



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

October 11, 2007

Mr. Russell Dowd
Plant Manager
Pinetree Power – Tamworth, Inc.
469 Plains Road, Route 41
Tamworth, NH 03890

RE: Inspection Report for Pinetree Power - Tamworth

Dear Mr. Dowd:

The New Hampshire Department of Environmental Services, Air Resources Division conducted an Onsite Full Compliance Evaluation of your facility on September 6, 2007. There were no deficiencies found during the inspection. Enclosed is a copy of the Inspection Report for your records.

If you have any questions regarding the inspection or the final report, please feel free to call me at (603) 271-6288.

Sincerely,

Raymond Walters
Compliance Measurement & Data Programs Manager
Air Resources Division

Enclosure: Inspection Report

**STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
AIR RESOURCES DIVISION**

Onsite Full Compliance Evaluation Report

**Pinetree Power Tamworth
469 Plains Road, Route 41
West Ossipee, NH 03890**

AFS # 3300300019

Inspection Date: September 6, 2007

Report Drafted: October 10, 2007

Report Finalized: October 10, 2007

I. Inspection

On September 6, 2007, the New Hampshire Department of Environmental Services, Air Resources Division ("DES") completed an onsite full compliance evaluation ("FCE") of Pinetree Power Tamworth ("PT Tamworth"), located in West Ossipee, NH, in Carroll County. DES' onsite FCE was conducted in accordance with EPA's Compliance Monitoring Strategy. DES last conducted an offsite records review of PT Tamworth on February 2, 2005. There were no deficiencies found during that review.

Date/Time of Inspection:	September 6, 2007; 10:00 a.m. -noon
Type of Inspection:	Onsite Full Compliance Evaluation
Inspected by:	Ray Walters
Weather:	Mostly cloudy, approximately 60 - 65 °F
Source Contact(s):	Russ Dowd – Plant Manager, 603-323-8187 Roger Rutter - Unit Supervisor, (603) 323-8187

Observation upon approach to the facility: There were no visible emissions and no unusual or notable odors detected.

Last compliance inspection conducted at facility: No deficiencies were found during the last offsite FCE in February 2005 and only a recommendation to conduct and document a facility-wide air toxics compliance determination was made after the last onsite FCE in June 2003.

I discussed the purpose of the current inspection with Mr. Rutter, who agreed to the inspection, authorized access to the facility as required by RSA 125-C:6, VII. and provided all requested information.

PT Tamworth operates a wood-fired electrical generating plant. The facility began operating in 1987. The primary sources of emissions at the facility are the wood-fired boiler, an emergency diesel generator, a fire pump and the cooling tower. The facility is a major source for nitrogen oxides and carbon monoxide and is therefore required to obtain a Title V Operating Permit. The facility's parent company is SUEZ Energy Generation NA, Inc ("SUEZ") which is responsible for managing power operations in the United States, Canada, and Mexico. SUEZ is headquartered in Houston, Texas, and currently owns and/or operates a total of 44 power, cogeneration, steam, and chilled-water facilities, representing a capacity of more than 5,538 MW of electricity generation.

II. Facility Description

PT Tamworth burns whole tree wood chips in the boiler which produces steam to spin a turbine. The Zurn-designed, spreader stoker, waterwall boiler uses 15 screw feeders to distribute wood chips across the grated floor of the boiler. The boiler is rated at a maximum of 404.13 million British thermal units per hour ("MMBtu/hr") and can produce approximately 220,000 lb/hr of

steam at 700 psig and 900°F while burning approximately 47.5 tons/hr of wood chips with an average heating value of 4,250 Btu/lb (assuming a 50% moisture content of the chips).

PT Tamworth has a 745 horsepower (“hp”) emergency generator, which can fire diesel fuel at a maximum rate of 39.9 gallons/hr in the event of a Public Service of New Hampshire (“PSNH”) blackout or when the boiler is shutdown for maintenance purposes. It also has a 187 hp diesel fire pump to be used in the event of a fire emergency. In addition, PT Tamworth has a 26,000 gallon/minute cooling tower. The tower lets the water which flows through the tubes of the main condenser lose the heat it has gained from the condensation of the primary side steam. The steam, after spinning the blades of the turbine, is condensed back to liquid on the shell side of the condenser and then fed back to the boiler tubes by the feedwater pumps. The entrainment of water treatment chemicals in the water mist that evaporates from the cooling tower is also a source of particulate emissions from the facility.

The Title V permit specifies the boiler as a 25 megawatt (MW) unit. However, according to PT Tamworth, the boiler is actually rated at 22-23 MW gross power output. SUEZ rates the facility on its website as 22.5 MW (net).

III. Regulatory Compliance

CHAPTER ENV-A 300 - Ambient Air Quality Standards (“AAQS”)

DES evaluated PT Tamworth’s compliance with AAQS in 1986 when PT Tamworth first applied for a permit to operate. There were no predicted exceedances of any of the National Ambient Air Quality Standards (“NAAQS”).

CHAPTER Env-A 500 – Standards Applicable to Certain New or Modified Facilities and Sources of Hazardous Air Pollutants

PT Tamworth is subject to the New Source Performance Standard (“NSPS”) specified in Env-A 503.01, 40 CFR 60 Subpart Db *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units*. It is not subject to any of the National Emission Standards for Hazardous Air Pollutants (“NESHAP”) specified in Env-A 504.01 or any of the National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technology, or MACT, Standards) specified in Env-A 505.01.

CHAPTER Env-A 600 - Statewide Permit System

USEPA Region 1 issued Prevention of Significant Deterioration (“PSD”) Permit No. 040-149NH06 (“the PSD Permit”) to PT Tamworth on November 15, 1990. A PSD permit was necessary, because PT Tamworth’s emissions typically exceed 275 tons per year (“tpy”) of nitrogen oxides (“NOx”) and 200 tpy of carbon monoxide (“CO”) (see Table 2 of this report). The limits of the PSD Permit are incorporated into Title V Operating Permit TV-OP-018 (“the Permit”), which DES originally issued to PT Tamworth on September 15, 1999. The Permit was most recently renewed on October 17, 2005.

Part Env-A 604.02 – Permit Terms and Conditions

The renewal of the Permit in 2005 incorporated the requirements of 40 CFR 64 *Compliance Assurance Monitoring* (“CAM”). CAM provides reasonable assurance, by the source’s monitoring of operational and maintenance parameters of air pollution control devices, that it is complying with emissions limits. CAM applies to Title V sources with pollution control equipment whose pre-controlled emissions exceed the major source threshold. PT Tamworth has pre-controlled emissions of particulate matter (“PM”) greater than 100 tpy. It uses a multiclone in series with an electrostatic precipitator to control PM emissions. Hence, the CAM rule is applicable to PM emissions from the wood-fired boiler and the Permit contains CAM requirements for the multiclone and ESP. PT Tamworth is also a major source of NO_x and CO. However, because it has no control equipment for NO_x and CO and it also has continuous emissions monitoring (“CEM”) system to constantly monitor its actual emissions of NO_x and CO, CAM is not required for NO_x and CO.

Table I shows the significant devices, permit limits and actual annual operating information for the significant devices.

Table 1

Device	Operating Limits	Reported Usage
EU01 - Zurn Waterwall Wood-fired Boiler Model: 2-Drum Open Pass Type of Boiler: Spreader Stoker Date of installation: July 1987	404.13 MMBtu/hr of heat input, equivalent to 47.5 tons/hr of wood chips @ 4,250 Btu/lb (50% moisture). Equivalent to 220,000 lbs/hr of steam (24-hour avg) at 900°F and 700 psig, assuming a boiler efficiency of 71.47% and boiler feedwater temperature of 405 °F.	2006: 318,545 tons of wood (equivalent to 2,866,909 MMBtu) 2005: 305,852 tons of wood (equivalent to 2,752,667 MMBtu) 2004: 312,980 tons of wood (equivalent to 2,816,818 MMBtu)
EU02 - 745 hp Caterpillar Emergency Diesel Generator, Model #3412 Date of installation: November 1987	500 hours of operation during any consecutive 12 month-period and the combined theoretical potential emissions of NO _x from all such generators are limited to less than 25 tons for any consecutive 12-month period.	2006: 2.70 hours of operation 2005: 14.90 hours of operation 2004: 9.10 hours of operation
EU04 - 187 hp Fire pump		No reported operation 2004 - 2006
EU03 - Cooling Tower Date of installation: 1987	Drift Factor = 0.002% (Manufacturer’s data) Circulation Rate = 26,000 gallons/minute	No significant PM emissions for fee purposes; in compliance with Env-A 1400.

The Title V permit specifies the boiler as a 25 megawatt (MW) unit. However, according to PT Tamworth, the boiler is actually rated at 23 MW gross power output. In Condition VIII.B. of the Permit, item #5(a) of Table 5 *Federally Enforceable Operational and Emission Limitations* defines the startup period as the time from “the initiation of wood firing until the unit reaches steady-state operation (85% to 100% load conditions)” which “shall not exceed 8 hours (480 minutes) for a cold startup, nor 4 hours (240 minutes) for a hot startup”. It takes more time to reach 85% to 100% of 25 MW than to reach 85% to 100% of a lower output, say 21 to 22 MW. PT Tamworth argues that it has never operated at an output of 25 MW and cannot generate that output even at maximum heat input to the boiler. PT Tamworth has reported permit deviations to DES for exceeding the maximum 8 hours and 4 hours for a cold and hot startup, respectively. PT Tamworth requested during the FCE if the rating of the boiler could be decreased to a more realistic rating of 21 to 22 MW. The inspector suggested using the maximum heat input to the boiler instead of the electrical output as a means of determining % of load for startup periods. If the turbine is oversized for the steam output of the boiler, then the input is a more realistic indicator of boiler operation and maximum conditions.

Annual emissions for the facility are calculated and submitted by PT Tamworth from CEM data or from the amount of fuel combusted with EPA’s AP-42 Emission Factors or stack test-derived emission factors. The annual emissions for the last 3 years are listed in Table 2 below.

Table 2 - Tons of Emissions per Year

Year	PT	SO ₂	NO _x	CO	VOCs	Total
2006	7.17	11.95	338.57	239.49	4.30	601.47
2005	6.88	11.48	335.08	249.60	4.13	607.17
2004	7.04	11.74	330.51	278.39	4.23	631.92

The Permit also contains short-term emission limits which are listed in Table 3.

Table 3 – CEM data and stack test results

Pollutants	Emission Limits	2005	2006
NO _x (24-hr avg)	107.1 lb/hr	79.61 lb/hr	79.97 lb/hr
NO _x (24-hr avg)	0.265 lb/MMBtu	0.206 lb/MMBtu	0.206 lb/MMBtu
CO (24-hr avg steady state)	202.10 lbs/hr	59.43 lbs/hr	56.88 lbs/hr
CO (24-hr avg steady state)	0.5 lb/MMBtu	0.227 lb/MMBtu	0.172 lb/MMBtu
PM	10.10 lb/hr	1.91 lb/hr (2004 stack test result)	
PM	0.025 lb/MMBtu	0.005 lb/MMBtu (2004 stack test result)	
SO ₂	40tpy	See Table 2.	
VOCs	38.80 lb/hr	No emissions data	
VOCs	0.096 lb/MMBtu	No emissions data	
Opacity (steady state)	15 %	2.65 %	4.52 %

Compliance with some of the limits in Table 3 is determined by CEM and/or periodic stack emissions tests. In some cases, PT Tamworth has reported 24-hour average emissions which exceed the limits in Table 2. Typically, exceedances of lb/MMBtu limits occur during periods when the boiler is in start up mode and boiler oxygen levels are higher than normal. The calculation for lb/MMBtu does not give accurate emissions data in these circumstances which causes the daily average to be erroneously high. Other exceedances of 24-hour average emission limit have been reported to DES as permit deviations. Most were due to CEM malfunctions or infrequent boiler upsets. See the *Full Compliance Evaluation Records Review* attached to this report for specific instances.

CHAPTER ENV-A 700 – Permit Fee System

Part Env-A 704 – Emission-Based Fees

PT Tamworth consistently submits its emissions-based fee payment prior to the due date.

CHAPTER ENV-A 800 - Testing and Monitoring Procedures

Part Env-A 802 – Testing and Monitoring for Stationary Sources

PT Tamworth last conducted compliance stack emissions testing on May 9, 2004 for hydrogen chloride and PM. The emission factor for PM generated from that testing is now being used to calculate PT Tamworth's PM emissions, during the last renewal of the Permit and for annual emissions purposes.

Part Env-A 808 – Continuous Emission Monitoring

PT Tamworth continuously monitors emissions of NO_x, CO, O₂, volumetric stack flowrate and opacity. The facility actually has 2 gaseous pollutant CEM systems. The primary CEM is the newer SICK Maihak multi-component monitoring system which was last certified on June 1, 2007. PT Tamworth also maintains its prior TECO CEM system which serves as a backup, if necessary, for either PT Tamworth or the similar PT Bethlehem facility in Bethlehem, NH.

PT-Tamworth is required to have a minimum data availability of 90% per quarter and 75% per month for its CEM system. PT Tamworth reports this data in its quarterly excess emission reports. Data availability falls within this required range.

See the *Full Compliance Evaluation Records Review* attached to this report for all Relative Accuracy Test Audits (“RATAs”); quarterly Opacity Audits (“OPAs”), Cylinder Gas Audits (“CGAs”) and Relative Accuracy Audits (“RAAs”); 7 Day Drift tests (“7DDs”); and quarterly Excess Emission Reports (“EERs”) submitted by PT Tamworth.

CHAPTER ENV-A 900 - Owner or Operator Recordkeeping and Reporting Obligations

PT Tamworth submits to DES the reports required by the Permit, and a review of its recordkeeping procedures during the onsite FCE indicate that it is maintaining the necessary records of its fuel usage, monitoring and maintenance, and emissions.

The *Full Compliance Evaluation Records Review* is included as an attachment to this report. The attachment lists all the reports that were reviewed in order to complete this compliance evaluation. The attachment includes a determination of each report's timeliness with regard to the required submittal date, and if the report was acceptable in terms of its content.

CHAPTER ENV-A 1200 - Stationary Source Air Pollution

Part Env-A 1204 - Stationary Sources of VOCs

Table 2 of this report shows PT Tamworth's actual VOC emissions. Its VOC emissions are from the incomplete combustion of clean wood and are therefore exempt from the Reasonably Available Control Technology ("RACT") requirements for VOC emissions as defined in Env-A 1204.48 *Applicability Criteria for Miscellaneous and Multicategory Stationary VOC Sources*.

Part Env-A 1211 - Nitrogen Oxides

PT Tamworth is subject to the NO_x RACT requirements of Env-A 1211.03 *Emission Standards for Utility Boilers*. The PSD emission limit for NO_x of 0.265 lb/MMBtu is more stringent than the NO_x RACT limit of 0.33 lb/MMBtu (Env-A 1211.04(d) and Env-A 1211.05(d)(5)) and shall take priority as the most stringent federally enforceable limit

CHAPTER ENV-A 1400 - Regulated Toxic Air Pollutants ("RTAPs")

PT Tamworth's emissions have been evaluated for compliance with Env-A 1400. Emissions from the combustion of untreated wood are exempt. However, RTAPs are emitted from the cooling tower. Water conditioners are added to the cooling tower water and emitted to the ambient air due to drift loss. The water additives include sulfuric acid, Nalco 8305 Corrosion inhibitor and sodium hypochlorite 15%. DES has determined that emissions of these RTAPs are below de minimus levels.

CHAPTER ENV-A 1600 - Fuel Specifications

PT Tamworth has fuel delivery slips from Jesse Cyman, Inc. which show the sulfur content provided by Global Energy.

CHAPTER ENV-A 2000 - Fuel Burning Devices

There were no visible emissions observed from any fuel burning device while onsite at the facility.

IV. Pollution Control Equipment

PT Tamworth has air pollution control equipment, specifically an electrostatic precipitator and a multiclone, for removal of PM from the combustion gases generated by the boiler. The Permit specifies inspections of the equipment components and data monitoring and recording to satisfy the requirements of CAM.

V. Compliance with Federal Requirements

40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. PT-Tamworth is subject to the requirements of this NSPS, which can also apply to similarly-sized units that burn coal, oil and/or natural gas. Specifically, PT Tamworth is subject to the Subpart Db emission limit for PM of 0.1 lb/MMBtu. However, the PSD limit for PM in the Permit is more stringent. In addition, the subpart requires PT Tamworth to maintain daily records of the amount of fuel combusted in the boiler, which is also required by Env-A 900.

40 CFR 64 - Compliance Assurance Monitoring. Tables 6A and 6B of the Permit stipulate the monitoring and recordkeeping requirements to be met by PT Tamworth in order to comply with CAM. Each table lists the parameters (i.e. Indicators) to be monitored including the acceptable indicator range, QA/QC practices and criteria, monitoring frequency, and data to be recorded for the respective pollution control device. For the ESP, the Secondary Voltage reading is Indicator No. 1; and Inspection/Maintenance of the ESP is Indicator No. 2. For the Multiclone, the Pressure Differential across the device is Indicator No. 1; and Inspection/Maintenance is Indicator No. 2. The data listed in the 2 tables is the minimum deemed necessary to provide reasonable assurance that the emissions limits for PM are being continuously achieved.

40 CFR 70.6 (c)(1) Permit Compliance Requirements

PT Tamworth is a permitted Title V source and submits the Annual Compliance Certification and Semiannual Permit Deviation and Monitoring Reports that are required by the Permit and 40 CFR 70.

VI. Compliance and Enforcement Status

The last enforcement action issued to PT Tamworth by DES was the Notice of Proposed Administrative Fine and Hearing No. AF 04-008 on April 8, 2004. DES took enforcement for PT Tamworth's late submittal of Title V Annual Compliance Certifications in 2001 through 2003. All reports submitted in 2004 through the present have been submitted on or prior to the due date.

VII. Conclusion and Recommended Actions

No problems or violations were noted during the onsite FCE and compliance determination. No further action is necessary at this time.



Raymond A. Walters
Compliance Measurement & Data Programs Manager
Air Resources Division

Full Compliance Evaluation Records Review

Facility: Pinetree Power - Tamworth

Date of FCE: September 6, 2007

Reviewer: Raymond Walters

Annual Emission Reports:

Reporting Period	When Rec'd?	Report OK?	In Database?
CY 2006	02/20/07	Yes	Yes
CY 2005	01/30/06	Yes	Yes

Annual Emissions-Based Fee Payments:

Reporting Period	When Rec'd?	In Database?
CY 2006	03/19/07	Yes, in Sonny's spreadsheet
CY 2005	04/23/06	Yes, in Sonny's spreadsheet

TV Annual Compliance Certifications:

Reporting Period	When Rec'd?	Report OK?	In Database?
CY 2006	04/11/07	Rev. submitted 4/25/07	Yes
CY 2005	04/17/06	Yes	Yes

TV Semi-Annual Permit Deviation and Monitoring Reports:

Reporting Period	When Rec'd?	Report OK?	In Database?
Jan-June, 2007	7/31/07	Yes	Yes
July-Dec, 2006	1/24/07	Yes	Yes
Jan-June, 2006	7/19/06	Yes	Yes
July-Dec, 2005	2/1/06	Yes	Yes

Individual Permit Deviations Reports

Date	Duration	When Rec'd?	Report OK, Cause?	In Database?
8/26/07	15 min	8/27/07	Exceeded PSD duration for hot SU	Yes
4/03/07	4 hrs	8/14/07	Exceeded PSD duration for cold SU	Yes
4/03/07	24 hr avg	8/10/07	Exceeded CO limit of 0.5 #/MM	Yes
4/16/07	8:50 hrs	4/17/07	ESP zone #1 offline	Yes
1/06/07	23 hrs	1/08/07	Incorrect stack flowrate readings	Yes
12/02/06	12 min	12/02/06	2 consecutive 6-min opacity > 20%	Yes
11/25/06	9 days	11/28/06	Incorrect stack flowrate readings	Yes
11/21/06	5:35 hrs	11/21/06	Bad CEM calibration and recal.	Yes
11/05/06	13 hrs	11/06/06	CEM malfunction	Yes
3/11/06	36 min	3/12/06	6 consecutive 6-min opacity > 20%	Yes
1/01/06	18 min	1/03/06	3 consecutive 6-min opacity > 20%	Yes
12/27/05	< 24 hrs	12/27/05	CEM malfunction	Yes
12/04/05	30 min	12/05/05	6 consecutive 6-min opacity > 20%	Yes
7/05/05	7 days	7/12/05	Opacity monitor out of commission	Yes

7/07/05	7 hrs	7/07/07	CEM malfunction	Yes
7/05/05	Unknown	7/05/07	CEM malfunction	Yes

Qtr'y CEM Excess Emission Reports:

Reporting Period	When Rec'd?	Report OK?	In Database?
2 nd Qtr 2007	7/18/07	Yes	Yes
1 st Qtr 2007	4/30/07	Yes	Yes
4 th Qtr 2006	1/17/07	Yes	Yes
3 rd Qtr 2006	10/16/06	Yes	Yes
2 nd Qtr 2006	7/19/06	Yes	Yes
1 st Qtr 2006	04/20/06	Yes	Yes
4 th Qtr 2005	01/27/06	Yes	Yes
3 rd Qtr 2005	10/17/05	Yes	Yes
2 nd Qtr 2005	7/18/05	Yes	Yes

CEM Audits (OPAs, Linearity Audits, 7DD):

Reporting Period	Report Type	When Rec'd?	Report OK?	In Database?
2 nd Qtr 2007	7 Day Drift	7/18/07	Yes	Yes
2 nd Qtr 2007	Stack flow transducer check	7/18/07	Yes	Yes
2 nd Qtr 2007	OPA	7/18/07	Yes	Yes
1 st Qtr 2007	Stack flow transducer check	4/30/07	Yes	Yes
1 st Qtr 2007	OPA	4/30/07	Yes	Yes
1 st Qtr 2007	CGA	4/30/07	Yes	Yes
1 st Qtr 2007	RAA	4/30/07	Yes	Yes
4 th Qtr 2006	OPA	1/17/07	Yes	Yes
4 th Qtr 2006	CGA	1/17/07	Yes	Yes
4 th Qtr 2006	RAA	1/17/07	Yes	Yes
3 rd Qtr 2006	OPA	10/16/06	Yes	Yes
3 rd Qtr 2006	CGA	10/16/06	Yes	Yes
3 rd Qtr 2006	RAA	10/16/06	Yes	Yes
2 nd Qtr 2006	7 Day Drift	7/19/06	Yes	Yes
2 nd Qtr 2006	OPA	7/19/06	Yes	Yes
1 st Qtr 2006	OPA	04/20/06	Yes	Yes
1 st Qtr 2006	CGA	04/20/06	Yes	Yes
1 st Qtr 2006	RAA	04/20/06	Yes	Yes
4 th Qtr 2005	OPA	01/27/06	Yes	Yes
4 th Qtr 2005	CGA	01/27/06	Yes	Yes
4 th Qtr 2005	RAA	01/27/06	Yes	Yes
3 rd Qtr 2005	OPA	10/17/05	Yes	Yes
3 rd Qtr 2005	CGA	10/17/05	Yes	Yes
3 rd Qtr 2005	RAA	10/17/05	Yes	Yes
2 nd Qtr 2005	7 Day Drift	7/18/05	Yes	Yes
2 nd Qtr 2005	OPA	7/18/05	Yes	Yes

Other reports:

Reporting Period	Report Type	When Rec'd?	Report OK?	In Database?
3 rd Qtr 2006	Fuel Usage	10/16/06	Yes	Yes

Stack Tests/CEM Certifications/RATAs:

Stack Test Date	Device Tested	When Rec'd?	Report OK?	In Database?
06/04/07	2007 CEM RATA	7/18/07	Yes	Yes
05/11/06	2006 CEM RATA	7/19/07	Yes	Yes
05/22/05	2005 CEM RATA	7/29/05	Yes	Yes

Last revised: May 17, 2005

H:\Compliance Assessment\Forms-Training-Other\Compliance Inspection Forms\FCE Records Review Checklist