URS

DOCKET	
09-AFC-1	
DATE	MAY 25 2010
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May 25, 2010

Dockets Unit
California Energy Commission
1516 Ninth Street, MS 4
Sacramento, CA 95814-5512

Re: Watson Cogeneration Steam and Electric Reliability Project
Application for Certification 09-AFC-1

On behalf of Watson Cogeneration Company, the applicant for the above-referenced Watson Cogeneration Steam and Electric Reliability Project, we are pleased to submit the following:

- Responses to Questions from South Coast Air Quality Management District (SCAQMD).

These responses were submitted via email to SCAQMD on May 21, 2010.

This document is being submitted to the CEC for docketing.

Sincerely,
URS Corporation

C Kyle-Fischer

Cindy Kyle-Fischer
Project Manager

Enclosure

cc: Proof of Service List

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RESPONSES TO QUESTIONS FROM SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

APPLICATION FOR CERTIFICATION (09-AFC-1)

for Watson Cogeneration Steam and Electric Reliability Project

May 21, 2010

Submitted by:
Watson Cogeneration Company
22850 South Wilmington Avenue
Carson, CA 90745

Question: For each commissioning activity please provide hourly emissions rates of criteria pollutants (NOx, SOx, CO, PM10, and ROG). In particular, we need to determine the emissions rates over the first month of normal operation. This month could include the final commissioning activity, then a cogen startup, followed by normal full load operation. Again, please compile hourly emissions rates for each commissioning activity, especially for the final activity as the unit is transitioned to normal operation.

Answer: There are several scenarios that are possible during commissioning, which are expected to result in NO_x, CO, VOC, and $PM_{10}/_{2.5}$ emissions that are greater than during normal operations. (During commissioning, SO_2 emissions are expected to be no greater than full load operations.) Typically, these commissioning activities occur prior to the installation of the abatement equipment, e.g., SCR and oxidation catalyst, while the combustion turbines are being tuned to achieve optimum performance. During combustion turbine tuning, NO_x and CO emission control systems would not be functioning.

For the purposes of air quality modeling, NO_2, CO, and $PM_{10}/_{25}$ effects could be higher during commissioning than under other operating conditions already evaluated. The commissioning activities for the combustion turbine are expected to consist of several phases. Though precise emission values during the phases of commissioning cannot be provided, given the consideration for contingencies during shakedown, the worst case short-term emissions profile during expected commissioning-period operating loads are summarized in Table 5.2-21, Estimated Maximum Hourly Emissions Rates.

Table 5.2-21
Estimated Maximum Hourly Emissions Rates During Commissioning

		NO_X	**CO**	**VOC**	**PM_{10}**	**SO_x**
Emission Rate	lb/hr	211	255	5	12	4

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2008.
Note:
CO = carbon monoxide
lb/hr = pounds per hour
NO_x = nitrogen oxide
PM_{10} = sub 10-micron particulate matter
SO_x = sulfur oxide
VOC = volatile organic compounds

The new combustion turbine's commissioning period (prior to SCR and CO catalyst loading), with an estimated duration of 550 operating hours total, is expected to consist of the following processes and time periods as delineated in Table 5.2-22 with emissions for each stage listed in Table 5.2-23.

Table 5.2-22
Commissioning Schedule

Stage	Activities	Emissions Controls	Duration (time, hrs)
1	1) Combustion turbine first fire 2) Combustion turbine no load testing 3) HRSG boil out	DLN: None SCR/CO: None/None	100 hrs
2	1) Steam blow 2) Combustion turbine no load operation	DLN: None SCR/CO: None/None	50 hrs
3	1) Combustion turbine generator load testing 2) HRSG steam production	DLN: None SCR/CO: None/None	100 hrs
4	1) Combustion turbine DLN combustor tuning 2) Combustion turbine control system tuning	DLN: Partial SCR/CO: None/None	150 hrs
5	1) SCR catalyst installation 2) Ammonia Injection/SCR tuning 3) CO catalyst installation	DLN: Full SCR/CO: Partial/Partial	100 hrs
6	1) Emissions control final tuning 2) Peak testing 3) Duct Burner testing	DLN: Full SCR/CO: Full/Full	50 hrs

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2008.
Note:
CO = carbon monoxide
DLN = Dry Low NO_x
HRSG = heat recovery steam generator
SCR = Selective Catalytic Reduction

Table 5.2-23
Estimated Emissions During Commissioning (Tons)

	Duration (hours)	NO_X	CO	VOC	PM_{10}	SO_x
Stage 1	100	3.1	4.3	0.6	0.3	0.1
Stage 2	50	1.0	1.4	0.2	0.1	0.1
Stage 3	100	5.8	5.4	0.1	0.3	0.1
Stage 4	150	7.2	7.8	0.2	0.4	0.2
Stage 5	100	2.6	4.2	0.1	0.3	0.1
Stage 6	50	0.3	0.6	0.1	0.3	0.1

Based on Table 5.2-23, the emissions during the 550 hours of commissioning activities are expected to be as follows:

- NO_x - 20.0 tons
- CO - 23.6 tons
- VOC - 1.4 tons
- TSP, $PM_{10/2.5}$ - 1.6 tons
- SO_x - 0.6 tons

The maximum monthly emissions during the commissioning process are expected to occur during the second month of commissioning where Stages 3 and part of 4 will occur. The commissioning period during this month will consist of approximately 200 hours of run time without or partial use of dry low NOx controls and without the use of SCR or a CO catalyst. The schedule is based on 5 day periods, up to 50 hours per period with 4 startups/shutdowns per 50 hour period. The startup emissions assume one (1) cold start and three (3) warm starts per 50 hour period. Based on a 200 hour commissioning month, Table 5.2-24 lists the emissions during the worst-case commissioning period.

Table 5.2-24
Estimated Maximum Monthly Emissions Rates During Commissioning

		NO_X	**CO**	**VOC**	**PM_{10}**	**SO_x**
Emission Rate	lb/month	20,600	21,200	1,700*	1,134	466.0

* VOC worst case commissioning period occurs for Stages 1, 2, and part of 3.

The commission activity is expected to be finalized during month three (3) where during the final month, up to 150 hours of commission activities will occur. The remainder of the month was assumed to have the turbine and duct burner operational for 171 hours (including one cold start and one shutdown) with the fifth train in full compliance with the permitted limits. Table 5.2-25 summarizes the emissions during the final month of commissioning.

Table 5.2-25
Estimated Maximum Monthly Emissions Rates During Commissioning

		NO_X	**CO**	**VOC**	**PM_{10}**	**SO_x**
Emission Rate	lb/month	7,705.1	12,067.4	1,102.1	2,897.9	1560.6

Question: We need to know the basis for the 240 lbs PM10/day, calculated for the fifth train. I believe this is from manufacturer data (GE and John Zink). Please provide details regarding how this emissions rate was calculated (e.g. emissions factors, source testing data, etc..).

Answer: The basis for the 240 lbs PM10/day calculated for the fifth train is based upon manufacturer data (GE and John Zink). The PM emissions were based on the GE guarantee of 5.0 lb/hr for the 7EA turbine. The PM emissions from the John Zink burners were based on the guarantee of 0.010 lbs/MMBtu (HHV), where after adjusting for the heat balance condition of 36 degrees F, and using a heat rate of 447.9 MMBtu/hr along with a 10 percent margin, the emissions from the HRSG is 4.927 lb/hr. Combining this with the turbine produces approximately 9.93 lb/hr, which was rounded to 10.0 lb/hr. When multiplied by 24 hours per day, this produces the 240 lbs PM10/day listed in the application. The turbine and duct burner emission factors are presented in Appendix I-A (Emissions Support Data) of the application.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
FOR THE *WATSON COGENERATION STEAM AND ELECTRICITY RELIABILITY PROJECT*

Docket No. 09-AFC-1

PROOF OF SERVICE LIST
(Revised 2/8/10)

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DECLARATION OF SERVICE

I, Cindy Kyle-Fischer, declare that on May 25, 2010, I served and filed copies of the attached *Responses to Questions from South Coast Air Quality Management District (SCAQMD)*, dated May 21, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[www.energy.ca.gov/sitingcases/watson]**.

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

_X_ sent electronically to all email addresses on the Proof of Service list

_X_ by personal delivery or by depositing in the United States mail at Denver, Colorado with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_X_ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

____depositing in the mail an original and ___ paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-1
1516 Ninth Street, MS-4
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docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Cindy Kyle-Fischer