NewGen Power

2013

SEMP Annual Compliance Report – NEWGEN POWER KWINANA

Stack Emissions Monitoring Plan

Compliance Report

January 2014

NewGen Power Kwinana Power Station Project

320 MW GAS FIRED COMBINED CYCLE GAS TURBINE

- SEMP ANNUAL COMPLIANCE REPORT
- January 2014

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Document version control

Revision	Date Issued	Reviewed by	Approved by	Date Approved	Revision Type
1					Issue

Distribution of copies

Revision	Copy no	Quantity	Issued to
Rev. 1			
Rev. 1			
Rev. 1			
Rev. 1			
Rev. 1			

Printed:	January 2014
Last saved:	16/1/2014
File name:	SEMP Compliance Annual Report 2013 V1.0
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Project manager:	Hayden Henderson
Name of document:	SEMP Compliance Report November 2013
Document version:	1.0

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1.0 Executive Summary

NewGen has made significant efforts to comply with the requirements of the Stack Emissions Monitoring Plan (SEMP). The following is a summary of the key points in the SEMP annual compliance report;

- ECS has completed both of the biannual emissions tests.
- Newgen has replaced the CEMS system with a more accurate Predictive Emissions Monitoring System for which ECS have completed RATA testing. This will come into effect for the 2014 reporting period.
- SEMP reviewed 2/5/13, no changes have been made.

1.1 Key Recommendations / Future Work

No VOCs have been detected in the exhaust emissions. This is to be expected as the power station is fuelled by natural gas and VOCs are generally emitted by engines running on liquid fuels. Further testing for VOCs in the exhaust would also yield nil detection whenever the plant is fuelled by natural gas. It is therefore recommended that the requirement for routine testing for VOCs be removed from the SEMP.

2.0 SEMP Conditions

This report demonstrates compliance with the requirements as set out in NewGen Power Kwinana Stack Emissions Monitoring Plan (SEMP) as agreed with by the Office of Environmental Protection Authority and NewGen Power Kwinana.

This annual SEMP Compliance Report is produced internally by NewGen Power Kwinana and covers the period from the 10th October 2012, the license anniversary date, to 10th October 2013.

The SEMP compliance conditions are detailed in section 13 of the SEMP and are summarized below.

Ref #	Timing / Phase	Key Management Action	OEPA Reporting / Evidence	Status
SEMP1	Post - Commissioning	Monitor exhaust emissions from the exhaust stack as specified in SEMP s7.1	Result submitted to OEPA in post commissioning compliance report.	Results submitted in this annual report.
SEMP2	Ongoing	Monitor NOx emissions from the exhaust stack as specified in SEMP s7.1	NOx continually monitored and recorded can be submitted on request.	Results submitted in this annual report.

SEMP3	Ongoing	Monitor power plant parameters as specified in s7.2	Summarise performance in annual report, logged data available on request.	Results submitted in this annual report.
SEMP4	Ongoing	Monitor and respond to community complaints, record actions as specified in s7.3	Summarise performance in annual report, logged data available on request.	Results submitted in this annual report.
SEMP5	Annual	Monitor carbon monoxide, VOCs and other stack parameters as specified in s7.1	Summarise performance in annual report, logged data available on request.	Results submitted in this annual report.
SEMP6	Annual	Prepare annual compliance report.	Analyse monitoring results, submit to OEPA with annual report.	Results submitted in this annual report.
SEMP7	Ongoing	Preventative maintenance	Complete maintenance log, logged data available on request.	Results submitted in this annual report.

2.1 SEMP 1

Sampling and analysis of air pollutants was undertaken by Environmental Consultancy Solutions (ECS) to determine the emission parameters as outlined in below. The sampling and analysis of the specified air pollutants occurred in May and November 2013.

On 22/9/13 from 1000-1100 the average NOx emitted from the stack was recorded at 74mg/m3 the limit for this period was 64mg/m3.

The results of these tests were as follows:

May 2013

	Parameter to be monitored						
	Flow Rate	Carbon Dioxide	Oxygen	Moisture	NOx	Plant Load	Exit Gas Temp.
Date	28 May	28 May	28 May	28 May	28 May	28 May	28 May
Analysis Method	AS4323.1 USEPA Method 2	USEPA Method 3A	USEPA Method 3A	USEPA Method 4	USEPA Method 7E	NA	NA
Result1	18502	4.6	12.9	7.0	44	315	90

Result2	22578	3.5	15.0	5.5	43	232	98
Result3	19072	3.1	15.5	6.6	47	155	98
Units	m^3/s @ STP dry	% v/v dry	% v/v dry	% H_2O	Mg/dcsm @ 15%	MW	°C
Company	ECS Stack	ECS Stack	ECS Stack	ECS Stack	ECS Stack	ECS Stack	ECS Stack
NATA Accd.	Current	Current	Current	Current	Current	Current	Current

November 2013

	Parameter to be monitored						
	Flow Rate	Carbon Dioxide	Oxygen	Moisture	NOx	Plant Load	Exit Gas Temp.
Date	26 Nov	26 Nov	26 Nov	26 Nov	26 Nov	26 Nov	26 Nov
Analysis Method	AS4323.1 USEPA Method 2	USEPA Method 3A	USEPA Method 3A	USEPA Method 4	USEPA Method 7E	NA	NA
Result1	22532	4.8	13.1	5.5	50	307	90
Result2	22083	3.8	15.2	5.5	52	236	108
Result3	19664	3.5	15.7	5.5	31	155	103
Units	m^3/s @ STP dry	% v/v dry	% v/v dry	% H_2O	Mg/dcsm @ 15%	MW	°C
Company	ECS Stack	ECS Stack	ECS Stack	ECS Stack	ECS Stack	ECS Stack	ECS Stack
NATA Accd.	Current	Current	Current	Current	Current	Current	Current

The 236MW limit of 51mg/m3 was exceeded by 1 mg/m3. Relative accuracy testing allows for 20% plus or minus for NOx emissions to any recorded result. Considering the uncertainty of the test method an exceedence of 1mg/m3 is not considered significant.

The following table described the operational emission constraints as specified in SEMP.

Parameter	Operational Condition [1]	Emission Limit [2,3]	Averaging Period
NO_x	Duct firing	31 ppmv or 64 mg/Nm^3	1 hour
	Without duct firing	25 ppmv or 51 mg/Nm^3	1 hour
CO	All	50 ppmv or 63 mg/Nm^3	1 hour
VOCs	All	10 ppmv or 20 mg/Nm^3	1 hour

Note: [1] Excluding start-up and shutdown
[2] Corrected to 15% O_2 basis
[3] mg/Nm^3, corrected to 101.3 kPa, 273 K, average.

2.2 SEMP 2

When the facility commenced commercial operation an operational license was obtained from the Kwinana office of the DEC. The following emissions limits were associated with this operational license.

Operating Condition	Facility Nominal Output (MW)	Target NOx (ppmvd @ 15% O_2)
Baseload	241 – 320	≤ 34
Medium Load	156 - 240	≤ 30
Low Load	< 156	≤ 70

These higher targets were provided by the DEC to account for instrumentation variability in the measurement of the NOx concentration. For the purpose of CEMS measurements above target these limits shall be used.

NOx emissions are monitored continuously using the NewGen Continuous Emissions Monitoring System (CEMS). An additional CEMS analyser has been installed in parallel to the SICK analyser at newgen to ensure 100% availability for the CEMS. Therefore availability for the 2013 reporting period is 100%.

2.3 SEMP3

NewGen Power Kwinana employs two operators to monitor power station operational parameters in accordance with the Alstom 'Operation and Maintenance' manuals. At all times, one operator is at the panel monitoring the operational condition of the power station.

2.4 SEMP4

NewGen Power Kwinana has a complaints procedure and policy which fulfils the commitments outline s7.3. To date no complaints have been received.

2.5 SEMP5

Bi-annual analysis of the exhaust emissions is conducted by a NATA Accredited company ECS. The results of the monitoring conducted to date are included in Table 4.

The monitoring conducted has not detected any VOCs in the emissions. This is to be expected as the plant is fired by natural gas which doesn't generate detectable quantities of VOCs. Since there is a cost to do this type of analysis, NewGen requests to remove this requirement from the SEMP in future years. The reported data provided by ECS have been attached to this report in Appendix 1 and 2.

2.6 SEMP6

This annual report is evidence of compliance with SEMP6.

2.7 SEMP7

A maintenance log is maintained and records all maintenance and calibration work performed on the CEMS. The following work is routinely conducted on the CEMS system and is included in the maintenance log. A secondary horiba CEMS analyser has been installed in parallel to the permanent SICK analyser resulting in 100% CEMS availability.

- Weekly and Quarterly checks are performed on the instruments as part of the preventative maintenance as recommended by Sick, the instrument supplier .
- Weekly checks are performed on the sample conditioning system.
- Zero calibrations are performed weekly.
- Span calibrations are performed fortnightly.

The maintenance log is available on request.

Availability of the NewGen CEMS system is reported in the following table.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Hours CEMS not Available	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hours	744	696	744	720	744	720	744	744	744	744	720	744	8808
% Availability	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

3.0 Certification of Results

The monitoring results supplied in this report are a correct representation of the plant as required by the SEMP.

Signed:

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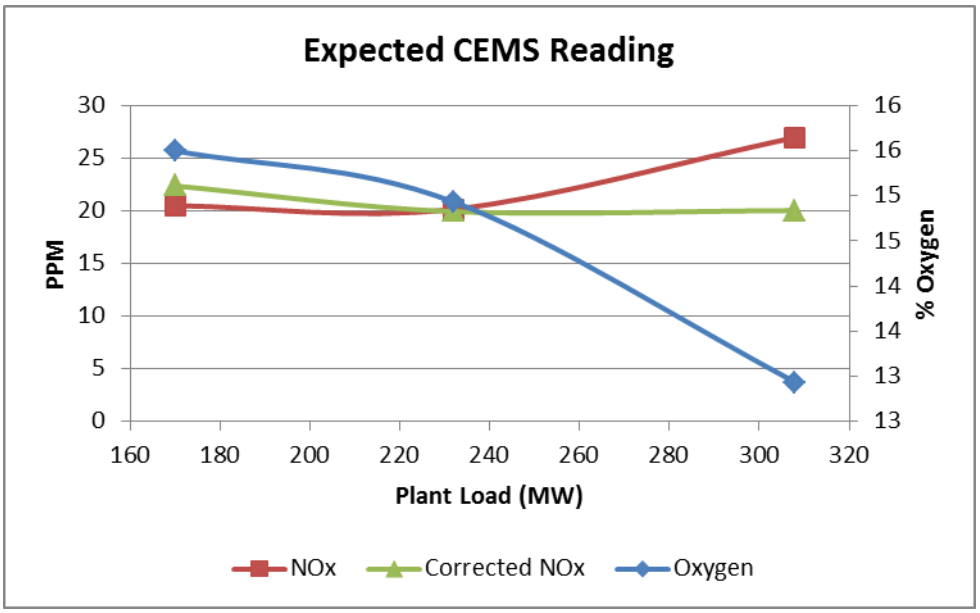
Name: Hayden Henderson
Position: Environmental Officer
Date: .....

Appendix 1 Biannual Compliance reports

Appendix 2 – NOx Calibration Curve



Appendix 3 – CD-ROM with Emissions Data

- An example of emissions data is included full years data available on request.