		1.25883	1.23611	1.21123	1.1857	1.1583	1.123784	1.0859	1.04539371	1.0069	0.957657

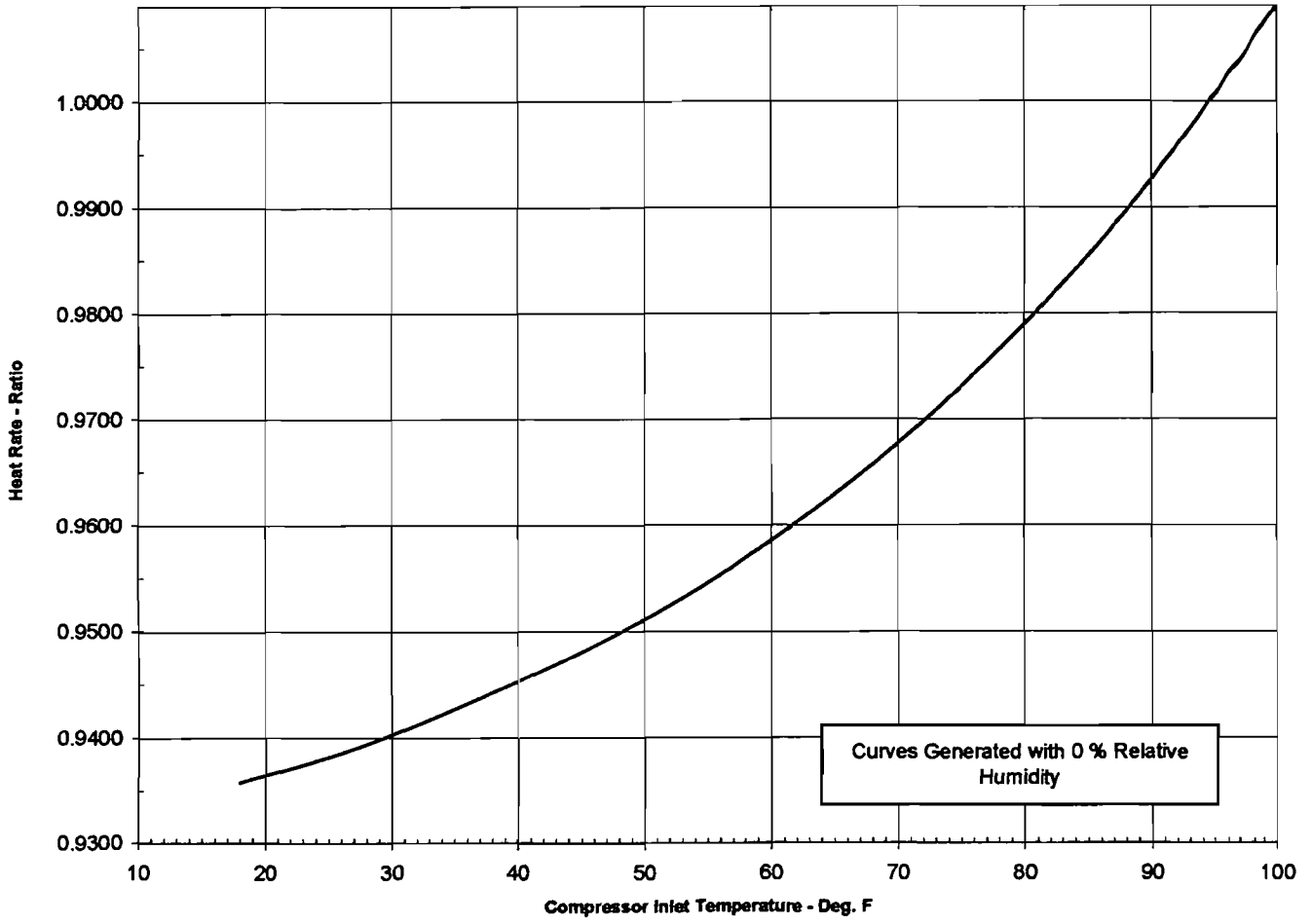
C. Banares
04/23/03

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Compressor Inlet Temperature on Heat Rate

Design Values Referenced on 553HA3461 Rev A
Fuel: Distillate Oil
Mode: Base



	Units										
Compressor Inlet Temperature	F	18.00	27.10	36.20	45.30	54.40	63.60	72.70	81.80	90.00	100.00
Heat Rate Ratio		0.935741	0.938967	0.943344	0.948239	0.954094	0.961634	0.970489	0.981187	0.992604	1.00894

C. Banares
04/23/03

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

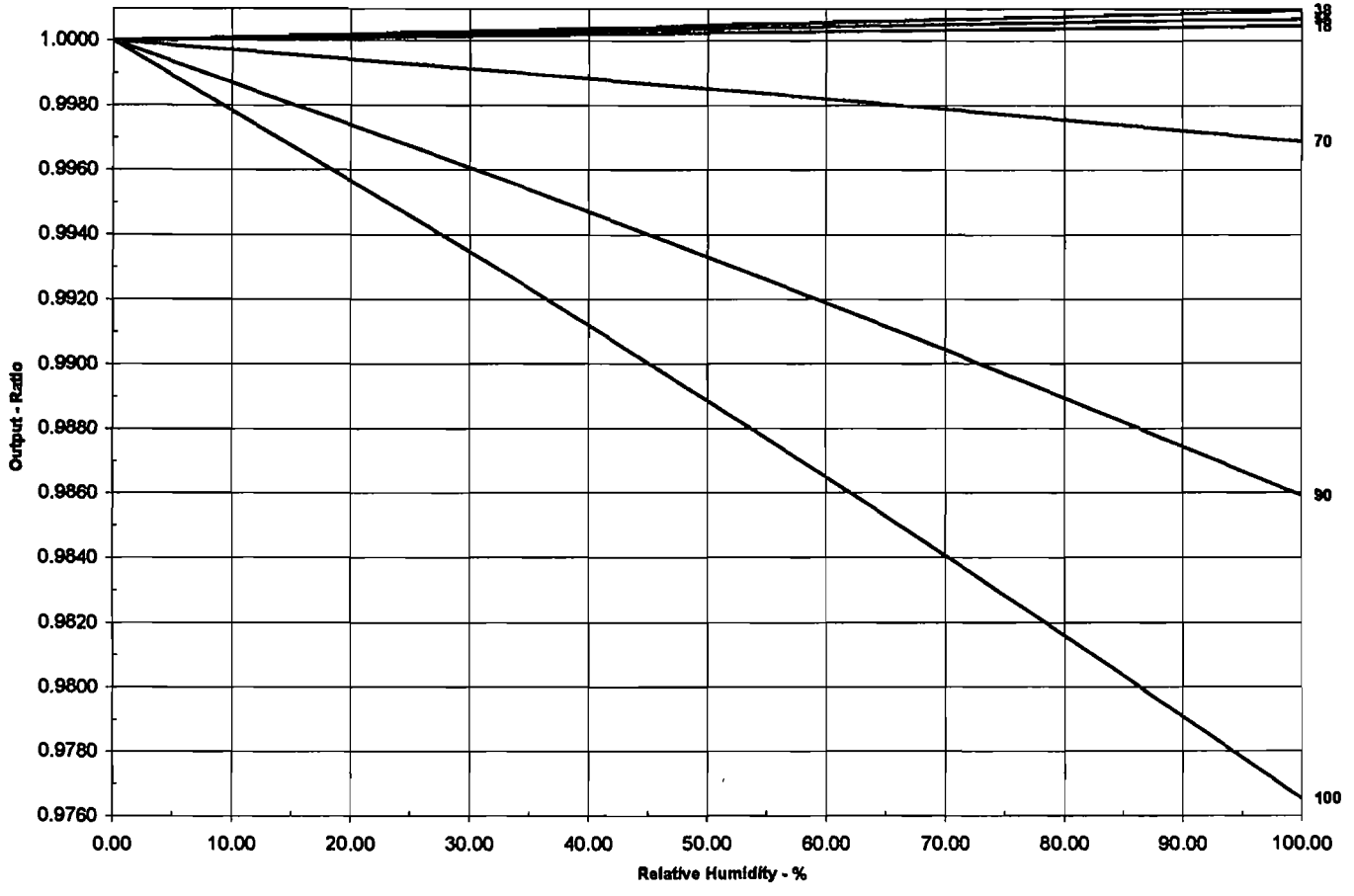
Estimated Performance

Effect of Relative Humidity on Output at Different Compressor Inlet Temperatures

Design Values Referenced on 553HA3461 Rev A

Fuel: Distillate Oil

Mode: Base



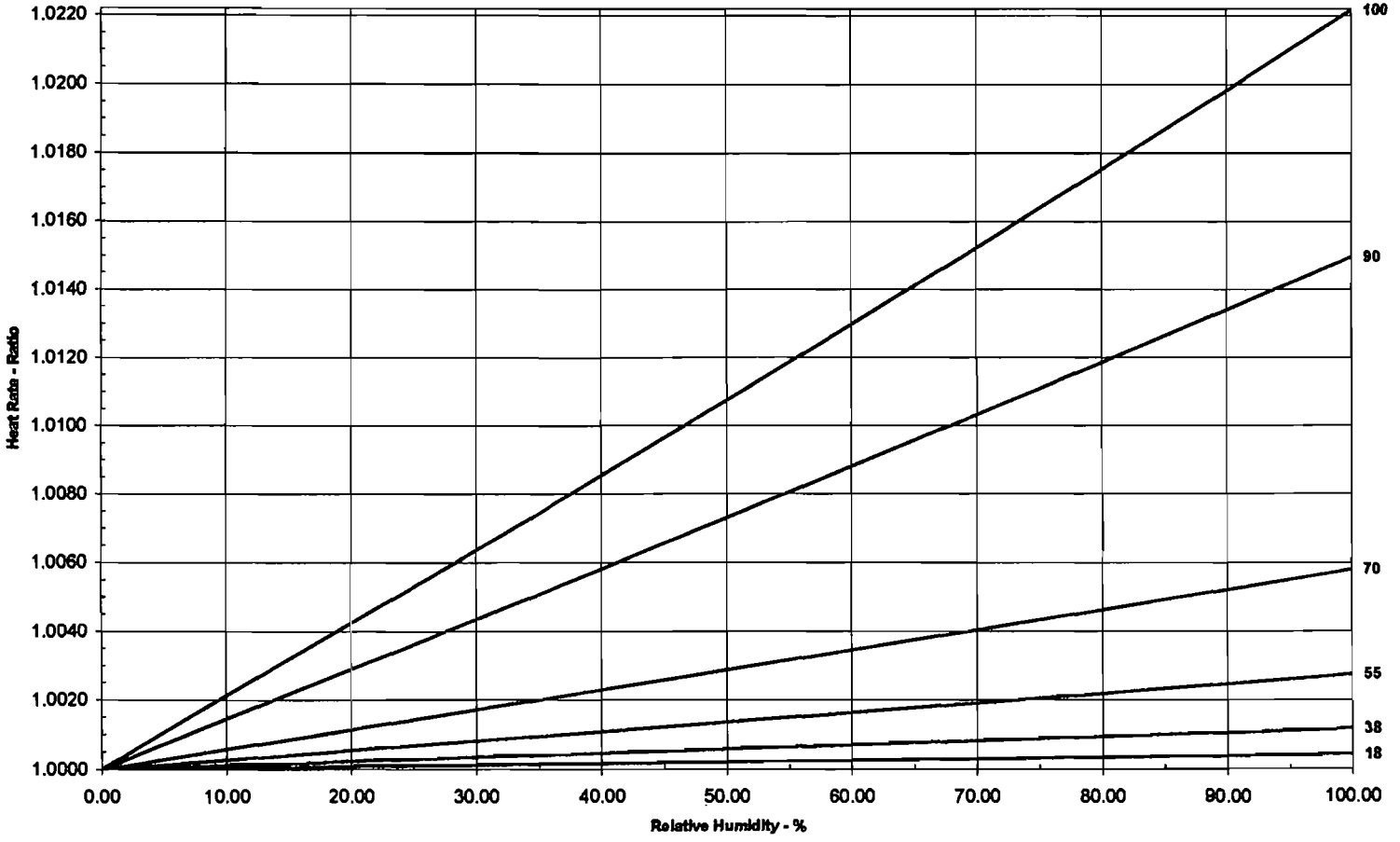
Compressor Inlet Temperature (F)

Relative Humidity - %	18.0	38.0	55.0	70.0	90.0	100.0
0	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30	1.00015	1.00029	1.00023	0.99913	0.99607	0.99347
40	1.00019	1.00038	1.00030	0.99883	0.99470	0.99118
50	1.00024	1.00048	1.00037	0.99852	0.99330	0.98886
60	1.00029	1.00057	1.00044	0.99820	0.99188	0.98648
70	1.00034	1.00067	1.00051	0.99788	0.99042	0.98406
80	1.00039	1.00076	1.00058	0.99755	0.98894	0.98160
90	1.00043	1.00086	1.00065	0.99722	0.98743	0.97908
100	1.00048	1.00095	1.00068	0.99688	0.98590	0.97652

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Relative Humidity on Heat Rate at Different Compressor Inlet Temperatures
Design Values Referenced on 553HA3461 Rev A
Fuel: Distillate Oil
Mode: Base



Compressor Inlet Temperature (F)

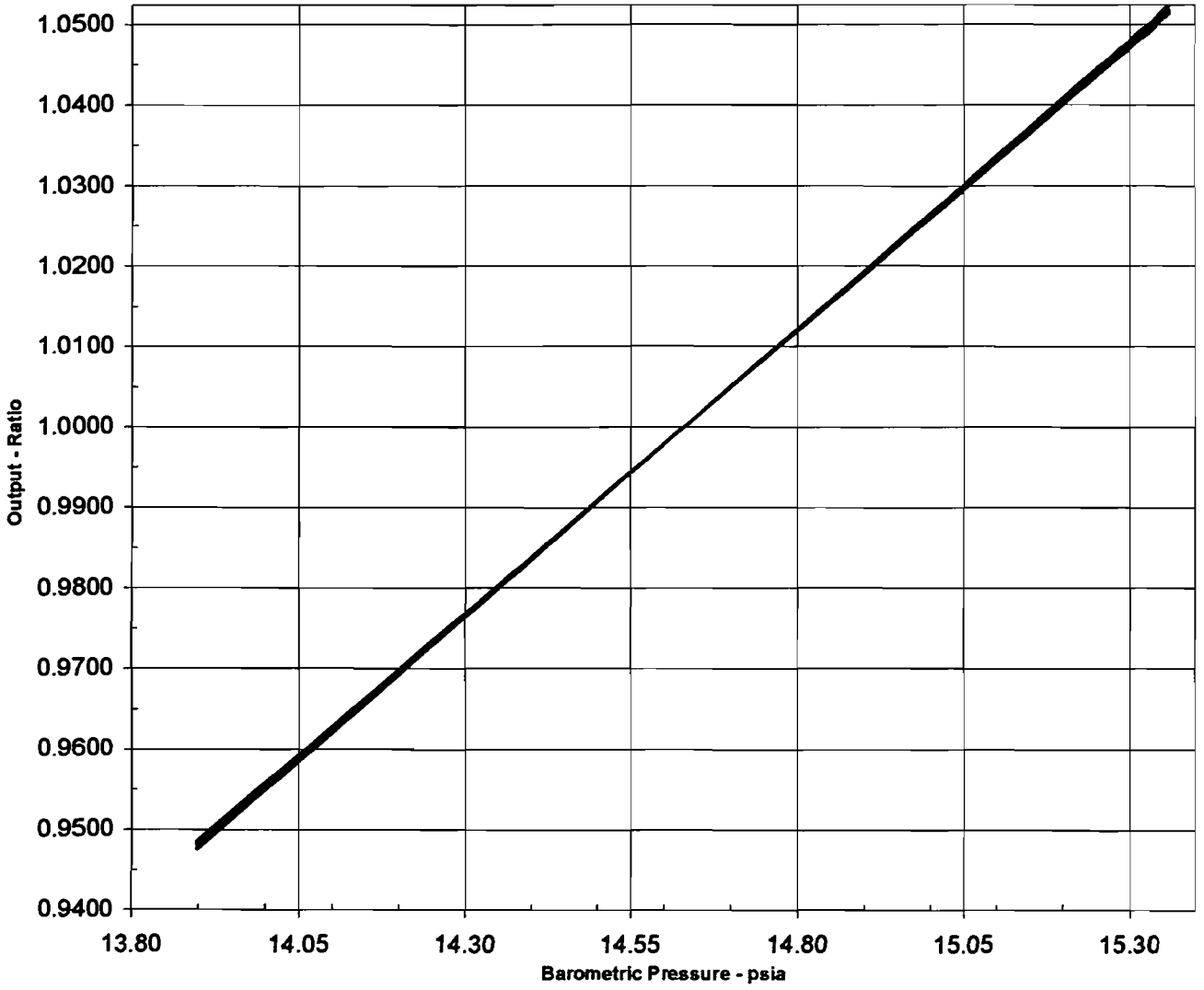
Relative Humidity - %	18.0	38.0	55.0	70.0	90.0	100.0
0	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30	1.00013	1.00035	1.00081	1.00171	1.00434	1.00636
40	1.00017	1.00047	1.00108	1.00229	1.00581	1.00854
50	1.00022	1.00058	1.00136	1.00287	1.00730	1.01074
60	1.00026	1.00070	1.00163	1.00345	1.00880	1.01297
70	1.00030	1.00082	1.00190	1.00403	1.01032	1.01522
80	1.00035	1.00093	1.00218	1.00462	1.01185	1.01751
90	1.00039	1.00105	1.00245	1.00521	1.01339	1.01982
100	1.00043	1.00117	1.00274	1.00580	1.01495	1.02216

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Barometric Pressure on Output at Different Compressor Inlet Temps

Design Values Referenced on 553HA3461 Rev A
Fuel: Distillate Oil
Mode: Base



Compressor Inlet Temperature (F)

Barometric Pressure (psia)	18.0	38.0	55.0	70.0	90.0	100.0
13.90	0.948625	0.948395	0.948297	0.948147	0.947642	0.947581
14.04	0.958899	0.958716	0.958639	0.958520	0.958115	0.958065
14.19	0.969175	0.969037	0.968981	0.968892	0.968588	0.968548
14.34	0.979450	0.979357	0.979321	0.979262	0.979059	0.979031
14.63	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
14.92	1.020541	1.020647	1.020680	1.020734	1.020936	1.020960
15.07	1.030813	1.030973	1.031013	1.031100	1.031397	1.031439
15.22	1.041081	1.041297	1.041354	1.041466	1.041855	1.041917
15.36	1.051351	1.051623	1.051697	1.051830	1.052317	1.052394

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

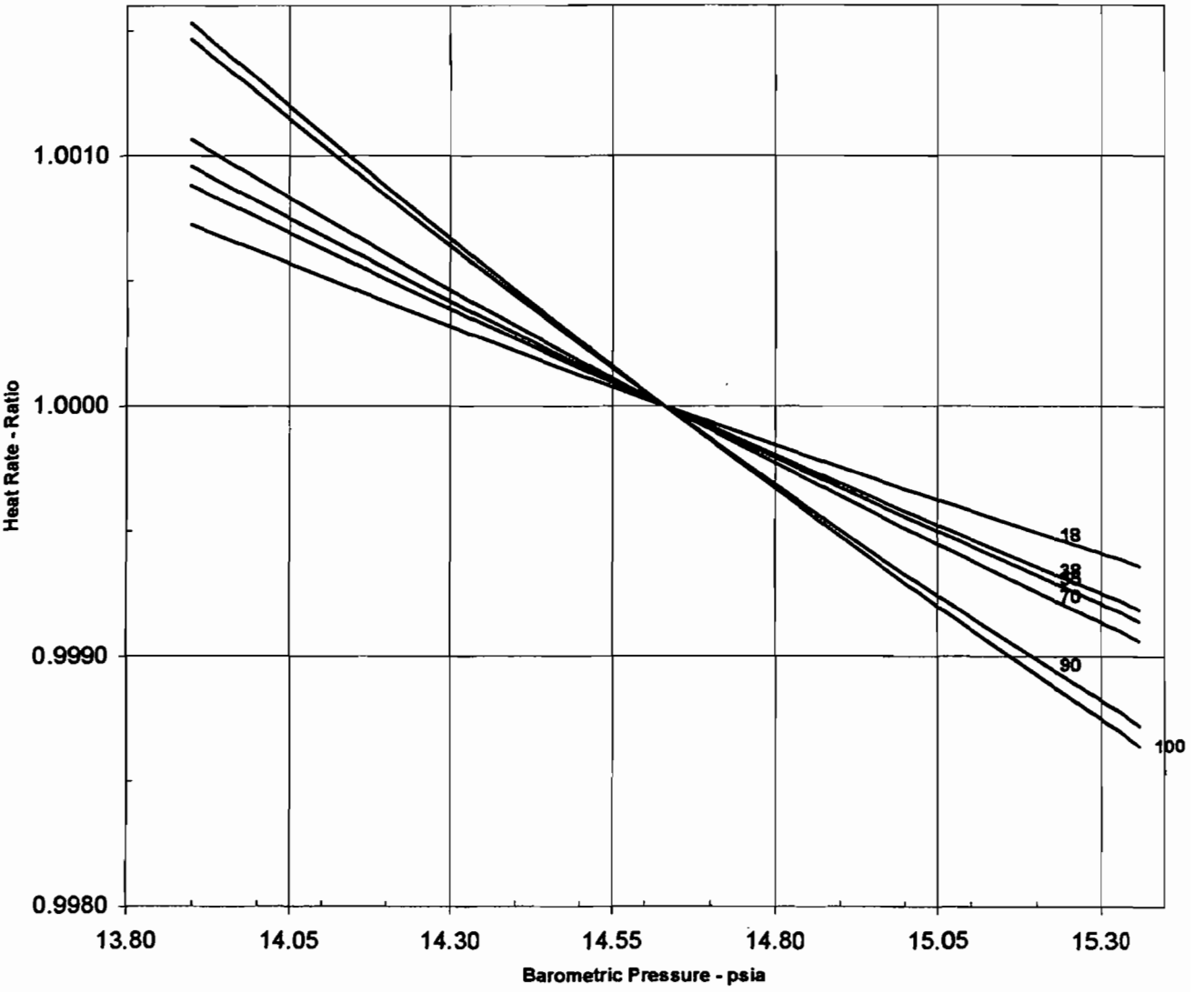
Estimated Performance

Effect of Barometric Pressure on Heat Rate at Different Compressor Inlet Temps

Design Values Referenced on 553HA3461 Rev A

Fuel: Distillate Oil

Mode: Base



Compressor Inlet Temperature (F)

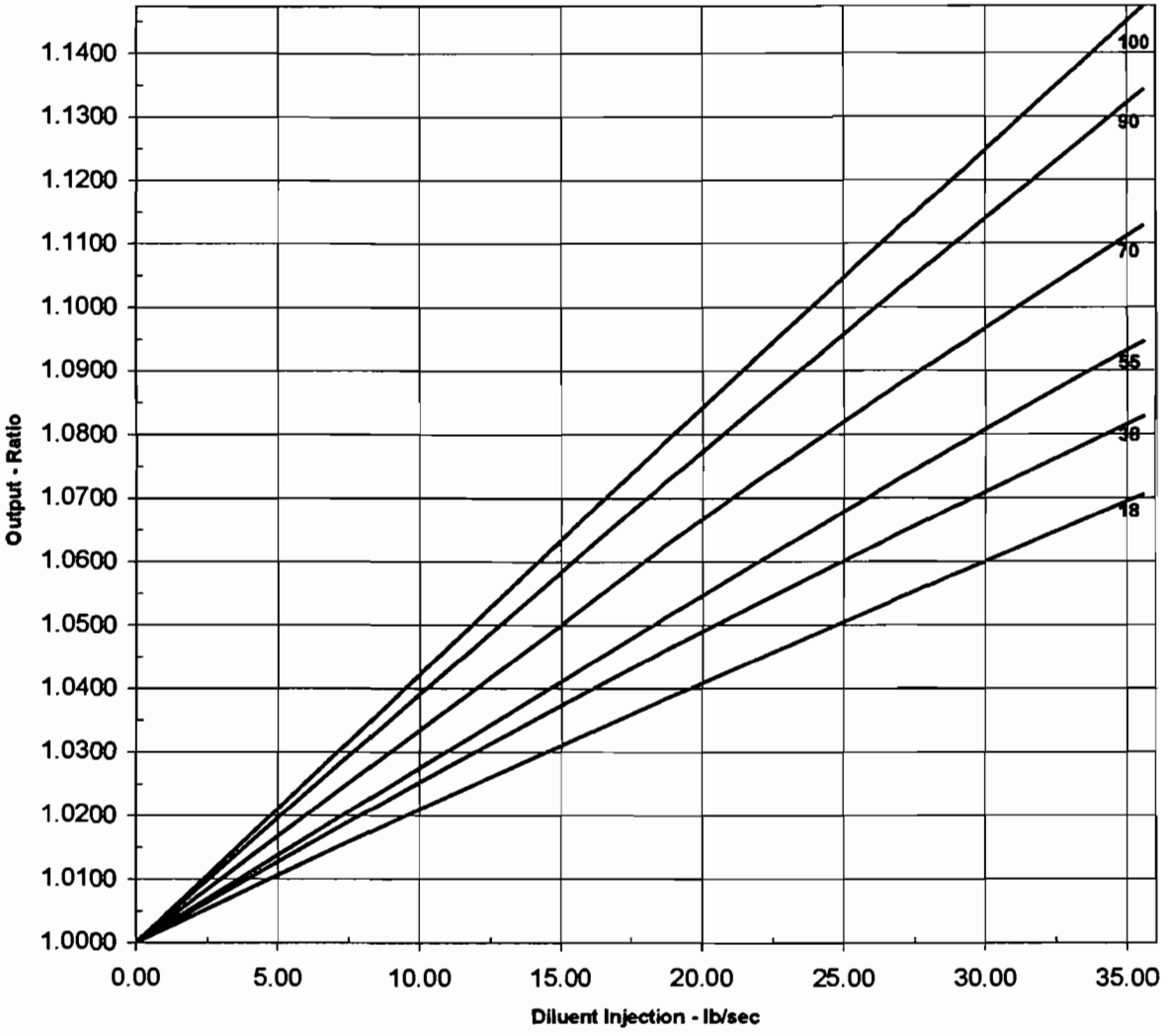
Barometric Pressure (psia)	18.0	38.0	55.0	70.0	90.0	100.0
13.90	1.000723	1.000881	1.000958	1.001065	1.001466	1.001530
14.04	1.000574	1.000697	1.000756	1.000840	1.001158	1.001209
14.19	1.000425	1.000517	1.000560	1.000621	1.000858	1.000897
14.34	1.000280	1.000342	1.000369	1.000409	1.000565	1.000591
14.63	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
14.92	0.999735	0.999665	0.999647	0.999611	0.999463	0.999437
15.07	0.999607	0.999502	0.999477	0.999424	0.999210	0.999166
15.22	0.999483	0.999343	0.999309	0.999240	0.998965	0.998901
15.36	0.999361	0.999187	0.999140	0.999062	0.998724	0.998642

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

Estimated Performance

Effect of Water Injection on Output at Different Compressor Inlet Temps

Design Values Referenced on 553HA3461 Rev A
Fuel: Distillate Oil
Mode: Base



Compressor Inlet Temperature (F)

Water Injection Flow (lb - sec)	18.0	38.0	55.0	70.0	90.0	100.0
0.00	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
7.12	1.015082	1.018060	1.019591	1.023826	1.027923	1.029996
14.23	1.029491	1.035504	1.038994	1.047469	1.055365	1.060129
21.35	1.043453	1.051983	1.058204	1.070942	1.082375	1.089792
28.46	1.057107	1.067676	1.076948	1.092294	1.108360	1.118594
29.88	1.059809	1.070740	1.080556	1.096399	1.113536	1.124348
31.31	1.062502	1.073781	1.084139	1.100493	1.118705	1.130096
32.73	1.065187	1.076806	1.087679	1.104581	1.123868	1.135840
34.15	1.067865	1.079812	1.091182	1.108658	1.129021	1.141581
35.58	1.070534	1.082803	1.094646	1.112731	1.134167	1.147316

General Electric Model PG7241 Gas Turbine
Tampa Electric Company GR0697

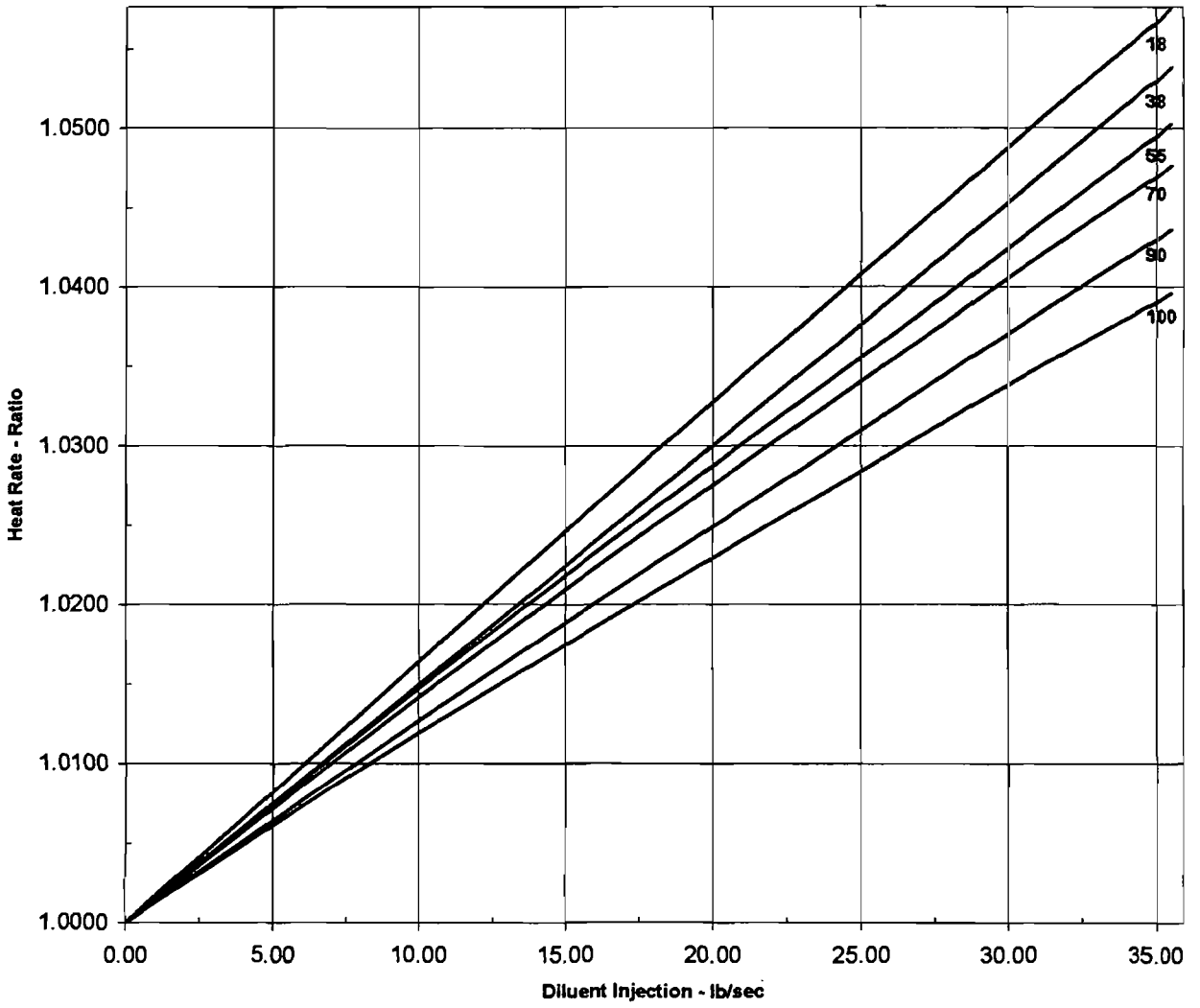
Estimated Performance

Effect of Water Injection on Heat Rate at Different Compressor Inlet Temps

Design Values Referenced on 553HA3461 Rev A

Fuel: Distillate Oil

Mode: Base



Compressor Inlet Temperature (F)

Water Injection Flow (lb - sec)	18.0	38.0	55.0	70.0	90.0	100.0
0.00	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
7.12	1.011657	1.010651	1.010543	1.010162	1.009074	1.008623
14.23	1.023338	1.021249	1.020726	1.019910	1.017907	1.016601
21.35	1.034917	1.032047	1.030569	1.029274	1.026494	1.024365
28.46	1.046321	1.042948	1.040283	1.038558	1.035231	1.032191
29.88	1.048578	1.045129	1.042266	1.040397	1.036934	1.033706
31.31	1.050826	1.047310	1.044251	1.042224	1.038624	1.035205
32.73	1.053065	1.049487	1.046245	1.044038	1.040299	1.036689
34.15	1.055294	1.051660	1.048247	1.045841	1.041962	1.038158
35.58	1.057516	1.053829	1.050258	1.047633	1.043611	1.039612

NATURAL GAS TESTING OPERATIONAL DATA

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-100%-1									
07-May-02 10:17:00	158.2	1131.5	71794	760.3	82.9	203.4	82.0	30.01	2.28
07-May-02 10:18:00	158.1	1131.8	71580	760.6	83.2	203.1	82.0	30.01	2.28
07-May-02 10:19:00	157.8	1132.3	71658	760.8	83.3	202.8	82.0	30.01	2.28
07-May-02 10:20:00	157.7	1132.1	71522	762.2	83.4	202.9	82.0	30.01	2.28
07-May-02 10:21:00	158.5	1132.0	71736	760.9	83.4	203.2	82.0	30.01	2.28
07-May-02 10:22:00	158.1	1132.0	71646	760.6	83.4	203.4	82.0	30.01	2.28
07-May-02 10:23:00	158.1	1131.9	71726	760.5	83.6	203.1	82.0	30.01	2.28
07-May-02 10:24:00	157.9	1132.0	71406	761.0	83.8	202.7	82.0	30.01	2.28
07-May-02 10:25:00	158.1	1132.0	71794	761.0	83.9	203.1	82.0	30.01	2.28
07-May-02 10:26:00	158.1	1132.1	71388	761.0	84.1	203.3	82.0	30.01	2.28
07-May-02 10:27:00	158.2	1132.1	71466	761.1	83.7	203.4	82.0	30.01	2.28
07-May-02 10:28:00	157.9	1132.2	71646	761.3	84.1	202.9	82.0	30.01	2.28
07-May-02 10:29:00	157.6	1132.3	71478	761.6	84.6	202.4	82.0	30.01	2.28
07-May-02 10:30:00	157.1	1132.6	71242	763.3	85.5	202.4	82.0	30.01	2.28
07-May-02 10:31:00	156.7	1132.9	71388	763.0	85.6	202.4	82.0	30.01	2.28
07-May-02 10:32:00	156.9	1132.8	71297	763.3	85.6	202.4	82.0	30.01	2.28
07-May-02 10:33:00	157.0	1132.8	71252	761.8	85.4	202.5	82.0	30.01	2.28
07-May-02 10:34:00	156.9	1132.7	71242	761.8	85.3	202.6	82.0	30.01	2.28
07-May-02 10:35:00	157.0	1132.7	71343	762.0	85.0	202.3	82.0	30.01	2.29
07-May-02 10:36:00	157.3	1132.6	71342	762.6	84.8	202.4	82.0	30.01	2.29
07-May-02 10:37:00	157.1	1132.6	71297	762.3	85.3	202.5	82.0	30.01	2.29
07-May-02 10:38:00	157.0	1132.5	71342	761.6	85.5	202.6	82.0	30.01	2.29
07-May-02 10:39:00	157.1	1132.4	71512	761.3	84.9	202.7	82.0	30.01	2.29
07-May-02 10:40:00	157.7	1132.3	71558	761.5	84.8	202.7	82.0	30.01	2.29
07-May-02 10:41:00	157.7	1132.2	71535	761.5	84.8	202.8	82.0	30.01	2.29
07-May-02 10:42:00	157.5	1132.7	71342	762.3	85.0	202.8	82.0	30.01	2.29
07-May-02 10:43:00	157.3	1132.5	71298	763.0	85.4	202.2	82.0	30.01	2.29
07-May-02 10:44:00	157.4	1132.6	71422	762.8	85.5	202.4	82.0	30.01	2.29
07-May-02 10:45:00	157.3	1132.7	71286	762.3	85.3	202.6	82.0	30.01	2.29
07-May-02 10:46:00	157.3	1132.6	71512	761.9	85.1	202.7	82.0	30.01	2.29
07-May-02 10:47:00	157.3	1132.5	71522	761.5	84.9	202.7	82.0	30.01	2.29
07-May-02 10:48:00	157.9	1132.5	71422	761.3	84.7	202.7	82.0	30.01	2.29
07-May-02 10:49:00	157.7	1132.5	71422	761.7	84.6	202.6	82.0	30.01	2.29
07-May-02 10:50:00	157.5	1132.5	71444	762.0	84.6	202.6	82.0	30.01	2.29
07-May-02 10:51:00	157.5	1132.5	71434	762.4	84.8	201.8	82.0	30.01	2.29
07-May-02 10:52:00	157.3	1132.5	71150	762.7	84.9	202.8	82.0	30.01	2.29
07-May-02 10:53:00	157.4	1132.5	71467	762.7	85.1	202.4	82.0	30.01	2.29
07-May-02 10:54:00	157.4	1132.4	71500	762.6	85.2	202.5	82.0	30.01	2.29
07-May-02 10:55:00	157.2	1133.1	71206	763.3	85.5	202.3	82.0	30.01	2.30

Unit 3 operational data supplied by Robert Barthelette with Tampa Electric Company

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
07-May-02 10:56:00	156.8	1133.9	71140	763.5	85.9	201.9	82.0	30.01	2.30
07-May-02 10:57:00	156.9	1133.1	71298	763.6	86.4	202.6	82.0	30.01	2.30
07-May-02 10:58:00	157.2	1132.9	71298	763.3	86.1	202.6	82.0	30.01	2.30
07-May-02 10:59:00	157.2	1133.3	71389	762.9	85.9	202.5	82.0	30.01	2.30
07-May-02 11:00:00	156.7	1133.6	71286	763.2	85.6	202.5	82.0	30.01	2.30
07-May-02 11:01:00	157.1	1133.5	71376	762.6	85.5	202.7	82.0	30.01	2.30
07-May-02 11:02:00	157.1	1133.2	71151	763.1	85.3	202.2	82.0	30.01	2.30
07-May-02 11:03:00	156.7	1133.2	71252	762.5	85.2	202.0	82.0	30.01	2.30
07-May-02 11:04:00	156.5	1133.3	71166	762.5	85.1	202.1	82.0	30.01	2.30
07-May-02 11:05:00	157.3	1133.1	71388	762.5	85.0	202.3	82.0	30.01	2.30
07-May-02 11:06:00	157.1	1132.8	71376	762.4	84.8	202.3	82.0	30.01	2.30
07-May-02 11:07:00	157.2	1132.9	71422	761.9	84.8	202.6	82.0	30.01	2.30
07-May-02 11:08:00	157.4	1133.0	71602	762.1	84.8	202.4	82.0	30.01	2.30
07-May-02 11:09:00	157.0	1133.2	71357	762.8	84.9	202.5	82.0	30.01	2.30
07-May-02 11:10:00	157.0	1133.0	71128	762.9	85.4	202.6	82.0	30.01	2.30
07-May-02 11:11:00	156.8	1133.2	71242	763.0	85.9	202.4	82.0	30.01	2.30
07-May-02 11:12:00	156.4	1133.5	71330	763.2	86.1	202.4	82.0	30.00	2.30
07-May-02 11:13:00	156.3	1134.0	70892	764.5	86.4	201.9	82.0	30.00	2.30
07-May-02 11:14:00	156.4	1134.3	71041	764.4	86.7	201.9	82.0	30.00	2.30
07-May-02 11:15:00	156.3	1134.1	71026	763.9	86.8	201.8	82.0	30.00	2.31
07-May-02 11:16:00	156.4	1134.0	71150	763.4	86.4	201.8	82.0	30.00	2.31
07-May-02 11:17:00	156.6	1133.7	71206	763.0	86.1	202.2	82.0	30.00	2.31
Average:	**157.3**	**1132.8**	**71379**	**762.3**	**85.0**	**202.5**	**82.0**	**30.01**	**2.29**
Note: Operational data times adjusted to CEMS time by subtracting 1 hour and 2 minutes.									

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-100%-2									
07-May-02 11:30:00	156.4	1133.6	71118	763.8	87.1	201.9	82.0	30.00	2.29
07-May-02 11:31:00	156.7	1133.5	71330	763.6	86.5	202.3	82.0	30.00	2.29
07-May-02 11:32:00	156.8	1133.5	71286	762.8	85.9	202.6	82.0	30.00	2.30
07-May-02 11:33:00	156.6	1133.4	71185	763.1	85.4	202.3	82.0	30.00	2.30
07-May-02 11:34:00	156.3	1133.5	71128	763.7	85.4	202.2	82.0	30.00	2.30
07-May-02 11:35:00	156.8	1133.5	71118	763.3	85.5	202.1	82.0	30.00	2.30
07-May-02 11:36:00	157.1	1133.5	71286	762.9	85.6	202.1	82.0	30.00	2.30
07-May-02 11:37:00	156.9	1133.4	71162	763.4	85.6	202.2	82.0	30.00	2.30
07-May-02 11:38:00	156.7	1133.2	71184	763.4	85.6	202.2	82.0	30.00	2.30
07-May-02 11:39:00	157.1	1133.2	71264	763.1	85.7	202.0	82.0	30.00	2.30
07-May-02 11:40:00	157.2	1133.3	71118	763.0	85.9	201.9	82.0	30.00	2.30
07-May-02 11:41:00	156.4	1133.4	71206	763.0	86.2	201.9	82.0	30.00	2.30
07-May-02 11:42:00	156.5	1133.5	71060	763.3	86.4	202.3	82.0	30.00	2.30
07-May-02 11:43:00	156.2	1133.6	70936	764.1	86.6	201.9	82.0	30.00	2.30
07-May-02 11:44:00	156.5	1133.7	71139	763.9	86.8	201.9	82.0	30.00	2.30
07-May-02 11:45:00	156.5	1133.8	71072	763.3	86.7	202.0	82.0	30.00	2.30
07-May-02 11:46:00	156.2	1133.9	71162	763.9	86.9	201.8	82.0	30.00	2.30
07-May-02 11:47:00	155.5	1133.9	71016	764.2	87.1	201.8	82.0	30.00	2.30
07-May-02 11:48:00	155.7	1133.9	70848	764.6	87.2	201.3	82.0	30.00	2.30
07-May-02 11:49:00	155.8	1133.9	71072	764.6	87.0	201.7	82.0	30.00	2.30
07-May-02 11:50:00	155.9	1134.1	70936	764.1	86.9	201.7	82.0	30.00	2.30
07-May-02 11:51:00	155.6	1134.6	70848	764.2	86.8	201.4	82.0	30.00	2.30
07-May-02 11:52:00	156.1	1134.6	71026	763.7	86.6	201.4	82.0	30.00	2.30
07-May-02 11:53:00	156.2	1134.3	71060	764.2	86.7	201.5	82.0	30.00	2.30
07-May-02 11:54:00	156.3	1134.0	71057	764.5	86.8	201.6	82.0	30.00	2.30
07-May-02 11:55:00	155.7	1133.7	70847	764.7	87.0	201.6	82.0	30.00	2.30
07-May-02 11:56:00	156.4	1133.8	70936	764.8	87.2	202.0	82.0	30.00	2.30
07-May-02 11:57:00	155.8	1134.0	70848	764.6	87.5	201.7	82.0	30.00	2.30
07-May-02 11:58:00	155.4	1134.6	70834	765.3	87.8	201.5	82.0	30.00	2.30
07-May-02 11:59:00	155.8	1135.1	70564	765.1	88.1	201.3	82.0	30.00	2.30
07-May-02 12:00:00	154.8	1135.7	70609	765.8	88.4	201.2	82.0	30.00	2.30
07-May-02 12:01:00	155.0	1135.4	70712	766.2	88.8	201.2	82.0	30.00	2.30
07-May-02 12:02:00	155.6	1135.1	70768	765.3	88.5	201.2	82.0	30.00	2.30
07-May-02 12:03:00	155.5	1134.8	70834	765.1	88.0	201.4	82.0	30.00	2.30
07-May-02 12:04:00	155.9	1134.4	70848	764.8	87.6	201.6	82.0	30.00	2.30
07-May-02 12:05:00	155.8	1134.5	70848	764.7	87.4	201.8	82.0	30.00	2.31
07-May-02 12:06:00	155.6	1134.6	70802	764.5	87.1	201.3	82.0	30.00	2.31
07-May-02 12:07:00	155.5	1134.7	70895	764.3	86.9	201.8	82.0	30.00	2.31
07-May-02 12:08:00	155.8	1134.6	70880	764.1	86.6	201.5	82.0	30.00	2.31

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
07-May-02 12:09:00	156.5	1134.5	71026	764.3	86.4	201.8	82.0	30.00	2.31
07-May-02 12:10:00	155.3	1134.6	70654	765.6	87.2	201.5	82.0	30.00	2.31
07-May-02 12:11:00	155.1	1135.1	70712	766.1	88.1	201.2	82.0	30.00	2.31
07-May-02 12:12:00	155.4	1134.9	70926	765.3	88.2	201.4	82.0	30.00	2.31
07-May-02 12:13:00	155.6	1134.6	70959	765.0	88.1	201.6	82.0	30.00	2.31
07-May-02 12:14:00	155.9	1134.4	70756	765.0	88.1	201.7	82.0	30.00	2.31
07-May-02 12:15:00	155.5	1134.4	70670	765.3	88.0	201.5	82.0	30.00	2.31
07-May-02 12:16:00	155.9	1134.3	70880	765.7	88.2	201.4	82.0	30.00	2.31
07-May-02 12:17:00	156.0	1134.3	70746	765.3	88.1	201.4	82.0	30.00	2.31
07-May-02 12:18:00	155.3	1134.2	70620	765.1	87.9	201.4	82.0	30.00	2.31
07-May-02 12:19:00	155.3	1134.1	70848	764.9	87.7	201.4	82.0	30.00	2.31
07-May-02 12:20:00	155.8	1134.3	70892	764.9	87.4	201.1	82.0	30.00	2.31
07-May-02 12:21:00	155.1	1134.7	70936	765.3	87.4	201.3	82.0	30.00	2.31
07-May-02 12:22:00	155.4	1135.0	70779	765.4	87.3	200.9	82.0	30.00	2.31
07-May-02 12:23:00	155.7	1135.2	70922	764.9	87.2	201.3	82.0	30.00	2.31
07-May-02 12:24:00	155.3	1135.4	70756	765.5	87.5	201.2	82.0	30.00	2.31
07-May-02 12:25:00	154.8	1135.7	70564	766.3	88.2	200.8	82.0	30.00	2.31
07-May-02 12:26:00	154.6	1136.0	70518	766.6	88.8	200.5	82.0	30.00	2.31
07-May-02 12:27:00	155.3	1135.8	70700	766.1	89.0	200.9	82.0	30.00	2.31
07-May-02 12:28:00	154.4	1135.4	70486	766.0	88.8	200.9	82.0	30.00	2.31
07-May-02 12:29:00	155.2	1135.2	70667	766.0	88.5	200.7	82.0	30.00	2.31
07-May-02 12:30:00	155.2	1134.9	70790	765.6	88.2	201.0	82.0	30.00	2.31
Average:	**155.9**	**1134.3**	**70912**	**764.6**	**87.2**	**201.6**	**82.0**	**30.00**	**2.30**
Note: Operational data times adjusted to CEMS time by subtracting 1 hour and 2 minutes.									

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-100%-3									
07-May-02 12:47:00	155.0	1135.2	70576	765.8	87.9	201.3	82.0	30.00	2.30
07-May-02 12:48:00	154.8	1135.3	70712	765.8	87.8	201.0	82.0	30.00	2.30
07-May-02 12:49:00	155.1	1135.4	70700	765.6	87.9	200.8	82.0	30.00	2.30
07-May-02 12:50:00	154.7	1135.4	70666	766.3	88.2	201.1	82.0	30.00	2.30
07-May-02 12:51:00	154.4	1135.2	70620	766.4	88.6	200.9	82.0	30.00	2.30
07-May-02 12:52:00	155.1	1136.1	70620	767.1	88.9	200.7	82.0	30.00	2.30
07-May-02 12:53:00	154.6	1135.9	70576	767.2	89.2	200.6	82.0	30.00	2.30
07-May-02 12:54:00	154.8	1135.6	70248	766.1	89.5	200.5	82.0	30.00	2.30
07-May-02 12:55:00	154.7	1135.6	70486	765.9	89.4	200.8	82.0	30.00	2.30
07-May-02 12:56:00	154.5	1135.7	70532	765.6	89.0	200.7	82.0	30.00	2.30
07-May-02 12:57:00	155.1	1135.4	70474	765.3	88.6	200.8	82.0	30.00	2.30
07-May-02 12:58:00	155.2	1135.2	70564	764.8	88.2	201.1	82.0	30.00	2.30
07-May-02 12:59:00	155.7	1135.1	70847	764.4	88.1	200.9	82.0	30.00	2.30
07-May-02 13:00:00	154.8	1135.2	70564	765.2	88.1	200.9	82.0	30.00	2.30
07-May-02 13:01:00	154.9	1135.3	70880	765.2	87.9	200.6	82.0	30.00	2.30
07-May-02 13:02:00	155.7	1135.3	70532	765.0	87.6	201.0	82.0	30.00	2.30
07-May-02 13:03:00	155.0	1135.3	70666	764.8	87.6	200.3	82.0	30.00	2.30
07-May-02 13:04:00	155.1	1135.3	70692	764.7	87.8	200.8	82.0	30.00	2.30
07-May-02 13:05:00	155.3	1135.4	70745	764.6	88.0	201.2	82.0	30.00	2.30
07-May-02 13:06:00	155.3	1135.4	70620	765.2	88.2	200.9	82.0	30.00	2.30
07-May-02 13:07:00	155.0	1135.4	70554	766.2	88.5	200.8	82.0	30.00	2.30
07-May-02 13:08:00	154.6	1135.4	70474	766.5	88.8	201.0	82.0	30.00	2.30
07-May-02 13:09:00	154.5	1135.3	70576	766.3	89.1	200.6	82.0	30.00	2.30
07-May-02 13:10:00	155.2	1135.3	70712	765.8	88.9	200.8	82.0	30.00	2.30
07-May-02 13:11:00	155.2	1135.2	70620	765.4	88.6	200.5	82.0	30.00	2.30
07-May-02 13:12:00	154.8	1135.2	70486	765.6	88.5	201.0	82.0	30.00	2.30
07-May-02 13:13:00	155.2	1135.5	70620	766.0	88.4	200.5	82.0	30.00	2.30
07-May-02 13:14:00	155.2	1135.8	70620	766.1	88.3	200.6	82.0	30.00	2.30
07-May-02 13:15:00	154.7	1136.1	70610	765.1	88.7	200.5	82.0	30.00	2.30
07-May-02 13:16:00	155.0	1136.4	70654	765.4	88.6	200.5	82.0	30.00	2.30
07-May-02 13:17:00	154.7	1136.6	70518	765.5	88.5	200.1	82.0	30.00	2.30
07-May-02 13:18:00	154.6	1136.4	70532	765.3	88.4	200.1	82.0	30.00	2.30
07-May-02 13:19:00	154.8	1136.2	70609	765.3	88.4	200.7	82.0	30.00	2.30
07-May-02 13:20:00	155.2	1136.0	70700	765.3	88.3	200.8	82.0	30.00	2.30
07-May-02 13:21:00	154.8	1135.8	70564	765.4	88.3	200.5	82.0	30.00	2.30
07-May-02 13:22:00	154.9	1135.9	70576	766.3	88.6	200.2	82.0	30.00	2.30
07-May-02 13:23:00	154.4	1136.0	70486	766.6	89.0	200.8	82.0	30.00	2.30
07-May-02 13:24:00	154.5	1136.2	70361	767.0	89.5	200.1	82.0	30.00	2.30
07-May-02 13:25:00	154.7	1136.4	70474	766.3	89.8	200.1	82.0	30.00	2.30

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
07-May-02 13:26:00	154.3	1136.5	70396	765.8	89.5	200.3	82.0	30.00	2.30
07-May-02 13:27:00	155.0	1136.3	70532	765.8	89.3	200.1	82.0	30.00	2.30
07-May-02 13:28:00	155.1	1136.1	70328	765.4	89.0	200.3	82.0	30.00	2.30
07-May-02 13:29:00	154.8	1136.0	70532	765.2	88.8	200.5	82.0	30.00	2.30
07-May-02 13:30:00	154.6	1135.9	70700	765.0	88.5	200.6	82.0	30.00	2.30
07-May-02 13:31:00	155.3	1135.8	70790	764.8	88.3	200.5	82.0	30.00	2.30
07-May-02 13:32:00	155.1	1135.7	70711	764.7	88.1	200.8	82.0	30.00	2.30
07-May-02 13:33:00	155.0	1135.7	70598	764.8	88.0	200.6	82.0	30.00	2.30
07-May-02 13:34:00	154.9	1135.7	70564	765.2	88.1	200.5	82.0	30.00	2.31
07-May-02 13:35:00	154.6	1135.6	70576	765.9	88.1	200.4	82.0	30.00	2.31
07-May-02 13:36:00	153.9	1135.5	70532	766.1	88.2	200.4	82.0	30.00	2.31
07-May-02 13:37:00	154.8	1135.5	70459	766.1	88.3	200.5	82.0	30.00	2.31
07-May-02 13:38:00	155.0	1135.5	70666	766.1	88.6	200.5	82.0	30.00	2.31
07-May-02 13:39:00	155.1	1135.5	70666	766.1	88.8	201.0	82.0	30.00	2.31
07-May-02 13:40:00	154.6	1135.5	70486	767.2	89.1	199.6	82.0	30.00	2.31
07-May-02 13:41:00	154.9	1135.5	70306	766.6	89.1	200.4	82.0	30.00	2.31
07-May-02 13:42:00	155.1	1135.4	70576	765.9	89.1	200.5	82.0	30.00	2.31
07-May-02 13:43:00	154.4	1135.9	70486	766.7	89.1	200.3	82.0	30.00	2.31
07-May-02 13:44:00	154.5	1136.5	70260	766.9	89.1	200.2	82.0	30.00	2.31
07-May-02 13:45:00	154.5	1136.6	70396	766.3	89.1	200.3	82.0	30.00	2.31
07-May-02 13:46:00	154.3	1136.7	70474	766.5	89.1	200.1	82.0	30.00	2.31
07-May-02 13:47:00	154.0	1136.7	70396	766.9	89.1	200.2	82.0	30.00	2.31
Average:	**154.8**	**1135.7**	**70565**	**765.8**	**88.6**	**200.6**	**82.0**	**30.00**	**2.30**
Note: Operational data times adjusted to CEMS time by subtracting 1 hour and 2 minutes.									

Unit 3 operational data supplied by Robert Barthelette with Tampa Electric Company

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-50%-1									
09-May-02 10:11:00	79.2	1200.8	46441	685.9	98.6	129.9	50.9	29.97	1.67
09-May-02 10:12:00	79.0	1199.1	46532	685.6	98.8	129.9	50.9	29.97	1.67
09-May-02 10:13:00	78.8	1198.6	46487	685.6	99.3	129.9	50.9	29.97	1.66
09-May-02 10:14:00	78.9	1199.8	46496	685.6	99.4	130.2	50.9	29.97	1.66
09-May-02 10:15:00	78.9	1200.6	46532	685.5	99.1	129.3	50.9	29.97	1.65
09-May-02 10:16:00	79.0	1200.5	46496	685.3	98.9	129.6	50.9	29.97	1.65
09-May-02 10:17:00	78.8	1199.6	46451	686.1	98.9	129.4	50.9	29.97	1.65
09-May-02 10:18:00	78.8	1198.6	46487	686.0	99.0	129.6	50.9	29.97	1.64
09-May-02 10:19:00	78.3	1199.6	46441	685.4	99.1	129.5	50.9	29.97	1.64
09-May-02 10:20:00	78.9	1200.8	46406	685.7	99.1	129.4	50.9	29.97	1.63
09-May-02 10:21:00	79.1	1199.4	46623	685.9	99.2	130.3	50.9	29.98	1.63
09-May-02 10:22:00	78.9	1199.8	46623	686.0	99.1	130.0	50.9	29.98	1.62
09-May-02 10:23:00	79.0	1201.0	46487	685.7	99.0	129.7	50.9	29.98	1.62
09-May-02 10:24:00	79.1	1199.8	46586	685.3	99.0	130.6	50.9	29.98	1.61
09-May-02 10:25:00	79.1	1199.4	46586	685.3	98.9	130.0	50.9	29.98	1.61
09-May-02 10:26:00	79.2	1198.7	46542	686.2	98.9	130.1	50.9	29.98	1.60
09-May-02 10:27:00	79.5	1200.9	46676	686.8	99.2	129.8	50.9	29.98	1.60
09-May-02 10:28:00	79.2	1198.5	46609	686.9	99.7	129.8	50.9	29.98	1.60
09-May-02 10:29:00	79.2	1200.8	46712	687.1	100.2	129.9	50.9	29.98	1.59
09-May-02 10:30:00	79.5	1199.9	46631	688.0	100.8	130.1	50.9	29.98	1.59
09-May-02 10:31:00	79.4	1201.0	46667	688.6	100.8	130.2	50.9	29.98	1.58
Average:	**79.0**	**1199.9**	**46548**	**686.1**	**99.3**	**129.9**	**50.9**	**29.98**	**1.63**

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output MW	Turbine Exhaust °F	Fuel Gas Flow lbs/hr	Compressor Disc. Temp oF	Compressor Inlet Temp °F	Compressor Disc. Press. Psig	Inlet Guide Vane Angle Deg.	Bar. Pressure Hg	Air Inlet Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-50%-2									
09-May-02 10:39:00	78.9	1200.1	46550	686.5	100.1	130.2	50.9	29.98	1.63
09-May-02 10:40:00	78.9	1199.1	46315	686.8	100.0	129.5	50.9	29.98	1.63
09-May-02 10:41:00	78.9	1199.7	46451	687.1	99.9	129.7	50.9	29.98	1.62
09-May-02 10:42:00	79.0	1200.5	46383	686.6	99.7	129.6	50.9	29.98	1.62
09-May-02 10:43:00	78.9	1200.0	46542	686.2	100.0	129.3	50.9	29.98	1.62
09-May-02 10:44:00	78.7	1199.3	46496	687.1	100.4	129.4	50.9	29.98	1.62
09-May-02 10:45:00	78.9	1199.5	46542	687.2	100.8	129.8	50.9	29.98	1.62
09-May-02 10:46:00	79.2	1200.5	46682	687.2	101.3	130.0	50.9	29.98	1.61
09-May-02 10:47:00	79.3	1200.0	46623	688.6	101.8	130.1	50.9	29.98	1.61
09-May-02 10:48:00	79.4	1199.5	46600	688.8	101.6	129.8	50.9	29.98	1.61
09-May-02 10:49:00	79.3	1201.2	46667	688.3	101.8	130.0	50.9	29.98	1.61
09-May-02 10:50:00	79.2	1198.9	46676	687.9	101.7	129.5	50.9	29.98	1.60
09-May-02 10:51:00	79.2	1201.1	46583	687.4	101.5	129.4	50.9	29.98	1.60
09-May-02 10:52:00	79.1	1198.8	46605	687.8	101.3	129.8	50.9	29.98	1.60
09-May-02 10:53:00	78.7	1200.3	46812	688.1	101.1	130.4	50.9	29.98	1.60
09-May-02 10:54:00	79.0	1199.6	46745	687.9	100.8	130.2	50.9	29.98	1.59
09-May-02 10:55:00	79.1	1200.4	46631	687.9	100.6	129.7	50.9	29.98	1.59
09-May-02 10:56:00	79.5	1201.0	46790	688.1	100.6	130.2	50.9	29.98	1.59
09-May-02 10:57:00	80.2	1199.0	46848	688.6	100.2	130.3	50.9	29.98	1.59
09-May-02 10:58:00	79.6	1200.8	46983	688.4	100.0	130.5	50.9	29.98	1.58
09-May-02 10:59:00	79.5	1200.0	46767	687.6	100.1	130.5	50.9	29.98	1.58
Average:	**79.2**	**1200.0**	**46633**	**687.6**	**100.7**	**129.9**	**50.9**	**29.98**	**1.61**

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output MW	Turbine Exhaust °F	Fuel Gas Flow lbs/hr	Compressor Disc. Temp oF	Compressor Inlet Temp °F	Compressor Disc. Press. Psig	Inlet Guide Vane Angle Deg.	Bar. Pressure Hg	Air Inlet Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-50%-3									
09-May-02 11:07:00	80.3	1200.1	47127	690.1	101.6	131.2	50.9	29.97	1.77
09-May-02 11:08:00	80.4	1198.6	46902	690.3	101.6	130.6	50.9	29.97	1.77
09-May-02 11:09:00	79.8	1201.5	46631	689.8	101.7	130.8	50.9	29.97	1.77
09-May-02 11:10:00	79.5	1199.6	46577	689.6	102.2	129.6	50.9	29.97	1.77
09-May-02 11:11:00	79.1	1201.0	46623	690.2	102.8	129.6	50.9	29.97	1.77
09-May-02 11:12:00	79.3	1198.9	46803	690.8	103.1	130.7	50.9	29.97	1.77
09-May-02 11:13:00	79.4	1201.0	46668	689.8	103.0	130.4	50.9	29.97	1.77
09-May-02 11:14:00	79.3	1199.6	46487	689.6	102.8	129.8	50.9	29.97	1.77
09-May-02 11:15:00	79.3	1200.3	46519	689.5	102.6	129.7	50.9	29.97	1.77
09-May-02 11:16:00	79.1	1199.5	46446	689.9	102.5	129.6	50.9	29.97	1.77
09-May-02 11:17:00	79.3	1200.0	46451	689.4	102.3	129.6	51.0	29.97	1.77
09-May-02 11:18:00	79.2	1201.2	46496	688.8	102.1	129.5	51.0	29.97	1.77
09-May-02 11:19:00	79.0	1199.9	46519	688.6	102.1	129.6	51.0	29.97	1.77
09-May-02 11:20:00	78.9	1199.1	46360	688.8	101.6	129.7	51.0	29.97	1.77
09-May-02 11:21:00	78.7	1200.8	46550	688.9	101.6	129.5	51.1	29.97	1.78
09-May-02 11:22:00	78.9	1199.0	46360	689.0	101.6	129.4	51.4	29.97	1.78
09-May-02 11:23:00	79.1	1200.8	46623	689.3	101.5	129.8	51.6	29.97	1.78
09-May-02 11:24:00	79.3	1198.6	46712	689.8	101.4	129.8	51.9	29.97	1.78
09-May-02 11:25:00	79.9	1199.7	46667	689.2	101.3	130.3	52.1	29.97	1.78
09-May-02 11:26:00	86.4	1201.3	48967	693.0	100.0	135.0	52.8	29.97	1.78
09-May-02 11:27:00	96.9	1194.6	52077	701.0	98.0	143.6	54.5	29.97	1.78
Average:	**80.5**	**1199.8**	**46979**	**690.3**	**101.8**	**130.9**	**51.4**	**29.97**	**1.77**

Unit 3 operational data supplied by Robert Barthelette with Tampa Electric Company

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output MW	Turbine Exhaust °F	Fuel Gas Flow lbs/hr	Compressor Disc. Temp oF	Compressor Inlet Temp °F	Compressor Disc. Press. Psig	Inlet Guide Vane Angle Deg.	Bar. Pressure Hg	Air Inlet Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-65%-1									
09-May-02 11:34:00	105.4	1182.8	54387	705.1	91.3	150.5	56.6	29.97	1.78
09-May-02 11:35:00	105.9	1181.9	54523	705.1	91.2	150.5	56.6	29.97	1.78
09-May-02 11:36:00	106.1	1184.0	54308	705.5	91.1	150.2	56.6	29.97	1.79
09-May-02 11:37:00	106.1	1183.2	54478	705.1	91.0	150.3	56.6	29.97	1.79
09-May-02 11:38:00	105.9	1180.9	54332	704.6	90.8	150.0	56.6	29.97	1.79
09-May-02 11:39:00	105.7	1181.8	54342	705.2	90.6	150.6	56.6	29.97	1.79
09-May-02 11:40:00	105.7	1183.2	54387	706.1	90.4	150.5	56.6	29.97	1.79
09-May-02 11:41:00	105.8	1183.7	54468	705.9	91.2	150.7	56.6	29.98	1.79
09-May-02 11:42:00	106.0	1184.2	54433	705.6	91.0	150.3	56.6	29.98	1.79
09-May-02 11:43:00	105.8	1181.6	54378	705.4	91.0	150.6	56.5	29.98	1.79
09-May-02 11:44:00	105.6	1182.0	54388	706.3	91.1	150.6	56.5	29.98	1.79
09-May-02 11:45:00	105.7	1183.7	54298	706.1	91.2	150.2	56.5	29.98	1.79
09-May-02 11:46:00	106.0	1183.9	54378	705.6	91.0	150.6	56.5	29.98	1.79
09-May-02 11:47:00	105.8	1185.8	54342	705.2	90.9	150.3	56.5	29.98	1.79
09-May-02 11:48:00	104.5	1186.9	53982	703.8	91.4	149.0	56.5	29.98	1.79
09-May-02 11:49:00	103.6	1183.9	53774	704.3	91.8	148.5	56.5	29.98	1.79
09-May-02 11:50:00	103.6	1185.8	53847	704.7	92.0	148.4	56.5	29.98	1.80
09-May-02 11:51:00	104.3	1185.4	53882	704.9	92.5	148.8	56.6	29.98	1.80
09-May-02 11:52:00	103.9	1185.4	53999	705.4	93.1	149.1	56.6	29.98	1.80
09-May-02 11:53:00	104.1	1185.9	53971	705.8	92.8	149.2	56.6	29.98	1.80
09-May-02 11:54:00	103.5	1188.6	53837	705.6	92.9	148.2	56.6	29.98	1.80
Average:	**105.2**	**1184.0**	**54225**	**705.3**	**91.4**	**149.9**	**56.6**	**29.98**	**1.79**

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-65%-2									
09-May-02 12:01:00	105.1	1183.4	54117	707.0	92.2	150.3	56.6	29.98	1.81
09-May-02 12:02:00	105.9	1184.0	54253	706.2	91.8	150.3	56.7	29.98	1.81
09-May-02 12:03:00	106.0	1184.8	54523	705.8	91.4	150.4	56.7	29.98	1.81
09-May-02 12:04:00	106.0	1186.6	54468	705.8	91.0	149.1	56.7	29.98	1.81
09-May-02 12:05:00	105.5	1182.9	54207	705.7	91.2	149.7	56.7	29.98	1.82
09-May-02 12:06:00	105.4	1185.8	54287	705.8	91.8	149.9	56.7	29.98	1.82
09-May-02 12:07:00	105.7	1182.9	54198	706.1	92.3	149.8	56.7	29.98	1.82
09-May-02 12:08:00	106.0	1183.4	54378	706.7	92.3	150.2	56.7	29.98	1.82
09-May-02 12:09:00	105.2	1184.6	54378	706.5	92.3	149.9	56.7	29.98	1.82
09-May-02 12:10:00	105.0	1184.4	54053	706.2	92.1	149.6	56.8	29.98	1.82
09-May-02 12:11:00	105.1	1183.2	54107	705.7	92.5	149.8	56.8	29.98	1.82
09-May-02 12:12:00	104.4	1185.5	54044	706.1	92.5	149.6	56.8	29.98	1.82
09-May-02 12:13:00	104.5	1184.7	54017	706.3	92.7	148.9	56.8	29.98	1.82
09-May-02 12:14:00	104.2	1184.9	53972	706.5	93.1	149.5	56.8	29.98	1.82
09-May-02 12:15:00	104.0	1186.1	53842	706.6	93.3	148.9	56.8	29.98	1.82
09-May-02 12:16:00	103.9	1185.9	53837	706.1	93.0	149.1	56.8	29.98	1.82
09-May-02 12:17:00	104.1	1184.4	53837	706.1	92.7	148.6	56.8	29.98	1.82
09-May-02 12:18:00	103.8	1186.4	53915	705.1	92.2	148.7	56.9	29.98	1.83
09-May-02 12:19:00	103.7	1184.2	53801	705.8	92.4	148.9	56.9	29.98	1.83
09-May-02 12:20:00	104.1	1186.6	53801	706.1	92.6	149.1	56.9	29.98	1.83
09-May-02 12:21:00	104.1	1185.0	53756	706.7	92.7	149.0	56.9	29.98	1.83
Average:	**104.9**	**1184.8**	**54085**	**706.1**	**92.3**	**149.5**	**56.8**	**29.98**	**1.82**

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-65%-3									
09-May-02 12:28:00	104.0	1184.7	53971	706.6	93.3	149.4	57.0	29.98	1.81
09-May-02 12:29:00	104.1	1184.4	53905	706.6	93.2	149.7	57.0	29.98	1.81
09-May-02 12:30:00	104.0	1186.3	53971	706.8	93.7	149.3	57.0	29.98	1.81
09-May-02 12:31:00	104.1	1185.2	53882	707.1	93.6	149.0	57.0	29.98	1.81
09-May-02 12:32:00	104.8	1184.7	54198	707.4	93.6	149.6	57.1	29.98	1.81
09-May-02 12:33:00	105.7	1184.7	54365	707.2	93.1	150.5	57.1	29.98	1.81
09-May-02 12:34:00	105.9	1183.8	54140	706.8	92.7	150.4	57.1	29.98	1.81
09-May-02 12:35:00	105.6	1184.5	54297	706.8	92.5	150.4	57.1	29.98	1.81
09-May-02 12:36:00	105.6	1183.2	54253	707.1	92.3	149.9	57.1	29.98	1.81
09-May-02 12:37:00	105.6	1182.7	54162	707.0	92.1	150.2	57.1	29.98	1.82
09-May-02 12:38:00	105.5	1185.0	54212	707.4	92.0	150.1	57.1	29.98	1.82
09-May-02 12:39:00	105.4	1181.8	54162	706.8	92.1	150.3	57.1	29.98	1.82
09-May-02 12:40:00	105.3	1183.3	54207	706.8	92.2	149.8	57.2	29.98	1.82
09-May-02 12:41:00	105.9	1184.4	54287	706.7	92.2	150.1	57.2	29.98	1.82
09-May-02 12:42:00	105.7	1185.2	54152	707.5	92.5	150.5	57.2	29.98	1.82
09-May-02 12:43:00	105.1	1183.6	54198	707.4	92.4	150.4	57.2	29.98	1.82
09-May-02 12:44:00	105.2	1186.6	54107	708.2	92.9	149.8	57.2	29.98	1.82
09-May-02 12:45:00	105.3	1184.8	54107	708.9	93.9	149.8	57.2	29.98	1.82
09-May-02 12:46:00	105.0	1185.0	54071	708.9	94.6	149.5	57.2	29.98	1.82
09-May-02 12:47:00	104.8	1185.9	54062	708.7	94.8	149.9	57.3	29.98	1.82
09-May-02 12:48:00	104.7	1186.5	53977	708.8	94.7	149.6	57.3	29.98	1.82
Average:	**105.1**	**1184.6**	**54128**	**707.4**	**93.1**	**149.9**	**57.1**	**29.98**	**1.82**

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-80%-1									
09-May-02 12:56:00	131.3	1155.7	62098	728.1	86.6	174.5	64.6	29.98	1.85
09-May-02 12:57:00	131.5	1155.7	61953	728.6	86.6	174.6	64.6	29.98	1.85
09-May-02 12:58:00	131.2	1155.8	61918	728.4	86.6	174.2	64.5	29.98	1.85
09-May-02 12:59:00	130.5	1158.2	61728	726.4	86.8	173.4	64.5	29.98	1.86
09-May-02 13:00:00	130.3	1156.7	61660	726.0	86.1	172.8	64.5	29.98	1.86
09-May-02 13:01:00	130.1	1156.6	61557	726.0	86.3	173.2	64.5	29.98	1.86
09-May-02 13:02:00	129.9	1156.9	61637	726.4	86.7	173.1	64.5	29.98	1.86
09-May-02 13:03:00	129.8	1157.8	61502	726.7	87.0	173.0	64.4	29.98	1.86
09-May-02 13:04:00	129.8	1157.8	61592	727.2	87.2	172.9	64.4	29.98	1.86
09-May-02 13:05:00	129.8	1158.1	61592	727.7	87.3	172.9	64.4	29.98	1.86
09-May-02 13:06:00	129.8	1158.1	61603	726.7	87.4	172.9	64.4	29.98	1.86
09-May-02 13:07:00	129.8	1157.5	61660	726.0	87.4	173.0	64.4	29.98	1.86
09-May-02 13:08:00	129.8	1157.9	61643	726.4	87.4	173.1	64.4	29.98	1.86
09-May-02 13:09:00	129.7	1157.4	61620	725.4	87.3	173.1	64.3	29.98	1.86
09-May-02 13:10:00	129.7	1157.8	61643	726.1	87.3	173.1	64.3	29.98	1.86
09-May-02 13:11:00	129.6	1157.4	61693	727.1	87.2	173.1	64.3	29.98	1.86
09-May-02 13:12:00	129.6	1157.2	61739	727.5	87.0	172.7	64.3	29.98	1.87
09-May-02 13:13:00	129.5	1157.4	61633	726.5	86.9	172.6	64.3	29.98	1.87
09-May-02 13:14:00	129.5	1157.5	61603	725.8	86.8	172.5	64.2	29.98	1.87
09-May-02 13:15:00	129.5	1157.5	61377	726.1	86.7	172.4	64.2	29.98	1.87
09-May-02 13:16:00	129.5	1157.4	61637	726.3	86.6	172.4	64.2	29.98	1.87
Average:	**130.0**	**1157.2**	**61671**	**726.7**	**86.9**	**173.1**	**64.4**	**29.98**	**1.86**

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-80%-2									
09-May-02 13:22:00	129.9	1157.8	61457	726.1	87.1	172.5	64.3	29.97	1.73
09-May-02 13:23:00	129.8	1157.9	61547	726.3	87.3	172.7	64.3	29.97	1.73
09-May-02 13:24:00	129.8	1157.7	61592	726.5	87.6	172.9	64.3	29.97	1.73
09-May-02 13:25:00	129.7	1157.6	61529	726.7	87.9	172.7	64.2	29.97	1.73
09-May-02 13:26:00	129.6	1157.8	61547	728.1	88.3	172.6	64.2	29.97	1.73
09-May-02 13:27:00	129.5	1158.0	61546	727.5	88.2	172.7	64.2	29.97	1.73
09-May-02 13:28:00	129.5	1158.2	61592	726.9	88.1	172.5	64.2	29.97	1.73
09-May-02 13:29:00	129.4	1158.4	61592	727.5	87.7	172.3	64.2	29.97	1.73
09-May-02 13:30:00	129.3	1158.3	61412	726.7	88.4	172.2	64.2	29.97	1.73
09-May-02 13:31:00	129.2	1158.3	61321	726.4	88.3	172.0	64.2	29.97	1.73
09-May-02 13:32:00	129.1	1158.7	61287	726.7	88.1	172.0	64.2	29.97	1.73
09-May-02 13:33:00	129.0	1158.3	61175	727.1	88.0	172.1	64.1	29.97	1.73
09-May-02 13:34:00	129.0	1158.3	61287	727.5	88.5	172.2	64.1	29.97	1.73
09-May-02 13:35:00	129.0	1158.5	61287	726.8	87.8	172.3	64.1	29.97	1.73
09-May-02 13:36:00	129.1	1158.4	61491	726.5	87.6	172.2	64.1	29.97	1.73
09-May-02 13:37:00	129.1	1158.5	61457	726.5	87.7	171.9	64.1	29.97	1.73
09-May-02 13:38:00	129.3	1158.7	61512	727.4	88.5	172.5	64.1	29.97	1.73
09-May-02 13:39:00	129.4	1158.6	61546	728.4	88.6	172.3	64.1	29.97	1.73
09-May-02 13:40:00	129.4	1158.5	61512	728.6	88.7	172.7	64.1	29.97	1.73
09-May-02 13:41:00	129.5	1159.0	61615	727.9	88.8	172.7	64.0	29.97	1.73
09-May-02 13:42:00	129.5	1158.7	61557	728.4	88.8	172.3	64.0	29.97	1.73
Average:	**129.4**	**1158.3**	**61469**	**727.2**	**88.1**	**172.4**	**64.2**	**29.97**	**1.73**

Unit 3 operational data supplied by Robert Barthelette with Tampa Electric Company

Unit 3 Operational Data, Natural Gas Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Gas	Compressor	Compressor	Compressor	Inlet Guide Vane	Bar. Pressure	Air Inlet
	MW	Exhaust °F	Flow lbs/hr	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FGSFT904CMP	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSPI909	3TMSPDI912
Run U3-NG-80%-3									
09-May-02 13:49:00	129.0	1157.9	61412	727.3	87.8	172.3	63.9	29.97	1.66
09-May-02 13:50:00	129.2	1157.6	61592	727.3	88.0	172.3	63.9	29.97	1.66
09-May-02 13:51:00	129.5	1157.7	61682	727.6	88.1	172.6	63.9	29.97	1.66
09-May-02 13:52:00	129.4	1158.2	61557	727.8	88.4	172.5	63.9	29.97	1.66
09-May-02 13:53:00	129.2	1158.0	61603	728.3	88.7	172.4	63.9	29.97	1.66
09-May-02 13:54:00	129.1	1158.2	61508	728.1	88.6	172.0	63.9	29.97	1.66
09-May-02 13:55:00	128.4	1159.3	61423	727.7	88.3	171.8	63.9	29.97	1.66
09-May-02 13:56:00	128.8	1158.8	61197	728.1	88.5	171.7	63.9	29.97	1.66
09-May-02 13:57:00	128.8	1159.0	61242	728.2	88.8	172.0	63.8	29.97	1.66
09-May-02 13:58:00	128.8	1159.1	61287	728.8	89.1	172.0	63.8	29.97	1.66
09-May-02 13:59:00	128.7	1158.8	61107	727.6	89.0	172.2	63.8	29.97	1.66
09-May-02 14:00:00	128.7	1158.9	61321	728.5	88.9	171.9	63.8	29.97	1.66
09-May-02 14:01:00	128.7	1159.2	61276	727.8	88.8	171.6	63.8	29.97	1.66
09-May-02 14:02:00	128.7	1159.3	61377	728.9	88.8	172.0	63.8	29.97	1.66
09-May-02 14:03:00	128.7	1158.6	61440	729.2	88.6	172.2	63.8	29.97	1.66
09-May-02 14:04:00	128.7	1158.7	61468	727.1	88.4	172.1	63.8	29.97	1.66
09-May-02 14:05:00	128.7	1159.4	61321	726.5	87.9	171.9	63.7	29.97	1.66
09-May-02 14:06:00	128.7	1158.8	61332	726.1	87.6	171.7	63.7	29.97	1.66
09-May-02 14:07:00	128.7	1158.6	61395	727.3	88.3	171.7	63.7	29.97	1.66
09-May-02 14:08:00	128.7	1158.8	61298	729.1	89.0	172.1	63.7	29.97	1.66
09-May-02 14:09:00	128.1	1159.4	61186	728.4	89.2	171.4	63.7	29.97	1.66
Average:	**128.8**	**1158.7**	**61382**	**727.9**	**88.5**	**172.0**	**63.8**	**29.97**	**1.66**

FUEL OIL TESTING OPERATIONAL DATA

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-50%-1											
08-May-02 11:25:00	79.7	1199.2	15.3742	696.1	107.5	127.9	50.1	17.7401	1.15	29.97	0.78
08-May-02 11:26:00	79.9	1199.8	15.3728	695.7	107.3	128.2	50.1	17.7452	1.15	29.97	0.79
08-May-02 11:27:00	80.1	1199.5	15.3714	695.8	107.0	127.7	50.1	17.7503	1.15	29.97	0.79
08-May-02 11:28:00	80.0	1201.8	15.3700	695.6	107.9	128.1	50.1	17.7554	1.16	29.97	0.79
08-May-02 11:29:00	80.0	1200.6	15.3686	696.7	107.8	128.3	50.2	17.7605	1.16	29.97	0.80
08-May-02 11:30:00	80.0	1199.6	15.3672	696.1	107.8	127.9	50.2	17.7655	1.16	29.97	0.80
08-May-02 11:31:00	80.0	1199.8	15.3658	695.9	107.8	128.4	50.2	17.7706	1.16	29.97	0.81
08-May-02 11:32:00	80.0	1199.3	15.3644	696.4	107.6	128.0	50.2	17.7757	1.16	29.97	0.81
08-May-02 11:33:00	79.9	1198.9	15.3631	696.1	107.4	127.9	50.2	17.7808	1.16	29.97	0.81
08-May-02 11:34:00	79.7	1198.9	15.3617	696.6	107.1	128.2	50.2	17.7859	1.16	29.97	0.82
08-May-02 11:35:00	79.8	1200.0	15.3603	696.6	106.9	128.0	50.2	17.7909	1.16	29.97	0.82
08-May-02 11:36:00	79.9	1201.7	15.3589	696.6	106.7	128.1	50.2	17.7960	1.16	29.97	0.82
08-May-02 11:37:00	79.8	1201.8	15.3575	696.2	106.6	128.1	50.2	17.8011	1.16	29.97	0.83
08-May-02 11:38:00	79.6	1198.2	15.3561	695.5	106.4	128.0	50.2	17.8062	1.16	29.97	0.83
08-May-02 11:39:00	80.0	1202.0	15.3609	696.1	106.3	128.5	50.2	17.8113	1.16	29.97	0.84
08-May-02 11:40:00	79.7	1198.4	15.3704	696.7	106.6	128.0	50.3	17.8163	1.16	29.97	0.84
08-May-02 11:41:00	79.7	1198.6	15.3799	696.5	107.0	128.3	50.3	17.8214	1.16	29.97	0.84
08-May-02 11:42:00	79.8	1200.3	15.3894	696.2	107.0	128.3	50.3	17.8265	1.16	29.97	0.85
08-May-02 11:43:00	79.6	1201.2	15.3989	696.7	107.1	128.2	50.3	17.8316	1.16	29.97	0.85
08-May-02 11:44:00	79.9	1201.4	15.4084	697.3	107.2	128.4	50.3	17.8367	1.16	29.97	0.85
08-May-02 11:45:00	80.2	1198.2	15.4179	695.9	107.3	128.3	50.3	17.8418	1.16	29.97	0.86
Average:	**79.9**	**1200.0**	**15.3732**	**696.2**	**107.2**	**128.1**	**50.2**	**17.7909**	**1.16**	**29.97**	**0.82**
Run U3-Oil-50%-2											
08-May-02 11:53:00	79.7	1201.0	15.4939	696.5	108.4	128.2	50.4	17.8824	1.15	29.96	1.10
08-May-02 11:54:00	79.5	1200.4	15.5034	697.0	108.4	128.0	50.4	17.8875	1.15	29.96	1.10
08-May-02 11:55:00	80.0	1201.1	15.5129	696.7	108.9	127.9	50.4	17.8926	1.15	29.96	1.11
08-May-02 11:56:00	79.4	1202.1	15.5224	697.1	108.4	128.4	50.4	17.8976	1.15	29.96	1.11
08-May-02 11:57:00	79.8	1201.3	15.5319	697.3	108.3	127.9	50.4	17.9027	1.15	29.96	1.12
08-May-02 11:58:00	79.3	1200.5	15.5414	696.6	108.0	127.9	50.4	17.9078	1.15	29.96	1.12
08-May-02 11:59:00	79.2	1199.5	15.5510	696.0	107.8	128.0	50.4	17.9129	1.15	29.96	1.13
08-May-02 12:00:00	79.0	1199.4	15.5605	695.6	107.6	127.6	50.4	17.9180	1.15	29.96	1.13
08-May-02 12:01:00	79.9	1200.4	15.5700	696.4	107.3	128.0	50.4	17.9231	1.15	29.96	1.14
08-May-02 12:02:00	80.1	1199.0	15.5795	697.4	107.3	128.4	50.5	17.9281	1.15	29.96	1.14
08-May-02 12:03:00	81.0	1199.2	15.5890	697.4	107.3	128.5	50.5	17.9332	1.15	29.96	1.15
08-May-02 12:04:00	80.6	1202.0	15.5985	697.2	107.3	128.3	50.5	17.9383	1.15	29.96	1.15
08-May-02 12:05:00	80.3	1199.3	15.6080	697.8	107.5	128.2	50.5	17.9434	1.15	29.96	1.15
08-May-02 12:06:00	80.3	1199.0	15.6175	697.5	107.7	128.4	50.5	17.9485	1.15	29.96	1.16
08-May-02 12:07:00	81.1	1201.7	15.6270	697.9	107.6	128.8	50.5	17.9535	1.15	29.96	1.16
08-May-02 12:08:00	80.6	1197.9	15.6365	697.9	107.4	128.8	50.5	17.9586	1.15	29.96	1.17
08-May-02 12:09:00	80.7	1200.7	15.6460	697.9	107.3	128.4	50.5	17.9637	1.15	29.96	1.17
08-May-02 12:10:00	81.0	1200.8	15.6555	698.2	107.4	129.4	50.5	17.9688	1.15	29.96	1.18
08-May-02 12:11:00	80.8	1198.9	15.6650	699.0	107.5	128.8	50.5	17.9739	1.15	29.96	1.18
08-May-02 12:12:00	81.3	1199.2	15.6745	698.5	107.6	128.8	50.5	17.9789	1.15	29.96	1.19
08-May-02 12:13:00	81.0	1201.5	15.6840	698.4	107.4	128.8	50.6	17.9840	1.15	29.96	1.19
Average:	**80.2**	**1200.2**	**15.5890**	**697.3**	**107.7**	**128.3**	**50.5**	**17.9332**	**1.15**	**29.96**	**1.15**

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-50%-3											
08-May-02 12:24:00	79.9	1198.6	15.7886	698.3	108.5	128.1	50.6	18.0399	1.14	29.96	1.22
08-May-02 12:25:00	80.2	1201.4	15.7981	697.6	108.2	128.8	50.6	18.0450	1.14	29.96	1.23
08-May-02 12:26:00	80.1	1197.9	15.8076	697.6	107.9	128.5	50.6	18.0501	1.14	29.96	1.23
08-May-02 12:27:00	80.1	1201.8	15.8171	697.6	107.6	128.1	50.6	18.0552	1.14	29.96	1.24
08-May-02 12:28:00	80.0	1197.9	15.8266	697.2	107.8	128.3	50.6	18.0602	1.14	29.96	1.24
08-May-02 12:29:00	80.0	1201.3	15.8361	697.6	107.9	128.3	50.6	18.0653	1.14	29.96	1.25
08-May-02 12:30:00	80.0	1198.1	15.8456	698.2	108.0	128.3	50.6	18.0704	1.14	29.96	1.25
08-May-02 12:31:00	80.0	1201.5	15.8551	698.3	108.1	128.3	50.6	18.0755	1.14	29.96	1.25
08-May-02 12:32:00	80.0	1199.3	15.8646	697.7	108.2	128.2	50.6	18.0806	1.14	29.96	1.26
08-May-02 12:33:00	80.1	1200.0	15.8741	698.3	108.3	128.5	50.6	18.0856	1.14	29.96	1.26
08-May-02 12:34:00	80.2	1199.2	15.8836	697.2	108.4	128.5	50.6	18.0907	1.14	29.96	1.27
08-May-02 12:35:00	79.9	1200.7	15.8931	697.7	108.5	128.3	50.6	18.0958	1.14	29.96	1.27
08-May-02 12:36:00	80.0	1200.6	15.9026	697.9	108.5	128.4	50.6	18.1009	1.14	29.96	1.28
08-May-02 12:37:00	79.9	1200.8	15.9121	699.0	108.6	128.6	50.6	18.1060	1.14	29.96	1.28
08-May-02 12:38:00	80.1	1199.1	15.9216	699.3	108.7	128.6	50.6	18.1111	1.14	29.96	1.29
08-May-02 12:39:00	80.6	1200.9	15.9312	699.3	108.8	128.4	50.6	18.1161	1.14	29.96	1.29
08-May-02 12:40:00	80.2	1198.9	15.9407	698.7	108.6	128.8	50.6	18.1212	1.14	29.96	1.30
08-May-02 12:41:00	80.1	1199.6	15.9502	698.6	108.8	128.1	50.6	18.1263	1.14	29.96	1.30
08-May-02 12:42:00	80.0	1200.3	15.9597	698.4	108.4	128.4	50.6	18.1314	1.14	29.96	1.30
08-May-02 12:43:00	87.1	1202.8	16.1877	703.8	108.0	135.1	51.5	18.6229	1.15	29.96	1.31
08-May-02 12:44:00	98.5	1195.1	17.0713	712.4	104.8	142.2	53.1	20.0875	1.18	29.96	1.31
Average:	**81.3**	**1199.8**	**15.9461**	**699.1**	**108.1**	**129.4**	**50.7**	**18.2066**	**1.14**	**29.96**	**1.27**
Run U3-Oil-65%-1											
08-May-02 12:53:00	110.6	1184.1	18.5771	719.5	97.1	150.5	55.6	22.7935	1.23	29.96	1.28
08-May-02 12:54:00	110.9	1185.4	18.5836	719.3	97.1	150.5	55.6	22.7999	1.23	29.96	1.29
08-May-02 12:55:00	110.6	1186.7	18.5901	720.0	97.1	151.0	55.6	22.8062	1.23	29.96	1.29
08-May-02 12:56:00	111.0	1186.4	18.5967	720.3	96.6	150.9	55.6	22.8125	1.23	29.96	1.30
08-May-02 12:57:00	110.4	1182.4	18.6032	719.4	96.8	150.5	55.6	22.8189	1.23	29.96	1.30
08-May-02 12:58:00	110.6	1187.3	18.6097	719.5	97.0	150.3	55.6	22.8252	1.23	29.96	1.31
08-May-02 12:59:00	110.2	1184.9	18.6162	720.4	97.5	150.4	55.6	22.8315	1.23	29.96	1.31
08-May-02 13:00:00	109.9	1186.2	18.6227	720.1	97.8	150.4	55.6	22.8378	1.23	29.96	1.31
08-May-02 13:01:00	109.9	1185.3	18.6292	720.1	97.4	150.6	55.6	22.8442	1.23	29.96	1.32
08-May-02 13:02:00	110.6	1184.7	18.6357	720.9	98.5	150.3	55.6	22.8505	1.23	29.96	1.32
08-May-02 13:03:00	110.2	1187.3	18.6422	721.0	98.4	150.5	55.6	22.8568	1.23	29.96	1.33
08-May-02 13:04:00	110.8	1188.4	18.6487	722.4	98.5	150.9	55.6	22.8632	1.23	29.96	1.33
08-May-02 13:05:00	110.6	1184.4	18.6552	721.4	98.0	151.8	55.6	22.8695	1.23	29.96	1.34
08-May-02 13:06:00	110.9	1183.9	18.6617	721.3	97.5	151.1	55.6	22.8758	1.23	29.96	1.34
08-May-02 13:07:00	110.6	1187.3	18.6682	720.6	97.1	150.9	55.6	22.8822	1.23	29.96	1.34
08-May-02 13:08:00	110.4	1184.4	18.6747	720.6	97.4	150.8	55.6	22.8885	1.23	29.96	1.35
08-May-02 13:09:00	110.5	1184.5	18.6813	720.6	97.3	151.1	55.6	22.8948	1.23	29.96	1.35
08-May-02 13:10:00	110.9	1187.1	18.6878	721.1	97.6	150.8	55.6	22.9012	1.23	29.96	1.36
08-May-02 13:11:00	110.8	1185.2	18.6943	720.1	97.3	151.3	55.6	22.9075	1.23	29.96	1.36
08-May-02 13:12:00	111.0	1183.9	18.7008	720.1	97.3	151.4	55.6	22.9138	1.23	29.96	1.37
08-May-02 13:13:00	110.8	1187.0	18.7073	720.0	97.3	149.8	55.6	22.9202	1.23	29.96	1.37
Average:	**110.6**	**1185.6**	**18.6422**	**720.4**	**97.5**	**150.8**	**55.6**	**22.8568**	**1.23**	**29.96**	**1.33**

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-65%-2											
08-May-02 13:21:00	111.0	1184.8	18.7593	722.5	98.3	151.2	55.6	22.9708	1.22	29.96	1.43
08-May-02 13:22:00	111.0	1188.3	18.7659	722.9	98.4	150.7	55.6	22.9771	1.22	29.96	1.43
08-May-02 13:23:00	111.0	1184.1	18.7724	722.2	98.2	151.4	55.6	22.9835	1.22	29.96	1.44
08-May-02 13:24:00	110.3	1188.1	18.7789	721.1	98.6	150.3	55.6	22.9898	1.22	29.96	1.44
08-May-02 13:25:00	109.9	1187.7	18.7854	721.0	97.6	149.8	55.6	22.9961	1.22	29.96	1.45
08-May-02 13:26:00	110.2	1186.5	18.7919	720.8	97.7	150.3	55.6	23.0025	1.22	29.96	1.45
08-May-02 13:27:00	110.0	1184.9	18.7984	720.2	97.8	150.3	55.6	23.0088	1.22	29.96	1.46
08-May-02 13:28:00	110.1	1187.6	18.8049	719.7	97.7	150.4	55.6	23.0151	1.22	29.96	1.46
08-May-02 13:29:00	110.6	1185.2	18.8114	720.3	97.6	150.0	55.6	23.0215	1.22	29.96	1.46
08-May-02 13:30:00	110.1	1188.0	18.8179	719.5	97.4	150.2	55.6	23.0278	1.22	29.96	1.47
08-May-02 13:31:00	110.5	1185.2	18.8244	719.9	97.1	150.4	55.7	23.0341	1.22	29.96	1.47
08-May-02 13:32:00	110.0	1184.7	18.8309	719.8	97.3	150.3	55.7	23.0404	1.22	29.96	1.48
08-May-02 13:33:00	110.6	1188.9	18.8374	719.4	97.2	150.5	55.7	23.0468	1.22	29.96	1.48
08-May-02 13:34:00	110.0	1184.1	18.8439	719.6	97.1	150.8	55.7	23.0531	1.22	29.96	1.49
08-May-02 13:35:00	110.2	1187.5	18.8505	719.1	97.0	150.5	55.7	23.0594	1.22	29.95	1.49
08-May-02 13:36:00	110.6	1183.6	18.8570	719.1	96.9	151.3	55.7	23.0658	1.22	29.95	1.49
08-May-02 13:37:00	110.4	1185.8	18.8635	719.1	96.8	150.9	55.7	23.0721	1.22	29.95	1.50
08-May-02 13:38:00	110.2	1187.4	18.8700	719.3	96.9	151.0	55.7	23.0784	1.22	29.95	1.50
08-May-02 13:39:00	109.5	1187.7	18.8765	720.0	97.0	150.4	55.7	23.0848	1.22	29.95	1.51
08-May-02 13:40:00	110.1	1185.7	18.8830	720.3	97.4	150.7	55.8	23.0911	1.22	29.95	1.51
08-May-02 13:41:00	109.8	1186.2	18.8895	720.3	98.0	150.5	55.8	23.0974	1.22	29.95	1.52
Average:	**110.3**	**1186.3**	**18.8244**	**720.3**	**97.5**	**150.6**	**55.7**	**23.0341**	**1.22**	**29.96**	**1.47**
Run U3-Oil-65%-3											
08-May-02 13:49:00	110.0	1187.3	18.9416	719.7	96.8	150.3	55.9	23.1481	1.22	29.95	1.56
08-May-02 13:50:00	110.8	1182.6	18.9481	720.3	96.7	151.2	55.9	23.1544	1.22	29.95	1.56
08-May-02 13:51:00	110.3	1186.5	18.9546	719.5	96.6	150.9	55.9	23.1607	1.22	29.95	1.57
08-May-02 13:52:00	110.3	1185.4	18.9611	719.9	96.6	151.4	55.9	23.1671	1.22	29.95	1.57
08-May-02 13:53:00	110.1	1183.8	18.9676	719.9	96.6	150.5	55.9	23.1734	1.22	29.95	1.58
08-May-02 13:54:00	110.4	1186.5	18.9741	719.8	96.9	150.4	55.9	23.1797	1.22	29.95	1.58
08-May-02 13:55:00	110.1	1185.3	18.9806	720.5	97.2	150.8	55.9	23.1861	1.22	29.95	1.59
08-May-02 13:56:00	110.1	1187.3	18.9871	720.4	97.5	150.3	55.9	23.1924	1.22	29.95	1.59
08-May-02 13:57:00	110.3	1186.3	18.9936	720.9	97.8	150.2	55.9	23.1987	1.22	29.95	1.59
08-May-02 13:58:00	110.6	1184.7	19.0001	721.9	98.1	150.9	56.0	23.2051	1.22	29.95	1.60
08-May-02 13:59:00	110.1	1188.6	19.0066	721.3	98.4	150.3	56.0	23.2114	1.22	29.95	1.60
08-May-02 14:00:00	109.7	1187.2	19.0132	720.7	97.9	150.6	56.0	23.2177	1.22	29.95	1.61
08-May-02 14:01:00	109.8	1185.2	19.0197	720.6	97.5	151.1	56.0	23.2241	1.22	29.95	1.61
08-May-02 14:02:00	109.8	1185.9	19.0262	720.2	97.9	150.0	56.0	23.2304	1.22	29.95	1.62
08-May-02 14:03:00	109.8	1187.6	19.0327	720.3	97.9	149.5	56.0	23.2367	1.22	29.95	1.62
08-May-02 14:04:00	109.2	1189.1	19.0392	719.9	98.1	149.9	56.0	23.2430	1.22	29.95	1.63
08-May-02 14:05:00	109.2	1184.8	19.0457	719.9	97.7	149.9	56.0	23.2494	1.22	29.95	1.63
08-May-02 14:06:00	109.6	1189.3	19.0522	720.4	98.0	149.4	56.0	23.2557	1.22	29.95	1.63
08-May-02 14:07:00	109.4	1189.7	19.0587	720.4	98.4	149.6	56.1	23.2620	1.22	29.95	1.64
08-May-02 14:08:00	111.4	1183.7	19.0652	721.6	97.8	152.4	56.5	23.2684	1.22	29.95	1.64
08-May-02 14:09:00	122.6	1175.9	19.7344	728.3	95.8	161.9	59.3	24.5789	1.25	29.95	1.65
Average:	**110.7**	**1185.8**	**19.0382**	**720.8**	**97.4**	**151.0**	**56.1**	**23.2735**	**1.22**	**29.95**	**1.60**

Unit 3 operational data supplied by Robert Barthelette with Tampa Electric Company

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-80%-1											
08-May-02 14:18:00	136.3	1158.1	21.1559	735.3	89.0	173.0	62.0	27.4390	1.30	29.94	1.86
08-May-02 14:19:00	135.9	1158.0	21.1620	735.0	88.5	172.4	62.0	27.4354	1.30	29.94	1.87
08-May-02 14:20:00	135.7	1158.0	21.1681	735.0	88.5	172.7	62.1	27.4318	1.30	29.94	1.87
08-May-02 14:21:00	134.8	1158.4	21.1742	734.6	88.5	172.3	62.2	27.4282	1.30	29.94	1.88
08-May-02 14:22:00	135.1	1159.4	21.1803	733.8	88.5	171.6	62.3	27.4246	1.29	29.94	1.88
08-May-02 14:23:00	134.7	1160.4	21.1864	734.4	88.5	171.8	62.4	27.4210	1.29	29.94	1.89
08-May-02 14:24:00	136.0	1158.9	21.1925	735.2	88.6	172.7	62.4	27.4174	1.29	29.94	1.89
08-May-02 14:25:00	136.4	1158.3	21.1986	735.8	88.9	173.4	62.5	27.4138	1.29	29.94	1.90
08-May-02 14:26:00	136.8	1157.9	21.2047	736.3	89.2	173.3	62.6	27.4103	1.29	29.94	1.90
08-May-02 14:27:00	136.6	1157.5	21.2108	736.8	89.4	173.5	62.6	27.4067	1.29	29.94	1.91
08-May-02 14:28:00	136.9	1157.4	21.2169	738.0	89.6	173.8	62.6	27.4031	1.29	29.94	1.91
08-May-02 14:29:00	137.0	1157.4	21.2230	738.0	89.7	173.9	62.6	27.3995	1.29	29.94	1.92
08-May-02 14:30:00	136.4	1157.7	21.2290	737.3	89.8	174.0	62.6	27.3959	1.29	29.94	1.92
08-May-02 14:31:00	136.6	1158.0	21.2351	736.5	89.6	173.6	62.6	27.3923	1.29	29.94	1.93
08-May-02 14:32:00	136.6	1158.0	21.2412	736.9	89.6	172.9	62.6	27.3887	1.29	29.94	1.93
08-May-02 14:33:00	136.6	1157.9	21.2473	736.6	89.6	173.3	62.7	27.3851	1.29	29.94	1.94
08-May-02 14:34:00	136.5	1157.8	21.2534	736.8	89.6	173.5	62.7	27.3815	1.29	29.94	1.94
08-May-02 14:35:00	136.5	1157.8	21.2595	736.7	89.6	173.6	62.7	27.3779	1.29	29.94	1.95
08-May-02 14:36:00	136.5	1157.8	21.2656	736.4	89.6	172.9	62.7	27.3743	1.29	29.94	1.95
08-May-02 14:37:00	136.5	1157.9	21.2717	736.4	88.9	173.3	62.7	27.3708	1.29	29.94	1.96
08-May-02 14:38:00	136.5	1158.0	21.2778	736.5	88.9	173.3	62.7	27.3672	1.29	29.94	1.96
Average:	**136.2**	**1158.1**	**21.2169**	**736.1**	**89.1**	**173.1**	**62.5**	**27.4031**	**1.29**	**29.94**	**1.91**
Run U3-Oil-80%-2											
08-May-02 14:47:00	136.3	1157.4	21.3327	737.5	89.1	173.4	62.8	27.3348	1.28	29.94	2.01
08-May-02 14:48:00	136.4	1158.2	21.3387	737.7	89.4	173.4	62.8	27.3312	1.28	29.94	2.01
08-May-02 14:49:00	136.4	1157.7	21.3448	737.1	89.9	174.0	62.8	27.3277	1.28	29.94	2.02
08-May-02 14:50:00	136.4	1157.7	21.3509	737.3	89.3	173.3	62.8	27.3241	1.28	29.94	2.02
08-May-02 14:51:00	136.4	1157.7	21.3570	737.4	89.5	173.7	62.8	27.3205	1.28	29.94	2.02
08-May-02 14:52:00	136.4	1157.8	21.3631	737.7	89.4	173.6	62.9	27.3169	1.28	29.94	2.03
08-May-02 14:53:00	136.5	1157.8	21.3692	738.1	89.8	173.5	62.9	27.3133	1.28	29.94	2.03
08-May-02 14:54:00	136.5	1157.8	21.3753	738.2	90.0	173.6	62.9	27.3097	1.28	29.94	2.04
08-May-02 14:55:00	136.6	1158.1	21.3814	738.2	90.1	173.5	62.9	27.3061	1.28	29.94	2.04
08-May-02 14:56:00	137.0	1158.0	21.3875	738.0	90.0	173.5	62.9	27.3025	1.28	29.94	2.05
08-May-02 14:57:00	136.8	1157.9	21.3936	737.8	89.9	173.6	62.9	27.2989	1.28	29.94	2.05
08-May-02 14:58:00	136.8	1158.0	21.3997	737.6	89.8	173.5	62.9	27.2953	1.28	29.94	2.06
08-May-02 14:59:00	136.8	1158.3	21.4058	737.3	90.0	173.1	62.9	27.2917	1.27	29.94	2.06
08-May-02 15:00:00	136.6	1158.5	21.4119	737.3	90.1	173.6	62.9	27.2882	1.27	29.94	2.07
08-May-02 15:01:00	136.4	1158.7	21.4180	738.3	90.3	173.5	63.0	27.2846	1.27	29.94	2.07
08-May-02 15:02:00	137.0	1158.3	21.4241	739.3	90.4	173.7	63.0	27.2810	1.27	29.94	2.08
08-May-02 15:03:00	136.9	1158.3	21.4302	739.3	90.4	174.1	63.0	27.2961	1.27	29.94	2.08
08-May-02 15:04:00	136.6	1157.8	21.4258	739.3	90.4	173.8	63.0	27.3276	1.28	29.94	2.09
08-May-02 15:05:00	137.0	1157.4	21.3424	739.5	90.5	173.9	63.0	27.3591	1.28	29.94	2.09
08-May-02 15:06:00	137.1	1157.7	21.2589	739.9	90.7	174.1	63.0	27.3905	1.29	29.94	2.10
08-May-02 15:07:00	136.8	1158.0	21.1754	739.8	90.8	173.7	63.0	27.4220	1.29	29.94	2.10
Average:	**136.7**	**1158.0**	**21.3660**	**738.2**	**90.0**	**173.6**	**62.9**	**27.3201**	**1.28**	**29.94**	**2.05**

Unit 3 operational data supplied by Robert Barthelette with Tampa Electric Company

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-80%-3											
08-May-02 15:17:00	137.3	1157.3	21.0432	738.2	89.9	174.3	63.1	27.7369	1.32	29.94	2.15
08-May-02 15:18:00	137.5	1157.4	21.0534	738.4	89.4	173.7	63.1	27.7684	1.32	29.94	2.16
08-May-02 15:19:00	137.3	1157.4	21.0636	738.6	89.7	173.7	63.2	27.7998	1.32	29.94	2.16
08-May-02 15:20:00	137.3	1157.5	21.0738	738.9	90.8	173.9	63.2	27.8313	1.32	29.94	2.17
08-May-02 15:21:00	137.3	1157.8	21.0840	739.7	90.6	174.1	63.2	27.8628	1.32	29.94	2.17
08-May-02 15:22:00	136.9	1158.0	21.0942	740.1	90.8	174.1	63.2	27.8943	1.32	29.94	2.18
08-May-02 15:23:00	136.6	1157.9	21.1044	740.4	91.0	174.2	63.2	27.9258	1.32	29.94	2.18
08-May-02 15:24:00	136.4	1157.9	21.1146	740.2	91.0	174.0	63.2	27.9573	1.32	29.94	2.19
08-May-02 15:25:00	136.2	1158.0	21.1248	740.4	91.1	173.9	63.2	27.9888	1.32	29.94	2.19
08-May-02 15:26:00	137.0	1158.1	21.1350	739.8	91.2	173.7	63.2	28.0202	1.33	29.94	2.20
08-May-02 15:27:00	137.0	1158.2	21.1452	739.8	91.2	173.7	63.2	28.0517	1.33	29.94	2.20
08-May-02 15:28:00	136.9	1158.3	21.1554	740.1	91.1	173.8	63.3	28.0832	1.33	29.94	2.21
08-May-02 15:29:00	136.9	1158.1	21.1656	739.8	90.9	173.7	63.3	28.1147	1.33	29.94	2.21
08-May-02 15:30:00	137.0	1158.0	21.1758	739.8	90.9	173.0	63.3	28.1462	1.33	29.94	2.22
08-May-02 15:31:00	137.1	1158.0	21.1860	739.5	90.6	173.7	63.3	28.1777	1.33	29.94	2.22
08-May-02 15:32:00	137.2	1158.0	21.1961	739.5	90.4	173.3	63.3	28.2092	1.33	29.94	2.23
08-May-02 15:33:00	137.3	1158.1	21.2063	740.5	90.9	173.7	63.3	28.2406	1.33	29.94	2.23
08-May-02 15:34:00	137.3	1158.2	21.2165	740.8	91.4	173.7	63.3	28.2721	1.33	29.94	2.23
08-May-02 15:35:00	137.4	1159.3	21.2267	740.8	91.2	173.7	63.3	28.3036	1.33	29.94	2.24
08-May-02 15:36:00	145.4	1153.3	22.0412	747.9	90.7	181.3	66.8	28.8484	1.31	29.94	2.24
08-May-02 15:37:00	156.4	1142.8	23.3212	760.4	90.8	192.5	72.3	30.6918	1.32	29.94	2.25
Average:	**138.4**	**1157.0**	**21.2822**	**741.1**	**90.7**	**175.0**	**63.8**	**28.1869**	**1.32**	**29.94**	**2.20**

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-100%-1											
08-May-02 15:55:00	167.1	1125.0	24.7433	781.0	90.9	206.1	82.0	33.8590	1.37	29.93	2.31
08-May-02 15:56:00	166.8	1125.0	24.7422	781.1	90.9	206.3	82.0	33.8497	1.37	29.93	2.31
08-May-02 15:57:00	166.9	1124.8	24.7401	781.1	90.9	206.3	82.0	33.8404	1.37	29.93	2.31
08-May-02 15:58:00	166.9	1124.7	24.7380	780.8	90.9	206.7	82.0	33.8311	1.37	29.93	2.31
08-May-02 15:59:00	166.4	1124.5	24.7359	781.4	90.9	206.4	82.0	33.8218	1.37	29.93	2.31
08-May-02 16:00:00	166.7	1124.6	24.7338	781.4	90.9	206.4	82.0	33.8125	1.37	29.93	2.31
08-May-02 16:01:00	166.1	1124.8	24.6913	781.4	90.9	206.6	82.0	33.8032	1.37	29.93	2.31
08-May-02 16:02:00	166.9	1124.9	24.5679	781.4	90.9	206.1	82.0	33.7939	1.38	29.93	2.31
08-May-02 16:03:00	166.4	1125.0	24.4445	781.4	90.9	206.2	82.0	33.7846	1.38	29.93	2.31
08-May-02 16:04:00	166.5	1125.2	24.3211	781.1	90.9	206.3	82.0	33.7753	1.39	29.93	2.31
08-May-02 16:05:00	166.5	1125.3	24.5832	781.0	90.9	206.1	82.0	33.7660	1.37	29.93	2.31
08-May-02 16:06:00	165.9	1125.3	24.5762	781.7	90.9	205.8	82.0	33.7567	1.37	29.93	2.31
08-May-02 16:07:00	166.4	1125.3	24.5693	781.3	90.9	205.9	82.0	33.7473	1.37	29.93	2.31
08-May-02 16:08:00	166.5	1125.5	24.5989	781.0	91.1	206.1	82.0	33.7380	1.37	29.93	2.31
08-May-02 16:09:00	165.9	1126.0	24.6342	781.8	91.5	205.6	82.0	33.7287	1.37	29.93	2.31
08-May-02 16:10:00	166.5	1125.2	24.6695	781.4	91.7	206.1	82.0	33.7194	1.37	29.93	2.31
08-May-02 16:11:00	166.5	1126.0	24.7047	781.4	91.8	205.8	82.0	33.8008	1.37	29.93	2.31
08-May-02 16:12:00	166.3	1125.7	24.7400	782.5	91.9	205.7	82.0	33.8074	1.37	29.93	2.31
08-May-02 16:13:00	165.8	1125.6	24.7753	782.2	92.0	205.6	82.0	33.7627	1.36	29.93	2.31
08-May-02 16:14:00	166.0	1125.5	24.8105	780.8	91.8	205.6	82.0	33.7180	1.36	29.93	2.31
08-May-02 16:15:00	166.1	1125.4	24.8458	780.6	91.3	205.8	82.0	33.6733	1.36	29.93	2.31
08-May-02 16:16:00	166.1	1125.3	24.8811	780.1	90.9	205.9	82.0	33.6287	1.35	29.93	2.31
08-May-02 16:17:00	166.2	1125.4	24.9163	780.1	90.9	206.1	82.0	33.5840	1.35	29.93	2.31
08-May-02 16:18:00	166.0	1125.5	24.9516	781.1	91.2	205.8	82.0	33.5393	1.34	29.93	2.31
08-May-02 16:19:00	166.1	1124.9	24.9869	781.1	91.4	206.1	82.0	33.4946	1.34	29.93	2.31
08-May-02 16:20:00	166.2	1124.6	24.8846	781.1	91.4	206.2	82.0	33.4914	1.35	29.93	2.31
08-May-02 16:21:00	167.1	1124.9	24.6536	781.1	91.4	206.1	82.0	33.5073	1.36	29.93	2.31
08-May-02 16:22:00	166.1	1124.7	24.8339	781.1	91.3	206.2	82.0	33.5233	1.35	29.93	2.31
08-May-02 16:23:00	166.4	1124.5	24.7674	781.1	91.1	206.1	82.0	33.5393	1.35	29.93	2.31
08-May-02 16:24:00	166.4	1125.2	24.6751	781.1	91.0	206.1	82.0	33.5552	1.36	29.93	2.31
08-May-02 16:25:00	166.8	1125.3	24.5827	780.8	90.9	206.6	82.0	33.5712	1.37	29.93	2.31
08-May-02 16:26:00	166.1	1125.3	24.5626	780.8	90.9	205.9	82.0	33.5871	1.37	29.93	2.31
08-May-02 16:27:00	166.4	1125.4	24.5464	780.7	90.9	205.8	82.0	33.6031	1.37	29.93	2.31
08-May-02 16:28:00	165.9	1126.3	24.5301	780.8	90.9	205.7	82.0	33.6191	1.37	29.93	2.31
08-May-02 16:29:00	166.2	1125.8	24.5138	780.9	90.9	205.6	82.0	33.6348	1.37	29.93	2.31
08-May-02 16:30:00	166.5	1125.9	24.4975	780.5	90.9	205.5	82.0	33.6364	1.37	29.93	2.31
08-May-02 16:31:00	165.8	1126.1	24.4812	780.9	90.9	205.7	82.0	33.6380	1.37	29.93	2.31
08-May-02 16:32:00	166.0	1126.2	24.4649	781.1	90.9	205.3	82.0	33.6397	1.38	29.93	2.31
08-May-02 16:33:00	166.1	1125.9	24.4486	782.3	91.6	205.8	82.0	33.6413	1.38	29.93	2.31
08-May-02 16:34:00	165.8	1125.8	24.4323	781.3	92.2	205.4	82.0	33.6429	1.38	29.93	2.31
08-May-02 16:35:00	165.9	1125.3	24.4160	780.9	91.8	206.1	82.0	33.6446	1.38	29.93	2.31
08-May-02 16:36:00	166.1	1125.3	24.3997	780.6	91.6	206.3	82.0	33.6462	1.38	29.93	2.31
08-May-02 16:37:00	166.0	1125.4	24.3834	780.8	91.6	206.4	82.0	33.6478	1.38	29.93	2.31
08-May-02 16:38:00	166.3	1125.7	24.3672	780.6	91.6	205.8	82.0	33.6494	1.38	29.93	2.31
08-May-02 16:39:00	166.3	1125.7	24.3509	780.8	91.5	206.2	82.0	33.6511	1.38	29.93	2.31

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
08-May-02 16:40:00	166.1	1125.7	24.3346	780.6	91.4	205.6	82.0	33.6527	1.38	29.93	2.31
08-May-02 16:41:00	166.0	1125.6	24.3183	781.1	91.9	205.5	82.0	33.6540	1.38	29.93	2.31
08-May-02 16:42:00	166.1	1125.5	24.3020	781.1	91.9	205.6	82.0	33.6383	1.38	29.92	2.31
08-May-02 16:43:00	166.1	1125.6	24.2857	781.1	91.8	205.7	82.0	33.6225	1.38	29.92	2.31
08-May-02 16:44:00	166.1	1125.6	24.2694	781.1	91.7	205.2	82.0	33.6068	1.38	29.92	2.31
08-May-02 16:45:00	165.6	1125.2	24.2531	781.1	91.5	206.3	82.0	33.5910	1.39	29.92	2.31
08-May-02 16:46:00	166.1	1124.9	24.2368	780.7	91.4	206.3	82.0	33.5753	1.39	29.92	2.31
08-May-02 16:47:00	166.1	1126.1	24.2654	781.2	91.5	205.8	82.0	33.5599	1.38	29.92	2.31
08-May-02 16:48:00	165.9	1125.9	24.3018	781.4	91.6	205.9	82.0	33.5502	1.38	29.92	2.31
08-May-02 16:49:00	165.7	1126.1	24.3383	781.9	91.8	205.9	82.0	33.5404	1.38	29.92	2.31
08-May-02 16:50:00	165.6	1125.9	24.3399	781.4	92.0	206.0	82.0	33.5307	1.38	29.92	2.31
08-May-02 16:51:00	165.9	1126.1	24.3353	781.2	91.6	205.9	82.0	33.5210	1.38	29.92	2.31
08-May-02 16:52:00	165.0	1126.3	24.3307	781.5	91.5	205.2	82.0	33.5112	1.38	29.92	2.31
08-May-02 16:53:00	166.1	1125.8	24.3261	781.1	91.5	205.3	82.0	33.5343	1.38	29.92	2.31
08-May-02 16:54:00	166.3	1124.8	24.3290	780.7	91.6	205.4	82.0	33.5632	1.38	29.92	2.31
08-May-02 16:55:00	166.4	1125.4	24.3693	781.0	91.6	205.8	82.0	33.5920	1.38	29.92	2.31
Average:	**166.2**	**1125.4**	**24.5480**	**781.1**	**91.3**	**205.9**	**82.0**	**33.6549**	**1.37**	**29.93**	**2.31**

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-100%-2											
08-May-02 17:10:00	165.7	1125.4	24.4461	780.1	91.0	205.8	82.0	33.1518	1.36	29.92	2.32
08-May-02 17:11:00	166.1	1125.5	24.4275	780.2	90.9	205.8	82.0	33.0941	1.35	29.92	2.32
08-May-02 17:12:00	165.8	1125.5	24.4088	780.4	90.9	206.1	82.0	33.0365	1.35	29.92	2.32
08-May-02 17:13:00	165.8	1125.5	24.3901	780.6	90.9	206.4	82.0	32.9789	1.35	29.92	2.32
08-May-02 17:14:00	166.4	1125.1	24.3714	780.8	91.0	206.0	82.0	32.9212	1.35	29.92	2.32
08-May-02 17:15:00	164.9	1125.4	24.3528	781.6	91.2	205.8	82.0	32.8636	1.35	29.92	2.32
08-May-02 17:16:00	165.8	1125.4	24.3341	781.1	91.3	205.8	82.0	32.8381	1.35	29.92	2.32
08-May-02 17:17:00	166.1	1125.6	24.3211	781.0	91.4	205.6	82.0	32.8938	1.35	29.92	2.32
08-May-02 17:18:00	166.0	1125.9	24.3181	780.3	91.4	205.7	82.0	32.9495	1.35	29.92	2.32
08-May-02 17:19:00	166.2	1125.1	24.3150	780.0	91.4	205.8	82.0	33.0161	1.36	29.92	2.32
08-May-02 17:20:00	166.4	1124.8	24.3236	779.9	91.2	206.0	82.0	33.1186	1.36	29.92	2.32
08-May-02 17:21:00	165.6	1125.1	24.3791	780.5	90.9	206.1	82.0	33.2211	1.36	29.92	2.32
08-May-02 17:22:00	166.5	1125.1	24.4346	779.6	90.6	205.7	82.0	33.3236	1.36	29.92	2.32
08-May-02 17:23:00	166.2	1125.1	24.4901	779.9	90.4	205.4	82.0	33.4261	1.36	29.92	2.32
08-May-02 17:24:00	165.5	1125.1	24.5456	780.1	90.3	205.9	82.0	33.5286	1.37	29.92	2.32
08-May-02 17:25:00	166.3	1124.4	24.6011	780.1	90.2	206.4	82.0	33.5906	1.37	29.92	2.32
08-May-02 17:26:00	166.7	1125.0	24.6097	779.9	90.2	206.3	82.0	33.5873	1.36	29.92	2.32
08-May-02 17:27:00	166.2	1125.6	24.5774	780.8	90.1	205.7	82.0	33.5841	1.37	29.92	2.32
08-May-02 17:28:00	166.0	1125.4	24.5450	780.4	90.2	205.8	82.0	33.5809	1.37	29.92	2.32
08-May-02 17:29:00	166.2	1125.1	24.5127	780.5	90.3	205.9	82.0	33.5777	1.37	29.92	2.32
08-May-02 17:30:00	166.2	1125.3	24.4803	780.3	90.4	206.0	82.0	33.5821	1.37	29.92	2.32
08-May-02 17:31:00	166.1	1125.4	24.4480	780.0	90.7	206.2	82.0	33.5933	1.37	29.92	2.32
08-May-02 17:32:00	165.9	1125.8	24.4156	781.3	90.9	205.9	82.0	33.6044	1.38	29.92	2.32
08-May-02 17:33:00	165.6	1125.6	24.3833	781.4	91.2	205.5	82.0	33.5817	1.38	29.92	2.32
08-May-02 17:34:00	165.9	1125.6	24.3568	780.7	91.2	205.8	82.0	33.5466	1.38	29.91	2.32
08-May-02 17:35:00	166.0	1125.6	24.3535	781.0	91.2	205.8	82.0	33.5116	1.38	29.91	2.32
08-May-02 17:36:00	165.9	1125.6	24.3503	781.1	91.3	205.7	82.0	33.4765	1.37	29.91	2.32
08-May-02 17:37:00	166.0	1125.8	24.3471	781.5	91.3	205.5	82.0	33.5271	1.38	29.91	2.32
08-May-02 17:38:00	165.9	1125.6	24.3439	781.4	91.4	206.0	82.0	33.6204	1.38	29.91	2.32
08-May-02 17:39:00	166.1	1125.4	24.3406	781.1	91.4	206.0	82.0	33.7138	1.39	29.91	2.32
08-May-02 17:40:00	165.8	1125.7	24.3374	781.5	91.7	205.6	82.0	33.7549	1.39	29.91	2.32
08-May-02 17:41:00	165.9	1125.9	24.3342	782.0	92.0	205.3	82.0	33.7656	1.39	29.91	2.32
08-May-02 17:42:00	165.6	1125.6	24.3310	782.0	92.2	205.9	82.0	33.7764	1.39	29.91	2.32
08-May-02 17:43:00	165.9	1125.6	24.3277	781.6	91.7	205.9	82.0	33.7718	1.39	29.91	2.32
08-May-02 17:44:00	166.2	1125.8	24.3245	781.2	92.1	205.7	82.0	33.7616	1.39	29.91	2.32
08-May-02 17:45:00	165.5	1125.8	24.3213	782.0	91.9	205.3	82.0	33.7514	1.39	29.91	2.32
08-May-02 17:46:00	165.9	1125.7	24.3180	781.4	91.8	205.6	82.0	33.7413	1.39	29.91	2.32
08-May-02 17:47:00	165.6	1125.7	24.3148	781.4	91.6	205.4	82.0	33.7311	1.39	29.91	2.32
08-May-02 17:48:00	165.8	1125.6	24.3304	780.6	91.3	205.7	82.0	33.7209	1.39	29.91	2.32
08-May-02 17:49:00	166.2	1125.1	24.3934	780.4	91.1	205.7	82.0	33.7227	1.38	29.91	2.33
08-May-02 17:50:00	165.5	1125.0	24.4564	780.8	91.0	205.7	82.0	33.7325	1.38	29.91	2.33
08-May-02 17:51:00	166.1	1125.0	24.5195	780.6	90.9	205.7	82.0	33.7423	1.38	29.91	2.33
08-May-02 17:52:00	166.0	1125.0	24.5825	780.6	90.9	205.7	82.0	33.7522	1.37	29.91	2.33
08-May-02 17:53:00	166.0	1125.5	24.6455	780.7	91.0	205.7	82.0	33.7620	1.37	29.91	2.33
08-May-02 17:54:00	166.2	1125.9	24.7085	781.2	91.4	205.6	82.0	33.7718	1.37	29.91	2.33

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
08-May-02 17:55:00	165.4	1126.3	24.7716	782.0	92.5	205.2	82.0	33.7817	1.36	29.91	2.33
08-May-02 17:56:00	165.8	1125.7	24.8346	781.6	92.5	205.8	82.0	33.7915	1.36	29.91	2.33
08-May-02 17:57:00	165.7	1125.4	24.8584	781.8	92.5	205.5	82.0	33.7676	1.36	29.91	2.33
08-May-02 17:58:00	165.8	1125.6	24.8654	781.4	92.5	205.8	82.0	33.7256	1.36	29.91	2.33
08-May-02 17:59:00	165.7	1125.1	24.8723	781.6	92.5	206.0	82.0	33.6835	1.35	29.91	2.33
08-May-02 18:00:00	165.7	1125.6	24.8793	780.8	91.4	205.9	82.0	33.6415	1.35	29.91	2.33
08-May-02 18:01:00	165.7	1125.5	24.8863	780.6	91.3	205.6	82.0	33.5995	1.35	29.91	2.33
08-May-02 18:02:00	165.9	1125.3	24.8932	780.6	91.2	205.5	82.0	33.5575	1.35	29.91	2.33
08-May-02 18:03:00	165.9	1125.5	24.9002	780.7	91.1	206.0	82.0	33.5154	1.35	29.91	2.33
08-May-02 18:04:00	166.2	1125.5	24.9072	779.8	91.0	205.9	82.0	33.4734	1.34	29.91	2.33
08-May-02 18:05:00	166.3	1125.1	24.9142	779.8	90.2	206.3	82.0	33.4314	1.34	29.91	2.33
08-May-02 18:06:00	166.3	1125.1	24.9208	780.3	90.7	206.1	82.0	33.1919	1.33	29.91	2.33
08-May-02 18:07:00	166.2	1125.4	24.8967	780.4	90.9	205.8	82.0	32.9220	1.32	29.91	2.33
08-May-02 18:08:00	166.0	1125.4	24.8457	780.0	90.9	206.1	82.0	32.7351	1.32	29.91	2.33
08-May-02 18:09:00	166.0	1125.7	24.7579	780.6	91.0	205.8	82.0	32.7583	1.32	29.91	2.33
08-May-02 18:10:00	165.2	1126.0	24.5490	781.1	91.7	205.4	82.0	32.7816	1.34	29.91	2.33
Average:	**165.9**	**1125.4**	**24.5299**	**780.8**	**91.2**	**205.8**	**82.0**	**33.4534**	**1.36**	**29.91**	**2.32**

Unit 3 operational data supplied by Robert Barthelette with Tampa Electric Company

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
Run U3-Oil-100%-3											
08-May-02 18:22:00	165.8	1125.6	24.4130	779.7	90.2	206.0	82.0	33.1162	1.36	29.91	2.33
08-May-02 18:23:00	166.7	1125.3	24.4339	779.6	90.4	206.2	82.0	33.1934	1.36	29.91	2.33
08-May-02 18:24:00	165.9	1125.3	24.4651	779.4	90.7	205.7	82.0	33.2707	1.36	29.91	2.33
08-May-02 18:25:00	166.0	1125.4	24.5249	779.8	91.0	205.8	82.0	33.3480	1.36	29.91	2.34
08-May-02 18:26:00	166.6	1125.5	24.5846	780.3	91.3	206.0	82.0	33.4253	1.36	29.91	2.34
08-May-02 18:27:00	166.2	1125.4	24.6443	780.7	91.4	205.5	82.0	33.4947	1.36	29.91	2.34
08-May-02 18:28:00	166.2	1125.3	24.7040	780.1	91.4	205.6	82.0	33.4777	1.36	29.91	2.34
08-May-02 18:29:00	166.3	1125.2	24.7637	780.3	91.2	205.8	82.0	33.4607	1.35	29.91	2.34
08-May-02 18:30:00	166.0	1125.8	24.8167	779.6	91.0	205.8	82.0	33.4437	1.35	29.91	2.34
08-May-02 18:31:00	165.9	1125.2	24.8397	779.2	90.7	205.6	82.0	33.4267	1.35	29.91	2.34
08-May-02 18:32:00	166.2	1125.2	24.8626	779.8	90.5	205.7	82.0	33.4098	1.34	29.91	2.34
08-May-02 18:33:00	166.0	1124.2	24.8856	779.3	90.3	206.3	82.0	33.3994	1.34	29.91	2.34
08-May-02 18:34:00	166.6	1124.3	24.6910	779.2	90.1	206.4	82.0	33.4024	1.35	29.91	2.34
08-May-02 18:35:00	166.8	1124.4	24.6785	779.1	89.9	206.6	82.0	33.4053	1.35	29.91	2.34
08-May-02 18:36:00	167.6	1124.1	24.6660	779.1	89.8	206.6	82.0	33.4083	1.35	29.91	2.34
08-May-02 18:37:00	167.2	1124.3	24.6535	779.1	89.8	206.5	82.0	33.4113	1.36	29.91	2.34
08-May-02 18:38:00	166.4	1124.7	24.6410	779.1	89.8	205.9	82.0	33.4142	1.36	29.91	2.34
08-May-02 18:39:00	166.8	1124.4	24.6285	778.9	89.9	206.2	82.0	33.4172	1.36	29.91	2.34
08-May-02 18:40:00	166.8	1124.5	24.6161	779.0	89.9	206.1	82.0	33.4202	1.36	29.91	2.34
08-May-02 18:41:00	167.1	1124.1	24.6036	779.1	90.1	206.1	82.0	33.4231	1.36	29.91	2.34
08-May-02 18:42:00	167.0	1124.4	24.5911	779.2	90.4	206.2	82.0	33.4261	1.36	29.91	2.34
08-May-02 18:43:00	166.4	1124.4	24.6157	779.3	89.6	206.3	82.0	33.4291	1.36	29.91	2.34
08-May-02 18:44:00	166.3	1124.5	24.6889	779.3	90.2	206.2	82.0	33.4320	1.35	29.91	2.34
08-May-02 18:45:00	166.7	1124.7	24.7620	779.3	90.1	206.3	82.0	33.4350	1.35	29.91	2.34
08-May-02 18:46:00	167.3	1124.9	24.8348	779.2	90.2	206.2	82.0	33.4379	1.35	29.91	2.34
08-May-02 18:47:00	166.4	1124.7	24.8834	779.0	90.2	206.1	82.0	33.4409	1.34	29.91	2.34
08-May-02 18:48:00	166.3	1124.6	24.9319	778.9	90.3	206.5	82.0	33.4439	1.34	29.91	2.34
08-May-02 18:49:00	166.4	1124.6	24.9460	779.4	90.4	206.6	82.0	33.4468	1.34	29.91	2.34
08-May-02 18:50:00	166.8	1124.5	24.9233	779.1	90.2	206.1	82.0	33.4498	1.34	29.91	2.34
08-May-02 18:51:00	166.4	1124.5	24.9005	778.5	90.0	206.7	82.0	33.4528	1.34	29.91	2.34
08-May-02 18:52:00	167.2	1124.4	24.8778	778.4	89.9	206.6	82.0	33.4557	1.34	29.91	2.34
08-May-02 18:53:00	166.8	1124.4	24.8550	778.4	89.7	206.6	82.0	33.4587	1.35	29.91	2.34
08-May-02 18:54:00	166.7	1124.2	24.8323	778.8	89.6	206.2	82.0	33.4616	1.35	29.91	2.34
08-May-02 18:55:00	166.7	1123.8	24.8281	778.5	89.4	206.9	82.0	33.4646	1.35	29.91	2.34
08-May-02 18:56:00	166.9	1123.6	24.8281	778.4	89.5	206.9	82.0	33.4676	1.35	29.91	2.34
08-May-02 18:57:00	167.3	1123.8	24.8281	778.3	89.5	206.7	82.0	33.4705	1.35	29.91	2.34
08-May-02 18:58:00	167.3	1124.0	24.8281	778.5	89.5	206.5	82.0	33.4735	1.35	29.91	2.34
08-May-02 18:59:00	166.7	1124.2	24.8281	779.2	89.3	206.7	82.0	33.4765	1.35	29.91	2.34
08-May-02 19:00:00	167.0	1124.1	24.8139	778.4	89.3	207.1	82.0	33.4794	1.35	29.91	2.34
08-May-02 19:01:00	167.0	1124.2	24.7785	778.9	89.3	206.3	82.0	33.4824	1.35	29.91	2.34
08-May-02 19:02:00	167.0	1124.3	24.7430	779.3	89.9	206.5	82.0	33.4853	1.35	29.91	2.34
08-May-02 19:03:00	167.0	1124.1	24.7076	779.5	90.7	206.8	82.0	33.4883	1.36	29.91	2.34
08-May-02 19:04:00	166.4	1124.3	24.6721	780.4	91.0	206.7	82.0	33.4913	1.36	29.91	2.34
08-May-02 19:05:00	167.2	1123.9	24.6443	779.9	90.7	206.6	82.0	33.4942	1.36	29.91	2.34
08-May-02 19:06:00	167.0	1124.2	24.6546	780.0	90.4	206.4	82.0	33.4972	1.36	29.91	2.34

Unit 3 Operational Data, Fuel Oil Testing, Polk Power Station

Polk Unit 3	Gen Output	Turbine	Fuel Oil Flow	Compressor	Compressor	Compressor	Inlet Guide Vane	H2O Injection	Water/Fuel	Bar. Pressure	Air Inlet
	MW	Exhaust °F	lbs/sec	Disc. Temp oF	Inlet Temp °F	Disc. Press. Psig	Angle Deg.	Rate lbs/sec	Ratio	Hg	Duct Loss H2O
	3PWRJI900	3TMETI934	3FOYFI900	3TMSTI920B	3TMSTI922M	3TMSPI916	3PWRZI904	3TMSFI914		3TMSPI909	3TMSPDI912
08-May-02 19:07:00	167.0	1124.3	24.6649	778.8	90.2	206.4	82.0	33.5001	1.36	29.91	2.34
08-May-02 19:08:00	166.8	1124.1	24.6752	778.8	90.0	206.6	82.0	33.5031	1.36	29.91	2.34
08-May-02 19:09:00	166.9	1123.8	24.7366	778.8	89.9	206.8	82.0	33.5061	1.35	29.91	2.34
08-May-02 19:10:00	166.9	1123.7	24.9882	778.5	89.7	206.7	82.0	33.5090	1.34	29.91	2.34
08-May-02 19:11:00	167.4	1123.9	24.9541	778.3	89.6	206.3	82.0	33.5120	1.34	29.91	2.34
08-May-02 19:12:00	166.8	1123.8	24.9200	778.3	89.7	206.9	82.0	33.5150	1.34	29.91	2.34
08-May-02 19:13:00	166.9	1123.7	24.8941	778.3	89.0	206.7	82.0	33.5179	1.35	29.91	2.34
08-May-02 19:14:00	167.3	1123.6	24.8692	778.5	89.5	206.5	82.0	33.5209	1.35	29.91	2.34
08-May-02 19:15:00	167.1	1123.6	24.7997	778.5	89.0	206.8	82.0	33.5238	1.35	29.91	2.34
08-May-02 19:16:00	167.2	1123.6	24.7195	778.8	88.9	206.9	82.0	33.5268	1.36	29.91	2.34
08-May-02 19:17:00	167.4	1123.7	24.8009	778.8	89.3	206.7	82.0	33.5298	1.35	29.91	2.34
08-May-02 19:18:00	167.1	1123.9	24.8822	778.8	89.3	206.4	82.0	33.5327	1.35	29.91	2.34
08-May-02 19:19:00	166.9	1124.0	24.9636	778.4	89.2	206.8	82.0	33.5357	1.34	29.91	2.34
08-May-02 19:20:00	167.0	1123.9	24.9463	778.8	89.1	207.2	82.0	33.5387	1.34	29.91	2.34
08-May-02 19:21:00	167.7	1123.4	24.9069	779.0	89.3	206.6	82.0	33.5416	1.35	29.91	2.34
08-May-02 19:22:00	167.2	1123.3	24.8675	779.2	89.5	207.0	82.0	33.5446	1.35	29.91	2.34
Average:	**166.8**	**1124.4**	**24.7623**	**779.1**	**90.0**	**206.4**	**82.0**	**33.4536**	**1.35**	**29.91**	**2.34**

APPENDIX I:
FDEP PSD PERMIT

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE:

Tampa Electric Company (TEC)
6944 U.S. Highway 41 North
Apollo Beach, Florida 33572-9200

File No.	PSD-FL-263 (PA92-32)
FID No.	1050233
SIC No.	4911
Expires:	December 31, 2002

Authorized Representative:

Gregory M. Nelson, Manager, Environmental Planning

PROJECT AND LOCATION:

Permit pursuant to the requirements for the Prevention of Significant Deterioration of Air Quality (PSD Permit) for the construction of: two dual-fuel nominal 165 megawatt (MW) General Electric PG7241FA combustion turbine-electrical generators and two 114-foot stacks. The units will operate in simple cycle mode and intermittent duty. The units will be equipped with Dry Low NO_x (DLN-2.6) combustors and wet injection capability. They are designated by TEC as CTGs Nos. 2 and 3 and by the Department as ARMS Emissions Units 009 and 010.

The project will be located at the existing Polk Power Station, 9995 State Route 37 South, Mulberry, Polk County. UTM coordinates are: Zone 17; 402.45 km E; 3067.35 km N.

STATEMENT OF BASIS:

This PSD permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and 40CFR52.21. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

Attached Appendices and Tables made a part of this permit:

Appendix BD	BACT Determination
Appendix GC	Construction Permit General Conditions

Howard L. Rhodes, Director
Division of Air Resources Management

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT PSD-FL-263

SECTION I - FACILITY INFORMATION

FACILITY DESCRIPTION

This facility presently generates electric power from a 260 megawatt (MW) integrated coal gasification and combined cycle turbine unit. The primary mover is a General Electric MS 7001F combustion turbine capable of firing syngas or No. 2 fuel oil. Associated support facilities include: a solid fuel gasification system; a hydrogen sulfide to sulfur dioxide converter; a sulfuric acid plant; solid fuel handling and storage; and fuel oil handling and storage.

This permitting action is to install two dual-fuel nominal 165 megawatt (MW) General Electric PG7241FA combustion turbine-electrical generators with two 114-foot stacks. The project will utilize existing infrastructure including oil storage and auxiliary equipment.

Emissions from the new units will be controlled by Dry Low NO_x (DLN-2.6) combustors when operating on natural gas and wet injection when firing fuel oil. Inherently clean fuels and good combustion practices will be employed to control all pollutants.

EMISSION UNITS

This permit addresses the following emission units:

ARMS Emissions Unit	System	Emission Unit Description
009 (CTG-2)	Power Generation	One nominal 165 Megawatt Gas Simple Cycle Combustion Turbine-Electrical Generator
010 (CTG-3)	Power Generation	One nominal 165 Megawatt Simple Cycle Gas Combustion Turbine-Electrical Generator

REGULATORY CLASSIFICATION

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), or volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is within an industry included in the list of the 28 Major Facility Categories per Table 212.400-1, F.A.C. Because emissions are greater than 100 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD). Pursuant to Table 62-212.400-2, modifications at this facility resulting in emissions increases greater than any of the following values require review per the PSD rules as well as a determination of Best Available Control Technology (BACT): 40 TPY of NO_x, SO_2, or VOC; 25/15 TPY of PM/PM_{10}; 100 TPY of CO; or 7 TPY of sulfuric acid mist (SAM).

This project is subject to certain requirements of Chapter 403. Part II, F.S., Electric Power Plant and Transmission Line Siting, including a modification of the Conditions of Certification (reference Site Certification PA92-32).

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT PSD-FL-263

SECTION I - FACILITY INFORMATION

This facility and the project are also subject to applicable provisions of Title IV, Acid Rain, of the Clean Air Act..

PERMIT SCHEDULE

- xx/xx/99 Modification of Conditions of Certification Approved.
- 07/10/99 Notice of Intent to Issue PSD Permit published in the Lakeland Ledger.
- 06/30/99 Distributed Intent to Issue Permit.
- 06/10/99 Application deemed complete for PSD review.
- 02/08/99 Received revised PSD Application.

RELEVANT DOCUMENTS:

The documents listed below are the basis of the permit. They are specifically related to this permitting action, but not all are incorporated into this permit. These documents are on file with the Department.

- Application received on February 8, 1999
- Department/ Siting Coordination Office incompleteness letter dated February 11, 1999
- Department/BAR memo to Siting Coordination Office dated March 9, 1999
- Comments and letter from the U. S. Fish and Wildlife Service dated March 19, 1999
- Site Certification and Revised PSD Application received May 10, 1999
- Department/BAR comments on Modeling dated May 20, 1999
- Comments from Hillsborough County EPC dated June 7, 1999
- Response from TEC/ECT received June 10, 1999
- Department's Intent to Issue PSD Permit and Public Notice Package dated June 30, 1999
- Department's Final Determination and Best Available Control Technology Determination issued concurrently with this Final Permit.
- Comments from TEC dated August 9, September 10, and 14, 1999.

GENERAL AND ADMINISTRATIVE REQUIREMENTS

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), at 2600 Blairstone Road, Tallahassee, Florida 32399-2400 and phone number (850)488-0114. All documents related to reports, tests, and notifications should be submitted to the DEP Southwest District, 3804 Coconut Palm Drive, Tampa, Fl 33619-8218 and phone number 813/744-6100.
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Forms and Application Procedures: The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. [Rule 62-210.900, F.A.C.]
5. Modifications: The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change. [Chapters 62-210 and 62-212, F.A.C.]
6. Expiration: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)]
7. BACT Determination: In conjunction with extension of the 18 month periods to commence or continue construction, or extension of the December 31, 2002 permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of best available control technology for the source. In accordance with paragraph (4) of 40 CFR 52.21(j) the Best Available Control Technology (BACT) determination shall be reviewed and modified as appropriate in the event of a plant conversion. This paragraph states: "For phased construction project, the determination of best available control technology shall be reviewed and modified as appropriate at the latest reasonable time which occurs no later than 18 months prior to commencement of construction of each independent phase of the project. At such time, the owner or operator of the applicable stationary source may be required to demonstrate

APPLICABLE STANDARDS AND REGULATIONS:

1. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-17, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, and 62-297; and the applicable requirements of the Code of Federal Regulations Section 40, Parts 52, 60, 72, 73, and 75.
2. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. [Rule 62-210.300, F.A.C.]
3. These emission units shall comply with all applicable requirements of 40CFR60, Subpart A, General Provisions including:

   40CFR60.7, Notification and Recordkeeping
   40CFR60.8, Performance Tests
   40CFR60.11, Compliance with Standards and Maintenance Requirements
   40CFR60.12, Circumvention
   40CFR60.13, Monitoring Requirements
   40CFR60.19, General Notification and Reporting requirements
4. ARMS Emissions Unit 009. Direct Power Generation, consisting of a nominal 165 megawatt simple cycle combustion turbine-electrical generator, shall comply with all applicable provisions of 40CFR60, Subpart GG, Standards of Performance for Stationary Gas Turbines, adopted by reference in Rule 62-204.800(7)(b), F.A.C. The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not used for compliance determinations with the BACT standard(s).
5. ARMS Emissions Unit 010. Direct Power Generation, consisting of a nominal 165 megawatt simple cycle combustion turbine-electrical generator, shall comply with all applicable provisions of 40CFR60, Subpart GG, Standards of Performance for Stationary Gas Turbines, adopted by reference in Rule 62-204.800(7)(b), F.A.C. The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not used for compliance determinations with the BACT standard(s).
6. All notifications and reports required by the above specific conditions shall be submitted to the DEP's Southwest District.

GENERAL OPERATION REQUIREMENTS

7. Fuels: Only pipeline natural gas or maximum 0.05 percent sulfur fuel oil No. 2 or superior grade of distillate fuel oil shall be fired in this unit. [Applicant Request, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)] {Note: The limitation of this specific condition is more stringent than the NSPS sulfur dioxide limitation and thus assures compliance with 40 CFR 60.333 and 60.334}

8. Combustion Turbine Capacity: The maximum heat input rates, based on the lower heating value (LHV) of each fuel to each unit at ambient conditions of 59°F temperature, 60% relative humidity, 100% load, and 14.7 psi pressure shall not exceed 1,600 million Btu per hour (mmBtu/hr) when firing natural gas, nor 1,800 mmBtu/hr when firing No. 2 or superior grade of distillate fuel oil. These maximum heat input rates will vary depending upon ambient conditions and the combustion turbine characteristics. Manufacturer's curves corrected for site conditions or equations for correction to other ambient conditions shall be provided to the Department of Environmental Protection (DEP) within 45 days of completing the initial compliance testing. [Design, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]

9. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary.

10. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the owner or operator shall notify the DEP Southwest District as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the steps being taken to correct the problem and prevent future recurrence; and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit and the regulations. [Rule 62-4.130, F.A.C.]

11. Operating Procedures: Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]

12. Circumvention: The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]

13. Maximum allowable hours of operation for each unit are 4,380 hours per year on natural gas and 750 hours per year on fuel oil. [Rule 62-210.200, F.A.C., (Definitions - Potential Emissions), 62-212.400, F.A.C., (BACT Determination)]

CONTROL TECHNOLOGY

14. Dry Low NO_x (DLN) combustors shall be installed on the stationary combustion turbine to comply with the NO_x emissions limits while firing natural gas. [Design, Rules 62-4.070 and 62-212.400, F.A.C. (BACT Determination)]

15. A water injection system shall be installed for use when firing No. 2 or superior grade distillate fuel oil for control of NO_x emissions. [Design, Rules 62-4.070 and 62-212.400, F.A.C.]

16. The permittee shall design these units to accommodate adequate testing and sampling locations for compliance with the applicable emission limits (per each unit) listed in Specific Conditions No. 19 through 24. [Rule 62-4.070 , Rule 62-204.800, F.A.C., and 40 CFR60.40a(b)]

17. The permittee shall provide manufacturer's emissions performance versus load diagrams for the DLN and wet injection systems prior to their installation. DLN systems shall each be tuned upon initial operation to optimize emissions reductions consistent with normal operation and maintenance practices and shall be maintained to minimize NOx emissions and CO emissions, consistent with normal operation and maintenance practices. Operation of the DLN systems in the diffusion-firing mode shall be minimized when firing natural gas. [Rule 62-4.070, and 62-210.650, F.A.C.]

EMISSION LIMITS AND STANDARDS

18. Following is a summary of the emission limits and required technology. Values for NO_x are corrected to 15 % O_2 on a dry basis. These limits or their equivalent in terms of lb/hr or NSPS units, as well as the applicable averaging times, are followed by the applicable specific conditions [Rules 62-212.400, 62-204.800(7)(b) (Subpart GG), 62-210.200 (Definitions-Potential Emissions) F.A.C.]

POLLUTANT	CONTROL TECHNOLOGY	EMISSION LIMIT
PM/PM_{10}, VE	Pipeline Natural Gas Good Combustion	10 Percent Opacity (gas or oil)
VOC	As Above	1.4 ppmvw (Gas) 3.5 ppmvw (FO)
CO	As Above	12 ppmvd (Gas) 20 ppmvd (FO)
SO2 and Sulfuric Acid Mist	Pipeline Natural Gas Low Sulfur Oil	2 gr S/100 ft^3 0.05% S Fuel Oil
NO_x	DLN, WI for F.O., limited fuel oil usage	10.5 ppmvd (DLN) → 9 ppmvd stack test 42 ppmvd (FO)

19. Nitrogen Oxides (NO_x) Emissions:

- While firing Natural Gas: The emission rate of NO_x in the exhaust gas shall not exceed 10.5 ppm @15% O_2 on a 24 hr block average as measured by the continuous emission monitoring system (CEMS). In addition, NO_x emissions calculated as NO_2 shall not exceed 59 pounds per hour (at ISO conditions) and 9 ppmvd @15% O_2 to be demonstrated by the initial "new and clean" GE performance stack test. [Rule 62-212.400, F.A.C.]

  Notwithstanding the applicable NO_x limit during normal operation, reasonable measures shall be implemented to maintain the concentration of NO_x in the exhaust gas at 9 ppmvd at 15% O_2 or lower. Any tuning of the combustors for Dry Low NO_x operation while firing gas shall result in initial subsequent NO_x concentrations of 9 ppmvd @15% O_2 or lower. [Rules 62-212.400 and 62-4.070, F.A.C.]

- While firing Fuel oil: The concentration of NO_x in the exhaust gas shall not exceed 42 ppmvd at 15% O_2 on the basis of a 3-hr average as measured by the continuous emission monitoring system (CEMS). In addition, NO_x emissions calculated as NO_2 shall not exceed 319 lb/hr (at ISO conditions) and 42 ppmvd @15% O_2 to be demonstrated by stack test. [Rule 62-212.400, F.A.C.]

  The permittee shall develop a NOx reduction plan when the hours of oil firing reach the allowable limit of 750 hours per year. This plan shall include a testing protocol designed to establish the maximum water injection rate and the lowest NOx emissions possible without affecting the actual performance of the gas turbine. The testing protocol shall set a range of water injection rates and attempt to quantify the corresponding NOx emissions for each rate and noting any problems with performance. Based on the test results, the plan shall recommend a new NOx emissions limiting standard and shall be submitted to the Department's Bureau of Air Regulation and Compliance Authority for review. If the Department determines that a lower NOx emissions standard is warranted for oil firing, this permit shall be revised. (BACT Determination].

20. Carbon Monoxide (CO) Emissions: During the first 12 months after initial start up, the concentration of CO in the stack exhaust gas shall exceed neither 15 ppmvd nor 48 lb/hr (at ISO conditions) while firing gas and neither 33 ppmvd nor 106 lb/hr (at ISO conditions) while firing oil based on stack test. Thereafter, these limits will be revised and lowered to 12 ppmvd and 38 lb/hr (at ISO conditions) while firing gas and 20 ppmvd and 65 lb/hr (at ISO conditions). The permittee shall demonstrate compliance with these limits by stack test using EPA Method 10. [Rule 62-212.400, F.A.C.]

21. Volatile Organic Compounds (VOC) Emissions: The concentration of VOC in the stack exhaust gas with the combustion turbine operating on natural gas shall exceed neither 1.4 ppmvw nor 2.8 lb/hr (ISO conditions) and neither 3.5 ppmvw nor 7 lb/hr (ISO conditions) while operating on oil to be demonstrated by initial stack test using EPA Method 18, 25 or 25A. [Applicant Request]

22. Sulfur Dioxide (SO_2) emissions: SO_2 emissions shall be limited by firing pipeline natural gas (sulfur content less than 2 grains per 100 standard cubic foot) or by firing No. 2 or superior grade distillate fuel oil with a maximum 0.05 percent sulfur for 750 hours per year per unit. Emissions of SO_2 (at ISO conditions) shall not exceed 9.2 lb/hr (natural gas) and 98.1 lb/hr (fuel oil) as measured by applicable compliance methods described below. [40CFR60 Subpart GG and Rules 62-4.070, 62-212.400, and 62-204.800(7), F.A.C]

23. Visible Emissions (VE): VE emissions shall serve as a surrogate for PM/PM10 emissions and shall not exceed 10 opacity. Rules 62-4.070, 62-212.400, and 62-204.800(7), F.A.C.]

EXCESS EMISSIONS

24. Excess emissions resulting from startup, shutdown, or malfunction shall be permitted provided that best operational practices are adhered to and the duration of excess emissions shall be minimized. Excess emissions occurrences shall in no case exceed two hours in any 24-hour

period for other reasons unless specifically authorized by DEP for longer duration. Operation below 50% output shall be limited to 2 hours per unit cycle (breaker closed to breaker open).

25. Excess emissions entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction, shall be prohibited pursuant to Rule 62-210.700, F.A.C. These emissions shall be included in the 24-hr average for NO_X.

26. Excess Emissions Report: If excess emissions occur due to malfunction (for greater than 2 hours in a 24-hr period), the owner or operator shall notify DEP's Southwest District within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Following the NSPS format, 40 CFR 60.7 Subpart A, periods of startup, shutdown, malfunction, shall be monitored, recorded, and reported as excess emissions when emission levels exceed the permitted standards listed in Specific Condition No. 18 and 19. [Rules 62-4.130, 62-204.800, 62-210.700(6), F.A.C., and 40 CFR 60.7 (1998 version)].

COMPLIANCE DETERMINATION

27. Compliance with the allowable emission limiting standards shall be determined within 60 days after achieving the maximum production rate, but not later than 180 days of initial operation of the unit, and annually thereafter as indicated in this permit, by using the following reference methods as described in 40 CFR 60, Appendix A (1998 version), and adopted by reference in Chapter 62-204.800, F.A.C.

28. Initial (I) performance tests (for both fuels) shall be performed on each unit while firing natural gas as well as while firing oil. Initial tests shall also be conducted after any modifications (and shake down period not to exceed 100 days after re-starting the CT) of air pollution control equipment such as change or tuning of combustors. Annual (A) compliance tests shall be performed during every federal fiscal year (October 1 - September 30) pursuant to Rule 62-297.310(7), F.A.C., on each unit as indicated. The following reference methods shall be used. No other test methods may be used for compliance testing unless prior DEP approval is received in writing.

    - EPA Reference Method 9, "Visual Determination of the Opacity of Emissions from Stationary Sources" (I, A).
    - EPA Reference Method 10, "Determination of Carbon Monoxide Emissions from Stationary Sources" (I, A).
    - EPA Reference Method 20, "Determination of Oxides of Nitrogen Oxide, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines." Initial test only for compliance with 40CFR60 Subpart GG and (1, A) short-term NO_X BACT limits (EPA reference Method 7E, "Determination of Nitrogen Oxides Emissions from Stationary Sources" or RATA test data may be used to demonstrate compliance for annual test requirements).

- EPA Reference Method 18, 25 and/or 25A, "Determination of Volatile Organic Concentrations." Initial test only.

29. Continuous compliance with the NO_X emission limits: Continuous compliance with the NO_X emission limits shall be demonstrated with the CEM system based on the applicable averaging time of 24-hr block average (DLN). Based on CEMS data, a separate compliance determination is conducted at the end of each operating day and a new average emission rate is calculated from the arithmetic average of all valid hourly emission rates from the previous operating day. A valid hourly emission rate shall be calculated for each hour in which at least two NO_X concentrations are obtained at least 15 minutes apart. Valid hourly emission rates shall not include periods of start up, shutdown, or malfunction unless prohibited by 62-210.700 F.A.C. These excess emissions periods shall be reported as required in Conditions 25 and 26. [Rules 62-4.070 F.A.C., 62-210.700, F.A.C., 40 CFR 75 and BACT]

    - All continuous monitoring systems (CEMS) shall be in continuous operation except for breakdowns, repairs, calibration checks, and zero and span adjustments. These CEMS shall meet minimum frequency of operation requirements: one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. Data recorded during periods of continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data average. [40CFR60.13]

30. Compliance with the SO_2 and PM/PM_{10} emission limits: Not withstanding the requirements of Rule 62-297.340, F.A.C., the use of pipeline natural gas, is the method for determining compliance for SO_2 and PM_{10}. For the purposes of demonstrating compliance with the 40 CFR 60.333 SO_2 standard, ASTM methods D4084-82 or D3246-81 (or equivalent) for sulfur content of gaseous fuel shall be utilized in accordance with the EPA-approved custom fuel monitoring schedule or natural gas supplier data may be submitted or the natural gas sulfur content referenced in 40 CFR 75 Appendix D may be utilized. However, the applicant is responsible for ensuring that the procedures in 40 CFR60.335 or 40 CFR75 are used when determination of fuel sulfur content is made. Analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency pursuant to 40 CFR 60.335(e) (1998 version).

31. Compliance with CO emission limit: An initial test for CO shall be conducted concurrently with the initial NO_X test, as required. The initial NO_X and CO test results shall be the average of three valid one-hour runs. Annual compliance testing for CO may be conducted at less than capacity when compliance testing is conducted concurrent with the annual RATA testing for the NO_X CEMS required pursuant to 40 CFR 75

32. Compliance with the VOC emission limit: An initial test is required to demonstrate compliance with the VOC emission limit. Thereafter, the CO emission limit and periodic tuning data will be employed as surrogate and no annual testing is required.

33. Testing procedures: Testing of emissions shall be conducted with the combustion turbine operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum

heat input rate allowed by the permit, corrected for the average ambient air temperature during the test (with 100 percent represented by a curve depicting heat input vs. ambient temperature). If it is impracticable to test at permitted capacity, the source may be tested at less than permitted capacity. In this case, subsequent operation is limited by adjusting the entire heat input vs. ambient temperature curve downward by an increment equal to the difference between the maximum permitted heat input (corrected for ambient temperature) and 110 percent of the value reached during the test until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity. Procedures for these tests shall meet all applicable requirements (i.e., testing time frequency, minimum compliance duration, etc.) of Chapters 62-204 and 62-297, F.A.C.

34. Test Notification: The DEP's Southwest District shall be notified, in writing, at least 30 days prior to the initial performance tests and at least 15 days before annual compliance test(s).

35. Special Compliance Tests: The DEP may request a special compliance test pursuant to Rule 62-297.310(7), F.A.C., when, after investigation (such as complaints, increased visible emissions, or questionable maintenance of control equipment), there is reason to believe that any applicable emission standard is being violated.

36. Test Results: Compliance test results shall be submitted to the DEP's Southwest District no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.].

NOTIFICATION, REPORTING, AND RECORDKEEPING

37. Records: All measurements, records, and other data required to be maintained by TEC shall be recorded in a permanent form and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. These records shall be made available to DEP representatives upon request.

38. Compliance Test Reports: A test report indicating the results of the required compliance tests shall be filed as per Condition No.36 above. The test report shall provide sufficient detail on the tested emission unit and the procedures used to allow the Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in Rule 62-297.310(8), F.A.C.

MONITORING REQUIREMENTS

39. Continuous Monitoring System: The permittee shall install, calibrate, maintain, and operate a continuous emission monitor in the stack to measure and record the nitrogen oxides emissions from these units. Upon request from EPA or DEP, the CEMS emission rates for NO_X on these Units shall be corrected to ISO conditions to demonstrate compliance with the NO_X standard established in 40 CFR 60.332. [Rules 62-204.800, 62-210.700, 62-4.130, 62-4.160(8), F.A.C, 40 CFR 75and 40 CFR 60.7 (1998 version)].

40. CEMS for reporting excess emissions: Excess Emissions and Monitoring System Performance Reports shall be submitted as specified in 40 CFR 60.7(c). CEM monitor downtime shall be

calculated and reported according to the requirements of 40 CFR 60.7(c)(3) and 40CFR 60.7(d)(2). Periods when NO_x emissions (ppmvd @ 15% oxygen) are above the BACT standards, listed in Specific Conditions No 18 and 19, shall be reported to the DEP Southwest District within one working day (verbally) followed up by a written explanation not later than three (3) working days (alternatively by facsimile within one working day).

41. CEMS in lieu of Water to Fuel Ratio: The NO_x CEMS shall be used in lieu of the water/fuel monitoring system for reporting excess emissions in accordance with 40 CFR 60.334(c)(1), Subpart GG (1998version). The calibration of the water/fuel monitoring device required in 40 CFR 60.335 (c)(2) (1998 version) will be replaced by the 40 CFR 75 certification tests of the NO_x CEMS

42. Continuous Monitoring Certification and Quality Assurance Requirements: The monitoring devices shall comply with the certification and quality assurance, and any other applicable requirements of Rule 62-297.520, F.A.C., 40 CFR 60.13, including certification of each device in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7(a)(5) or 40 CFR Part 75. Quality assurance procedures must conform to all applicable sections of 40 CFR 60, Appendix F or 40CFR75. The monitoring plan, consisting of data on CEM equipment specifications, manufacturer, type, calibration and maintenance needs, and its proposed location shall be provided to the DEP Emissions Monitoring Section Administrator and EPA for review no later than 45 days prior to the first scheduled certification test pursuant to 40 CFR 75.62.

43. Natural Gas Monitoring Schedule: A custom fuel monitoring schedule pursuant to 40 CFR 75 Appendix D for natural gas may be used in lieu of the daily sampling requirements of 40 CFR 60.334 (b)(2) provided the following requirements are met:

    - The permittee shall apply for an Acid Rain permit within the deadlines specified in 40 CFR 72.30.
    - The permittee shall submit a monitoring plan, certified by signature of the Designated Representative, that commits to using a primary fuel of pipeline supplied natural gas (sulfur content less than 20 gr/100 scf pursuant to 40 CFR 75.11(d)(2)).
    - Each unit shall be monitored for SO_2 emissions using methods consistent with the requirements of 40 CFR 75 and certified by the USEPA.

    This custom fuel monitoring schedule will only be valid when pipeline natural gas is used as a primary fuel. If the primary fuel for these units is changed to a higher sulfur fuel, SO_2 emissions must be accounted for as required pursuant to 40 CFR 75.11(d).

44. Fuel Oil Monitoring Schedule: The following monitoring schedule for No. 2 or superior grade fuel oil shall be followed: For all bulk shipments of No. 2 fuel oil received at this facility an analysis which reports the sulfur content and nitrogen content of the fuel shall be provided by the fuel vendor. The analysis shall also specify the methods by which the analyses were conducted and shall comply with the requirements of 40 CFR 60.335(d).

45. Determination of Process Variables:

- The permittee shall operate and maintain equipment and/or instruments necessary to determine process variables, such as process weight input or heat input, when such data is needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- Equipment and/or instruments used to directly or indirectly determine such process variables, including devices such as belt scales, weigh hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value [Rule 62-297.310(5), F.A.C]