OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MEMORANDUM **May 30, 2001**

TO: Dawson Lasseter, P.E., Chief Engineer, Permits Section

THROUGH: Phillip Fielder, P.E., New Source Permits Unit

THROUGH: Peer Review

FROM: Herb Neumann
Regional Office at Tulsa

SUBJECT: Evaluation of Permit Application No. **99-028-C (PSD)(M-1)**
Calpine Oneta Power, L.P.
Oneta Energy Center Modification
NE/4 Section 27, T18N, R15E, Wagoner County, OK
Located on S.H. 51 approximately 1 mile east of Oneta, or from the intersection of Oneta Road (241st E. Ave.) and New Orleans (101st S.)

I. INTRODUCTION

Panda Oneta Power (Panda) received a construction permit for an electric generating station (SIC Code 4911) on January 21, 2000. The proposed construction was to consist of four nominal 170 MW combined cycle gas turbines and four heat recovery steam generators (HRSG) with 200 MMBTUH duct burners (DBs) that were planned to provide steam to drive two nominal 160 MW steam turbines. Total nominal output for the facility was estimated at 1,000 MW.

Calpine has purchased the Panda project and has proposed some changes. In addition to some minor design changes, the current modification request is to increase the duct burners to 328 MMBTUH each and to increase nominal facility output to 1,150 MW. Emission increases exceed Prevention of Significant Deterioration (PSD) significance levels, and this request is a significant modification.

This modification request addresses only the changes. Discussion of changes that do not alter the original permit conditions or conclusions may be found in the original PSD construction permit and associated memorandum.

II. FACILITY DESCRIPTION

The duct burners are expected to fire only natural gas at 328 million BTUH. The HRSG units are expected to operate only when the turbines are at base load and electric power requirements are at a peak. Calpine estimates that these conditions will result in the equivalent of 4,000 hours per year of duct burner operation at full load.

Each turbine and associated duct burner will exhaust through a separate stack. Each of the four stacks is expected to be approximately 142 feet high and 20 feet in diameter. The original design called for a stack height of 120 feet.

Specifications for two eight-cell mechanical draft cooling towers capable of handling approximately 282,000 gpm of recirculation water had not been completed at the time of issue of the original permit. The two towers have now been specified to have nine cells each and to have a flow of 185,375 gpm for each tower. The total dissolved solids content of the recirculation water has also been determined to be 1,000 ppm_W.

The facility layout has changed very slightly to accommodate the increased sizes of the equipment referenced above. Spacing of equipment has no direct effect on the amount of emissions and an immeasurably small effect on downwind effects of the emissions.

III. EMISSIONS

The following table compares original and revised duct burner emission estimates. Note that some emission factors have slight increases, based on new information available as a result of selecting the actual DBs. All other assumptions remain as stated in the original memorandum.

	Original DBs			New DBs			Facility increase
Pollutant	Lb/MMBTU	Lb/hr ea	TPY ea	Lb/MMBTU	Lb/hr ea	TPY ea	TPY
NOx	0.080	16.0	32.0	0.080	26.24	52.48	81.92
SO_2	0.0013	0.26	0.52	0.0013	0.43	0.85	1.33
PM_{10}	0.010	2.0	4.0	0.015	4.92	9.83	23.36
VOC	0.010	2.0	4.0	0.020	6.56	13.12	36.48
CO	0.080	16.0	32.0	0.100	32.80	65.60	134.40
H_2SO_4	0.00015	0.03	0.06	0.00015	0.05	0.10	0.39

An extensive table of speciated HAP and Oklahoma toxic emissions in the original memorandum was largely unaffected by the change in DB size. Only those emissions with a change in the third decimal place of the TPY column (two pounds per year) are shown below. Note that no toxic other than those identified in the original table exceeds its *de minimis*, and those three will be discussed further in the OAC 252:100-41 section below.

Pollutant	HAP	Toxic Cat.	Original lb/hr/DB	New lb/hr/DB	Facility-wide TPY Increase	Facility-wide TPY Total
Dichlorobenzene	Yes	B	0.0002	0.0004	0.001	0.003
Formaldehyde	Yes	A	0.401	0.410	6.880	6.956
Hexane	Yes	C	0.355	0.582	2.837	4.653
Toluene	Yes	C	0.0007	0.0011	0.003	2.306*
Barium	No	B	0.0009	0.0014	0.004	0.011
Cadmium	Yes	A	0.0002	0.0004	0.001	0.033*
Chromium VI	Yes	A	0.0003	0.0005	0.001	0.046*
Copper	No	B	0.0002	0.0003	0.001	0.002
Lead	Yes	NS	0.003	0.005	0.016	0.572*

*The total includes unchanged emissions from the turbines.

Emissions from the new cooling tower design were calculated assuming a drift ratio of 0.003% and total dissolved solids (TDS) of 1,000 ppm. A total flow of 370,750 gpm yields 5.57 lb/hr or 24.39 TPY of PM. This is a decrease of 124 TPY from the estimate in the original permit analysis. Table 4-1 of the Electric Power Research Institute (EPRI) report titled *User's Manual – Cooling Tower Plume Prediction* shows that particulate for their representative cooling tower had no PM_{10}, and that less than ½% of all PM was less than 20μ in size. Although there is no claim that the distribution in their table holds for every tower, it is safe to assume that only a very small fraction of the TSP is PM_{10}. Non-contact cooling towers are considered to be trivial sources, so these calculations are presented only for completeness.

IV. PSD REVIEW

Pollutant	NO_X	CO	SO_2	VOC	PM_{10}	H_2SO_4	Lead	Mercury	Beryllium
Original emissions	1170.61	620.61	42.66	65.31	173.95	5.01	0.16	0.015	0.00002
Increases	81.92	134.40	1.33	36.48	23.36	0.39	0.016	-0-	0.00001
Total emissions	1252.53	755.01	43.99	101.79	197.31	5.40	0.18	0.015	0.00003
Significance	40	100	40	40	15	7	0.6	0.1	0.0004
PSD Review?	Yes	Yes	Yes	Yes	Yes	No	No	No	No

Other pollutants for which PSD significance levels are established are not expected emissions from this type of facility. As this table indicates, PSD review was required for emissions of NO_X, CO, SO_2, VOC and PM_{10}, under the original project, and the proposed modifications do not alter any of the conclusions as to the continued applicability of PSD review. Sources considered were the turbines, HRSGs, emergency generator and fire pump. Each turbine and its associated duct burners were generally considered as a set for this analysis because they operate as a unit. Full PSD review of emissions consisted of the following.

A determination of best available control technology (BACT)
B evaluation of existing air quality
C evaluation of PSD increment consumption

D analysis of compliance with National Ambient Air Quality Standards (NAAQS)
E pre- and post-construction ambient monitoring
F evaluation of source-related impacts on growth, soils, vegetation, visibility
G evaluation of Class I area impact

A Best Available Control Technology (BACT)

The emission units for which a BACT analysis was required and performed in the original analysis include the combustion turbines, duct burners, emergency diesel generator, diesel fire pump and cooling towers. These units are treated in the same order as in the original memorandum.

1. Combustion turbines and duct burners

NO_X BACT Review

The analysis presented in the original memorandum is unchanged, except that the increase in NO_x emissions due to the increased DB size results in different economic calculations for the SCR application. Based on the original date of construction, the cost per ton of NO_X removed reduced of $5,114, site location, and secondary impacts BACT continues to be dry low-NO_X burners for the CTs and low-NO_X burners for the DBs.

CO BACT Review

Catalytic oxidation was dismissed as a possible control technology in the original permit review. The high combustion efficiency of CTs was considered to make further oxidation of CO by catalysts of marginal value and it was asserted that this method is typically used only in non-attainment areas. The BACT proposal was reviewed using the EPA RACT/BACT/LAER Clearinghouse on the EPA web site and using the selection criteria described in the original permit analysis. All but one of the facilities that evaluated CO BACT showed "good combustion" or equivalent language and had emissions ranging between 3.1 and 50 ppmvd at 15% oxygen. Only one facility used oxidation catalysts to achieve an emission rate of 3 ppm, and that facility indicated LAER. Combustion control, with CO emissions of 9 ppmvd as proposed, is equivalent to the requirements for other facilities nationwide. An additional step was taken in the current analysis due to the addition of DB capacity. An economic analysis was performed, assuming 80% control efficiency. This resulted in a CO removal cost of $3,700 per ton. DEQ agrees that the selection of combustion control continues to represent BACT.

PM/PM_{10} BACT Review

Increase in DB capacity does not alter the considerations involved in the determination of combustion control as BACT.

SO_2 BACT Review

Increase in DB capacity does not alter the considerations involved in the determination of the use of low sulfur natural gas (0.5 gr/ 100 DSCF) as BACT.

VOC BACT Review

Increase in DB capacity does not alter the considerations involved in the determination of good combustion practices as BACT.

2. Diesel-fired emergency generator and fire pump

No changes are proposed with respect to this equipment, so re-analysis of BACT in not necessary.

3. Cooling tower

The changes in design criteria proposed have no effect on the original analysis; no changes from the original BACT are necessary.

B Air Quality Impacts

Air quality impact analyses were conducted again to determine if ambient impacts would result in a radius of impact being defined for the facility for each pollutant. Increasing stack heights had a marked effect on these analyses.

Modeling Methodology

Preliminary screening was conducted as described in the original permit analysis. Each of the 14 operating cases identified in Section III (Emissions) above was modeled to determine which case yielded the maximum long term or short-term effect. All but one maximum effects were found to occur in the same operating case as in the original analysis. The exception is for the maximum short-term effect for PM_{10}, which was achieved at 100% load at 98°F with DBs and coolers operating. Note that the modeling used in the original analysis and the modeling used here include all PM emissions from the cooling towers as if all PM could be considered to be PM_{10}. This conservatively high assumption yielded some results that forced consideration of increment consumption and NAAQS compliance in the original analysis. While the current modification adds 24 TPY of PM_{10} at the DBs, the recalculation of the cooling tower emissions results in a decrease of 124 TPY there, more than offsetting the increase due to the DBs. In every other respect, modeling for this modification is performed using methods consistent with the original analysis.

Model Stack Parameters

Stack parameters for turbines used in the modeling analysis include stack height of 43.3 meters, diameter of 6.10 m, and temperature of 355°K. Emission rates and exhaust velocities depend on the case under consideration.

Case	Pollutant	Rate (g/s)	Velocity (m/s)
Long term	NO_2	42.96	15.6
Short term	CO	29.60	14.4
Long term	SO_2	1.48	15.6
Short term	SO_2	1.28	14.4
Long term	PM_{10}	7.0	15.6
Short term	PM_{10}	7.0	14.4

Note that the model used NO_2, but results were adjusted to NO_X by applying an EPA-approved factor of 75%.

Modeling Results

Significance Level Comparisons

Pollutant	Averaging Period	Year	Modeled Concentrations (ug/m^3)	Significance Level (ug/m^3)	Radius of Impact (km)
NO_2	annual	1988	0.86	1	N/A
SO_2	annual	1988	0.04	1	N/A
	24-hour	1990	1.08	5	N/A
	3-hour	1988	3.27	25	N/A
CO	8-hour	1988	47.4	500	N/A
	1-hour	1988	125.9	2000	N/A
PM_{10}	annual	1988	0.22	1	N/A
	24-hour	1990	5.90	5	0.27

The modeling indicates facility emissions will result in ambient concentrations below the significance levels for all but the 24-hour PM_{10} standard. Therefore, additional modeling for increment consumption and NAAQS compliance is required.

C Increment Consumption

Methodology and considerations affecting this analysis are unchanged from the original memorandum. The following abbreviated table compares model results with Class II increments as a worst case. The PM_{10} maximum occurred in 1990.

Pollutant and Averaging Period	Maximum Concentration ($\mu g/m^3$)	Increment Standard ($\mu g/m^3$)
PM_{10} 24-hour	1.14	30

D NAAQS Modeling

Due to the 1997 revision of the NAAQS, PM_{10} is modeled with a combined 5-year meteorological data file and the 24-hour highest-second-high value over the period 1996-97 is compared to the standard. This procedure exceeds the guidance issued by William Hunt of the EPA in a letter dated March 17, 1998.

Pollutant and Averaging Period	Max. Conc. ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
PM_{10} 24-hour	1.14	77	78.1	150

E Ambient Monitoring

Maximum ambient impacts of the source and the monitoring exemption levels are shown below.

Comparison of Modeled Impacts to Monitoring Exemption Levels

	Monitoring Exemption Levels		Ambient Impacts
Pollutant	$\mu g/m^3$	Averaging Time	$\mu g/m^3$
NO_2	14	annual	0.86
SO_2	13	24-hour	1.08
CO	575	8-hour	47.4
PM_{10}	10	24-hour	5.90
VOC	100 TPY of VOC		102 TPY

The predicted maximum ground-level concentrations of pollutants by air dispersion models have demonstrated that the ambient impacts of the facility are below the monitoring exemption levels for all pollutants but VOC. Neither pre-construction nor post-construction ambient monitoring will be required for NO_2, SO_2, CO, or PM_{10}. Note that total expected emissions of VOC exceed the exemption level. Applicant participated in a study performed by Environ in response to a requirement of the original permit. This study, forwarded to DEQ on April 20, 2000, indicated that proposed new Oklahoma sources, including the Oneta project, would contribute less than 1 part per billion to future peak one-hour ozone concentrations in the Tulsa area. Data supporting this claim are found on pages ES-7 and 8 of the report. This study did not include possible future controls and resulted in conservatively high estimates of ozone concentrations.

Since the current modification increases both VOC and NOx emissions, it was determined to add further support to the idea that additional ozone impact is likely to be nearly undetectable. The Oneta plant is in a largely rural area (Wagoner County), unaffected by the ozone problems plaguing certain portions of Oklahoma. The closest ozone monitor is in Glenpool (Tulsa County), approximately 18 miles to the west. Per the Environ study, both sites are in the "tongue" of ozone pollution stretching north from the Muskogee area, but the rural Oneta area can be safely modeled using the conservatively higher data one expects from the Glenpool site. Applicant has collected quality-assured data from the DEQ-operated ozone monitor in Glenpool, Oklahoma, in lieu of pre- and post-construction monitoring. The fourth-high reading from the data sets was 0.105 ppm, which converts to 206.1 $\mu g/m^3$ for ease in comparison to Scheffe table results. Similarly, the 0.12 ppm standard converts to 235 $\mu g/m^3$, and the three-decimal value of 0.124, beyond which an exceedance occurs, converts to 243.3 $\mu g/m^3$. The Scheffe ozone impact screening method uses the

ratio of annual emissions of NO_X to those of VOC. This value is entered into rural and urban tables that give values of the expected ozone increment in each case. In the present instance, these ozone increment values are 27.5 and 21.8 $\mu g/m^3$, respectively. Adding these results to the fourth-high value stated earlier yields 233.6 $\mu g/m^3$ for the rural value and 227.9 $\mu g/m^3$ for the urban value. Both of these are less than either the NAAQS standard or the "exceedance" value. Pre- and post-construction monitoring is not required.

F Additional Impacts Analyses

Addition of DB capacity has no effect on the original analysis.

G Class I Area Impact Analysis

Visibility

The visibility screening performed in the original analysis showed a Delta E at 3% of the threshold and a Contrast less than 2% of the threshold for the Upper Buffalo Wilderness Area, with even lower readings for the Caney Creek Wilderness Area. The relatively small increases in emissions expected in this request (13% PM, 7% NO_X, 8% H_2SO_4) should cause no measurable changes in either of the values listed.

Class I Increment Consumption

As noted in Subsection C above, the combination of proposed modifications indicated that only significance level is exceeded under the modified design, that being the 24-hour PM10 standard. Even the amount of the exceedance has been greatly reduced, with an impact only 1/5 of that shown in the earlier analysis. The greatly reduced results of the Class I impact analysis are shown below.

Pollutant and Averaging Period	Maximum Concentration ($\mu g/m^3$)	Date of Occurrence	Increment Standard ($\mu g/m^3$)
PM_{10} 24-hour	0.03	1987	8

V. OKLAHOMA AIR POLLUTION CONTROL RULES

Only those Subchapters affected by the additions are listed and discussed.

OAC 252:100-4 (New Source Performance Standards) [Applicable]

Federal regulations in 40 CFR Part 60 are incorporated by reference as they exist on July 1, 1997, except for the following: Subpart A (Sections 60.4, 60.9, 60.10, and 60.16), Subpart B, Subpart C, Subpart Ca, Subpart Cb, Subpart Cc, Subpart Cd, Subpart AAA, and Appendix G. This facility was subject to Subparts GG and Db, but the increase in DB capacity has made the HRSGs subject to Da instead of Db. A discussion of these Subparts may be found under "Federal Rules" below.

OAC 252:100-41 (Hazardous and Toxic Air Contaminants) [Applicable]

Part 5 is a **state-only** requirement governing toxic air contaminants. Of the three chemicals listed in the original permit analysis as exceeding their respective *de minimis* thresholds, only formaldehyde has increased emissions due to this proposed modification. It has increased from 6.88 TPY in the original to 6.96 TPY in the current analysis, showing a ground level concentration increasing from 0.411 to 0.415 $\mu g/m^3$, still well below the MAAC of 12 $\mu g/m^3$.

VI. FEDERAL REGULATIONS

PSD, 40 CFR Part 52 [Applicable]
The facility qualifies as a major stationary source because it emits more than 250 TPY of a regulated pollutant and is, furthermore, one of those listed as attaining major status at the level of 100 TPY. PSD review has been completed in Section IV.

NSPS, 40 CFR Part 60 [Subpart Da now Applicable]
Subpart Db affects industrial-commercial-institutional steam generating units with a design capacity greater than 100 MMBTUH heat input and which commenced construction or modification after June 9, 1989. The original project fit the definition of "combined cycle system" and the HRSG units fit the definition of "steam generating unit" as each is found in 40 CFR 60.41b, so the duct burners were subject to Db. Increasing the design capacity of the DBs to 328 MMBTUH causes them to become subject to Da instead of Db.

Subpart Da affects electric steam generating units with a design capacity greater than 250 MMBTUH constructed after September 18, 1978. Combined cycle gas turbines with such capacity are affected sources only if fuel combustion in the heat recovery unit exceeds the 250 MMBTUH level. The DBs add 328 MMBTUH in the HRSG, so this facility is subject to Da. Emission standards include PM not to exceed 0.03 lb/MMBTU, and SO_2 and NO_X not to exceed 0.20 lb/MMBTU. Further, NO_X emissions are required to demonstrate a 25% reduction of the potential combustion concentration, however, 40 CFR 60.46a(b) allows compliance with the 0.20 lb/MMBTU standard to be used as a demonstration of compliance with the 25% reduction standard. Compliance with the NO_X standards is to be demonstrated on a 30-day rolling average. Finally, there is an opacity limit of 20% during any six-minute averaging period, except for one period per hour during which opacity may not exceed 27%. These standards apply at all times except during periods of startup, shutdown, and malfunction.

Compliance provisions and demonstration methods are described fully in §§60.46a and 60.48a. Note that both NO_X and SO_X require averaging over a 30-day period. This can be accomplished using the CEMs installed for Title IV compliance. The particular case of 30-day averaging for SO_2 is further elucidated in §60.48a(c), where reliance on Reference Method 19 is allowed. Paragraph 1.2.5 of RM 19 allows fuel sampling to satisfy the SO_X requirement, much as allowed in NSPS Subpart GG for turbines.
Continuous emission monitoring systems are required for oxides of nitrogen and oxygen or carbon dioxide per §60.47a(c) and (d). Continuous monitoring for particulate, opacity, and sulfur dioxide is not necessary for units fueled by natural gas.

CAM, 40 CFR Part 64 [Not Applicable]

The proposed modifications do not alter the discussion or conclusions found in the original analysis.

VII. COMPLIANCE

Tier Classification and Public Review

The applicant published the "Notice of Filing a Tier II Application" in the *Coweta American* and in the *Broken Arrow Ledger* on December 20, 2000. The notice stated that the application was available for public review at the Coweta Public Library in Coweta, Oklahoma, and at the DEQ Regional Office at Tulsa. The applicant published the "Notice of Draft Permit" in the *Coweta American* and in the *Broken Arrow Ledger* on February 7, 2001. The notice stated that the draft permit was available for public review for a period of 30 days at the Coweta Public Library in Coweta, Oklahoma, and at the DEQ Regional Office at Tulsa. A public meeting was held on Monday, March 12, 2001 at the Coweta Public Library. No technical objections were raised, and several requests for information were to be satisfied by the applicant. Information on all permit actions is available for review by the public in the Air Quality section of the DEQ web page at *http://www.deq.state.ok.us.*

The applicant has submitted an affidavit that they are not seeking a permit for land use or for any operation upon land owned by others without their knowledge. The affidavit certifies that the applicant owns the real property.

Comments

No comments were received from the public during the 30-day period described above. Applicant had three comments, identified below as "Q" and followed by DEQ's response, identified as "A."

Q1. The TPY limitations in Specific Condition 1 for SO_2 and VOC differ slightly from the emissions detailed in the permit application. This may be due to a slight round off difference.

A1. Correct. DEQ carries results to two decimal places, ignoring significant digits. Decimals are carried through all steps.

Q2. Specific Condition 7 notes that the duct burners are subjected to all applicable federal New Source Performance Standards, under 40 CFR 60, Subpart Da. Due to impractibility, the permittee requests a waiver of 40 CFR 60.47a(c), (k), and (l). These requirements require continuous monitoring and record keeping of NO_X, megawatt output, and exhaust gas flow for the duct burners. Because the combustion turbine and duct burners exhausts are co-mingled, the permittee requests this waiver because it is impracticable to continuously monitor and record NO_X, megawatt output, and exhaust flow rate for the duct burners separate from the combined combustion turbine/duct burner exhaust stream. The HRSG stack will be equipped with a NO_X /O_2 CEMS meeting 40 CFR Part 75 requirements making continuous monitoring of exhaust flow rate unnecessary.

A2. EPA has addressed the difficulties involved in performance tests at combined cycle plants for both Subpart Da and Subpart Db. In this instance, the revised sections of Da become effective June 11, 2001. The subheadings listed in Specific Condition No.7 have been deleted and only the generic requirement to comply with 40 CFR 60 Subpart Db remains.

Q3. The permittee requests the following custom fuel-monitoring schedule pursuant to 40 CFR 75 Appendix D for natural gas. This custom fuel-monitoring schedule is to be used in lieu of the daily sampling requirements of 40 CFR 60.334(b)(2).

- The permittee shall apply for an Acid Rain permit within the deadlines specified in 40 CFR 72.30.
- The permittee shall submit certification from the Designated Representative that commits to exclusive use of pipeline supplied natural gas 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.
- This custom fuel-monitoring schedule will only be valid for pipeline supplied natural gas. If the fuel for these units is changed to a higher sulfur fuel, SO_2 emissions will be accounted for as required pursuant to 40 CFR 75.11(d).
- Monitoring of nitrogen content is not required.

A3. EPA has issued guidance to the effect that compliance requirements for Acid Rain are more stringent than those of NSPS, so that compliance with the alternative methods outlined above satisfies the requirements of the referenced paragraph cited from Subpart GG. Specific Condition No.6 has been modified accordingly.

Fees Paid
Construction permit modification fee of $2,000.

VIII. SUMMARY

The applicant has demonstrated the ability to comply with all applicable air quality rules and regulations. Ambient air quality standards are not threatened at this site. A Notice of Violation was issued for this facility during the Public Comment period. That action has been dropped and the permit may now be issued. There are no other active compliance or enforcement Air Quality issues concerning this facility. Issuance of the permit is recommended.

PERMIT TO CONSTRUCT
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS

Calpine Oneta Power **Permit Number 99-028-C (PSD)(M-1)**
Oneta Energy Center Modifications

The permittee was authorized to construct in Permit Number 99-028-C (PSD), issued January 21, 2000. This modification authorizes construction of modifications in conformity with the specifications submitted to Air Quality on November 20, 2000. The Evaluation Memorandum dated May 30, 2001 explains the derivation of applicable permit requirements and estimates of emissions; however, it does not contain operating limitations or permit requirements. Only those Specific Conditions from the original permit that have been changed are listed below, using the same numbering convention as in the original permit. Commencing construction or operations under this permit constitutes acceptance of, and consent to, the conditions contained herein.

1. Points of emissions and emissions limitations for each point follow.

Each HRSG Duct Burner Set		
Pollutant	lb/hr	TPY
NO_X	26.24	52.48
SO_2	0.43	0.85
PM_{10}	4.92	9.83
VOC	6.56	13.12
CO	32.80	65.60
H_2SO_4	0.05	0.10

Combustion turbine emissions are unchanged

There is only one change in the toxic emissions for the entire facility. Formaldehyde is now authorized at 1.64 pounds per hour and 6.96 TPY. All other toxics continue as listed in the original permit.

2. Compliance with the modified authorized emission limits of Specific Condition No. 1 shall be demonstrated by fuel usage and initial performance testing designed to satisfy the requirements of Federal NSPS and to confirm the manufacturer-guaranteed emission factors. Total usage of 5,248,000 MMBTU per year of commercial-grade natural gas is authorized for all duct burners.

6. The turbines are subject to federal New Source Performance Standards, 40 CFR 60, Subpart GG, and shall comply with all applicable requirements.

a. 60.332: Standard for nitrogen oxides
b. 60.333: Standard for sulfur dioxide
c. 60.334: Monitoring of operations, in accordance with alternative methods identified in 40 CFR 75.
d. 60.335: Test methods and procedures

7. The duct burners are subject to federal New Source Performance Standards, 40 CFR 60, Subpart Da, and shall comply with all applicable requirements.

17. All conditions from the original permit not specifically listed or amended here remain in full force and effect.

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PERMIT

AIR QUALITY DIVISION
STATE OF OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
707 NORTH ROBINSON, SUITE 4100
P.O. BOX 1677
OKLAHOMA CITY, OKLAHOMA 73101-1677

Date _____ **Permit No. 99-028-C (PSD)(M-1)**

Calpine Oneta Power, L.P.,

having complied with the requirements of the law, is hereby granted permission to construct four gas turbines and associated heat recovery steam generators and two steam turbines, all for electrical generation at the Oneta Energy Center in Coweta, Wagoner County, Oklahoma, according to the modifications submitted subsequent to issuance of the original permit

subject to the following conditions, attached:

[X] Standard Conditions dated May 1, 2000

[X] Standard Conditions for EPA New Source Performance Standards

[X] Specific Conditions

_____Director, Air Quality

DEQ Form 885
Revised 7/93

, 2001

Diana Knox, Senior V.P.
Calpine Oneta Power, L.P.
700 Louisiana Street, Suite 2700
Houston, TX 77002

Re: PSD Construction Permit No. **99-028-C (PSD)(M-1)**
Calpine Oneta Energy Center
Equipment and Design Modifications

Dear Ms. Knox:

Air Quality Division has completed the initial review of your permit application referenced above. This application has been determined to be a **Tier II**. In accordance with 27A O.S. § 2-14-302 and OAC 252:002-31, the enclosed draft permit is now ready for public review. The requirements for public review include the following steps that you must accomplish.

1. Publish at least one legal notice (one day) in at least one newspaper of general circulation within the county where the facility is located. (Instructions enclosed)

2. Provide for public review (for a period of 30 days following the date of the newspaper announcement) a copy of this draft permit and a copy of the application at a convenient location **within the county** of the facility.

3. Send to AQD a copy of the proof of publication notice from Item #1 above together with any additional comments or requested changes that you may have on the draft permit.

Thank you for your cooperation. If you have any questions, please refer to the permit number above and contact this office at (918) 461-7400.

Sincerely,

Herb Neumann
AIR QUALITY DIVISION

Encl.

copy: Keith Glynn
Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street
Gainesville, FL 32606

Diana Knox, Senior V.P.
Calpine Oneta Power, L.P.
700 Louisiana Street, Suite 2700
Houston, TX 77002

Re: PSD Construction Permit No. **99-028-C (PSD)(M-1)**
Calpine Oneta Energy Center
Equipment and Design Modifications

Dear Ms. Knox:

Enclosed is the permit authorizing construction modifications for the referenced facility. Please note that this permit is issued subject to certain standard and specific conditions that are attached. We should receive your application for a Title V Operating Permit within 180 days of the completion of construction or of the date of first operation of the new equipment.

Thank you for your cooperation in this matter. If we may be of further service, please contact our office at (918) 461-7400. Air Quality personnel are located at 5051 S. 129 E. Avenue, Tulsa. Our **mailing** address is Regional Office at Tulsa, 5051-A S. 129 E. Avenue, Tulsa 74134.

Sincerely,

Herb Neumann
AIR QUALITY DIVISION

Encl.

copy: Keith Glynn
Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street
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