



Shell Oil Products US

Puget Sound Refinery

P.O. Box 622

Anacortes, WA 98221

Tel 360.293.0800

Fax 360.293.0808

Email pugetsound@ShellOPUS.com

Web-Plant www.shellpugetsoundrefinery.com

Web-Corporate www.shellus.com

RECEIVED

MAR 30 2015

NORTHWEST
CLEAN AIR AGENCY

March 30, 2015

Mr. Dan Mahar
Northwest Clean Air Agency
1600 South Second Street
Mount Vernon, WA 98273-5202

Subject: Monthly Emissions, Deviation and MACTII Report for February 2015
WAC 173-400/WAC 173-401/NWAPA 300 & MACT 63.1575(c-f)

Dear Mr. Mahar,

Enclosed you will find the subject report for the Shell Oil Products US, Puget Sound Refinery. The report includes an emissions summary, a Deviation Report per AOP Term #2.4.7 and a continuous emission monitoring system (CEMS) Quality Assurance Report.

In addition, this report covers the semiannual reporting requirements of Refinery MACTII 63.1575(c-f) for the FCCU, SRU and CRU.

Please contact Mr. Tim Figgie at (360) 293-1525 if you should have any questions regarding this report.

Based on information and belief formed after reasonable inquiry, I certify that the statements and information enclosed are true, accurate, and complete.

Sincerely,

Shirley Yap
General Manager

Carmen Cuartin on behalf.

Attachments

TCF

cc: Air Toxics Coordinator - Office of Air Quality
US-EPA Region 10
1200 Sixth Ave
Seattle, WA 98101

Gail _____ Michele _____ Scanned ☒
Agata _____ Christos _____ Dan _____
Jason _____ Lyn _____ Toby _____
Mark A _____ Mark B _____ Julie _____
Other: Crystal
Rtn to: _____

February 2015

Deviations (per AOP Permit Term #2.4.7)

1. Permit Term 5.11.8: See attached Excess Emissions Report for February 12, 2015
2. Permit Term 5.7.8: The initial NOx compliance source test required for this permit term was not completed within 180 days of permit issuance as required.
3. Permit Term 4.3, 4.4, 4.5 & 4.6: See the attached Excess Emissions Report for February 20, 2015.

Startup, Shutdown and Malfunction Excess Emissions

1. Permit Term - none

Pending Investigation Reports

1. None

SSMP and OMMP Changes

None to report

SHELL OIL PRODUCTS - PUGET SOUND REFINERY

PARAMETER		LIMIT		
1. PLT TOTAL SO2 EMISSIONS		lbs/hr/month		
Fuel Gas	0.8	YTD Hrs: 0	(Max is 4-hrs/yr for training)	
Low Sulfur Distillate	0.0			
FCCU WGS	37.0			
Plant Flares	0.2			
SRU/TGTU Stack	8.2			
Other SO ₂ Emissions	0.0			
TOTAL	46	2100		
2. POUNDS SO ₂ / MMBTU		Monthly	Limit	
Pounds SO ₂ / mmbtu	0.02	1.5		
MMBTU per Month	1981479			
3. FCCU EMISSIONS		Monthly Tons	12-mo RA Tons	Limit
SO ₂ Total from WGS	12.4	140	214	
NO _x WGS Permit Limit ¹	30.2	344	1380	
CO Total from the WGS	0.2	45	95	
PM-10 Total from the WGS ²	6.9	78	202	
4. SULFUR RECOVERY UNIT		Monthly	12-mo RA Tons	Limit
Sulfur Production, LT/Day	78			
SRU tons of SO ₂ Emissions		41.9	53 Tons	
5. NO _x LIMITS		12-mo RA Tons	Limit	
DCU 15-F100		17	39.5 cal	
CRU #1		0	39.9 cal	
VPS 1A-F8		12	21 rol	
VPS 1A-F4		17	41 rol	
VPS 1A-F5/F6		54	164 rol	

1 The permit limit for NO_x only include emissions from the Regen and fuel gas up to a firing rate of 65 mmbtu/hr for full combustion and 30 mmbtu/hr for partial combustion. Fuel gas firing above the 65 or 30 is for steam production and is not considered part of the regenerator process. See OAC 623f.

2 All particulate is assumed to be PM-10 particulate. Monthly Tons based on most current source test data plus any upset emissions.

Cogen Unit Emissions Summary

Feb 2015	GTG1	GTG2	GTG3
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Turbine Operation

Hours	567	672	672
Days of Duct Burning	0-NG; 23-MRG	0-NG; 27-MRG	0-NG; 17-MRG

Low Sulfur Distillate Burning Activity, Gallons

Monthly	0	0	0
12-Month Cumulative	na	na	35

MSCF/HR to Each Turbine

FCCU Gas (MRG)	152.8	185.0	193.1
Natural Gas	246.1	274.9	285.9
Duct Burners (MRG+NG)	42.0	43.5	22.6

MMBTU/hr contribution to each turbine

Turbines	414.9	478.3	498.1
Duct Burners	42.6	44.1	15.6

Emission Rate, lb/hr (Calendar Month Average)

NOx	11	16	10
CO	2	1	7
SO2	0.06	0.89	0.10
NH3 Slip, lb/hr	0.23	0.01	0.02

TONS, 12-Month Rolling Total (Limits: SO2 - 55; PM10 - 18)

SO2	na	na	2.3
PM10	na	na	2.1

Highest Hourly (daily for NOx) ppm corrected to 15% O2 (excludes startups/shutdowns per permit)

NOx - 24-hr avg	12	12	8
CO - 1-hr avg	27	3	9
SO2 - 3-hr rolling	0.2	1.2	0.6
NH3 Slip - 24-hr avg	0.7	0.1	0.1



1600 South Second Street
Mount Vernon, WA 98273-5202
ph 360.428.1617
fax 360.428.1620
www.nwcleanair.org

Air Operating Permit Excess Emissions Report Form Part II

Name of Facility	Shell, Puget Sound Refinery	Reported by	Tim Figgie
Date of notification	February 20, 2015	Incident type: breakdown/ upset/startup or shutdown	Shutdown
Start Date	February 20, 2015	Start Time:	2:30 PM
End Date	February 20, 2015	End Time:	4:30 PM
Process unit or system(s): East Flare			

Incident Description

On Friday, February 20th, at around 2pm, partially combusted gasses were released from the East Flare. An approximately 10 mph north wind carried odors toward La Conner and the Swinomish Reservation. Odor complaints were received by Shell PSR, the Anacortes 911, Northwest Clean Air Agency (NWCAA), EPA Emergency Response Unit and the Washington State Emergency Management Division.

The flare shutdown procedure began the previous day (Feb 19) when Operations started flushing 19NC6 Seal Pot and 19NC3 KO Drum by increasing the Seal Pot makeup water. The KO Drum was filled with firewater and pumped out on Thursday nightshift. Friday morning at about 8:45AM, the East Flare was blocked in and isolated from normal process flow by closing the valve upstream of the C3 KO drum.

Steam was introduced to the bottom of the KO Drum through a steam hose. This warmed up the drum enough to push vapors through the Seal Pot water level, and register at the Sulfur analyzers downstream¹. It is estimated that the temperature in the KO Drum reached approximately 140 degrees. At about 12:30pm, 250lb steam was introduced into the KO Drum vapor space through a 2 inch line. This began to heat up the water in the C6 Seal Pot. When Operators realized that the C6 Seal Pot had a water level in it, they transferred it into the KO Drum. The 200 degree water increased the temperature of the KO Drum, causing more vapors to form. With the water seal removed, the vapors that had built up in the KO Drum moved into the Flare header. Partially combusted hydrocarbons and mercaptans were released to the atmosphere.

Immediate steps taken to limit the duration and/or quantity of excess emissions:

The East Flare decontamination process was stopped upon Shell PSR learning there were impacts to the community.

Applicable air operating permit term(s): 4.3 – 4.6

Estimated Excess Emissions: Based on Engineering Estimates	Pollutant(s): Sulfur and VOC Compounds	Pounds (Estimate): detailed emission calculations are being developed and the results will be sent to NWCAA by April 10, 2015 in a separate report.
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¹ The sulfur analyzers were later shutdown at approximately 12:40PM to prevent water damage.

The incident was the result of the following (check all that apply):

- ☐ Scheduled equipment startup
- ☒ Scheduled equipment shutdown
- ☐ Poor or inadequate design
- ☐ Careless, poor, or inadequate operation
- ☐ Poor or inadequate maintenance
- ☒ A reasonably preventable condition

Did the facility receive any complaints from the public?

- ☐ No
- ☒ Yes (provide details below)

Shell PSR received community complaints from areas south of the refinery including Swede's Net Repair and Sales, Padilla Heights area, Shelter Bay area, the Town of La Conner and from the Swinomish Indian Tribal Community.

Did the incident result in the violation of an ambient air quality standard

- ☒ No
- ☐ Yes (provide details below)

Root and other contributing causes of incident:

The root cause of this event was insufficient procedures were used for the decontamination of the east flare prior to venting to the atmosphere.

The root cause of the incident was:

(The retention of records of all required monitoring data and support information shall be kept for a period of five years from the date of the report as per the WAC regulation (173-401-615))

- ☐ Identified for the first time
- ☒ Identified as a recurrence (explain previous incident(s) below – provide dates)

Odor complaints were received during previous flare shutdown and decontamination activities on January 24 and October 5, 2011 and on March 15, 2014.

Are the emissions from the incident exempted by the NSPS or NESHAP "malfunction" definitions below?

- ☒ No
- ☐ Yes (describe below)

Emissions occurred during shutdown of the East flare and after the flare was isolated from normal operation. There was no regular process or upset gas flow to the flare at the time of the event.

Definition of NSPS "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 60.2

Definition of NESHAP "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 63.2

Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):

New procedures will be developed for future flare shutdowns and associated decontamination activities, before any future planned maintenance activities. PSR will provide NWCAA the new procedures once completed.

Description of corrective action to be taken (include commencement and completion dates):

See above

If correction not required, explain basis for conclusion:

See above

Attach Reports, Reference Documents, and Other Backup Material as Necessary. This report satisfies the requirements of both NWCAA regulation 340, 341, 342 and the WAC regulation (173-400-107).

Is the investigation continuing? ☐ No ☒ Yes

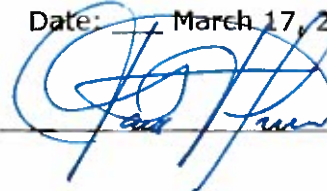
Is the source requesting additional time for completion of the report? ☐ No ☒ Yes

Based upon information and belief formed after reasonable inquiry, I certify that the statements and information in this document and all referenced documents and attachments are true, accurate and complete.

Prepared By: _ Tim Figgie

Date: March 17, 2015

Responsible Official or Designee:



Date:

30th March, 2015



1600 South Second Street
Mount Vernon, WA 98273-5202
ph 360.428.1617
fax 360.428.1620
www.nwcleanair.org

Air Operating Permit Excess Emissions Report Form Part II

Name of Facility	Shell, Puget Sound Refinery	Reported by	Tim Figgie
Date of notification	February 12, 2015	Incident type: breakdown/ upset/startup or shutdown	Breakdown
Start Date	February 12, 2015	Start Time:	2:00 PM
End Date	February 12, 2015	End Time:	3:00 PM
Process unit or system(s): Flare			

Incident Description

On February 12, 2015 high H₂S occurred in the flare due to a sour gas stream leaking into the sweet flare header. The sour gas originated from Liquid Mover 21NG72, a system designed to remove liquids from the plant fuel gas line. The vent line for this liquid mover is normally routed to the sour flare line but the primary system was out of service for repair. Therefore, a temporary line was routed to an alternate system that vented to the sweet flare. After the event the liquid mover was removed from service and inspected to determine the cause of the equipment failure. The inspection did not reveal a specific failure point. Therefore, the exact cause of this event could not be determined. The liquid mover system has been isolated from service to prevent a reoccurrence.

The volume of sour gas vented was very low but contain a high concentration of H₂S. This resulted in very low pounds of emissions but a longer period of high H₂S readings.

This event resulted in 2 periods above the 162ppm H₂S 3-hour rolling average limit.

Immediate steps taken to limit the duration and/or quantity of excess emissions:

The FGR system was operating to recovery as much excess flare gas as possible.

Applicable air operating permit term(s): 5.11.8

Estimated Excess Emissions: Based on online H ₂ S CEMS and fuel gas flow meters	Pollutant(s): SO ₂	Pounds (Estimate): 1
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The incident was the result of the following (check all that apply):

- ☐ Scheduled equipment startup
- ☐ Scheduled equipment shutdown
- ☐ Poor or inadequate design
- ☐ Careless, poor, or inadequate operation
- ☐ Poor or inadequate maintenance
- ☒ A reasonably preventable condition

Did the facility receive any complaints from the public?

- ☒ No
- ☐ Yes (provide details below)

Air Operating Permit
Excess Emissions Report Form Part II
Page 2

Did the incident result in the violation of an ambient air quality standard

- ☒ No
☐ Yes (provide details below)

Root and other contributing causes of incident:

The root cause of this event was related to the liquid mover system 21NG72 but a specific cause could not be determined.

The root cause of the incident was:

(The retention of records of all required monitoring data and support information shall be kept for a period of five years from the date of the report as per the WAC regulation (173-401-615))

- ☐ Identified for the first time
☒ Identified as a recurrence (explain previous incident(s) below – provide dates)

The root cause of this event was related to the liquid mover system 21NG72 but a specific cause could not be determined. High H2S readings occurred in the flare on April 18, 2013 due to a liquid mover system failure.

Are the emissions from the incident exempted by the NSPS or NESHAP "malfunction" definitions below?

- ☐ No
☒ Yes (describe below)

The root cause of this event was related to the liquid mover system 21NG72 but a specific cause could not be determined.

Definition of NSPS "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 60.2

Definition of NESHAP "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 63.2

Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):

The liquid mover system was inspected and cleaned.

Description of corrective action to be taken (include commencement and completion dates):

See above

If correction not required, explain basis for conclusion:

See above

Attach Reports, Reference Documents, and Other Backup Material as Necessary. This report satisfies the requirements of both NWCAA regulation 340, 341, 342 and the WAC regulation (173-400-107).

Is the investigation continuing? ☒ No ☐ Yes

Is the source requesting additional time for completion of the report? ☒ No ☐ Yes

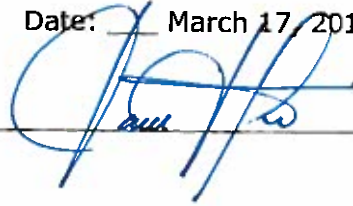
Based upon information and belief formed after reasonable inquiry, I certify that the statements and information in this document and all referenced documents and attachments are true, accurate and complete.

Air Operating Permit
Excess Emissions Report Form Part II
Page 2

Prepared By: _ Tim Figgie

Date: _ March 17, 2015

Responsible Official or Designee: _____



Date: March 30th, 2015

Summary Report- Gaseous and Opacity Excess Emission and Monitoring System Performance

Reporting Period: 02/1/15 to 02/28/15

Process unit	Manufacturer/ Model # Serial #	Pollutant	Total Source Operating Time in Period(hrs)	Emission Data Summary						CEMS Performance Summary								
				Duration (Hours) of Excess Emission Due to:						CEMS Downtime (Hours) in Reporting Period Due to:								
				Start-Up/Shutdown	Control Equipment Problems	Process Problems	Other Known Causes	Unknown Causes	Total Duration of Excess Emissions	Excess Emission Duration (% of time)	Monitor Equipment Malfunctions	Non-Monitoring Equipment Malfunctions	Quality Assurance Calibration		Other Known Causes	Unknown Causes	Total CEMS Downtime	CEMS Downtime (% of time)
zero and span checks	quarterly audit																	
VPS F5-F6 (1AR200)	Thermo Env 42I LS 1138451127	NOx	312	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
VPS F5-F6 (1AR201)	Siemens Oxymat 61 F-Nr N1-S8-0867	O2	312	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
VPS F4 (1AR210)	Thermo Env 42I LS 1134150805	NOx	312	-	-	-	-	-	0	-	28.7	-	16	-	-	-	28.7	9.2
VPS F4 (1AR211)	Siemens Oxymat 61 F-Nr -N1-T6-0958	O2	312	-	-	-	-	-	0	-	28.7	-	16	-	-	-	28.7	9.2
HTU 1 (7AR303)	Thermo Env 43C HL 43chl-75082	SO2	288	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
HTU 1 (7AR304)	Siemens Oxymat 6E 7mb20011ea00	O2	288	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
HTU 2 (11AT33)	Siemens Maxum II 0025319290200	H2S	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
HTU 3 (60A1875)	Siemens Maxum II 5061350001	H2S	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 3 (16AR677)	Ametek RM9000 AV-9000RM-10202-1	SO2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 3 (16AR676)	Ametek RM9000 AV-9000RM-10202-1	O2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 4 (18AR980A)	Thermo Env 43C #0332903168	SO2	240	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 4 (18AR988A)	Siemens Oxymat 61 7MB202115A000CA1	O2	240	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Plant Fuel Gas (35AT19)	Siemens Maxum II 30025319290100	H2S	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
East Flare (19AR11)	Thermo Env 43I 1106147337	SO2	597	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
East Flare (19A19)	Siemens Maxum II 3002122360010	H2S	597	-	-	-	-	-	2	0.3	-	-	16	-	-	-	0	-
Wet Gas Scrubber (3AI330b)	Thermo Env 48I 0904234786	CO	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Wet Gas Scrubber (3AI329b)	Thermo Env 42I HL 42I-HL-0601914956	NOx	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Wet Gas Scrubber (3AI326b)	Thermo Env 43Ihl 1106047297	SO2	672	-	-	-	-	-	0	-	30.6	-	16	-	-	-	30.6	4.6
Wet Gas Scrubber (3AI327b)	Siemens Oxymat 6 7mb2023-1ca20	O2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-

Excess Emissions Detail

East Flare (19A19)	February 12, 2015: Due to shutdown activities associated with turn-around work. See attached Incident Report for more details
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Monitor Downtime/Out-of-Control Detail

Process Unit	Problem Description	Corrective Action	Start	End	Total Hrs.
VPS F4 (1AR210)	NOx sample chiller power supply malfunctioned	Replaced power supply	2/8/15 05:00 hours	2/9/15 09:40 hours	28.7
VPS F4 (1AR211)	O2 sample chiller power supply malfunctioned	Replaced power supply	2/8/15 05:00 hours	2/9/14 09:40 hours	28.7
Wet Gas Scrubber (3AI326b)	Low pH material getting past SO2 sample chiller	Installed acid scrubber	2/2/15 04:23 hours	2/3/15 11:00 hours	30.6

Cylinder Gas Audits

Process Unit	Pollutant	Audit Date	Audit Point	Cylinder ID	Date of Cert.	Certified Audit Value	CEM Response Value	Accuracy Average(%)
VPS F5-F6 (1AR201)	NOx	11/14/2014	1	cc69684	7/16/2013	61.8	62.77	1.57
			2	cc69838	7/16/2013	139	138.83	-0.12
VPS F5-F6 (1AR201)	O2	11/14/2014	1	cc78968	7/17/2013	6.27	6.5	3.67
			2	cc60777	7/17/2013	13.8	13.85	0.36
VPS F4 (1AR210)	NOx	1/21/2015	1	cc69870	7/16/2013	61.8	62.54	1.20
			2	cc53549	7/16/2013	138	137.93	-0.05
VPS F4 (1AR211)	O2	1/21/2015	1	cc17029	7/17/2013	6.27	6.38	1.75
			2	cc91401	7/17/2013	13.8	13.27	-3.84
HTU 1 (7AR303)	SO2	1/30/2015	1	alm008998	9/16/2014	12.8	12.4	-3.13
			2	alm033988	9/16/2014	27.7	26.9	-2.89
HTU 1 (7AR304)	O2	1/30/2015	1	alm008998	9/16/2014	6.22	6.25	0.48
			2	alm033988	9/16/2014	13.8	13.8	0.00
HTU 2 (11AT33)	H2S	10/30/2014	1	cc64433	1/5/2012	75.1	76.04	1.25
			2	alm053199	2/18/2013	167	166.07	-0.56
HTU 3 (60AI875)	H2S	11/5/2014	1	cc64433	1/5/2012	75.1	85.27	13.54
			2	aal2120	3/7/2012	167	191.63	14.75
SRU 3 (16AR676)	O2	2/7/2015	1	cc53554	7/16/2013	6.25	6.2	-0.80
			2	cc70016	7/16/2013	13.81	13.68	-0.94
SRU 3 (16AR677)	SO2	2/7/2015	1	cc53554	7/16/2013	127	133.5	5.12
			2	cc70016	7/16/2013	275	275.8	0.29
SRU 4 (18AR990A)	SO2	11/14/2014	1	cc55269	7/16/2013	127	136.33	7.35
			2	cc70111	7/16/2013	275	277.33	0.85
SRU 4 (18AR988A)	O2	11/14/2014	1	cc55269	7/16/2013	6.25	6.2	-0.80
			2	cc70111	7/16/2013	13.81	13.62	-1.38
Plant Fuel Gas (35AT19)	H2S	11/16/2014	1	aal19655	2/18/2013	76.1	76.63	0.70
			2	cc58463	2/18/2013	167	171.13	2.47
East Flare (19AR11)	SOx	2/23/2015	1	cc184851	1/26/2015	1.0	0.99	-1.00
			2	cc165618	5/7/2014	2.2	2.24	1.82
East Flare (19AI9)	H2S	1/21/2015	1	alm026530	2/18/2013	78.6	77.83	-0.98
			2	cc62855	2/18/2013	168	173.53	3.29
WGS (3AI330b)	CO	11/5/2014	1	alm035808	5/27/2014	249	273.87	9.99
			2	alm052493	5/27/2014	547	579.33	5.91
WGS (3AI329b)	NOx	11/5/2014	1	alm035808	5/27/2014	75.2	70.76	-5.90
			2	alm052493	5/27/2014	167	162.4	-2.75
WGS (3AI326b)	SO2	11/5/2014	1	alm035808	5/27/2014	24.9	26.88	7.95
			2	alm052493	5/27/2014	55.2	55.92	1.30
WGS (3AI327b)	O2	11/5/2014	1	cc318575	5/22/2012	6.26	6.1	-2.56
			2	alm60771	5/22/2012	13.71	13.57	-1.02

Relative Accuracy Test Audits

Process Unit	Pollutant	Audit Date	Reference Method	Absolute Mean Difference	Confidence Coefficient	CEMS Value	Ref. Method Value	Relative Accuracy(%)
VPS F5-F6 (1AR200)	NOx	2/3/2015	NOx (lb/MMBTU) Spec 2	0.0025	0.0005	0.051	0.054	5.6
VPS F5-F6 (1AR200)	NOx	2/3/2015	NOx (lb/hr) Spec 2-M19	0.156	0.138	12.35	12.51	2.4
VPS F5-F6 (1AR201)	O2	2/3/2015	Spec 3	0.065	0.04	7.4	7.47	0.1
VPS F4 (1AR210)	NOx	10/1/2014	NOx (ppmv) Spec 2	1.3	0.422	39.17	37.87	4.56
VPS F4 (1AR210)	NOx	10/1/2014	NOx (lb/MMBTU) Spec 2	0.002	0.0004	0.041	0.039	5.38
VPS F4 (1AR210)	NOx	10/1/2014	NOx (lb/hr) Spec 2	0.323	0.055	4.42	4.09	9.23
VPS F4 (1AR211)	O2	10/1/2014	Spec 3	0.204	0.018	5.64	5.44	0.22
HTU 1 (7AR303)	SO2	7/17/2014	Spec 2	0.573	0.184	3.45	4.02	0.76
HTU 1 (7AR304)	O2	7/17/2014	Spec 3	0.108	0.022	5.52	5.63	0.13
HTU 2 (11AT33)	H2S	1/21/2015	Spec 7	2.19	0.066	0.00	2.19	1.39
HTU 3 (60AI875)	H2S	1/20/2015	Spec 7	3.55	0.083	4.28	0.74	2.24
SRU 3 (16AR677)	SO2	11/26/2014	Spec 2	2.08	1.59	88.31	86.23	1.47
SRU 3 (16AR676)	O2	11/26/2014	Spec 3	0.044	0.011	7.12	7.16	0.06
SRU 4 (18AR990A)	SO2	1/28/2015	Spec 2	0.23	1.31	103.26	103.49	0.62
SRU 4 (18AR988A)	O2	1/28/2015	Spec 3	0.13	0.02	6.61	6.48	0.15
Plant Fuel Gas (35AT19)	H2S	1/22/2015	EPA Method 15	0.59	0.013	0.00	0.59	0.37
East Flare (19AR11)	SOx	N/A						
East Flare (19AI9)	H2S	10/7/2014	EPA Method 15	0.42	0.172	0	0.42	0.37
WGS (3AI330b)	CO	1/30/2015	Method 10 PS-4	1.35	0.21	1.45	0.10	0.31
WGS (3AI329b)	NOx	1/30/2015	Method 7E PS-2	7.52	0.62	143.44	150.96	5.4
WGS (3AI326b)	SO2	1/30/2015	Method 6C PS-2	0.78	0.96	22.73	21.95	3.5
WGS (3AI327b)	O2	1/30/2015	Method 3A PS-3	0.0045	0.007	2.77	2.77	0.012

Summary Report- Gaseous and Opacity Excess Emission and Monitoring System Performance

Reporting Period: 02/01/15 to 02/28/15

Process unit	Manufacturer/ Model #/ Serial #	Pollutant	Total Source Operating Time in Period	Emission Data Summary							CEMS Performance Summary							
				Duration (Hours) of Excess Emission Due to:							CEMS Downtime (Hours) in Reporting Period Due to:							
				Start-Up/Shutdown	Control Equipment Problems	Process Problems	Other Known Causes	Unknown Causes	Total Duration of Excess Emissions	Excess Emission Duration (% of time)	Monitor Equipment Malfunctions	Non-Monitoring Equipment Malfunctions	Quality Assurance Calibration		Other Known Causes	Unknown Causes	Total CEMS Downtime	CEMS Downtime (% of time)
												zero and span checks	quarterly audit					
GTG #1 (90AR108B)	Thermo Env 43C 70846-367	SO2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #1 (90AR105B)	Thermo Env 42C 70730-336	CO	672	-	-	-	-	-	0	-	29.3	-	16	-	-	29.3	0	4.40
GTG #1 (90AR103B)	Thermo Env 42C 70651-366	NOx	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #1 (90AR108B)	Thermo Env 42C 74018-375	NH3	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #1 (90AR104)	Sevomex 1400 014200-3002	O2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR206B)	Thermo Env 43C 70679-366	SO2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR205B)	Thermo Env 48C 73967-375	CO	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR203B)	Thermo Env 42C 0512611679	NOx	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR208B)	Thermo Env 42C 72312-370	NH3	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR204)	Sevomax 1400 014200-3009	O2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR306B)	Thermo Env 43C 39007-755	SO2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR305B)	Thermo Env 48C 72227-370	CO	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR303B)	Thermo Env 42C 70655-336	NOx	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR308B)	Thermo Env 42C 72154-370	NH3	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR304)	Sevomex 1400 014500-3314	O2	672	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-

Excess Emissions Detail

None to report

Monitor Downtime/Out-of-Control Detail

Process Unit	Problem Description	Corrective Action	Start	End	Total Hrs.
GTG #1 (90AR105B)	CO analyzer reference cell malfunctioned	New reference cell	2/17/15 05:50 hours	2/18/15 11:07 hours	29.3

Cylinder Gas Audits

Process Unit	Pollutant	Audit Date	Audit Point	Cylinder ID	Date of Cert.	Certified Audit Value	CEM Response Value	Accuracy Average(%)
GTG #1 (90AR106B)	SO2	11/5/2014	1	cc109318	9/23/2013	10.2	9.77	-4.22
			2	cc113662	9/23/2013	22.2	21.95	-1.13
GTG #1 (90AR105B)	CO	11/5/2014	1	cc109318	9/23/2013	25.5	26.3	3.14
			2	cc113662	9/23/2013	55.4	52.35	-5.51
GTG #1 (90AR103B)	NOx	11/5/2014	1	cc109318	9/23/2013	8.12	8.29	2.09
			2	cc113662	9/23/2013	17.2	17.13	-0.41
GTG #1 (90AR108B)	NH3	11/5/2014	1	cc109318	9/23/2013	8.12	8.46	4.19
			2	cc113662	9/23/2013	17.2	17.87	3.90
GTG #1 (90AR104)	O2	11/5/2014	1	cc318575	5/22/2012	6.26	6.1	-2.56
			2	alm60771	5/22/2012	13.71	13.4	-2.26
GTG #2 (90AR206B)	SO2	11/5/2014	1	cc115276	9/23/2013	10.2	10.02	-1.76
			2	cc169413	9/23/2013	22.2	22.28	0.36
GTG #2 (90AR205B)	CO	11/5/2014	1	cc115276	9/23/2013	25.5	26.74	4.86
			2	cc169413	9/23/2013	55.4	55.69	0.52
GTG #2 (90AR203B)	NOx	11/5/2014	1	cc115276	9/23/2013	8.23	7.99	-2.92
			2	cc169413	9/23/2013	17.1	17.19	0.53
GTG #2 (90AR208B)	NH3	11/5/2014	1	cc115276	9/23/2013	8.23	8.5	3.28
			2	cc169413	9/23/2013	17.1	17.55	2.63
GTG #2 (90AR204)	O2	11/5/2014	1	cc318575	5/22/2012	6.26	6.23	-0.48
			2	alm60771	5/22/2012	13.71	13.8	0.66
GTG #3 (90AR306B)	SO2	11/7/2014	1	cc169446	9/23/2013	10.2	10.19	-0.10
			2	cc169309	9/23/2013	21.8	22.23	1.97
GTG #3 (90AR305B)	CO	11/7/2014	1	cc169446	9/23/2013	25.5	26.04	2.12
			2	cc169309	9/23/2013	55.4	55.25	-0.27
GTG #3 (90AR303B)	NOx	11/7/2014	1	cc169446	9/23/2013	8.26	8.33	0.85
			2	cc169309	9/23/2013	17	17.35	2.06
GTG #3 (90AR308B)	NH3	11/7/2014	1	cc169446	9/23/2013	8.26	9.06	9.69
			2	cc169309	9/23/2013	17	18.05	6.18
GTG #3 (90AR304)	O2	11/7/2014	1	cc318575	5/22/2012	6.26	6.45	3.04
			2	alm60771	5/22/2012	13.71	14.13	3.06

Relative Accuracy Test Audits

Process Unit	Pollutant	Audit Date	Reference Method	Absolute Mean Difference	Confidence Coefficient	CEMS Value	Ref. Method Value	Relative Accuracy(%)
GTG #1 (90AR106B)	SO2	2/27/2014	EPA M-6C Spec 2	-0.077	0.198	0.003	-0.074	1.53
GTG #1 (90AR105B)	CO	2/27/2014	EPA M-10 Spec 4A	-0.251	0.14	3.55	3.29	0.392
GTG #1 (90AR103B)	NOx	2/27/2014	EPA M-7E Spec 2	0.323	0.067	11.5	11.82	3.3
GTG #1 (90AR108B)	NH3	2/27/2014	BAAQMD ST-1B	0.997	0.072	0.32	1.32	1.1
GTG #1 (90AR104)	O2	2/27/2014	EPA M-3A Spec 3	0.177	0.031	13.92	14.1	0.208
GTG #2 (90AR206B)	SO2	2/26/2014	EPA M-6C Spec 2	-0.206	0.023	0.228	0.022	1.27
GTG #2 (90AR205B)	CO	2/26/2014	EPA M-10 Spec 4A	1.63	0.117	1.72	3.35	1.75
GTG #2 (90AR203B)	NOx	2/26/2014	EPA M-7E Spec 2	1.93	0.175	11.48	13.42	15.71
GTG #2 (90AR208B)	NH3	2/26/2014	BAAQMD ST-1B	0.368	0.015	0.015	0.383	3.83
GTG #2 (90AR204)	O2	2/26/2014	EPA M-3A Spec 3	0.266	0.014	13.64	13.91	0.28
GTG #3 (90AR306B)	SO2	2/25/2014	EPA M-6C Spec 2	0.181	0.132	0	0.181	1.74
GTG #3 (90AR305B)	CO	2/25/2014	EPA M-10 Spec 4A	1.39	0.287	2.21	3.6	1.68
GTG #3 (90AR303B)	NOx	2/25/2014	EPA M-7E Spec 2	0.94	0.088	7.98	8.92	11.48
GTG #3 (90AR308B)	NH3	2/25/2014	BAAQMD ST-1B	0.185	0.04	0.04	0.226	2.26
GTG #3 (90AR304)	O2	2/25/2014	EPA M-3A Spec 3	0.171	0.03	14.07	14.24	0.201