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Annual Compliance Report

**City of Anaheim
Canyon Power Plant**

Anaheim, California

**SCAQMD
Facility ID: 153992**

**CEC Permit Number:
800-2010-001-CMF**

**Docket Number:
07-AFC-9C**

2018

Period Spanning
January 1, 2018 through December 31, 2018

Review and Certification

I have reviewed both technically and editorially all details, calculations, results conclusions and other appropriate written material contained herein and hereby certify that to the best of my knowledge the material presented is true, accurate and complete.

I certify that the information contained in this report is true, accurate, and complete.

Ronald Hoffard

Name


Signature

Generation Plant Manager

Title

1/30/19

Date

Canyon Power Plant
Annual Compliance Report
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Acronyms and Abbreviations

BHP	Break horse power
Btu	British thermal unit
BACT	Best available control technology
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COA	City of Anaheim
CFR	Code of Federal Regulations
CPP	Canyon Power Plant
CT	Combustion turbine
DAHS	Data acquisition and handling
TDS	Total dissolved solids
DPF	Diesel particulate filter
EPA	Environmental Protection Agency
F.	Fahrenheit
ICE	Internal combustion engine
lbs/hr	pounds per hour
lb/lb-mol	pound per pound mol
MW	mega watts
MMBtu	million British thermal units
mmcf	million cubic feet
NH ₃	ammonia
NO	Nitrogen Oxide
NO _x	Oxides of Nitrogen
NO ₂	Nitrogen Dioxide
O ₂	Oxygen
ppm	parts per million
ppmc	parts per million corrected to 15% O ₂
RATA	relative accuracy test audit
ROG	Reactive Organic Compounds
RTU	remote terminal unit
scf	standard cubic feet (standard temperature = 68 degrees F)
SCR	selective catalytic reactor
SCAQMD	South Coast Air Quality Management District
unit	The term unit refers to the boiler/steam turbine
VOC	Volatile Organic Compounds

1.0 Facility Description:

The City of Anaheim's (COA) Canyon Power Plant (CPP) facility is located at 3071 Miraloma Avenue in Anaheim California.

The facility consists of four natural gas fired General Electric, Model LM6000PC Sprint, simple cycle combustion turbine with water injection. The gas turbine was designed with a maximum heat input of 479 MMBtu per hour with a 46 degree Fahrenheit (F.) inlet air temperature. The units are equipped with an inlet air chiller designed to maintain the gas turbine inlet temperature at 46 degrees F. at full load.

Each unit is capable of generating 50.95 megawatts.

Carbon Monoxide (CO) emission from the gas turbine are controlled by utilizing a CO oxidation catalyst located between the gas turbine and the selective catalytic reactor (SCR). The CO oxidation catalyst controls the unit's CO and volatile organic compounds (VOC) emissions. The catalyst is guaranteed to reduce the unit's CO emission rate to a maximum of 4 ppm corrected to 15% O₂ (ppmc) and the VOC to 2 ppmc, both emission rates are based on a one (1) hour averages, dry basis at 15% O₂. The CO catalyst system was designed and supplied by Englehard/BASF.

The NO_x emissions from the gas turbine are controlled by the utilizing two (2) independent systems or techniques in series. The first system utilized on this unit is the water injection system.

Water is injected into the combustor suppressing the flame temperature and reducing the 1-hour average NO_x concentration to approximately 25 ppmc at 15% oxygen prior to entry into the SCR.

The second NO_x control system utilized by the unit is the NH₃/SCR system. After passing through the CO catalyst, the exhaust gases pass through an ammonia injection grid on its way to the SCR. The ammonia (NH₃) used at this facility is in the form a 19% by weight solution of ammonium hydroxide.

The SCR catalyst utilized by the unit for NO_x control was provided by Cormetech. The reaction between the NH₃ and the SCR catalyst reduces the existing NO_x to elemental nitrogen and water, resulting in NO_x concentrations in the exhaust gas at no greater than 2.5 ppmv at 15% O₂ on a 1-hour average. The ammonia slip must be maintained below 5 ppm at 15% O₂. Each SCR is vented through a dedicated stack, which is 11.8 ft diameter and 86 ft high.

The facility is also equipped with an 1141 BHP diesel emergency internal combustion engine (ICE) (black start engine) will be used to start up the plant in the event of a loss of grid power.

The ICE, is a Caterpillar, Model C-27, rated at 1141 BHP and fired on ultra low sulfur diesel fuel. The ICE, will serve to provide power to the plant during blackout conditions. The engine is certified by the SCAQMD as an EPA Tier 2 engine on 12/31/2010. The engine is required to be permitted, rather than registered, because CPP is a RECLAIM/Title V facility.

The black start engine will be used only in emergency situations where grid power from the COA's 69 kV system is unavailable to start the CTs. The black start engine will provide power to the turbine starter motors and various other necessary pieces of support equipment to get one of the gas turbines started. Once one of the turbines has been started and providing power to the

grid, the black start engine will be shut down.

The SCAQMD's rules limit operation of an emergency ICE to 50 hours per year.

The black start engine incorporates a diesel particulate filter (DPF), which is required by LAER. The Caterpillar DPF is designed to control the particulate emissions from diesel engines. The DPF consists of 2 filters, each 15-inches diameter by 15-inches long. The DPF system has been verified by CARB under Executive Order DE-14-006-01 to reduce emissions of diesel particulate matter consistent with a Level 3 device (greater than or equal to 85 percent reduction), when used with ultra low sulfur diesel with 15 ppm or lower sulfur content. As the DPF is CARB verified, a source test is not required. With the DPF, the particulate matter emissions from the engine is reduced from 0.15 g/bhp-hr to 0.0225 g/bhp-hr.

The DPF consists of a catalyzed cordierite ceramic honeycomb with hundreds of parallel channels, is designed to reduce emissions of particulate, carbon monoxide and hydrocarbons. The catalyst on the ceramic walls oxidizes carbon monoxide into carbon dioxide, and hydrocarbons into water and carbon dioxide. The arrangement of the channels is such that the exhaust gases carrying the carbon particles are forced through the fine pores of the walls, which filter out the particles. As the carbon particles are collected on the ceramic walls, the backpressure on the engine will increase. When the temperature of the exhaust is equal to or greater than 300 °C (572 °F) for at least 30% of the duty cycle, the catalyst interacts with the collected particulates to burn the particulates into carbon dioxide and water vapor, which will pass through the DPF.

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 1
COMPLIANCE MATRIX

CANYON POWER PLANT COMPLIANCE MATRIX
CY 2018 SCAQMD COMPLIANCE

AQMD Requirement	Limit	Limit	Period	Unit 1 Done	Unit 1 Due	Unit 2 Done	Unit 2 Due	Unit 3 Done	Unit 3 Due	Unit 4 Done	Unit 4 Due	Canyon Site Done	Canyon Site Due	Responsible
CEMS Calibration Stack and Turbine	each 24 hours	Daily prior to fires lit	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily			DAHS/Operator Confirm
NOx pounds		RECLAIM RTC Holdings per AQMD records 60 days after the end of each quarter	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily			DAHS/Operator/Hernandez Confirm
NOx pounds monthly Electronic			15 days at the end of the month									1/4/19	2/15/19	DAHS/Hoffard/Hernandez Confirm
NOx pounds quarterly Electronic			30 days at the end of the Quarter									1/4/19	4/30/19	DAHS/Hoffard/Hernandez Confirm
Q CER			30 days at the end of the first 3 calendar Quarters									10/30/18	1/30/19	Hernandez/Hoffard
NOx pounds Annual Permit Emissions Program report (APEP)			60 days after the end of the calendar year									2/22/18	2/28/19	Hernandez/Hoffard
RATA - RECLAIM/Acid Rain		Relative accuracy test of CEMS equipment	Every Six months or annually if incentive is met	8/21/18	9/30/19	8/23/18	9/30/19	10/30/18	12/31/19	5/16/18	6/30/19			Montrose/Hoffard/Hernandez
RATA - CO Spiking 218			Annually	8/21/18	9/30/19	8/23/18	9/30/19	10/30/18	12/31/19	5/16/18	6/30/19			Montrose/Hoffard/Hernandez
Ammonia slip	NH3 slip test 5 ppm	5 PPM	Every quarter 1st year then annually	8/21/18	9/30/19	8/23/18	9/30/19	10/30/18	12/31/19	5/16/18	6/30/19			Montrose/Hoffard/Hernandez
Particulate PM, VOC & SOx Tri-Annual Test		1.67 lb/hr; 2.0 ppm; .06 lb/MMbtu per unit	Every 3 years	8/22-23/17	9/30/20	8/24-25/17	9/30/20	4/17-18/17	4/30/20	4/19-20/17	4/30/20			Montrose/Hoffard/Hernandez
Particulate PM (per Permit met the 3-year cycle on 2017)		1.67 lb/hr	Every 18 months in a 3 year period	2/8/16	not required	2/9/16	not required	11/4/15	not required	11/5/15	not required			Montrose/Hoffard/Hernandez
Fuel Flow, Pressure, & Temperature calibration	pass or fail	2% accuracy	Annually	5/1/18	5/1/19	5/3/18	5/3/19	5/7/18	5/7/19	5/9/18	5/9/19			Wilmington Inst/Hoffard
SCR Inlet temperature probe calibration			Annually	5/1/18	5/1/19	5/3/18	5/3/19	5/7/18	5/7/19	5/9/18	5/9/19			V Nguyen/Hoffard
SCR differential pressure calibration	pass or fail	2% accuracy	Annually	5/1/18	5/1/19	5/3/18	5/3/19	5/7/18	5/7/19	5/9/18	5/9/19			V Nguyen/Hoffard
Ammonia flow meter	pass or fail	2% accuracy	Annually	5/1/18	5/1/19	5/3/18	5/3/19	5/7/18	5/7/19	5/9/18	5/9/19			Wilmington Inst/Hoffard
CEMS enclosure Temperature element calibration	pass or fail	2% accuracy	Annually	5/1/18	6/1/19	5/3/18	6/1/19	5/7/18	6/1/19	5/9/18	6/1/19			V Nguyen/Hoffard
Regenerate Diesel Particulate Filter		Every 24 Cold starts or Back Pressure (Yellow light) greater then 36 INCH/H2O										8/14/17	24 starts	Quinn/Hoffard
Diesel NOx pounds quarterly electronic		RECLAIM RTC Holdings	15 days after the end of the quarter									1/4/19	4/30/19	Hoffard/Hernandez/CEMS/DAHS
Diesel tune up (Annual)	Manufactures specifications	4 degrees retarded	Annually									9/7/18	6/30/19	Quinn/Hoffard
Metal Coating Log - Rule 1107 (VOC)		Log coatings used on site	Annually									12/31/18	12/31/19	Operator/Hoffard/Hernandez
Natural Gas Sample analysis	Manufactures specifications	0.25 grains H2S/100 scf	Monthly									12/5/18	1/30/19	Quantum/Hoffard/Hernandez
218 report (non-RECLAIM elements)		PPM & Emission Rates	Semi-annual									7/26/18	1/30/19	Hernandez/Hoffard
Title V Permit Renewal (Application due to AQMD 180 days prior to 11/5/20 (May 23, 2020))		Compliance Report	Every 5 years; Apply 180 days prior to expiration;									11/6/15	11/5/20	Hoffard/Hernandez
Title V 500 SAM Report		Compliance Report	Semi-annual									7/26/18	2/28/19	Hernandez/Hoffard
Title V 500 ACC Report		Compliance Report	Annually									3/8/18	3/1/19	Hoffard/Hernandez
Annual Emissions Report (AER)		Compliance Report	75 days at the end of calendar year									3/1/18	3/16/19	Hernandez/Hoffard
RECLAIM equipment breakdown	Upon Discovery	Upon Discovery	Verbal report to AQMD within 1 hour of discovery											Hoffard/Operator/Hernandez
Non-RECLAIM equipment breakdown	Upon Discovery	Upon Discovery	Verbal report to AQMD within 24 hours of discovery											Hoffard/Operator/Hernandez
Stack NOx Limit	2.5 parts per million	2.5 PPM	60 minute average											Hoffard/Operator/Hernandez
Ammonia Slip Limit	5 parts per million	5 PPM	60 minute average											Hoffard/Operator/Hernandez
Start-up NOx Limit	14.27 pounds	14.27 lbs per 60 min	60 minute average											Hoffard/Operator/Hernandez
Shut-down NOx Limit	4.07 pounds	4.07 lbs per 60 min	10 minutes average											Hoffard/Operator/Hernandez
**Maintenance Operations NOx Limit	44.0 pounds	44.0 lbs in any hour	60 minute average											Hoffard/Operator/Hernandez
CO Limit	4.0 parts per million	4 PPM	60 minute average											Hoffard/Operator/Hernandez
Start-up CO Limit	11.6 pounds	11.6 lbs per 60 min	60 minute average											Hoffard/Operator/Hernandez
Shut-down CO Limit	4.15 pounds	4.15 lbs per 60 min	10 minute average											Hoffard/Operator/Hernandez
**Maintenance Operations CO Limit	19.5 pounds	19.4 lbs in any hour	60 minute average											Hoffard/Operator/Hernandez
ROG Limit	2.0 parts per million	2 PPM	60 minute average											Hoffard/Operator/Hernandez
Start-up ROG Limit	1.29 pounds	1.29 lbs per 60 min	60 minute average											Hoffard/Operator/Hernandez
Shut-down ROG Limit	1.27 pounds	1.27 lbs per 60 min	10 minutes average											Hoffard/Operator/Hernandez
VOC Limit	412 pounds	412 lb/mo per unit	Monthly											Hoffard/Operator/Hernandez
PM-10 Limit	540 pounds	540 lb/mo per unit	Monthly											Hoffard/Operator/Hernandez
SOX Limit	108 pounds	108 lb/mo per unit	Monthly											Hoffard/Operator/Hernandez
VOC Limit	3608 pounds	3608 lbs/yr per unit	Annual											Hoffard/Operator/Hernandez
PM-10 Limit	4822 pounds	4822 lbs/yer per unit	Annual											Hoffard/Operator/Hernandez
SOX Limit	971 pounds	971 lbs/year per unit	Annual											Hoffard/Operator/Hernandez
Start-ups Limit	240 pounds	540 starts per unit	Year											Hoffard/Operator/Hernandez

*** Met Incentive**

****Maintenance-** optimizing and re-balancing fo the NH3 grid or catalyst modules, and the retuning and testing of the turbine control system.

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 SCAQMD 500-N REPORTS

No.	Unit No.	Description	AQMD Permit Limit	Actual Emissions	Duration	Date of Episode	Reported to AQMD	500N sent to AQMD	Inspector Site Visit	Notice of Violation	Responsible	Resolution/Comments
1	Unit 3 & 4	Shutdown NOx lbs exceedance	NOx lbs > 4.07 lbs	U3-0.70lbs/U4-0.83lbs	3 min/4 min	3/20/18	3/20/18	4/3/18	YES	YES	Hoffard/Robledo/Hernandez	Operator training
2	Unit 4	Startup/Shutdown NOx lbs exceedance	NOx lbs > 14.27 lbs	16.61 lbs	10 min	6/4/18	6/4/18	6/8/18	YES	No	Hoffard/Robledo/Hernandez	The solenoid valve coil was replaced
3	Unit 4	NOxppm and NOx lbs Shutdown; water injection shutdown	NOx ppm > 2.5 and NOx lbs > 4.07	0.3ppm/9.44 lbs	10 min	7/6/18	7/6/18	7/12/18	YES	No	Hoffard/Hernandez	The inlet NOx water injection signal was disabled for Unit 4 at the DCS
4	Unit 4	NOxppm and NOx lbs Shutdown; water injection shutdown	NOx ppm > 2.5 and NOx lbs > 4.07	1ppm/8.59 lbs	18 min	7/9/18	7/9/18	7/12/18	YES	No	Hoffard/Hernandez	The inlet NOx water injection signal was disabled for Unit 4 at the DCS
5	Unit 1/2	NOxppm - Alternate power was not supplied to the NH3 panels	NOx ppm > 2.5	0.8/0.72 ppm	7 min	7/10/18	7/10/08	7/18/18	YES	YES	Hoffard/Hernandez	Staff received refresher training on the importance of providing alternate power to all necessary equipment during breaker maintenance
6	Unit 1	Failed temperature thermocouple for the NH3 Dilution Air Heater	NOxppm > 2.5 and NOx lbs > 4.07	3.21ppm/4.9lbs	6 min	12/12/18	12/12/18	12/19/18	YES	No	Hoffard/Hernandez	Thermocouple was replance and unit tested

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 ENFORCEMENT ACTION NOTICES

NTC/NOV	No.	Description	Date Issued	Compliance Due Date	Response Submitted	Responsible	Resolution/Comments
*NOV	P66604	A shutdown Noxlbs exceedance occurred when the operator, during shutdown, attempted to control the NH3 slip by lowering the NH3 flow and observing the incorrect monitor.	4/5/18	3/20/18	3/20/18	Robledo/Hoffard	Management discussed issue with operator. Further training scheduled with all operators.

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 CEC REPORTING

CEC Requirement	Period	Last Done	Next Due	Responsibility	Comments
CEC 1304	varies one to two months after the quarter	10/22/18	1/30/19	Hoffard/Hernandez	
CEC 1306C	Semi-Annual	7/31/18	2/14/19	Hoffard	
CEC Annual Report	30 days at end of calender year	1/30/18	1/31/19	Hoffard/Hernandez	
CEC Quarterly Operations Report	30 days at end of each quarter	10/31/18	1/30/19	Hoffard/Hernandez	
Building and structure inspection	Semi-annually	12/30/18	6/30/19	Hoffard/Hernandez	
BOD/TSS	Semi-annually	10/1/18	4/15/19	Hoffard/Truesdale	
Legionella/TDS - PM10 calculation	Quarterly	12/3/18	3/30/19	Hoffard/Truesdale	

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 CAISO REPORTING

CAISO Requirement	Period	Canyon Site Done	Canyon Site Due	Responsibility	Comments
Planned Outage Schedule	Annual Spring & Fall Outages	11/5/18	10/15/19	Hoffard	
DPG recertification	Triannually	3/30/17	3/30/20	Hoffard/Trimark	Changed to 3 yrs per Trimark

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 CAL RMP REPORTING

Cal. Refrigerant Management Program (RMP) Requirements (> 2000 lbs.)	Limit	Period	Last Done	Next Due	Responsible
Annual Report and Fee Payment	Not Applicable	Due Annually (March 1 Each Year)	2/17/18	3/1/19	Hernandez/Hoffard
Leak Detection System Audit and Cals.	Not Applicable	Due Annually	1/29/18	6/30/19	Trane/Hoffard

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 CAL ARP

California Accidental Release Prevention Program	Period	Last Done	Next Due	Responsibility
Hazard Review - 19% Aqua Ammonia System	Every 5 years	06/01/16	6/30/21	Hoffard/AFD
Compliance Audit	Every three years	2/19/17	2/19/20	Ralph McCaffrey
Ammonia Refresher Training	Every three years	6/17/17	6/17/20	Hoffard/McCaffrey

California Air Resources Board

Stationary Equipment Refrigerant Management Program (RMP)

Canyon Power Plant (CPP) Compliance Guidance

Compliance Year: 2018
Facility Size Classification: Large (at least 1 unit w/≥ 2000 lbs high GWP-refrigerant capacity)
Annual Fee: \$370.00 (Fees must be paid annually by the reporting deadline)
No. of Refrigeration Systems: 2 (CH-100, CH-200)
Location(s): Both chillers are located in the Northeast portion of facility footprint, just South of two water storage tanks.

Refrigeration System Specifications

CH-100: Centrifugal Chiller w/5200 lbs R-123 (full charge), Trane, Model No. CDHF3000, Serial No. L10B00882;
> ALDS ID: **301-IRF A:** Vulcain/Honeywell, Model No. 301-EM, Concentration Monitor (Direct System), 2 Infrared Sensors
Done
Last System Audit: 1/29/18 **Next audit target:** 6/30/2019 **Deadline:** 12/31/2019
Last Calibration: 1/29/18 **Next calibration target:** 6/30/2019 **Deadline:** 12/31/2019

CH-100: Centrifugal Chiller w/5200 lbs R-123 (full charge), Trane, Model No. CDHF3000, Serial No. L10A00350;
>ALDS ID: **301-IRF B:** Vulcain/Honeywell, Model No. 301-EM, Concentration Monitor (Direct System), 2 Infrared Sensors
Last System Audit: 1/29/18 **Next audit target:** 6/30/2019 **Deadline:** 12/31/2019
Last Calibration: 1/29/18 **Next calibration target:** 6/30/2019 **Deadline:** 12/31/2019

CARB Reporting (due by 3/1 each year)

Last CARB Report: 2/16/2018 **Next reporting deadline:** 3/1/2019 (Fee payment due on or before this date)

Automatic Leak Detection System Requirements

- Each system must be audited and calibrated using manufacturer's recommended procedures to ensure that the system:
 - 1.) accurately detects a concentration level of 10 parts per million of vapor of the specific refrigerant used in the system; and
 - 2.) alerts the operator when a refrigerant concentration of 100 parts per million of vapor of the specific refrigerant is reached.

● The audit and calibration must be completed on each leak detection system at least once per calendar year.

- If an automatic leak detection system alerts plant operators, a leak inspection must be conducted within 24 hours after the system alert.
- This leak inspection must be completed using a calibrated refrigerant leak detection device or a bubble test to confirm a refrigerant leak and to determine the leak location(s).
- If during a required leak inspection or at any time oil residue is observed indicating a refrigerant leak, a leak inspection must be conducted using a calibrated refrigerant leak detection device or a bubble test to confirm the leak.
- A leak inspection must be conducted using a calibrated refrigerant leak detection device, a bubble test, or observation of oil residue, each time an additional refrigerant charge equal to or greater than 5 pounds, or one percent of the refrigeration system full charge (whichever is greater), is added to the system.

Leak Repairs and Subsequent Leak Inspection Requirements

- A refrigerant leak must be repaired by an EPA-certified technician holding a current and active C38 - Refrigeration Contractor's license, or by an employee of a contractor with these qualifications.
 - > A contractor's license is not required if:
 - 1.) a City employee services or repairs the system and wages are sole compensation; or
 - 2.) the City performs the service or repair through one undertaking, or by one or more contracts, and the aggregate contract price for labor, materials, and all other items is less than \$500; or
 - 3.) the service or repair is performed pursuant to a contract entered into before 1/1/2011, by the City.

● Leaks must be repaired within 14 days of detection, unless a longer time period is allowed (*)

* 45-day allowance if ANY of the following criteria is met:

- 1.) A certified technician is not available to complete the repair or replace the component(s). This must be documented in writing per recordkeeping requirements;
- 2.) The parts necessary to repair a refrigerant leak are unavailable, and the operator obtains a written statement from the refrigeration system or component manufacturer or distributor stating that the parts are unavailable. This must be documented in writing per recordkeeping requirements; or
- 3.) The refrigerant leak repair requires an industrial process shutdown that results in a process temporarily ceasing to manufacture the intermediate or final product that is produced when the industrial process refrigeration appliance is in operation.

* 120-day allowance if ALL of the following criteria is met:

- 1.) The facility is an entity subject to Mandatory Greenhouse Gas Emissions Reporting requirements;
- 2.) The refrigeration system is an industrial process refrigeration appliance;
- 3.) The refrigerant leak repair requires an industrial process shutdown that results in a process temporarily ceasing to manufacture the intermediate or final product that is produced when the industrial process refrigeration appliance is in operation; and
- 4.) Written records are maintained to document that all of the conditions are met.

● An initial verification test must be performed upon completion of refrigerant leak repairs.

● A follow-up verification test must be conducted on the complete refrigeration system after the initial verification test.

- > If the system was evacuated during the refrigerant leak repair, then this test should be conducted when the system is operating at normal operating characteristics and conditions.
- > If the system was not evacuated during the refrigerant leak repair, then the follow-up verification test requirement is satisfied once the required changes are made to return the refrigeration system to normal operating characteristics and conditions.

● If either the initial or follow-up verification tests indicate that a refrigerant leak is still occurring, the leak must be repaired within 14 days (unless a longer time period is allowed*).

- > A retrofit or retirement plan may also be prepared in lieu of this repair.

● If a follow-up verification test indicates that a refrigerant leak has not been successfully repaired within the 14 days allowed, and no exemption has been received, then:

- > successfully repair the leak within 45 days of the initial leak detection; or
- > prepare a retrofit or retirement plan within 60 days of the initial leak detection.

● If a follow-up verification test indicates that a refrigerant leak has not been successfully repaired within the 45 days allowed(*), and no exemption has been received, then:

- > prepare a retrofit or retirement plan within 60 days of the initial leak detection.

● If a follow-up verification test indicates that a refrigerant leak has not been successfully repaired within the 120 days allowed(*), and no exemption has been received, then:

- > prepare a retrofit or retirement plan within 135 days of the initial leak detection.

Retrofit or Retirement Plan Requirements

● If required to prepare a retirement or retrofit plan, the plan must establish a schedule to retrofit or retire the leaking system no later than six months after the initial leak detection, and all work must be completed during the 6-month period.

● The plan must be kept on-site where the leaking system is located.

● If a refrigeration system is to be retired and replaced, the plan must include information specific to the new refrigeration system to be constructed or installed. (**)

● If a refrigeration system is to be retrofitted, the plan must include information specific to the refrigeration system after the retrofit has been completed. (**)

** A retrofit or retirement plan must include the following information:

- 1.) The system identification number of the refrigeration system being retired or retrofitted;
- 2.) equipment type;
- 3.) equipment manufacturer;
- 4.) equipment model or description;
- 5.) intended physical location of the refrigeration system through schematic or floor plan with locations clearly noted;
- 6.) temperature classification (i.e., low, medium, other);
- 7.) full charge of refrigeration system;
- 8.) type of refrigerant used;
- 9.) if the refrigeration system is to be retired and replaced, a plan to dispose of the retired system;
- 10.) a timetable which includes, at a minimum:

- > the date installation, construction, or retrofit of the refrigeration system is expected to begin, and
 - > the expected completion date of the installation, construction, or retrofit of the refrigeration system; and
- 11.) A signature by a representative of the facility, including the date.

- If the system is being mothballed, these requirements do not apply until the day that the refrigeration system resumes operation at a facility.
- If an exemption has been received, then the preparation and implementation of a retrofit or retirement plan is not required during the exemption time period. If an exemption request has been submitted, then the plan preparation or implementation is not required until a final exemption determination is made.

Recordkeeping Requirements

- Maintain the following records for a minimum of 5 years:
 - 1.) All registration information required by the rule;
 - 2.) documentation of all leak detection systems, leak inspections, and automatic leak detection system annual audit and calibrations;
 - 3.) records of refrigeration system service and refrigerant leak repairs, and any documentation of conditions allowing repair to be conducted more than 14 days after leak detection;
 - 4.) retrofit or retirement plans;
 - 5.) all CARB reports;
 - 6.) any application for exemption, and any notification of an exemption approved, denied, revoked, or modified;
 - 7.) invoices for all refrigerant purchases;
 - 8.) records of all shipments of refrigerants for reclamation or destruction, to include:
 - > Name and address of the person the refrigerant was shipped to;
 - > Weight in pounds of refrigerant shipped;
 - > type of refrigerant shipped;
 - > date of shipment;
 - > purpose of shipment (i.e., reclamation, destruction, etc.);
 - 9.) records of all refrigeration systems component data, measurements, calculations and assumptions used to determine the full charge.

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 CITY REPORTING

Anaheim Requirement	Period	Last Done	Next Due	Responsibility
Certified (Facility) Fire Protection Systems Inspection	Semi-Annual	12/6/18	5/6/19	Hoffard
Electric protection relays	5-years	5/1/16	5/1/21	Hoffard
8-Hour refresher HAZWOPER	Annual	07/09/18	6/30/19	Hoffard/Ralph McCaffrey
Oil Spill Prevention, Control and Countermeasure Plan	5-years	12/7/16	12/7/21	McCaffrey/Hoffard
Hazardous Materials Business Plans (CERS)	Annual	3/8/18	3/15/19	McCaffrey/Hoffard

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 EIA REPORTING

EIA Requirement	Period	Last Done	Next Due	Responsibility	Comments
EIA 860-A	Annual	2/13/18	2/15/19	Hoffard/Hernandez	
EIA-923-M	Monthly	1/15/19	2/15/19	Hoffard/Hernandez	

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 OSHA REPORTING

OSHA Requirement	Period	Unit 1 Done	Unit 1 Due	Unit 2 Done	Unit 2 Due	Unit 3 Done	Unit 3 Due	Unit 4 Done	Unit 4 Due	Canyon Site Done	Canyon Site Due	Responsible
LM6000 Overhead Crane inspection	Annually	12/3/18	12/3/19	12/6/18	12/6/19	12/11/18	12/11/19	12/13/18	12/13/19			NACC/Hoffard
Warehouse Crane inspection	Annually									12/22/18	12/22/19	NACC/Hoffard
LM6000 Overhead Crane load test	Every 4 years	11/21/16	11/1/20	11/21/16	11/1/20	11/14/13	11/14/18	11/21/16	11/1/20	12/21/16	12/22/20	NACC/Hoffard
Warehouse Crane load test	Every 4 years									12/22/16	12/23/20	NACC/Hoffard
Fuel Gas system safeties - CTG	Annually									5/27/18	5/31/19	Hoffard
Fuel Gas system safeties - Gas Yard	Annually									5/27/18	5/31/19	Hoffard
Instrument Air system safeties	Every 5 years									10/17/16	10/17/21	Hoffard
Ammonia tank system safeties	Updated Every 4 years									11/8/16	11/30/20	Hoffard
Air Pressure tank inspection / permit renewal	Every 5 years									9/16/16	9/16/21	Hoffard/HSB insurance

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 EPA REPORTING

EPA Requirement	Period	Unit 1 Done	Unit 1 Due	Unit 2 Done	Unit 2 Due	Unit 3 Done	Unit 3 Due	Unit 4 Done	Unit 4 Due	Responsible
Linearity Test	anytime within the quarter	11/5/18	3/30/19	11/6/18	3/30/19	11/7/18	3/30/19	11/8/18	3/30/19	Montrose/Hoffard/Hernandez
Electronic Data Report (EDR)	15 days at the end of the Quarter	10/18/18	1/30/19	10/18/18	1/30/19	10/15/18	1/30/19	10/11/18	1/30/19	B&W/Hernandez/Hoffard
Greenhouse gas monitoring report	Annually	2/20/18	3/31/19	2/20/18	3/31/19	2/20/18	3/31/19	2/20/18	3/31/19	Hernandez/Hoffard
EPA Form 500 ACC	Annually	2/22/18	3/1/19	2/22/18	3/1/19	2/22/18	3/1/19	2/22/18	3/1/19	Hernandez/Hoffard

Spill Prevention, Control and Countermeasures Plan	Period	Last Done	Next Due	Responsibility	Comments
SPCC Facility Inspection	Monthly	12/21/18	1/30/19	Hernandez	

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 FIRE CODE REPORTING

Fire Code Requirement	Period	Last Done	Next Due	Responsibility
Fire detection system certification	Annual	5/4/18	5/31/19	Hoffard/Fire Protection Systems
Fire detection system inspection	Semi-annual	12/3/18	5/3/19	Hoffard/Fire Protection Systems
CO 2 cylinder (weight)	Annual	12/13/18	12/13/19	Hoffard/Fire Protection Systems

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 OCSD REPORTING

OCSD Requirement	Period	Last Done	Next Due	Responsibility
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Permit # 1-600296

Effluent Meter reading Report	Monthly	12/4/18	1/20/19	Operator/Hoffard/Hernandez
Effluent Sample collection	semi-annual	10/25/18	4/15/19	Sanks/Hernandez/Hoffard
Effluent Meter Certification	Annual	1/10/18	1/31/19	Sanks/Hernandez/Hoffard
Class I Permit Renewal	every 2 years	3/30/17	3/31/19	Sanks/Hernandez/Hoffard

CANYON POWER PLANT COMPLIANCE MATRIX

CY 2018 WQMP REPORTING

Storm Drain Systems	Period	Last Done	Next Due	Responsibility
Catch Basins (25) inspection	Semi-Annual (in-house)	4/13/18	4/30/19	Hernandez/Hoffard
Infiltration Vault	Annual Inspection	4/13/18	4/30/19	Hernandez/Hoffard
Contech Storm Filters	Annual Inspection	4/13/18	4/30/19	Hernandez/Hoffard

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 2
FACILITY OPERATIONAL STATUS REPORT

Overall Project Status

Canyon Power Plant construction was completed in August 2011. Units 3 and 4 were ready for commercial operation on July 27, 2011. Units 1 and 2 were ready for commercial operation on September 15, 2011. All four gas turbines completed commissioning and were in commercial operation for the entire compliance year 2018.

No changes planned to the operational status of the facility.

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 3
CEC APPROVED POST CERTIFICATION CHANGES

**No CEC approved post certification changes
and no Title V revisions to report for CY 2018**

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 4
MISSED SUBMITTAL DEADLINES

No Missed submittal deadlines for CY 2018

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 5
PERMIT FILINGS AND PERMITS ISSUED
DURING THE PERIOD

No permit filings or permits issued for CY 2018

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 6
PROJECTED COMPLIANCE TESTING
FOR THE NEXT YEAR

Projected Environmental Compliance Testing schedule in CY 2019:

Compliance Test	Frequency	Scheduled Quarter
NH3 Slip Test	Annual	2Q, 3Q; 4Q
RATA Test	Annual or Semi-Annual	2Q, 3Q; 4Q
Cooling Tower TDS/PM10	Quarterly	All four Quarters
Cooling Tower Legionella	Quarterly	All four Quarters
Fuel H2S Test	Monthly	January through December
Fuel Flow Accuracy	Annual	2Q
SCR Differential Pressure	Annual	2Q
SCR Inlet Temperature	Annual	2Q
NH3 Flow Meter Calibration	Annual	2Q
Linearity/CGA Test	Quarterly	All four Quarters

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 7
ADDITIONS TO ON-SITE COMPLIANCE FILE

GENERAL PLANT:

Cooling Tower Legionella test report
Cooling Tower PM10 test reports
Monthly Waste Water reports
Monthly Potable water use reports
Monthly Reclaim water use reports
Monthly natural gas burn records
Monthly natural H₂S gas test reports
Refrigerant monitor calibration report
RECLAIM RTC holdings records

CEC:

Quarterly reports
Quarterly 1304 Report
Annual report
Potable water use records

CAISO:

Certificate of Compliance

CARB:

Greenhouse gas records
Annual refrigerant report
Annual SF6 use report

DIESEL ENGINE:

Maintenance Reports
Fuel purchase records
Engine run-time records
HiBack calibration report
Engine tune up report

EIA

Annual/Monthly EIA 923 report
Annual EIA 860 report

EPA:

Part 98 Greenhouse Gas reports
Certificate of Representation forms

RECLAIM:

Daily submittals
Monthly submittals
Quarterly submittals
SCAQMD QCER Forms
SCAQMD 500-N Forms

SCAQMD 500-SAM Forms
SCAQMD 500-ACC Form
SCAQMD APEP Form
SCAQMD AER Report
SCAQMD Rule 218 Semi-annual reports

SCAQMD:

NOV & NTCs issued by the SCAQMD
SCAQMD responses to 500-N forms

UNIT 1:**EPA**

Quarterly Acid Rain report
Quarterly Acid Rain report & feedback report
Annual Form 500-ACC

Calibration Records

Fuel flow meter calibration report
Water flow meter calibration report
NH₃ flow meter calibration report
SCR DP transducer calibration report
SCR inlet temperature transducer Cal report
SCR outlet temperature transducer Cal report

Calibration gas logs

Linearity test reports
Part 75 RATA test reports
RECLAIM RATA test reports
Rule 218 (CO) RATA test reports
NH₃ slip test reports

Tri-annual compliance testing:

VOC emissions;
PM10 emissions; and
ROG emissions

UNIT 2:

EPA

Quarterly Acid Rain report
Quarterly Acid Rain report & feedback report
Annual Form 500-ACC

Calibration Records

Fuel flow meter calibration report
Water flow meter calibration report
NH3 flow meter calibration report
SCR DP transducer calibration report
SCR inlet temperature transducer Cal report
SCR outlet temperature transducer Cal report

Calibration gas logs
Linearity test reports
Part 75 RATA test reports
RECLAIM RATA test reports
Rule 218 (CO) RATA test reports
NH3 slip test reports

Tri-annual compliance testing:
VOC emissions;
PM10 emissions; and
ROG emissions

UNIT 3:

EPA

Quarterly Acid Rain report
Quarterly Acid Rain report & feedback report
Annual Form 500-ACC

Calibration Records

Fuel flow meter calibration report
Water flow meter calibration report
NH3 flow meter calibration report
SCR DP transducer calibration report
SCR inlet temperature transducer Cal report
SCR outlet temperature transducer Cal report

Calibration gas logs
Linearity test reports
Part 75 RATA test reports
RECLAIM RATA test reports

Rule 218 (CO) RATA test reports
NH3 slip test reports

Tri-annual compliance testing:
VOC emissions;
PM10 emissions; and
ROG emissions

UNIT 4:

EPA

Quarterly Acid Rain report
Quarterly Acid Rain report & feedback report
Annual Form 500-ACC

Calibration Records

Fuel flow meter calibration report
Water flow meter calibration report
NH3 flow meter calibration report
SCR DP transducer calibration report
SCR inlet temperature transducer Cal report
SCR outlet temperature transducer Cal report

Calibration gases logs
Linearity test reports
Part 75 RATA test reports
RECLAIM RATA test reports
Rule 218 (CO) RATA test reports
NH3 slip test reports

Tri-annual compliance testing:
VOC emissions;
PM10 emissions; and
ROG emissions

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 8
UN-PLANNED FACILITY CLOSURE PLAN REVIEW

An “Un-Planned Facility Closure Plan” was drafted and submitted to the CEC in the First Quarter of 2014. At this time, no revisions or changes are required.

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 9

Notice of Violation and Notice to Comply
Issued in CY 2018

**Notices of Violation
Issued by the SCAQMD in the CY 2018**

4/5/18



South Coast Air Quality Management District
21865 COPLEY DRIVE, DIAMOND BAR, CA 91765-4178

P 66604

NOTICE OF VIOLATION

DATE OF VIOLATION		
Month:	Day:	Year:
3	20	18

Facility Name:	Canyon Power Plant	Facility ID#:	153992	Sector:	
Location Address:	3071 E. Miraloma Ave.	City:	Anaheim	Zip:	92806
Mailing Address:	3071 E. Miraloma Ave.	City:	Anaheim	Zip:	92806

YOU ARE HEREBY NOTIFIED THAT YOU HAVE BEEN CITED FOR ONE OR MORE VIOLATIONS OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULES, STATE LAW OR FEDERAL LAW. IF PROVEN, SUCH VIOLATION(S) MAY RESULT IN THE IMPOSITION OF CIVIL OR CRIMINAL PENALTIES.

EACH DAY A VIOLATION OCCURS MAY BE HANDLED AS A SEPARATE OFFENSE REGARDLESS OF WHETHER OR NOT ADDITIONAL NOTICES OF VIOLATION ARE ISSUED.

DESCRIPTION OF VIOLATIONS

#	Authority*	Code Section or Rule No.	SCAQMD Permit to Operate or CARB Registration No.	Condition No. (If Applicable)	Description of Violation
1	☒ SCAQMD ☐ CH&SC ☐ CCR ☐ CFR	3002 (C)(1)	A/N 555830 A/N 555831	4/5/18 MP A.99.1 A99.1	Failure to comply with Title V Facility Permit Condition A99.1 by exceeding NOx emissions limit of 4.07 lbs for an hour of operation that includes a shut down.
2	☐ SCAQMD ☐ CH&SC ☐ CCR ☐ CFR				
3	☐ SCAQMD ☐ CH&SC ☐ CCR ☐ CFR				
4	☐ SCAQMD ☐ CH&SC ☐ CCR ☐ CFR				
5	☐ SCAQMD ☐ CH&SC ☐ CCR ☐ CFR				

Served To:	Bertha Hernández	Phone:	714-765-7481	Served By:	Mary Ann Pham	Date Notice Served:	4/05/18
Title:	Environmental Services Specialist	Email:	bhernandez@anaheim.net	Phone No:	☒ 909-396-3127 ☐ 310-233-	Email:	mpham1@aqmd.gov

*Key to Authority Abbreviations:

SCAQMD – South Coast Air Quality Management District
CCR – California Code of Regulations

CH&SC – California Health and Safety Code
CFR – Code of Federal Regulations

Method of Service:

☐ In Person

☒ Certified Mail

ORIGINAL

**Notices to Comply
Issued by the SCAQMD in the CY 2018**

NONE

SCAQMD FORM 500-N
Submitted by the Facility



South Coast Air Quality Management District

Form 500-N**Title V - Deviations, Emergencies & Breakdowns**

*This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.

Mail To:
SCAQMD
P.O. Box 4941
Diamond Bar, CA 91765-0941

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): <u>CANYON POWER PLANT Unit 3 (D13) and Unit 4 (D19)</u>		2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): <u>153992</u>	
3. Address: (where incident occurred) <u>3071 E. Miraloma Avenue</u> <u>Anaheim</u> City		Street Address <u>CA</u> State <u>92806</u> Zip	
4. Mailing Address: (if different from Item 3) City		Street Address State Zip	
5. Provide the name, title, and phone number of the person to contact for further information: <u>Ronald Hoffard</u> Name <u>Generation Plant Manager</u> Title <u>(714) 765-4536</u> Phone #			

Section II - Reporting of Breakdowns, Deviations, and Emergencies

Type of Incident	Verbal Report Due*	Written Report Due
a. ☐ Emergency under Rule 3002(g)	Within 1 hour of discovery	Within 2 working days from when the emission limit was exceeded.
b. ☐ Breakdown under: ☐ Rule 430 (Non-RECLAIM) ☐ Rule 2004 (RECLAIM) ☐ Rule 218 (Non-RECLAIM) [See Rule 218(f)(3)]	For Rules 430 & 2004 - Within 1 hour of discovery. For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours	For Rules 430 & 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from start of the breakdown, unless a written extension is granted. For Rule 218 - With required semi-annual reports.
c. ☒ Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B]	Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation.	Within 14 days of discovery of the deviation.
d. ☐ Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23]	None	With required semi-annual monitoring reports.

2. The incident was first discovered by: Victor Carnaggio on 03/20/2018 10:30 ☐ AM ☒ PM
Name Date Time

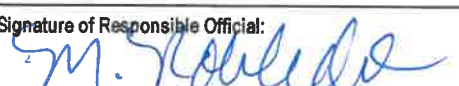
3. The incident was first reported by: Voicemail left at 1800-CUT-SMOG on 03/20/2018 10:45 ☐ AM ☒ PM
Name of AQMD Staff Person Date Time

a. ☒ Via Phone
b. ☐ In Person

Notification Number (Required): 507637

4. When did the incident actually occur? 03/20/2018 08:03 ☐ AM ☒ PM
Date Time

AQMD USE ONLY	Received By:		Assigned By:		Inspector:	
	Date/Time Received:		Date/Time Assigned:		Date/Time Received Assignment:	
	Date Delivered To Team:		Date Reviewed Inspector Report:		Date Inspected Facility:	
	Team:	Sector:	Breakdown/Deviation Notification No.		Date Completed Report:	
	Recommended Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____
	Final Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____

5. Has the incident stopped? a. ☒ Yes, on: <u>03/20/2018</u> ^{u3} ^{u4} 0806/0807		Time <u>3min/4min</u> ☐ AM ☒ PM		b. ☐ No	
6. What was the total duration of the incident? _____		Days _____		Hours _____	
7. For equipment with an operating cycle, as defined in Rule 430 (b)(3)(A), when was the end of the operating cycle during which the incident occurred? _____					
Date _____ Time _____ ☐ AM ☐ PM					
8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary. SEE ATTACHMENT					
9. The incident may have resulted in a:					
a. ☒ Violation of Permit Condition(s): <u>A99.1 NOx 4.07 lbs Shutdown hour</u>					
b. ☐ Violation of AQMD Rule(s): _____					
10. What was the probable cause of the incident? Attach additional pages as necessary. SEE ATTACHMENT					
11. Did the incident result in excess emissions? ☐ No ☒ Yes (Complete the following and attach calculations.)					
☐ VOC _____ lbs		☒ NOx ^{u3} ^{u4} <u>0.70 / 0.83</u> lbs		☐ SOx _____ lbs	
☐ CO _____ lbs		☐ PM _____ lbs		☐ Other: _____ lbs pollutant	
12. For RECLAIM facilities Subject to Rule 2004 (i)(3) ONLY: If excess emissions of NOx and/or SOx were reported in Item 11, do you want these emissions to be counted when determining compliance with your annual allocations?					
a. ☒ Yes, for: ☐ NOx ☐ SOx b. ☐ No, for: ☐ NOx ☐ SOx					
If box 12(b) above is checked, include all information specified in Rule 2004(i)(3)(B) and (C), as applicable.					
13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary. SEE ATTACHMENT					
14. Was the facility operating properly prior to the incident?					
a. ☒ Yes b. ☐ No, because: _____					
15. Did the incident result from operator error, neglect or improper operation or maintenance procedures?					
a. ☒ Yes b. ☐ No, because: _____					
16. Has the facility returned to compliance?					
a. ☐ No, because: _____					
b. ☒ Yes (Attach evidence such as emissions calculations, contemporaneous operating logs or other credible evidence.)					
Section III - Certification Statement					
I certify under penalty of law that based on information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.					
For Title V Facilities ONLY: ☒ I also certify under penalty of law that that I am the responsible official for this facility as defined in AQMD Regulation XXX.					
1. Signature of Responsible Official: 			2. Title of Responsible Official: INTEGRATED RESOURCES MANAGER		
3. Print Name: MANNY ROBLEDO			4. Date: <u>4-2-18</u> ^{MR} 03/29/2018		
5. Phone #: (714) 765-5177			6. Fax #:		
7. Address of Responsible Official:					
201 S. Anaheim Blvd., Ste. 801		Anaheim		CA	92805
Street #		City		State	Zip

AQMD 500N Episode Date: 3/20/2018

Identify issue: NOx lbs exceedance shutdown hour

Canyon Power Plant: Unit 3 & Unit 4 /ID# 152993

Notification: 507637

Question 8 - Describe the incident and identify each piece of equipment:

On March 20, 2018 Units 3 & 4 were dispatched to be shut down at 1650 hours and the shutdown started at approximately 1956 hours. During the shutdown the operator noticed that the ammonia slip rose above its normal operating limit, and he thought that he had to respond to bring it back within limits; therefore, the operator took manual control of the ammonia flow and proceeded to reduce ammonia flow. Unfortunately, the operator was observing the wrong monitor screen and he lowered the ammonia flow too much without an associated response on the monitor. The ammonia flow actually went to zero on Units 3 & 4 for approximately 5 minutes during the end of the 10 minute shutdown period, which caused a total of 1.53 lbs of excess emissions (NOx) for both units during the shutdown.

Question 10 – What was the probable cause of the incident?

The operator inadvertently observed the incorrect monitor while adjusting ammonia flow.

Question 13 – Describe the steps taken to correct the problem:

The Generation Plant Manager has counseled and provided additional training to the operator who caused the exceedance, and all plant operators have received refresher training to avoid recurrence.

Question 16 – Facility retuned to compliance?

Yes, Unit 3 & 4 came into compliance on March 20, 2018 at 2006 and 2007 hours.

		Time	3_Flame_On 1=ON	3_NOX_LBHR #/hr	3_NOxlb_SD #/hr	3_NOxlbSDH pounds	3_NH3_Flow #/hr	3_Shutdown 1=ON
Startup period 35 minutes	1	16:51	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	2	16:52	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-0.01</u>	<u>0</u>
	3	16:53	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	4	16:54	<u>1</u>	<u>3.09</u>	<u>0</u>	<u>0</u>	<u>-0.01</u>	<u>0</u>
	5	16:55	<u>1</u>	<u>15</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	6	16:56	<u>1</u>	<u>18.18</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	7	16:57	<u>1</u>	<u>14.44</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	8	16:58	<u>1</u>	<u>10.69</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	9	16:59	<u>1</u>	<u>12.15</u>	<u>0</u>	<u>0</u>	<u>-0.01</u>	<u>0</u>
	10	17:00	<u>1</u>	<u>16.96</u>	<u>0</u>	<u>0</u>	<u>73.75</u>	<u>0</u>
	11	17:01	<u>1</u>	<u>22.79</u>	<u>0</u>	<u>0</u>	<u>103.85</u>	<u>0</u>
	12	17:02	<u>1</u>	<u>17.82</u>	<u>0</u>	<u>0</u>	<u>116.09</u>	<u>0</u>
	13	17:03	<u>1</u>	<u>4.33</u>	<u>0</u>	<u>0</u>	<u>124.09</u>	<u>0</u>
	14	17:04	<u>1</u>	<u>2.14</u>	<u>0</u>	<u>0</u>	<u>125.63</u>	<u>0</u>
	15	17:05	<u>1</u>	<u>1.74</u>	<u>0</u>	<u>0</u>	<u>125.53</u>	<u>0</u>
	16	17:06	<u>1</u>	<u>1.64</u>	<u>0</u>	<u>0</u>	<u>125.2</u>	<u>0</u>
	17	17:07	<u>1</u>	<u>1.49</u>	<u>0</u>	<u>0</u>	<u>124.9</u>	<u>0</u>
	18	17:08	<u>1</u>	<u>1.44</u>	<u>0</u>	<u>0</u>	<u>124.03</u>	<u>0</u>
	19	17:09	<u>1</u>	<u>1.39</u>	<u>0</u>	<u>0</u>	<u>120.56</u>	<u>0</u>
	20	17:10	<u>1</u>	<u>1.34</u>	<u>0</u>	<u>0</u>	<u>120.64</u>	<u>0</u>
	21	17:11	<u>1</u>	<u>1.39</u>	<u>0</u>	<u>0</u>	<u>120.08</u>	<u>0</u>
	22	17:12	<u>1</u>	<u>1.44</u>	<u>0</u>	<u>0</u>	<u>119.07</u>	<u>0</u>
	23	17:13	<u>1</u>	<u>1.49</u>	<u>0</u>	<u>0</u>	<u>118.15</u>	<u>0</u>
	24	17:14	<u>1</u>	<u>1.49</u>	<u>0</u>	<u>0</u>	<u>117.18</u>	<u>0</u>
	25	17:15	<u>1</u>	<u>1.54</u>	<u>0</u>	<u>0</u>	<u>116.6</u>	<u>0</u>
	26	17:16	<u>1</u>	<u>1.54</u>	<u>0</u>	<u>0</u>	<u>115.78</u>	<u>0</u>
	27	17:17	<u>1</u>	<u>1.59</u>	<u>0</u>	<u>0</u>	<u>115.12</u>	<u>0</u>
	28	17:18	<u>1</u>	<u>1.59</u>	<u>0</u>	<u>0</u>	<u>114.09</u>	<u>0</u>
	29	17:19	<u>1</u>	<u>1.59</u>	<u>0</u>	<u>0</u>	<u>113.44</u>	<u>0</u>
	30	17:20	<u>1</u>	<u>1.59</u>	<u>0</u>	<u>0</u>	<u>112.29</u>	<u>0</u>
	31	17:21	<u>1</u>	<u>1.59</u>	<u>0</u>	<u>0</u>	<u>111.61</u>	<u>0</u>
	32	17:22	<u>1</u>	<u>1.64</u>	<u>0</u>	<u>0</u>	<u>111.01</u>	<u>0</u>
	33	17:23	<u>1</u>	<u>1.64</u>	<u>0</u>	<u>0</u>	<u>110.36</u>	<u>0</u>
	34	17:24	<u>1</u>	<u>1.69</u>	<u>0</u>	<u>0</u>	<u>109.48</u>	<u>0</u>
	35	17:25	<u>1</u>	<u>1.74</u>	<u>0</u>	<u>0</u>	<u>108.88</u>	<u>0</u>
		17:26	<u>1</u>	<u>1.79</u>	<u>0</u>	<u>0</u>	<u>107.98</u>	<u>0</u>
		17:27	<u>1</u>	<u>1.84</u>	<u>0</u>	<u>0</u>	<u>107.22</u>	<u>0</u>
		17:28	<u>1</u>	<u>1.84</u>	<u>0</u>	<u>0</u>	<u>106.81</u>	<u>0</u>
		17:29	<u>1</u>	<u>1.89</u>	<u>0</u>	<u>0</u>	<u>106.13</u>	<u>0</u>
		17:30	<u>1</u>	<u>1.89</u>	<u>0</u>	<u>0</u>	<u>105.16</u>	<u>0</u>
		17:31	<u>1</u>	<u>1.94</u>	<u>0</u>	<u>0</u>	<u>104.54</u>	<u>0</u>
		17:32	<u>1</u>	<u>1.94</u>	<u>0</u>	<u>0</u>	<u>103.76</u>	<u>0</u>
		17:33	<u>1</u>	<u>1.99</u>	<u>0</u>	<u>0</u>	<u>103.15</u>	<u>0</u>
		17:34	<u>1</u>	<u>2.04</u>	<u>0</u>	<u>0</u>	<u>102.43</u>	<u>0</u>

Cali

17:35	<u>1</u>	<u>2.09</u>	<u>0</u>	<u>0</u>	<u>101.85</u>	<u>0</u>
17:36	<u>1</u>	<u>2.09</u>	<u>0</u>	<u>0</u>	<u>101.26</u>	<u>0</u>
17:37	<u>1</u>	<u>2.14</u>	<u>0</u>	<u>0</u>	<u>100.69</u>	<u>0</u>
17:38	<u>1</u>	<u>2.14</u>	<u>0</u>	<u>0</u>	<u>100.09</u>	<u>0</u>
17:39	<u>1</u>	<u>2.19</u>	<u>0</u>	<u>0</u>	<u>99.58</u>	<u>0</u>
17:40	<u>1</u>	<u>2.19</u>	<u>0</u>	<u>0</u>	<u>98.99</u>	<u>0</u>
17:41	<u>1</u>	<u>2.24</u>	<u>0</u>	<u>0</u>	<u>98.29</u>	<u>0</u>
17:42	<u>1</u>	<u>2.29</u>	<u>0</u>	<u>0</u>	<u>97.9</u>	<u>0</u>
17:43	<u>1</u>	<u>2.29</u>	<u>0</u>	<u>0</u>	<u>97.23</u>	<u>0</u>
17:44	<u>1</u>	<u>2.34</u>	<u>0</u>	<u>0</u>	<u>96.69</u>	<u>0</u>
17:45	<u>1</u>	<u>2.39</u>	<u>0</u>	<u>0</u>	<u>96.3</u>	<u>0</u>
17:46	<u>1</u>	<u>2.39</u>	<u>0</u>	<u>0</u>	<u>95.92</u>	<u>0</u>
17:47	<u>1</u>	<u>2.44</u>	<u>0</u>	<u>0</u>	<u>95.29</u>	<u>0</u>
17:48	<u>1</u>	<u>2.49</u>	<u>0</u>	<u>0</u>	<u>94.28</u>	<u>0</u>
17:49	<u>1</u>	<u>2.54</u>	<u>0</u>	<u>0</u>	<u>93.99</u>	<u>0</u>
17:50	<u>1</u>	<u>2.59</u>	<u>0</u>	<u>0</u>	<u>93.86</u>	<u>0</u>
17:51	<u>1</u>	<u>2.7</u>	<u>0</u>	<u>0</u>	<u>92.85</u>	<u>0</u>
17:52	<u>1</u>	<u>2.74</u>	<u>0</u>	<u>0</u>	<u>92.35</u>	<u>0</u>
17:53	<u>1</u>	<u>2.68</u>	<u>0</u>	<u>0</u>	<u>92.48</u>	<u>0</u>
17:54	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>90.97</u>	<u>0</u>
17:55	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>91.38</u>	<u>0</u>
17:56	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>89.39</u>	<u>0</u>
17:57	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>77.79</u>	<u>0</u>
17:58	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>88.86</u>	<u>0</u>
17:59	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>91.03</u>	<u>0</u>
18:00	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>91.4</u>	<u>0</u>
18:01	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.06</u>	<u>0</u>
18:02	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>91.69</u>	<u>0</u>
18:03	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.14</u>	<u>0</u>
18:04	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.32</u>	<u>0</u>
18:05	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.17</u>	<u>0</u>
18:06	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.27</u>	<u>0</u>
18:07	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.41</u>	<u>0</u>
18:08	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.48</u>	<u>0</u>
18:09	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>92.45</u>	<u>0</u>
18:10	<u>1</u>	<u>4.58</u>	<u>0</u>	<u>0</u>	<u>91.77</u>	<u>0</u>
18:11	<u>1</u>	<u>4.43</u>	<u>0</u>	<u>0</u>	<u>92.59</u>	<u>0</u>
18:12	<u>1</u>	<u>4.22</u>	<u>0</u>	<u>0</u>	<u>93.23</u>	<u>0</u>
18:13	<u>1</u>	<u>4.08</u>	<u>0</u>	<u>0</u>	<u>93.68</u>	<u>0</u>
18:14	<u>1</u>	<u>3.88</u>	<u>0</u>	<u>0</u>	<u>93.88</u>	<u>0</u>
18:15	<u>1</u>	<u>3.73</u>	<u>0</u>	<u>0</u>	<u>94.13</u>	<u>0</u>
18:16	<u>1</u>	<u>3.63</u>	<u>0</u>	<u>0</u>	<u>94.53</u>	<u>0</u>
18:17	<u>1</u>	<u>3.53</u>	<u>0</u>	<u>0</u>	<u>94.36</u>	<u>0</u>
18:18	<u>1</u>	<u>3.43</u>	<u>0</u>	<u>0</u>	<u>94.26</u>	<u>0</u>
18:19	<u>1</u>	<u>3.38</u>	<u>0</u>	<u>0</u>	<u>95.03</u>	<u>0</u>
18:20	<u>1</u>	<u>3.38</u>	<u>0</u>	<u>0</u>	<u>94.83</u>	<u>0</u>
18:21	<u>1</u>	<u>3.33</u>	<u>0</u>	<u>0</u>	<u>94.72</u>	<u>0</u>
18:22	<u>1</u>	<u>3.28</u>	<u>0</u>	<u>0</u>	<u>94.66</u>	<u>0</u>
18:23	<u>1</u>	<u>3.28</u>	<u>0</u>	<u>0</u>	<u>94.4</u>	<u>0</u>

60 minute
averaging
period

18:24	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.55</u>	<u>0</u>
18:25	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.78</u>	<u>0</u>
18:26	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.25</u>	<u>0</u>
18:27	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.56</u>	<u>0</u>
18:28	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.47</u>	<u>0</u>
18:29	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.45</u>	<u>0</u>
18:30	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.29</u>	<u>0</u>
18:31	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.2</u>	<u>0</u>
18:32	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>93.85</u>	<u>0</u>
18:33	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>93.69</u>	<u>0</u>
18:34	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>93.77</u>	<u>0</u>
18:35	<u>1</u>	<u>3.27</u>	<u>0</u>	<u>0</u>	<u>93.36</u>	<u>0</u>
18:36	<u>1</u>	<u>3.27</u>	<u>0</u>	<u>0</u>	<u>93.46</u>	<u>0</u>
18:37	<u>1</u>	<u>3.32</u>	<u>0</u>	<u>0</u>	<u>92.8</u>	<u>0</u>
18:38	<u>1</u>	<u>3.37</u>	<u>0</u>	<u>0</u>	<u>92.28</u>	<u>0</u>
18:39	<u>1</u>	<u>3.42</u>	<u>0</u>	<u>0</u>	<u>93</u>	<u>0</u>
18:40	<u>1</u>	<u>3.47</u>	<u>0</u>	<u>0</u>	<u>92.59</u>	<u>0</u>
18:41	<u>1</u>	<u>3.52</u>	<u>0</u>	<u>0</u>	<u>93.01</u>	<u>0</u>
18:42	<u>1</u>	<u>3.47</u>	<u>0</u>	<u>0</u>	<u>93.15</u>	<u>0</u>
18:43	<u>1</u>	<u>3.42</u>	<u>0</u>	<u>0</u>	<u>93.69</u>	<u>0</u>
18:44	<u>1</u>	<u>3.37</u>	<u>0</u>	<u>0</u>	<u>93.19</u>	<u>0</u>
18:45	<u>1</u>	<u>3.32</u>	<u>0</u>	<u>0</u>	<u>93.88</u>	<u>0</u>
18:46	<u>1</u>	<u>3.22</u>	<u>0</u>	<u>0</u>	<u>93.66</u>	<u>0</u>
18:47	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.3</u>	<u>0</u>
18:48	<u>1</u>	<u>3.18</u>	<u>0</u>	<u>0</u>	<u>94.27</u>	<u>0</u>
18:49	<u>1</u>	<u>3.18</u>	<u>0</u>	<u>0</u>	<u>93.98</u>	<u>0</u>
18:50	<u>1</u>	<u>3.18</u>	<u>0</u>	<u>0</u>	<u>93.9</u>	<u>0</u>
18:51	<u>1</u>	<u>3.18</u>	<u>0</u>	<u>0</u>	<u>94.04</u>	<u>0</u>
18:52	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>94.03</u>	<u>0</u>
18:53	<u>1</u>	<u>3.18</u>	<u>0</u>	<u>0</u>	<u>93.79</u>	<u>0</u>
18:54	<u>1</u>	<u>3.08</u>	<u>0</u>	<u>0</u>	<u>93.77</u>	<u>0</u>
18:55	<u>1</u>	<u>3.08</u>	<u>0</u>	<u>0</u>	<u>93.68</u>	<u>0</u>
18:56	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>93.47</u>	<u>0</u>
18:57	<u>1</u>	<u>3.42</u>	<u>0</u>	<u>0</u>	<u>93.65</u>	<u>0</u>
18:58	<u>1</u>	<u>3.47</u>	<u>0</u>	<u>0</u>	<u>92.85</u>	<u>0</u>
18:59	<u>1</u>	<u>3.52</u>	<u>0</u>	<u>0</u>	<u>92.82</u>	<u>0</u>
19:00	<u>1</u>	<u>3.61</u>	<u>0</u>	<u>0</u>	<u>91.81</u>	<u>0</u>
19:01	<u>1</u>	<u>3.76</u>	<u>0</u>	<u>0</u>	<u>92.42</u>	<u>0</u>
19:02	<u>1</u>	<u>3.85</u>	<u>0</u>	<u>0</u>	<u>92.24</u>	<u>0</u>
19:03	<u>1</u>	<u>3.9</u>	<u>0</u>	<u>0</u>	<u>91.99</u>	<u>0</u>
19:04	<u>1</u>	<u>3.86</u>	<u>0</u>	<u>0</u>	<u>92.39</u>	<u>0</u>
19:05	<u>1</u>	<u>3.8</u>	<u>0</u>	<u>0</u>	<u>92.65</u>	<u>0</u>
19:06	<u>1</u>	<u>3.81</u>	<u>3.81</u>	<u>0</u>	<u>93.23</u>	<u>0</u>
19:07	<u>1</u>	<u>3.8</u>	<u>3.8</u>	<u>4.77</u>	<u>93</u>	<u>0</u>
19:08	<u>1</u>	<u>3.75</u>	<u>3.75</u>	<u>4.77</u>	<u>93.28</u>	<u>0</u>
19:09	<u>1</u>	<u>3.76</u>	<u>3.76</u>	<u>4.77</u>	<u>94.22</u>	<u>0</u>
19:10	<u>1</u>	<u>3.71</u>	<u>3.71</u>	<u>4.77</u>	<u>94.65</u>	<u>0</u>
19:11	<u>1</u>	<u>3.56</u>	<u>3.56</u>	<u>4.77</u>	<u>94.43</u>	<u>0</u>
19:12	<u>1</u>	<u>3.36</u>	<u>3.36</u>	<u>4.77</u>	<u>94.49</u>	<u>0</u>

53	19:13	<u>1</u>	<u>3.27</u>	<u>3.27</u>	<u>4.77</u>	<u>95.04</u>	<u>0</u>
52	19:14	<u>1</u>	<u>3.22</u>	<u>3.22</u>	<u>4.77</u>	<u>95.02</u>	<u>0</u>
51	19:15	<u>1</u>	<u>3.21</u>	<u>3.21</u>	<u>4.77</u>	<u>95.15</u>	<u>0</u>
50	19:16	<u>1</u>	<u>3.21</u>	<u>3.21</u>	<u>4.77</u>	<u>94.7</u>	<u>0</u>
49	19:17	<u>1</u>	<u>3.31</u>	<u>3.31</u>	<u>4.77</u>	<u>94.26</u>	<u>0</u>
48	19:18	<u>1</u>	<u>3.36</u>	<u>3.36</u>	<u>4.77</u>	<u>94.8</u>	<u>0</u>
47	19:19	<u>1</u>	<u>3.46</u>	<u>3.46</u>	<u>4.77</u>	<u>94.61</u>	<u>0</u>
46	19:20	<u>1</u>	<u>3.46</u>	<u>3.46</u>	<u>4.77</u>	<u>94.57</u>	<u>0</u>
45	19:21	<u>1</u>	<u>3.46</u>	<u>3.46</u>	<u>4.77</u>	<u>94.75</u>	<u>0</u>
44	19:22	<u>1</u>	<u>3.41</u>	<u>3.41</u>	<u>4.77</u>	<u>95.27</u>	<u>0</u>
43	19:23	<u>1</u>	<u>3.32</u>	<u>3.32</u>	<u>4.77</u>	<u>96.18</u>	<u>0</u>
42	19:24	<u>1</u>	<u>3.22</u>	<u>3.22</u>	<u>4.77</u>	<u>96.32</u>	<u>0</u>
41	19:25	<u>1</u>	<u>3.18</u>	<u>3.18</u>	<u>4.77</u>	<u>97.12</u>	<u>0</u>
40	19:26	<u>1</u>	<u>3.08</u>	<u>3.08</u>	<u>4.77</u>	<u>97.14</u>	<u>0</u>
39	19:27	<u>1</u>	<u>2.98</u>	<u>2.98</u>	<u>4.77</u>	<u>97.06</u>	<u>0</u>
38	19:28	<u>1</u>	<u>2.88</u>	<u>2.88</u>	<u>4.77</u>	<u>96.91</u>	<u>0</u>
37	19:29	<u>1</u>	<u>2.88</u>	<u>2.88</u>	<u>4.77</u>	<u>96.75</u>	<u>0</u>
36	19:30	<u>1</u>	<u>2.97</u>	<u>2.97</u>	<u>4.77</u>	<u>96.11</u>	<u>0</u>
35	19:31	<u>1</u>	<u>3.07</u>	<u>3.07</u>	<u>4.77</u>	<u>95.73</u>	<u>0</u>
34	19:32	<u>1</u>	<u>3.22</u>	<u>3.22</u>	<u>4.77</u>	<u>95.72</u>	<u>0</u>
33	19:33	<u>1</u>	<u>3.38</u>	<u>3.38</u>	<u>4.77</u>	<u>95.93</u>	<u>0</u>
32	19:34	<u>1</u>	<u>3.32</u>	<u>3.32</u>	<u>4.77</u>	<u>96.21</u>	<u>0</u>
31	19:35	<u>1</u>	<u>3.18</u>	<u>3.18</u>	<u>4.77</u>	<u>96.24</u>	<u>0</u>
30	19:36	<u>1</u>	<u>3.12</u>	<u>3.12</u>	<u>4.77</u>	<u>95.72</u>	<u>0</u>
29	19:37	<u>1</u>	<u>3.12</u>	<u>3.12</u>	<u>4.77</u>	<u>95.01</u>	<u>0</u>
28	19:38	<u>1</u>	<u>3.17</u>	<u>3.17</u>	<u>4.77</u>	<u>94.44</u>	<u>0</u>
27	19:39	<u>1</u>	<u>3.36</u>	<u>3.36</u>	<u>4.77</u>	<u>94.28</u>	<u>0</u>
26	19:40	<u>1</u>	<u>3.51</u>	<u>3.51</u>	<u>4.77</u>	<u>94.24</u>	<u>0</u>
25	19:41	<u>1</u>	<u>3.62</u>	<u>3.62</u>	<u>4.77</u>	<u>94.66</u>	<u>0</u>
24	19:42	<u>1</u>	<u>3.61</u>	<u>3.61</u>	<u>4.77</u>	<u>94.84</u>	<u>0</u>
23	19:43	<u>1</u>	<u>3.61</u>	<u>3.61</u>	<u>4.77</u>	<u>94.81</u>	<u>0</u>
22	19:44	<u>1</u>	<u>3.51</u>	<u>3.51</u>	<u>4.77</u>	<u>94.9</u>	<u>0</u>
21	19:45	<u>1</u>	<u>3.46</u>	<u>3.46</u>	<u>4.77</u>	<u>94.93</u>	<u>0</u>
20	19:46	<u>1</u>	<u>3.46</u>	<u>3.46</u>	<u>4.77</u>	<u>95.45</u>	<u>0</u>
19	19:47	<u>1</u>	<u>3.46</u>	<u>3.46</u>	<u>4.77</u>	<u>95.47</u>	<u>0</u>
18	19:48	<u>1</u>	<u>3.42</u>	<u>3.42</u>	<u>4.77</u>	<u>95.47</u>	<u>0</u>
17	19:49	<u>1</u>	<u>3.42</u>	<u>3.42</u>	<u>4.77</u>	<u>95.79</u>	<u>0</u>
16	19:50	<u>1</u>	<u>3.36</u>	<u>3.36</u>	<u>4.77</u>	<u>95.67</u>	<u>0</u>
15	19:51	<u>1</u>	<u>3.37</u>	<u>3.37</u>	<u>4.77</u>	<u>95.84</u>	<u>0</u>
14	19:52	<u>1</u>	<u>3.36</u>	<u>3.36</u>	<u>4.77</u>	<u>95.84</u>	<u>0</u>
13	19:53	<u>1</u>	<u>3.37</u>	<u>3.37</u>	<u>4.77</u>	<u>95.81</u>	<u>0</u>
12	19:54	<u>1</u>	<u>3.36</u>	<u>3.36</u>	<u>4.77</u>	<u>95.4</u>	<u>0</u>
11	19:55	<u>1</u>	<u>3.32</u>	<u>3.32</u>	<u>4.77</u>	<u>95.9</u>	<u>0</u>
10	19:56	<u>1</u>	<u>3.15</u>	<u>3.15</u>	<u>4.77</u>	<u>85.86</u>	<u>1</u>
9	19:57	<u>1</u>	<u>2.83</u>	<u>2.83</u>	<u>4.77</u>	<u>69.11</u>	<u>1</u>
8	19:58	<u>1</u>	<u>2.52</u>	<u>2.52</u>	<u>4.77</u>	<u>52.2</u>	<u>1</u>
7	19:59	<u>1</u>	<u>3.28</u>	<u>3.28</u>	<u>4.77</u>	<u>0</u>	<u>1</u>
6	20:00	<u>1</u>	<u>4.65</u>	<u>4.65</u>	<u>4.77</u>	<u>-0.01</u>	<u>1</u>
5	20:01	<u>1</u>	<u>14.49</u>	<u>14.49</u>	<u>4.77</u>	<u>-0.01</u>	<u>1</u>

1 Shutdown
2 Period
3 10 minute
4
5
6

4	20:02	<u>1</u>	<u>21.3</u>	<u>21.3</u>	<u>4.77</u>	<u>-0.01</u>	<u>1</u>	7
3	20:03	<u>1</u>	<u>22.19</u>	<u>22.19</u>	<u>4.77</u>	<u>-0.02</u>	<u>1</u>	8
2	20:04	<u>1</u>	<u>22.05</u>	<u>22.05</u>	<u>4.77</u>	<u>0</u>	<u>1</u>	9
1	20:05	<u>1</u>	<u>21.98</u>	<u>21.98</u>	<u>4.77</u>	<u>-0.01</u>	<u>1</u>	10
	20:06	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	
	20:07	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-0.01</u>	<u>0</u>	

Unit 3

Exceedance	4.77 NOx lbs	
Limit	4.07 NOx lbs	
Over the limit by	<u>0.70</u> NOx lbs	17%

Canyon Power Plant ID#153992

Unit 4 Episode: 3/20/2018

		Time	4_Flame_On 1=ON	4_NOX_LBHR #/hr	4_NOxlb_SD #/hr	4_NOxlbSDH pounds	4_NH3_Flow #/hr	4_Shutdown 1=ON
Startup Period 35 minute	1	16:51	0	0	0	0	0	0
	2	16:52	1	0.01	0	0	0	0
	3	16:53	1	1.01	0	0	0	0
	4	16:54	1	16.32	0	0	0	0
	5	16:55	1	19.92	0	0	0	0
	6	16:56	1	22.89	0	0	0	0
	7	16:57	1	23.5	0	0	0	0
	8	16:58	1	31.68	0	0	0	0
	9	16:59	1	40.73	0	0	51.07	0
	10	17:00	1	35.58	0	0	95.01	0
	11	17:01	1	10.36	0	0	101.68	0
	12	17:02	1	4.66	0	0	103.93	0
	13	17:03	1	3.45	0	0	106.87	0
	14	17:04	1	3.14	0	0	105.85	0
	15	17:05	1	2.95	0	0	105.88	0
	16	17:06	1	3.05	0	0	106.32	0
	17	17:07	1	3.15	0	0	106.99	0
	18	17:08	1	3.2	0	0	107.03	0
	19	17:09	1	3.25	0	0	106.73	0
	20	17:10	1	3.2	0	0	106.73	0
	21	17:11	1	3.25	0	0	106.81	0
	22	17:12	1	3.3	0	0	106.97	0
	23	17:13	1	3.3	0	0	107.01	0
	24	17:14	1	3.3	0	0	106.8	0
	25	17:15	1	3.29	0	0	106.3	0
	26	17:16	1	3.3	0	0	106.48	0
	27	17:17	1	3.39	0	0	106.54	0
	28	17:18	1	3.39	0	0	106.49	0
	29	17:19	1	3.39	0	0	106.57	0
	30	17:20	1	3.39	0	0	106.48	0
	31	17:21	1	3.39	0	0	106.93	0
	32	17:22	1	3.39	0	0	106.6	0
	33	17:23	1	3.49	0	0	106.75	0
	34	17:24	1	3.64	0	0	106.85	0
	35	17:25	1	3.69	0	0	107.24	0
		17:26	1	3.79	0	0	107.97	0
		17:27	1	3.73	0	0	108.42	0
		17:28	1	3.54	0	0	108.94	0
		17:29	1	3.2	0	0	109.32	0
		17:30	1	2.85	0	0	109.43	0
		17:31	1	2.76	0	0	109.25	0
		17:32	1	2.9	0	0	108.48	0
		17:33	1	3.24	0	0	107.77	0
		17:34	1	3.68	0	0	107.46	0
		17:35	1	3.98	0	0	107.85	0
		17:36	1	3.88	0	0	108.59	0
		17:37	1	3.49	0	0	109.58	0
		17:38	1	3.1	0	0	109.72	0
		17:39	1	2.85	0	0	109.59	0

Calibration

17:40	<u>1</u>	<u>2.8</u>	<u>0</u>	<u>0</u>	<u>109.04</u>	<u>0</u>
17:41	<u>1</u>	<u>2.95</u>	<u>0</u>	<u>0</u>	<u>108.39</u>	<u>0</u>
17:42	<u>1</u>	<u>3.34</u>	<u>0</u>	<u>0</u>	<u>108.29</u>	<u>0</u>
17:43	<u>1</u>	<u>3.63</u>	<u>0</u>	<u>0</u>	<u>107.98</u>	<u>0</u>
17:44	<u>1</u>	<u>3.78</u>	<u>0</u>	<u>0</u>	<u>108.19</u>	<u>0</u>
17:45	<u>1</u>	<u>3.63</u>	<u>0</u>	<u>0</u>	<u>108.93</u>	<u>0</u>
17:46	<u>1</u>	<u>3.29</u>	<u>0</u>	<u>0</u>	<u>109.53</u>	<u>0</u>
17:47	<u>1</u>	<u>2.95</u>	<u>0</u>	<u>0</u>	<u>109.57</u>	<u>0</u>
17:48	<u>1</u>	<u>2.85</u>	<u>0</u>	<u>0</u>	<u>109.1</u>	<u>0</u>
17:49	<u>1</u>	<u>2.94</u>	<u>0</u>	<u>0</u>	<u>108.11</u>	<u>0</u>
17:50	<u>1</u>	<u>3.28</u>	<u>0</u>	<u>0</u>	<u>107.6</u>	<u>0</u>
17:51	<u>1</u>	<u>3.74</u>	<u>0</u>	<u>0</u>	<u>107.85</u>	<u>0</u>
17:52	<u>1</u>	<u>3.83</u>	<u>0</u>	<u>0</u>	<u>108.2</u>	<u>0</u>
17:53	<u>1</u>	<u>3.82</u>	<u>0</u>	<u>0</u>	<u>108.8</u>	<u>0</u>
17:54	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.61</u>	<u>0</u>
17:55	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.89</u>	<u>0</u>
17:56	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>108.72</u>	<u>0</u>
17:57	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.42</u>	<u>0</u>
17:58	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>117.79</u>	<u>0</u>
17:59	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>111.36</u>	<u>0</u>
18:00	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.87</u>	<u>0</u>
18:01	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.81</u>	<u>0</u>
18:02	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>110.03</u>	<u>0</u>
18:03	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.82</u>	<u>0</u>
18:04	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.84</u>	<u>0</u>
18:05	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.57</u>	<u>0</u>
18:06	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.77</u>	<u>0</u>
18:07	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.69</u>	<u>0</u>
18:08	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.82</u>	<u>0</u>
18:09	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>109.38</u>	<u>0</u>
18:10	<u>1</u>	<u>2.94</u>	<u>0</u>	<u>0</u>	<u>109.3</u>	<u>0</u>
18:11	<u>1</u>	<u>2.94</u>	<u>0</u>	<u>0</u>	<u>108.58</u>	<u>0</u>
18:12	<u>1</u>	<u>3.09</u>	<u>0</u>	<u>0</u>	<u>108.23</u>	<u>0</u>
18:13	<u>1</u>	<u>3.47</u>	<u>0</u>	<u>0</u>	<u>107.74</u>	<u>0</u>
18:14	<u>1</u>	<u>3.82</u>	<u>0</u>	<u>0</u>	<u>107.72</u>	<u>0</u>
18:15	<u>1</u>	<u>4.07</u>	<u>0</u>	<u>0</u>	<u>108.38</u>	<u>0</u>
18:16	<u>1</u>	<u>3.97</u>	<u>0</u>	<u>0</u>	<u>109.31</u>	<u>0</u>
18:17	<u>1</u>	<u>3.48</u>	<u>0</u>	<u>0</u>	<u>110</u>	<u>0</u>
18:18	<u>1</u>	<u>3.04</u>	<u>0</u>	<u>0</u>	<u>110.58</u>	<u>0</u>
18:19	<u>1</u>	<u>2.74</u>	<u>0</u>	<u>0</u>	<u>110.37</u>	<u>0</u>
18:20	<u>1</u>	<u>2.69</u>	<u>0</u>	<u>0</u>	<u>110.01</u>	<u>0</u>
18:21	<u>1</u>	<u>2.89</u>	<u>0</u>	<u>0</u>	<u>109.03</u>	<u>0</u>
18:22	<u>1</u>	<u>3.33</u>	<u>0</u>	<u>0</u>	<u>108.63</u>	<u>0</u>
18:23	<u>1</u>	<u>3.72</u>	<u>0</u>	<u>0</u>	<u>108.46</u>	<u>0</u>
18:24	<u>1</u>	<u>3.97</u>	<u>0</u>	<u>0</u>	<u>108.97</u>	<u>0</u>
18:25	<u>1</u>	<u>3.87</u>	<u>0</u>	<u>0</u>	<u>109.8</u>	<u>0</u>
18:26	<u>1</u>	<u>3.38</u>	<u>0</u>	<u>0</u>	<u>110.45</u>	<u>0</u>
18:27	<u>1</u>	<u>2.94</u>	<u>0</u>	<u>0</u>	<u>111</u>	<u>0</u>
18:28	<u>1</u>	<u>2.74</u>	<u>0</u>	<u>0</u>	<u>110.56</u>	<u>0</u>
18:29	<u>1</u>	<u>2.79</u>	<u>0</u>	<u>0</u>	<u>109.82</u>	<u>0</u>
18:30	<u>1</u>	<u>3.08</u>	<u>0</u>	<u>0</u>	<u>109.36</u>	<u>0</u>
18:31	<u>1</u>	<u>3.43</u>	<u>0</u>	<u>0</u>	<u>109.1</u>	<u>0</u>
18:32	<u>1</u>	<u>3.72</u>	<u>0</u>	<u>0</u>	<u>109.48</u>	<u>0</u>
18:33	<u>1</u>	<u>3.67</u>	<u>0</u>	<u>0</u>	<u>109.69</u>	<u>0</u>

60 minute 60
Averaging 59
Period 58

18:34	<u>1</u>	<u>3.43</u>	<u>0</u>	<u>0</u>	<u>110.1</u>	<u>0</u>
18:35	<u>1</u>	<u>3.04</u>	<u>0</u>	<u>0</u>	<u>110.27</u>	<u>0</u>
18:36	<u>1</u>	<u>2.84</u>	<u>0</u>	<u>0</u>	<u>110.16</u>	<u>0</u>
18:37	<u>1</u>	<u>2.83</u>	<u>0</u>	<u>0</u>	<u>109.72</u>	<u>0</u>
18:38	<u>1</u>	<u>3.03</u>	<u>0</u>	<u>0</u>	<u>109.03</u>	<u>0</u>
18:39	<u>1</u>	<u>3.42</u>	<u>0</u>	<u>0</u>	<u>108.73</u>	<u>0</u>
18:40	<u>1</u>	<u>3.81</u>	<u>0</u>	<u>0</u>	<u>108.86</u>	<u>0</u>
18:41	<u>1</u>	<u>3.76</u>	<u>0</u>	<u>0</u>	<u>109.4</u>	<u>0</u>
18:42	<u>1</u>	<u>3.47</u>	<u>0</u>	<u>0</u>	<u>109.89</u>	<u>0</u>
18:43	<u>1</u>	<u>3.08</u>	<u>0</u>	<u>0</u>	<u>110.37</u>	<u>0</u>
18:44	<u>1</u>	<u>2.79</u>	<u>0</u>	<u>0</u>	<u>110.3</u>	<u>0</u>
18:45	<u>1</u>	<u>2.69</u>	<u>0</u>	<u>0</u>	<u>110.01</u>	<u>0</u>
18:46	<u>1</u>	<u>2.89</u>	<u>0</u>	<u>0</u>	<u>109.45</u>	<u>0</u>
18:47	<u>1</u>	<u>3.18</u>	<u>0</u>	<u>0</u>	<u>109.02</u>	<u>0</u>
18:48	<u>1</u>	<u>3.62</u>	<u>0</u>	<u>0</u>	<u>108.92</u>	<u>0</u>
18:49	<u>1</u>	<u>3.92</u>	<u>0</u>	<u>0</u>	<u>109.27</u>	<u>0</u>
18:50	<u>1</u>	<u>3.76</u>	<u>0</u>	<u>0</u>	<u>109.75</u>	<u>0</u>
18:51	<u>1</u>	<u>3.38</u>	<u>0</u>	<u>0</u>	<u>110.26</u>	<u>0</u>
18:52	<u>1</u>	<u>2.99</u>	<u>0</u>	<u>0</u>	<u>110.6</u>	<u>0</u>
18:53	<u>1</u>	<u>2.69</u>	<u>0</u>	<u>0</u>	<u>110.56</u>	<u>0</u>
18:54	<u>1</u>	<u>2.64</u>	<u>0</u>	<u>0</u>	<u>110.07</u>	<u>0</u>
18:55	<u>1</u>	<u>2.84</u>	<u>0</u>	<u>0</u>	<u>109.46</u>	<u>0</u>
18:56	<u>1</u>	<u>3.13</u>	<u>0</u>	<u>0</u>	<u>108.93</u>	<u>0</u>
18:57	<u>1</u>	<u>3.57</u>	<u>0</u>	<u>0</u>	<u>108.73</u>	<u>0</u>
18:58	<u>1</u>	<u>3.86</u>	<u>0</u>	<u>0</u>	<u>108.76</u>	<u>0</u>
18:59	<u>1</u>	<u>3.86</u>	<u>0</u>	<u>0</u>	<u>109.2</u>	<u>0</u>
19:00	<u>1</u>	<u>3.57</u>	<u>0</u>	<u>0</u>	<u>109.88</u>	<u>0</u>
19:01	<u>1</u>	<u>3.23</u>	<u>0</u>	<u>0</u>	<u>110.3</u>	<u>0</u>
19:02	<u>1</u>	<u>2.93</u>	<u>0</u>	<u>0</u>	<u>110.33</u>	<u>0</u>
19:03	<u>1</u>	<u>2.83</u>	<u>0</u>	<u>0</u>	<u>110.06</u>	<u>0</u>
19:04	<u>1</u>	<u>2.98</u>	<u>0</u>	<u>0</u>	<u>109.56</u>	<u>0</u>
19:05	<u>1</u>	<u>3.32</u>	<u>0</u>	<u>0</u>	<u>109.3</u>	<u>0</u>
19:06	<u>1</u>	<u>3.51</u>	<u>0</u>	<u>0</u>	<u>109.32</u>	<u>0</u>
19:07	<u>1</u>	<u>3.56</u>	<u>3.56</u>	<u>0</u>	<u>109.61</u>	<u>0</u>
19:08	<u>1</u>	<u>3.42</u>	<u>3.42</u>	<u>4.9</u>	<u>109.88</u>	<u>0</u>
19:09	<u>1</u>	<u>3.08</u>	<u>3.08</u>	<u>4.9</u>	<u>110.12</u>	<u>0</u>
19:10	<u>1</u>	<u>2.88</u>	<u>2.88</u>	<u>4.9</u>	<u>110.1</u>	<u>0</u>
19:11	<u>1</u>	<u>2.78</u>	<u>2.78</u>	<u>4.9</u>	<u>109.75</u>	<u>0</u>
19:12	<u>1</u>	<u>2.88</u>	<u>2.88</u>	<u>4.9</u>	<u>109.3</u>	<u>0</u>
19:13	<u>1</u>	<u>3.17</u>	<u>3.17</u>	<u>4.9</u>	<u>108.76</u>	<u>0</u>
19:14	<u>1</u>	<u>3.47</u>	<u>3.47</u>	<u>4.9</u>	<u>108.77</u>	<u>0</u>
19:15	<u>1</u>	<u>3.76</u>	<u>3.76</u>	<u>4.9</u>	<u>109.04</u>	<u>0</u>
19:16	<u>1</u>	<u>3.81</u>	<u>3.81</u>	<u>4.9</u>	<u>109.39</u>	<u>0</u>
19:17	<u>1</u>	<u>3.57</u>	<u>3.57</u>	<u>4.9</u>	<u>110.01</u>	<u>0</u>
19:18	<u>1</u>	<u>3.13</u>	<u>3.13</u>	<u>4.9</u>	<u>110.5</u>	<u>0</u>
19:19	<u>1</u>	<u>2.88</u>	<u>2.88</u>	<u>4.9</u>	<u>110.54</u>	<u>0</u>
19:20	<u>1</u>	<u>2.79</u>	<u>2.79</u>	<u>4.9</u>	<u>110.16</u>	<u>0</u>
19:21	<u>1</u>	<u>2.83</u>	<u>2.83</u>	<u>4.9</u>	<u>109.6</u>	<u>0</u>
19:22	<u>1</u>	<u>3.08</u>	<u>3.08</u>	<u>4.9</u>	<u>109.23</u>	<u>0</u>
19:23	<u>1</u>	<u>3.37</u>	<u>3.37</u>	<u>4.9</u>	<u>109.07</u>	<u>0</u>
19:24	<u>1</u>	<u>3.52</u>	<u>3.52</u>	<u>4.9</u>	<u>109.19</u>	<u>0</u>
19:25	<u>1</u>	<u>3.53</u>	<u>3.53</u>	<u>4.9</u>	<u>109.84</u>	<u>0</u>
19:26	<u>1</u>	<u>3.23</u>	<u>3.23</u>	<u>4.9</u>	<u>110.47</u>	<u>0</u>
19:27	<u>1</u>	<u>2.94</u>	<u>2.94</u>	<u>4.9</u>	<u>110.37</u>	<u>0</u>

39	19:28	<u>1</u>	<u>2.84</u>	<u>2.84</u>	<u>4.9</u>	<u>110.17</u>	<u>0</u>
38	19:29	<u>1</u>	<u>2.84</u>	<u>2.84</u>	<u>4.9</u>	<u>109.95</u>	<u>0</u>
37	19:30	<u>1</u>	<u>3.09</u>	<u>3.09</u>	<u>4.9</u>	<u>109.62</u>	<u>0</u>
36	19:31	<u>1</u>	<u>3.57</u>	<u>3.57</u>	<u>4.9</u>	<u>109.22</u>	<u>0</u>
35	19:32	<u>1</u>	<u>3.87</u>	<u>3.87</u>	<u>4.9</u>	<u>109.15</u>	<u>0</u>
34	19:33	<u>1</u>	<u>3.68</u>	<u>3.68</u>	<u>4.9</u>	<u>110.23</u>	<u>0</u>
33	19:34	<u>1</u>	<u>3.24</u>	<u>3.24</u>	<u>4.9</u>	<u>110.91</u>	<u>0</u>
32	19:35	<u>1</u>	<u>2.89</u>	<u>2.89</u>	<u>4.9</u>	<u>110.98</u>	<u>0</u>
31	19:36	<u>1</u>	<u>2.65</u>	<u>2.65</u>	<u>4.9</u>	<u>110.59</u>	<u>0</u>
30	19:37	<u>1</u>	<u>2.74</u>	<u>2.74</u>	<u>4.9</u>	<u>109.58</u>	<u>0</u>
29	19:38	<u>1</u>	<u>3.18</u>	<u>3.18</u>	<u>4.9</u>	<u>108.73</u>	<u>0</u>
28	19:39	<u>1</u>	<u>3.62</u>	<u>3.62</u>	<u>4.9</u>	<u>108.56</u>	<u>0</u>
27	19:40	<u>1</u>	<u>4.01</u>	<u>4.01</u>	<u>4.9</u>	<u>108.57</u>	<u>0</u>
26	19:41	<u>1</u>	<u>3.92</u>	<u>3.92</u>	<u>4.9</u>	<u>109.21</u>	<u>0</u>
25	19:42	<u>1</u>	<u>3.38</u>	<u>3.38</u>	<u>4.9</u>	<u>110.16</u>	<u>0</u>
24	19:43	<u>1</u>	<u>2.99</u>	<u>2.99</u>	<u>4.9</u>	<u>110.43</u>	<u>0</u>
23	19:44	<u>1</u>	<u>2.74</u>	<u>2.74</u>	<u>4.9</u>	<u>110.16</u>	<u>0</u>
22	19:45	<u>1</u>	<u>2.78</u>	<u>2.78</u>	<u>4.9</u>	<u>109.61</u>	<u>0</u>
21	19:46	<u>1</u>	<u>3.03</u>	<u>3.03</u>	<u>4.9</u>	<u>109.05</u>	<u>0</u>
20	19:47	<u>1</u>	<u>3.42</u>	<u>3.42</u>	<u>4.9</u>	<u>108.77</u>	<u>0</u>
19	19:48	<u>1</u>	<u>3.67</u>	<u>3.67</u>	<u>4.9</u>	<u>108.91</u>	<u>0</u>
18	19:49	<u>1</u>	<u>3.72</u>	<u>3.72</u>	<u>4.9</u>	<u>109.32</u>	<u>0</u>
17	19:50	<u>1</u>	<u>3.52</u>	<u>3.52</u>	<u>4.9</u>	<u>109.85</u>	<u>0</u>
16	19:51	<u>1</u>	<u>3.13</u>	<u>3.13</u>	<u>4.9</u>	<u>110.26</u>	<u>0</u>
15	19:52	<u>1</u>	<u>2.84</u>	<u>2.84</u>	<u>4.9</u>	<u>110.31</u>	<u>0</u>
14	19:53	<u>1</u>	<u>2.74</u>	<u>2.74</u>	<u>4.9</u>	<u>109.92</u>	<u>0</u>
13	19:54	<u>1</u>	<u>2.83</u>	<u>2.83</u>	<u>4.9</u>	<u>109.35</u>	<u>0</u>
12	19:55	<u>1</u>	<u>3.18</u>	<u>3.18</u>	<u>4.9</u>	<u>108.9</u>	<u>0</u>
11	19:56	<u>1</u>	<u>3.53</u>	<u>3.53</u>	<u>4.9</u>	<u>106.85</u>	<u>1</u>
10	19:57	<u>1</u>	<u>3.1</u>	<u>3.1</u>	<u>4.9</u>	<u>92.86</u>	<u>1</u>
9	19:58	<u>1</u>	<u>2.1</u>	<u>2.1</u>	<u>4.9</u>	<u>80.19</u>	<u>1</u>
8	19:59	<u>1</u>	<u>2.02</u>	<u>2.02</u>	<u>4.9</u>	<u>24.58</u>	<u>1</u>
7	20:00	<u>1</u>	<u>9.47</u>	<u>9.47</u>	<u>4.9</u>	<u>0</u>	<u>1</u>
6	20:01	<u>1</u>	<u>19.21</u>	<u>19.21</u>	<u>4.9</u>	<u>0</u>	<u>1</u>
5	20:02	<u>1</u>	<u>21.3</u>	<u>21.3</u>	<u>4.9</u>	<u>0</u>	<u>1</u>
4	20:03	<u>1</u>	<u>21.18</u>	<u>21.18</u>	<u>4.9</u>	<u>0</u>	<u>1</u>
3	20:04	<u>1</u>	<u>21.4</u>	<u>21.4</u>	<u>4.9</u>	<u>0</u>	<u>1</u>
2	20:05	<u>1</u>	<u>21.85</u>	<u>21.85</u>	<u>4.9</u>	<u>0</u>	<u>1</u>
1	20:06	<u>1</u>	<u>11.02</u>	<u>11.02</u>	<u>4.9</u>	<u>0</u>	<u>1</u>
	20:07	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

1 Shutdown
2 Period
3 10 minutes
4
5
6
7
8
9
10

Unit 4

Exceedance 4.90 NOx lbs
Limit 4.07 NOx lbs
Over the limit by 0.83 NOx lbs 20%



South Coast Air Quality Management District

Form 500-N**Title V - Deviations, Emergencies & Breakdowns**

*This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.

Mail To:
SCAQMD
P.O. Box 4941
Diamond Bar, CA 91765-0941

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): <u>CANYON POWER PLANT Unit 4 (D 19)</u>		2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): <u>153992</u>	
3. Address: (where incident occurred) <u>3071 E. Miraloma Avenue</u> <u>Anaheim</u> City		Street Address <u>CA</u> State <u>92806</u> Zip	
4. Mailing Address: (if different from Item 3) City		Street Address State Zip	
5. Provide the name, title, and phone number of the person to contact for further information: <u>Ronald Hoffard</u> Name <u>Generation Plant Manager</u> Title <u>(714) 765-4536</u> Phone #			

Section II - Reporting of Breakdowns, Deviations, and Emergencies

1. This written notification is to report a(n):		Verbal Report Due*		Written Report Due	
Type of Incident		Within 1 hour of discovery		Within 2 working days from when the emission limit was exceeded.	
a. ☐ Emergency under Rule 3002(g)		For Rules 430 & 2004 - Within 1 hour of discovery.		For Rules 430 & 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from start of the breakdown, unless a written extension is granted.	
b. ☒ Breakdown under: ☐ Rule 430 (Non-RECLAIM) ☒ Rule 2004 (RECLAIM) ☐ Rule 218 (Non-RECLAIM) [See Rule 218(f)(3)]		For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours		For Rule 218 - With required semi-annual reports.	
c. ☐ Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B]		Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation.		Within 14 days of discovery of the deviation.	
d. ☐ Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23]		None		With required semi-annual monitoring reports.	
2. The incident was first discovered by: <u>Victor Carnaggio</u> on <u>06/04/2018</u> <u>03:45</u> ☐ AM ☒ PM Name Date Time					
3. The incident was first reported by: <u>Operator #5</u> on <u>06/04/2018</u> <u>04:28</u> ☐ AM ☒ PM Name of AQMD Staff Person Date Time					
a. ☒ Via Phone					
b. ☐ In Person					
Notification Number (Required): <u>516166</u>					
4. When did the incident actually occur? <u>06/04/2018</u> <u>03:05</u> ☐ AM ☒ PM Date Time					

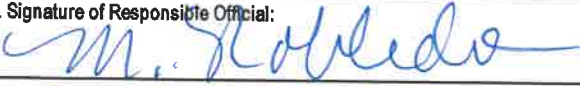
AQMD USE ONLY	Received By:		Assigned By:		Inspector:	
	Date/Time Received:		Date/Time Assigned:		Date/Time Received Assignment:	
	Date Delivered To Team:		Date Reviewed Inspector Report:		Date Inspected Facility:	
	Team:	Sector:	Breakdown/Deviation Notification No.		Date Completed Report:	
	Recommended Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____
	Final Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____

5. Has the incident stopped? a. ☒ Yes, on: 06/04/2018 03:15 ☐ AM ☒ PM b. ☐ No
Date Time
6. What was the total duration of the incident? 10
Days Hours MINUTES
7. For equipment with an operating cycle, as defined in Rule 430 (b)(3)(A), when was the end of the operating cycle during which the incident occurred? _____
Date Time ☐ AM ☐ PM
8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary.
9. The incident may have resulted in a:
a. ☒ Violation of Permit Condition(s): A99.1 - 14.27 lbs startup
b. ☐ Violation of AQMD Rule(s): _____
10. What was the probable cause of the incident? Attach additional pages as necessary.
11. Did the incident result in excess emissions? ☐ No ☒ Yes (Complete the following and attach calculations.)
☐ VOC _____ lbs ☒ NOx 2.340 lbs ☐ SOx _____ lbs ☐ H2S _____ lbs
☐ CO _____ lbs ☐ PM _____ lbs ☐ Other: _____ lbs pollutant
12. For RECLAIM facilities Subject to Rule 2004 (f)(3) ONLY: If excess emissions of NOx and/or SOx were reported in Item 11, do you want these emissions to be counted when determining compliance with your annual allocations?
a. ☒ Yes, for: ☒ NOx ☐ SOx b. ☐ No, for: ☐ NOx ☐ SOx
If box 12(b) above is checked, include all information specified in Rule 2004(f)(3)(B) and (C), as applicable.
13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.
14. Was the facility operating properly prior to the incident?
a. ☒ Yes b. ☐ No, because: _____
15. Did the incident result from operator error, neglect or improper operation or maintenance procedures?
a. ☐ Yes b. ☒ No, because: _____
16. Has the facility returned to compliance?
a. ☐ No, because: _____
b. ☒ Yes (Attach evidence such as emissions calculations, contemporaneous operating logs or other credible evidence.)

Section III - Certification Statement

I certify under penalty of law that based on information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.

For Title V Facilities ONLY: ☒ I also certify under penalty of law that I am the responsible official for this facility as defined in AQMD Regulation XXX.

1. Signature of Responsible Official: 	2. Title of Responsible Official: INTEGRATED RESOURCES MANAGER
3. Print Name: MANNY ROBLEDO	4. Date: 06/07/2018
5. Phone #: (714) 765-5177	6. Fax #:
7. Address of Responsible Official: 201 S. Anaheim Blvd., Ste. 801 Anaheim CA 92805	
Street #	City State Zip

AQMD 500N Episode Date: 06/04/2018
Identify issue: Water injection system
Canyon Power Plant: Unit 4 (D19) /ID# 153992
Notification:

Question 8 - Describe the incident and identify each piece of equipment:

Unit 4 (D19) startup was at 1353 hours on June 4, 2018 and operated for 22 minutes. The unit had a normal start-up for the first 10 minutes; however, the operator observed on the monitor unusual water injection feedback. At 1403 hours, the operator noticed that the water flow injection rapidly decreased to zero losing water injection control that caused the NOx ppm to increase. The operator quickly initiated a shutdown at 1407 hours to prevent an emissions exceedance; however, because the water flow injection had failed to respond and there was no way for the operator to control the NOx PPM, the unit's NOx lbs. emissions exceeded in the first hour of operation.

Question 10 – What was the probable cause of the incident?

The investigation of Unit 4 revealed that the cause of the incident was due to a faulty solenoid valve coil.

Question 13 – Describe the steps taken to correct the problem:

The technician replaced the solenoid valve coil and tested the unit on June 5, 2018. As witnessed by SCAQMD Inspector Thomas Lee, the unit was started at 0914 hours, a passing on-line calibration was performed at 0931 hours, and the unit was shutdown at 0957 hours. The water injection valve responded accordingly.

Question 16 – Facility retuned to compliance?

Unit 4 returned to compliance on June 5, 2018.

Time	4_Flame_On 1=ON	4_NOXPPM ppm	4_H2O_FLOW k#/hr	4_NOxlb_SU #/hr	4_NOxlbSUH pounds	4_COlb_SD #/hr	4_COlb_SDH pounds	4_GasFlow kscfh
13:50	0	0	0	0	-99.99	0	0	0.3
13:51	0	-0.01	0	0	-99.99	0	0	0.3
13:52	1	0	0	0	-99.99	0	0	0.3
13:53	1	0.02	0	0.03	0	87.82	0	53
13:54	1	5.57	0	5.58	0.09	86.18	3.49	110.2
13:55	1	18.25	0	19.02	0.41	6.4	3.49	123.7
13:56	1	18.23	2.2	21.57	0.77	1.79	3.49	150.9
13:57	1	16.28	5.2	22.94	1.15	2.14	3.49	216.8
13:58	1	16.36	9.1	25.43	1.58	2.6	3.49	281.9
13:59	1	19.68	16	33.28	2.13	2.86	3.49	358.6
14:00	1	21.36	22.8	37.91	2.76	3.04	3.49	438.7
14:01	1	13.52	22.9	23.03	3.15	3.53	3.49	466.8
14:02	1	2.83	17.7	4.68	3.22	3.67	3.49	454.5
14:03	1	3.27	3.7	5.31	3.31	2.89	3.49	417.7
14:04	1	63.9	5.9	107.61	5.11	1.6	3.49	422.1
14:05	1	77.93	0	127.27	7.23	0.59	3.49	404.3
14:06	1	128.52	0	194.73	10.47	0.23	3.49	357.8
14:07	1	111.5	0	153.76	13.04	0.15	3.49	290.7
14:08	1	80.22	0	94.78	14.62	0.07	3.49	220
14:09	1	50.09	0	49.41	15.44	0.05	3.49	154.3
14:10	1	24.66	0	20.77	15.79	0.14	3.49	109.2
14:11	1	14.64	0	12.95	16	0.46	3.49	106.6
14:12	1	14.15	0	12.54	16.21	0.86	3.49	106.5
14:13	1	13.78	0	12.3	16.42	1.14	3.49	106.8
14:14	1	13.42	0	11.98	16.61	1.2	3.49	106.9
14:15	0	13.04	0	0	16.61	0	0	18.1
14:16	0	4.99	0	0	16.61	0	0	0.3
14:17	0	0.49	0	0	16.61	0	0	0.3
14:18	0	0.41	0	0	16.61	0	0	0.3
14:19	0	0.35	0	0	16.61	0	0	0.3
14:20	0	0.29	0	0	16.61	0	0	0.3
14:21	0	0.24	0	0	16.61	0	0	0.3
14:22	0	0.2	0	0	16.61	0	0	0.3
14:23	0	0.18	0	0	16.61	0	0	0.3

water injection stoppe

shutdown initiated

14:24	0	0.15	0	0	0	16.61	0	0	0.3
14:25	0	0.12	0	0	0	16.61	0	0	0.3
14:26	0	0.12	0	0	0	16.61	0	0	0.3
14:27	0	0.11	0	0	0	16.61	0	0	0.3
14:28	0	0.09	0	0	0	16.61	0	0	0.3
14:29	0	0.09	0	0	0	16.61	0	0	0.3
14:30	0	0.08	0	0	0	16.61	0	0	0.3
14:31	0	0.07	0	0	0	16.61	0	0	0.3
14:32	0	0.06	0	0	0	16.61	0	0	0.3
14:33	0	0.07	0	0	0	16.61	0	0	0.3
14:34	0	0.06	0	0	0	16.61	0	0	0.3
14:35	0	0.06	0	0	0	16.61	0	0	0.3
14:36	0	0.05	0	0	0	16.61	0	0	0.3
14:37	0	0.05	0	0	0	16.61	0	0	0.4
14:38	0	0.05	0	0	0	16.61	0	0	0.4
14:39	0	0.05	0	0	0	16.61	0	0	0.3
14:40	0	0.05	0	0	0	16.61	0	0	0.3
14:41	0	0.05	0	0	0	16.61	0	0	0.3
14:42	0	0.05	0	0	0	16.61	0	0	0.3
14:43	0	0.04	0	0	0	16.61	0	0	0.3
14:44	0	0.04	0	0	0	16.61	0	0	0.3
14:45	0	0.04	0	0	0	16.61	0	0	0.3
14:46	0	0.04	0	0	0	16.61	0	0	0.3
14:47	0	0.04	0	0	0	16.61	0	0	0.3
14:48	0	0.03	0	0	0	16.61	0	0	0.3
14:49	0	0.04	0	0	0	16.61	0	0	0.3
14:50	0	0.03	0	0	0	16.61	0	0	0.3
14:51	0	0.03	0	0	0	16.61	0	0	0.3
14:52	0	0.03	0	0	0	16.61	0	0	0.3
14:53	0	0.04	0	0	0	16.61	0	0	0.3
14:54	0	0.03	0	0	0	16.52	0	0	0.3
14:55	0	0.03	0	0	0	16.2	0	0	0.3
14:56	0	0.03	0	0	0	15.84	0	0	0.3
14:57	0	0.02	0	0	0	15.46	0	0	0.4
14:58	0	0.02	0	0	0	15.04	0	0	0.3
14:59	0	0.02	0	0	0	14.48	0	0	0.4
15:00	0	0.02	0	0	0	13.85	0	0	0.3

16.61 lbs calculat

14.27 lbs Permit I

2.34 lbs over the

15:01	0	0.02	0	0	0	13.47	0	0	0	0.3
15:02	0	0.02	0	0	0	13.39	0	0	0	0.3
15:03	0	0.02	0	0	0	13.3	0	0	0	0.3
15:04	0	0.02	0	0	0	11.51	0	0	0	0.3
15:05	0	0.02	0	0	0	9.39	0	0	0	0.3
15:06	0	0.02	0	0	0	6.14	0	0	0	0.3
15:07	0	0.02	0	0	0	3.58	0	0	0	0.3
15:08	0	0.02	0	0	0	2	0	0	0	0.4
15:09	0	0.02	0	0	0	1.18	0	0	0	0.3
15:10	0	0.02	0	0	0	0.83	0	0	0	0.3
15:11	0	0.02	0	0	0	0.61	0	0	0	0.3
15:12	0	0.01	0	0	0	0.4	0	0	0	0.3
15:13	0	0.02	0	0	0	0.2	0	0	0	0.3



South Coast Air Quality Management District

Form 500-N**Title V - Deviations, Emergencies & Breakdowns**

*This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.

Mail To:
SCAQMD
P.O. Box 4941
Diamond Bar, CA 91765-0941

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): <u>CANYON POWER PLANT Unit 4 (D19)</u>		2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): <u>153992</u>	
3. Address: (where incident occurred) <u>3071 E. Miraloma Avenue</u> <u>Anaheim</u> City		Street Address <u>CA</u> State <u>92806</u> Zip	
4. Mailing Address: (if different from Item 3) City		Street Address State Zip	
5. Provide the name, title, and phone number of the person to contact for further information: <u>RONALD HOFFARD</u> Name <u>Generation Plant Manager</u> Title <u>(714) 765-4536</u> Phone #			

Section II - Reporting of Breakdowns, Deviations, and Emergencies

1. This written notification is to report a(n):			
Type of Incident	Verbal Report Due*	Written Report Due	
a. ☐ Emergency under Rule 3002(g)	Within 1 hour of discovery	Within 2 working days from when the emission limit was exceeded.	
b. ☒ Breakdown under: ☐ Rule 430 (Non-RECLAIM) ☒ Rule 2004 (RECLAIM) ☐ Rule 218 (Non-RECLAIM) [See Rule 218(f)(3)]	For Rules 430 & 2004 - Within 1 hour of discovery. For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours	For Rules 430 & 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from start of the breakdown, unless a written extension is granted. For Rule 218 - With required semi-annual reports.	
c. ☐ Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B]	Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation.	Within 14 days of discovery of the deviation.	
d. ☐ Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23]	None	With required semi-annual monitoring reports.	
2. The incident was first discovered by: <u>Charlie Vo</u> on <u>07/06/2018</u> <u>12:50</u> ☐ AM ☒ PM Name Date Time			
3. The incident was first reported by: <u>Operator #8</u> on <u>07/06/2018</u> <u>01:36</u> ☐ AM ☒ PM Name of AQMD Staff Person Date Time			
a. ☐ Via Phone			
b. ☐ In Person			
Notification Number (Required): <u>520018</u>			
4. When did the incident actually occur? <u>07/06/2018</u> <u>11:48</u> ☒ AM ☐ PM Date Time			

AQMD USE ONLY	Received By:		Assigned By:		Inspector:	
	Date/Time Received:		Date/Time Assigned:		Date/Time Received Assignment:	
	Date Delivered To Team:		Date Reviewed Inspector Report:		Date Inspected Facility:	
	Team:	Sector:	Breakdown/Deviation Notification No.		Date Completed Report:	
	Recommended Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____
	Final Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____

5. Has the incident stopped? a. ☒ Yes, on: 07/06/2018 11:58 ☒ AM b. ☐ No
Date Time ☐ PM
6. What was the total duration of the incident? 10
Days Hours
7. For equipment with an operating cycle, as defined in Rule 430 (b)(3)(A), when was the end of the operating cycle during which the incident occurred? _____
Date Time ☐ AM ☐ PM
8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary.
See Attachment
9. The incident may have resulted in a:
a. ☒ Violation of Permit Condition(s): A99.1 - 2.5ppm NOx & 4.07 lbs NOx shutdown
b. ☐ Violation of AQMD Rule(s): _____
10. What was the probable cause of the incident? Attach additional pages as necessary.
See Attachment
11. Did the incident result in excess emissions? ☐ No ☒ Yes (Complete the following and attach calculations.)
☐ VOC _____ lbs ☒ NOx 0.3ppm/9.94 lbs ☐ SOx _____ lbs ☐ H2S _____ lbs
☐ CO _____ lbs ☐ PM _____ lbs ☐ Other: _____ lbs pollutant
12. For RECLAIM facilities Subject to Rule 2004 (i)(3) ONLY: If excess emissions of NOx and/or SOx were reported in Item 11, do you want these emissions to be counted when determining compliance with your annual allocations?
a. ☒ Yes, for: ☒ NOx ☐ SOx b. ☐ No, for: ☐ NOx ☐ SOx
If box 12(b) above is checked, include all information specified in Rule 2004(i)(3)(B) and (C), as applicable.
13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.
See Attachment
14. Was the facility operating properly prior to the incident?
a. ☒ Yes b. ☐ No, because: _____
15. Did the incident result from operator error, neglect or improper operation or maintenance procedures?
a. ☐ Yes b. ☒ No, because: _____
16. Has the facility returned to compliance?
a. ☐ No, because: _____
b. ☒ Yes (Attach evidence such as emissions calculations, contemporaneous operating logs or other credible evidence.)

Section III - Certification Statement

I certify under penalty of law that based on information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.

For Title V Facilities ONLY: ☒ I also certify under penalty of law that that I am the responsible official for this facility as defined in AQMD Regulation XXX.

1. Signature of Responsible Official: 	2. Title of Responsible Official: INTEGRATED RESOURCES MANAGER
3. Print Name: MANNY ROBLEDO	4. Date: 07/12/2018
5. Phone #: (714) 765-5177	6. Fax #:
7. Address of Responsible Official: 201 S. Anaheim Blvd., Ste. 801 Street # City State Zip Anaheim CA 92805	

SCAQMD 500N Episode Date: 07/06/18

Identify issue: Water Flow Pump failed to respond

Canyon Power Plant: Unit 4/ID# 153992

Notification: 520018

Question 8 - Describe the incident and identify each piece of equipment:

On July 6, 2018 Unit 4 operated at 1037 hours without issue. All parameters including the Water and Ammonia flow injection responded accordingly during the startup period. At 11:19 hours a passing on-line calibration was performed. At approximately 1144 hours the load was gradually increased to 50 MW but at 1146 hours the Water inlet injection flow did not respond as it should and the NOx ppm increased to 77.62 and 54.41 in minute 1148 and 1149, respectively. The operator immediately initiated a shutdown to prevent a possible episode and to investigate the issue. Since the shutdown occurred with only 11 minutes remaining in the hour, Unit 4 exceeded the NOx ppm emissions by 0.3ppm and the NOx lbs shutdown by 9.44 lbs.

Question 10 – What was the probable cause of the incident?

The cause of the incident was the Distribution Control System (DCS) that controls and monitors non-gas turbine auxiliary equipment. It was later determined that the DCS sent an erroneous signal to the Woodward Controller that controls gas turbine operation to ramp out Inlet NOx water injection flow. Loss of Inlet NOx water injection resulted in an increase of the NOx ppm.

Question 13 – Describe the steps taken to correct the problem:

On July 9, 2018, GTS Service was hired to assist in determining the cause of the Inlet NOx water injection flow failure on Unit 4. During the testing, the inlet NOx water flow injection failed and the incident was investigated. It was determined that the DCS sent an erroneous signal to the Woodward Controller to ramp out Inlet NOx water injection flow. It was determined that the DCS had sent an erroneous signal to the Woodward Controller to ramp down the inlet water flow injection. The Inlet NOx water injection signal was disabled for Unit 4 at the DCS to prevent this issue from reoccurring. Unit 4 was tested at 1322 hours and was verified that the DCS did not send a signal to the Woodward Controller. The Inlet NOx water injection flow was not affected. The Unit operated in compliance within NOx ppm prescribed limits.

Question 16 – Facility returned to compliance?

Unit 4 returned into compliance on July 9, 2018.

7/6/2018

Unit 4

NOx ppm

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
10:15	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	status
10:16	0.02 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:17	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	0 P
10:18	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:19	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	0.01 P
10:20	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	0.01 P
10:21	0.01 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0.01 P	0.02 P
10:22	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	0.02 P
10:23	0.01 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0.02 P	0.02 P
10:24	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:25	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
10:26	0.01 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0.01 P	0.01 P
10:27	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	0.02 P
10:28	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	0.01 P
10:29	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.01 P	0.01 P
10:30	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:31	0.01 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:32	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:33	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:34	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:35	0.01 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:36	0 P	0 P	1 P	8.4 P	1 P	-0.01 P	0 P	0.02 P	0.02 P
1 10:37	1.51	4.09	1	106.1	1	0	0	0.02	0.02
2 10:38	13.65	29.61	1	120.8	1	1.85	0	0.03	0.03
3 10:39	20.3	40.74	1	135.8	1	4.3	1.1	0.03	0.03
4 10:40	20.73	36.73	1	192.5	1	13.41	4.5	0.02	0.02
5 10:41	17.72	26.27	1	242.5	1	20.17	6.6	0.01	0.01
6 10:42	21.08	30.11	1	241.6	1	20.22	6.6	0	0
7 10:43	22.54	31.89	1	241.1	1	20.2	6.6	24.18	24.18
8 10:44	21.81	30.64	1	240.3	1	20.15	6.6	73.4	73.4
9 10:45	9.83	13.71	1	240.2	1	20.23	6.5	75.88	75.88
10 10:46	3.53	4.91	1	239.6	1	20.14	6.5	75.77	75.77
11 10:47	2.35	3.27	1	240	1	20.12	6.6	75.69	75.69
12 10:48	1.86	2.59	1	240.1	1	20.18	6.6	75.67	75.67
13 10:49	1.61	2.25	1	240.4	1	20.27	6.6	75.86	75.86
14 10:50	1.27	1.77	1	240.1	1	20.22	6.6	76.14	76.14
15 10:51	1.07	1.49	1	240.1	1	20.17	6.6	75.77	75.77
16 10:52	0.96	1.34	1	239.8	1	20.08	6.6	75.24	75.24
17 10:53	0.88	1.22	1	240.1	1	20.24	6.6	74.26	74.26
18 10:54	0.85	1.18	1	240	1	20.1	6.6	73.23	73.23
19 10:55	0.81	1.12	1	240.2	1	20.2	6.6	72.16	72.16
20 10:56	0.79	1.1	1	239.8	1	20.17	6.6	70.99	70.99
21 10:57	0.79	1.1	1	239.9	1	20.21	6.6	69.73	69.73
22 10:58	0.79	1.1	1	240	1	20.23	6.6	68.48	68.48
23 10:59	0.8	1.11	1	239.7	1	20.11	6.6	67.04	67.04
24 11:00	0.81	1.13	1	240	1	20.19	6.6	65.98	65.98

Start up

7/6/2018

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_H2O_FLOW		4_NH3_Flow	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	k#/hr	status	#/hr	status
25 11:01	0.82		1.14		1		240.3		1		20.17		6.6		64.8	
26 11:02	0.84		1.17		1		239.8		1		20.18		6.6		63.47	
27 11:03	0.86		1.19		1		240		1		20.18		6.6		62.18	
28 11:04	0.89		1.24		1		239.5		1		20.19		6.6		61.26	
29 11:05	0.92		1.28		1		240.2		1		20.19		6.6		60.24	
30 11:06	0.96		1.33		1		239.7		1		20.13		6.6		59.35	
31 11:07	1		1.39		1		238.5		1		20.15		6.6		58.5	
32 11:08	1.05		1.45		1		239.8		1		20.22		6.6		57.92	
33 11:09	1.1		1.53		1		239.6		1		20.15		6.6		57.18	
34 11:10	1.17		1.62		1		239.8		1		20.24		6.5		56.71	
35 11:11	1.26		1.76		1		239.1		1		20.15		6.3		67.56	
11:12	1.34		1.87		0		239.6		1		20.18		6.2		76.95	
11:13	1.34		1.87		0		239.5		1		20.18		6.2		86.48	
11:14	1.18		1.65		0		238.5		1		20.16		6		90.05	
11:15	0.99		1.38		0		238.8		1		20.2		5.9		91.63	
11:16	0.86		1.2		0		238.8		1		20.15		5.9		91.64	
11:17	0.79		1.1		0		239.1		1		20.19		5.9		91.6	
11:18	0.75		1.05		0		239		1		20.24		6		91.54	
11:19	0.71 C		0 C		0		239.3		1		20.09		5.9		91.52	
11:20	1.2 C		0 C		0		239.4		1		20.18		6		91.47	
11:21	0.02 C		0 C		0		238.8		1		20.2		5.9		91.49	
11:22	0.01 C		0 C		0		239		1		20.19		5.9		91.47	
11:23	0 CZ		0 CZ		0		239.2		1		20.2		6		91.39	
11:24	0 CZ		0 CZ		0		238.9		1		20.16		5.9		91.42	
11:25	8.5 C		0 C		0		238.6		1		20.18		5.9		91.41	
11:26	8.67 C		0 C		0		238.3		1		20.23		6		91.52	
11:27	8.68 CS		0 CS		0		238.9		1		20.22		5.9		91.5	
11:28	164.3 C		0 C		0		238.5		1		20.22		5.9		91.53	
11:29	179.34 C		0 C		0		238.1		1		20.25		5.9		91.43	
11:30	179.42 CS		0 CS		0		239.4		1		20.2		6		91.39	
11:31	179.42 CS		0 CS		0		239.1		1		20.22		5.9		91.42	
11:32	4.56 C		0 C		0		238.8		1		20.2		5.9		91.44	
11:33	1.3 C		0 C		0		239.1		1		20.24		6		91.41	
11:34	1.16 C		0 C		0		239.5		1		20.23		5.9		91.46	
11:35	1.03		1.43		0		239.1		1		20.18		5.9		91.45	
11:36	0.93		1.29		0		239.2		1		20.2		5.9		91.44	
11:37	0.87		1.2		0		239.1		1		20.23		5.9		91.48	
11:38	0.83		1.15		0		239.5		1		20.13		5.9		91.43	
11:39	0.81		1.12		0		239.1		1		20.18		6		91.4	
11:40	0.78		1.08		0		239.3		1		20.18		6		91.45	
11:41	0.76		1.06		0		242.7		1		21.01		6.5		90.88	
11:42	0.74		0.97		0		291.9		1		28.51		10.8		107.27	
11:43	0.7		0.8		0		369.6		1		39.12		18.3		120.73	
11:44	0.63		0.62		0		448.5		1		48.83		24		127.53	
11:45	0.58		0.53		0		464.8		1		50.15		23.6		125.2	
11:46	0.61		0.56		0		457		1		49.53		17.8		115.41	
11:47	3.98		3.87		0		420.4		1		46.69		3.8		102.56	

End Startup

Passing On-line
Calibration

7/6/2018

Time	4_NOXPPM	4_NOX_CORR	4_Startup	4_GasFlow	4_Flame_On	4_LOAD	4_H2O_FLOW	4_NH3_Flow
	ppm	status	1=ON	status	1=ON	MW	k#/hr	#/hr
11:48	77.75	77.62	0	433.5	1	48.03	11.3	113.01
11:49	59.02	54.41	0	465	1	50.19	22.9	121.49
11:50	6.43	5.83	0	465.9	1	50.22	23	123.85
11:51	1.21	1.1	0	464.5	1	50.11	22.1	129.06
11:52	1.14	1.04	0	461.7	1	49.97	21.1	129.11
11:53	1.23	1.12	0	459.9	1	50.22	20.8	129.16
11:54	1.37	1.25	0	462	1	50.02	21.6	129.09
11:55	1.42	1.3	0	449.3	1	49.07	15.9	129.07
11:56	9.73	9.57	0	412.6	1	45.87	2.1	128.78
11:57	97.22	103.72	0	357.9	1	38.11	0	103.98
11:58	111.29	132.65	0	291.5	1	28.11	0	74.94
11:59	79.72	106.9	0	225.6	1	17.94	0	66.31
12:00	53	84.06	0	158.9	1	7.59	0	59.53
12:01	27.59	52.17	0	111.5	1	0.38	0	45.91
12:02	14.8	30.43	0	107.8	1	0	0	44.47
12:03	14.39	29.58	0	108.1	1	0	0	44.74
12:04	13.98	28.64	0	108	1	0	0	44.75
12:05	13.79	28.15	0	108.3	1	0	0	44.71
12:06	13.47 P	0 P	0 P	18.4 P	0 P	-0.01 P	0 P	7.44 P
12:07	6.87 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P
12:08	0.39 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.04 P
12:09	0.25 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.04 P
12:10	0.24 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P
12:11	0.2 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P
12:12	0.17 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.04 P
12:13	0.14 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P
12:14	0.13 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P
12:15	0.12 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P
12:16	0.1 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.04 P
12:17	0.1 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.05 P
12:18	0.09 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.05 P
12:19	0.08 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P
12:20	0.07 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P
12:21	0.07 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P
12:22	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P
12:23	0.06 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0.05 P
12:24	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.04 P
12:25	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P
12:26	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P
12:27	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.05 P
12:28	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.05 P
12:29	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.05 P
12:30	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P
12:31	0.05 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.05 P
12:32	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.05 P
12:33	0.07 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P
12:34	0.08 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P

Exceedance ppm2.8

Permit Limit ppm2.5

Over the limit ppm0.3

Exceedance ppm 2.8
Permit Limit ppm 2.5
Over the limit ppm 0.3

Start Shutdown

End Shutdown

7/6/2018

Time	4_NOXPPM ppm	4_NOX_CORR ppm	status	4_Startup 1=ON	status	4_GasFlow kscfh	status	4_Flame_On 1=ON	status	4_LOAD MW	status	4_H2O_FLOW k#/hr	status	4_NH3_Flow #/hr	status
12:35	0.08 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:36	0.07 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:37	0.06 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:38	0.06 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:39	0.06 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:40	0.04 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:41	0.04 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:42	0.04 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:43	0.04 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:44	0.04 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:45	0.03 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:46	0.03 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:47	0.03 P		0 P	0 P	0.5 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:48	0.03 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.03 P	0.03 P
12:49	0.02 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:50	0.04 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:51	0.04 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:52	0.03 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:53	0.03 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:54	0.02 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:55	0.02 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:56	0.02 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:57	0.02 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P
12:58	0.02 P		0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.04 P	0.04 P
12:59	0.02 P		0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.05 P	0.05 P

Invalid Status Legend:

U - Untouched
P - Process OFF
E - Data Error
C - In Calibration
F - Calibration Failure
Z - Zero Step
S - Span Step
O - Out of Control
I - Ignore/Discard Data
L - Old Data
M - Communication Failure
H - Hardware Failure
T - Task Error

NDx lbs

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	status	4_GasFlow kscf	status	4_Flame_On 1=ON	status	4_LOAD MW	status	4_H2O_FLOW k#/hr	status	4_NOxlb_SD #/hr	status	4_NOxlbSDH pounds	status
10:15	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:16	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:17	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:18	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:19	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:20	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:21	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:22	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:23	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:24	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:25	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:26	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:27	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:28	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:29	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:30	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:31	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:32	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:33	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:34	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:35	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:36	0 P	0 P	1 P	8.4 P	1 P	1 P	1 P	1 P	-0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:37	1.51	4.09	1	106.1	1	1	1	1	0	0	0	0	0 P	0 P	0 P	0 P
10:38	13.65	29.61	1	120.8	1	1	1	1	1.85	0	0	0	0 P	0 P	0 P	0 P
10:39	20.3	40.74	1	135.8	1	1	1	1	4.3	0	0	0	0 P	0 P	0 P	0 P
10:40	20.73	36.73	1	192.5	1	1	1	1	13.41	1.1	1.1	0	0 P	0 P	0 P	0 P
10:41	17.72	26.27	1	242.5	1	1	1	1	20.17	4.5	4.5	0	0 P	0 P	0 P	0 P
10:42	21.08	30.11	1	241.6	1	1	1	1	20.22	6.6	6.6	0	0 P	0 P	0 P	0 P
10:43	22.54	31.89	1	241.1	1	1	1	1	20.2	6.6	6.6	0	0 P	0 P	0 P	0 P
10:44	21.81	30.64	1	240.3	1	1	1	1	20.15	6.6	6.6	0	0 P	0 P	0 P	0 P
10:45	9.83	13.71	1	240.2	1	1	1	1	20.23	6.5	6.5	0	0 P	0 P	0 P	0 P
10:46	3.53	4.91	1	239.6	1	1	1	1	20.14	6.5	6.5	0	0 P	0 P	0 P	0 P
10:47	2.35	3.27	1	240	1	1	1	1	20.12	6.6	6.6	0	0 P	0 P	0 P	0 P
10:48	1.86	2.59	1	240.1	1	1	1	1	20.18	6.6	6.6	0	0 P	0 P	0 P	0 P
10:49	1.61	2.25	1	240.4	1	1	1	1	20.27	6.6	6.6	0	0 P	0 P	0 P	0 P
10:50	1.27	1.77	1	240.1	1	1	1	1	20.22	6.6	6.6	0	0 P	0 P	0 P	0 P
10:51	1.07	1.49	1	240.1	1	1	1	1	20.17	6.6	6.6	0	0 P	0 P	0 P	0 P
10:52	0.96	1.34	1	239.8	1	1	1	1	20.08	6.6	6.6	0	0 P	0 P	0 P	0 P
10:53	0.88	1.22	1	240.1	1	1	1	1	20.24	6.6	6.6	0	0 P	0 P	0 P	0 P
10:54	0.85	1.18	1	240	1	1	1	1	20.1	6.6	6.6	0	0 P	0 P	0 P	0 P
10:55	0.81	1.12	1	240.2	1	1	1	1	20.2	6.6	6.6	0	0 P	0 P	0 P	0 P
10:56	0.79	1.1	1	239.8	1	1	1	1	20.17	6.6	6.6	0	0 P	0 P	0 P	0 P
10:57	0.79	1.1	1	239.9	1	1	1	1	20.21	6.6	6.6	0	0 P	0 P	0 P	0 P
10:58	0.79	1.1	1	240	1	1	1	1	20.23	6.6	6.6	0	0 P	0 P	0 P	0 P
10:59	0.8	1.11	1	239.7	1	1	1	1	20.11	6.6	6.6	0	0 P	0 P	0 P	0 P
11:00	0.81	1.13	1	240	1	1	1	1	20.19	6.6	6.6	0	0 P	0 P	0 P	0 P
11:01	0.82	1.14	1	240.3	1	1	1	1	20.17	6.6	6.6	0	0 P	0 P	0 P	0 P
11:02	0.84	1.17	1	239.8	1	1	1	1	20.18	6.6	6.6	0	0 P	0 P	0 P	0 P
11:03	0.86	1.19	1	240	1	1	1	1	20.18	6.6	6.6	0	0 P	0 P	0 P	0 P
11:04	0.89	1.24	1	239.5	1	1	1	1	20.19	6.6	6.6	0	0 P	0 P	0 P	0 P
11:05	0.92	1.28	1	240.2	1	1	1	1	20.19	6.6	6.6	0	0 P	0 P	0 P	0 P

Start up

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NOxlb_SD #/hr	4_NOxlbSDH pounds	status
11:06	0.96	1.33	1	239.7	1	20.13	6.6	1.23	0	
11:07	1	1.39	1	238.5	1	20.15	6.6	1.28	13.51	
11:08	1.05	1.45	1	239.8	1	20.22	6.6	1.35	13.51	
11:09	1.1	1.53	1	239.6	1	20.15	6.6	1.41	13.51	
11:10	1.17	1.62	1	239.8	1	20.24	6.5	1.51	13.51	
11:11	1.26	1.76	1	239.1	1	20.15	6.3	1.63	13.51	
11:12	1.34	1.87	0	239.6	1	20.18	6.2	1.74	13.51	
11:13	1.34	1.87	0	239.5	1	20.18	6.2	1.74	13.51	
11:14	1.18	1.65	0	238.5	1	20.16	6	1.53	13.51	
11:15	0.99	1.38	0	238.8	1	20.2	5.9	1.28	13.51	
11:16	0.86	1.2	0	238.8	1	20.15	5.9	1.1	13.51	
11:17	0.79	1.1	0	239.1	1	20.19	5.9	1.03	13.51	
11:18	0.75	1.05	0	239	1	20.24	6	0.98	13.51	
11:19	0.71 C	0 C	0	239.3	1	20.09	5.9	0 C	13.51	
11:20	1.2 C	0 C	0	239.4	1	20.18	6	0 C	13.51	
11:21	0.02 C	0 C	0	238.8	1	20.2	5.9	0 C	13.51	
11:22	0.01 C	0 C	0	239	1	20.19	5.9	0 C	13.51	
11:23	0 CZ	0 CZ	0	239.2	1	20.2	6	0 CZ	13.51	
11:24	0 CZ	0 CZ	0	238.9	1	20.16	5.9	0 CZ	13.51	
11:25	8.5 C	0 C	0	238.6	1	20.18	5.9	0 C	13.51	
11:26	8.67 C	0 C	0	238.3	1	20.23	6	0 C	13.51	
11:27	8.68 CS	0 CS	0	238.9	1	20.22	5.9	0 CS	13.51	
11:28	164.3 C	0 C	0	238.5	1	20.22	5.9	0 C	13.51	
11:29	179.34 C	0 C	0	238.1	1	20.25	5.9	0 C	13.51	
11:30	179.42 CS	0 CS	0	239.4	1	20.2	6	0 CS	13.51	
11:31	179.42 CS	0 CS	0	239.1	1	20.22	5.9	0 CS	13.51	
11:32	4.56 C	0 C	0	238.8	1	20.2	5.9	0 C	13.51	
11:33	1.3 C	0 C	0	239.1	1	20.24	6	0 C	13.51	
11:34	1.16 C	0 C	0	239.5	1	20.23	5.9	0 C	13.51	
11:35	1.03	1.43	0	239.1	1	20.18	5.9	1.33	13.51	
11:36	0.93	1.29	0	239.2	1	20.2	5.9	1.18	13.51	
11:37	0.87	1.2	0	239.1	1	20.23	5.9	1.1	13.51	
11:38	0.83	1.15	0	239.5	1	20.13	5.9	1.06	13.51	
11:39	0.81	1.12	0	239.1	1	20.18	6	1.03	13.51	
11:40	0.78	1.08	0	239.3	1	20.18	6	1.01	13.51	
11:41	0.76	1.06	0	242.7	1	21.01	6.5	0.99	13.51	
11:42	0.74	0.97	0	291.9	1	28.51	10.8	1.1	13.51	
11:43	0.7	0.8	0	369.6	1	39.12	18.3	1.13	13.51	
11:44	0.63	0.62	0	448.5	1	48.83	24	1.08	13.51	
11:45	0.58	0.53	0	464.8	1	50.15	23.6	0.93	13.51	
11:46	0.61	0.56	0	457	1	49.53	17.8	1.01	13.51	
11:47	3.98	3.87	0	420.4	1	46.69	3.8	6.31	13.51	
11:48	77.75	77.62	0	433.5	1	48.03	11.3	130.14	13.51	
11:49	59.02	54.41	0	465	1	50.19	22.9	97.86	13.51	
11:50	6.43	5.83	0	465.9	1	50.22	23	10.52	13.51	
11:51	1.21	1.1	0	464.5	1	50.11	22.1	1.95	13.51	
11:52	1.14	1.04	0	461.7	1	49.97	21.1	1.84	13.51	
11:53	1.23	1.12	0	459.9	1	50.22	20.8	1.98	13.51	
11:54	1.37	1.25	0	462	1	50.02	21.6	2.23	13.51	
11:55	1.42	1.3	0	449.3	1	49.07	15.9	2.26	13.51	
11:56	9.73	9.57	0	412.6	1	45.87	2.1	15.25	13.51	
11:57	97.22	103.72	0	357.9	1	38.11	0	143.59	13.51	

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NOxlb_SD #/hr	4_NOxlbSDH pounds
11:58	111.29	132.65	0	291.5	1	28.11	0	149.59	13.51
11:59	79.72	106.9	0	225.6	1	17.94	0	93.29	13.51
12:00	53	84.06	0	158.9	1	7.59	0	51.66	13.51
12:01	27.59	52.17	0	111.5	1	0.38	0	22.51	13.51
12:02	14.8	30.43	0	107.8	1	0	0	12.69	13.51
12:03	14.39	29.58	0	108.1	1	0	0	12.37	13.51
12:04	13.98	28.64	0	108	1	0	0	11.96	13.51
12:05	13.79	28.15	0	108.3	1	0	0	11.79	13.51
12:06	13.47 P	0 P	0 P	18.4 P	0 P	-0.01 P	0 P	0 P	0 P
12:07	6.87 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:08	0.39 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:09	0.25 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:10	0.24 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:11	0.2 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:12	0.17 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:13	0.14 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:14	0.13 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:15	0.12 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:16	0.1 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:17	0.1 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:18	0.09 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:19	0.08 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:20	0.07 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:21	0.07 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:22	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:23	0.06 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
12:24	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:25	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:26	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:27	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:28	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:29	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:30	0.06 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:31	0.05 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:32	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:33	0.07 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:34	0.08 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:35	0.08 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:36	0.07 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:37	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:38	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:39	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:40	0.04 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:41	0.04 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:42	0.04 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:43	0.04 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:44	0.04 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:45	0.03 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
12:46	0.03 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:47	0.03 P	0 P	0 P	0.5 P	0 P	0 P	0 P	0 P	0 P
12:48	0.03 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
12:49	0.02 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P

Exceedance ppm 13.51
Shutdown Limit ppm 4.07
Over limit ppm 9.44

7/6/2018
Unit 4

Time	4_NOXPPM ppm	status	4_NOX_CORR ppm	status	4_Startup 1=ON	status	4_GasFlow kscfh	status	4_Flame_On 1=ON	status	4_LOAD MW	status	4_H2O_FLOW k#/hr	status	4_NOxlb_SD #/hr	status	4_NOxlbSDH pounds	status
12:50	0.04 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:51	0.04 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:52	0.03 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:53	0.03 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:54	0.02 P			O P		O P	0.3 P		O P		O P		O P		O P		O P	
12:55	0.02 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:56	0.02 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:57	0.02 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:58	0.02 P			O P		O P	0.4 P		O P		O P		O P		O P		O P	
12:59	0.02 P			O P		O P	0.3 P		O P		O P		O P		O P		O P	

Invalid Status Legend:

- U - Untouched
- P - Process OFF
- E - Data Error
- C - In Calibration
- F - Calibration Failure
- Z - Zero Step
- S - Span Step
- O - Out of Control
- I - Ignore/Discard Data
- L - Old Data
- M - Communication Failure
- H - Hardware Failure
- T - Task Error



South Coast Air Quality Management District

Form 500-N**Title V - Deviations, Emergencies & Breakdowns**

*This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.

Mail To:
SCAQMD
P.O. Box 4941
Diamond Bar, CA 91765-0941

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): <u>CANYON POWER PLANT Unit 1 (D1) & 2 (D7)</u>		2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): <u>153992</u>	
3. Address: (where incident occurred) <u>3071 E. Miraloma Avenue</u> <u>Anaheim</u> City		Street Address <u>CA</u> State <u>92806</u> Zip	
4. Mailing Address: (if different from Item 3) City		Street Address State Zip	
5. Provide the name, title, and phone number of the person to contact for further information: <u>RONALD HOFFARD</u> Name <u>Generation Plant Manager</u> Title <u>(714) 765-4536</u> Phone #			

Section II - Reporting of Breakdowns, Deviations, and Emergencies

Type of Incident	Verbal Report Due*	Written Report Due
a. ☐ Emergency under Rule 3002(g)	Within 1 hour of discovery	Within 2 working days from when the emission limit was exceeded.
b. ☐ Breakdown under: ☐ Rule 430 (Non-RECLAIM) ☐ Rule 2004 (RECLAIM) ☐ Rule 218 (Non-RECLAIM) [See Rule 218(f)(3)]	For Rules 430 & 2004 - Within 1 hour of discovery. For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours	For Rules 430 & 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from start of the breakdown, unless a written extension is granted. For Rule 218 - With required semi-annual reports.
c. ☒ Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B]	Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation.	Within 14 days of discovery of the deviation.
d. ☐ Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23]	None	With required semi-annual monitoring reports.

2. The incident was first discovered by: Vincent Nguyen on 07/10/2018 at 10:42 ☒ AM ☐ PM
Name Date Time

3. The incident was first reported by: Operator #4 on 07/10/2018 at 10:53 ☒ AM ☐ PM
Name of AQMD Staff Person Date Time

a. ☒ Via Phone
b. ☐ In Person

Notification Number (Required): 520383

4. When did the incident actually occur? 07/10/2018 0839/0840 ☒ AM ☐ PM
Date Time

AQMD USE ONLY	Received By:		Assigned By:		Inspector:	
	Date/Time Received:		Date/Time Assigned:		Date/Time Received Assignment:	
	Date Delivered To Team:		Date Reviewed Inspector Report:		Date Inspected Facility:	
	Team:	Sector:	Breakdown/Deviation Notification No.		Date Completed Report:	
	Recommended Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____
	Final Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____

5. Has the incident stopped? a. ☒ Yes, on: 07/10/2018 0845/0846 ☒ AM ☐ PM b. ☐ No
6. What was the total duration of the incident? 07 Days Hours- min
7. For equipment with an operating cycle, as defined in Rule 430 (b)(3)(A), when was the end of the operating cycle during which the incident occurred? ☐ AM ☐ PM
8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary.
See Attachment
9. The incident may have resulted in a:
a. ☒ Violation of Permit Condition(s): A99.1 - 2.5 ppm NOx
b. ☐ Violation of AQMD Rule(s):
10. What was the probable cause of the incident? Attach additional pages as necessary.
See Attachment
11. Did the incident result in excess emissions? ☐ No ☒ Yes (Complete the following and attach calculations.)
☐ VOC lbs ☒ NOx 0.00 / 0.72 ppm lbs ☐ SOx lbs ☐ H2S lbs
☐ CO lbs ☐ PM lbs ☐ Other: lbs pollutant
12. For RECLAIM facilities Subject to Rule 2004 (i)(3) ONLY: If excess emissions of NOx and/or SOx were reported in Item 11, do you want these emissions to be counted when determining compliance with your annual allocations?
a. ☒ Yes, for: ☒ NOx ☐ SOx b. ☐ No, for: ☐ NOx ☐ SOx
If box 12(b) above is checked, include all information specified in Rule 2004(i)(3)(B) and (C), as applicable.
13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.
See Attachment
14. Was the facility operating properly prior to the incident?
a. ☒ Yes b. ☐ No, because:
15. Did the incident result from operator error, neglect or improper operation or maintenance procedures?
a. ☒ Yes b. ☐ No, because:
16. Has the facility returned to compliance?
a. ☐ No, because:
b. ☒ Yes (Attach evidence such as emissions calculations, contemporaneous operating logs or other credible evidence.)

Section III - Certification Statement

I certify under penalty of law that based on information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.

For Title V Facilities ONLY: ☒ I also certify under penalty of law that that I am the responsible official for this facility as defined in AQMD Regulation XXX.

1. Signature of Responsible Official: 	2. Title of Responsible Official: INTEGRATED RESOURCES MANAGER
3. Print Name: MANNY ROBLEDO	4. Date: 07/18/2018
5. Phone #: (714) 765-5177	6. Fax #:
7. Address of Responsible Official: 201 S. Anaheim Blvd., Ste. 801 Anaheim CA 92805	
Street #	City State Zip

SCAQMD 500N Episode Date: 07/10/18

Identify issue: Ammonia Injection Pump

Canyon Power Plant: Unit 1 (D1) & 2 (D2) /ID# 153992

Notification: 520383

Question 8 - Describe the incident and identify each piece of equipment:

On July 10, 2018, the 480-volt power serving the pumps supplying ammonia to the selective catalytic reduction systems of Units 1 and 2 temporarily lost power during a preventative maintenance procedure conducted on the circuit breakers protecting pump motors. Prior to performing the breaker maintenance the technicians did review the single line electrical drawings to ensure that any required equipment would be served by alternate sources during the maintenance procedure. Unfortunately, the ammonia pumps were missed during this review, and the maintenance procedure caused them to lose power and cause excess NOx emissions. The ammonia control panel was without power for approximately seven minutes, which caused a loss of ammonia flow. Because the ammonia flow suffered a temporary electrical disconnection the NOx PPM increased during minutes 0839 through 0845 for Unit 1 and minutes 0840 through 0846 for Unit 2. This temporary electrical disconnection caused the hourly NOx ppm average to exceed the permit limit by 0.80 and 0.72 ppm for Unit 1 and 2 respectively.

Question 10 – What was the probable cause of the incident?

The cause of the episode was that alternate power was not supplied to the ammonia panels serving Units 1 and 2 during a breaker maintenance procedure.

Question 13 – Describe the steps taken to correct the problem:

All maintenance staff have received refresher training on the importance of providing alternate power to all necessary equipment during breaker maintenance procedures, and a written step-by-step clearance and alternate supply procedure has been added to the preventative maintenance work order that will automatically be issued by the computerized maintenance system three years from now to prevent this issue from happening again.

Question 16 – Facility returned to compliance?

Unit 1 & 2 returned to compliance on July 10, 2018.

Unit 1

7/10/2018													
Unit 1													
Time	1_NOXPPM	1_NOX_CORR		1_H2O_FLOW		1_NH3_Flow		1_GasFlow		1_Startup		1_Shutdown	
		status	ppm	status	k#/hr	status	#/hr	status	kscfh	status	1=ON	status	1=ON
Startup	7:35	-0.03 P		0 P		0 P	-0.06 P		0.3 P		0 P		0 P
	7:36	-0.02 P		0 P		0 P	-0.05 P		0.3 P		0 P		0 P
	7:37	0		0		0	-0.05		51.3		1		0
	7:38	1.92	4.93			0	-0.05		17.1		1		0
	7:39	13.05	33.33			0	-0.05		1.1		1		0
	7:40	19.8	43.43			1.9	-0.05		127.5		1		0
	7:41	19.93	32.94			5.9	-0.06		207.1		1		0
	7:42	16.76	22.68			10.4	-0.06		271.4		1		0
	7:43	17.3	20.75			16.6	-0.05		350		1		0
	7:44	19.43	20.22			21.9	47.81		433.2		1		0
	7:45	22.48	22			20.5	94.03		445.8		1		0
	7:46	11.19	10.82			20.4	95.47		449.6		1		0
	7:47	3.56	3.43			20.3	95.87		453.9		1		0
	7:48	3.14	3.01			20.6	96.56		458.9		1		0
	7:49	3.11	2.95			23.2	97.24		464.1		1		0
	7:50	2.69	2.53			24.9	103.66		467.3		1		0
	7:51	1.5	1.41			25.5	111.71		467.5		1		0
	7:52	1.13	1.06			25.3	112.96		469.5		1		0
	7:53	0.98	0.92			24.5	112.21		470.4		1		0
	7:54	0.87	0.81			23.9	110.52		469.7		1		0
	7:55	0.91	0.85			22.8	108.25		468.7		1		0
	7:56	1.02	0.95			22.6	106.2		468.4		1		0
	7:57	1.18	1.1			22.5	105.04		468.9		1		0
	7:58	1.38	1.28			22.5	104.59		470.8		1		0
	7:59	1.47	1.36			22.4	104.31		471.1		1		0
	8:00	1.57	1.45			22.3	103.22		471		1		0
	8:01	1.63	1.5			21.7	103.05		465		1		0
	8:02	1.65	1.52			21	103.1		457.8		1		0
	8:03	1.67	1.54			20.5	103.11		452.9		1		0
	8:04	1.7	1.56			20.5	103.11		449		1		0
	8:05	1.71	1.57			21.2	103.12		449.9		1		0
	8:06	1.59	1.45			21.3	103.11		450.5		1		0
	8:07	1.38	1.27			20.6	103.1		448.9		1		0
	8:08	1.29	1.19			20.5	103.09		447.8		1		0
	8:09	1.38	1.27			20.5	103.1		448		1		0
8:10	1.46	1.34			21.8	103.83		459.6		1		0	
8:11	1.5	1.37			22.1	103.6		463.2		1		0	
8:12	1.55	1.42			22.6	104.34		469.4		0		0	
8:13	1.6	1.46			22	103.6		464.1		0		0	
8:14	1.6	1.47			21.5	101.04		458		0		0	
8:15	1.59	1.45			22	100.83		462.6		0		0	
End Startup													

7/10/2018
Unit 1

Time	1_NOXPPM ppm	1_NOX_CORR ppm	1_H2O_FLOW k#/hr	status	1_NH3_Flow #/hr	status	1_GasFlow kschf	status	1_Startup 1=ON	status	1_Shutdown 1=ON	status
8:16	1.64	1.5	22.4		101.43		467.1		0		0	
8:17	1.68	1.53	22.4		100.87		466.7		0		0	
8:18	1.69	1.55	22.5		100.66		467.9		0		0	
8:19	1.68	1.54	22.6		101.67		470.1		0		0	
8:20	1.7	1.64	19.9		86.33		419.8		0		0	
8:21	1.69	1.82	14.2		79.47		341.3		0		0	
8:22	1.52	1.79	8.7		79.47		267.1		0		0	
8:23	1.36	1.75	7.3		79.5		243.4		0		0	
8:24	1.17	1.51	7.2		79.46		243.8		0		0	
8:25	0.97	1.25	7.2		79.48		242.6		0		0	
8:26	0.93	1.2	7.3		79.5		244.4		0		0	
8:27	0.91	1.18	7.1		79.5		242.7		0		0	
8:28	0.9	1.16	7		79.52		243.7		0		0	
8:29	0.89	1.15	7.2		78.4		244		0		0	
8:30	0.88	1.14	7.2		74.98		243.4		0		0	
8:31	0.89	1.15	7.2		74.78		243.5		0		0	
8:32	0.9	1.16	7.2		66.85		244.2		0		0	
8:33	0.93	1.2	7.2		66.64		243.6		0		0	
8:34	0.99	1.28	7.2		66.63		243.5		0		0	
8:35	1.06	1.37	7.2		66.63		244		0		0	
8:36	1.14	1.47	7.2		66.6		244.3		0		0	
8:37	1.17	1.51	7.2		49.78		243.3		0		0	
8:38	1.17	1.52	7.2		11.02		243.2		0		0	
8:39	2.54	3.29	7.2		0.06		243.9		0		0	
8:40	10.45	13.52	7.3		-0.05		244.6		0		0	
8:41	19.23	24.94	7.2		-0.05		244.4		0		0	
8:42	21.6	28.01	7.2		-0.05		243.8		0		0	
8:43	21.74	28.19	7.2		64.95		243.8		0		0	
8:44	21.66	28.03	7.3		130.86		244.7		0		0	
8:45	8.74	11.31	7.2		129.67		244.1		0		0	
8:46	0.89	1.15	7.2		125.16		244		0		0	
8:47	0.75	0.97	7.2		125.21		243.8		0		0	
8:48	0.72	0.93	7.2		124.84		243.8		0		0	
8:49	0.7	0.91	7.3		123.95		243.4		0		0	
8:50	0.68	0.88	7.5		123.8		244		0		0	
8:51	0.67	0.87	7.5		123.73		244		0		0	
8:52	0.65	0.84	7.7		123.72		244.6		0		0	
8:53	0.63	0.81	7.7		123.71		245.2		0		0	
8:54	0.62	0.8	7.6		123.59		244		0		0	
8:55	0.61	0.79	7.6		123.63		244		0		0	
8:56	0.61	0.79	7.6		123.62		244.1		0		0	
8:57	0.61	0.79	7.7		123.61		244.2		0		0	
8:58	0.6	0.77	7.8		123.59		245.3		0		0	

7/10/2018
Unit 1

Time	1_NOXPPM	1_NOX_CORR	1_H2O_FLOW	1_NH3_Flow	1_GasFlow	1_Startup	1_Shutdown
	ppm	ppm	k#/hr	#/hr	kscfh	1=ON	1=ON
8:59	0.6	0.77	7.8	123.58	245.3	0	0
9:00	0.6	0.77	7.8	123.6	245.4	0	0
9:01	0.6	0.78	7.7	123.6	244.8	0	0
9:02	0.6	0.78	7.6	123.59	244	0	0
9:03	0.6	0.78	7.6	123.6	244.3	0	0
9:04	0.6	0.78	7.7	112.99	243.9	0	0
9:05	0.6	0.77	7.6	103.53	244	0	0
9:06	0.6	0.77	7.6	101.52	244.3	0	0
9:07	0.6	0.77	7.7	99.69	244.2	0	0
9:08	0.6	0.77	7.8	83.39	244.9	0	0
9:09	0.6	0.77	7.7	73.52	244.7	0	0
9:10	0.61	0.79	7.7	71.57	244.9	0	0
9:11	0.63	0.81	7.8	69.92	245.4	0	0
9:12	0.67	0.86	7.8	68.23	245.5	0	0
9:13	0.69	0.89	7.8	66.51	245.3	0	0
9:14	0.73	0.95	6.2	61.06	226.2	0	1
9:15	0.78	1.2	2.6	46.29	160.1	0	1
9:16	0.84	1.7	0.9	39.08	96.9	0	1
9:17	1.02	2.44	0.6	42.41	90.3	0	1
9:18	1.34	3.21	0.7	34.2	52.8	0	1
9:19	1.56	3.98	0.6	15.45	1.2	0	1
9:20	1.95	5.05	0.6	15.49	1.1	0	1
9:21	3.21	8.23	0	15.53	0.8	0	1
9:22	4.55 P	0 P	0 P	15.57 P	0.3 P	0 P	0 P
9:23	2.47 P	0 P	0 P	15.58 P	0.3 P	0 P	0 P
9:24	0.1 P	0 P	0 P	15.55 P	0.3 P	0 P	0 P
9:25	0.02 P	0 P	0 P	15.62 P	0.3 P	0 P	0 P
9:26	0.01 P	0 P	0 P	15.59 P	0.3 P	0 P	0 P
9:27	0 P	0 P	0 P	15.62 P	0.3 P	0 P	0 P
9:28	-0.01 P	0 P	0 P	15.67 P	0.3 P	0 P	0 P
9:29	-0.01 P	0 P	0 P	15.71 P	0.3 P	0 P	0 P
9:30	-0.01 P	0 P	0 P	15.71 P	0.4 P	0 P	0 P

Shutdown

End Shutdown

Exceedance ppm

Permit Limit ppm

Over by ppm

Invalid Status Legend:

- U - Untouched
- P - Process OFF
- E - Data Error
- C - In Calibration
- F - Calibration Failure
- Z - Zero Step
- S - Span Step
- O - Out of Control
- I - Ignore/Discard Data

7/10/2018
Unit 1

Time	1_NOXPPM	1_NOX_CORR	1_H2O_FLOW	1_NH3_Flow	1_GasFlow	1_Startup	1_Shutdown
	ppm	ppm	k#/hr	#/hr	kscfh	status	status
L - Old Data							
M - Communication Failure							
H - Hardware Failure							
T - Task Error							

7/10/2018

Unit 2

7/10/2018		Unit 2													
Time	2_NOXPPM	2_NOX_CORR		2_H2O_FLOW		2_NH3_FLOW		2_GasFlow		2_Startup		2_Shutdown			
		ppm	status	ppm	status	k#/hr	status	#/hr	status	kscfh	status	1=ON	status	1=ON	status
Startup	7:35	0.03	P	0	P		P		P		P		P		P
	7:36	0.03	P	0	P		P		P	11.2	P	1	P		P
	7:37	0.02		0.07			0		0.89	71.7		1			0
	7:38	2.73		6.44			0		0.89	90.5		1			0
	7:39	9.04		21.08			0		0.89	100.7		1			0
	7:40	7.67		15.5		2.3			0.89	140.9		1			0
	7:41	6.01		9.26		6			0.89	211.6		1			0
	7:42	4.01		5.11		10.1			0.89	275.1		1			0
	7:43	3.22		3.68		15.4			0.89	351.1		1			0
	7:44	5.11		5.14		20.5		30.24		429.3		1			0
	7:45	10.06		9.44		19.8		104.45		447.6		1			0
	7:46	12.94		12.06		19.6		114.51		448.9		1			0
	7:47	3.13		2.91		19.5		110.61		452.2		1			0
	7:48	1.63		1.51		19.5		110.7		455.6		1			0
	7:49	1.62		1.5		19.5		111.06		456.7		1			0
	7:50	1.64		1.52		19.6		111.21		457.1		1			0
	7:51	1.66		1.54		19.8		110.9		457.6		1			0
	7:52	1.65		1.53		19.5		110.89		459.2		1			0
	7:53	1.65		1.53		19.5		110.46		459.3		1			0
	7:54	1.68		1.56		19.6		110.06		459.3		1			0
	7:55	1.75		1.62		19.6		109.72		459.1		1			0
	7:56	1.78		1.65		19.5		109.35		459.6		1			0
	7:57	1.8		1.67		19.6		109.11		459.8		1			0
	7:58	1.86		1.73		19.6		108.86		459.4		1			0
	7:59	1.89		1.75		19.6		108.6		459.3		1			0
	8:00	1.91		1.77		19.7		108.68		459.3		1			0
	8:01	1.93		1.77		19.5		108.61		460.5		1			0
	8:02	1.98		1.8		18.9		108.46		459.1		1			0
	8:03	2.1		1.9		19.1		108.41		457.8		1			0
	8:04	2.18		1.96		20.1		108.44		455.4		1			0
	8:05	1.8		1.61		20.4		108.47		454.9		1			0
	8:06	1.25		1.12		19.2		108.33		452.8		1			0
	8:07	1.24		1.12		19		108.39		452.3		1			0
	8:08	1.36		1.23		18.9		105.13		451.3		1			0
	8:09	1.53		1.38		19		103.41		451.9		1			0
8:10	1.65		1.49		20		105.05		461.4		1			0	
8:11	1.8		1.62		20.1		105.81		463.2		1			0	
8:12	1.9		1.73		20.3		105.15		462.9		1			0	
8:13	1.95		1.76		19.7		104.81		459.9		0			0	
8:14	1.92		1.73		20		104.83		462.7		0			0	
8:15	1.94		1.75		20.2		105.29		463.8		0			0	
End Startup															

End Startup

7/10/2018
Unit 2

Time	2_NOXPPM ppm	2_NOX_CORR ppm	2_H2O_FLOW k#/hr	2_NH3_FLOW #/hr	2_GasFlow kscfh	2_Startup 1=ON	2_Shutdown 1=ON	status
8:16	1.99	1.81	20.2	104.89	462.7	0	0	0
8:17	1.97	1.79	20.4	105.14	463	0	0	0
8:18	1.93	1.75	20.9	104.79	461.9	0	0	0
8:19	1.95	1.78	21.1	104.4	460.9	0	0	0
8:20	1.98	1.81	21.2	104.39	460.5	0	0	0
8:21	2	1.9	18.5	92.5	420.2	0	0	0
8:22	1.9	2.01	13.2	78.25	345.3	0	0	0
8:23	1.48	1.71	8.9	78.15	270.5	0	0	0
8:24	1.58	2	7.3	78.29	240.5	0	0	0
8:25	0.99	1.26	7.2	78.31	240.6	0	0	0
8:26	0.8	1.02	7.3	78.24	241.2	0	0	0
8:27	0.79	1	7.3	78.26	241.2	0	0	0
8:28	0.78	0.99	7.3	78.28	241.4	0	0	0
8:29	0.75	0.95	7.3	75.44	241.1	0	0	0
8:30	0.75	0.95	7.3	71.28	241.1	0	0	0
8:31	0.75	0.95	7.3	69.23	241.6	0	0	0
8:32	0.77	0.98	7.3	67.47	241	0	0	0
8:33	0.79	1	7.3	67.54	241.4	0	0	0
8:34	0.82	1.04	7.3	67.35	241.6	0	0	0
8:35	0.84	1.07	7.3	67.63	241.7	0	0	0
8:36	0.86	1.09	7.3	67.58	240.9	0	0	0
8:37	0.87	1.11	7.3	40.18	241.5	0	0	0
8:38	0.87	1.11	7.3	7.65	241.5	0	0	0
8:39	1.77	2.25	7.3	0.89	241.3	0	0	0
8:40	4.69	5.96	7.3	0.89	241.3	0	0	0
8:41	12.22	15.61	7.2	0.89	238.9	0	0	0
8:42	19.54	24.95	7.2	0.89	238.9	0	0	0
8:43	20.93	26.73	7.2	0.89	239.4	0	0	0
8:44	21.15	27.01	7.2	73.1	239.6	0	0	0
8:45	19.95	25.53	7.2	98.28	239.2	0	0	0
8:46	5.37	6.86	7.2	98.05	239.3	0	0	0
8:47	0.83	1.06	7.2	98.37	239	0	0	0
8:48	0.77	0.98	7.2	98.1	239.3	0	0	0
8:49	0.74	0.95	7.4	98	239.3	0	0	0
8:50	0.71	0.9	7.4	98.19	239.4	0	0	0
8:51	0.69	0.88	7.4	98.33	239.5	0	0	0
8:52	0.67	0.86	7.6	98.4	239.7	0	0	0
8:53	0.66	0.84	7.6	98.31	239.7	0	0	0
8:54	0.64	0.82	7.6	98.41	239.7	0	0	0
8:55	0.63	0.8	7.6	98.5	239.6	0	0	0
8:56	0.64	0.82	7.6	98.64	239.8	0	0	0
8:57	0.63	0.8	7.6	98.52	239.6	0	0	0
8:58	0.63	0.8	7.7	98.52	239.7	0	0	0

7/10/2018 Unit 2	Time	2_NOXPPM ppm	2_NOX_CORR ppm	2_H2O_FLOW k#/hr	2_NH3_Flow #/hr	2_GasFlow kscfh	2_Startup 1=ON	2_Shutdown 1=ON	status
	8:59	0.63	0.8	7.6	98.62	239.8	0	0	
	9:00	0.62	0.79	7.1	98.71	239.1	0	0	
	9:01	0.63	0.8	7.1	98.77	239.1	0	0	
	9:02	0.65	0.83	7.1	98.8	239.3	0	0	
	9:03	0.66	0.84	7.1	98.83	239.1	0	0	
	9:04	0.66	0.84	7.1	98.87	239.4	0	0	
	9:05	0.67	0.86	7.1	98.63	239.3	0	0	
	9:06	0.66	0.84	7.1	88.31	239.3	0	0	
	9:07	0.66	0.84	7.1	76.16	239.5	0	0	
	9:08	0.67	0.86	7.1	76.1	239.3	0	0	
	9:09	0.67	0.86	7.1	76.28	239.2	0	0	
	9:10	0.68	0.87	7.1	72.5	239.2	0	0	
	9:11	0.7	0.89	7.1	66.39	239.3	0	0	
	9:12	0.72	0.92	7.1	65.16	239.4	0	0	
	9:13	0.74	0.95	7	63.42	238.6	0	0	
	9:14	0.78	1.05	4.3	55.24	200.6	0	1	
	9:15	0.82	1.33	1.6	53.9	135.3	0	1	
	9:16	0.95	1.98	0.8	44.66	92	0	1	
	9:17	1.16	2.58	0.7	44.81	91.6	0	1	
	9:18	1.38	3.07	0.7	46.6	91.7	0	1	
	9:19	1.46	3.25	0.7	48.8	91.8	0	1	
	9:20	1.54	3.43	0.6	51.45	91.6	0	1	
	9:21	1.59 P	0 P	0.2 P	9.57 P	15.5 P	0 P	1 P	
	9:22	1.39 P	0 P	0.1 P	0.89 P	0.2 P	0 P	0 P	
	9:23	0.23 P	0 P	0.1 P	0.89 P	0.2 P	0 P	0 P	
	9:24	0.05 P	0 P	0.1 P	0.87 P	0.2 P	0 P	0 P	
	9:25	0.04 P	0 P	0.1 P	0.87 P	0.2 P	0 P	0 P	
	9:26	0.03 P	0 P	0.1 P	0.85 P	0.2 P	0 P	0 P	
	9:27	0.02 P	0 P	0.1 P	0.87 P	0.2 P	0 P	0 P	
	9:28	0.02 P	0 P	0.1 P	0.86 P	0.2 P	0 P	0 P	
	9:29	0.02 P	0 P	0.1 P	0.86 P	0.2 P	0 P	0 P	
	9:30	0.01 P	0 P	0.1 P	0.87 P	0.2 P	0 P	0 P	
Shutdown	10								
	9								
	8								
	7								
	6								
	5								
	4								
	3								
	2								
End Shutdown	1								
Exceedance ppm	3.2								
Permit Limit ppm	2.5								
Over limit by ppm	0.72								

Invalid Status Legend:

- U - Untouched
- P - Process OFF
- E - Data Error
- C - In Calibration
- F - Calibration Failure
- Z - Zero Step
- S - Span Step
- O - Out of Control
- I - Ignore/Discard Data



South Coast Air Quality Management District

Form 500-N**Title V - Deviations, Emergencies & Breakdowns**

*This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.

Mail To:
SCAQMD
P.O. Box 4941
Diamond Bar, CA 91765-0941
Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): <u>CANYON POWER PLANT Unit 4 (D19)</u>		2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): <u>153992</u>	
3. Address: (where incident occurred) <u>3071 E. Miraloma Avenue</u> <u>Anaheim</u> City		Street Address <u>CA</u> State <u>92806</u> Zip	
4. Mailing Address: (if different from Item 3) _____ City		Street Address _____ State Zip	
5. Provide the name, title, and phone number of the person to contact for further information: <u>RONALD HOFFARD</u> Name <u>Generation Plant Manager</u> Title <u>(714) 765-4536</u> Phone #			

Section II - Reporting of Breakdowns, Deviations, and Emergencies

1. This written notification is to report a(n):			
Type of Incident	Verbal Report Due*	Written Report Due	
a. ☐ Emergency under Rule 3002(g)	Within 1 hour of discovery	Within 2 working days from when the emission limit was exceeded.	
b. ☒ Breakdown under: ☐ Rule 430 (Non-RECLAIM) ☒ Rule 2004 (RECLAIM) ☐ Rule 218 (Non-RECLAIM) [See Rule 218(f)(3)]	For Rules 430 & 2004 - Within 1 hour of discovery. For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours	For Rules 430 & 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from start of the breakdown, unless a written extension is granted. For Rule 218 - With required semi-annual reports.	
c. ☐ Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B]	Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation.	Within 14 days of discovery of the deviation.	
d. ☐ Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23]	None	With required semi-annual monitoring reports.	
2. The incident was first discovered by: <u>Charlie Vo</u> on <u>07/09/2018</u> <u>01:10</u> ☐ AM ☒ PM Name Date Time			
3. The incident was first reported by: <u>Operator #4</u> on <u>07/09/2018</u> <u>01:31</u> ☐ AM ☒ PM Name of AQMD Staff Person Date Time			
a. ☒ Via Phone		Notification Number (Required): <u>520238</u>	
b. ☐ In Person			
4. When did the incident actually occur? <u>07/09/2018</u> <u>12:32</u> ☐ AM ☒ PM Date Time			

AQMD USE ONLY	Received By:		Assigned By:		Inspector:	
	Date/Time Received:		Date/Time Assigned:		Date/Time Received Assignment:	
	Date Delivered To Team:		Date Reviewed Inspector Report:		Date Inspected Facility:	
	Team:	Sector:	Breakdown/Deviation Notification No.		Date Completed Report:	
	Recommended Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____
	Final Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____

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SCAQMD 500N Episode Date: 07/09/18

Identify issue: Water Flow Pump failed to respond

Canyon Power Plant: Unit 4/ID# 153992

Notification: 520238

Question 8 - Describe the incident and identify each piece of equipment:

On July 9, 2018, City of Anaheim hired GTS Services to assist and determine the cause of the Inlet NOx water injection flow failure. During the test, Unit 4 operated without issue for 54 minutes when suddenly the Inlet NOx water injection began to ramp down on its own. The incident was investigated and it was determined that the Woodward Controller (gas turbine controller) received a Distribution Control System (DCS) generated command to shutdown the water pump. During testing to investigate the cause of Unit 4 Inlet NOx water injection flow failure, the NOx ppm and shutdown NOx lbs were exceeded. The Unit was immediately shutdown to further investigate the issue.

Question 10 – What was the probable cause of the incident?

The cause of the incident was the Distribution Control System (DCS) that controls and monitors non-gas turbine auxiliary equipment. It was determined that the DCS sent an erroneous signal to the Woodward Controller that controls gas turbine operation to ramp out Inlet NOx water injection flow. Loss of Inlet NOx water injection resulted in an increase of the NOx ppm.

Question 13 – Describe the steps taken to correct the problem:

On July 9, 2018, GTS Service was hired to assist in determining the cause of the Inlet NOx water injection flow failure on Unit 4. During the testing, the inlet NOx water flow injection failed and the incident was investigated. It was determined that the DCS sent an erroneous signal to the Woodward Controller to ramp out Inlet NOx water injection flow. It was determined that the DCS had sent an erroneous signal to the Woodward Controller to ramp down the inlet water flow injection. The Inlet NOx water injection signal was disabled for Unit 4 at the DCS to prevent this issue from reoccurring. Unit 4 was tested at 1322 hours and was verified that the DCS did not send a signal to the Woodward Controller. The Inlet NOx water injection flow was not affected. The Unit operated in compliance within NOx ppm prescribed limits.

Question 16 – Facility returned to compliance?

Unit 4 returned into compliance on July 9, 2018.

7/9/2018

Unit 4

NOx lbs

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup status 1=ON	4_GasFlow status kscfh	4_Flame_On status 1=ON	4_LOAD status MW	4_NOxlb_SD status #/hr	4_NOxlbSDH status pounds	status
10:15	0 P	0 P	0 P	0.4 P	0 P	-0.01 P	0 P	0 P	0 P
10:16	0 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:17	0 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:18	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:19	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:20	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:21	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:22	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:23	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:24	0 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:25	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:26	0 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:27	0 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:28	0 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:29	0 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P	0 P
10:30	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
10:31	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:32	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:33	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P
10:34	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:35	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P
10:36	0 P	0 P	1 P	0.3 P	1 P	0 P	0 P	0 P	0 P
10:37	0.6	2.21	1	75.6	1	0	0 P	0 P	0 P
10:38	7.04	15.62	1	112.2	1	0.13	0 P	0 P	0 P
10:39	11.41	24.57	1	123.5	1	2.19	0 P	0 P	0 P
10:40	8.71	16.96	1	161.8	1	8.55	0 P	0 P	0 P
10:41	7.11	11.43	1	228.4	1	18.76	0 P	0 P	0 P
10:42	7.97	10.99	1	293	1	28.34	0 P	0 P	0 P
10:43	12.37	14.6	1	369.3	1	39.13	0 P	0 P	0 P
10:44	20.6 C	0 C	1	446.3	1	48.72	0 PC	0 PC	0 P
10:45	4.92 C	0 C	1	464.5	1	50.18	0 PC	0 PC	0 P
10:46	0.17 C	0 C	1	465.4	1	50.13	0 PC	0 PC	0 P
10:47	0.11 C	0 C	1	465.8	1	50.24	0 PC	0 PC	0 P
10:48	0.08 CZ	0 CZ	1	466.4	1	50.13	0 PCZ	0 PCZ	0 P
10:49	0.08 CZ	0 CZ	1	466.7	1	50.29	0 PCZ	0 PCZ	0 P
10:50	8.65 C	0 C	1	466.8	1	50.14	0 PC	0 PC	0 P
10:51	8.68 C	0 C	1	466.8	1	50.16	0 PC	0 PC	0 P
10:52	8.68 CS	0 CS	1	466.9	1	50.12	0 PCS	0 PCS	0 P
10:53	178.1 C	0 C	1	467	1	50.12	0 PC	0 PC	0 P
10:54	178.88 C	0 C	1	466.8	1	49.99	0 PC	0 PC	0 P
10:55	178.94 CS	0 CS	1	466.8	1	50.06	0 PCS	0 PCS	0 P
10:56	178.94 CS	0 CS	1	466.9	1	50.04	0 PCS	0 PCS	0 P
10:57	3.03 C	0 C	1	465.9	1	50.15	0 PC	0 PC	0 P
10:58	1.63 C	0 C	1	464.4	1	50.12	0 PC	0 PC	0 P
10:59	1.63 C	0 C	1	464	1	50.07	0 PC	0 PC	0 P
11:00	1.75	1.61	1	464.1	1	49.96	2.88	0	12.66

Time	4_NOXPPM ppm	4_NOX_CORR status ppm	4_Startup status 1=ON	4_GasFlow status kscfh	4_Flame_On status 1=ON	4_LOAD status MW	4_NOxlb_SD status #/hr	4_NOxlbSDH status pounds
11:01	1.81	1.66	1	465.1	1	50.24	2.98	12.66
11:02	1.87	1.72	1	465.4	1	50.19	3.08	12.66
11:03	1.85	1.7	1	465.4	1	50.2	3.08	12.66
11:04	1.74	1.6	1	465.3	1	50.1	2.88	12.66
11:05	1.64	1.51	1	465.7	1	50.19	2.74	12.66
11:06	1.5	1.38	1	466.3	1	50.04	2.5	12.66
11:07	1.39	1.28	1	465.9	1	50.15	2.3	12.66
11:08	1.34	1.23	1	465.9	1	50.15	2.2	12.66
11:09	1.38	1.27	1	465.6	1	50.13	2.3	12.66
11:10	1.5	1.38	1	464.9	1	50.19	2.49	12.66
11:11	1.7	1.56	1	465.3	1	50.26	2.83	12.66
11:12	1.89	1.73	0	465.7	1	50.15	3.13	12.66
11:13	1.98	1.81	0	465.7	1	50.24	3.28	12.66
11:14	1.92	1.76	0	466.1	1	50.06	3.18	12.66
11:15	1.74	1.6	0	466.4	1	50.06	2.89	12.66
11:16	1.6	1.47	0	466.2	1	50.3	2.64	12.66
11:17	1.55	1.42	0	465.9	1	50.23	2.54	12.66
11:18	1.61	1.48	0	465.8	1	50.09	2.69	12.66
11:19	1.76	1.62	0	465.9	1	50.23	2.94	12.66
11:20	1.98	1.82	0	465.5	1	50.21	3.27	12.66
11:21	2.1	1.93	0	466	1	50.1	3.47	12.66
11:22	2.11	1.93	0	466.1	1	50.12	3.47	12.66
11:23	1.97	1.81	0	466.2	1	50.27	3.28	12.66
11:24	1.77	1.62	0	466.2	1	50.12	2.94	12.66
11:25	1.65	1.52	0	465.7	1	50.23	2.74	12.66
11:26	1.64	1.51	0	466	1	50.27	2.74	12.66
11:27	1.73	1.59	0	465.3	1	50.12	2.88	12.66
11:28	1.93	1.78	0	465.3	1	50.13	3.18	12.66
11:29	2.12	1.95	0	465.6	1	50.21	3.52	12.66
11:30	2.2	2.03	0	456	1	49.54	3.59	12.66
11:31	20.28	20.04	0	421.6	1	47.09	32.67	12.66
11:32	91.37	90.91	0	443.2	1	48.85	155.86	12.66
11:33	49.27	45.63	0	465.6	1	50.16	82.18	12.66
11:34	5.07	4.67	0	464.8	1	50.21	8.39	12.66
11:35	1.37	1.26	0	464.1	1	50	2.29	12.66
11:36	1.32	1.22	0	465	1	50.08	2.2	12.66
11:37	1.28	1.18	0	465.9	1	50.1	2.1	12.66
11:38	1.09	1	0	466.4	1	50.05	1.81	12.66
11:39	0.9	0.83	0	466.4	1	50.24	1.47	12.66
11:40	0.8	0.74	0	466.6	1	50.13	1.32	12.66
11:41	0.77	0.71	0	466.4	1	50.22	1.27	12.66
11:42	0.76	0.7	0	466.4	1	50.09	1.27	12.66
11:43	0.75	0.69	0	466.6	1	50.18	1.22	12.66
11:44	0.74	0.68	0	466	1	50.34	1.22	12.66
11:45	0.74	0.68	0	466	1	50.21	1.22	12.66
11:46	0.73	0.67	0	466.3	1	50.15	1.22	12.66
11:47	0.74	0.68	0	466.1	1	50.04	1.22	12.66
11:48	0.73	0.67	0	462.4	1	50.08	1.21	12.66

7/9/2018
Unit 4

Time	4_NOXPPM ppm	4_NOX_CORR status ppm	4_Startup status 1=ON	4_GasFlow status kscfh	4_Flame_On status 1=ON	4_LOAD status MW	4_NOxlb_SD status #/hr	4_NOxlbSDH status pounds
11:49	2.34	2.27	0	405.2	1	45.27	3.57	12.66
11:50	41.45	46.85	0	309.7	1	32	56.13	12.66
11:51	85.26	110.31	0	287.9	1	27.11	122.85	12.66
11:52	55.47	74.89	0	238.3	1	18.93	69.03	12.66
11:53	45.52	72.59	0	163.9	1	8.14	46.02	12.66
11:54	26.7	50.82	0	113.9	1	0.41	22.39	12.66
11:55	13.88	28.94	0	109.1	1	0	12.22	12.66
11:56	13.95	29.08	0	109.3	1	0	12.3	12.66
11:57	13.82	28.81	0	109.3	1	0	12.18	12.66
11:58	13.59	28.33	0	109.3	1	0	11.99	12.66
11:59	13.37 P	0 P	0 P	18.5 P	0 P	0 P	0 P	0 P
12:00	7.37 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:01	0.5 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P
12:02	0.34 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P
12:03	0.31 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P
12:04	0.25 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P
12:05	0.21 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:06	0.18 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:07	0.13 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:08	0.1 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:09	0.08 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P
12:10	0.07 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:11	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:12	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:13	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:14	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:15	0.05 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:16	0.04 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P
12:17	0.04 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:18	0.04 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0 P
12:19	0.05 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P
12:20	0.05 P	0 P	0 P	0.4 P	0 P	-0.01 P	0 P	0 P
12:21	0.05 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:22	0.03 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:23	0.04 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:24	0.04 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:25	0.03 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:26	0.03 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:27	0.03 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:28	0.03 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:29	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:30	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:31	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:32	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:33	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:34	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:35	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P

Shutdown

Exceedance lbs 12.66
Permit Limit lbs 4.07
Over Limit ppm 8.59

Time	4_NOXppm ppm	4_NOX_CORR status ppm	4_Startup status 1=ON	4_GasFlow status kscfh	4_Flame_On status 1=ON	4_LOAD status MW	4_NOxlb_SD status #/hr	4_NOxlbSDH status pounds	status
12:36	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:37	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:38	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:39	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:40	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:41	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:42	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:43	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:44	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:45	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:46	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:47	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:48	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:49	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:50	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:51	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:52	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:53	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:54	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:55	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:56	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:57	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:58	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
12:59	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:00	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:01	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:02	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:03	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:04	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:05	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:06	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:07	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:08	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:09	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:10	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:11	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:12	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:13	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:14	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:15	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:16	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:17	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:18	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:19	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:20	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
13:21	0 P	0 P	1 P	0 P	1 P	0 P	0 P	0 P	0 P
13:22	1.67	4.9	1	1.6	1	0	0	0 P	0 P
13:23	14.41	32.08	1	2	1	0.89	0 P	0 P	0 P

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
13:24	26.14		53.55		1		2.2		1		3.36				0 P	0 P
13:25	33.51		62.57		1		3		1		11.17				0 P	0 P
13:26	26.26		40.56		1		4.1		1		21.04				0 P	0 P
13:27	22.96		30.51		1		5.2		1		31.07				0 P	0 P
13:28	22.48		25.46		1		6.5		1		41.78				0 P	0 P
13:29	21.17		20.65		1		7.7		1		49.7				0 P	0 P
13:30	10.15		9.45		1		7.8		1		50.24				0 P	0 P
13:31	1.63		1.51		1		7.8		1		50.13				0 P	0 P
13:32	1.04		0.96		1		7.8		1		50.04				0 P	0 P
13:33	1		0.92		1		7.8		1		50.2				0 P	0 P
13:34	0.99		0.91		1		7.8		1		50.35				0 P	0 P
13:35	1.02		0.94		1		7.8		1		50.28				0 P	0 P
13:36	1.1		1.01		1		7.8		1		50.18				0 P	0 P
13:37	1.21		1.11		1		7.8		1		50.15				0 P	0 P
13:38	1.37		1.26		1		7.8		1		50.21				0 P	0 P
13:39	1.45		1.33		1		7.8		1		50.19				0 P	0 P
13:40	1.43		1.31		1		7.7		1		49.95				0 P	0 P
13:41	1.3		1.2		1		7.8		1		50.24				0 P	0 P
13:42	1.15		1.06		1		7.8		1		50.11				0 P	0 P
13:43	1.11		1.02		1		7.8		1		50.06				0 P	0 P
13:44	1.3		1.2		1		7.8		1		50.15				0 P	0 P
13:45	1.54		1.42		1		7.8		1		50.2				0 P	0 P
13:46	1.7		1.57		1		7.8		1		50.21				0 P	0 P
13:47	1.78		1.64		1		7.8		1		50.17				0 P	0 P
13:48	1.81		1.67		1		7.8		1		50.2				0 P	0 P
13:49	1.84		1.69		1		7.8		1		50.33				0 P	0 P
13:50	1.89		1.74		1		7.8		1		50.16				0 P	0 P
13:51	1.95		1.8		1		7.8		1		50.08				0 P	0 P
13:52	1.98		1.83		1		7.8		1		50.09				0 P	0 P
13:53	1.97		1.82		1		7.8		1		50.19				0 P	0 P
13:54	1.9		1.75		1		7.8		1		50.09				0 P	0 P
13:55	1.85		1.71		1		7.8		1		50.12				0 P	0 P
13:56	1.82		1.68		1		7.8		1		50.22				0 P	0 P
13:57	1.81		1.67		0		7.8		1		50.07				0 P	0 P
13:58	1.8		1.67		0		7.8		1		49.98				0 P	0 P
13:59	1.8		1.66		0		7.8		1		49.95				0 P	0 P
14:00	1.84		1.71		0		7.7		1		49.93				0 P	0 P
14:01	1.91		1.77		0		7.8		1		50.01				0 P	0 P
14:02	1.96		1.81		0		7.8		1		50.14				0 P	0 P
14:03	1.98		1.83		0		7.8		1		50.17				0 P	0 P
14:04	1.98		1.83		0		7.8		1		50.05				0 P	0 P
14:05	1.96		1.81		0		7.8		1		50.34				0 P	0 P
14:06	1.97		1.82		0		7.8		1		50.23				0 P	0 P
14:07	1.99		1.83		0		7.8		1		50.27				0 P	0 P
14:08	2		1.84		0		7.8		1		50.14				0 P	0 P
14:09	2.02		1.86		0		7.8		1		50.23				0 P	0 P
14:10	2.03		1.86		0		7.8		1		50.25				0 P	0 P
14:11	2.04		1.87		0		7.8		1		50.19				0 P	0 P

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
14:12	2.09		1.91		0		7.8		1		50.2				0 P	0 P
14:13	2.16		1.98		0		7.8		1		50.13				0 P	0 P
14:14	2.18		1.99		0		7.8		1		50.2				0 P	0 P
14:15	2.13		1.95		0		7.8		1		50.17				0 P	0 P
14:16	2.14		1.97		0		7.8		1		50.12				0 P	0 P
14:17	2.15		1.98		0		7.8		1		50.06				0 P	0 P
14:18	2.1		1.93		0		7.8		1		50.18		2		0 P	0
14:19	2.05		1.88		0		7.8		1		50.25		2.05			3.14
14:20	2.03		1.87		0		7.8		1		50.17		2.06			3.14
14:21	2.01		1.85		0		7.8		1		50.11		2.05			3.14
14:22	1.99		1.83		0		7.8		1		50.32		2.1			3.14
14:23	1.98		1.82		0		7.8		1		50.34		2.15			3.14
14:24	1.97		1.81		0		7.7		1		50.13		2.29			3.14
14:25	1.97		1.81		0		7.8		1		50.12		2.39			3.14
14:26	1.97		1.81		0		7.7		1		50.27		2.39			3.14
14:27	1.97		1.81		0		7.7		1		50.1		2.34			3.14
14:28	1.98		1.82		0		7.7		1		50.26		2.29			3.14
14:29	1.98		1.82		0		7.7		1		50.28		2.2			3.14
14:30	1.98		1.82		0		7.7		1		50.12		2.15			3.14
14:31	1.97		1.81		0		7.7		1		50.12		2.1			3.14
14:32	1.97		1.81		0		7.7		1		50.21		2.1			3.14
14:33	1.96		1.8		0		7.7		1		50.3		2.05			3.14
14:34	1.96		1.8		0		7.7		1		50.3		2.1			3.14
14:35	1.97		1.81		0		7.7		1		50.14		2.1			3.14
14:36	1.97		1.82		0		7.7		1		50.12		2.1			3.14
14:37	1.96		1.8		0		7.8		1		50.2		2			3.14
14:38	1.97		1.81		0		7.7		1		50.2		1.95			3.14
14:39	1.97		1.81		0		7.7		1		50.14		1.95			3.14
14:40	1.97		1.81		0		7.7		1		50.33		2			3.14
14:41	1.97		1.81		0		7.7		1		50.19		2			3.14
14:42	1.97		1.81		0		7.7		1		50.14		2.05			3.14
14:43	1.98		1.82		0		7.7		1		50.09		2.05			3.14
14:44	1.98		1.82		0		7.7		1		50.15		2.05			3.14
14:45	1.97		1.81		0		7.7		1		50.19		2			3.14
14:46	1.98		1.82		0		7.7		1		50.13		2			3.14
14:47	1.98		1.82		0		7.7		1		50.14		2.05			3.14
14:48	1.98		1.82		0		7.7		1		50.29		2.1			3.14
14:49	1.98		1.82		0		7.7		1		50.07		2.05			3.14
14:50	1.95		1.79		0		7.7		1		50.16		2.1			3.14
14:51	1.93		1.77		0		7.7		1		50.22		2.19			3.14
14:52	1.94		1.78		0		7.7		1		50.39		2.2			3.14
14:53	1.94		1.78		0		7.7		1		50.08		2.15			3.14
14:54	1.93		1.77		0		7.7		1		50.15		2.05			3.14
14:55	1.93		1.78		0		7.7		1		50.22		2.1			3.14
14:56	1.93		1.77		0		7.7		1		50.31		2.05			3.14
14:57	1.94		1.79		0		7.7		1		50.25		2.1			3.14
14:58	1.95		1.79		0		7.7		1		50.12		2.15			3.14
14:59	1.95		1.8		0		7.7		1		50.29		2.19			3.14

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
15:00	1.96	1.8	0	7.7	1	50.16	2.19	3.14								
15:01	1.96	1.8	0	7.7	1	50.11	2.14	3.14								
15:02	1.96	1.8	0	7.7	1	50.23	2.05	3.14								
15:03	1.96	1.8	0	7.7	1	50.22	2.05	3.14								
15:04	1.95	1.79	0	7.7	1	50.12	2.05	3.14								
15:05	1.95	1.79	0	7.7	1	50.25	2.05	3.14								
15:06	1.95	1.79	0	7.7	1	50.2	2.05	3.14								
15:07	1.97	1.81	0	7.7	1	50.09	2.05	3.14								
15:08	1.98	1.91	0	6.9	1	43.7	1.92	3.14								
15:09	1.86	2	0	5.7	1	34.05	1.84	3.14								
15:10	2.28	2.79	0	4.6	1	24.28	1.67	3.14								
15:11	2.94	4.17	0	3.3	1	13.09	1.21	3.14								
15:12	2.94	4.96	0	2.3	1	3.32	0.82	3.14								
15:13	2.69	5.4	0	1.8	1	0	0.97	3.14								
15:14	2.93	5.98	0	1.8	1	0	1.59	3.14								
15:15	3.08	6.29	0	1.8	1	0	2.23	3.14								
15:16	2.42	4.96	0	1.8	1	0	2.61	3.14								
15:17	1.79	3.67	0	1.8	1	0	2.73	3.14								
15:18	1.52 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:19	0.47 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:20	0.08 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:21	0.06 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:22	0.04 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:23	0.03 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:24	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:25	0.02 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:26	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:27	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:28	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:29	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:30	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:31	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:32	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:33	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:34	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:35	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:36	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:37	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:38	0.01 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:39	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:40	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:41	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:42	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:43	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:44	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:45	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:46	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								
15:47	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P								

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
16:36	0 P		0 P			O P		O P		O P		O P		O P		O P
16:37	0 P		0 P			O P		O P		O P		O P		O P		O P
16:38	0 P		0 P			O P		O P		O P		O P		O P		O P
16:39	0 P		0 P			O P		O P		O P		O P		O P		O P
16:40	-0.01 P		0 P			O P		O P		O P		O P		O P		O P
16:41	-0.01 P		0 P			O P		O P		O P		O P		O P		O P
16:42	0 P		0 P			O P		O P		O P		O P		O P		O P
16:43	0 P		0 P			O P		O P		O P		O P		O P		O P
16:44	0 P		0 P			O P		O P		O P		O P		O P		O P
16:45	0 P		0 P			O P		O P		O P		O P		O P		O P
16:46	0 P		0 P			O P		O P		O P		O P		O P		O P
16:47	-0.01 P		0 P			O P		O P		O P		O P		O P		O P
16:48	0 P		0 P			O P		O P		O P		O P		O P		O P
16:49	0 P		0 P			O P		O P		O P		O P		O P		O P
16:50	0 P		0 P			O P		O P		O P		O P		O P		O P
16:51	-0.01 P		0 P			O P		O P		O P		O P		O P		O P
16:52	0 P		0 P			O P		O P		O P		O P		O P		O P
16:53	0 P		0 P			O P		O P		O P		O P		O P		O P
16:54	0 P		0 P			O P		O P		O P		O P		O P		O P
16:55	0.33		1.55		1		1		1		0		0		0 P	
16:56	7.05		15.88		1		1.9		1		0		0		0 P	
16:57	14.22		30.96		1		2		1		1.63		1		0 P	
16:58	14.93		29.76		1		2.5		1		6.67		1		0 P	
16:59	15.07		25.12		1		3.7		1		17.13		1		0 P	
17:00	17.35		24.2		1		4.8		1		27.4		1		0 P	
17:01	20.48		24.76		1		6		1		37.37		1		0 P	
17:02	21.11		21.97		1		7.3		1		47.38		1		0 P	
17:03	19.83		18.51		1		7.8		1		50.01		1		0 P	
17:04	3.92		3.64		1		7.8		1		50.08		1		0 P	
17:05	1.24		1.14		1		7.8		1		50.14		1		0 P	
17:06	1.07		0.98		1		7.8		1		50.24		1		0 P	
17:07	1.05		0.97		1		7.8		1		50.15		1		0 P	
17:08	1.08		0.99		1		7.8		1		50.1		1		0 P	
17:09	1.17		1.08		1		7.7		1		50.05		1		0 P	
17:10	1.29		1.19		1		7.8		1		50.25		1		0 P	
17:11	1.38		1.27		1		7.8		1		50.21		1		0 P	
17:12	1.38		1.27		1		7.8		1		50.11		1		0 P	
17:13	1.31		1.21		1		7.8		1		50.2		1		0 P	
17:14	1.26		1.16		1		7.8		1		50.05		1		0 P	
17:15	1.22		1.12		1		7.8		1		50.14		1		0 P	
17:16	1.26		1.16		1		7.7		1		50.02		1		0 P	
17:17	1.38		1.27		1		7.7		1		50.07		1		0 P	
17:18	1.62		1.49		1		7.7		1		50.11		1		0 P	
17:19	1.83		1.69		1		7.7		1		50.11		1		0 P	
17:20	1.97		1.82		1		7.8		1		50.09		1		0 P	
17:21	1.93		1.78		1		7.7		1		50.19		1		0 P	
17:22	1.78		1.64		1		7.8		1		50.04		1		0 P	
17:23	1.65		1.52		1		7.7		1		50.15		1		0 P	

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
17:24	1.55		1.43	1	1	7.7	1	49.99		0 P	0 P	0 P			0 P	0 P
17:25	1.57		1.45	1	1	7.7	1	50.08		0 P	0 P	0 P			0 P	0 P
17:26	1.76		1.62	1	1	7.7	1	50.12		0 P	0 P	0 P			0 P	0 P
17:27	2.03		1.87	1	1	7.7	1	50.17		0 P	0 P	0 P			0 P	0 P
17:28	2.29		2.11	1	1	7.7	1	50.25		0 P	0 P	0 P			0 P	0 P
17:29	2.36		2.18	1	1	7.8	1	50.21		0 P	0 P	0 P			0 P	0 P
17:30	2.04		1.88	0	0	7.8	1	50.19		0 P	0 P	0 P			0 P	0 P
17:31	1.1		1.01	0	0	7.8	1	50.1		0 P	0 P	0 P			0 P	0 P
17:32	1.03		0.95	0	0	7.8	1	50.13		0 P	0 P	0 P			0 P	0 P
17:33	1.01		0.93	0	0	7.7	1	50.24		0 P	0 P	0 P			0 P	0 P
17:34	1.03		0.95	0	0	7.7	1	50.08		0 P	0 P	0 P			0 P	0 P
17:35	1.14		1.05	0	0	7.7	1	50.14		0 P	0 P	0 P			0 P	0 P
17:36	1.28		1.18	0	0	7.7	1	50.18		0 P	0 P	0 P			0 P	0 P
17:37	1.43		1.32	0	0	7.7	1	50.02		0 P	0 P	0 P			0 P	0 P
17:38	1.52		1.4	0	0	7.7	1	50.05		0 P	0 P	0 P			0 P	0 P
17:39	1.52		1.4	0	0	7.8	1	50.16		0 P	0 P	0 P			0 P	0 P
17:40	1.43		1.31	0	0	7.7	1	50.03		0 P	0 P	0 P			0 P	0 P
17:41	1.36		1.25	0	0	7.8	1	50.15		0 P	0 P	0 P			0 P	0 P
17:42	1.33		1.22	0	0	7.7	1	50.04		0 P	0 P	0 P			0 P	0 P
17:43	1.36		1.25	0	0	7.7	1	50.13		0 P	0 P	0 P			0 P	0 P
17:44	1.5		1.38	0	0	7.7	1	50.25		0 P	0 P	0 P			0 P	0 P
17:45	1.69		1.56	0	0	7.7	1	50.17		0 P	0 P	0 P			0 P	0 P
17:46	1.9		1.75	0	0	7.7	1	50.01		0 P	0 P	0 P			0 P	0 P
17:47	2.02		1.86	0	0	7.7	1	50.29		0 P	0 P	0 P			0 P	0 P
17:48	2		1.84	0	0	7.7	1	49.98		0 P	0 P	0 P			0 P	0 P
17:49	1.87		1.72	0	0	7.7	1	50.16		0 P	0 P	0 P			0 P	0 P
17:50	1.72		1.58	0	0	7.7	1	50.11		0 P	0 P	0 P			0 P	0 P
17:51	1.65		1.52	0	0	7.7	1	50.1		0 P	0 P	0 P			0 P	0 P
17:52	1.68		1.55	0	0	7.7	1	50.02		0 P	0 P	0 P			0 P	0 P
17:53	1.84		1.7	0	0	7.7	1	50.08		0 P	0 P	0 P			0 P	0 P
17:54	2.05		1.89	0	0	7.7	1	50.19		0 P	0 P	0 P			0 P	0 P
17:55	2.25		2.07	0	0	7.7	1	50.12		0 P	0 P	0 P			0 P	0 P
17:56	2.3		2.12	0	0	7.7	1	50.2		0 P	0 P	0 P			0 P	0 P
17:57	2.15		1.98	0	0	7.7	1	50.08		0 P	0 P	0 P			0 P	0 P
17:58	1.89		1.74	0	0	7.7	1	50.07		0 P	0 P	0 P			0 P	0 P
17:59	1.72		1.58	0	0	7.7	1	50.03		0 P	0 P	0 P			0 P	0 P
18:00	1.61		1.48	0	0	7.7	1	50.18		0 P	0 P	0 P			0 P	0 P
18:01	1.67		1.54	0	0	7.7	1	49.99		0 P	0 P	0 P			0 P	0 P
18:02	1.87		1.72	0	0	7.7	1	50.07		0 P	0 P	0 P			0 P	0 P
18:03	2.08		1.92	0	0	7.7	1	50.18		0 P	0 P	0 P			0 P	0 P
18:04	2.22		2.05	0	0	7.7	1	50.02		0 P	0 P	0 P			0 P	0 P
18:05	2.23		2.05	0	0	7.7	1	50.14		0 P	0 P	0 P			0 P	0 P
18:06	2.03		1.87	0	0	7.7	1	50.07		0 P	0 P	0 P			0 P	0 P
18:07	1.83		1.68	0	0	7.7	1	49.99		0 P	0 P	0 P			0 P	0 P
18:08	1.71		1.57	0	0	7.7	1	50.06		0 P	0 P	0 P			0 P	0 P
18:09	1.71		1.58	0	0	7.7	1	50.1		0 P	0 P	0 P			0 P	0 P
18:10	1.81		1.67	0	0	7.7	1	50.11		0 P	0 P	0 P			0 P	0 P
18:11	2.03		1.87	0	0	7.7	1	50.22		0 P	0 P	0 P			0 P	0 P

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
18:12	2.16		1.99	0			7.7		1		50.07			0 P		0 P
18:13	2.23		2.06	0			7.7		1		50.15			0 P		0 P
18:14	2.13		1.96	0			7.7		1		50.11			0 P		0 P
18:15	1.91		1.76	0			7.7		1		50.15			0 P		0 P
18:16	1.7		1.56	0			7.7		1		50.23			0 P		0 P
18:17	1.66		1.53	0			7.7		1		50.12			0 P		0 P
18:18	1.74		1.6	0			7.7		1		50.06			0 P		0 P
18:19	1.93		1.78	0			7.7		1		50.11			0 P		0 P
18:20	2.18		2.01	0			7.7		1		50.08			0 P		0 P
18:21	2.29		2.11	0			7.7		1		50.22			0 P		0 P
18:22	2.23		2.06	0			7.7		1		49.99			0 P		0 P
18:23	2.04		1.88	0			7.7		1		50.08			0 P		0 P
18:24	1.79		1.65	0			7.7		1		50.1			0 P		0 P
18:25	1.66		1.53	0			7.7		1		50.14			0 P		0 P
18:26	1.64		1.51	0			7.7		1		50.13			0 P		0 P
18:27	1.73		1.59	0			7.7		1		50.16			0 P		0 P
18:28	1.93		1.78	0			7.7		1		50.15			0 P		0 P
18:29	2.19		2.02	0			7.7		1		49.96			0 P		0 P
18:30	2.29		2.11	0			7.7		1		50.18			0 P		0 P
18:31	2.22		2.05	0			7.7		1		50.12			0 P		0 P
18:32	2.03		1.87	0			7.7		1		50.15			0 P		0 P
18:33	1.8		1.66	0			7.7		1		50.11			0 P		0 P
18:34	1.69		1.56	0			7.7		1		50.15			0 P		0 P
18:35	1.66		1.53	0			7.7		1		50.15			0 P		0 P
18:36	1.74		1.61	0			7.7		1		49.94			0 P		0 P
18:37	1.94		1.79	0			7.7		1		50.07			0 P		0 P
18:38	2.21		2.04	0			7.7		1		50.17			0 P		0 P
18:39	2.33		2.15	0			7.7		1		50.02			0 P		0 P
18:40	2.32		2.14	0			7.7		1		50.03			0 P		0 P
18:41	2.13		1.96	0			7.7		1		50.05			0 P		0 P
18:42	1.88		1.73	0			7.7		1		50.09			0 P		0 P
18:43	1.7		1.57	0			7.7		1		50.02			0 P		0 P
18:44	1.65		1.52	0			7.7		1		50.01			0 P		0 P
18:45	1.71		1.58	0			7.7		1		49.95			0 P		0 P
18:46	1.92		1.78	0			7.7		1		50.08			0 P		0 P
18:47	2.14		1.98	0			7.7		1		50.18			0 P		0 P
18:48	2.22		2.05	0			7.7		1		50.17			0 P		0 P
18:49	2.15		1.98	0			7.7		1		50.27			0 P		0 P
18:50	1.97		1.81	0			7.7		1		50.07			0 P		0 P
18:51	1.77		1.63	0			7.7		1		50.07			0 P		0 P
18:52	1.69		1.56	0			7.7		1		50.18			0 P		0 P
18:53	1.72		1.59	0			7.7		1		50.18			0 P		0 P
18:54	1.86		1.72	0			7.7		1		50			0 P		0 P
18:55	2.07		1.91	0			7.7		1		50.04			0 P		0 P
18:56	2.25		2.08	0			7.7		1		50			0 P		0 P
18:57	2.26		2.08	0			7.7		1		50.1			0 P		0 P
18:58	2.13		1.96	0			7.7		1		50.05			0 P		0 P
18:59	1.93		1.78	0			7.7		1		50.07			0 P		0 P

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
19:00	1.72		1.59		0		7.7		1		50.11				0 P	0 P
19:01	1.66		1.53		0		7.7		1		49.97				0 P	0 P
19:02	1.71		1.58		0		7.7		1		50.16				0 P	0 P
19:03	1.87		1.73		0		7.7		1		50.06				0 P	0 P
19:04	2.08		1.92		0		7.7		1		50.1				0 P	0 P
19:05	2.21		2.04		0		7.7		1		49.99				0 P	0 P
19:06	2.18		2.01		0		7.7		1		50.2				0 P	0 P
19:07	2		1.84		0		7.7		1		50.13				0 P	0 P
19:08	1.81		1.67		0		7.7		1		50.06				0 P	0 P
19:09	1.69		1.56		0		7.7		1		50				0 P	0 P
19:10	1.66		1.53		0		7.7		1		50.13				0 P	0 P
19:11	1.75		1.62		0		7.7		1		50.16				0 P	0 P
19:12	1.95		1.8		0		7.7		1		49.94				0 P	0 P
19:13	2.16		2		0		7.7		1		50.06				0 P	0 P
19:14	2.27		2.1		0		7.7		1		50.04				0 P	0 P
19:15	2.2		2.03		0		7.7		1		50.01				0 P	0 P
19:16	1.97		1.82		0		7.7		1		50.06				0 P	0 P
19:17	1.78		1.64		0		7.7		1		50.1				0 P	0 P
19:18	1.66		1.53		0		7.7		1		50.07				0 P	0 P
19:19	1.65		1.52		0		7.7		1		50				0 P	0 P
19:20	1.78		1.64		0		7.7		1		50.17				0 P	0 P
19:21	2.01		1.86		0		7.7		1		50.21				0 P	0 P
19:22	2.18		2.01		0		7.7		1		49.93				0 P	0 P
19:23	2.24		2.07		0		7.7		1		50.04				0 P	0 P
19:24	2.09		1.93		0		7.7		1		50.05				0 P	0 P
19:25	1.89		1.75		0		7.7		1		50.01				0 P	0 P
19:26	1.77		1.64		0		7.7		1		49.94				0 P	0 P
19:27	1.72		1.59		0		7.7		1		50				0 P	0 P
19:28	1.76		1.63		0		7.7		1		50.26				0 P	0 P
19:29	1.99		1.84		0		7.7		1		50.24				0 P	0 P
19:30	2.19		2.02		0		7.7		1		49.92				0 P	0 P
19:31	2.3		2.12		0		7.7		1		50.03				0 P	0 P
19:32	2.25		2.08		0		7.7		1		50.12				0 P	0 P
19:33	2.06		1.9		0		7.8		1		50.05				0 P	0 P
19:34	1.8		1.66		0		7.8		1		50.04				0 P	0 P
19:35	1.7		1.57		0		7.7		1		50.24				0 P	0 P
19:36	1.67		1.54		0		7.7		1		50.04				0 P	0 P
19:37	1.79		1.66		0		7.7		1		50.15				0 P	0 P
19:38	1.98		1.83		0		7.7		1		50.03				0 P	0 P
19:39	2.17		2		0		7.7		1		50.05				0 P	0 P
19:40	2.24		2.07		0		7.7		1		50.08				0 P	0 P
19:41	2.16		1.99		0		7.7		1		50.01				0 P	0 P
19:42	1.95		1.8		0		7.8		1		50.07				0 P	0 P
19:43	1.73		1.6		0		7.8		1		50.17				0 P	0 P
19:44	1.65		1.52		0		7.8		1		50.12				0 P	0 P
19:45	1.67		1.54		0		7.7		1		50.01				0 P	0 P
19:46	1.83		1.69		0		7.7		1		50.14				0 P	0 P
19:47	2.05		1.9		0		7.7		1		50.15				0 P	0 P

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbSDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
19:48	2.15		1.99		0		7.8		1		49.98		0	P		0 P
19:49	2.16		1.99		0		7.7		1		50		0	P		0 P
19:50	2.06		1.9		0		7.7		1		50.05		0	P		0 P
19:51	1.92		1.77		0		7.7		1		50.06		0	P		0 P
19:52	1.85		1.71		0		7.7		1		50.1		0	P		0 P
19:53	1.82		1.68		0		7.8		1		50.14		0	P		0 P
19:54	1.81		1.67		0		7.7		1		49.99		0	P		0 P
19:55	1.83		1.69		0		7.8		1		50.1		0	P		0 P
19:56	1.87		1.73		0		7.7		1		50.22		0	P		0 P
19:57	1.93		1.78		0		7.8		1		50.02		0	P		0 P
19:58	1.95		1.8		0		7.8		1		50.01		0	P		0 P
19:59	1.95		1.8		0		7.7		1		49.99		0	P		0 P
20:00	1.96		1.81		0		7.7		1		50.09		0	P		0 P
20:01	1.99		1.84		0		7.7		1		49.29		0	P		0 P
20:02	1.97		1.95		0		6.6		1		41.13		2.51			0
20:03	1.78		1.98		0		5.4		1		31.39		2.29			1.52
20:04	2.54		3.18		0		4.6		1		25.24		2.05			1.52
20:05	3.04		3.88		0		4.6		1		25.22		1.75			1.52
20:06	1.49		1.9		0		4.6		1		25.1		1.46			1.52
20:07	0.58		0.74		0		4.6		1		25.15		1.43			1.52
20:08	0.53		0.68		0		4.6		1		25.24		1.52			1.52
20:09	0.5		0.64		0		4.6		1		25.13		1.63			1.52
20:10	0.49		0.63		0		4.6		1		25.12		1.72			1.52
20:11	0.47		0.6		0		4.6		1		25.13		1.81			1.52
20:12	0.47		0.6		0		4.6		1		25.22		1.84			1.52
20:13	0.47		0.6		0		4.6		1		25.18		1.87			1.52
20:14	0.48		0.61		0		4.6		1		25.23		1.87			1.52
20:15	0.48		0.61		0		4.6		1		25.15		1.9			1.52
20:16	0.47		0.6		0		4.6		1		25.08		1.9			1.52
20:17	0.48		0.61		0		4.6		1		25.16		1.93			1.52
20:18	0.49		0.62		0		4.6		1		25.16		1.93			1.52
20:19	0.5		0.64		0		4.6		1		25.15		1.93			1.52
20:20	0.51		0.65		0		4.6		1		25.23		1.93			1.52
20:21	0.52		0.66		0		4.6		1		25.08		1.96			1.52
20:22	0.54		0.69		0		4.6		1		25.16		1.96			1.52
20:23	0.56		0.71		0		4.6		1		25.15		1.96			1.52
20:24	0.57		0.73		0		4.6		1		25.15		1.96			1.52
20:25	0.6		0.76		0		4.6		1		25.17		1.95			1.52
20:26	0.63		0.8		0		4.6		1		25.19		1.96			1.52
20:27	0.66		0.84		0		4.6		1		25.17		1.96			1.52
20:28	0.7		0.89		0		4.6		1		25.15		1.96			1.52
20:29	0.74		0.94		0		4.6		1		25.15		1.96			1.52
20:30	0.79		1.01		0		4.6		1		25.18		1.98			1.52
20:31	0.83		1.06		0		4.6		1		25.13		1.98			1.52
20:32	0.9		1.15		0		4.6		1		25.19		1.99			1.52
20:33	0.96		1.22		0		4.6		1		25.13		1.98			1.52
20:34	1.05		1.34		0		4.6		1		25.16		1.98			1.52
20:35	1.14		1.45		0		4.6		1		25.07		2.02			1.52

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_NOxlb_SD		4_NOxlbsDH	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	#/hr	status	pounds	status
20:36	1.27		1.61		0		4.6		1		25.16		2.02		1.52	
20:37	1.38		1.76		0		4.6		1		25.16		2.05		1.52	
20:38	1.52		1.94		0		4.6		1		25.21		2.04		1.52	
20:39	1.64		2.09		0		4.6		1		25.16		2.05		1.52	
20:40	1.74		2.22		0		4.6		1		25.14		2.04		1.52	
20:41	1.82		2.32		0		4.6		1		25.21		2.02		1.52	
20:42	1.85		2.36		0		4.6		1		25.19		2.02		1.52	
20:43	1.84		2.34		0		4.6		1		25.16		2.02		1.52	
20:44	1.79		2.28		0		4.6		1		25.15		2.04		1.52	
20:45	1.71		2.18		0		4.6		1		25.16		2.05		1.52	
20:46	1.62		2.06		0		4.6		1		25.09		2.04		1.52	
20:47	1.53		1.95		0		4.6		1		25.13		2.07		1.52	
20:48	1.45		1.85		0		4.6		1		25.11		2.07		1.52	
20:49	1.38		1.76		0		4.6		1		25.13		2.08		1.52	
20:50	1.32		1.69		0		4.6		1		25.19		2.07		1.52	
20:51	1.28		1.63		0		4.6		1		25.12		2.07		1.52	
20:52	1.27		1.62		0		4.6		1		25.11		2.07		1.52	
20:53	1.25		1.59		0		4.6		1		25.24		2.08		1.52	
20:54	1.26		1.61		0		4.4		1		22.89		1.98		1.52	
20:55	1.26		1.79		0		3.3		1		12.6		1.54		1.52	
20:56	1.25		2.1		0		2.2		1		3.07		1.16		1.52	
20:57	1.44		2.88		0		1.8		1		-0.02		1.25		1.52	
20:58	2.31		4.64		0		1.8		1		-0.02		1.82		1.52	
20:59	2.64		5.3		0		1.8		1		-0.02		2.47		1.52	
21:00	2.67		5.36		0		1.8		1		-0.02		2.79		1.52	
21:01	2.53		5.08		0		1.5		1		-0.02		2.37		1.52	
21:02	1.8 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:03	0.41 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:04	0.05 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:05	0.04 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:06	0.03 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:07	0.02 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:08	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:09	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:10	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:11	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:12	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:13	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:14	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:15	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:16	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:17	0.01 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:18	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:19	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:20	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:21	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:22	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	
21:23	0 P		0 P		0 P		0 P		0 P		-0.02 P		0 P		0 P	

Time	4_NOXPPM ppm	4_NOX_CORR status ppm	4_Startup status 1=ON	4_GasFlow status kscfh	4_Flame_On status 1=ON	4_LOAD status MW	4_NOxlb_SD status #/hr	4_NOxlbSDH status pounds	status
21:24	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:25	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:26	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:27	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:28	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:29	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:30	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:31	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:32	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:33	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:34	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:35	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:36	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:37	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:38	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:39	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:40	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:41	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:42	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:43	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:44	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:45	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:46	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:47	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:48	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:49	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:50	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:51	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:52	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:53	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:54	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:55	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:56	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:57	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P
21:58	0 P	0 P	0 P	0 P	0 P	-0.02 P	0 P	0 P	0 P
21:59	0 P	0 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P

Invalid Status Legend:

- U - Untouched
- P - Process OFF
- E - Data Error
- C - In Calibration
- F - Calibration Failure
- Z - Zero Step
- S - Span Step
- O - Out of Control
- I - Ignore/Discard Data
- L - Old Data

Time	4_NOXPPM	4_NOX_CORR	4_Startup	4_GasFlow	4_Flame_On	4_LOAD	4_NOxlb_SD	4_NOxlbSDH
	ppm	status ppm	status 1=ON	status kscfh	status 1=ON	status MW	status #/hr	status pounds
M - Communication Failure								
H - Hardware Failure								
T - Task Error								

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Unit 4

NOx ppm

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	status	4_Flame_On 1=ON	status	4_LOAD MW	status	4_H2O_FLOW k#/hr	status	4_NH3_Flow #/hr	status
10:15	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0.01 P	0 P
10:16	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0.01 P	0 P
10:17	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
10:18	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.03 P	0 P
10:19	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.01 P	0 P
10:20	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.02 P	0 P
10:21	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P
10:22	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.01 P	0 P
10:23	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.02 P	0 P
10:24	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
10:25	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.01 P	0 P
10:26	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0.01 P	0 P
10:27	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0.03 P	0 P
10:28	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0.01 P	0 P
10:29	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.03 P	0 P
10:30	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.02 P	0 P
10:31	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.03 P	0 P
10:32	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.03 P	0 P
10:33	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.01 P	0 P
10:34	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.02 P	0 P
10:35	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0 P	0 P	0 P	0 P	0.03 P	0 P
10:36	0 P	0 P	1 P	0.3 P	0 P	1 P	1 P	0 P	0 P	0 P	0 P	0.01 P	0 P
10:37	0.6	2.21	1	75.6	1	1	1	0	0	0	0	0.03	0.03
10:38	7.04	15.62	1	112.2	1	1	1	0.13	0	0	0	0.03	0.03
10:39	11.41	24.57	1	123.5	1	1	1	2.19	0.2	0.2	0.2	0.03	0.03
10:40	8.71	16.96	1	161.8	1	1	1	8.55	2.8	2.8	2.8	0.03	0.03
10:41	7.11	11.43	1	228.4	1	1	1	18.76	5.5	5.5	5.5	0.02	0.02
10:42	7.97	10.99	1	293	1	1	1	28.34	9.9	9.9	9.9	0.03	0.03
10:43	12.37	14.6	1	369.3	1	1	1	39.13	16.5	16.5	16.5	62.96	62.96
10:44	20.6 C	0 C	1	446.3	1	1	1	48.72	22.2	22.2	22.2	92.07	92.07
10:45	4.92 C	0 C	1	464.5	1	1	1	50.18	22.8	22.8	22.8	100.17	100.17
10:46	0.17 C	0 C	1	465.4	1	1	1	50.13	23.2	23.2	23.2	102.65	102.65
10:47	0.11 C	0 C	1	465.8	1	1	1	50.24	23.5	23.5	23.5	103.62	103.62
10:48	0.08 CZ	0 CZ	1	466.4	1	1	1	50.13	23.8	23.8	23.8	104.08	104.08
10:49	0.08 CZ	0 CZ	1	466.7	1	1	1	50.29	24.2	24.2	24.2	104.69	104.69
10:50	8.65 C	0 C	1	466.8	1	1	1	50.14	24.5	24.5	24.5	104.53	104.53
10:51	8.68 C	0 C	1	466.8	1	1	1	50.16	24.7	24.7	24.7	104.91	104.91
10:52	8.68 CS	0 CS	1	466.9	1	1	1	50.12	24.7	24.7	24.7	104.72	104.72
10:53	178.1 C	0 C	1	467	1	1	1	50.12	24.7	24.7	24.7	105.03	105.03
10:54	178.88 C	0 C	1	466.8	1	1	1	49.99	24.7	24.7	24.7	104.94	104.94
10:55	178.94 CS	0 CS	1	466.8	1	1	1	50.06	24.7	24.7	24.7	105.05	105.05
10:56	178.94 CS	0 CS	1	466.9	1	1	1	50.04	24.7	24.7	24.7	105.02	105.02
10:57	3.03 C	0 C	1	465.9	1	1	1	50.15	23.6	23.6	23.6	104.87	104.87
10:58	1.63 C	0 C	1	464.4	1	1	1	50.12	22.4	22.4	22.4	104.1	104.1
10:59	1.63 C	0 C	1	464	1	1	1	50.07	22.3	22.3	22.3	103.92	103.92
11:00	1.75	1.61	1	464.1	1	1	1	49.96	22.1	22.1	22.1	102.11	102.11

Start Up

7/9/2018
Unit 4

End Start up

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
25 11:01	1.81	1.66	1	465.1	1	50.24	22.5	100.77	status
26 11:02	1.87	1.72	1	465.4	1	50.19	22.6	100.72	status
27 11:03	1.85	1.7	1	465.4	1	50.2	22.8	100.3	status
28 11:04	1.74	1.6	1	465.3	1	50.1	23.2	100.12	status
29 11:05	1.64	1.51	1	465.7	1	50.19	23.5	99.83	status
30 11:06	1.5	1.38	1	466.3	1	50.04	23.7	99.62	status
31 11:07	1.39	1.28	1	465.9	1	50.15	23.6	98.81	status
32 11:08	1.34	1.23	1	465.9	1	50.15	23.3	97.93	status
33 11:09	1.38	1.27	1	465.6	1	50.13	23	96.8	status
34 11:10	1.5	1.38	1	464.9	1	50.19	22.8	95.79	status
35 11:11	1.7	1.56	1	465.3	1	50.26	22.8	94.88	status
11:12	1.89	1.73	0	465.7	1	50.15	22.9	94.43	status
11:13	1.98	1.81	0	465.7	1	50.24	23.3	94.41	status
11:14	1.92	1.76	0	466.1	1	50.06	23.6	94.35	status
11:15	1.74	1.6	0	466.4	1	50.06	23.7	94.52	status
11:16	1.6	1.47	0	466.2	1	50.3	23.6	94.01	status
11:17	1.55	1.42	0	465.9	1	50.23	23.3	93.44	status
11:18	1.61	1.48	0	465.8	1	50.09	23	92.78	status
11:19	1.76	1.62	0	465.9	1	50.23	23	92.31	status
11:20	1.98	1.82	0	465.5	1	50.21	22.9	91.67	status
11:21	2.1	1.93	0	466	1	50.1	23.2	91.9	status
11:22	2.11	1.93	0	466.1	1	50.12	23.5	92.1	status
11:23	1.97	1.81	0	466.2	1	50.27	23.7	92.43	status
11:24	1.77	1.62	0	466.2	1	50.12	23.6	92.26	status
11:25	1.65	1.52	0	465.7	1	50.23	23.5	92.05	status
11:26	1.64	1.51	0	466	1	50.27	23.1	91.57	status
11:27	1.73	1.59	0	465.3	1	50.12	22.9	90.99	status
11:28	1.93	1.78	0	465.3	1	50.13	22.9	90.31	status
11:29	2.12	1.95	0	465.6	1	50.21	22.9	90.32	status
11:30	2.2	2.03	0	456	1	49.54	16.2	88.69	status
11:31	20.28	20.04	0	421.6	1	47.09	3.4	84.36	status
11:32	91.37	90.91	0	443.2	1	48.85	13.5	109.21	status
11:33	49.27	45.63	0	465.6	1	50.16	22.9	117.58	status
11:34	5.07	4.67	0	464.8	1	50.21	22.2	127.9	status
11:35	1.37	1.26	0	464.1	1	50	21.5	127.88	status
11:36	1.32	1.22	0	465	1	50.08	22.6	127.73	status
11:37	1.28	1.18	0	465.9	1	50.1	23.9	127.82	status
11:38	1.09	1	0	466.4	1	50.05	24.3	127.97	status
11:39	0.9	0.83	0	466.4	1	50.24	24.3	127.86	status
11:40	0.8	0.74	0	466.6	1	50.13	24.4	128.13	status
11:41	0.77	0.71	0	466.4	1	50.22	24.3	128.2	status
11:42	0.76	0.7	0	466.4	1	50.09	24.3	128.12	status
11:43	0.75	0.69	0	466.6	1	50.18	24.3	128.13	status
11:44	0.74	0.68	0	466	1	50.34	24.3	128.03	status
11:45	0.74	0.68	0	466	1	50.21	24.3	128.24	status
11:46	0.73	0.67	0	466.3	1	50.15	24.3	127.99	status
11:47	0.74	0.68	0	466.1	1	50.04	24.3	128.12	status
11:48	0.73	0.67	0	462.4	1	50.08	20.1	128.36	status

7/9/2018

Unit 4

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
11:49	2.34	2.27	0	405.2	1	45.27	5.1	128.27	status
10 11:50	41.45	46.85	0	309.7	1	32	0	128.43	
9 11:51	85.26	110.31	0	287.9	1	27.11	0	115.51	
8 11:52	55.47	74.89	0	238.3	1	18.93	0	82.62	
7 11:53	45.52	72.59	0	163.9	1	8.14	0	61.12	
6 11:54	26.7	50.82	0	113.9	1	0.41	0	46.87	
5 11:55	13.88	28.94	0	109.1	1	0	0	45.45	
4 11:56	13.95	29.08	0	109.3	1	0	0	45.21	
3 11:57	13.82	28.81	0	109.3	1	0	0	45.4	
2 11:58	13.59	28.33	0	109.3	1	0	0	45.16	
1 11:59	13.37 P	0 P	0 P	18.5 P	0 P	0 P	0 P	7.54 P	
12:00	7.37 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	
12:01	0.5 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	
12:02	0.34 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	
12:03	0.31 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	
12:04	0.25 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	
12:05	0.21 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	
12:06	0.18 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	
12:07	0.13 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:08	0.1 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:09	0.08 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.05 P	
12:10	0.07 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	
12:11	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:12	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:13	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	
12:14	0.06 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:15	0.05 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0.03 P	
12:16	0.04 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	
12:17	0.04 P	0 P	0 P	0.3 P	0 P	-0.01 P	0 P	0.02 P	
12:18	0.04 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:19	0.05 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:20	0.05 P	0 P	0 P	0.4 P	0 P	-0.01 P	0 P	0.02 P	
12:21	0.05 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:22	0.03 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	
12:23	0.04 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	
12:24	0.04 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	
12:25	0.03 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	
12:26	0.03 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	
12:27	0.03 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:28	0.03 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	
12:29	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	
12:30	0.02 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	
12:31	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	
12:32	0.02 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	
12:33	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	
12:34	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	
12:35	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	
12:36	0.02 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	

Exceedance ppm 3.5
Permit Limit ppm 2.5
Exceedance ppm 1.0

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
12:37	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
12:38	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
12:39	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
12:40	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.01 P	status
12:41	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
12:42	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P	status
12:43	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
12:44	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
12:45	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
12:46	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.01 P	status
12:47	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	status
12:48	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.01 P	status
12:49	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
12:50	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
12:51	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	status
12:52	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	status
12:53	0 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.04 P	status
12:54	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	status
12:55	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
12:56	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	status
12:57	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
12:58	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.01 P	status
12:59	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
13:00	0 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P	status
13:01	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.01 P	status
13:02	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
13:03	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
13:04	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
13:05	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
13:06	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.04 P	status
13:07	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.01 P	status
13:08	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
13:09	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
13:10	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
13:11	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.03 P	status
13:12	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
13:13	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
13:14	0.01 P	0 P	0 P	0.4 P	0 P	0 P	0 P	0.02 P	status
13:15	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
13:16	0.02 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	status
13:17	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	status
13:18	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
13:19	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.03 P	status
13:20	0.01 P	0 P	0 P	0.3 P	0 P	0 P	0 P	0.02 P	status
13:21	0 P	0 P	1 P	0.4 P	1 P	0 P	0 P	0.03 P	status
13:22	1.67	4.9	1	97	1	0	0	0.02	status
13:23	14.41	32.08	1	117.4	1	0.89	0	0.03	status
13:24	26.14	53.55	1	131.5	1	3.36	0.6	0.02	status

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status	status	status	status
13:25	33.51	62.57	1	179.6	1	11.17	3.7	0.03				
13:26	26.26	40.56	1	245.1	1	21.04	6.9	0.02				
13:27	22.96	30.51	1	314.2	1	31.07	12.7	0.03				
13:28	22.48	25.46	1	391.1	1	41.78	20.4	26.3				
13:29	21.17	20.65	1	460.6	1	49.7	24.6	92.55				
13:30	10.15	9.45	1	466.9	1	50.24	24.3	101.03				
13:31	1.63	1.51	1	466.8	1	50.13	24	103.8				
13:32	1.04	0.96	1	467	1	50.04	23.8	104.86				
13:33	1	0.92	1	467.4	1	50.2	23.5	105.32				
13:34	0.99	0.91	1	466.8	1	50.35	23.2	104.97				
13:35	1.02	0.94	1	467	1	50.28	22.9	104.09				
13:36	1.1	1.01	1	467.2	1	50.18	22.7	103.13				
13:37	1.21	1.11	1	467.2	1	50.15	22.6	102.07				
13:38	1.37	1.26	1	466.9	1	50.21	23	100.44				
13:39	1.45	1.33	1	466.6	1	50.19	23.3	99.29				
13:40	1.43	1.31	1	463.8	1	49.95	24.4	97.49				
13:41	1.3	1.2	1	468	1	50.24	23.6	104.98				
13:42	1.15	1.06	1	466.6	1	50.11	23.2	98.4				
13:43	1.11	1.02	1	466.8	1	50.06	23	95.36				
13:44	1.3	1.2	1	466.9	1	50.15	23	93.66				
13:45	1.54	1.42	1	466.5	1	50.2	23	92.34				
13:46	1.7	1.57	1	466.7	1	50.21	23.2	91.31				
13:47	1.78	1.64	1	466.8	1	50.17	23.1	91.23				
13:48	1.81	1.67	1	467.1	1	50.2	23	91.04				
13:49	1.84	1.69	1	466.6	1	50.33	22.9	90.59				
13:50	1.89	1.74	1	466.6	1	50.16	23	90.06				
13:51	1.95	1.8	1	466.4	1	50.08	23.1	89.8				
13:52	1.98	1.83	1	466.4	1	50.09	23.2	89.41				
13:53	1.97	1.82	1	467	1	50.19	23.3	90.16				
13:54	1.9	1.75	1	466.9	1	50.09	23.2	90.21				
13:55	1.85	1.71	1	467.1	1	50.12	23.3	90.16				
13:56	1.82	1.68	1	466.9	1	50.22	23.2	90.05				
13:57	1.81	1.67	0	466.5	1	50.07	23.2	89.63				
13:58	1.8	1.67	0	465.4	1	49.98	23.1	88.82				
13:59	1.8	1.66	0	465.3	1	49.95	23.1	88.31				
14:00	1.84	1.71	0	464	1	49.93	22.9	87.9				
14:01	1.91	1.77	0	465.4	1	50.01	23.1	87.59				
14:02	1.96	1.81	0	466.4	1	50.14	23.2	88.06				
14:03	1.98	1.83	0	466.7	1	50.17	23.2	88.46				
14:04	1.98	1.83	0	466.5	1	50.05	23.1	88.67				
14:05	1.96	1.81	0	466.4	1	50.34	23.2	88.48				
14:06	1.97	1.82	0	466.6	1	50.23	23.2	88.63				
14:07	1.99	1.83	0	466.4	1	50.27	23.1	88.52				
14:08	2	1.84	0	466.5	1	50.14	23.2	88.58				
14:09	2.02	1.86	0	466.3	1	50.23	23.2	88.55				
14:10	2.03	1.86	0	466.8	1	50.25	23.2	89.04				
14:11	2.04	1.87	0	467.2	1	50.19	23.1	89.41				
14:12	2.09	1.91	0	466.8	1	50.2	23.1	89.18				

7/9/2018
Unit 4

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
14:13	2.16	1.98	0	466.3	1	50.13	23.2	89.31	status
14:14	2.18	1.99	0	467	1	50.2	23.3	89.21	
14:15	2.13	1.95	0	466	1	50.17	22.9	90.33	
14:16	2.14	1.97	0	466.2	1	50.12	23.1	89.83	
14:17	2.15	1.98	0	465.9	1	50.06	23.1	89.96	
14:18	2.1	1.93	0	465.7	1	50.18	23.1	90.26	
14:19	2.05	1.88	0	465.8	1	50.25	23.2	90.29	
14:20	2.03	1.87	0	466	1	50.17	23.2	90.59	
14:21	2.01	1.85	0	465.4	1	50.11	23.1	90.62	
14:22	1.99	1.83	0	465.4	1	50.32	23.1	90.63	
14:23	1.98	1.82	0	465.1	1	50.34	23.1	90.78	
14:24	1.97	1.81	0	464.9	1	50.13	23.1	90.74	
14:25	1.97	1.81	0	465.2	1	50.12	23.2	90.8	
14:26	1.97	1.81	0	464.7	1	50.27	23.1	90.85	
14:27	1.97	1.81	0	464.8	1	50.1	23.1	90.76	
14:28	1.98	1.82	0	464.7	1	50.26	23.1	90.75	
14:29	1.98	1.82	0	464.8	1	50.28	23.1	90.8	
14:30	1.98	1.82	0	464.8	1	50.12	23.1	90.88	
14:31	1.97	1.81	0	464.9	1	50.12	23.1	91.06	
14:32	1.97	1.81	0	464.7	1	50.21	23.1	90.94	
14:33	1.96	1.8	0	464.8	1	50.3	23.2	90.99	
14:34	1.96	1.8	0	464.9	1	50.3	23.1	90.95	
14:35	1.97	1.81	0	464.8	1	50.14	23.1	90.97	
14:36	1.97	1.82	0	464.9	1	50.12	23.1	90.95	
14:37	1.96	1.8	0	465.1	1	50.2	23.2	91.08	
14:38	1.97	1.81	0	464.8	1	50.2	23.1	91.12	
14:39	1.97	1.81	0	464.6	1	50.14	23.1	91.24	
14:40	1.97	1.81	0	464.7	1	50.33	23.1	91	
14:41	1.97	1.81	0	464.4	1	50.19	23.1	91.08	
14:42	1.97	1.81	0	464.7	1	50.14	23.1	91.04	
14:43	1.98	1.82	0	464.7	1	50.09	23.2	91.03	
14:44	1.98	1.82	0	464.7	1	50.15	23.1	91.26	
14:45	1.97	1.81	0	464.5	1	50.19	23.1	91.24	
14:46	1.98	1.82	0	464.5	1	50.13	23.1	91.28	
14:47	1.98	1.82	0	464.4	1	50.14	23	91.13	
14:48	1.98	1.82	0	464.9	1	50.29	23.1	91.17	
14:49	1.98	1.82	0	464.7	1	50.07	23.1	91.31	
14:50	1.95	1.79	0	464.7	1	50.16	23.1	91.24	
14:51	1.93	1.77	0	464.5	1	50.22	23.1	91.13	
14:52	1.94	1.78	0	464.6	1	50.39	23.2	91.26	
14:53	1.94	1.78	0	464.3	1	50.08	23.1	91.14	
14:54	1.93	1.77	0	464.2	1	50.15	23.1	91.15	
14:55	1.93	1.78	0	464.6	1	50.22	23.2	91.03	
14:56	1.93	1.77	0	464.6	1	50.31	23.2	90.92	
14:57	1.94	1.79	0	464.4	1	50.25	23.2	91.02	
14:58	1.95	1.79	0	464.5	1	50.12	23.1	90.9	
14:59	1.95	1.8	0	464.4	1	50.29	23.1	90.9	
15:00	1.96	1.8	0	464.4	1	50.16	23.1	90.84	

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	status	4_GasFlow kscfh	status	4_Flame_On 1=ON	status	4_LOAD MW	status	4_H2O_FLOW k#/hr	status	4_NH3_Flow #/hr	status
15:01	1.96	1.8	0		464.1		1		50.11		23.1		90.8	
15:02	1.96	1.8	0		464.3		1		50.23		23.1		90.91	
15:03	1.96	1.8	0		464.5		1		50.22		23.1		90.91	
15:04	1.95	1.79	0		464.6		1		50.12		23.2		91.03	
15:05	1.95	1.79	0		464.4		1		50.25		23.1		90.91	
15:06	1.95	1.79	0		464.4		1		50.2		23.2		90.93	
15:07	1.97	1.81	0		463.9		1		50.09		23		90.85	
15:08	1.98	1.91	0		416		1		43.7		19.7		78.56	
15:09	1.86	2	0		343.7		1		34.05		13.8		63.81	
15:10	2.28	2.79	0		274.8		1		24.28		8.4		58.77	
15:11	2.94	4.17	0		199.3		1		13.09		4.2		55.14	
15:12	2.94	4.96	0		137		1		3.32		1.8		49.96	
15:13	2.69	5.4	0		110.3		1		0		1.2		46.01	
15:14	2.93	5.98	0		110.4		1		0		1.2		53.04	
15:15	3.08	6.29	0		110.7		1		0		1.3		61.26	
15:16	2.42	4.96	0		110.6		1		0		1.3		68.97	
15:17	1.79	3.67	0		110.6		1		0		1.2		73.96	
15:18	1.52 P	0 P	0 P		0.5 P		0 P		0 P		0 P		0 P	
15:19	0.47 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.01 P	
15:20	0.08 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.01 P	
15:21	0.06 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.01 P	
15:22	0.04 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.03 P	
15:23	0.03 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0 P	
15:24	0.02 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:25	0.02 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0 P	
15:26	0.01 P	0 P	0 P		0.3 P		0 P		0 P		0 P		0.01 P	
15:27	0.01 P	0 P	0 P		0.3 P		0 P		0 P		0 P		0.01 P	
15:28	0 P	0 P	0 P		0.3 P		0 P		0 P		0 P		0.03 P	
15:29	0.01 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.03 P	
15:30	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:31	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0 P	
15:32	0.01 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:33	0 P	0 P	0 P		0.3 P		0 P		0 P		0 P		0.03 P	
15:34	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.03 P	
15:35	0.01 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.03 P	
15:36	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:37	0.01 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:38	0.01 P	0 P	0 P		0.5 P		0 P		0 P		0 P		0.02 P	
15:39	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:40	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:41	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:42	0 P	0 P	0 P		0.3 P		0 P		0 P		0 P		0.03 P	
15:43	0 P	0 P	0 P		0.5 P		0 P		0 P		0 P		0.03 P	
15:44	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.02 P	
15:45	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.01 P	
15:46	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0.01 P	
15:47	0 P	0 P	0 P		0.4 P		0 P		0 P		0 P		0 P	
15:48	0 P	0 P	0 P		0.3 P		0 P		0 P		0 P		0.02 P	

Time	4_NOXPPM		4_NOX_CORR		4_Startup		4_GasFlow		4_Flame_On		4_LOAD		4_H2O_FLOW		4_NH3_Flow	
	ppm	status	ppm	status	1=ON	status	kscfh	status	1=ON	status	MW	status	k#/hr	status	#/hr	status
15:49		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
15:50		0 P		0 P		0 P		0.5 P		0 P		0 P		0 P		0 P
15:51		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
15:52		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.03 P
15:53		0 P		0 P		0 P		0.3 P		0 P		0 P		0 P		0.01 P
15:54		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
15:55		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
15:56		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
15:57		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
15:58		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
15:59		0 P		0 P		0 P		0.3 P		0 P		0 P		0 P		0 P
16:00		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.03 P
16:01		0 P		0 P		0 P		0.3 P		0 P		0 P		0 P		0 P
16:02		-0.01 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
16:03		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.02 P
16:04		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.03 P
16:05		0 P		0 P		0 P		0.3 P		0 P		0 P		0 P		0 P
16:06		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:07		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
16:08		-0.01 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
16:09		0 P		0 P		0 P		0.5 P		0 P		0 P		0 P		0 P
16:10		0 P		0 P		0 P		0.5 P		0 P		0 P		0 P		0 P
16:11		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.02 P
16:12		-0.01 P		0 P		0 P		0.5 P		0 P		0 P		0 P		0 P
16:13		0 P		0 P		0 P		0.5 P		0 P		0 P		0 P		0.01 P
16:14		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:15		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:16		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
16:17		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:18		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
16:19		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:20		0 P		0 P		0 P		0.3 P		0 P		0 P		0 P		0 P
16:21		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:22		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0.01 P
16:23		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:24		0 P		0 P		0 P		0.4 P		0 P		0 P		0 P		0 P
16:25		0 P		0 P		0 P		0.3 P		0 P						

Time	4_NOXPPM			4_NOX_CORR			4_Startup			4_GasFlow			4_Flame_On			4_LOAD			4_H2O_FLOW			4_NH3_Flow		
	ppm	status		ppm	status		1=ON	status		kscfh	status	1=ON	status		MW	status	k#/hr	status		#/hr	status			
16:37		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0 P				
16:38		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.02 P				
16:39		0 P			0 P			0 P	0.3 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:40		-0.01 P			0 P			0 P	0.3 P		0 P		0 P	0 P		0 P		0 P		0.02 P				
16:41		-0.01 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:42		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:43		0 P			0 P			0 P	0.3 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:44		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0 P				
16:45		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:46		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0 P				
16:47		-0.01 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.02 P				
16:48		0 P			0 P			0 P	0.3 P		0 P		0 P	0 P		0 P		0 P		0 P				
16:49		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.02 P				
16:50		0 P			0 P			0 P	0.3 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:51		-0.01 P			0 P			0 P	0.3 P		0 P		0 P	0 P		0 P		0 P		0.02 P				
16:52		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:53		0 P			0 P			0 P	0.4 P		0 P		0 P	0 P		0 P		0 P		0.01 P				
16:54		0 P			0 P			0 P	0.3 P		0 P		1 P	0 P		0 P		0 P		0.01 P				
16:55	0.33			1.55				1	57.5		1		1	0		0		0		0				
16:56	7.05			15.88				1	113.2		1		1	0		0		0		0				
16:57	14.22			30.96				1	121		1		1	1.63		1.63		0		0.01				
16:58	14.93			29.76				1	152.3		1		1	6.67		6.67		2.5		0.02				
16:59	15.07			25.12				1	219.4		1		1	17.13		17.13		5.4		0.02				
17:00	17.35			24.2				1	289		1		1	27.4		27.4		10.2		0				
17:01	20.48			24.76				1	359.2		1		1	37.37		37.37		16.7		0.01				
17:02	21.11			21.97				1	436.1		1		1	47.38		47.38		23.3		47.01				
17:03	19.83			18.51				1	466.6		1		1	50.01		50.01		23.9		96.69				
17:04	3.92			3.64				1	466.5		1		1	50.08		50.08		23.6		102.21				
17:05	1.24			1.14				1	466.4	</														

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow ksf/hr	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr
17:25	1.57	1.45	1	463.9	1	50.08	22.8	90.13
17:26	1.76	1.62	1	464.7	1	50.12	22.6	89.61
17:27	2.03	1.87	1	464.5	1	50.17	22.5	89.27
17:28	2.29	2.11	1	464.3	1	50.25	22.8	89.33
17:29	2.36	2.18	1	465	1	50.21	23.1	95.58
17:30	2.04	1.88	0	465.3	1	50.19	23.4	107.31
17:31	1.1	1.01	0	465.8	1	50.1	23.6	107.33
17:32	1.03	0.95	0	465.2	1	50.13	23.5	106.42
17:33	1.01	0.93	0	464.5	1	50.24	23.2	104.88
17:34	1.03	0.95	0	464.4	1	50.08	22.9	103.27
17:35	1.14	1.05	0	464.3	1	50.14	22.6	101.66
17:36	1.28	1.18	0	464.3	1	50.18	22.6	100.23
17:37	1.43	1.32	0	464	1	50.02	22.7	99
17:38	1.52	1.4	0	464.9	1	50.05	23.1	98.13
17:39	1.52	1.4	0	465.1	1	50.16	23.4	97.42
17:40	1.43	1.31	0	464.8	1	50.03	23.4	96.74
17:41	1.36	1.25	0	465	1	50.15	23.5	95.9
17:42	1.33	1.22	0	464.7	1	50.04	23.3	94.92
17:43	1.36	1.25	0	464.5	1	50.13	22.9	93.89
17:44	1.5	1.38	0	464.1	1	50.25	22.8	92.8
17:45	1.69	1.56	0	464.3	1	50.17	22.7	91.92
17:46	1.9	1.75	0	464.1	1	50.01	22.8	91.34
17:47	2.02	1.86	0	464.3	1	50.29	23.1	91.17
17:48	2	1.84	0	464.8	1	49.98	23.4	91.31
17:49	1.87	1.72	0	464.5	1	50.16	23.4	91.39
17:50	1.72	1.58	0	464.8	1	50.11	23.4	91.22
17:51	1.65	1.52	0	464.8	1	50.1	23.2	90.95
17:52	1.68	1.55	0	464	1	50.02	22.9	90.42
17:53	1.84	1.7	0	464	1	50.08	22.7	89.83
17:54	2.05	1.89	0	464.2	1	50.19	22.7	89.6
17:55	2.25	2.07	0	464.1	1	50.12	22.9	89.74
17:56	2.3	2.12	0	464.3	1	50.2	23.2	90.25
17:57	2.15	1.98	0	464.1	1	50.08	23.4	90.92
17:58	1.89	1.74	0	464.4	1	50.07	23.5	91.13
17:59	1.72	1.58	0	464.6	1	50.03	23.4	91.2
18:00	1.61	1.48	0	463.9	1	50.18	23.1	90.65
18:01	1.67	1.54	0	463.8	1	49.99	22.8	90.05
18:02	1.87	1.72	0	463.8	1	50.07	22.7	89.59
18:03	2.08	1.92	0	463.6	1	50.18	22.7	89.4
18:04	2.22	2.05	0	464.1	1	50.02	23.1	89.71
18:05	2.23	2.05	0	464	1	50.14	23.3	90.04
18:06	2.03	1.87	0	464.1	1	50.07	23.4	90.54
18:07	1.83	1.68	0	464.3	1	49.99	23.4	90.7
18:08	1.71	1.57	0	463.5	1	50.06	23.2	90.43
18:09	1.71	1.58	0	463.4	1	50.1	22.9	89.97
18:10	1.81	1.67	0	463.8	1	50.11	22.8	89.64
18:11	2.03	1.87	0	463.9	1	50.22	22.8	89.53
18:12	2.16	1.99	0	463.7	1	50.07	22.9	89.52

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
18:13	2.23	2.06	0	463.8	1	50.15	23.1	89.91	status
18:14	2.13	1.96	0	464	1	50.11	23.4	90.33	status
18:15	1.91	1.76	0	464.1	1	50.15	23.5	90.58	status
18:16	1.7	1.56	0	464.3	1	50.23	23.4	90.73	status
18:17	1.66	1.53	0	463.8	1	50.12	23	90.14	status
18:18	1.74	1.6	0	463.3	1	50.06	22.7	89.58	status
18:19	1.93	1.78	0	462.9	1	50.11	22.7	89.13	status
18:20	2.18	2.01	0	463.3	1	50.08	22.8	89.07	status
18:21	2.29	2.11	0	463.6	1	50.22	23	89.63	status
18:22	2.23	2.06	0	463.9	1	49.99	23.3	90.19	status
18:23	2.04	1.88	0	463.8	1	50.08	23.4	90.59	status
18:24	1.79	1.65	0	463.7	1	50.1	23.4	90.77	status
18:25	1.66	1.53	0	463.8	1	50.14	23.4	90.49	status
18:26	1.64	1.51	0	463.9	1	50.13	23.1	90.14	status
18:27	1.73	1.59	0	462.9	1	50.16	22.7	89.52	status
18:28	1.93	1.78	0	463.3	1	50.15	22.7	89.08	status
18:29	2.19	2.02	0	463.7	1	49.96	22.8	89.02	status
18:30	2.29	2.11	0	463.6	1	50.18	23	89.54	status
18:31	2.22	2.05	0	464.3	1	50.12	23.4	90.05	status
18:32	2.03	1.87	0	464.1	1	50.15	23.4	90.51	status
18:33	1.8	1.66	0	464.4	1	50.11	23.5	90.8	status
18:34	1.69	1.56	0	464.1	1	50.15	23.3	90.55	status
18:35	1.66	1.53	0	463.8	1	49.94	23	90.05	status
18:36	1.74	1.61	0	462.6	1	50.07	22.7	89.34	status
18:37	1.94	1.79	0	462.8	1	50.17	22.7	88.87	status
18:38	2.21	2.04	0	462.1	1	50.02	22.7	88.82	status
18:39	2.33	2.15	0	462.1	1	50.03	22.9	89.13	status
18:40	2.32	2.14	0	462.4	1	50.05	23.3	89.81	status
18:41	2.13	1.96	0	462.9	1	50.09	23.5	90.39	status
18:42	1.88	1.73	0	462.2	1	50.02	23.5	90.73	status
18:43	1.7	1.57	0	462.7	1	50.01	23.4	90.73	status
18:44	1.65	1.52	0	461.8	1	49.95	23.1	90.17	status
18:45	1.71	1.58	0	461.8	1	50.08	22.8	89.65	status
18:46	1.92	1.78	0	461.9	1	50.18	22.8	89.25	status
18:47	2.14	1.98	0	462.2	1	50.17	22.9	89.21	status
18:48	2.22	2.05	0	462.4	1	50.27	23.2	89.51	status
18:49	2.15	1.98	0	462.4	1	50.07	23.5	89.98	status
18:50	1.97	1.81	0	462.9	1	50.07	23.5	90.39	status
18:51	1.77	1.63	0	462.8	1	50.18	23.5	90.47	status
18:52	1.69	1.56	0	462.4	1	50.18	23.2	90.05	status
18:53	1.72	1.59	0	462.5	1	50	23	89.76	status
18:54	1.86	1.72	0	462.4	1	50.04	22.8	89.33	status
18:55	2.07	1.91	0	462.1	1	50	22.8	89.04	status
18:56	2.25	2.08	0	462.6	1	50.1	23	89.39	status
18:57	2.26	2.08	0	463.1	1	50.05	23.3	89.91	status
18:58	2.13	1.96	0	463.5	1	50.07	23.6	90.34	status
18:59	1.93	1.78	0	463.6	1	50.03	23.6	90.68	status
19:00	1.72	1.59	0	463.4	1	50.11	23.4	90.84	status

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
19:01	1.66	1.53	0	462.6	1	49.97	23.1	90.31	status
19:02	1.71	1.58	0	462.6	1	50.16	22.9	89.93	
19:03	1.87	1.73	0	463.2	1	50.06	22.8	89.52	
19:04	2.08	1.92	0	463.2	1	50.1	22.9	89.27	
19:05	2.21	2.04	0	463.3	1	49.99	23.2	89.51	
19:06	2.18	2.01	0	463.8	1	50.2	23.4	89.97	
19:07	2	1.84	0	464.1	1	50.13	23.5	90.34	
19:08	1.81	1.67	0	464.2	1	50.06	23.6	90.59	
19:09	1.69	1.56	0	464.2	1	50	23.4	90.43	
19:10	1.66	1.53	0	464.2	1	50.13	23.2	90.08	
19:11	1.75	1.62	0	463.7	1	50.16	22.8	89.56	
19:12	1.95	1.8	0	463.7	1	49.94	22.8	89.2	
19:13	2.16	2	0	464.1	1	50.06	22.9	89.04	
19:14	2.27	2.1	0	464.4	1	50.04	23.2	89.45	
19:15	2.2	2.03	0	464.7	1	50.01	23.5	89.99	
19:16	1.97	1.82	0	464.9	1	50.06	23.6	90.47	
19:17	1.78	1.64	0	464.9	1	50.1	23.6	90.64	
19:18	1.66	1.53	0	464.2	1	50.07	23.3	90.39	
19:19	1.65	1.52	0	464.5	1	50	23	89.93	
19:20	1.78	1.64	0	464.1	1	50.17	22.8	89.28	
19:21	2.01	1.86	0	464.8	1	50.21	22.9	89.07	
19:22	2.18	2.01	0	464.4	1	49.93	23	89.19	
19:23	2.24	2.07	0	464.4	1	50.04	23.3	89.45	
19:24	2.09	1.93	0	464.4	1	50.05	23.5	89.84	
19:25	1.89	1.75	0	464	1	50.01	23.4	90.02	
19:26	1.77	1.64	0	464.2	1	49.94	23.3	90.14	
19:27	1.72	1.59	0	464.3	1	50	23.1	89.92	
19:28	1.76	1.63	0	464.3	1	50.26	22.8	89.48	
19:29	1.99	1.84	0	464.7	1	50.24	22.7	89.24	
19:30	2.19	2.02	0	464.4	1	49.92	22.8	89.18	
19:31	2.3	2.12	0	464.9	1	50.03	23.1	89.68	
19:32	2.25	2.08	0	464.6	1	50.12	23.4	90.12	
19:33	2.06	1.9	0	465.2	1	50.05	23.5	90.55	
19:34	1.8	1.66	0	465.1	1	50.04	23.5	91.02	
19:35	1.7	1.57	0	464.9	1	50.24	23.3	90.92	
19:36	1.67	1.54	0	464.8	1	50.04	23	90.34	
19:37	1.79	1.66	0	464.5	1	50.15	22.7	89.89	
19:38	1.98	1.83	0	464.4	1	50.03	22.8	89.5	
19:39	2.17	2	0	464.7	1	50.05	22.9	89.54	
19:40	2.24	2.07	0	464.7	1	50.08	23.2	89.83	
19:41	2.16	1.99	0	464.9	1	50.01	23.4	90.29	
19:42	1.95	1.8	0	465.1	1	50.07	23.5	90.76	
19:43	1.73	1.6	0	465.4	1	50.17	23.5	90.86	
19:44	1.65	1.52	0	465	1	50.12	23.2	90.59	
19:45	1.67	1.54	0	464.9	1	50.01	22.9	90.05	
19:46	1.83	1.69	0	464.7	1	50.14	22.9	89.53	
19:47	2.05	1.9	0	464.7	1	50.15	22.8	89.3	
19:48	2.15	1.99	0	465.3	1	49.98	23.1	89.4	

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr
19:49	2.16	1.99	0	464.6	1	50	23.3	89.77
19:50	2.06	1.9	0	464.6	1	50.05	23.3	90.05
19:51	1.92	1.77	0	464.4	1	50.06	23.3	90.13
19:52	1.85	1.71	0	464.7	1	50.1	23.3	90.22
19:53	1.82	1.68	0	465	1	50.14	23.3	90.16
19:54	1.81	1.67	0	464.9	1	49.99	23.2	89.86
19:55	1.83	1.69	0	465.1	1	50.1	23.2	89.73
19:56	1.87	1.73	0	464.9	1	50.22	23.2	89.47
19:57	1.93	1.78	0	465.2	1	50.02	23.2	89.42
19:58	1.95	1.8	0	465.2	1	50.01	23.2	89.42
19:59	1.95	1.8	0	464.9	1	49.99	23.2	89.35
20:00	1.96	1.81	0	464.9	1	50.09	23.2	89.4
20:01	1.99	1.84	0	459.9	1	49.29	22.6	88.48
20:02	1.97	1.95	0	397.9	1	41.13	18.7	71.94
20:03	1.78	1.98	0	325.8	1	31.39	12.4	60.6
20:04	2.54	3.18	0	278.6	1	25.24	9.1	58.4
20:05	3.04	3.88	0	277.6	1	25.22	9.2	107.36
20:06	1.49	1.9	0	277.6	1	25.1	9.2	107.26
20:07	0.58	0.74	0	277.7	1	25.15	9.3	107.06
20:08	0.53	0.68	0	278.1	1	25.24	9.5	105.67
20:09	0.5	0.64	0	277.9	1	25.13	9.6	103.82
20:10	0.49	0.63	0	278	1	25.12	9.6	101.91
20:11	0.47	0.6	0	277.9	1	25.13	9.4	99.77
20:12	0.47	0.6	0	278.2	1	25.22	9.6	97.54
20:13	0.47	0.6	0	278.1	1	25.18	9.6	95.39
20:14	0.48	0.61	0	278.6	1	25.23	9.6	93.28
20:15	0.48	0.61	0	278.2	1	25.15	9.6	91.06
20:16	0.47	0.6	0	278.4	1	25.08	9.6	88.85
20:17	0.48	0.61	0	278.3	1	25.16	9.6	86.67
20:18	0.49	0.62	0	278.1	1	25.16	9.6	84.42
20:19	0.5	0.64	0	278.2	1	25.15	9.6	82.1
20:20	0.51	0.65	0	278.4	1	25.23	9.6	79.86
20:21	0.52	0.66	0	278.2	1	25.08	9.6	77.74
20:22	0.54	0.69	0	278.4	1	25.16	9.6	75.62
20:23	0.56	0.71	0	278.2	1	25.15	9.6	73.54
20:24	0.57	0.73	0	278	1	25.15	9.6	71.58
20:25	0.6	0.76	0	277.8	1	25.17	9.6	69.69
20:26	0.63	0.8	0	278	1	25.19	9.6	67.76
20:27	0.66	0.84	0	278.3	1	25.17	9.6	65.96
20:28	0.7	0.89	0	278.2	1	25.15	9.6	64.45
20:29	0.74	0.94	0	278.2	1	25.15	9.6	62.65
20:30	0.79	1.01	0	278	1	25.18	9.6	61.25
20:31	0.83	1.06	0	278	1	25.13	9.6	59.83
20:32	0.9	1.15	0	278.3	1	25.19	9.6	58.63
20:33	0.96	1.22	0	277.8	1	25.13	9.6	57.38
20:34	1.05	1.34	0	277.9	1	25.16	9.6	56.44
20:35	1.14	1.45	0	278.4	1	25.07	9.6	55.53
20:36	1.27	1.61	0	278.2	1	25.16	9.6	55.01

Time	4_NOXPPM ppm	4_NOX_CORR ppm	4_Startup 1=ON	4_GasFlow kscfh	4_Flame_On 1=ON	4_LOAD MW	4_H2O_FLOW k#/hr	4_NH3_Flow #/hr	status
20:37	1.38	1.76	0	278.4	1	25.16	9.6	54.77	status
20:38	1.52	1.94	0	278.1	1	25.21	9.6	54.66	
20:39	1.64	2.09	0	278.4	1	25.16	9.6	55.15	
20:40	1.74	2.22	0	278.1	1	25.14	9.6	55.54	
20:41	1.82	2.32	0	278.4	1	25.21	9.6	56.39	
20:42	1.85	2.36	0	278.2	1	25.19	9.6	57.27	
20:43	1.84	2.34	0	278.7	1	25.16	9.6	58.43	
20:44	1.79	2.28	0	278.1	1	25.15	9.6	59.37	
20:45	1.71	2.18	0	278.3	1	25.16	9.6	60.17	
20:46	1.62	2.06	0	278.1	1	25.09	9.6	60.74	
20:47	1.53	1.95	0	278.3	1	25.13	9.6	61.37	
20:48	1.45	1.85	0	278.3	1	25.11	9.6	61.59	
20:49	1.38	1.76	0	278.4	1	25.13	9.6	61.59	
20:50	1.32	1.69	0	278.3	1	25.19	9.6	61.54	
20:51	1.28	1.63	0	278.3	1	25.12	9.6	61.3	
20:52	1.27	1.62	0	278.2	1	25.11	9.6	60.9	
20:53	1.25	1.59	0	278.5	1	25.24	9.4	60.68	
20:54	1.26	1.61	0	265	1	22.89	8.3	59.46	
20:55	1.26	1.79	0	196	1	12.6	4.3	50.63	
20:56	1.25	2.1	0	133.4	1	3.07	1.8	40.61	
20:57	1.44	2.88	0	109.2	1	-0.02	1.2	31.45	
20:58	2.31	4.64	0	109	1	-0.02	1.2	33.94	
20:59	2.64	5.3	0	108.8	1	-0.02	1.2	39.04	
21:00	2.67	5.36	0	108.8	1	-0.02	1.2	45.47	
21:01	2.53	5.08	0	90.8	1	-0.02	1	51.71	
21:02	1.8 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:03	0.41 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:04	0.05 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:05	0.04 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:06	0.03 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:07	0.02 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:08	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:09	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:10	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:11	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:12	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:13	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:14	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:15	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:16	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0.01 P	0 P
21:17	0.01 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:18	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0.01 P	0 P
21:19	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:20	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:21	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:22	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:23	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P
21:24	0 P	0 P	0 P	0.3 P	0 P	-0.02 P	0 P	0 P	0 P

7/9/2018
Unit 4

Time	4_NOXPPM ppm	4_NOX_CORR ppm	status	4_Startup 1=ON	status	4_GasFlow kscfh	status	4_Flame_On 1=ON	status	4_LOAD MW	status	4_H2O_FLOW k#/hr	status	4_NH3_Flow #/hr	status
21:25	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:26	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:27	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:28	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:29	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:30	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:31	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:32	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:33	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:34	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:35	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:36	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:37	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:38	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:39	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:40	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:41	0 P	0 P	0 P	0 P	0 P	0.4 P	0.4 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:42	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:43	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:44	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:45	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:46	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:47	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:48	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:49	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:50	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:51	0 P	0 P	0 P	0 P	0 P	0.4 P	0.4 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:52	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:53	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:54	0 P	0 P	0 P	0 P	0 P	0.4 P	0.4 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:55	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:56	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:57	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P
21:58	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.02 P	0 P	0 P	0 P	0 P	0 P
21:59	0 P	0 P	0 P	0 P	0 P	0.3 P	0.3 P	0 P	0 P	-0.01 P	0 P	0 P	0 P	0 P	0 P

Invalid Status Legend:

- U - Untouched
- P - Process OFF
- E - Data Error
- C - In Calibration
- F - Calibration Failure
- Z - Zero Step
- S - Span Step
- O - Out of Control
- I - Ignore/Discard Data
- L - Old Data
- M - Communication Failure



South Coast Air Quality Management District

Form 500-N**Title V - Deviations, Emergencies & Breakdowns**

*This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.

Mail To:
SCAQMD
P.O. Box 4941
Diamond Bar, CA 91765-0941
Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): <u>CANYON POWER PLANT Unit 1 (D1)</u>		2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): <u>153992</u>	
3. Address: (where incident occurred) <u>3071 E. MIRALOMA AVENUE</u> <u>ANAHEIM</u> City		Street Address <u>CA</u> State <u>92806</u> Zip	
4. Mailing Address: (if different from Item 3) _____ City		Street Address _____ State _____ Zip	
5. Provide the name, title, and phone number of the person to contact for further information:			
<u>Ronald Hoffard</u> Name		<u>Generation Plant Manager</u> Title <u>(714) 765-4536</u> Phone #	

Section II - Reporting of Breakdowns, Deviations, and Emergencies

1. This written notification is to report a(n):			
Type of Incident	Verbal Report Due*	Written Report Due	
a. ☐ Emergency under Rule 3002(g)	Within 1 hour of discovery	Within 2 working days from when the emission limit was exceeded.	
b. ☒ Breakdown under: ☐ Rule 430 (Non-RECLAIM) ☒ Rule 2004 (RECLAIM) ☐ Rule 218 (Non-RECLAIM) [See Rule 218(f)(3)]	For Rules 430 & 2004 - Within 1 hour of discovery. For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours	For Rules 430 & 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from start of the breakdown, unless a written extension is granted. For Rule 218 - With required semi-annual reports.	
c. ☐ Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B]	Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation.	Within 14 days of discovery of the deviation.	
d. ☐ Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23]	None	With required semi-annual monitoring reports.	
2. The incident was first discovered by: <u>JEFFREY HACKER</u> on <u>12/12/2018</u> <u>05:55</u> ☐ AM ☒ PM Name Date Time			
3. The incident was first reported by: <u>OPERATOR #10</u> on <u>12/12/2018</u> <u>06:20</u> ☐ AM ☒ PM Name of AQMD Staff Person Date Time			
a. ☒ Via Phone b. ☐ In Person			
Notification Number (Required): <u>541227</u>			
4. When did the incident actually occur? <u>12/12/2018</u> <u>05:52</u> ☐ AM ☒ PM Date Time			

AQMD USE ONLY	Received By:		Assigned By:		Inspector:	
	Date/Time Received:		Date/Time Assigned:		Date/Time Received Assignment:	
	Date Delivered To Team:		Date Reviewed Inspector Report:		Date Inspected Facility:	
	Team:	Sector:	Breakdown/Deviation Notification No.		Date Completed Report:	
	Recommended Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____
	Final Action:		Cancel Notification	Grant Relief	Issue NOV No. _____	Other: _____

5. Has the incident stopped? a. ☒ Yes, on: 12/12/2018 05:58 ☐ AM ☒ PM b. ☐ No
Date Time
6. What was the total duration of the incident? 06
Days Hours min
7. For equipment with an operating cycle, as defined in Rule 430 (b)(3)(A), when was the end of the operating cycle during which the incident occurred? _____
Date Time ☐ AM ☒ PM
8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary.
SEE ATTACHMENT
9. The incident may have resulted in a:
a. ☒ Violation of Permit Condition(s): A99.1 NOxppm > 2.5 ppm & NOx lbs > 4.07 lbs
b. ☐ Violation of AQMD Rule(s): _____
10. What was the probable cause of the incident? Attach additional pages as necessary.
SEE ATTACHMENT
11. Did the incident result in excess emissions? ☐ No ☒ Yes (Complete the following and attach calculations.)
☐ VOC _____ lbs ☒ NOx 1.47 / 0.83 lbs ☐ SOx _____ lbs ☐ H2S _____ lbs
☐ CO _____ lbs ☐ PM _____ lbs ☐ Other: _____ lbs _____ pollutant
12. For RECLAIM facilities Subject to Rule 2004 (i)(3) ONLY: If excess emissions of NOx and/or SOx were reported in Item 11, do you want these emissions to be counted when determining compliance with your annual allocations?
a. ☒ Yes, for: ☐ NOx ☐ SOx b. ☐ No, for: ☐ NOx ☐ SOx
If box 12(b) above is checked, include all information specified in Rule 2004(i)(3)(B) and (C), as applicable.
13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.
SEE ATTACHMENT
14. Was the facility operating properly prior to the incident?
a. ☒ Yes b. ☐ No, because: _____
15. Did the incident result from operator error, neglect or improper operation or maintenance procedures?
a. ☐ Yes b. ☒ No, because: _____
16. Has the facility returned to compliance?
a. ☐ No, because: _____
b. ☒ Yes (Attach evidence such as emissions calculations, contemporaneous operating logs or other credible evidence.)

Section III - Certification Statement

I certify under penalty of law that based on information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.

For Title V Facilities ONLY: ☒ I also certify under penalty of law that I am the responsible official for this facility as defined in AQMD Regulation XXX.

1. Signature of Responsible Official: 	2. Title of Responsible Official: GENERATION PLANT MANAGER
3. Print Name: RONALD HOFFARD	4. Date: 12/19/2018
5. Phone #: (714) 765-5177	6. Fax #:
7. Address of Responsible Official: 201 S. Anaheim Blvd., Ste. 801 Street # City State Zip Anaheim CA 92805	

AQMD 500N Episode Date: 12/12/2018

Identify issue: Ammonia Vaporizer heating element

Canyon Power Plant: Unit 1 (D1)/ID# 153992

Notification:

Question 8 - Describe the incident and identify each piece of equipment:

During operation of Unit 1 on December 12, 2018 at 1752 hours, an Ammonia Dilution Air Heater temperature alarm activated. The activated alarm caused the Ammonia Dilution Air Heater element to trip off which shut down NH₃ injection. NH₃ injection flow dropped from 128.6 to 0.13 lbs/hr in minutes 1752 through 1754 causing the NO_x ppm to spike in minutes 1753 through 1757. The operator reset the Dilution Air Heater and manually opened the NH₃ injection valve at minute 1755. Unfortunately, the Generation Technician returning to the control room after assessing the NH₃ flow issue noticed that the Dilution Air Heater alarm activated a second time and initiated an emergency shutdown. The unit was placed in an outage pending further investigation.

Question 10 – What was the probable cause of the incident?

The cause of the incident was a failed temperature thermocouple for the Ammonia Dilution Air Heater element, which triggered an alarm. The alarm triggers an ammonia heater trip and subsequent closure of the ammonia flow control valve that transpired to a NO_x exceedance.

Question 13 – Describe the steps taken to correct the problem:

On December 13, at 0800 hours Generation Technicians began troubleshooting Unit 1 ammonia system and determined that the Ammonia Dilution Air Heater Element, Temperature Thermocouple had failed. The thermocouple was replaced by a spare.

Question 16 – Facility returned to compliance?

The unit came into compliance on December 13, 2018 at 1320 hours.



Thermocouple

ID#	Time	1_Flame_On	1_LOAD	1_NOXPPM	1_NOX_CORR	1_H2O_FLOW	1_NH3_Flow	1_NOxlb_SD
153992		1=ON	MW	ppm	ppm	k#/hr	#/hr	#/hr
	14:36	0	0	-0.01	0 P	0	-0.06	0 P
	14:37	0	0	-0.01	0 P	0	-0.07	0 P
	14:38	0	-0.01	-0.01	0 P	0	-0.07	0 P
	14:39	0	-0.01	-0.01	0 P	0	-0.05	0 P
	14:40	0	0	-0.01	0 P	0	-0.05	0 P
	14:41	0	0	-0.01	0 P	0	-0.05	0 P
	14:42	0	-0.01	-0.01	0 P	0	-0.06	0 P
	14:43	0	0	-0.01	0 P	0	-0.06	0 P
	14:44	0	0	-0.01	0 P	0	-0.06	0 P
	14:45	0	0	-0.01	0 P	0	-0.06	0 P
	14:46	0	-0.01	-0.01	0 P	0	-0.05	0 P
	14:47	0	-0.01	-0.01	0 P	0	-0.06	0 P
	14:48	0	-0.02	-0.01	0 P	0	-0.08	0 P
	14:49	0	-0.02	-0.01	0 P	0	-0.09	0 P
	14:50	1	-0.01	0	0 P	0	-0.06	0 P
	14:51	1	-0.01	0	0	0	-0.06	0 P
	14:52	1	0.48	3.27	8.54	0	-0.05	0 P
	14:53	1	3.27	14.92	36.83	0.7	-0.06	0 P
	14:54	1	11.86	20.6	42.5	3.5	-0.07	0 P
	14:55	1	21.05	18.89	29.33	7.1	-0.06	0 P
	14:56	1	22.05	15.62	21.43	7.5	-0.06	0 P
	14:57	1	22.07	18.3	24.94	7.4	10.77	0 P
	14:58	1	22.01	21.07	28.51	7.3	66.93	0 P
	14:59	1	22	20.35	27.41	7.2	69.97	0 P
	15:00	1	21.89	7.48	10.03	7	70.01	0 P
	15:01	1	22.03	3.24	4.32	7	70	0 P
	15:02	1	22.1	2.35	3.1	6.9	69.91	0 P
	15:03	1	22.11	2.12	2.77	6.8	69.88	0 P
	15:04	1	22.03	1.9	2.47	6.6	70.04	0 P
	15:05	1	21.99	1.77	2.3	6.6	70.97	0 P
	15:06	1	21.97	1.76	2.29	6.7	71.91	0 P
	15:07	1	22.06	1.79	2.32	6.8	72.86	0 P
	15:08	1	22.02	1.79	2.32	6.9	73.78	0 P
	15:09	1	22.05	1.74	2.26	6.9	74.74	0 P
	15:10	1	22	1.62	2.11	6.8	75.53	0 P
	15:11	1	22.18	1.53	1.98	6.9	76.09	0 P
	15:12	1	22.06	1.45	1.88	6.9	76.44	0 P

Startup

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ID#	Time	1_Flame_On	1_LOAD	1_NOXPPM	1_NOX_CORR	1_H2O_FLOW	1_NH3_Flow	1_NOxlb_SD	status
153992		1=ON	MW	ppm	ppm	k#/hr	#/hr	#/hr	
23	15:13	1	21.94	1.41	1.83	6.8	76.66		O P
24	15:14	1	22.11	1.37	1.78	6.8	76.58		O P
25	15:15	1	21.94	1.35	1.75	6.8	76.68		O P
26	15:16	1	22.04	1.34	1.74	6.8	76.56		O P
27	15:17	1	22.11	1.34	1.74	6.8	76.45		O P
28	15:18	1	22.04	1.33	1.72	6.8	76.39		O P
29	15:19	1	22.08	1.33	1.73	6.8	76.19		O P
30	15:20	1	22.08	1.34	1.74	6.8	76.15		O P
31	15:21	1	21.97	1.36	1.77	6.7	76.14		O P
32	15:22	1	22.14	1.37	1.78	6.8	75.97		O P
33	15:23	1	22.07	1.36	1.76	6.8	76.05		O P
34	15:24	1	22.07	1.37	1.78	6.8	76.09		O P
35	15:25	1	22.05	1.38	1.79	6.8	76.03		O P
	15:26	1	21.93	1.38	1.8	6.7	75.87		O P
	15:27	1	22.01	1.39	1.81	6.7	76.07		O P
	15:28	1	21.94	1.39	1.81	6.7	76.1		O P
	15:29	1	22.12	1.4	1.82	6.8	76.17		O P
	15:30	1	22.16	1.4	1.82	6.8	76.12		O P
	15:31	1	22.11	1.41	1.83	6.8	76.26		O P
	15:32	1	22.12	1.41	1.83	6.8	76.27		O P
	15:33	1	21.97	1.4	1.82	6.7	76.32		O P
	15:34	1	22.05	1.4	1.82	6.7	76.49		O P
	15:35	1	22.04	1.41	1.84	6.7	76.39		O P
	15:36	1	22.12	1.41	1.84	6.8	76.63		O P
	15:37	1	22.09	1.4	1.82	6.8	76.51		O P
	15:38	1	22.04	1.4	1.82	6.7	76.7		O P
	15:39	1	22.08	1.4	1.82	6.7	76.71		O P
	15:40	1	22.09	1.4	1.82	6.8	76.66		O P
	15:41	1	22.06	1.39	1.81	6.8	76.96		O P
	15:42	1	22.01	1.38	1.79	6.8	76.76		O P
	15:43	1	22.11	1.36	1.77	6.7	76.79		O P
	15:44	1	22.05	1.37	1.78	6.6	76.89		O P
	15:45	1	22.07	1.4	1.83	6.6	76.85		O P
	15:46	1	22.06	1.45	1.89	6.6	76.83		O P
	15:47	1	22.09	1.46	1.91	6.6	77.12		O P
	15:48	1	22.17	1.46	1.9	6.7	77.34		O P
	15:49	1	22.04	1.46	1.9	6.6	77.44		O P

ID#
153992

Time

1_Flame_On	1_LOAD	1_NOXPPM	1_NOX_CORR	1_H2O_FLOW	1_NH3_Flow	1_NOxlb_SD
1=ON	MW	ppm	ppm	k#/hr	#/hr	#/hr
status						status
15:50	1	21.99	1.45	1.89	6.6	77.72
15:51	1	21.95	1.44	1.88	6.6	77.82
15:52	1	22.06	1.41	1.84	6.7	78.05
15:53	1	22.04	1.39	1.81	6.6	78.04
15:54	1	22.15	1.36	1.77	6.8	78
15:55	1	22.04	1.35	1.76	6.7	78.05
15:56	1	21.91	1.34	1.75	6.6	85.88
15:57	1	22.14	1.34	0 C	6.7	90.64
15:58	1	21.95	1.31	0 C	6.6	90.62
15:59	1	22.03	3.53	0 C	6.7	90.64
16:00	1	22.13	0.15	0 C	6.7	90.6
16:01	1	21.95	0.06	0 C	6.6	90.63
16:02	1	22.1	0.05	0 CZ	6.7	90.63
16:03	1	22.16	1.06	0 C	6.7	90.64
16:04	1	21.91	7.96	0 C	6.6	90.66
16:05	1	22.14	8.51	0 CS	6.6	90.65
16:06	1	22.02	8.51	0 CS	6.6	90.61
16:07	1	22.04	104.5	0 C	6.6	90.61
16:08	1	22.05	174.87	0 C	6.6	90.63
16:09	1	22.03	175.36	0 CS	6.6	90.63
16:10	1	22.14	166.44	0 C	6.6	90.64
16:11	1	22.09	60.08	0 C	6.6	90.64
16:12	1	22.11	2.07	0 C	6.6	90.63
16:13	1	22.06	1.53	0 C	6.6	90.62
16:14	1	22.12	1.41	0 C	6.6	90.65
16:15	1	22.09	1.35	0 C	6.6	90.66
16:16	1	22.04	1.23	1.6	6.6	90.7
16:17	1	22.05	1.19	1.56	6.6	90.68
16:18	1	22.06	1.15	1.5	6.6	90.66
16:19	1	22.02	1.14	1.49	6.6	90.65
16:20	1	21.95	1.13	1.48	6.6	90.66
16:21	1	22.03	1.11	1.45	6.6	90.64
16:22	1	22.11	1.09	1.42	6.6	90.63
16:23	1	21.99	1.09	1.42	6.6	90.65
16:24	1	22.02	1.09	1.43	6.6	90.66
16:25	1	21.93	1.08	1.41	6.6	90.67
16:26	1	22.08	1.08	1.41	6.6	90.65

ID#
153992

Time	1_Flame_On	1_LOAD	1_NOX_CORR		1_H2O_FLOW		1_NH3_Flow		1_NOxlb_SD	
			1=ON	MW	ppm	ppm	status	k#/hr	#/hr	status
16:27	1	21.98	1	1.06	1.39	6.6	90.66	0 P		
16:28	1	22.03	1	1.06	1.39	6.6	90.64	0 P		
16:29	1	22	1	1.07	1.4	6.6	90.68	0 P		
16:30	1	22.04	1	1.06	1.39	6.6	90.73	0 P		
16:31	1	21.99	1	1.06	1.39	6.6	90.67	0 P		
16:32	1	21.97	1	1.06	1.39	6.6	90.66	0 P		
16:33	1	22.13	1	1.06	1.39	6.6	90.68	0 P		
16:34	1	22.1	1	1.06	1.39	6.6	90.68	0 P		
16:35	1	21.99	1	1.06	1.39	6.6	90.7	0 P		
16:36	1	22.06	1	1.05	1.37	6.6	90.67	0 P		
16:37	1	22.1	1	1.05	1.37	6.6	90.67	0 P		
16:38	1	22.11	1	1.05	1.37	6.6	90.68	0 P		
16:39	1	22.1	1	1.05	1.37	6.6	90.73	0 P		
16:40	1	22.08	1	1.05	1.37	6.6	90.74	0 P		
16:41	1	21.98	1	1.05	1.37	6.6	90.73	0 P		
16:42	1	22.01	1	1.05	1.37	6.6	90.74	0 P		
16:43	1	22.1	1	1.04	1.36	6.7	90.69	0 P		
16:44	1	22.13	1	1.04	1.36	6.6	90.71	0 P		
16:45	1	22.05	1	1.04	1.36	6.6	90.68	0 P		
16:46	1	22.16	1	1.04	1.36	6.6	90.73	0 P		
16:47	1	22.05	1	1.04	1.36	6.6	90.74	0 P		
16:48	1	22.03	1	1.05	1.37	6.6	90.73	0 P		
16:49	1	22.03	1	1.05	1.37	6.6	90.71	0 P		
16:50	1	21.94	1	1.04	1.36	6.6	90.73	0 P		
16:51	1	22.06	1	1.04	1.36	6.6	90.73	0 P		
16:52	1	22.13	1	1.03	1.35	6.6	90.75	0 P		
16:53	1	22.11	1	1.03	1.35	6.6	90.79	0 P		
16:54	1	22.05	1	1.03	1.35	6.6	90.78	0 P		
16:55	1	22.07	1	1.04	1.36	6.6	90.78	0 P		
16:56	1	22.02	1	1.04	1.36	6.6	90.18	0 P		
16:57	1	26.33	1	1.04	1.34	8.9	105.14	0 P		
16:58	1	36.71	1	1.04	1.23	13.9	115.58	0 P		
16:59	1	45.82	1	1.02	1.08	18.4	125.5	0 P		
17:00	1	47.85	1	1.04	1	18.3	126.09	0 P		
17:01	1	47.91	1	1.26	1.2	18.3	112.59	0 P		
17:02	1	47.96	1	1.8	1.71	18.4	110.38	0 P		
17:03	1	47.98	1	2.82	2.67	18.4	110.94	0 P		

ID#
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Time	1_Flame_On		1_LOAD	1_NOXPPM	1_NOX_CORR		1_H2O_FLOW		1_NH3_Flow	1_NOxlb_SD	status
	1=ON		MW	ppm	ppm		k#/hr	#/hr	#/hr		
17:04	1		47.98	3.2		3.04	18.4	112.87		0 P	
17:05	1		48	3.36		3.18	18.5	115.2		0 P	
17:06	1		48.06	3.43		3.25	18.4	117.54		0 P	
17:07	1		48.06	3.33		3.15	18.5	119.78		0 P	
17:08	1		48.08	3.12		2.95	18.5	122.07		0 P	
17:09	1		48.11	2.92		2.77	18.5	124.21		0 P	
17:10	1		48.11	2.72		2.58	18.5	125.87		0 P	
17:11	1		48.14	2.54		2.41	18.6	127.21		0 P	
17:12	1		48.12	2.4		2.27	18.6	128.26		0 P	
17:13	1		48.19	2.31		2.18	18.6	128.44		0 P	
17:14	1		48.16	2.24		2.11	18.6	128.42		0 P	
17:15	1		48.17	2.2		2.08	18.6	128.42		0 P	
17:16	1		48.18	2.19		2.07	18.6	128.45		0 P	
17:17	1		48.21	2.18		2.06	18.6	128.46	3.75		
17:18	1		48.2	2.17		2.05	18.7	128.48	3.76		
17:19	1		48.26	2.16		2.04	18.7	128.47	3.76		
17:20	1		48.21	2.16		2.04	18.8	128.47	3.76		
17:21	1		48.37	2.16		2.04	19.4	128.46	3.77		
17:22	1		48.43	2.15		2.02	19.6	128.43	3.31		
17:23	1		48.43	2.02		1.9	19.6	128.43	3.31		
17:24	1		48.42	1.83		1.72	19.6	128.53	2.84		
17:25	1		48.45	1.76		1.65	19.6	128.51	2.84		
17:26	1		48.45	1.75		1.64	19.6	128.42	2.84		
17:27	1		48.44	1.75		1.64	19.6	128.43	2.84		
17:28	1		48.45	1.75		1.64	19.6	128.4	2.84		
17:29	1		48.44	1.75		1.64	19.6	128.42	2.84		
17:30	1		48.45	1.73		1.63	19.6	128.43	2.85		
17:31	1		48.47	1.72		1.61	19.7	128.41	2.85		
17:32	1		48.5	1.71		1.6	19.8	128.44	2.85		
17:33	1		48.5	1.72		1.61	19.7	128.42	2.85		
17:34	1		48.49	1.72		1.61	19.7	128.41	2.84		
17:35	1		48.48	1.72		1.62	19.6	128.41	2.84		
17:36	1		48.47	1.73		1.63	19.6	128.37	2.83		
17:37	1		48.43	1.74		1.63	19.5	128.38	2.82		
17:38	1		48.46	1.76		1.66	19.5	128.41	2.82		
17:39	1		48.42	1.78		1.68	19.5	128.43	2.81		
17:40	1		48.41	1.81		1.71	19.4	128.47	2.81		

ID#
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Time

	1_Flame_On 1=ON	1_LOAD MW	1_NOXPPM ppm	1_NOX_CORR ppm	status	1_H2O_FLOW k#/hr	1_NH3_Flow #/hr	1_NOxlb_SD #/hr	status
17:41	1	48.41	1.84	1.73		19.4	128.54	2.81	
17:42	1	48.4	1.86	1.75		19.4	128.56	2.81	
17:43	1	48.41	1.86	1.75		19.4	128.52	2.81	
17:44	1	48.43	1.87	1.76		19.4	128.57	2.81	
17:45	1	48.44	1.88	1.77		19.4	128.58	3.28	
17:46	1	48.39	1.88	1.77		19.4	128.59	3.28	
17:47	1	48.41	1.89	1.78		19.4	128.6	3.28	
17:48	1	48.4	1.91	1.8		19.4	128.61	3.28	
17:49	1	48.42	1.94	1.83		19.4	128.6	3.28	
17:50	1	48.42	1.95	1.84		19.4	128.63	3.28	
17:51	1	48.41	1.95	1.84		19.4	128.6	3.28	
17:52	1	48.43	1.97	1.86		19.4	8.12	3.28	
17:53	1	48.42	3.99	3.76		19.4	-0.07	6.56	
17:54	1	48.44	23.32	21.98		19.4	0.13	37.99	
17:55	1	48.45	28.69	27.04		19.4	112.78	46.89	The NH3 injection
17:56	1	48.43	27.31	25.74		19.4	134.11	44.55	valve was opened
17:57	1	48.47	6.6	6.22		19.4	134.05	10.78	
17:58	1	48.43	2	1.88		19.4	134.02	3.28	
17:59	1	48.45	1.81	1.71	3.208 ppm	19.5	134	2.81	
18:00	1	48.45	1.76	1.66		19.4	133.99	2.81	
18:01	1	48.45	1.72	1.62		19.5	133.99	2.81	
18:02	1	48.45	1.69	1.59		19.4	133.97	2.81	
18:03	1	48.46	1.69	1.59		19.4	133.97	2.81	
18:04	1	48.46	1.68	1.58		19.4	133.96	2.81	
18:05	1	48.46	1.68	1.58		19.4	133.95	2.81	
18:06	1	48.1	1.68	1.58		19.2	133.93	2.8	
18:07	1	41.15	1.68	1.66		16.7	133.97	2.46	
18:08	1	31.44	1.64	1.8		11.7	134.04	2.33	
18:09	1	21.29	1.1	1.32		6.7	134.15	1.26	
18:10	1	10.61	0.92	1.33		2.6	134.19	0.86	
18:11	1	1.8	0.88	1.65		0.9	134.22	0.64	
18:12	1	-0.02	0.86	2.08		0.6	61.73	0.74	The dilution air
18:13	1	-0.01	0.88	2.15		0.6	-0.09	0.74	heater alarm
18:14	1	-0.02	0.9	2.2		0.7	-0.09	0.74	initiated 2nd
18:15	1	-0.02	0.94	2.29		0.5	-0.08	0.14	time, Shutdown
18:16	1	-0.01	1.13	2.85		0.3	-0.09	0.62	4.903 lbs
18:17	0	-0.02	1.9		0 P	0	-0.07	0 P	

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Time	1_Flame_On			1_NOX_CORR			1_H2O_FLOW			1_NH3_Flow			1_NOxlb_SD		
	1=ON	1_LOAD MW	1_NOXPPM ppm	1_NOX_CORR ppm	status	k#/hr	1_H2O_FLOW k#/hr	1_NH3_Flow #/hr	1_NOxlb_SD #/hr	status	1_H2O_FLOW k#/hr	1_NH3_Flow #/hr	1_NOxlb_SD #/hr	status	
18:18	0	-0.01	2.04		0 P		0	-0.09		0 P		-0.09		0 P	
18:19	0	-0.02	0.34		0 P		0	-0.09		0 P		-0.09		0 P	
18:20	0	-0.01	0.04		0 P		0	-0.08		0 P		-0.08		0 P	
18:21	0	-0.01	0.03		0 P		0	-0.09		0 P		-0.09		0 P	
18:22	0	0	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:23	0	-0.02	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:24	0	-0.02	0		0 P		0	-0.09		0 P		-0.09		0 P	
18:25	0	-0.02	0		0 P		0	-0.09		0 P		-0.09		0 P	
18:26	0	0	0		0 P		0	-0.09		0 P		-0.09		0 P	
18:27	0	-0.01	0		0 P		0	-0.09		0 P		-0.09		0 P	
18:28	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:29	0	0	0		0 P		0	-0.08		0 P		-0.08		0 P	
18:30	0	0.01	0.01		0 P		0	-0.08		0 P		-0.08		0 P	
18:31	0	-0.01	0.01		0 P		0	-0.08		0 P		-0.08		0 P	
18:32	0	-0.02	0.01		0 P		0	-0.08		0 P		-0.08		0 P	
18:33	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:34	0	-0.01	0.01		0 P		0	-0.08		0 P		-0.08		0 P	
18:35	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:36	0	-0.02	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:37	0	-0.02	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:38	0	-0.02	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:39	0	-0.02	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:40	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:41	0	-0.02	0.02		0 P		0	-0.09		0 P		-0.09		0 P	
18:42	0	-0.01	0.01		0 P		0	-0.08		0 P		-0.08		0 P	
18:43	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:44	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:45	0	0	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:46	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:47	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:48	0	-0.01	0		0 P		0	-0.09		0 P		-0.09		0 P	
18:49	0	-0.01	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:50	0	-0.02	0		0 P		0	-0.08		0 P		-0.08		0 P	
18:51	0	-0.02	0.01		0 P		0	-0.09		0 P		-0.09		0 P	
18:52	0	-0.01	0.01		0 P		0	-0.08		0 P		-0.08		0 P	
18:53	0	-0.01	0.01		0 P		0	-0.08		0 P		-0.08		0 P	
18:54	0	-0.01	0		0 P		0	-0.08		0 P		-0.08		0 P	

ID#
153992

Time	1_Flame_On 1=ON	1_LOAD MW	1_NOXPPM ppm	1_NOX_CORR ppm	status	1_H2O_FLOW k#/hr	1_NH3_Flow #/hr	1_NOxlb_SD #/hr	status
18:55	0	-0.01	0.01	0.01	0 P	0	-0.08		0 P
18:56	0	-0.01	0	0	0 P	0	-0.09		0 P
18:57	0	-0.01	0.01	0.01	0 P	0	-0.09		0 P
18:58	0	-0.01	0.01	0.01	0 P	0	-0.09		0 P
18:59	0	-0.01	0.01	0.01	0 P	0	-0.09		0 P

Invalid Status Legend:

- U - Untouched
- P - Process OFF
- E - Data Error
- C - In Calibration
- F - Calibration Failure
- Z - Zero Step
- S - Span Step
- O - Out of Control
- I - Ignore/Discard Data
- L - Old Data
- M - Communication Failure
- H - Hardware Failure
- T - Task Error

Shutdown lbs/hr 4.90 lbs Exceedance
 4.07 lbs Limit
 0.83 lbs over the limit

NOX ppm 3.21 ppm Exceedance
 2.5 ppm Limit
 0.71 ppm over the limit

15-MIN DATA

SCAQMD Reclaim Audit Report (Ver:2.2)													
Customer Name: CITY OF ANAHEIM			Report Start	12/12/2018 0:00									
Unit ID D1			Report End	12/12/2018 23:59									
Category CANYON POWER PLANT			Date Generated	Generated: 12/18/2018 11:59									
NOx Avail	427.7	%											
Flow Avail	440.3	%											
											</		

15 MIN DATA

Date / Time	Valid NOx ppm minutes	Valid Stack flow minutes	Average of Valid Range adjusted NOx ppm minutes	NOx ppm bias factor	Bias adjusted NOx ppm	Average of Valid stack flow minutes (kscf/hr)	Stack flow bias factor	Bias Adjusted stack flow (kscf/hr)	NOx (lb/hr)	Average of O ₂ %	Average of Fuel flow (kscf/hr)	Average of HHV (BTU/SCF)	Average of FD (SCF/MMBTU)
12/12/2018 13:00	15	15	0	1	0	0	1	0	0	21	0	1050	8710
12/12/2018 13:15	15	15	0	1	0	0	1	0	0	21	0	1050	8710
12/12/2018 13:30	15	15	0	1	0	0	1	0	0	21	0	1050	8710
12/12/2018 13:45	15	15	0	1	0	0	1	0	0	21	0	1050	8710
12/12/2018 14:00	15	15	0	1	0	0	1	0	0	21	0	1050	8710
12/12/2018 14:15	15	15	0	1	0	0	1	0	0	21	0	1050	8710
12/12/2018 14:30	15	15	0	1	0	0	1	0	0	21	0	1050	8710
12/12/2018 14:45	15	14	9.75	1	9.75	9692	1	9692	11.29	18.77	108	1050	8710
12/12/2018 15:00	15	15	2.22	1	2.22	10136	1	10136	2.69	16.38	239.7	1050	8710
12/12/2018 15:15	15	15	1.36	1	1.36	10045	1	10045	1.63	16.36	238.6	1050	8710
12/12/2018 15:30	15	15	1.4	1	1.4	10045	1	10045	1.68	16.36	238.6	1050	8710
12/12/2018 15:45	12	12	1.41	1	1.41	10097	1	10097	1.7	16.37	239.3	1050	8710
12/12/2018 16:00	0	0	NA	1	NA	NA	1	NA	NA	NA	238.4	1050	8710
12/12/2018 16:15	14	14	1.11	1	1.11	10074	1	10074	1.34	16.39	237.7	1050	8710
12/12/2018 16:30	15	15	1.05	1	1.05	10087	1	10087	1.27	16.39	238	1050	8710
12/12/2018 16:45	15	15	1.04	1	1.04	10703	1	10703	1.33	16.28	258.7	1050	8710
12/12/2018 17:00	15	15	2.57	1	2.57	13638	1	13638	4.19	14.68	443.8	1050	8710
12/12/2018 17:15	15	15	2	1	2	13688	1	13688	3.27	14.63	449	1050	8710
12/12/2018 17:30	15	15	1.77	1	1.77	13682	1	13682	2.89	14.63	448.8	1050	8710
12/12/2018 17:45	15	15	7.27	1	7.27	13630	1	13630	11.84	14.64	446.4	1050	8710
12/12/2018 18:00	15	15	1.42	1	1.42	11788	1	11788	2	15.93	306.5	1050	8710
12/12/2018 18:15	15	15	0.14	1	0.14	3540	1	3540	0.06	20.63	5	1050	8710
12/12/2018 18:30	15	15	0	1	0	0	1	0	0	21.04	0	1050	8710
12/12/2018 18:45	15	15	0	1	0	0	1	0	0	21.04	0	1050	8710
12/12/2018 19:00	15	15	0	1	0	0	1	0	0	21.05	0	1050	8710
12/12/2018 19:15	15	15	0	1	0	0	1	0	0	21.06	0	1050	8710
12/12/2018 19:30	15	15	0	1	0	0	1	0	0	21.06	0	1050	8710
12/12/2018 19:45	15	15	0	1	0	0	1	0	0	21.06	0	1050	8710
12/12/2018 20:00	15	15	0	1	0	0	1	0	0	21.06	0	1050	8710
12/12/2018 20:15	15	15	0	1	0	0	1	0	0	21.06	0	1050	8710
12/12/2018 20:30	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 20:45	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 21:00	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 21:15	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 21:30	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 21:45	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 22:00	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 22:15	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 22:30	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 22:45	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 23:00	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 23:15	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 23:30	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710
12/12/2018 23:45	15	15	0	1	0	0	1	0	0	21.07	0	1050	8710

HOURLY DATA

SCAQMD Reclaim Audit Report (Ver:2.2)									
Customer Name:		CITY OF ANAHEIM		Report Start		12/12/2018 0:00		Report End	
Unit ID		D1		Report End		12/12/2018 23:59		Date Generated	
Category		CANYON POWER PLANT		427.7		%		Generated: 12/18/2018 11:59	
NOx Avail		440.3		12.13		lb			
Flow Avail									
Total NOx Mass									
Date/Time	NOx Valid Quadrants	NOx Calibration/Maintenance	Average of Valid bias adjusted NOx ppm quadrants	Stack Flow Valid Quadrants	Stack Flow Calibration/Maintenance	Average of Valid bias adjusted stack flow	Average of Valid NOx lb/hr quadrants	Missing data Procedure	Daily Total
12/12/2018 0:00	4	0	0	4	0	0	0		
12/12/2018 1:00	4	0	0	4	0	0	0		
12/12/2018 2:00	4	1	0	4	1	0	0		
12/12/2018 3:00	4	1	0	4	1	0	0		
12/12/2018 4:00	4	0	0	4	0	0	0		
12/12/2018 5:00	4	0	0	4	0	0	0		
12/12/2018 6:00	4	0	0	4	0	0	0		
12/12/2018 7:00	4	0	0	4	0	0	0		
12/12/2018 8:00	4	0	0	4	0	0	0		
12/12/2018 9:00	4	0	0	4	0	0	0		
12/12/2018 10:00	4	0	0	4	0	0	0		
12/12/2018 11:00	4	0	0	4	0	0	0		
12/12/2018 12:00	4	0	0	4	0	0	0		
12/12/2018 13:00	4	0	0	4	0	0	0		
12/12/2018 14:00	4	0	2.44	4	0	2423	2.82	3.40ppm = 5.55 lbs	
12/12/2018 15:00	4	1	1.6	4	1	10081	1.93	2.5ppm = x	
12/12/2018 16:00	3	1	1.07	3	1	10288	1.31		
12/12/2018 17:00	4	0	3.4	4	0	13660	5.55	x = (5.55*2.5)/3.40 = 4.08lbs	
12/12/2018 18:00	4	0	0.39	4	0	3832	0.52		
12/12/2018 19:00	4	0	0	4	0	0	0	5.55-4.08 = 1.47 lbs excess	
12/12/2018 20:00	4	0	0	4	0	0	0		
12/12/2018 21:00	4	0	0	4	0	0	0		
12/12/2018 22:00	4	0	0	4	0	0	0		
12/12/2018 23:00	4	0	0	4	0	0	0		12.13

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 10
CONDITION HAZ-1

List of Hazardous Materials contained at Canyon Power Plant CY 2018.

- o Aqueous Ammonia
- o Batteries
- o Bromine
- o CEMS Calibration Gases
- o CO2
- o Diesel Fuel
- o Fire suppression chemicals
- o Freon in Chiller
- o Gas Turbine oil
- o Gas compressor oil
- o Reagents for water treatment system
- o SF6 in switch gear
- o ChemTreat RL9007
- o ChemTreat BL124
- o ChemTreat CI2156
- o ChemTreat CL6855
- o Biocide ChemTreat CL41
- o Sodium Hypochlorite solution
- o Multi-Chlor

Location Information					Chemical Identification					Fire Code Hazard Class Information						
1a*	201	202	203	204	205	206	207*	208	209	210a	210b	210c	210d	210e	210f	210g
CERSID	ChemicalLocation	CLConfidential	MapNumber	GridNumber	ChemicalName	TradeSecret	CommonName	EHS	CASNumber	PFCCodeHazardClass	SFCodeHazardClass	TFCodeHazardClass	FFCodeHazardClass	FifthFireCodeHazardClass	SixthFireCodeHazardClass	SeventhFireCodeHazardClass
10445230	RO WATER TREATMENT	N	1	E-1, F-1		N	ANTISCALENT RL 9007	N								
10445230	AMMONIA STORAGE TANK		1	D-3		N	AQUA AMMONIA (19%)	N			5	31				
10445230	BENEATH BACK-UP GENERATOR	N	1	D-4		N	DIESEL FUEL	N			2					
10445230	IN TURBINE ENGINES and DRUM STORAGE AREA	N	1	B5, F3-6		N	MOBIL JET OIL II	N			3					
10445230	ELECTRIC GENERATORS AND DRUM STORAGE AREA	N	1	B5, F3-6		N	MOBIL DTE LIGHT OIL	N			4					
10445230	HYDRAULIC STARTERS AND DRUM STORAGE AREA	N	1	B5, F3-6			MOBIL DTE 25 OIL	N			4					
10445230	NATURAL GAS COMPRESSORS AND DRUM STORAGE AREA	N	1	B5, F1-G1		N	MOBIL PEGASUS 805 OIL	N			4					
10445230	IN TRANSFORMERS	N	1	G 3-6,			MINERAL OIL	N			4					
10445230	RO WATER TREATMENT	Y	1	D2	SODIUM HYDROXIDE		CAUSTIC SODA 50%	N			5					
10445230	RO WATER TREATMENT	N	1	F1			SODIUM BISULFITE SOLUTION	N			5					
10445230	NEAR COOLING TOWER AND IN DRUM STORAGE AREA	N	1	B5, D2		N	FORMULA 1285 DISPERSANT	N			31					
10445230	NEAR COOLING TOWER AND IN DRUM STORAGE AREA	N	1	B5, E2		N	INHIBITOR FORMULA 2009 LT	N			5					
10445230	NEAR COOLING TOWER AND IN DRUM STORAGE AREA	N	1	D-2		N	BIOCIDE (CHEMTREAT CL41)	N								
10445230	NEAR COOLING TOWER AND IN DRUM STORAGE AREA		1	B5, E2		N	SODIUM HYPOCHLORITE SOLUTION	N			5					
10445230	WAREHOUSE AND NEAR EXHAUST TOWERS	N				N	CALIBRATION GAS	N								
10445230	DRUM STORAGE AREA		1	B5	PROPANE		PROPANE	N	74-98-6		8					
10445230	SUBSTATION BUILDING	N	1	D7, E7	SULFUR HEXAFLUORIDE	N	SF6	N	2551-62-4							
10445230	IN FIRE FIGHTING EQUIPMENT - VARIOUS AREAS	N	1	C5, D4, F1, G1	CARBON DIOXIDE	N	CO2	N	124-38-9							
10445230	DRUM STORAGE AREA	N	1	C5		N	CONNTECT 5000	N								
10445230	DRUM STORAGE AREA	N				N	FORMULA 312 BIOCID	N			5					
10445230	NEAR GAS COMPRESSORS	N			HELIUM		HELIUM	N	7440-59-7							
10445230	Chiller Enclosure		1	E-2	Freon R-123	N	Freon	N	306-83-2							
10445230	WATER TREATMENT	N	1	E-1		N	MICROBIOCID	N								

Print

Cancel



California Environmental Protection Agency
Air Resources Board
 Phone: 1 (916) 324-2517
 Email: reftrackinfo@arb.ca.gov



 File Report for "Canyon Power Plant"

Year of Filing: 2017

Submitted Date: 02/16/2018

 Company Profile

Company Name : City of Anaheim Federal tax ID : *****970

 Contact Person Details

Person Name : Mr. Ronald Hoffard (Generation Manager)

Phone : Contact: 7147654536

Email : rhoffard@anaheim.net

 Mailing Address Information

3071 East Miraloma Ave.
 Anaheim, 92806
 CA

 Billing Address Information

3071 East Miraloma Ave.
 Anaheim, 92806
 Anaheim

 Facility Profile

Facility Name : Canyon Power Plant Federal tax ID : *****970

 Contact Person Details

Person Name : Mr. Ronald Hoffard (Generation Manager)

Phone : Contact: 7147654536

Email : rhoffard@anaheim.net

 Mailing Address Information

3071 East Miraloma Ave.
 Anaheim, 92806
 CA

 Billing Address Information

3071 East Miraloma Ave.
 Anaheim, 92806
 Anaheim

 Refrigeration System Listing

Number	System ID	Full Charge (lbs)	Refrigerant Type	Installation Date	Temperature Class	Equipment Type	Manufacturer	Operational Status	Model	Model Year	Serial Number	Location	Floor Plan (Y/N)
1	CH-100	5200.00	R-123	05/12/2011	Medium	Chiller	Trane	Normal Operation	CDHF3000	2011	L10A00350	North side of facility, in dedicated chiller enclosure.	Y
2	CH-200	5200.00	R-123	05/12/2011	Medium	Chiller	Trane	Normal Operation	CDHF3000	2011	L10B00882	North side of facility, in dedicated chiller enclosure.	Y

 Leak detection System

Number	ALD ID	Refrigeration System ID	Installation Date	ALD Type	Detection Limit	Alarm Set Point	Concentration Monitor Type	Manufacturer	Number of Sensors	Sensor Type	Sensor Manufacturer	Location of Sensors/Inlets
1	301-IRF A	CH-100CH-200	05/12/2011	Concentration Monitor (Direct System)	10.00	100	Distributed sensors with central readout panel		2	Infra red	Vulcain/honeywell	1 foot above floor

Refrigeration System Inspection and Servicing

Number	Service Date	System ID	Leaks Detected?	Date Leak Detected	Date Leak Repaired	Number of Days	Refrigerant Added (lbs)	Cause of Leak	Service Provided	Date of Initial VT	Date of Follow-up VT	Purpose of Added Refrigerant	Technician Name	Certificate #	Certificate Type
1	02/22/2017	CH-100	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
2	02/22/2017	CH-200	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
3	03/07/2017	CH-200	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
4	07/12/2017	CH-100	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
5	07/12/2017	CH-200	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
6	12/12/2017	CH-100	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
7	12/12/2017	CH-200	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
8	12/19/2017	CH-100	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal
9	12/19/2017	CH-200	No			0	0.00		No				Gilbert Chavez, Jr.	000223692	Universal

Leak Detection System Inspection and Servicing

Number	Service Date	ALD ID	Service Type	Description of Service
1	07/12/2017	301-IRF A	Calibration	

Refrigerant Purchase Information

Type	Total Purchased (lbs.)	Total Charged (lbs.)	Total Recovered (lbs.)	Total Stored (lbs.)	Total Shipped (lbs.)
R-123	0.00	0.00	0.00	0.00	0.00

Comment

Submitted By: Ronald Hoffard



California Environmental Protection Agency

Air Resources Board

Phone: (916) 324-2517

Email: rmp@arb.ca.govURL: www.arb.ca.gov/rmp/rmp.htm**Invoice Detail**

Invoice No: 112026

Invoice For Year: 2017

ARB REFERENCE CODE: RMP

Dated: 02/16/2018

City of Anaheim				
#	Facility Name	Amount Due(\$)	Exemption	Total (\$)
1	Canyon Power Plant (CIT003-001)	370.00	0	370.00
TOTAL CHARGES				370.00

Please return a copy on the invoice with your payment to the address below.

"Checks should be made payable to the California Air Resources Board.

If required for your company records, the CARB Federal Tax ID is 68-0288069. A \$10 service fee may apply for returned checks."

Air Resources Board

Attn: Accounting

P.O. Box 1436

1001 I St., Floor 20

Sacramento, CA 95812-1436



California Environmental Protection Agency
Air Resources Board
Phone: (916) 324-2517
Email: reftrackinfo@arb.ca.gov



Online Payment Receipt

Invoice No: 112026

Dated: 2018-02-16

Invoice For Year: 2017

Payment Amount: \$370.00

ARB Reference Code: RMP

Transaction Time: 02/16/2018 09:51:39 AM

Payment Transaction Id: 160218A15-46510DD4-70BA-4870-8771-32B9BBFEF17E

Payment Result: APPROVAL

Payment Approval Code: 016553

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 11

CONDITION HAZ-8

In the annual compliance report, the project owner shall include the following statements:

“All current project employee and appropriate contractor background investigations have been performed and that updated certification statements have been appended to the operations security plan”.

All current project employee and appropriate contractor background investigations have been performed and that updated certification statements have been appended to the operations security plan.

“The operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations”.

The operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 12
SOIL & WATER USE REPORT-7

Monthly Water Reading Reports

Company: City of Anaheim/Canyon Power Plant
 Plant Location: 3071 E. Miraloma Ave.
 City/State/Zip: Anaheim, CA 92806

Period Start: 1/1/2018
 Period End: 12/31/2018

Recycle Water Usage

Annual Total Gallons	Annual Total Acre Feet	Monthly Average Gallons	Monthly Average Acre Feet	Monthly Minimum Gallons	Monthly Minimum Acre Feet	Monthly Maximum Gallons	Monthly Maximum Acre Feet	Average Gallons Per Day
23,817,912	73.09	1,984,826	6.09	0	0.00	4,465,859	13.71	65,165

Company: City of Anaheim/Canyon Power Plant
 Plant Location: 3071 E. Miraloma Ave.
 City/State/Zip: Anaheim, CA 92806

Period Start: 1/1/2018
 Period End: 12/31/2018

Potable Water Usage

Annual Total Gallons	Annual Total Acre Feet	Monthly Average Gallons	Monthly Average Acre Feet	Monthly Minimum Gallons	Monthly Minimum Acre Feet	Monthly Maximum Gallons	Monthly Maximum Acre Feet	Average Gallons Per Day
2,277,132	6.99	94,880	0.29	0.00	0.00	598,440	1.84	3,111

Annual Data

	Recycle Water		Portable Water	
	Annual Total Acre Feet	Annual Total Gallons	Annual Total Acre Feet	Annual Total Gallons
2016	64.35	20,968,792	7.79	2,539,586
2017	73.21	23,854,364	0.41	134,469
2018	73.09	23,817,912	6.99	2,277,132
Average	70.22	22,880,356	5.06	1,650,396
Min	64.35	20,968,792	0.41	134,469
Max	73.21	23,854,364	7.79	2,539,586

Company: City of Anaheim
Plant Location: 3071 E. Miraloma Ave.
City/State/Zip: Anaheim, CA 92806

Period Start: 1/1/2018
Period End: 12/31/2018

Recycled Water Usage

Date	Start Cubic-ft	End Cubic-ft	Total Cubic-ft	Month gal	Daily gal	Month Acre-ft
1/1/2018	14,449,900.00	14,678,800.00	228,900.00	1,712,286.45	55,235.05	5.25
2/1/2018	14,678,800.00	15,002,200.00	323,400.00	2,419,193.70	86,399.78	7.42
3/1/2018	15,002,200.00	15,262,100.00	259,900.00	1,944,181.95	62,715.55	5.97
4/1/2018	15,262,100.00	15,469,600.00	207,500.00	1,552,203.75	51,740.13	4.76
5/1/2018	15,469,600.00	15,618,800.00	149,200.00	1,116,090.60	36,002.92	3.43
6/1/2018	15,618,800.00	15,777,000.00	158,200.00	1,183,415.10	39,447.17	3.63
7/1/2018	15,777,000.00	16,374,000.00	597,000.00	4,465,858.50	144,059.95	13.71
8/1/2018	16,374,000.00	16,908,600.00	534,600.00	3,999,075.30	129,002.43	12.27
9/1/2018	16,908,600.00	16,908,600.00	0.00	0.00	0.00	0.00
10/1/2018	16,908,600.00	17,200,800.00	292,200.00	2,185,802.10	70,509.75	6.71
11/1/2018	17,200,800.00	17,494,300.00	293,500.00	2,195,526.75	73,184.23	6.74
12/1/2018	17,494,300.00	17,633,900.00	139,600.00	1,044,277.80	33,686.38	3.20
Annual Total:			3,184,000.00	23,817,912.00		73.09
Average:			265,333.33	1,984,826.00	65,165.28	6.09
Monthly Minimum:			0.00	0.00		0.00
Monthly Maximum:			597,000.00	4,465,858.50		13.71

Company: City of Anaheim
 Plant Location: 3071 E. Miraloma Ave.
 City/State/Zip: Anaheim, CA 92806

Period Start: 1/1/2018
 Period End: 12/31/2018

Potable Water Usage

HCF-1

Date	Start Cubic-ft	End Cubic-ft	Total Cubic-ft	Month gal	Daily gal	Month Acre-ft
1/1/2018	567,700.00	567,700.00	0.00	0.00	0.00	0.00
2/1/2018	567,700.00	567,700.00	0.00	0.00	0.00	0.00
3/1/2018	567,700.00	567,700.00	0.00	0.00	0.00	0.00
4/1/2018	567,700.00	567,800.00	100.00	748.05	24.94	0.00
5/1/2018	567,800.00	567,800.00	0.00	0.00	0.00	0.00
6/1/2018	567,800.00	567,800.00	0.00	0.00	0.00	0.00
7/1/2018	567,800.00	618,300.00	50,500.00	377,765.25	12,185.98	1.16
8/1/2018	618,300.00	661,900.00	43,600.00	326,149.80	10,520.96	1.00
9/1/2018	661,900.00	741,900.00	80,000.00	598,440.00	19,948.00	1.84
10/1/2018	741,900.00	782,500.00	40,600.00	303,708.30	9,797.04	0.93
11/1/2018	782,500.00	828,400.00	45,900.00	343,354.95	11,445.17	1.05
12/1/2018	828,400.00	828,400.00	0.00	0.00	0.00	0.00
Annual Total:			260,700.00	1,950,166.35		5.98
Average:			21,725.00	162,513.86	5,326.84	0.50
Monthly Minimum:			0.00	0.00		0.00
Monthly Maximum:			80,000.00	598,440.00		1.84

HCF-2

Date	Start Cubic-ft	End Cubic-ft	Total Cubic-ft	Month gal	Daily gal	Month Acre-ft
1/1/2018	168,156.00	170,351.00	2,195.00	16,419.70	529.67	0.05
2/1/2018	170,351.00	172,174.00	1,823.00	13,636.95	487.03	0.04
3/1/2018	172,174.00	174,331.00	2,157.00	16,135.44	520.50	0.05
4/1/2018	174,331.00	176,210.00	1,879.00	14,055.86	468.53	0.04
5/1/2018	176,210.00	178,471.00	2,261.00	16,913.41	545.59	0.05
6/1/2017	178,471.00	180,695.00	2,224.00	16,636.63	554.55	0.05
7/1/2018	180,695.00	184,359.00	3,664.00	27,408.55	884.15	0.08
8/1/2018	184,359.00	188,049.00	3,690.00	27,603.05	890.42	0.08
9/1/2018	188,049.00	192,598.00	4,549.00	34,028.79	1,134.29	0.10
10/1/2018	192,598.00	200,703.00	8,105.00	60,629.45	1,955.79	0.19
11/1/2018	200,703.00	211,126.00	10,423.00	77,969.25	2,598.98	0.24
12/1/2018	211,126.00	211,865.00	739.00	5,528.09	178.33	0.02
Annual Total:			43,709.00	326,965.17		1.00
Average:			3,642.42	27,247.10	895.65	0.08
Monthly Minimum:			739.00	5,528.09		0.02
Monthly Maximum:			10,423.00	77,969.25		0.24

Summary for both meters

Annual Total:	304,409.00	2,277,131.52		6.99
Average:	12683.71	94880.48	3111.25	0.29
Monthly Minimum:	0.00	0.00		0.00
Monthly Maximum:	80,000.00	598,440.00		1.84

OCWD/Anaheim Distribution & Sale of GWRS Water Supplied

TO Anaheim Public Utilities Dept. Attn: Al Shaikh 201 S. Anaheim Blvd. Suite #601 Anaheim, CA 92805	CUSTOMER ID:	20250	METER ID:	21024735
	RATE:	\$530 / AF	UNIT:	GALLONS
	ACCOUNT:	1001.41500	MULTIPLIER:	X1000
	AGMT NO:	6075	FISCAL YEAR:	2017-2018

LOCATION:	CANYON POWER PLANT (CPP)					
MONTH:	JULY 2017	AUGUST 2017	SEPT 2017	OCT 2017	NOV 2017	DEC 2017
(1) Beginning Read	111,548	113,382	118,924	119,292	122,110	124,634
(2) Ending Read	113,382	118,924	119,292	122,110	124,634	126,805
Total Units (Gallons x1000)	1,834,000	5,542,000	368,000	2,818,000	2,524,000	2,171,000
Total Acre Feet	5.62	17.01	1.13	8.65	7.74	6.66
AMOUNT PAID:	2,720.08	8,232.84	546.92	4,186.60	3,746.16	3,223.44
CORRECT AMOUNT:	2,978.60	9,015.30	598.90	4,584.50	4,102.20	3,529.80
AMOUNT DUE:	\$258.52	\$782.46	\$51.98	\$397.90	\$356.04	\$306.36

LOCATION:	CANYON POWER PLANT (CPP)					
MONTH:	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUNE 2018
(1) Beginning Read	126,805	128,315	131,119	133,117	134,720	135,815
(2) Ending Read	128,315	131,119	133,117	134,720	135,815	136,971
Total Units (Gallons x1000)	1,510,000	2,804,000	1,998,000	1,603,000	1,095,000	1,156,000
Total Acre Feet	4.64	8.60	6.14	4.91	3.36	3.55
AMOUNT PAID:	2,245.76	4,162.40	2,971.76	2,376.44	0.00	0.00
CORRECT AMOUNT:	2,459.20	4,558.00	3,254.20	2,602.30	0.00	0.00
AMOUNT DUE:	\$213.44	\$395.60	\$282.44	\$225.86	\$1,780.80	\$1,881.50

OCWD/Anaheim Distribution & Sale of GWRS Water Supplied

TO Anaheim Public Utilities Dept. Attn: Al Shaikh 201 S. Anaheim Blvd. Suite #601 Anaheim, CA 92805	CUSTOMER ID:	20250	METER ID:	21024735
	RATE:	\$552 / AF	UNIT:	GALLONS
	ACCOUNT:	1001.41500	MULTIPLIER:	X1000
	AGMT NO:	6075	FISCAL YEAR:	2018-2019
			READ DATE:	10/31/2018

LOCATION:	CANYON POWER PLANT (CPP)					
MONTH:	JULY 2018	AUGUST 2018	SEPT 2018	OCT 2018	NOV 2018	DEC 2018
(1) Beginning Read	136,971	141,149	145,803	145,803	147,896	150,051
(2) Ending Read	141,149	145,803	145,803	147,896	150,051	151,312
Total Units (Gallons x1000)	4,178,000	4,654,000	0	2,093,000	2,155,000	1,261,000
Total Acre Feet	12.82	14.29	0.00	6.42	6.63	3.90
AMOUNT DUE:	\$7,076.64	\$7,888.08	\$0.00	\$3,543.84	\$3,659.76	\$2,152.80

LOCATION:	CANYON POWER PLANT (CPP)					
MONTH:	JAN 2019	FEB 2019	MAR 2019	APR 2019	MAY 2019	JUNE 2019
(1) Beginning Read						
(2) Ending Read						
Total Units (Gallons x1000)						
Total Acre Feet						
AMOUNT DUE:						

Company: City of Anaheim/Canyon Power Plant
Plant Location: 3071 E. Miraloma Ave.
City/State/Zip: Anaheim, CA 92806

Period Start: 1/1/2018
Period End: 12/31/2018

CPP Waste Water

Date	Start (gal)	Finish (gal)	Total Gallons	Comments
1/1/2018	58,961,461.00	59,698,033.00	736,572.00	
2/1/2018	59,698,033.00	60,839,861.00	1,141,828.00	
3/1/2018	60,839,861.00	61,824,001.00	984,140.00	
4/1/2018	61,824,001.00	62,569,677.00	745,676.00	
5/1/2018	62,569,677.00	63,132,009.00	562,332.00	
6/1/2018	63,132,009.00	63,835,520.00	703,511.00	
7/1/2018	63,835,520.00	66,202,245.00	2,366,725.00	
8/1/2018	66,202,245.00	68,266,096.00	2,063,851.00	
9/1/2018	68,266,096.00	68,688,120.00	422,024.00	
10/1/2018	68,688,120.00	69,973,507.00	1,285,387.00	
11/1/2018	69,973,507.00	71,429,028.00	1,455,521.00	
12/1/2018	71,429,028.00	72,432,805.00	1,003,777.00	

Wastewater Flow Meter Calibration Report

January 15, 2018

Ms. Mila Kleinbergs
Source Control Program
Orange County Sanitation Districts
10844 Ellis Avenue
Fountain Valley, CA 92708

Subject: Effluent Flow Meter Hydraulic Calibration Report

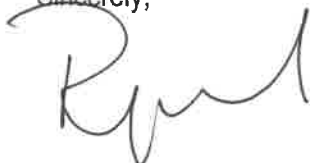
Facility: City of Anaheim
Canyon Power Plant
3071 E. Miraloma Ave.
Anaheim, CA 92806
I.W. Permit No. 52-2-758

Dear Ms. Kleinbergs,

Enclosed is our report on the effluent flow meter hydraulic calibration completed at the subject facility on January 10, 2018. The calibration was conducted in accordance with requirements of the Orange County Sanitation District, and the meter was determined to be operating within $\pm 5\%$ accuracy limits for the entire range tested.

If you have any questions regarding this calibration report, please contact me directly, or Bertha A. Hernandez, Environmental Services Specialist.

Sincerely,



Robert J. MacDonald, P.E., CPP
President & Principal Engineer

Enclosures

cc: Bertha A Hernandez, Environmental Services Specialist

**WASTEWATER FLOW METER
HYDRAULIC CALIBRATION**

PREPARED BY



FOR

**City of Anaheim
Canyon Power Plant**
3071 E. Miraloma Ave.
Anaheim, CA 92806

I.W. Permit No. 52-2-758

January 10, 2018



EFFLUENT FLOW METER CALIBRATION REPORT

Company Name: City of Anaheim Permit No.: 52-2-758

Discharge Address: 3071 E. Miraloma Ave. Anaheim, CA 92806

Mailing Address: 201 S. Anaheim Blvd. Suite 1101 Anaheim, CA 92805

Meter Location *[Use Meter Location Form (page 3) to identify location]*

☐ a ☐ b ☐ c ☐ d ☒ Other: (Attach sketch)

Effluent Meter Description

Open Channel

A. Flume:

- ☐ Parshall Flume
☐ Palmer-Bowlus Flume
☐ Trapezoidal
☐ Other, Specify: _____

B. Weir.

- ☐ V-notch
☐ Rectangular
☐ Trapezoidal
☐ Other, Specify: _____

C. Other

Description: _____

In-line

☒ Magnetic

☐ Propeller

☐ Ultrasonic

☐ Other, Specify: _____

Effluent Meter Description

Primary Element

Size: 4"

Manufacturer: Badger

Meter Series 2000

Secondary Element

Manufacturer: N/A

Recorder's 100% span = N/A GPM

Totalizer Units: = 1 Gallons per Count

Sampling Signal Contact Closure Frequency: 1 closure per N/A gallons discharged.

Current Facility Wastewater Discharge Rate to Sewer Determined by Calibration Engineer

Average 200 GPM

Peak 300 GPM



EFFLUENT FLOW METER CALIBRATION REPORT

5. Calibration Results

Type of Calibration: ☒ Hydraulic ☐ Instrument

Calibration System		Existing Meter				Error (%)	
Flow Rate GPM	Total Discharge Gallons	Primary Element's Head	Flow Rate, GPM		Total Discharge Gallons	Recorder	Totalizer
			Indicator	Recorder			
286.7	923	--	290.21	--	935	--	1.3%
247.9	823	--	249.14	--	829	--	0.7%
200.9	693	--	202.16	--	697	--	0.6%
150.4	493	--	152.23	--	501	--	1.6%
104.8	344	--	105.23	--	346	--	0.6%

A copy of all data collected and of any calculations performed must be attached to this form.

6. Method of Calibration Results *(attach additional sheets if necessary)*

Hydraulic: (For in line flow meters describe calibration/simulator system)

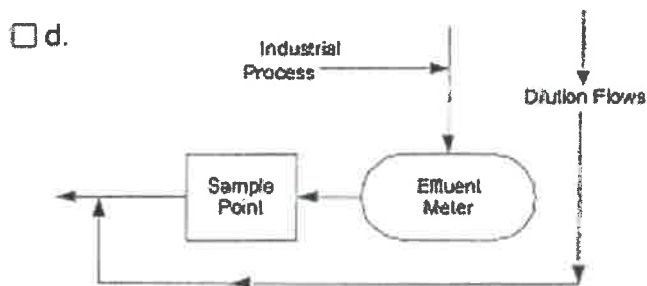
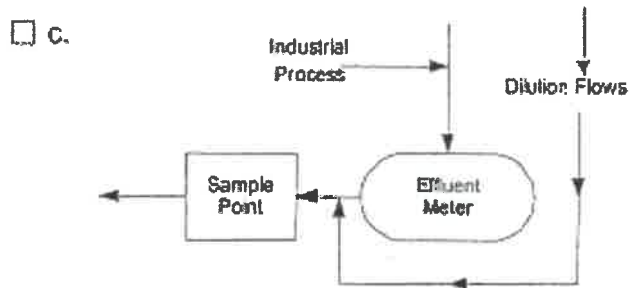
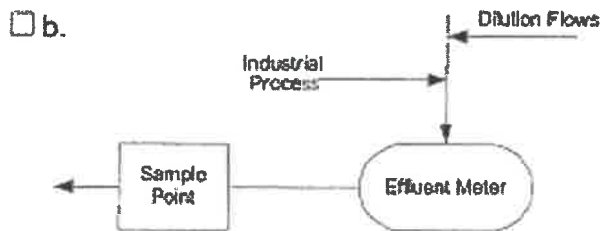
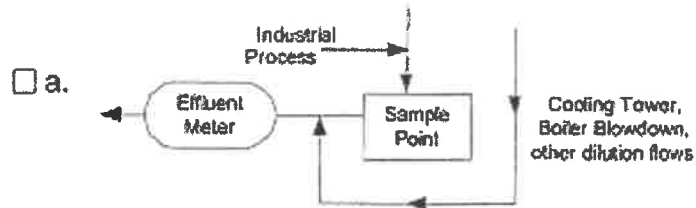
Various flow rates were achieved using 150' of 2.5" fire hose from a local hydrant to the test meter. A 2" Halliburton turbine was used to measure the water flow. At each rate tested, the meter totalizer was timed using an electronic stopwatch for a number of counts. The accumulated volume was then compared to the actual volume to determine the totalizer accuracy.

Instrument:

7. Corrective Measures *(describe condition of flow meter prior to calibration and state if any adjustments were made):*

No corrective measures were required.

EFFLUENT FLOW METER LOCATION FORM

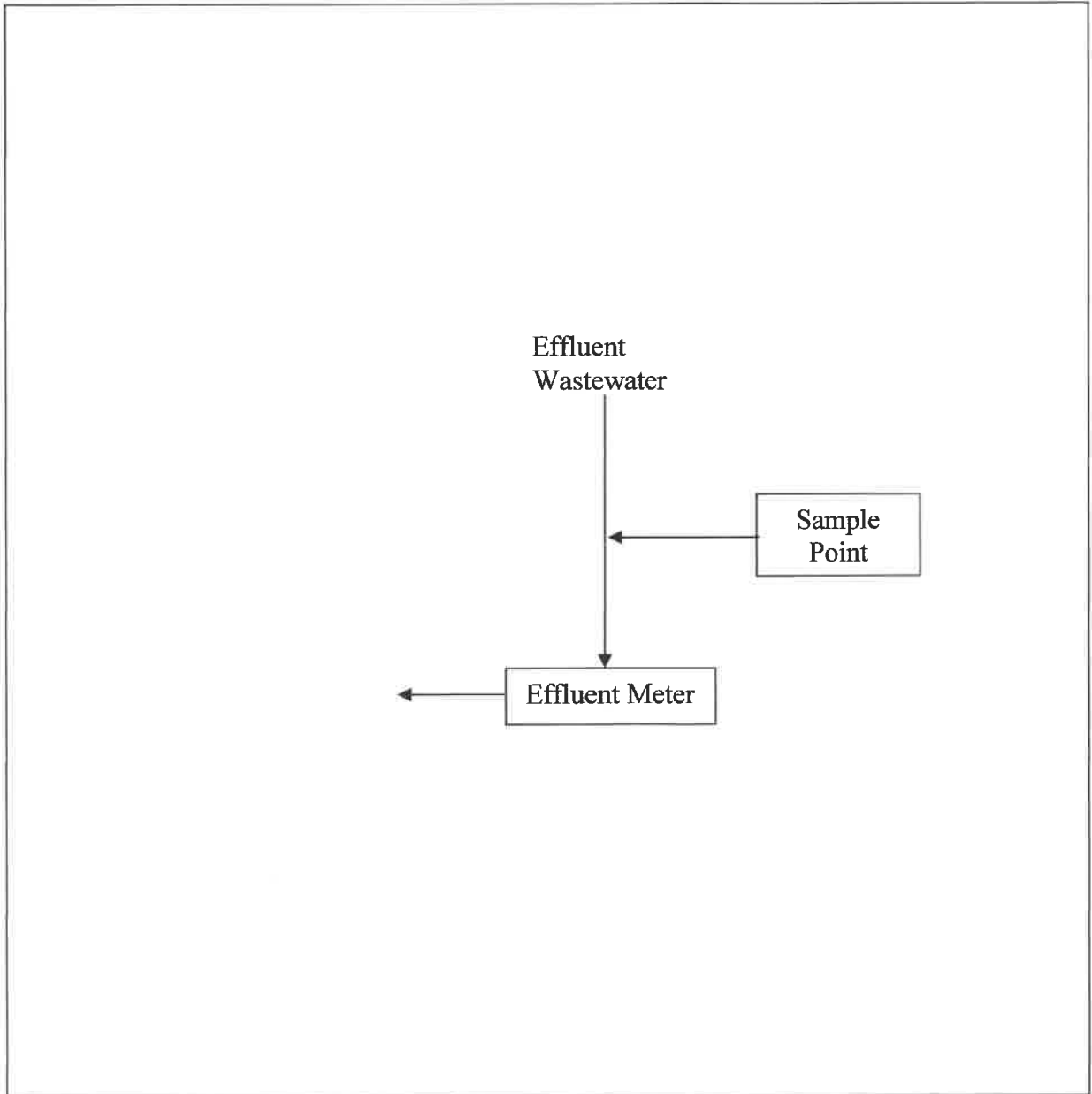


☒ Other

Please provide a schematic of the location of the effluent flow meter

Attachment:

Effluent Flow Meter Location





CERTIFICATION OF CALIBRATION CHECK

(Certification of Test Results by a California Registered Professional Engineer)

I hereby certify that I am knowledgeable in the field of wastewater flow measurement and that I have supervised the calibration of the flow monitoring system as described on the previous page, and also have reviewed and approved all details of the method of calibration. I consider the calibration method and procedures used to be technically sound, and assume professional responsibility for the validity and accuracy of the results reported.

(Signature)

Robert J. MacDonald, P.E.

(Full Name – Please Print or Type)



M29874 Expires 6/30/18

(California Professional
Engineering Certification No.)

Mechanical

(Engineering Discipline)

1/15/18
(Date)

CERTIFICATION OF TEST RESULTS BY AN ADMINISTRATIVE OFFICIAL OF THE COMPANY

City of Anaheim
(Company Name)

52-2-758
(Permit No.)

I hereby certify that the flow monitoring system certified as properly calibrated above is so arranged and operated, so as to accurately measure and record the industrial wastewater flow to the sewer system.

(Signature)

RONALD HOFFARD

(Full Name – Please Print or Type)

GENERATION PLANT MANAGER

(Administrative Position in Company)

1/30/2018
(Date)

Appendix:

Calculations Sheet
Field Calibration Data
Calibration Certificate

Recorder:

MAX = --- GPM

AVG = 200

PK = 300

Sampler:

Contact Closure = N/A gallons/pulse

Totalizer:

Finish: 59190839

Start: 59184637

Diff: 6202

MULT: 1

Total: 6202 gallons

Client: City of Anaheim - Canyon Power Plant

Date: 1/10/18 IW#: 52-2-758

Element: 4" Pipe

Instrument: 4" Badger Meter M2000

Recorder: ---

Calibrated Flows and Data

Turbine		Manometer - inches					Duration	Total	W.C.	Flow	Reading		Error	Total	Error
cycles	gpm	+	-	Δ	w.c.	gpm	min	gal	in.	gpm	%	gpm	%	gal	%
①	286.7						3.22	923		290.21				935	1.3
②	247.9						3.32	823		249.14				829	0.7
③	200.9						3.45	693		202.31				697	0.6
④	150.4						3.28	493		152.23				501	1.6
⑤	104.8						3.28	343		105.23				346	0.9

Calibration Type

Instrumentation

☒ Hydraulic

Notes:

① 86239
- 85304
935 @ 3:13

② 87892
- 87063
829 @ 3:19

Hydraulic Meter Used:

Turbine Meter, 1", Haliburton, Threaded
Turbine Meter, 1.5", XO Technologies, 150# Flange
X Turbine Meter, 2", Haliburton, flanged
Turbine Meter, 4", XO Technologies, 150# Flange
Turbine Meter, 4", Haliburton, flanged

Other: _____

K: 4.86

③ 89247
- 88550
697 @ 3:27

④ 90134
- 89633
501 @ 3:17

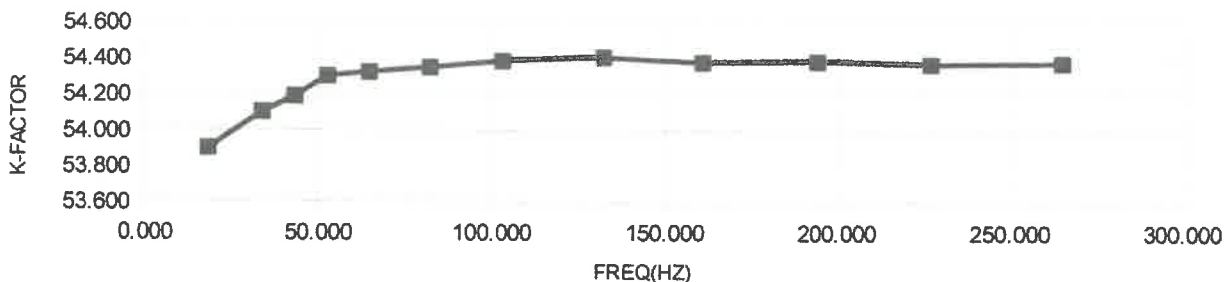
⑤ 90701
- 90355
346 @ 3:17

CERTIFICATE OF CALIBRATION

CUSTOMER: CONSERVTECH, COMMERCE, CA
VSR NUMBER: 9075
INST. MANUFACTURER: HALLIBURTON
INST. DESCRIPTION: TURBINE METER
MODEL NUMBER: 458.99101 (2")
SERIAL NUMBER: 2BF3677
RATED UNCERTAINTY: +/- .5% R.D.
UNCERTAINTY GIVEN: TOTAL measurement uncertainty +/- 151% RD K=2
NOTES: ** CALIBRATED WITH DMC. SENSOR COIL **

CALIBRATION DATE: 07/20/17
CALIBRATION DUE: 07/20/18
PROCEDURE: NAVAIR17-20MG-01
CALIBRATION FLUID: H2O @ 70F
ARRIVAL CONDITIONS: WITHIN MFG. SPEC.
RETURNED CONDITIONS: WITHIN MFG. SPEC.
AMBIENT CONDITIONS: 763mmHGA 48%RH 68°F
CERTIFICATE FILE #: 420148.2017

TEST POINT NUMBER	INDICATED UUT FREQ(HZ)	DM.STD. ACTUAL GPM	ACTUAL K-FACTOR PUL/GAL.
1	18.006	20.044	53.898
2	33.579	37.241	54.099
3	42.935	47.541	54.187
4	52.375	57.875	54.299
5	64.475	71.215	54.321
6	82.011	90.545	54.345
7	102.912	113.545	54.382
8	131.972	145.552	54.402
9	160.632	177.252	54.374
10	194.098	214.152	54.382
11	227.135	250.662	54.369
12	264.758	292.152	54.374



STANDARDS USED:

A710 (SERAFIN VOLUME PROVER 0-100GPM) +/- .022% BY VOLUME CMC +/- .2% RD FLOW TRACE# 1446135470,1453296155	DUE	01/16/18
A350 (PLATFORM SCALE & TANK: 10,000LBS/ 50-2800GPM) +/- .07LBS +/- BY MASS TRACE# 1446135470,1453296155	DUE	12/09/17
A14 (VOLUME PROVER 5-50GPM) +/- .02% BY VOLUME CMC +/- .151% RD FLOW TRACE# 1446135470,1453296155	DUE	12/07/17

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCIS-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

Dick Munns Company • 11133 Winners Circle • Los Alamitos, CA 90720
Phone (714) 827-1215 • Fax (714) 827-0823

This Calibration Certificate shall not be reproduced except, in full, without approval by DICK MUNNS COMPANY. The data shown applies only to the instrument being calibrated and under the stated conditions of calibration.

Date:

Approved By:

Calibration Technician:

7/20/17

[Signature]

[Signature]

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 13
SOIL & WATER REPORTS-8

**OCSD Wastewater Quality Semi-Annual
Monitoring Reports**

TX Result Report

P 1
04/13/2018 09:18
Serial No. A7PY011022705
TC: 11902

Addressee	Start Time	Time	Prints	Result	Note
917145937799	04-13 09:15	00:03:12	008/008	OK	

Note

TMR:Timer TX, POL:Polling, ORG:Original Size Setting, FME:Frame Erase TX,
DPS:Page Separation TX, MIX:Mixed Original TX, CALL:Manual TX, CSAC:CSAC,
FWD:Forward, PC:PC-FAX, BND:Double-Sided Binding Direction, SP:Special Original,
FCODE:F-code, RTX:Re-TX, RLV:Relay, MBX:Confidential, BUL:Bulletin, SIP:SIP Fax,
IPADR:IP Address Fax, I-FAX:Internet Fax

Result

OK: Communication OK, S-OK: Stop Communication, PW-OFF: Power Switch OFF,
TEL: RX from TEL, NG: Other Error, Cont: Continue, No Ans: No Answer,
Refuse: Receipt Refused, Busy: Busy, M-Full:Memory Full, LOVR:Receiving length over,
POVR:Receiving page over, FIL:File Error, DC:Decode Error, MDN:MDN Response Error,
DSN:DSN Response Error, PRINT:Compulsory Memory Document Print,
DEL:Compulsory Memory Document Delete, SEND:Compulsory Memory Document Send.



CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
Environmental Services
Letter of Transmittal

To:	Ms. Mila Kleinbergs Orange County Sanitation District Resource Protection Division 10844 Ellis Avenue Fountain Valley, CA 92708-7018	Date:	04/13/2018
		Project	Canyon Power Plant 3071 E. Miraloma Ave. Anaheim, CA 92807
		Subject:	Semi-Annual Self-Monitoring

We are sending you:

Copy of Original	Description
1	Completed Semi-Annual Form OCSD Self-Monitoring Form for City of Anaheim Canyon Power Plant (Permit No. 1-600286).

These are transmitted:

☐ 1	As requested	☐	For your action	☐	For your files
☐	For approval	☐	For your review	☐	For your information

Via: ☐ US Mail ☒ FAX # 8 of pgs. ☐ Hand Delivery
(714) 593-7799

Remarks:

Please contact me at (714) 765-7481 or bhernandez@anaheim.net if you have any questions regarding this submittal.

By: Bertha A Hernandez, Environmental Services Specialist



CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
Environmental Services
Letter of Transmittal

To:	Ms. Mila Kleinbergs Orange County Sanitation District Resource Protection Division 10844 Ellis Avenue Fountain Valley, CA 92708-7018	Date:	04/13/2018
		Project:	Canyon Power Plant 3071 E. Miraloma Ave. Anaheim, CA 92807
		Subject:	Semi-Annual Self-Monitoring

We are sending you:

Copy of Original	Description
1	Completed Semi-Annual Form OCSD Self-Monitoring Form for City of Anaheim Canyon Power Plant (Permit No. 1-600296).

These are transmitted:

☒ 1	As requested	☐	For your action	☐	For your files
☐	For approval	☐	For your review	☐	For your information

Via: ☐ US Mail ☒ FAX # 8 of pgs. ☐ Hand Delivery
(714) 593-7799

Remarks:

Please contact me at (714) 765-7481 or bhernandez@anaheim.net if you have any questions regarding this submittal.

By: Bertha A Hernandez, Environmental Services Specialist



**ORANGE COUNTY SANITATION DISTRICT
SELF-MONITORING FORM**

SMR No.: S-121860

SMR Type: Standard

City of Anaheim, Canyon Power Plant

General Pretreatment Regulations For Existing And New Sources Of Pollution

Permit No. 1-600296 (previously)

Sampling Dates: 04/01/2018 to 04/16/2018

Submit By Date: 04/30/2018

Sample Start Date: 04/02/2018

Sample End Date: 04/03/2018

Sample Start Time: 10:15 AM

Sample End Time: 10:15 AM

Sampling Point Location: Sampling Structure located in the center of the site

Contact Person: RONALD HOFFARD

Contact Phone: (714) 765-4536

Contact Email: R.HOFFARD@ANAHEIM.NET

☐ **No Discharge**

Water Meter Readings: (If this is a batch discharge, enter volume only)

Location	Meter Type	Meter ID	Stop Reading	Start Reading	Volume	Units	Digits	Int
Center of site adjacent to the final clarifier/vault	Effluent Flow Meter	EM-1-600296	61898932	61824052	74880	G	9	

Composite

Sample Results: (If constituent is not detected or is less than detection limit, enter as reported in the lab results.)

Constituent	Result		EPA Method
	Result	Units	
BOD T	ND	mg/L	SM 5210B
TSS	2.90	mg/L	SM 2540D

Sample Comments: _____

To Submit Data - Fax: (714) 593-7799 or

Mail: Orange County Sanitation District, Resource Protection Division, 10844 Ellis Avenue, Fountain Valley, CA, 92708-7018

Questions: Contact Melissa Soriano at 714-593-7448

MSK



**ORANGE COUNTY SANITATION DISTRICT
SELF-MONITORING FORM**

SMR No.: S-121860

SMR Type: Standard

City of Anaheim, Canyon Power Plant

General Pretreatment Regulations For Existing And New Sources Of Pollution

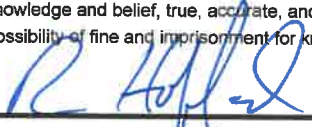
Permit No. 1-600296 (previously)

**This form must be completely filled out and Laboratory Analysis Report
and Chain of Custody must be attached.**

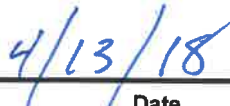
Please check if composite sample was obtained using an automatic sampling device: () Yes () No

In accordance with 40 CFR 403.12, the results presented herein must be verified and signed under penalty of perjury by: (i) a responsible corporate officer; (ii) general partner or proprietor; or (iii) a representative who has responsibility for the overall operation of the permitted facility, who has been authorized by the corporate officer, general partner or proprietor to sign such reports, and such authorization has been made in writing and submitted to the District.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. [40 C.F.R. § 403.6(a)(2)(ii) (2005)]


Signature (Ronald Hoffard)

Title (GENERATION PLANT MANAGER)


Date


Print Name

To Submit Data - Fax: (714) 593-7799 or

Mail: Orange County Sanitation District, Resource Protection Division, 10844 Ellis Avenue, Fountain Valley, CA, 92708-7018

Questions: Contact Melissa Soriano at 714-593-7448

MSK



**ORANGE COUNTY SANITATION DISTRICT
SELF-MONITORING FORM**

SMR No.: S-121860

SMR Type: Standard

City of Anaheim, Canyon Power Plant

General Pretreatment Regulations For Existing And New Sources Of Pollution

Permit No. 1-600296 (previously)

Sample Location: Compliance

<u>Meter Type</u>	<u>Equipment</u> <u>Name</u>	<u>Event ID</u>	<u>Start - End Date</u>	<u>End</u>	<u>Reading</u> <u>Start</u>	<u>Vol</u>	
EFFLUENT	EM-1-600296	121859	10/2/2017 - 10/3/2017	56541077 Gallon	56514574 Gallon	26503	GPD

To Submit Data - Fax: (714) 593-7799 or

Mail: Orange County Sanitation District, Resource Protection Division, 10844 Ellis Avenue, Fountain Valley, CA, 92708-7018

Questions: Contact Melissa Soriano at 714-593-7448

MSK



REPORT

3337 MICHELSON DRIVE, SUITE CN 750
IRVINE, CA 92612
(714) 730-6239 • FAX (714) 730-6462
www.truesdail.com

Client: City of Anaheim - Canyon Water Power Plant

3071 E Miraloma Ave

Anaheim, CA 92806

Attention: Bertha Hernandez

Project Name: Canyon Power Plant Semi-Annually Wastewater

Project Number: Canyon Power Plant

Work Order No.: 18D0013

Printed: 04/12/2018

CASE NARRATIVE

Date & Time Installed: 04/02/2018; 10:15 AM

Date & Time Removed: 04/03/2018; 10:15 AM

Flow Start Number: 61824052 GAL

Flow Stop Number: 61898932 GAL

Total Flow, CFPD: 74880

Peak Flow, CFPM: 78.00

SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
52-2-758 Composite	18D0013-01	Wastewater	Composite	04/03/2018 10:15	04/03/2018 16:20

DEFINITIONS

Symbol	Definition
DF	Dilution Factor
MDL	Method Detection Limit
ND	Not Detected
RL	Reporting Limit

Respectfully yours,

Arian Scheibe For Shelly Brady
Customer Service Manager

**Client: City of Anaheim - Canyon Water Powe****Project Name: Canyon Power Plant Semi-Annually Wastewater****Project Number: Canyon Power Plant****Printed: 04/12/2018****52-2-758 Composite
18D0013-01 (Wastewater)**

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
---------	--------	----	-------	----	-------	----------	---------	--------	-------

Truesdail Laboratories, Inc**Field Measurements**

pH	8.06	0.00	N/A	1	1804212	04/03/2018 10:15	SMB	Field	
Temperature (Celsius)	32.2		°C	1	1804212	04/03/2018 10:15	SMB	Field	

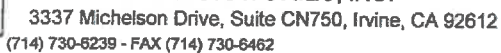
Wet Chemistry

Total Dissolved Solids	186	25.0	mg/L	1	1804200	04/10/2018 09:47	MxR	SM 2540 C	
Total Suspended Solids	2.90	2.50	mg/L	1	1804203	04/08/2018 12:00	AxL	SM 2540 D	

General Chemistry

Biochemical Oxygen Demand	ND	2.00	mg/L	1	1804082	04/08/2018 12:51	AxL	SM 5210B - 5 Day	
---------------------------	----	------	------	---	---------	------------------	-----	------------------	--

This report applies to the sample(s), or product(s), investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed. This report shall not be reproduced without the written consent of Truesdail Laboratories, Inc., and must be reproduced in its entirety.



1800013
METHODS

☒ **TURNAROUND TIME** Normal TAT ▼
DATE: 4/2 to 4/3/18 PAGE: 1 OF 1

Page 3 of 3



**ORANGE COUNTY SANITATION DISTRICT
SELF-MONITORING FORM**

March 14, 2018

Ronald Hoffard, GENERATION PLANT MANAGER
City of Anaheim, Canyon Power Plant
3071 E Miraloma Ave.
Anaheim, CA 92806

Subject: **REMINDER TO CONDUCT SELF-MONITORING**
Permit No. 1-600296 (previously listed as)

Please be reminded that Self-Monitoring must be conducted between **April 01, 2018 -- April 16, 2018** in accordance with your company's permit requirements. Self-Monitoring must be conducted during a production day in accordance with the guidelines detailed in your company's permit.

It is your responsibility to comply with the requirements set forth in your company's permit. Failure to comply with all the directives, conditions, and requirements of the permit may result in enforcement action against your company.

If your company's permit shows a self-monitoring requirement for total toxic organics (TTOs) and your company has received a waiver from this self-monitoring, you are now required to submit a signed TTOs SMR form to us to comply with the TTO waiver requirements of the U.S. Environmental Protection Agency. Please indicate in the "Sample Comments" that you have received a TTOs self-monitoring waiver from us.

For permittees that have monthly as well as quarterly and/or semi-annual self-monitoring requirements, the forms may list more than the SMR constituents required for the monthly self-monitoring. We ask that you adhere to your permit's self-monitoring requirements and sample only for the constituent(s) required on a monthly basis, except when the quarterly and semi-annual self-monitoring are also required in the same month, in which case all constituents listed on the form must be analyzed for as specified in your permit.

Finally, for those who are required to submit meter readings, a list of the meter readings submitted within the last year is attached to the SMR form for your reference and comparison to current readings.

Thank you for your patience and cooperation. If you have any questions, please contact Mila Kleinbergs at 714-593-7408.

Mila Kleinbergs
Engineer

To Submit Data - Fax: (714) 593-7799 or

Mail: Orange County Sanitation District, Resource Protection Division, 10844 Ellis Avenue, Fountain Valley, CA, 92708-7018

Questions: Contact Melissa Soriano at 714-593-7448

MSK

TX Result Report

P 1

10/25/2018 08:12

Serial No. A7PY011022705

TC: 20930

Addressee	Start Time	Time	Prints	Result	Note
917145937799	10-25 08:04	00:06:34	008/008	OK	

Note TMR:Timer TX, POL:Polling, ORG:Original Size Setting, FME:Frame Erase TX,
 DP6:Page Separation TX, MIX:Mixed Original TX, CALL:Manual TX, CSAC:CSAC,
 FWD:Forward, PC:PC-FAX, BND:Double-Sided Binding Direction, SP:Special Original,
 FCODE:F-code, RTX:Re-TX, RLY:Relay, MBX:Confidential, BUL:Bulletin, SIP:SIP Fax,
 IPADR:IP Address Fax, I-FAX:Internet Fax

Result OK: Communication OK, S-OK: Stop Communication, PW-OFF: Power Switch OFF,
 TEL: RX from TEL, NG: Other Error, Cont: Continue, No Ans: No Answer,
 Refuse: Receipt Refused, Busy: Busy, M-Full:Memory Full, LOVR:Receiving length Over,
 POWR:Receiving page Over, FIL:File Error, DC:Decode Error, MDN:MDN Response Error,
 DSN:DSN Response Error, PRINT:Compulsory Memory Document Print,
 DEL:Compulsory Memory Document Delete, SEND:Compulsory Memory Document Send.



CITY OF ANAHEIM
PULIC UTILITIES DEPARTMENT
 Environmental Services
 Letter of Transmittal

To:	Ms. Milla Kleinbergs Orange County Sanitation District Resource Protection Division 10844 Ellis Avenue Fountain Valley, CA 92708-7018	Date:	010/25/2018
		Project	Canyon Power Plant 3071 E. Miraloma Ave. Anaheim, CA 92806
		Subject:	Semi-Annual Self-Monitoring

We are sending you:

Copy of Original	Description
1	Completed Semi-Annual Form OCSD Self-Monitoring Form for City of Anaheim Canyon Power Plant (Permit No. 1-600296).

These are transmitted:

☒ 1 As requested	☐ For your action	☐ For your files
☐ For approval	☐ For your review	☐ For your information

Via: ☐ US Mail ☒ FAX # 8 of pgs. ☐ Hand Delivery
 (714) 593-7799

Remarks:

Please contact me at (714) 765-7481 or bhernandez@anaheim.net if you have any questions regarding this submittal.

By: Bertha A Hernandez, Environmental Services Specialist



CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
Environmental Services
Letter of Transmittal

To:	Ms. Mila Kleinbergs Orange County Sanitation District Resource Protection Division 10844 Ellis Avenue Fountain Valley, CA 92708-7018	Date:	010/25/2018
		Project	Canyon Power Plant 3071 E. Miraloma Ave. Anaheim, CA 92806
		Subject:	Semi-Annual Self-Monitoring

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Via: ☐ US Mail ☒ FAX # 8 of pgs. ☐ Hand Delivery
(714) 593-7799

Remarks:

Please contact me at (714) 765-7481 or bhernandez@anaheim.net if you have any questions regarding this submittal.

By: Bertha A Hernandez, Environmental Services Specialist



ORANGE COUNTY SANITATION DISTRICT SELF-MONITORING FORM

September 14, 2018

Ronald Hoffard, GENERATION PLANT MANAGER
City of Anaheim, Canyon Power Plant
3071 E Miraloma Ave.
Anaheim, CA 92806

Subject: **REMINDER TO CONDUCT SELF-MONITORING**
Permit No. 1-600296 (previously listed as)

Please be reminded that Self-Monitoring must be conducted between **October 01, 2018 -- October 16, 2018** in accordance with your company's permit requirements. Self-Monitoring must be conducted during a production day in accordance with the guidelines detailed in your company's permit.

It is your responsibility to comply with the requirements set forth in your company's permit. Failure to comply with all the directives, conditions, and requirements of the permit may result in enforcement action against your company.

If your company's permit shows a self-monitoring requirement for total toxic organics (TTOs) and your company has received a waiver from this self-monitoring, you are now required to submit a signed TTOs SMR form to us to comply with the TTO waiver requirements of the U.S. Environmental Protection Agency. Please indicate in the "Sample Comments" that you have received a TTOs self-monitoring waiver from us.

For permittees that have monthly as well as quarterly and/or semi-annual self-monitoring requirements, the forms may list more than the SMR constituents required for the monthly self-monitoring. We ask that you adhere to your permit's self-monitoring requirements and sample only for the constituent(s) required on a monthly basis, except when the quarterly and semi-annual self-monitoring are also required in the same month, in which case all constituents listed on the form must be analyzed for as specified in your permit.

Finally, for those who are required to submit meter readings, a list of the meter readings submitted within the last year is attached to the SMR form for your reference and comparison to current readings.

Thank you for your patience and cooperation. If you have any questions, please contact Mila Kleinbergs at 714-593-7408.

Mila Kleinbergs
Engineer



**ORANGE COUNTY SANITATION DISTRICT
SELF-MONITORING FORM**

SMR No.: S-121861

SMR Type: Standard

City of Anaheim, Canyon Power Plant

General Pretreatment Regulations For Existing And New Sources Of Pollution

Permit No. 1-600296 (previously)

Sampling Dates: 10/01/2018 to 10/16/2018

Submit By Date: 10/31/2018

Sample Start Date: 10/01/2018

Sample End Date: 10/02/2018

Sample Start Time: 0945 AM

Sample End Time: 1100 AM

Sampling Point Location: Sampling Structure located in the center of the site

Contact Person: RONALD HOFFARD

Contact Phone: (714) 765-4536

Contact Email: RHOFFARD@ANAHEIM.NET

☐ **No Discharge**

Water Meter Readings: (If this is a batch discharge, enter volume only)

Location	Meter Type	Meter ID	Stop Reading	Start Reading	Volume	Units	Digits	Int
Center of site adjacent to the final clarifier/vault	Effluent Flow Meter	EM-1-600296	68740935	68688798	52137	G	9	

Composite

Sample Results: (If constituent is not detected or is less than detection limit, enter as reported in the lab results.)

Constituent	Result	Units	EPA Method
BOD T	ND	mg/L	SM 5210B
TSS	ND	mg/L	SM 2540D

Sample Comments: _____

To Submit Data - Fax: (714) 593-7799 or
Mail: Orange County Sanitation District, Resource
Protection Division, 10844 Ellis Avenue, Fountain Valley,
CA, 92708-7018



Questions: Contact Melissa Soriano at 714-593-7448 PB



**ORANGE COUNTY SANITATION DISTRICT
SELF-MONITORING FORM**

SMR No.: S-121861

SMR Type: Standard

City of Anaheim, Canyon Power Plant

General Pretreatment Regulations For Existing And New Sources Of Pollution

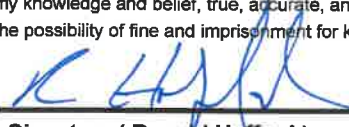
Permit No. 1-600296 (previously)

**This form must be completely filled out and Laboratory Analysis Report
and Chain of Custody must be attached.**

Please check if composite sample was obtained using an automatic sampling device: () Yes () No

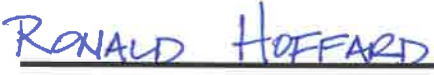
In accordance with 40 CFR 403.12, the results presented herein must be verified and signed under penalty of perjury by: (i) a responsible corporate officer; (ii) general partner or proprietor; or (iii) a representative who has responsibility for the overall operation of the permitted facility, who has been authorized by the corporate officer, general partner or proprietor to sign such reports, and such authorization has been made in writing and submitted to the District.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.[40 C.F.R. § 403.6(a)(2)(ii) (2005)]


Signature (Ronald Hoffard)

Title (GENERATION PLANT MANAGER)


Date


Print Name

**To Submit Data - Fax: (714) 593-7799 or
Mail: Orange County Sanitation District, Resource
Protection Division, 10844 Ellis Avenue, Fountain Valley,
CA, 92708-7018**

Questions: Contact Melissa Soriano at 714-593-7448 PB



**ORANGE COUNTY SANITATION DISTRICT
SELF-MONITORING FORM**

SMR No.: S-121861

SMR Type: Standard

City of Anaheim, Canyon Power Plant

General Pretreatment Regulations For Existing And New Sources Of Pollution

Permit No. 1-600296 (previously)

Sample Location: Compliance

<u>Meter Type</u>	<u>Equipment</u>	<u>Event ID</u>	<u>Start - End Date</u>	<u>End</u>	<u>Reading</u>	<u>Start</u>	<u>Vol</u>	
EFFLUENT	EM-1-600296	121860	4/2/2018 - 4/3/2018	61898932	Gallon	61824052	Gallon	74880 GPD
EFFLUENT	EM-1-600296	121859	10/2/2017 - 10/3/2017	56541077	Gallon	56514574	Gallon	26503 GPD

To Submit Data - Fax: (714) 593-7799 or
Mail: Orange County Sanitation District, Resource
Protection Division, 10844 Ellis Avenue, Fountain Valley,
CA, 92708-7018

Questions: Contact Melissa Soriano at 714-593-7448 PB



REPORT

3337 MICHELSON DRIVE, SUITE CN 750
IRVINE, CA 92612
(714) 730-6239 • FAX (714) 730-6462
www.truesdail.com

Client: City of Anaheim - Canyon Water Power Plant
3071 E Miraloma Ave
Anaheim, CA 92806

Work Order No.: 18J0029
Printed: 10/16/2018

Attention: Bertha Hernandez

Project Name: Canyon Power Plant Semi-Annually Wastewater

Project Number: Canyon Power Plant

P.O. Number: MA-106-491110 (exp 8/31/18)

CASE NARRATIVE

Date & Time Installed: 10/01/2018; 09:45 AM
Date & Time Removed: 10/02/2018; 11:00 AM

Flow Start Number: 68688798 GAL
Flow Stop Number: 68740935 GAL
Total Flow, GPD: 52137

SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
52-2-758 Composite	18J0029-01	Wastewater	Composite	10/02/2018 11:00	10/02/2018 15:45

DEFINITIONS

Symbol	Definition
C	GGA recovery was below the method acceptance limit.
DF	Dilution Factor
MDL	Method Detection Limit
ND	Not Detected
RL	Reporting Limit

Respectfully yours,

Arian Scheibe
Project Manager

**Client: City of Anaheim - Canyon Water Powe****Project Name: Canyon Power Plant Semi-Annually Wastewater****Project Number: Canyon Power Plant****Printed: 10/16/2018****52-2-758 Composite
18J0029-01 (Wastewater)**

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
---------	--------	----	-------	----	-------	----------	---------	--------	-------

Truesdail Laboratories, Inc**Wet Chemistry**

Total Dissolved Solids	1190	50.0	mg/L	1	1810147	10/09/2018 10:10	VHD	SM 2540 C	
Total Suspended Solids	ND	2.50	mg/L	1	1810068	10/04/2018 14:00	KKL	SM 2540 D	

General Chemistry

Biochemical Oxygen Demand	ND	2.00	mg/L	1	1810049	10/07/2018 13:31	SMC	SM 5210B - 5 Day	C
---------------------------	----	------	------	---	---------	------------------	-----	------------------	---

This report applies to the sample(s), or product(s), investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed. This report shall not be reproduced without the written consent of Truesdail Laboratories, Inc., and must be reproduced in its entirety.



TRUESDAIL LABORATORIES, INC.

3337 Michelson Drive, Suite CN750, Irvine, CA 92612
(714) 730-6239 - FAX (714) 730-6462

(714) 730-6239 - FAX (714) 730-6462

☒

TURNAROUND TIME	Normal TAT
10	10
20	20
30	30
40	40
50	50
60	60
70	70
80	80
90	90
100	100

DATE: 10/1 - 10/2/18

PAGE: 1

OF

18 Joo21 METHODS

METHODS

[illegible]

OCSD
No Violations or Corrective Actions
to report for CY 2018

CANYON POWER PLANT

ANNUAL COMPLIANCE REPORT

ATTACHMENT 14

VIS-4

**SURFACE TREATMENT OF PROJECT
STRUCTURES AND BUILDINGS**

VIS-4: Surface Treatment of Project Structures and Buildings

Condition of Certification VIS-4 requires a status report of the surface treatment maintenance for the structures and buildings in the Annual Compliance Report. The report shall specify the following:

1. The condition of surfaces of all structures and buildings at the end of the reporting year 2018:

- a. Butler Building (Administrative and Warehouse)
- b. Main Electrical Enclosure (MEE)
- c. Balance of Plan (BOPEE)
- d. Substation Building
- e. Chiller
- f. RO Skid (open wall with roof sheet metal covering)
 - i. The exterior building material is fabricated sheet metal. The colors and finishes do not create excessive glare and consistent with local policies and ordinances. All structure and buildings visual inspection showed no trouble items and all are in good working order.
- g. Gas Turbines (4 identical units)

2. Maintenance activities that occurred in CY 2018:

- a. May Planned Outage
 - i. Semi-annual maintenance performed
- b. December Planned Outage
 - i. Semi-annual maintenance performed

3. Schedule maintenance activities for CY 2019:

- a. May 2019 Planned Outage
 - i. Semi-annual maintenance
- b. December 2019 Planned Outage
 - i. Semi-annual maintenance

Status report regarding condition of Structures and Buildings

The photographs below shows the surface treatment of project structures and buildings. All buildings comply with condition VIS-4.



Warehouse Building (1/24/19)



Administrative Building (1/24/19)



Main Electrical Enclosure Building (1/24/19)



Substation Building (1/24/19)



Chiller Building (1/24/19)



RO Skid Structure (1/24/19)



Balance of Plant Building (1/24/19)



LM 6000 Turbines (1/24/19)

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 15
LANDSCAPE SCREENING

VIS-5: Landscape Screening

Condition of Certification VIS-5 requires a status report in the Annual Compliance Report regarding landscape maintenance activities. At the Canyon Power Plant the landscape maintenance activities were performed according to the contract and consistent with policies and requirements of the City of Anaheim plan and zoning ordinance.

The contracted company performed the following landscape maintenance activities:

Contracted Landscape Services – Landscape West Mgmt. Service, Inc. (Period: Jan 1, through December 31, 2018)

Activity Type	Frequency
<u>Weed Control</u> Landscape areas Hardscape areas Gravel areas	2x/wk. 1x/Mo
<u>Fertilization</u> Shrubs Ground cover Trees	As needed
<u>Pest Control</u> Rodents	As needed
<u>Irrigation Maintenance</u> Inspect all Sprinklers/Systems	2x/wk.
<u>Trees</u> Canopy Trees	As needed
<u>Maintenance/Clean-Up</u> Ground Cover and Shrubs Trash & Litter at Landscape area Trash & Litter at enclosed gravel areas Monthly Inspection	2x/wk.

The photographs below taken by staff on 1/24/19 of the landscape maintenance demonstrating compliance pursuant VIS-5 condition:

Landscaping - Exterior Plants



Miraloma Avenue, south wall



Miraloma Avenue, south wall



Miraloma Avenue, south wall



East wall ivy

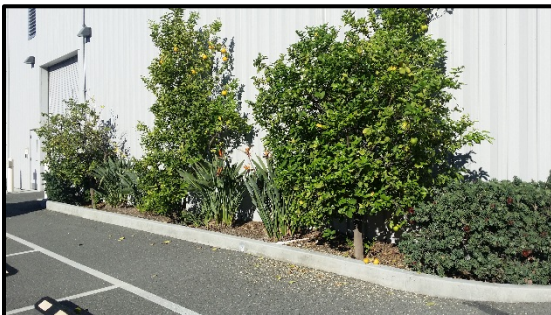
Landscaping - Interior Plant



Administration Building



Administration and Warehouse Building



Warehouse Building

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 16

AQ-9
NH₃ SLIP TESTING

TEST REPORT FOR AMMONIA SLIP TEST AT CANYON POWER PLANT UNIT 1 FACILITY ID: 153992, DEVICE ID: D1

Prepared For:

Canyon Power Plant
3071 E. Mira Loma Avenue
Anaheim, California 92806

For Submittal To:

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4178

Prepared By:

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, California 92705
(714) 282-8240

Sean Donovan

Test Date: **August 21, 2018**

Production Date: **September 6, 2018**

Report Number: **002AS-466620-RT-702**



CONFIDENTIALITY STATEMENT

Except as otherwise required by law or regulation, this information contained in this communication is intended exclusively for the individual or entity to which it is addressed. This communication may contain information that is proprietary, privileged or confidential or otherwise legally exempt from disclosure. If you are not the named addressee, you are not authorized to read, print, retain, copy, or disseminate this message or any part of it.

REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature: Sean Donovan Date: 9/6/2018

Name: Sean Donovan Title: Filed Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: Matt McCune Date: 9/6/2018

Name: Matt McCune Title: Regional Vice President

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1.0 INTRODUCTION AND SUMMARY

Montrose Air Quality Services, LLC (MAQS), was contracted the Canyon Power Plant to perform an ammonia slip test at Unit 1 as required by the facility Permit (Facility ID 153992) Condition Number D29.2. This report documents the results of the ammonia slip tests performed on August 21, 2018. The test was performed by Sean Donovan, Danny Avila, and Robert Howard. Sean Donovan was the on-site qualified individual for MAQS. Bertha Hernandez coordinated the test for Canyon Power Plant.

The test consisted of duplicate ammonia tests performed at 50 MW. The test program followed the procedures described in the initial compliance test protocol (MAQS document R038842). The results of the test are summarized in Table 1-1. The table shows that the ammonia slip from this unit was less than the permitted limit of 5 ppm corrected to 15% O₂.

**TABLE 1-1
AMMONIA SLIP TEST RESULTS SUMMARY
CANYON POWER PLANT UNIT 1
AUGUST 21, 2018**

Parameter	Units	Result ⁽¹⁾	Limit
NH ₃	ppm	2.4	--
NH ₃	ppmc	2.2	5

(1) Maximum of duplicate runs, as required by SCAQMD Method 207.1

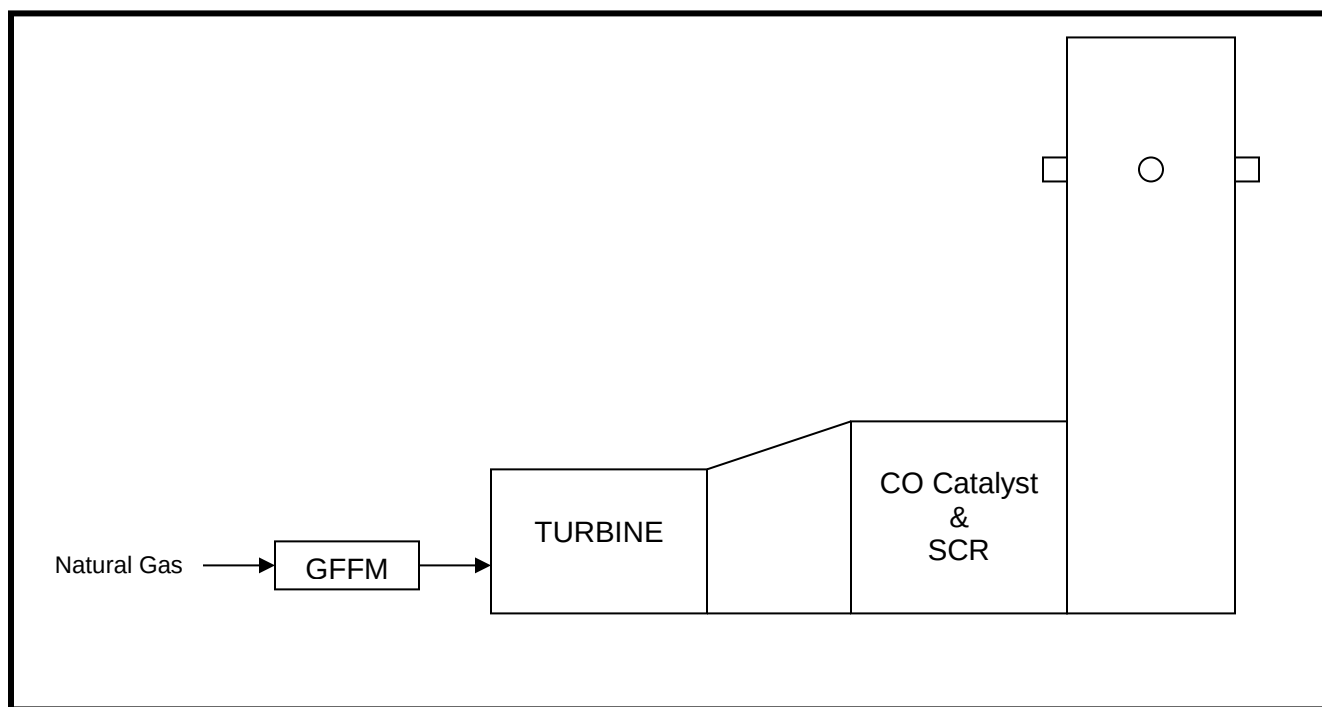
Section 2 of this document provides a brief description of the unit, test conditions, sample location, and CEMS. Details of the test procedures are provided in Section 3. Section 4 provides the results of each individual test. All raw data, calculations, quality assurance data, unit operating conditions, and CEMS data are provided in the appendices.

2.0 UNIT AND CEMS DESCRIPTION

2.1 UNIT DESCRIPTION

The City of Anaheim Canyon Power Plant is located at 3071 E. Mira Loma Avenue, Anaheim, California 92806. The facility consists of four identical generating units. Each unit consists of a natural gas fired, GE Model LM6000PC Sprint simple cycle, gas turbine. The units are natural gas fired with a rated heat input of 479 MMBtu per hour at 46 degrees Fahrenheit, with water injection. The units are equipped with a CO catalyst and Selective Catalytic Reduction (SCR) system for NO_x control. Figure 2-1 presents a block diagram of the unit.

**FIGURE 2-1
UNIT BLOCK DIAGRAM
CANYON POWER PLANT**



Stack Inside Diameter:	11 feet, 8 inches
Distance from Upstream Disturbance:	23 feet, 4 inches (2.0 Diameters)
Distance from Stack Exit:	16 feet, 6 inches (1.4 Diameters)

2.2 TEST CONDITIONS

The tests were performed with the unit operating at an average load of 50 MW. Tests were performed while the unit was firing natural gas and operating under normal conditions. Unit operation was established by the Canyon Power Plant operators.

2.3 SAMPLE LOCATION

The measurements were made from sample ports located on the exhaust stack. There are four sample ports equally spaced at this location. The stack inside diameter at the sample plane is 11 feet, 8 inches. The sample ports are located 23 feet, 4 inches (2.0 diameters) downstream of the nearest flow disturbance and 16 feet, 6 inches (1.4 diameters) from the stack exit.

3.0 TEST DESCRIPTION

Flue gas samples were collected non-isokinetically using a SCAQMD Method 207.1 sample train. The samples were collected using a 12-point traverse at the exhaust stack location. Each test was performed over a 60 minute interval. The sample gas was drawn through a glass probe, Teflon sample line, two impingers each containing 100 ml of 0.1N H₂SO₄, an empty impinger, an impinger containing silica gel, and a dry gas meter. The optional nozzle and filter were not used since the source is natural gas fired. The contents of the sample line and the first three impingers were recovered and analyzed by SCAQMD Method 207.1 for ammonia concentration by Ion Specific Electrode analysis.

Stack O₂ and NO_x concentrations and stack volumetric flow rate data were recorded from the Continuous Emission Monitoring System (CEMS) which is installed on the unit. These data were used to correct the ammonia concentration to 15% O₂.

4.0 TEST RESULTS AND OVERVIEW

4.1 TEST RESULTS

The results of the test are summarized in Table 4-1. The results show that the ammonia slip was 2.2 ppm @ 15% O₂ which is less than the permitted limit of 5 ppm @ 15% O₂.

**TABLE 4-1
AMMONIA SLIP TEST RESULTS
CANYON POWER PLANT UNIT 1
AUGUST 21, 2018**

Parameter	Units	Run 1	Run 2	Average	Maximum ⁽¹⁾	Limit
Test		1-NH ₃ -U1	2-NH ₃ -U1			--
Date		8/21/2018	8/21/2018			--
Time		1345/1448	1523/1626			--
O ₂ ⁽²⁾	%	14.43	14.43	14.43	--	--
Stack Flow ⁽²⁾	dscfm @ T _{ref}	227,697	227,598	227,648	--	--
NO _x ⁽²⁾	ppmc	2.3	2.3	2.3	--	2.5
NH ₃	ppm	2.4	2	2.2	2.4	--
NH ₃	ppmc	2.2	1.8	2	2.2	5
NH ₃	lb/hr	1.5	1.2	1.3	1.5	--
NH ₃	lb/MMBtu	0.003	0.002	0.003	0.003	--
NH ₃	lb/MMSCF	3.1	2.6	2.8	3.1	--

1) Maximum of duplicate test runs, as required by SCAQMD Method 207.1

2) From facility CEMS

APPENDIX A

RAW DATA

APPENDIX A.1

SAMPLE DATA SHEETS

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: Canyon
 LOCATION: Unit 1
 DATE: 8/24/12
 RUN NO: 1-1043
 OPERATOR: DA/RY
 METER BOX NO: 18-205
 METER ΔH@: 1.767
 METER Yd: 1.002
 STACK AREA, FT²:
 TRAVERSE POINTS, MIN/POINT:
 ΔH= X ΔP:
 Probe Condition, pre/post test: Good / N
 Silica Gel Expanded, Y/N:
 Filter Condition after Test:
 Check Weight: 500.3 / 1500.0

AMBIENT TEMPERATURE:
 BAROMETRIC PRESSURE: 29.73
 ASSUMED MOISTURE:
 PITOT TUBE COEFF, Cp: 0.84
 PROBE ID NO/MATERIAL: 41055
 PROBE LENGTH: 7
 NOZZLE ID NO/MATERIAL: N/A
 NOZZLE DIAMETER: N/A
 FILTER NO/TYPE: N/A
 PRE-TEST LEAK RATE: 6.005 CFM@ 17 in. Hg.
 POST-TEST LEAK RATE: 6.005 CFM@ 16 in. Hg.
 PITOT LEAK CHECK - PRE: ✓ POST:
 CHAIN OF CUSTODY: SAMPLE CUSTODIAN 56
 SAMPLE CUSTODIAN DA/RY
 SAMPLE CUSTODIAN 56

Imp. # Contents Post-Test - Pre-Test = Difference
 1 H₂SO₄ 911.4 715.6
 2 H₂SO₄ 684.2 681.8
 3 MT 475.0 472.9
 4 SO 933.0 914.3
 10 Ø 100
 Total:

Point	Time	Meter Volume, ft ³	ΔP in. H ₂ O	ΔH in. H ₂ O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In Out	Vacuum in. Hg.	O ₂ %	P. static in. H ₂ O
3	1345	307.200		1.5		N/A	N/A	57	86 84	6		
2	1355	311.090						56	87 85	6		
1	1400	314.985						56	87 85	6		
END												
3	1401	318.421						56	86 85	6		
2	1406	321.930						57	86 85	6		
1	1411	325.395						56	88 85	6		
END												
5	1417	328.860						56	88 85	6		
2	1422	332.275						56	89 85	6		
1	1427	335.755						56	90 86	6		
END												
3	1433	339.237						57	90 87	6		
2	1438	342.575						57	92 88	7		
1	1443	346.090						57	94 89	7		
END												
1448		349.606										
Average:												

Comments:

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: Clayton
 LOCATION: Unit 1
 DATE: 8/21/16
 RUN NO: 2-NH2
 OPERATOR: DA/EL
 METER BOX NO: 18-VLS
 METER ΔH@: 1.767
 METER Yd: 1.002
 STACK AREA, FT²:
 TRAVERSE POINTS, MIN/POINT:
 ΔH= X ΔP:
 Probe Condition, pre/post test: 4002/100.1
 Silica Gel Expanded, Y/N: N
 Filter Condition after Test: NA
 Check Weight: 500.3 / 500.0

AMBIENT TEMPERATURE: 29.73
 BAROMETRIC PRESSURE: 0.94
 ASSUMED MOISTURE: 416.55
 PITOT TUBE COEFF, Cp: NA
 PROBE ID NO/MATERIAL: NA
 PROBE LENGTH: NA
 NOZZLE ID NO/MATERIAL: NA
 NOZZLE DIAMETER: NA
 FILTER NO/TYPE: NA
 PRE-TEST LEAK RATE: 10.005 CFM@ 14 in. Hg.
 POST-TEST LEAK RATE: 10.005 CFM@ 15 in. Hg.
 PITOT LEAK CHECK - PRE: ✓ POST: ✓
 CHAIN OF CUSTODY: SAMPLE CUSTODIAN 16
SAMPLER 14/12/11
SAMPLE CUSTODIAN 36

Imp. # Contents Post-Test - Pre-Test = Difference
 1 A₂SO₄ 877.5 684.4
 2 H₂SO₄ 733.9 731.1
 3 NT 506.3 505.0
 4 SG 955.4 941.6
LR Ø 100
 Total:

Point	Time	Meter Volume, ft ³	ΔP in. H ₂ O	ΔH in. H ₂ O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Out	Vacuum in. Hg.	O ₂ %	P. static in. H ₂ O
3	1523	357.100		1.5		NA	NA	58	42	89	6		
2	1528	354.665						58	42	88	6		
1	1533	358.010						57	42	89	6		
END	1538	361.346											
3	1539	361.346						57	42	89	6		
2	1544	364.780						57	43	89	6		
1	1549	368.155						57	44	89	6		
END	1554	371.506											
3	1555	371.506						56	43	89	6		
2	1600	374.920						56	43	89	6		
1	1605	378.285						56	42	88	6		
END	1610	381.680											
3	1611	381.680						57	47	87	6		
2	1616	385.010						57	46	85	6		
1	1621	388.380						57	45	84	6		
END	1626	391.726											
Average:													

Comments: _____

APPENDIX A.2

LABORATORY DATA

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS CALCULATION

Client/ Location: Canyon
Sample Location: Unit 1
District Method: SCAQMD 207.1
Sample Date: 8/21/2018
Analysis Date: 8/21/2018
Analyst's Initials: JG
Calibration Curve: $y = -57.9608x + 111.2358$
 R^2 : 0.9999

Sample	P mV	Conc. $\mu\text{g NH}_3 / \text{ml as N}$	C avg as N	TV (ml)	C avg as NH_3	$\mu\text{g NH}_3 /$ sample
28 $\mu\text{g NH}_3 / \text{ml as N}$	27.6	27.731				
repeat 28 $\mu\text{g NH}_3 / \text{ml as N}$	27.3	28.064	27.898	NA	33.911	NA
1- NH_3	83.7	2.986				
repeat 1- NH_3	83.8	2.974	2.980	542	3.622	1963.317
Reagent Blank	212.5	0.018				
repeat Reagent Blank	212.0	0.018	0.0181	NA	0.022	NA
DI H ₂ O Blank	208.0	0.021				
Repeat DI H ₂ O Blank	208.9	0.021	0.0210	NA	0.026	NA
28 $\text{NH}_3 / \text{ml as N}$	26.6	28.855				
repeat 28 $\mu\text{g NH}_3 / \text{ml as N}$	26.7	28.741	28.798	NA	35.006	NA

Notes:

Measured Concentration of Ammonia (C) in $\mu\text{g NH}_3 / \text{ml as N}$

$$C = 10^{(P-B)/M}$$

P = electrode potential (mV), M=slope and B=intercept

Average Measured Ammonia Concentration (Cavg) = (C1 + C2)/2

where C1, C2 results from duplicate analyses ($\mu\text{g NH}_3 / \text{ml as N}$)

Cavg ($\mu\text{g NH}_3 / \text{ml as NH}_3$) = Cavg ($\mu\text{g NH}_3 / \text{ml as N}$) * 17.03/ 14.01

$\mu\text{g NH}_3 / \text{sample} = \text{Cavg} (\mu\text{g NH}_3 / \text{ml as NH}_3) * \text{TV}$

Used 100 ml of samples and standards with 2 ml ISA and constant stirring rate.

All solutions turned blue and remained blue with ISA unless otherwise indicated.

Sample PH and Temperatures can be found on the laboratory datasheet.

Maximum samples (including blanks) between 28 $\mu\text{g/ml}$ check standard is 5 samples analyzed in duplicate.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS QUALITY CONTROL

Client/ Location: Canyon
 Sample Location: Unit 1
 District Method: SCAQMD 207.1
 Sample Date: 8/21/2018
 Analysis Date: 8/21/2018
 Analyst's Initials: JG

Sample	% recovery	RPD %	RPA %
28 ug NH ₃ / ml as N repeat 28 ug NH ₃ /ml as N	NA	-1.19	-0.366
1-NH ₃ repeat 1- NH ₃	NA	0.40	NA
Reagent Blank repeat Reagent Blank	NA	-1.99	NA
DI H ₂ O Blank Repeat DI H ₂ O Blank	NA	3.58	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	0.40	2.850

Notes:

spike: 100 ml sample + 2 ml (1000 µg NH₃ / ml as N)

Matrix Spike Percent Recovery (%R)

%R = (C spike*0.104 - Csample*0.102)/2 *100

Cspike = average result of matrix spike (µg NH₃/ ml as N)

Relative Percent Difference (RPD) = (C1-C2)/ Cavg *100 (must be 5% or less)

Relative Percent Accuracy (RPA) (must be 10% or less)

RPA = (Cavg-theoretical value of standard)/ theoretical value of standard * 100

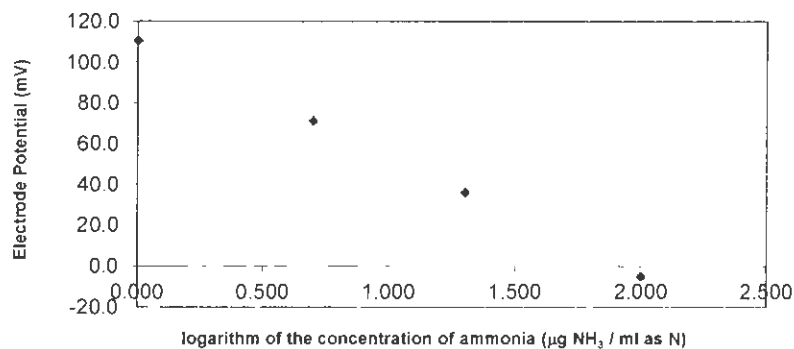
AMMONIA ELECTRODE CALIBRATION CURVE

NH ₃ concentration (µg NH ₃ / ml as N)	log NH ₃ concentration	Electrode potential	Sample Temperature (C)	Room Temperature (C)
1	0.000	110.8	20	22
5	0.699	71.3	20	22
20	1.301	36.0	20	22
100	2.000	-5.0	20	22

Ammonia Electrode Calibration Curve
8/21/2018

$$y = -57.9608x + 111.2358$$

$$R^2 = 0.9999$$



slope -57.9608
y-intercept 111.2358

Concentration (µg NH ₃ / ml as N)	Value LR line	Difference	% Difference
1	1.0175	0.0175	1.7465
5	4.8867	-0.1133	-2.2664
20	19.8631	-0.1369	-0.6847
100	101.2559	1.2559	1.2559

Calculation:

Regression Line: $P = M \cdot \log(\mu\text{g of NH}_3 / \text{ml as N}) + B$

Measured Concentration of Ammonia (C) in µg / ml NH₃ as N: $C = 10^{(P-B)/M}$

where P = electrode potential, M= slope (must be -57±3) and B= intercept

All standards were prepared in 0.04N H₂SO₄ and allowed to equilibrate to room temperature.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS CALCULATION

Client/ Location: Canyon
Sample Location: Unit 1
District Method: SCAQMD 207.1
Sample Date: 8/21/2018
Analysis Date: 8/21/2018
Analyst's Initials: JG
Calibration Curve: $y = -57.9608x + 111.2358$
 R^2 : 0.9999

Sample	P mV	Conc. $\mu\text{g NH}_3$ / ml as N	C avg as N	TV (ml)	C avg as NH_3	$\mu\text{g NH}_3$ / sample
28 $\mu\text{g NH}_3$ / ml as N	26.7	28.741				
repeat 28 $\mu\text{g NH}_3$ / ml as N	26.7	28.741	28.741	NA	34.936	NA
2- NH_3	89.3	2.390				
repeat 2- NH_3	88.5	2.468	2.429	520	2.953	1535.308
spike 2- NH_3	32.7	22.645				
repeat spike	32.9	22.466	22.556	NA	27.418	NA
Field Blank	218.0	0.014				
repeat Field Blank	219.0	0.014	0.0141	371	0.017	6.362
28 NH_3 / ml as N	25.7	29.906				
repeat 28 $\mu\text{g NH}_3$ / ml as N	25.6	30.025	29.965	NA	36.424	NA

Notes:

Measured Concentration of Ammonia (C) in $\mu\text{g NH}_3$ / ml as N

$$C = 10^{(P-B)/M}$$

P = electrode potential (mV), M=slope and B=intercept

Average Measured Ammonia Concentration (Cavg) = $(C1 + C2)/2$

where C1, C2 results from duplicate analyses ($\mu\text{g NH}_3$ / ml as N)

$$\text{Cavg } (\mu\text{g NH}_3/\text{ml as NH}_3) = \text{Cavg } (\mu\text{g NH}_3/\text{ml as N}) * 17.03/14.01$$

$$\mu\text{g NH}_3 / \text{sample} = \text{Cavg } (\mu\text{g NH}_3/\text{ml as NH}_3) * \text{TV}$$

Used 100 ml of samples and standards with 2 ml ISA and constant stirring rate.

All solutions turned blue and remained blue with ISA unless otherwise indicated.

Sample PH and Temperatures can be found on the laboratory datasheet.

Maximum samples (including blanks) between 28 $\mu\text{g/ml}$ check standard is 5 samples analyzed in duplicate.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS QUALITY CONTROL

Client/ Location: Canyon
 Sample Location: Unit 1
 District Method: SCAOMD 207.1
 Sample Date: 8/21/2018
 Analysis Date: 8/21/2018
 Analyst's Initials: JG

Sample	% recovery	RPD %	RPA %
28 ug NH ₃ / ml as N repeat 28 ug NH ₃ /ml as N	NA	0.00	2.646
2-NH ₃ repeat 2- NH ₃	NA	-3.18	NA
spike 2-NH ₃ repeat spike	104.90	0.79	NA
Field Blank repeat Field Blank	NA	3.97	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	-0.40	7.018

Notes:

spike: 100 ml sample + 2 ml (1000 µg NH₃ / ml as N)

Matrix Spike Percent Recovery (%R)

%R = (C spike*0.104 - Csample*0.102)/2 *100

Cspike = average result of matrix spike (µg NH₃/ ml as N)

Relative Percent Difference (RPD) = (C1-C2)/ Cavg *100 (must be 5% or less)

Relative Percent Accuracy (RPA) (must be 10% or less)

RPA = (Cavg-theoretical value of standard)/ theoretical value of standard * 100

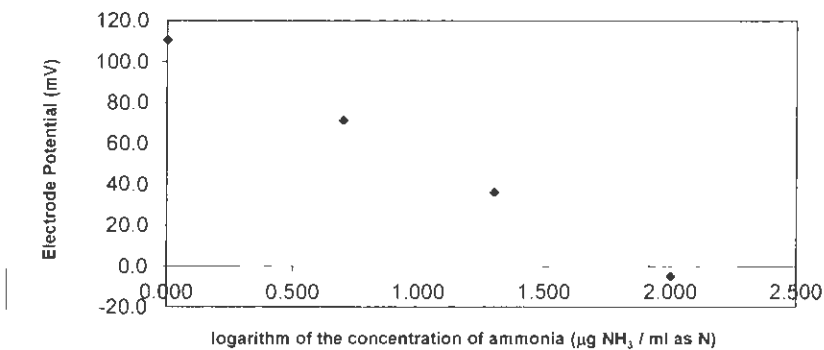
AMMONIA ELECTRODE CALIBRATION CURVE

NH ₃ concentration (µg NH ₃ / ml as N)	log NH ₃ concentration	Electrode potential	Sample Temperature (C)	Room Temperature (C)
1	0.000	110.8	20	22
5	0.699	71.3	20	22
20	1.301	36.0	20	22
100	2.000	-5.0	20	22

Ammonia Electrode Calibration Curve
8/21/2018

$$y = -57.9608x + 111.2358$$

$$R^2 = 0.9999$$



slope -57.9608
y-intercept 111.2358

Concentration (µg NH ₃ / ml as N)	Value LR line	Difference	% Difference
1	1.0175	0.0175	1.7465
5	4.8867	-0.1133	-2.2664
20	19.8631	-0.1369	-0.6847
100	101.2559	1.2559	1.2559

Calculation:

Regression Line: $P = M \cdot \log(\mu\text{g of NH}_3 / \text{ml as N}) + B$

Measured Concentration of Ammonia (C) in µg / ml NH₃ as N: $C = 10^{(P-B)/M}$

where P = electrode potential, M= slope (must be -57 ± 3) and B= intercept

All standards were prepared in 0.04N H₂SO₄ and allowed to equilibrate to room temperature.

APPENDIX A.3

QA/QC DATA

[illegible]

Comments:

SCAQMD METHOD 207.1 - AMMONIA DETERMINATION OF SAMPLE TIME

Source: Canyon U1
Date: 8/21/2018
Performed by: SD

Constants:

	1,000	mg/gram
	454	grams/lb
	35.315	SCF/SCM
	379.5	SCF/lb-mole
	1,000,000	parts/million parts
MW _{NH3}	17.03	lb/lb-mole
MW _{N2}	14.01	lb/lb-mole

Variables:

Target concentration	5	ppm @ O ₂ correction factor
O ₂ correction factor	15	% O ₂
Expected Flue Gas O ₂	14.5	% O ₂
F	2	Safety Factor
P	128.5	electrode potential corresponding to minimum value on calibration curve (mV)
B	128.83	y-intercept
M	-58.676	slope
V _r	0.5	Assumed liquid volume of probe rinse and first impinger (L)
Q @ dH = 1	0.55	cfm

Calculated Values:

Target concentration	5.4	ppm - raw
Target concentration	3.90	mg/dscm
C ₁	1.013	Lowest concentration on a calibration curve (mg NH ₃ -N/L)
RL	0.616	analytical mass reporting limit, mg
PSV	0.316	Planned sample volume, cubic meters
PSV	11.144	Planned sample volume, cubic feet
VSR	33.0	achievable volumetric sampling rate (dscf/hr)

PST	20.3	Planned sample time, minutes (minimum)
------------	-------------	---

Notes:

- 1) A minimum of 1 hour sample time is required for any mass per hour limits.
- 2) Facility Permit or Rule may specify sample time

SEMI-ANNUAL DRY GAS METER/ORIFICE CALIBRATION

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: C:\Users\sdonovan\Desktop\Canyon Certs\18WCS Semi-Annual Meter Calibration 4-13-18.xls\WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised 4/8/2005

Model # C5000
ID # 18 wcs
Date: 4/13/2018
Bar Pressure: 30.19 (in Hg)
Performed By: R Howard

DRY GAS METER READINGS										CRITICAL ORIFICE READINGS			
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps Inlet (deg F)	Initial Temps Outlet (deg F)	Final Temps Inlet (deg F)	Final Temps Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Average Final (deg F)
0.12	25.00	881.530	886.799	5.269	72.0	69.0	72.0	70.0	33	0.1553	17.0	70.0	70.0
0.12	25.00	886.909	892.191	5.282	72.0	70.0	73.0	71.0	33	0.1553	17.0	70.0	70.0
0.12	25.00	892.291	897.551	5.260	73.0	71.0	75.0	72.0	33	0.1553	17.0	70.0	70.5
0.65	12.00	899.400	904.861	5.461	75.0	71.0	75.0	72.0	48	0.3485	15.0	71.0	71.0
0.65	12.00	904.861	910.338	5.477	75.0	72.0	76.0	72.0	48	0.3485	15.0	71.0	71.0
0.65	12.00	910.338	915.795	5.457	76.0	72.0	77.0	72.0	48	0.3485	15.0	71.0	71.0
1.90	7.00	916.870	922.281	5.411	77.0	72.0	77.0	72.0	63	0.5888	13.0	71.0	71.5
1.90	7.00	922.281	927.690	5.409	77.0	72.0	77.0	73.0	63	0.5888	13.0	72.0	72.0
1.90	7.00	927.690	933.089	5.399	77.0	73.0	78.0	74.0	63	0.5888	13.0	72.0	72.0
3.80	5.00	864.280	869.538	5.258	70.0	69.0	71.0	69.0	73	0.8202	12.0	69.0	69.0
3.80	5.00	869.538	874.794	5.256	71.0	69.0	71.0	69.0	73	0.8202	12.0	69.0	69.0
3.80	5.00	874.794	880.045	5.251	71.0	69.0	72.0	69.0	73	0.8202	12.0	69.0	69.0

DRY GAS METER				ORIFICE		DRY GAS METER		ORIFICE		ORIFICE		ORIFICE	
VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED
Vm(std) (cu ft)	Vm(std) (liters)	Vr(std) (cu ft)	Vr(std) (liters)	Vcr (cu ft)	Vcr (liters)	Y Value (number)	dh@ Value (in H2O)	Individual Run	Individual Orifice	Orifice Average	Orifice Average	Orifice Average	Orifice Average
5.288	149.8	5.295	150.0	5.270	1.001	1.637		Pass					
5.294	149.9	5.295	150.0	5.270	1.000	1.634		Pass					
5.260	149.0	5.293	149.9	5.272	1.006	1.633		Pass					
				Average	1.003	1.635		Pass	Pass	Pass	Pass	Pass	Pass
5.462	154.7	5.448	154.3	5.432	0.997	1.778		Pass					
5.473	155.0	5.448	154.3	5.432	0.995	1.777		Pass					
5.448	154.3	5.448	154.3	5.432	1.000	1.777		Pass					
				Average	0.997	1.777		Pass	Pass	Pass	Pass	Pass	Pass
5.416	153.4	5.397	152.9	5.387	0.997	1.800		Pass					
5.412	153.3	5.395	152.8	5.389	0.997	1.800		Pass					
5.394	152.6	5.395	152.8	5.389	1.000	1.797		Pass					
				Average	0.998	1.799		Pass	Pass	Pass	Pass	Pass	Pass
5.335	151.1	5.383	152.4	5.347	1.009	1.857		Pass					
5.330	151.0	5.383	152.4	5.347	1.010	1.857		Pass					
5.323	150.7	5.383	152.4	5.347	1.011	1.857		Pass					
				Average	1.010	1.857		Pass	Pass	Pass	Pass	Pass	Pass

Average Yd: 1.002 dH@: 1.767
Q @ dH = 1: 0.564

SIGNED: Signature on File

Date

4/13/2018



DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: 18-WCS
 Readout Description: Control Box
 Date: 7/2/2018
 Performed By: JG/DA/RH

Calibrated Thermocouple ID: TC-CAL
 T1 Reference Thermometer ID: 201100
 T2 Reference Thermometer ID: 805002770
 T3 Reference Thermometer ID: 805002803

T/C I.D.	Readout I.D.	T/C - Readout °F				Reference Thermometer °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
TC-CAL												
T3 (OIL)	18-WCS	360	360	360	360	359	359	359	359	1.0	0.1%	Pass
T2 (Boiling H ₂ O)	18-WCS	208	208	208	208	212	212	212	212	4.0	0.6%	Pass
T1 (Ice/Water)	18-WCS	30	30	30	30	32	32	32	32	2.0	0.4%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

Thermocouple Source Readings

T/C Source S/N		T/C - Readout °F				T/C Source °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T4 (~650 F)	S/N 106970	652	653	652	652	650	650	650	650	2.3	0.2%	Pass
T3 (~370 F)	S/N 106970	370	370	370	370	370	370	370	370	0.0	0.0%	Pass
T2 (~212 F)	S/N 106970	212	212	212	212	212	212	212	212	0.0	0.0%	Pass
T1 (~32 F)	S/N 106970	30	30	30	30	32	32	32	32	2.0	0.4%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

APPENDIX B

FACILITY CEMS DATA

Average Values Report
Generated: 8/21/2018 15:07

Company: City Of Anaheim
Plant: 3071 Miraloma Ave.,
City/St: Anaheim, CA, 92806
Source: unit1

Period Start: 8/21/2018 13:45
Period End: 8/21/2018 14:47
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average l_O2 %	Average l_NOXPPM ppm	Average l_NOX CORR ppm	Average l_NOX LBHR #/hr	Average #/MBTU	Average l_NOX LBMM #/MBTU	Average l_Gasflow kscfb	Average l_LOAD MW	Average l_STACKFLW kscfm	Average l_COPPM ppm	Average l_CO CORR ppm	Average l_CO LBHR #/hr
08/21/2018 13:45	14.45	2.30	2.10	3.85	0.0078	0.0078	470.2	49.71	232.2	3.06	2.80	3.11
08/21/2018 13:46	14.45	2.31	2.11	3.85	0.0078	0.0078	470.2	49.72	232.2	3.05	2.79	3.11
08/21/2018 13:47	14.45	2.31	2.11	3.85	0.0078	0.0078	470.2	49.74	232.2	3.05	2.79	3.11
08/21/2018 13:48	14.45	2.34	2.14	3.90	0.0079	0.0079	470.4	49.72	232.3	3.04	2.78	3.06
08/21/2018 13:49	14.45	2.36	2.16	3.95	0.0080	0.0080	470.1	49.72	232.2	3.05	2.79	3.11
08/21/2018 13:50	14.44	2.38	2.17	3.95	0.0080	0.0080	470.2	49.72	231.9	3.04	2.78	3.06
08/21/2018 13:51	14.43	2.40	2.19	4.00	0.0081	0.0081	470.3	49.72	231.6	3.02	2.75	3.06
08/21/2018 13:52	14.42	2.43	2.21	4.05	0.0082	0.0082	470.5	49.74	231.3	3.02	2.75	3.06
08/21/2018 13:53	14.42	2.44	2.22	4.05	0.0082	0.0082	470.6	49.73	231.3	2.99	2.72	3.01
08/21/2018 13:54	14.43	2.47	2.25	4.08	0.0083	0.0083	468.5	49.54	230.7	2.95	2.69	2.98
08/21/2018 13:55	14.43	2.50	2.28	4.10	0.0084	0.0084	464.9	49.03	228.9	2.96	2.70	2.98
08/21/2018 13:56	14.54	2.47	2.29	4.08	0.0084	0.0084	462.1	48.67	231.5	3.11	2.89	3.15
08/21/2018 13:57	14.43	2.31	2.11	3.83	0.0078	0.0078	468.0	49.39	230.4	3.39	3.09	3.39
08/21/2018 13:58	14.43	2.08	1.90	3.44	0.0070	0.0070	468.5	49.42	230.7	3.32	3.03	3.34
08/21/2018 13:59	14.43	2.16	1.97	3.59	0.0073	0.0073	467.8	49.27	230.3	3.01	2.74	3.05
08/21/2018 14:00	14.43	2.47	2.25	4.08	0.0083	0.0083	467.7	49.29	230.3	2.86	2.61	2.90
08/21/2018 14:01	14.43	2.56	2.33	4.23	0.0086	0.0086	468.8	49.47	230.8	2.83	2.58	2.85
08/21/2018 14:02	14.42	2.63	2.39	4.34	0.0088	0.0088	470.2	49.62	231.2	2.82	2.57	2.86
08/21/2018 14:03	14.42	2.70	2.46	4.49	0.0091	0.0091	470.4	49.64	231.2	2.81	2.56	2.82
08/21/2018 14:04	14.41	2.75	2.50	4.54	0.0092	0.0092	470.4	49.64	230.9	2.81	2.55	2.82
08/21/2018 14:05	14.41	2.78	2.53	4.59	0.0093	0.0093	470.0	49.69	230.7	2.80	2.55	2.81
08/21/2018 14:06	14.41	2.77	2.52	4.59	0.0093	0.0093	470.3	49.70	230.8	2.81	2.55	2.81
08/21/2018 14:07	14.43	2.70	2.46	4.49	0.0091	0.0091	469.6	49.59	231.2	2.85	2.60	2.86
08/21/2018 14:08	14.42	2.60	2.37	4.30	0.0087	0.0087	470.5	49.70	231.3	2.94	2.68	2.96
08/21/2018 14:09	14.42	2.51	2.29	4.15	0.0084	0.0084	470.2	49.70	231.2	3.02	2.75	3.06
08/21/2018 14:10	14.43	2.45	2.23	4.05	0.0082	0.0082	470.2	49.65	231.5	3.08	2.81	3.11
08/21/2018 14:11	14.43	2.45	2.23	4.05	0.0082	0.0082	470.1	49.67	231.5	3.13	2.85	3.16
08/21/2018 14:12	14.44	2.44	2.23	4.05	0.0082	0.0082	469.9	49.67	231.7	3.18	2.90	3.21
08/21/2018 14:13	14.45	2.43	2.22	4.05	0.0082	0.0082	469.9	49.65	232.1	3.12	2.85	3.16
08/21/2018 14:14	14.44	2.43	2.22	4.04	0.0082	0.0082	469.7	49.65	231.6	3.05	2.79	3.06
08/21/2018 14:15	14.43	2.42	2.21	4.00	0.0081	0.0081	469.9	49.68	231.4	3.00	2.74	3.01
08/21/2018 14:16	14.43	2.43	2.22	4.04	0.0082	0.0082	469.7	49.65	231.3	3.06	2.79	3.11
08/21/2018 14:17	14.43	2.43	2.22	4.05	0.0082	0.0082	469.8	49.65	231.3	3.10	2.83	3.11
08/21/2018 14:18	14.43	2.44	2.23	4.05	0.0082	0.0082	469.8	49.66	231.3	3.13	2.85	3.16
08/21/2018 14:19	14.43	2.44	2.23	4.04	0.0082	0.0082	469.7	49.66	231.3	3.16	2.88	3.21
08/21/2018 14:20	14.43	2.46	2.24	4.09	0.0083	0.0083	469.8	49.67	231.6	3.14	2.87	3.16
08/21/2018 14:21	14.44	2.48	2.27	4.09	0.0083	0.0083	469.7	49.66	231.6	3.15	2.88	3.21
08/21/2018 14:22	14.45	2.48	2.27	4.14	0.0084	0.0084	469.6	49.64	231.9	3.17	2.90	3.21
08/21/2018 14:23	14.44	2.48	2.27	4.09	0.0083	0.0083	469.8	49.66	231.7	3.21	2.93	3.26
08/21/2018 14:24	14.44	2.48	2.27	4.10	0.0084	0.0084	469.9	49.69	231.7	3.30	3.01	3.36
08/21/2018 14:25	14.44	2.49	2.27	4.14	0.0084	0.0084	469.9	49.69	231.7	3.30	3.01	3.36
08/21/2018 14:26	14.42	2.50	2.28	4.15	0.0084	0.0084	470.0	49.69	231.7	3.31	3.10	3.45
08/21/2018 14:27	14.43	2.51	2.29	4.14	0.0084	0.0084	469.9	49.68	231.4	3.51	3.20	3.55
08/21/2018 14:28	14.42	2.53	2.30	4.19	0.0085	0.0085	469.6	49.65	230.9	3.52	3.20	3.55
08/21/2018 14:29	14.42	2.52	2.29	4.19	0.0085	0.0085	469.8	49.65	231.0	3.44	3.13	3.45
08/21/2018 14:30	14.42	2.52	2.29	4.19	0.0085	0.0085	469.7	49.69	230.9	3.37	3.07	3.40
08/21/2018 14:31	14.42	2.53	2.30	4.19	0.0085	0.0085	469.6	49.65	230.9	3.42	3.11	3.45
08/21/2018 14:32	14.42	2.52	2.29	4.19	0.0085	0.0085	469.6	49.66	230.9	3.38	3.08	3.40
08/21/2018 14:33	14.43	2.51	2.29	4.14	0.0084	0.0084	469.7	49.65	231.3	3.28	2.99	3.30

1-NH3-41

Period Start:	Average l_O2 %	Average l_NOXPPM ppm	Average l_NOX_CORR ppm	Average l_NOX_LBHR #/hr	Average l_NOX_LBHM #/MBTU	Average l_GasFlow kscfb	Average l_LOAD MW	Average l_STACKFLOW kscfm	Average l_COPPM ppm	Average l_CO_CORR ppm	Average l_CO_LBHR #/hr
08/21/2018 14:34	14.43	2.51	2.29	4.14	0.0084	469.8	49.63	231.3	3.18	2.90	3.21
08/21/2018 14:35	14.43	2.51	2.29	4.14	0.0084	469.9	49.66	231.4	3.11	2.84	3.16
08/21/2018 14:36	14.43	2.50	2.28	4.14	0.0084	469.7	49.65	231.3	3.12	2.85	3.16
08/21/2018 14:37	14.43	2.51	2.29	4.14	0.0084	469.8	49.67	231.3	3.20	2.92	3.21
08/21/2018 14:38	14.43	2.51	2.29	4.14	0.0084	469.5	49.65	231.2	3.31	3.02	3.35
08/21/2018 14:39	14.43	2.52	2.30	4.19	0.0085	469.7	49.66	231.3	3.38	3.08	3.40
08/21/2018 14:40	14.42	2.52	2.29	4.19	0.0085	469.7	49.66	230.9	3.39	3.09	3.40
08/21/2018 14:41	14.42	2.51	2.29	4.14	0.0084	469.4	49.61	230.8	3.38	3.08	3.40
08/21/2018 14:42	14.42	2.50	2.28	4.14	0.0084	469.5	49.65	230.8	3.32	3.02	3.35
08/21/2018 14:43	14.42	2.49	2.27	4.14	0.0084	469.6	49.65	230.9	3.22	2.93	3.25
08/21/2018 14:44	14.42	2.48	2.26	4.09	0.0083	469.5	49.65	230.8	3.23	2.94	3.25
08/21/2018 14:45	14.43	2.47	2.25	4.09	0.0083	469.6	49.65	231.2	3.30	3.01	3.35
08/21/2018 14:46	14.43	2.48	2.26	4.09	0.0083	469.7	49.67	231.3	3.35	3.05	3.40
08/21/2018 14:47	14.43	2.49	2.27	4.14	0.0084	469.6	49.64	231.2	3.43	3.13	3.45
Daily Average*	14.43	2.48	2.26	4.11	0.0083	469.5	49.62	231.2	3.14	2.86	3.17
Maximum*	14.54	2.78	2.53	4.59	0.0093	470.6	49.74	232.3	3.52	3.20	3.55
08/21/2018	13:56	14:05	14:05	14:06	14:06	13:53	13:52	13:48	14:28	14:28	14:28
Minimum*	14.41	2.08	1.90	3.44	0.0070	462.1	48.67	228.9	2.80	2.55	2.81
08/21/2018	14:06	13:58	13:58	13:58	13:58	13:56	13:56	13:55	14:05	14:06	14:06

* Does not include Invalid Averaging Periods ("N/A")

2-NH3-41

Babcock & Wilcox Power Generation Group NetDAHS®

Average Values Report
Generated: 8/21/2018 16:59

Company: City Of Anaheim
Plant: 3071 Miraloma Ave...
City/St: Anaheim, CA, 92806
Source: unit1

Period Start: 8/21/2018 15:23
Period End: 8/21/2018 16:25
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average 1_O2 %	Average 1_NOXPPM ppm	Average 1_NOX CORR ppm	Average 1_NOX LBHR #/hr	Average 1_NOX LBMM #/MBTU	Average 1_GasFlow kscfh	Average 1_LOAD MW	Average 1_STACKFLOW kscfm	Average 1_COPPM ppm	Average 1_CO CORR ppm	Average 1_CO LBHR #/hr
08/21/2018 15:23	14.43	2.49	2.27	4.14	0.0084	469.4	49.60	231.1	3.27	2.98	3.30
08/21/2018 15:24	14.43	2.49	2.27	4.14	0.0084	469.6	49.59	231.2	3.19	2.91	3.21
08/21/2018 15:25	14.43	2.49	2.27	4.14	0.0084	469.6	49.61	231.2	3.13	2.85	3.16
08/21/2018 15:26	14.43	2.50	2.28	4.14	0.0084	469.4	49.59	231.1	3.14	2.86	3.15
08/21/2018 15:27	14.43	2.52	2.30	4.19	0.0085	469.7	49.61	231.3	3.16	2.88	3.21
08/21/2018 15:28	14.42	2.53	2.30	4.19	0.0085	469.5	49.60	230.8	3.16	2.88	3.20
08/21/2018 15:29	14.42	2.53	2.30	4.19	0.0085	469.8	49.60	231.0	3.23	2.94	3.26
08/21/2018 15:30	14.42	2.53	2.30	4.19	0.0085	469.6	49.62	230.9	3.26	2.97	3.30
08/21/2018 15:31	14.42	2.52	2.29	4.19	0.0085	469.6	49.60	230.9	3.19	2.90	3.21
08/21/2018 15:32	14.42	2.50	2.28	4.14	0.0084	469.3	49.60	230.7	3.14	2.86	3.15
08/21/2018 15:33	14.42	2.49	2.27	4.14	0.0084	469.4	49.62	230.8	3.19	2.90	3.20
08/21/2018 15:34	14.43	2.48	2.26	4.09	0.0083	469.4	49.59	231.1	3.26	2.97	3.30
08/21/2018 15:35	14.43	2.49	2.27	4.14	0.0084	469.5	49.60	231.2	3.24	2.95	3.25
08/21/2018 15:36	14.43	2.50	2.28	4.14	0.0084	469.5	49.59	231.2	3.20	2.92	3.20
08/21/2018 15:37	14.43	2.49	2.27	4.14	0.0084	469.5	49.62	231.2	3.20	2.92	3.20
08/21/2018 15:38	14.43	2.49	2.27	4.14	0.0084	469.4	49.63	231.1	3.27	2.98	3.30
08/21/2018 15:39	14.43	2.50	2.28	4.14	0.0084	469.4	49.63	231.0	3.26	2.97	3.30
08/21/2018 15:40	14.43	2.50	2.28	4.14	0.0084	469.1	49.60	231.0	3.24	2.95	3.25
08/21/2018 15:41	14.42	2.50	2.28	4.14	0.0084	469.6	49.63	230.9	3.24	2.95	3.25
08/21/2018 15:42	14.42	2.51	2.29	4.14	0.0084	469.8	49.63	231.0	3.27	2.98	3.31
08/21/2018 15:43	14.41	2.52	2.29	4.14	0.0084	469.7	49.62	230.6	3.38	3.07	3.40
08/21/2018 15:44	14.41	2.54	2.31	4.19	0.0085	469.7	49.63	230.6	3.48	3.16	3.50
08/21/2018 15:45	14.42	2.55	2.32	4.24	0.0086	469.5	49.63	230.8	3.43	3.12	3.45
08/21/2018 15:46	14.42	2.56	2.33	4.24	0.0086	469.5	49.63	230.8	3.31	3.01	3.35
08/21/2018 15:47	14.42	2.55	2.32	4.24	0.0086	469.8	49.62	231.0	3.25	2.96	3.26
08/21/2018 15:48	14.42	2.53	2.30	4.19	0.0085	469.7	49.62	230.9	3.34	3.04	3.35
08/21/2018 15:49	14.43	2.51	2.29	4.14	0.0084	469.6	49.63	231.2	3.37	3.07	3.40
08/21/2018 15:50	14.42	2.50	2.28	4.14	0.0084	469.3	49.63	230.7	3.40	3.10	3.40
08/21/2018 15:51	14.42	2.50	2.28	4.14	0.0084	469.4	49.63	230.8	3.47	3.16	3.50
08/21/2018 15:52	14.42	2.51	2.29	4.14	0.0084	469.5	49.63	230.8	3.52	3.20	3.55
08/21/2018 15:53	14.42	2.51	2.29	4.14	0.0084	469.6	49.63	230.9	3.47	3.16	3.50
08/21/2018 15:54	14.42	2.51	2.29	4.14	0.0084	469.3	49.58	230.7	3.41	3.10	3.45
08/21/2018 15:55	14.43	2.50	2.28	4.13	0.0084	467.9	49.45	230.4	3.35	3.05	3.39
08/21/2018 15:56	14.43	2.48	2.26	4.07	0.0083	467.0	49.35	230.0	3.35	3.05	3.38
08/21/2018 15:57	14.48	2.41	2.21	4.00	0.0082	464.2	49.01	230.3	3.48	3.20	3.51
08/21/2018 15:58	14.54	2.33	2.16	3.86	0.0080	460.0	48.55	230.4	3.68	3.41	3.72
08/21/2018 15:59	14.47	2.18	2.00	3.66	0.0074	470.6	49.65	233.1	3.95	3.62	4.00
08/21/2018 16:00	14.42	2.01	1.83	3.21	0.0067	471.0	49.78	231.6	3.84	3.50	3.86
08/21/2018 16:01	14.42	1.95	1.78	3.21	0.0065	470.2	49.70	231.2	3.50	3.19	3.51
08/21/2018 16:02	14.41	2.61	2.37	4.30	0.0087	471.1	49.73	231.3	3.18	2.89	3.22
08/21/2018 16:03	14.42	2.72	2.48	4.49	0.0091	469.9	49.65	231.0	3.15	2.87	3.16
08/21/2018 16:04	14.42	2.78	2.53	4.58	0.0093	469.4	49.60	230.8	3.18	2.90	3.20
08/21/2018 16:05	14.42	2.83	2.58	4.69	0.0095	470.5	49.69	231.3	3.20	2.91	3.21
08/21/2018 16:06	14.40	2.77	2.51	4.60	0.0093	471.4	49.77	231.0	3.23	2.93	3.27
08/21/2018 16:07	14.40	2.74	2.49	4.56	0.0092	471.7	49.79	231.2	3.13	2.84	3.17
08/21/2018 16:08	14.41	2.77	2.52	4.60	0.0093	471.0	49.75	231.2	3.02	2.75	3.07
08/21/2018 16:09	14.42	2.77	2.52	4.60	0.0093	470.8	49.71	231.4	3.01	2.74	3.02
08/21/2018 16:10	14.41	2.71	2.46	4.50	0.0091	471.2	49.74	231.3	3.05	2.77	3.07
08/21/2018 16:11	14.42	2.65	2.41	4.39	0.0089	470.3	49.65	231.2	3.05	2.78	3.06

2-24H3-01

Period Start:	Average 1_O2 %	Average 1_NOXPPM ppm	Average 1_NOX CORR ppm	Average 1_NOX LBHR #/hr	Average 1_NOX LBMM #/MBTU	Average 1_GasFlow kscfh	Average 1_LOAD MW	Average 1_STACKFLW kscfm	Average 1_COPEM ppm	Average 1_CO CORR ppm	Average 1_CO LBHR #/hr
08/21/2018 16:12	14.43	2.61	2.38	4.35	0.0088	470.6	49.68	231.7	3.03	2.76	3.06
08/21/2018 16:13	14.44	2.56	2.34	4.24	0.0086	469.3	49.59	231.4	3.03	2.77	3.06
08/21/2018 16:14	14.44	2.50	2.28	4.14	0.0084	468.9	49.52	231.2	3.09	2.82	3.10
08/21/2018 16:15	14.44	2.42	2.21	3.99	0.0081	468.6	49.50	231.1	3.15	2.88	3.20
08/21/2018 16:16	14.44	2.35	2.15	3.89	0.0079	468.8	49.52	231.2	3.22	2.94	3.25
08/21/2018 16:17	14.44	2.31	2.11	3.84	0.0078	468.8	49.51	231.2	3.25	2.97	3.30
08/21/2018 16:18	14.43	2.30	2.10	3.79	0.0077	468.7	49.53	230.8	3.25	2.96	3.25
08/21/2018 16:19	14.44	2.30	2.10	3.79	0.0077	468.6	49.50	231.1	3.24	2.96	3.25
08/21/2018 16:20	14.44	2.33	2.13	3.84	0.0078	468.5	49.52	231.0	3.23	2.95	3.25
08/21/2018 16:21	14.45	2.37	2.17	3.94	0.0080	468.7	49.51	231.5	3.22	2.95	3.25
08/21/2018 16:22	14.45	2.40	2.20	3.98	0.0081	468.5	49.51	231.4	3.22	2.95	3.25
08/21/2018 16:23	14.45	2.42	2.21	4.03	0.0082	468.5	49.50	231.4	3.22	2.95	3.25
08/21/2018 16:24	14.45	2.45	2.24	4.08	0.0083	468.6	49.50	231.4	3.24	2.96	3.25
08/21/2018 16:25	14.45	2.46	2.25	4.08	0.0083	468.7	49.48	231.5	3.26	2.98	3.30
Daily Average*	14.43	2.50	2.28	4.14	0.0084	469.3	49.58	231.1	3.27	2.98	3.30
Maximum*	14.54	2.83	2.58	4.69	0.0095	471.7	49.79	233.1	3.95	3.62	4.00
08/21/2018	15:58	16:05	16:05	16:05	16:05	16:07	16:07	15:59	15:59	15:59	15:59
Minimum*	14.40	1.95	1.78	3.21	0.0065	460.0	48.55	230.0	3.01	2.74	3.02
08/21/2018	16:07	16:01	16:01	16:01	16:01	15:58	15:58	15:56	16:09	16:09	16:09

* Does not include Invalid Averaging Periods ("N/A")

APPENDIX C

CALCULATIONS

APPENDIX C.1

GENERAL EMISSIONS CALCULATIONS

GENERAL EMISSION CALCULATIONS

I. Stack Gas Velocity

A. Stack gas molecular weight, lb/lb-mole

$$MW_{dry} = 0.44 * \%CO_2 + 0.32 * \%O_2 + 0.28 * \%N_2$$

$$MW_{wet} = MW_{dry} * (1 - B_{wo}) + 18 * B_{wo}$$

B. Absolute stack pressure, iwg

$$Ps = Pbar + \frac{Psg}{13.6}$$

C. Stack gas velocity, ft/sec

$$V_s = 2.9 * C_p * \sqrt{\Delta P} * \sqrt{T_s} * \sqrt{\frac{29.92 * 28.95}{P_s * MW_{wet}}}$$

II. Moisture

A. Sample gas volume, dscf

$$V_{mstd} = 0.03342 * V_m * (P_{bar} + \frac{\Delta H}{13.6}) * \frac{T_{ref}}{T_m} * Y_d$$

B. Water vapor volume, scf

$$V_{wstd} = 0.0472 * V_{lc} * \frac{T_{ref}}{528 ^\circ R}$$

C. Moisture content, dimensionless

$$B_{wo} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

III. Stack gas volumetric flow rate

A. Actual stack gas volumetric flow rate, wacfm

$$Q = V_s * A_s * 60$$

B. Standard stack gas flow rate, dscfm

$$Q_{sd} = Q * (1 - B_{wo}) * \frac{T_{ref}}{T_s} * \frac{P_s}{29.92}$$

IV. Gaseous Mass Emission Rates, lb/hr

$$M = \frac{\text{ppm} * MW_i * Q_{sd} * 60}{SV * 10^6}$$

V. Emission Rates, lb/MMBtu

$$\frac{\text{lb}}{\text{MMBtu}} = \frac{\text{ppm} * MW_i * F}{SV * 10^6} * \frac{20.9}{20.9 - \%O_2}$$

6. Percent Isokinetic

$$I = \frac{17.32 * T_s (V_m \text{ std})}{(1 - B_w) * 0 * V_s * P_s * D_n^2} * \frac{528^\circ R}{T_{ref}}$$

7. Particulate emissions

a) Grain loading, gr/dscf

$$C = 0.01543 (M_n / V_m \text{ std})$$

b) Grain loading at 12% CO₂, gr/dscf

$$C_{12\% \text{ CO}_2} = C (12 / \% \text{ CO}_2)$$

c) Mass emissions, lb/hr

$$M = C * Q_{sd} * (60 \text{ min/hr}) / (7000 \text{ gr/lb})$$

d) Particulate emission factor

$$\text{lb} / 10^6 \text{ Btu} = C * \frac{1 \text{ lb}}{7000 \text{ gr}} * F * \frac{20.9}{20.9 - \%O_2}$$

Nomenclature:

A _s	= stack area, ft ²
B _{wo}	= flue gas moisture content, dimensionless
C _{12%CO₂}	= particulate grain loading, gr/dscf corrected to 12% CO ₂
C	= particulate grain loading, gr/dscf
C _p	= pitot calibration factor, dimensionless
D _n	= nozzle diameter, in.
F	= fuel F-Factor, dscf/MMBtu @ 0% O ₂
H	= orifice differential pressure, iwg
I	= % isokinetics
M _n	= mass of collected particulate, mg
M _i	= mass emission rate of specie i, lb/hr
MW	= molecular weight of flue gas, lb/lb-mole
M _{wi}	= molecular weight of specie i: SO ₂ : 64 NO _x : 46 CO: 28 HC: 16
0	= sample time, min.
ΔP	= average velocity head, iwg = $(\sqrt{\Delta P})^2$
P _{bar}	= barometric pressure, inches Hg
P _s	= stack absolute pressure, inches Hg
P _{sg}	= stack static pressure, iwbg
Q	= wet stack flow rate at actual conditions, wacfm
Q _{sd}	= dry standard stack flow rate, dscfm
SV	= specific molar volume of an ideal gas at standard conditions, ft ³ /lb-mole
T _m	= meter temperature, °R
T _{ref}	= reference temperature, °R
T _s	= stack temperature, °R
V _s	= stack gas velocity, ft/sec
V _{lc}	= volume of liquid collected in impingers, ml
V _m	= uncorrected dry meter volume, dcf
V _{mstd}	= dry meter volume at standard conditions, dscf
V _{wstd}	= volume of water vapor at standard conditions, scf
Y _d	= meter calibration coefficient

APPENDIX C.2

SPREADSHEET SUMMARIES

SCAQMD 207.1 EXAMPLE CALCULATION **TEST NUMBER: 1-NH3-U1**

Identifier	Description	Units	Equation	Value
A	Reference Temperature	F	--	60
B	Reference Temperature	R	$A + 460$	520
C	Meter Calibration Factor (Yd)	--	--	1.002
D	Barometric Pressure	" Hg	--	29.73
E	Meter Volume	acf	--	42.406
F	Meter Temperature	F	--	87.2
G	Meter Temperature	R	$F + 460$	547.2
H	Delta H	" H ₂ O	--	1.5
I	Meter Volume (standard)	dscf	$0.03342 * E * (D + H/13.6) * B/G * C$	40.268
J	Liquid Collected	grams	--	119.1
K	Water vapor volume	scf	$0.0472 * J * B/528$	5.536
L	Moisture Content	--	$K/(K + I)$	0.121
M	Gas Constant	ft-lbf/lb-mole-R	--	1545.33
N	Specific Molar Volume	SCF/lb-mole	$385.3 * B / 528$	379.5
O	F-Factor	dscf/MMBtu	--	8,710
P	HHV	Btu/SCF	--	1,050
Q	Mass Conversion Factor	lb/ug	--	2.2046E-09
R	O ₂ Correction Factor	--	--	15
S	Stack Flow Rate @ 68 F	dscfm	--	231,200
T	Stack Flow Rate @ Tref	dscfm	$S * B/528$	227,697
U	Mass NH ₃	ug	--	1.963
V	Mass NH ₃	lb	$U * Q$	4.33E-06
W	MW of NH ₃	lb/lb-mole	--	17.03
X	NH ₃	ppm	$(V * N * 10^6)/(I * W)$	2.4
Y	Flue Gas O ₂	%	--	14.43
Z	NH ₃	ppmc	$X * (20.9 - R)/(20.9 - Y)$	2.2
AA	NH ₃	lb/hr	$X * T * W * 60/(N * 10^6)$	1.5
AB	NH ₃	lb/MMBtu	$(X * W * O)/(385.3 * 10^6) * 20.9/(20.9 - Y)$	0.003
AC	NH ₃	lb/MMSCF	$AB * P$	3.1

Note:

(1) Some values may be slightly different from those shown on the run sheets due to round off errors. This page is intended to show the calculation methodology only.

SCAQMD METHOD 207.1 DATA WORKSHEET AND SUMMARY

Facility.....	Canyon		Parameter.....	NH₃	
Unit.....	U1		Fuel.....	Natural gas	
Sample Location.....	Stack		Data By.....	SD	
Test Number.....	1-NH3-U1	2-NH3-U1	Average	Maximum	Limit
Reference Temperature (°F).....	60	60			
Test Date.....	8/21/2018	8/21/2018			
Test Method.....	SCAQMD 207.1	SCAQMD 207.1			
Sample Train.....	18-WCS	18-WCS			
Meter Calibration Factor.....	1.002	1.002			
Stack Area (ft ²).....	106.90	106.90			
Sample Time (Minutes).....	60	60			
Barometric Pressure ("Hg).....	29.73	29.73			
Start/Stop Time.....	1345/1448	1523/1626			
Meter Volume (acf).....	42.406	40.626			
Meter Temperature (°F).....	87.2	89.4			
Meter Pressure (iwg).....	1.5	1.5			
Liquid Volume (ml).....	119.1	111.0			
Stack O ₂ (%).....	14.43	14.43	14.43	(from facility CEMS)	
Unit Load (MW).....	50.0	50.0	50.0		
Standard Sample Volume (SCF).....	40.268	38.423			
Moisture Fraction.....	0.121	0.118			
Stack Flow Rate (dscfm, 68 °F).....	231.200	231.100	231,150	(from facility CEMS)	
Stack Flow Rate (@ Tref).....	227,697	227,598	227,648		
Gas Constant (ft-lbf/lb-mole-R).....	1545.33	1545.33			
Molecular Weight NH ₃ (lb/lb-mole).....	17.03	17.03			
Specific Molar Volume (ft ³ /lb-mole).....	379.5	379.5			
F-Factor (dscf/MMBtu).....	8,710	8,710			
HHV(Btu/SCF).....	1,050	1,050			
Mass Conversion (lb/ug).....	2.2046E-09	2.2046E-09			
O ₂ Correction Factor (%).....	15	15			
Mass NH ₃ (ug).....	1,963	1,535			
Mass NH ₃ (lb).....	4.33E-06	3.38E-06			
NH ₃ (ppmv, flue gas).....	2.4	2.0	2.2	2.4	
NH ₃ (ppmv @ O ₂ Correction Factor).....	2.2	1.8	2.0	2.2	5
NH ₃ (lb/hr).....	1.5	1.2	1.3	1.5	
NH ₃ (lb/MMBtu).....	0.003	0.002	0.003	0.003	
NH ₃ (lb/MMSCF).....	3.1	2.6	2.8	3.1	

Note: SCAQMD Method 207.1 requires the higher of the duplicate runs be reported as the test result.

APPENDIX D

QUALITY ASSURANCE

APPENDIX D.1

QUALITY ASSURANCE PROGRAM SUMMARY

QUALITY ASSURANCE PROGRAM SUMMARY

As part of Montrose Air Quality Services, LLC (Montrose) ASTM D7036-04 certification, Montrose is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. Montrose quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: Montrose has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: Montrose has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of Montrose QA efforts. The manual is revised upon periodic review and as Montrose adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. Montrose training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the Montrose QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of Montrose emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: Montrose maintains current copies of EPA, ARB, and SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: Montrose maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to Montrose source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to Montrose office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

“Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, Montrose Air Quality Services, LLC (Montrose) personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, Montrose personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04. The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report.”

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, will be present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)

The following safety measures will be followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

TABLE 1
EQUIPMENT MAINTENANCE SCHEDULE

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero, span gas	As recommended by manufacturer	As recommended by manufacturer
Integrated sampling tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobile van sampling system	1. Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry.

TABLE 2
MAJOR SAMPLING EQUIPMENT CALIBRATION REQUIREMENTS

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	< 2% of analyzer range
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	< 5% of analyzer range
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	< 3% of analyzer range
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO _x Analyzer	Daily	NO ₂ -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	+/- 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	+/- 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	+/- 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	+/- 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	+/- 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for ΔH@	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	+/- 1.5%

Note: Calibration requirements will be used that meet applicable regulatory agency requirements.

APPENDIX D.2

SCAQMD AND STAC CERTIFICATIONS



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

October 4, 2017

Mr. John Peterson
Montrose Air Quality Services, LLC (MAQS-SNA, Delta, SCEC)
1631 E. Saint Andrew Place
Santa Ana, CA 92705

Subject: LAP Approval Notice
Reference # 96LA1220

Dear Mr. Peterson:

We have reviewed your renewal letter under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning September 30, 2017, and ending September 30, 2018 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 10.1 and 100.1	SCAQMD Methods 25.1 and 25.3 (Sampling)
USEPA CTM-030 and ASTM D6522-00	SCAQMD Rule 1121/ 1146.2 Protocol
SCAQMD Rule 1420/1420.1/1420.2 – (Lead) Source and Ambient Sampling	

Your LAP approval to perform nitrogen oxide emissions compliance testing for SCAQMD Rule 1121/ 1146.2 Protocols includes satellite facilities located at:

McKenna Boiler
1510 North Spring Street
Los Angeles, CA 90012

Noritz America Corp.
11160 Grace Avenue
Fountain Valley, CA 92708

Ajax Boiler, Inc.
2701 S. Harbor Blvd.
Santa Ana, CA 92704

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

A handwritten signature in black ink that reads 'D. Sarkar'.

Dipankar Sarkar
Program Supervisor
Source Test Engineering

DS:GK/gk

Attachment

171004 LapRenewalRev.doc

Cleaning the air that we breathe...



American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 5th day of March 2018.




President and CEO
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2020

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

APPENDIX D.3

INDIVIDUAL QI CERTIFICATE

CERTIFICATE OF COMPLETION

Sean Donovan

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

SCAQMD Method 207.1

Certificate Number: 002-2016-06

Tate Strickler

DATE OF ISSUE: 11/30/16

Tate Strickler, Accreditation Director

DATE OF
EXPIRATION: 11/30/21



APPENDIX E

APPLICABLE PERMIT SECTIONS



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 POWER GENERATION					
GAS TURBINE, NO. 1, NATURAL GAS, GENERAL ELECTRIC, MODEL LM6000PC SPRINT, SIMPLE CYCLE, 179 MMBTU/HR AT 46 DEG F, WITH INLET CHILLING, WITH WATER INJECTION WITH A/N: 555828	D1	C3	NOX: MAJOR SOURCE**	CO: 4 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]; CO: 2000 PPMV NATURAL GAS (5) [RULE 407, 4-2-1982]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 2005, 6-3-2011]; NOX: 25 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; PM10: 0.01 GRAINS/SCF NATURAL GAS (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; PM10: 1.67 LBS/HR NATURAL GAS (5C) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR NATURAL GAS (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SOX: 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A63.1, A99.1, A99.2, A99.3, A195.1, A195.2, A195.3, A327.1, B61.1, D12.1, D29.2, D29.3, D82.1, D82.2, E193.1, H23.1, I298.1, K40.1
GENERATOR, 50.95 MW					

- * (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 - POWER GENERATION					
CO OXIDATION CATALYST, NO. 1, BASE, 110 CUBIC FEET OF TOTAL CATALYST VOLUME A/N: 476654	C3	D1 C4			
SELECTIVE CATALYTIC REDUCTION, NO. 1, CORMETECH CMHT-21, 1012 CU.FT.; WIDTH: 2 FT 6 IN; HEIGHT: 25 FT 9 IN; LENGTH: 18 FT WITH A/N: 476654	C4	C3 S6		NH3: 5 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.4, D12.2, D12.3, D12.4, E179.1, E179.2, E193.1
AMMONIA INJECTION					
STACK, TURBINE NO. 1, HEIGHT: 86 FT ; DIAMETER: 11 FT 8 IN A/N: 555828	S6	C4			

- * (1) (1A) (1B) Denotes RECLAIM emission factor
(3) Denotes RECLAIM concentration limit
(5) (5A) (5B) Denotes command and control emission limit
(7) Denotes NSR applicability limit
(9) See App B for Emission Limits
(2) (2A) (2B) Denotes RECLAIM emission rate
(4) Denotes BACT emission limit
(6) Denotes air toxic control rule limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(10) See section J for NESHAP/MACT requirements
- ** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[Devices subject to this condition : C4, C10, C16, C22]

D12.5 The operator shall install and maintain a(n) non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

[**RULE 1110.2, 2-1-2008; RULE 1110.2, 9-7-2012; RULE 1303(b)(2)-Offset, 5-10-1996;**
RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1401, 9-10-2010; RULE 1470, 5-4-2012;
RULE 2012, 5-6-2005; 40CFR 60 Subpart III, 1-30-2013]

[Devices subject to this condition : D25]

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR serving this equipment



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

The test(s) shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter. The AQMD shall be notified of the date and time of the test at least 10 days prior to the test.

If the turbine is not in operation during one calendar year, then no testing is required during that calendar year.

The NO_x concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NO_x emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted and the results submitted to the District within 60 days after the test date.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration limit.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D1, D7, D13, D19]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Sampling Time	Test Location
SOX emissions	AQMD Laboratory Method 307-91	Not Applicable	Fuel sample
VOC emissions	District Method 25.3	1 hour	Outlet of the SCR serving this equipment
PM emissions	District method 5.1	4 hours	Outlet of the SCR serving this equipment

THIS IS THE LAST PAGE OF THIS DOCUMENT

If you have any questions, please contact one of the following individuals by email or phone.

Name: Mr. Sean Donovan
Title: Filed Project Manager
Region: Southwest
E-Mail: SDonovan@montrose-env.com
Phone: (714) 279-6777

Name: Mr. Matt McCune
Title: Regional Vice President
Region: Southwest
E-Mail: MMccune@montrose-env.com
Phone: (714) 279-6777

**TEST REPORT FOR
AMMONIA SLIP TEST
AT CANYON POWER PLANT UNIT 2
FACILITY ID: 153992, DEVICE ID: D7**

Prepared For:

Canyon Power Plant
3071 E. Mira Loma Avenue
Anaheim, California 92806

For Submittal To:

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4178

Prepared By:

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, California 92705
(714) 282-8240

Sean Donovan

Test Date: **August 23, 2018**

Production Date: **September 6, 2018**

Report Number: **002AS-466620-RT-700**



CONFIDENTIALITY STATEMENT

Except as otherwise required by law or regulation, this information contained in this communication is intended exclusively for the individual or entity to which it is addressed. This communication may contain information that is proprietary, privileged or confidential or otherwise legally exempt from disclosure. If you are not the named addressee, you are not authorized to read, print, retain, copy, or disseminate this message or any part of it.

REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature: Sean Donovan Date: 9/6/2018

Name: Sean Donovan Title: Filed Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: Matt McCune Date: 9/6/2018

Name: Matt McCune Title: Regional Vice President

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1.0 INTRODUCTION AND SUMMARY

Montrose Air Quality Services, LLC (MAQS) was contracted by the Canyon Power Plant to perform an ammonia slip test at Unit 2 as required by the facility Permit (Facility ID 153992) Condition Number D29.2. This report documents the results of the ammonia slip tests performed on August 23, 2018. The test was performed by Sean Donovan, Danny Avila, and Robert Howard. Sean Donovan was the on-site qualified individual for MAQS. Bertha Hernandez coordinated the test for Canyon Power Plant.

The test consisted of duplicate ammonia tests performed at 50 MW. The test program followed the procedures described in the initial compliance test protocol (MAQS document R038842). The results of the test are summarized in Table 1-1. The table shows that the ammonia slip from this unit was less than the permitted limit of 5 ppm corrected to 15% O₂.

**TABLE 1-1
AMMONIA SLIP TEST RESULTS SUMMARY
CANYON POWER PLANT UNIT 2
AUGUST 23, 2018**

Parameter	Units	Result ⁽¹⁾	Limit
NH ₃	ppm	2.1	--
NH ₃	ppmc	1.9	5

(1) Maximum of duplicate runs, as required by SCAQMD Method 207.1

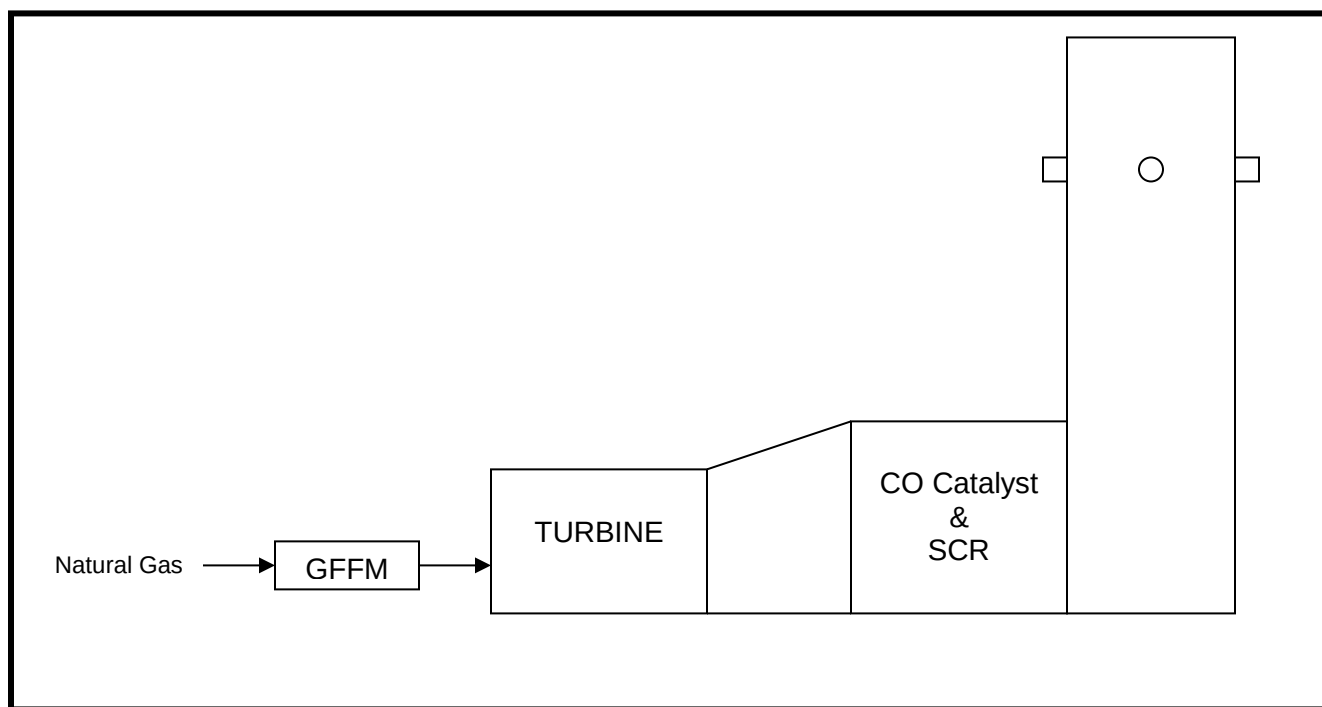
Section 2 of this document provides a brief description of the unit, test conditions, sample location, and CEMS. Details of the test procedures are provided in Section 3. Section 4 provides the results of each individual test. All raw data, calculations, quality assurance data, unit operating conditions, and CEMS data are provided in the appendices.

2.0 UNIT AND CEMS DESCRIPTION

2.1 UNIT DESCRIPTION

The City of Anaheim Canyon Power Plant is located at 3071 E. Mira Loma Avenue, Anaheim, California 92806. The facility consists of four identical generating units. Each unit consists of a natural gas fired, GE Model LM6000PC Sprint simple cycle, gas turbine. The units are natural gas fired with a rated heat input of 479 MMBtu per hour at 46 degrees Fahrenheit, with water injection. The units are equipped with a CO catalyst and Selective Catalytic Reduction (SCR) system for NO_x control. Figure 2-1 presents a block diagram of the unit.

**FIGURE 2-1
UNIT BLOCK DIAGRAM
CANYON POWER PLANT**



Stack Inside Diameter:	11 feet, 8 inches
Distance from Upstream Disturbance:	23 feet, 4 inches (2.0 Diameters)
Distance from Stack Exit:	16 feet, 6 inches (1.4 Diameters)

2.2 TEST CONDITIONS

The tests were performed with the unit operating at an average load of 50 MW. Tests were performed while the unit was firing natural gas and operating under normal conditions. Unit operation was established by the Canyon Power Plant operators.

2.3 SAMPLE LOCATION

The measurements were made from sample ports located on the exhaust stack. There are four sample ports equally spaced at this location. The stack inside diameter at the sample plane is 11 feet, 8 inches. The sample ports are located 23 feet, 4 inches (2.0 diameters) downstream of the nearest flow disturbance and 16 feet, 6 inches (1.4 diameters) from the stack exit.

3.0 TEST DESCRIPTION

Flue gas samples were collected non-isokinetically using a SCAQMD Method 207.1 sample train. The samples were collected using a 12-point traverse at the exhaust stack location. Each test was performed over a 60 minute interval. The sample gas was drawn through a glass probe, Teflon sample line, two impingers each containing 100 ml of 0.1N H₂SO₄, an empty impinger, an impinger containing silica gel, and a dry gas meter. The optional nozzle and filter were not used since the source is natural gas fired. The contents of the sample line and the first three impingers were recovered and analyzed by SCAQMD Method 207.1 for ammonia concentration by Ion Specific Electrode analysis.

Stack O₂ and NO_x concentrations and stack volumetric flow rate data were recorded from the Continuous Emission Monitoring System (CEMS) which is installed on the unit. These data were used to correct the ammonia concentration to 15% O₂.

4.0 TEST RESULTS AND OVERVIEW

4.1 TEST RESULTS

The results of the test are summarized in Table 4-1. The results show that the ammonia slip was 1.9 ppm @ 15% O₂ which is less than the permitted limit of 5 ppm @ 15% O₂.

**TABLE 4-1
AMMONIA SLIP TEST RESULTS
CANYON POWER PLANT UNIT 2
AUGUST 23, 2018**

Parameter	Units	Run 1	Run 2	Average	Maximum ⁽¹⁾	Limit
Test		1-NH ₃ -U2	2-NH ₃ -U2			--
Date		8/23/2018	8/23/2018			--
Time		1208/1311	1346/1449			--
O ₂ ⁽²⁾	%	14.60	14.58	14.59	--	--
Stack Flow ⁽²⁾	dscfm @ T _{ref}	230,455	229,864	230,159	--	--
NO _x ⁽²⁾	ppmc	2.3	2.3	2.3	--	2.5
NH ₃	ppm	2.1	1.9	2.0	2.1	--
NH ₃	ppmc	1.9	1.8	1.9	1.9	5
NH ₃	lb/hr	1.3	1.2	1.2	1.3	--
NH ₃	lb/MMBtu	0.003	0.002	0.003	0.003	--
NH ₃	lb/MMSCF	2.8	2.5	2.6	2.8	--

1) Maximum of duplicate test runs, as required by SCAQMD Method 207.1

2) From facility CEMS

APPENDIX A

RAW DATA

APPENDIX A.1

SAMPLE DATA SHEETS



WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: Canyon
LOCATION: Unit 2
DATE: 8/23/18
RUN NO: 1-1113 (4-5 runs)
OPERATOR: DA/ELH
METER BOX NO: 18-WCS
METER ΔH@: 1.767
METER Yd: 1002
STACK AREA, FT²:
TRAVERSE POINTS, MIN/POINT: 5/12
ΔH= X ΔP:
Probe Condition, pre/post test: Good/Good
Silica Gel Expanded, Y/N: N
Filter Condition after Test: N/A
Check Weight: 500.3 / 500.0

AMBIENT TEMPERATURE: ~80
BAROMETRIC PRESSURE: 29.74
ASSUMED MOISTURE: -12%
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 91655
PROBE LENGTH: 7'
NOZZLE ID NO/MATERIAL: N/A
NOZZLE DIAMETER: N/A
FILTER NO/TYPE: N/A
PRE-TEST LEAK RATE: 6005 CFM@ 14 in. Hg.
POST-TEST LEAK RATE: 6005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST:
CHAIN OF CUSTODY: SAMPLE CUSTODIAN JG
SAMPLER DA/ELH
SAMPLE CUSTODIAN JG

Imp. # Contents Post-Test - Pre-Test = Difference
1 H₂SO₄ 99.1 724.3
2 H₂SO₄ 734.1 730.0
3 mt 609.6 607.9
4 SB 964.0 954.5
LR φ 100
Total: _____

Point	Time	Meter Volume, ft ³	ΔP in. H ₂ O	ΔH in. H ₂ O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In Out	Vacuum in. Hg.	O ₂ %	P. static in. H ₂ O
1	1208	670.400		1.5		N/A	N/A	58	82 82	7		-1.82
2	1218	674.410						58	82 81	7		
END	1218	677.900						57				
3	1224	681.414							83 82	7		
2	1229	684.960						57	84 82	7		
1	1234	688.525						57	84 82	7		
END	1239	692.030										
3	1245	695.615						56	83 82	6		
2	1250	699.040						55	85 83	6		
END	1255	702.575										
3	1256	702.575							84 82	6		
2	1301	704.035						57	85 83	6		
1	1306	709.520						57	85 83	6		
END	1311	713.016										
Average:												

Comments: _____



WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: Canyon
LOCATION: Unit 2
DATE: 8/23/18
RUN NO: NH3 (runs 637)
OPERATOR: DA/ELH
METER BOX NO: 181053
METER ΔH@: 1.767
METER Yd: 1.002
STACK AREA, FT²:
TRAVERSE POINTS, MIN/POINT: 5/12
ΔH= X ΔP
Probe Condition, pre/post test: Good/Good
Silica Gel Expanded, Y/N: N
Filter Condition after Test: NH
Check Weight: 500.3/500.0

AMBIENT TEMPERATURE: 29.721
BAROMETRIC PRESSURE: 29.721
ASSUMED MOISTURE: 0.81
PITOT TUBE COEFF, Cp: 0.81
PROBE ID NO/MATERIAL: Glass
PROBE LENGTH: 7'
NOZZLE ID NO/MATERIAL: NA
NOZZLE DIAMETER: NA
FILTER NO/TYPE: NA
PRE-TEST LEAK RATE: LO-005 CFM@ 16 in. Hg.
POST-TEST LEAK RATE: LO-005 CFM@ 14 in. Hg.
PITOT LEAK CHECK - PRE: POST:
CHAIN OF CUSTODY: SAMPLE CUSTODIAN JG
SAMPLER JGR
SAMPLE CUSTODIAN JG

Imp. # Contents Post-Test - Pre-Test = Difference
1 H₂SO₄ 898.0 716.66
2 H₂SO₄ 751.0 741.02
3 NH₃ 557.0 556.4
4 SB 931.0 918.0
NR Ø 100
Total:

Point	Time	Meter Volume, ft ³	ΔP in. H ₂ O	ΔH in. H ₂ O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In Out	Vacuum in. Hg.	O ₂ %	P. static in. H ₂ O
3	1346	714.800		1.5		14.14	14.14	57	84 83	6		-1.82
2	1351	718.245						57	85 83	6		
1	1356	721.715						57	85 83	6		
END	1401	725.154										
3	1402	725.154						57	85 83	6		
2	1407	728.675						56	86 84	6		
1	1412	732.145						56	87 84	6		
END	1417	735.611										
3	1418	735.611						55	87 85	6		
2	1423	739.120						56	88 84	6		
1	1428	742.560						56	88 84	6		
END	1433	745.995										
3	1434	745.995						57	88 84	6		
2	1439	749.455						56	88 84	6		
1	1444	752.860						57	88 84	6		
END	1449	756.324										
Average:												

Comments: _____

APPENDIX A.2

LABORATORY DATA

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS

Project #: _____ District Method: SCAQMD 207.1 Sample Date: 8/23/18
 Client/Location: Canyon Calibration Date: 8/23/18 Analysis Date: 8/23/18
 Sample Location: Unit 2 Calibration Curve: -57.9515x + 111.7515 Analyst's Initials: JG
 Test #'s: -NH₃ R²: 0.9999

Sample	Electrode Potential (mV)	TV (ml)	Conc. $\mu\text{g NH}_3 - \text{N / ml}$	Cavg ($\mu\text{g NH}_3 - \text{N / ml}$)	$\mu\text{g NH}_3 / \text{sample}$	Room Temperature
Standard Check: <u>28</u> $\mu\text{g NH}_3/\text{ml}$	<u>26.4</u>		<u>29.704</u>			<u>22</u>
						Percent Recovery: <u>NA</u>
<u>28 ppm</u>	<u>26.5</u>		<u>29.586</u>	<u>29.615</u>		
<u>1 -NH₃</u>	<u>87.3</u>	<u>533</u>	<u>2.642</u>			
<u>1 -NH₃</u>	<u>87.4</u>	<u>533</u>	<u>2.632</u>	<u>2.637</u>	<u>1708.3</u>	<u>pH 12, T=20°C</u>
<u>RB</u>	<u>206.3</u>		<u>0.023</u>			
<u>RB</u>	<u>206.5</u>		<u>0.023</u>	<u>0.0233</u>		
<u>DI H₂O</u>	<u>209.9</u>		<u>0.020</u>			
<u>DI H₂O</u>	<u>210.1</u>		<u>0.020</u>	<u>0.0202</u>		
<u>28 ppm</u>	<u>25.8</u>		<u>30.420</u>			
<u>28 ppm</u>	<u>25.8</u>		<u>30.420</u>	<u>30.420</u>		

Notes: Total volume of samples and standards used: 100
 Volume of pH adjusting ISA used in ml: 2
 Absorbing solution: H₂SO₄

Calculations: Conc. ($\mu\text{g NH}_3 - \text{N / ml}$) = $10^{(P-B)/M}$
 P = electrode potential, B = y-intercept and M = slope
 Cavg = average result of duplicate analyses ($\mu\text{g NH}_3 - \text{N / ml}$) = $(C1+C2)/2$
 $\mu\text{g NH}_3 / \text{sample} = \text{Cavg} \times 17.03 / 14.01 \times \text{TV}$
 $\text{mg / sample} = \mu\text{g / sample} \div 1000$
 $\text{ppm NH}_3 = \text{mg NH}_3/\text{sample} \times 1/\text{Vmstd} \times 1/454000 \times \text{SV}/17 \times 10^6$

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS CALCULATION

Client/ Location: Canyon
Sample Location: Unit 2
District Method: SCAOMD 207.1
Sample Date: 8/21/2018
Analysis Date: 8/21/2018
Analyst's Initials: JG
Calibration Curve: $y = -57.9515x + 111.7515$
 R^2 : 0.9999

Sample	P mV	Conc. $\mu\text{g NH}_3 / \text{ml as N}$	C avg as N	TV (ml)	C avg as NH_3	$\mu\text{g NH}_3 /$ sample
28 $\mu\text{g NH}_3 / \text{ml as N}$	26.4	29.704				
repeat 28 $\mu\text{g NH}_3 / \text{ml as N}$	26.5	29.586	29.645	NA	36.035	NA
1- NH_3	87.3	2.642				
repeat 1- NH_3	87.4	2.632	2.637	533	3.205	1708.330
Reagent Blank	206.3	0.023				
repeat Reagent Blank	206.5	0.023	0.0233	NA	0.028	NA
DI H ₂ O Blank	209.9	0.020				
Repeat DI H ₂ O Blank	210.1	0.020	0.0202	NA	0.025	NA
28 $\text{NH}_3 / \text{ml as N}$	25.8	30.420				
repeat 28 $\mu\text{g NH}_3 / \text{ml as N}$	25.8	30.420	30.420	NA	36.978	NA

Notes:

Measured Concentration of Ammonia (C) in $\mu\text{g NH}_3 / \text{ml as N}$

$$C = 10^{(P-B)/M}$$

P = electrode potential (mV), M=slope and B=intercept

Average Measured Ammonia Concentration (Cavg) = $(C1 + C2)/2$

where C1, C2 results from duplicate analyses ($\mu\text{g NH}_3 / \text{ml as N}$)

Cavg ($\mu\text{g NH}_3 / \text{ml as NH}_3$) = Cavg ($\mu\text{g NH}_3 / \text{ml as N}$) * 17.03/ 14.01

$\mu\text{g NH}_3 / \text{sample} = \text{Cavg} (\mu\text{g NH}_3 / \text{ml as NH}_3) * \text{TV}$

Used 100 ml of samples and standards with 2 ml ISA and constant stirring rate.
All solutions turned blue and remained blue with ISA unless otherwise indicated.
Sample PH and Temperatures can be found on the laboratory datasheet.

Maximum samples (including blanks) between 28 $\mu\text{g/ml}$ check standard is 5 samples analyzed in duplicate.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS QUALITY CONTROL

Client/ Location: Canyon
Sample Location: Unit 2
District Method: SCAQMD 207.1
Sample Date: 8/21/2018
Analysis Date: 8/21/2018
Analyst's Initials: JG

Sample	% recovery	RPD %	RPA %
28 ug NH ₃ / ml as N repeat 28 ug NH ₃ /ml as N	NA	0.40	5.874
1-NH ₃ repeat 1- NH ₃	NA	0.40	NA
Reagent Blank repeat Reagent Blank	NA	0.79	NA
DI H ₂ O Blank Repeat DI H ₂ O Blank	NA	0.79	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	0.00	8.644

Notes:

spike: 100 ml sample + 2 ml (1000 µg NH₃ / ml as N)

Matrix Spike Percent Recovery (%R)

%R = (C spike*0.104 - Csample*0.102)/2 *100

Cspike = average result of matrix spike (µg NH₃/ ml as N)

Relative Percent Difference (RPD) = (C1-C2)/ Cavg *100 (must be 5% or less)

Relative Percent Accuracy (RPA) (must be 10% or less)

RPA = (Cavg-theoretical value of standard)/ theoretical value of standard * 100

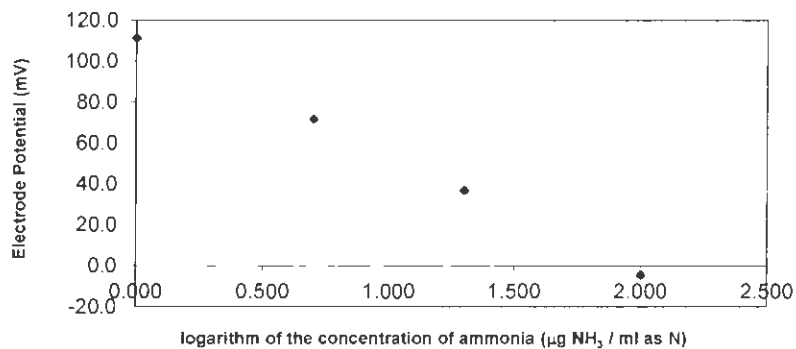
AMMONIA ELECTRODE CALIBRATION CURVE

NH ₃ concentration (µg NH ₃ / ml as N)	log NH ₃ concentration	Electrode potential	Sample Temperature (C)	Room Temperature (C)
1	0.000	111.4	20	22
5	0.699	71.6	20	22
20	1.301	36.7	20	22
100	2.000	-4.5	20	22

Ammonia Electrode Calibration Curve
8/23/2018

$$y = -57.9515x + 111.7515$$

$$R^2 = 0.9999$$



slope -57.9515
y-intercept 111.7515

Concentration (µg NH ₃ / ml as N)	Value LR line	Difference	% Difference
1	1.0141	0.0141	1.4063
5	4.9300	-0.0700	-1.4001
20	19.7276	-0.2724	-1.3619
100	101.3945	1.3945	1.3945

Calculation:

Regression Line: $P = M \cdot \log(\mu\text{g of NH}_3 / \text{ml as N}) + B$

Measured Concentration of Ammonia (C) in µg / ml NH₃ as N: $C = 10^{(P-B)/M}$

where P = electrode potential, M= slope (must be -57±3) and B= intercept

All standards were prepared in 0.04N H₂SO₄ and allowed to equilibrate to room temperature.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS

Project #: _____ District Method: SCAQMD 207.1 Sample Date: 8/23/18
 Client/Location: Canyon Calibration Date: 8/23/18 Analysis Date: 8/23/18
 Sample Location: Unit 2 Calibration Curve: -57.9515x + 111.07515 Analyst's Initials: JG
 Test #'s: -NH₃ R²: 0.9999

Sample	Electrode Potential (mV)	TV (ml)	Conc. $\mu\text{g NH}_3 - \text{N / ml}$	Cavg ($\mu\text{g NH}_3 - \text{N / ml}$)	$\mu\text{g NH}_3 / \text{sample}$	Room Temperature
Standard Check: <u>28</u> $\mu\text{g NH}_3 / \text{ml}$	<u>26.3</u>		<u>29.822</u>			<u>22</u>
						Percent Recovery: <u>106%</u>
<u>28 ppm</u>	<u>26.3</u>		<u>29.822</u>	<u>29.822</u>		
<u>2 - NH₃</u>	<u>89.8</u>	<u>524</u>	<u>2.392</u>			
<u>2 - NH₃</u>	<u>89.5</u>	<u>524</u>	<u>2.421</u>	<u>2.407</u>	<u>1532.8</u>	<u>pH < 7, T = 20°C</u>
<u>spike</u>	<u>33.5</u>		<u>22.402</u>			
<u>spike</u>	<u>32.6</u>		<u>23.218</u>	<u>22.810</u>		
<u>FB</u>	<u>212.8</u>	<u>355</u>	<u>0.018</u>			
<u>FB</u>	<u>213.5</u>	<u>355</u>	<u>0.018</u>	<u>0.0178</u>	<u>7.68</u>	<u>pH < 7, T = 20°C</u>
<u>28 ppm</u>	<u>25.7</u>		<u>30.541</u>			
<u>28 ppm</u>	<u>25.8</u>		<u>30.420</u>	<u>30.481</u>		

Notes: Total volume of samples and standards used: 100
 Volume of pH adjusting ISA used in ml: 2
 Absorbing solution: H₂SO₄

Calculations: Conc. ($\mu\text{g NH}_3 - \text{N / ml}$) = $10^{(P-B)/M}$
 P = electrode potential, B = y-intercept and M = slope
 Cavg = average result of duplicate analyses ($\mu\text{g NH}_3 - \text{N / ml}$) = $(C1+C2)/2$
 $\mu\text{g NH}_3 / \text{sample} = \text{Cavg} \times 17.03 / 14.01 \times \text{TV}$
 $\text{mg / sample} = \mu\text{g / sample} \div 1000$
 $\text{ppm NH}_3 = \text{mg NH}_3 / \text{sample} \times 1 / \text{Vmstd} \times 1 / 454000 \times \text{SV} / 17 \times 10^6$

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS CALCULATION

Client/ Location: Canyon
Sample Location: Unit 2
District Method: SCAQMD 207.1
Sample Date: 8/23/2018
Analysis Date: 8/23/2018
Analyst's Initials: JG
Calibration Curve: $y = -57.9515x + 111.7515$
 R^2 : 0.9999

Sample	P mV	Conc. $\mu\text{g NH}_3 / \text{ml as N}$	C avg as N	TV (ml)	C avg as NH_3	$\mu\text{g NH}_3 /$ sample
28 $\mu\text{g NH}_3 / \text{ml as N}$	26.3	29.822				
repeat 28 $\mu\text{g NH}_3 / \text{ml as N}$	26.3	29.822	29.822	NA	36.250	NA
2- NH_3	89.8	2.392				
repeat 2- NH_3	89.5	2.421	2.407	524	2.925	1532.831
spike 2- NH_3	33.5	22.402				
repeat spike	32.6	23.218	22.810	NA	27.727	NA
Field Blank	212.8	0.018				
repeat Field Blank	213.5	0.018	0.0178	355	0.022	7.679
28 $\text{NH}_3 / \text{ml as N}$	25.7	30.541				
repeat 28 $\mu\text{g NH}_3 / \text{ml as N}$	25.8	30.420	30.481	NA	37.051	NA

Notes:

Measured Concentration of Ammonia (C) in $\mu\text{g NH}_3 / \text{ml as N}$

$$C = 10^{(P-B)/M}$$

P = electrode potential (mV), M=slope and B=intercept

Average Measured Ammonia Concentration (Cavg) = $(C1 + C2)/2$

where C1, C2 results from duplicate analyses ($\mu\text{g NH}_3 / \text{ml as N}$)

$$\text{Cavg } (\mu\text{g NH}_3 / \text{ml as NH}_3) = \text{Cavg } (\mu\text{g NH}_3 / \text{ml as N}) * 17.03 / 14.01$$

$$\mu\text{g NH}_3 / \text{sample} = \text{Cavg } (\mu\text{g NH}_3 / \text{ml as NH}_3) * \text{TV}$$

Used 100 ml of samples and standards with 2 ml ISA and constant stirring rate.

All solutions turned blue and remained blue with ISA unless otherwise indicated.

Sample PH and Temperatures can be found on the laboratory datasheet.

Maximum samples (including blanks) between 28 $\mu\text{g/ml}$ check standard is 5 samples analyzed in duplicate.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS QUALITY CONTROL

Client/ Location: Canyon
Sample Location: Unit 2
District Method: SCAQMD 207.1
Sample Date: 8/23/2018
Analysis Date: 8/23/2018
Analyst's Initials: JG

Sample	% recovery	RPD %	RPA %
28 ug NH ₃ / ml as N repeat 28 ug NH ₃ /ml as N	NA	0.00	6.507
2-NH ₃ repeat 2- NH ₃	NA	-1.19	NA
spike 2-NH ₃ repeat spike	106.34	-3.58	NA
Field Blank repeat Field Blank	NA	2.78	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	0.40	8.860

Notes:

spike: 100 ml sample + 2 ml (1000 µg NH₃ / ml as N)

Matrix Spike Percent Recovery (%R)

%R = (C spike*0.104 - Csample*0.102)/2 *100

Cspike = average result of matrix spike (µg NH₃/ ml as N)

Relative Percent Difference (RPD) = (C1-C2)/ Cavg *100 (must be 5% or less)

Relative Percent Accuracy (RPA) (must be 10% or less)

RPA = (Cavg-theoretical value of standard)/ theoretical value of standard * 100

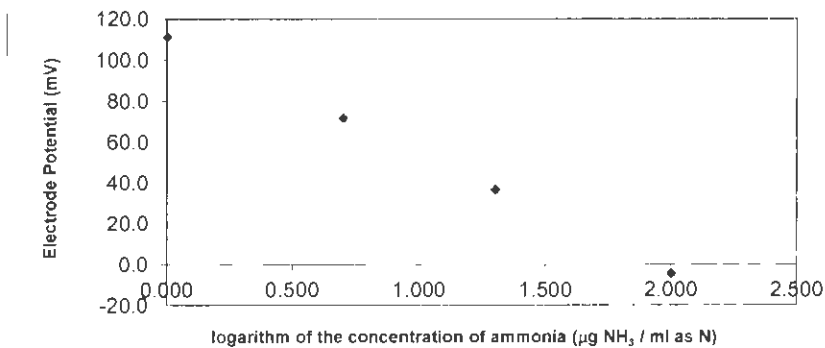
AMMONIA ELECTRODE CALIBRATION CURVE

NH ₃ concentration (µg NH ₃ / ml as N)	log NH ₃ concentration	Electrode potential	Sample Temperature (°C)	Room Temperature (°C)
1	0.000	111.4	20	22
5	0.699	71.6	20	22
20	1.301	36.7	20	22
100	2.000	-4.5	20	22

Ammonia Electrode Calibration Curve
8/23/2018

$$y = -57.9515x + 111.7515$$

$$R^2 = 0.9999$$



slope -57.9515
y-intercept 111.7515

Concentration (µg NH ₃ / ml as N)	Value LR line	Difference	% Difference
1	1.0141	0.0141	1.4063
5	4.9300	-0.0700	-1.4001
20	19.7276	-0.2724	-1.3619
100	101.3945	1.3945	1.3945

Calculation:

Regression Line: $P = M \cdot \log(\mu\text{g of NH}_3 / \text{ml as N}) + B$

Measured Concentration of Ammonia (C) in µg / ml NH₃ as N: $C = 10^{(P-B)/M}$

where P = electrode potential, M= slope (must be -57±3) and B= intercept

All standards were prepared in 0.04N H₂SO₄ and allowed to equilibrate to room temperature.

APPENDIX A.3

QA/QC DATA



AMBIENT TEMPERATURE: _____
 BAROMETRIC PRESSURE: 29.74
 ASSUMED MOISTURE: _____
 PITOT TUBE COEFF. Cp: _____
 PROBE ID NO/MATERIAL: Glass
 PROBE LENGTH: 71
 NOZZLE ID NO/MATERIAL: NA
 NOZZLE DIAMETER: NA
 FILTER NO/TYPE: NA
 PRE-TEST LEAK RATE: 0.005 CFM@ 16 in. Hg.
 POST-TEST LEAK RATE: _____ CFM@ _____ in. Hg.
 PITOT LEAK CHECK - PRE: _____ POST: _____
 CHAIN OF CUSTODY: _____
 SAMPLE CUSTODIAN: JL
 SAMPLER: DA
 SAMPLE CUSTODIAN: JL

Imp.	# Contents	Post-Test =	Difference
1	H ₂ SO ₄	820.0	720.1
2	H ₂ SO ₄	735.7	735.5
3	MT	607.5	607.5
4	SG	969.1	969.0
12			100
Total:			

Check Weight: 500.3 / 500.0

[illegible]

Comments:

SCAQMD METHOD 207.1 - AMMONIA DETERMINATION OF SAMPLE TIME

Source: Canyon U2
Date: 8/23/2018
Performed by: SD

Constants:

	1,000	mg/gram
	454	grams/lb
	35.315	SCF/SCM
	379.5	SCF/lb-mole
	1,000,000	parts/million parts
MW _{NH3}	17.03	lb/lb-mole
MW _{N2}	14.01	lb/lb-mole

Variables:

Target concentration	5	ppm @ O ₂ correction factor
O ₂ correction factor	15	% O ₂
Expected Flue Gas O ₂	14.5	% O ₂
F	2	Safety Factor
P	128.5	electrode potential corresponding to minimum value on calibration curve (mV)
B	128.83	y-intercept
M	-58.676	slope
V _r	0.5	Assumed liquid volume of probe rinse and first impinger (L)
Q @ dH = 1	0.55	cfm

Calculated Values:

Target concentration	5.4	ppm - raw
Target concentration	3.90	mg/dscm
C ₁	1.013	Lowest concentration on a calibration curve (mg NH ₃ -N/L)
RL	0.616	analytical mass reporting limit, mg
PSV	0.316	Planned sample volume, cubic meters
PSV	11.144	Planned sample volume, cubic feet
VSR	33.0	achievable volumetric sampling rate (dscf/hr)

PST	20.3	Planned sample time, minutes (minimum)
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Notes:

- 1) A minimum of 1 hour sample time is required for any mass per hour limits.
- 2) Facility Permit or Rule may specify sample time

SEMI-ANNUAL DRY GAS METER/ORIFICE CALIBRATION

Orifice Method - Triplicate Runs/Four Calibration Points

English Meter Box Units, English K' Factor

Filename: C:\Users\sdonovan\Desktop\Canyon Certs\18WCS Semi-Annual Meter Calibration 4-13-18.xls\WCS

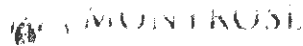
File Modified From: APEX 522 Series Meter box Calibration

Revised 4/8/2005

Model # C5000
 ID # 18 wcs
 Date 4/13/2018
 Bar Pressure 30.19 (in Hg)
 Performed By R Howard

DRY GAS METER READINGS										CRITICAL ORIFICE READINGS			
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps (deg F)	Outlet (deg F)	Inlet (deg F)	Final Temps (deg F)	Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Vacuum (in Hg)	Ambient Temperature Initial (deg F)
0.12	25.00	881.530	886.799	5.269	72.0	69.0	72.0	70.0	70.0	33	0.1553	17.0	70.0
0.12	25.00	886.909	892.191	5.282	72.0	70.0	73.0	71.0	70.0	33	0.1553	17.0	70.0
0.12	25.00	892.291	897.551	5.260	73.0	71.0	75.0	72.0	72.0	33	0.1553	17.0	70.0
0.65	12.00	899.400	904.861	5.461	75.0	71.0	75.0	72.0	72.0	48	0.3465	15.0	71.0
0.65	12.00	904.861	910.338	5.477	75.0	72.0	76.0	72.0	72.0	48	0.3465	15.0	71.0
0.65	12.00	910.338	915.795	5.457	76.0	72.0	77.0	72.0	72.0	48	0.3465	15.0	71.0
1.90	7.00	916.870	922.281	5.411	77.0	72.0	77.0	72.0	72.0	63	0.5888	13.0	71.0
1.90	7.00	922.281	927.690	5.409	77.0	72.0	77.0	73.0	72.0	63	0.5888	13.0	72.0
1.90	7.00	927.690	933.089	5.399	77.0	73.0	78.0	74.0	72.0	63	0.5888	13.0	72.0
3.80	5.00	864.280	869.538	5.258	70.0	69.0	71.0	69.0	69.0	73	0.8202	12.0	69.0
3.80	5.00	869.538	874.794	5.256	71.0	69.0	71.0	69.0	69.0	73	0.8202	12.0	69.0
3.80	5.00	874.794	880.045	5.251	71.0	69.0	72.0	69.0	69.0	73	0.8202	12.0	69.0

DRY GAS METER				DRY GAS METER				ORIFICE				ORIFICE			
VOLUME		VOLUME		VOLUME		VOLUME		CALIBRATION FACTOR		CALIBRATION FACTOR		Individual		Orifice	
CORRECTED	CORRECTED	CORRECTED	CORRECTED	CORRECTED	CORRECTED	NOMINAL	NOMINAL	Y	dh@	Ymax < Ymin	dh@	Run	Ymax < Ymin	Average	Average
Vm(std)	Vm(std)	Vm(std)	Vm(std)	Vc(std)	Vc(std)	Vcr	Vcr	Value	(in H2O)	< 0.010?	< 0.102?		< 0.010?		< 0.155?
(cu ft)	(cu ft)	(cu ft)	(cu ft)	(liters)	(liters)	(cu ft)	(cu ft)	(number)							
5.288	149.8	5.295	150.0	5.270	1.001	1.637	1.637	Pass	0.95 < Y	Pass	Pass	Pass	Pass	Pass	Pass
5.294	149.9	5.295	150.0	5.270	1.000	1.634	1.634	Pass	< 1.05?	Pass	Pass	Pass	Pass	Pass	Pass
5.260	149.0	5.293	149.9	5.272	1.006	1.633	1.633	Pass							
				Average	1.003	1.635	1.635	Pass							
5.462	154.7	5.448	154.3	5.432	0.997	1.778	1.778	Pass							
5.473	155.0	5.448	154.3	5.432	0.995	1.777	1.777	Pass							
5.448	154.3	5.448	154.3	5.432	1.000	1.777	1.777	Pass							
				Average	0.997	1.777	1.777	Pass							
5.416	153.4	5.397	152.9	5.387	0.997	1.800	1.800	Pass							
5.412	153.3	5.395	152.8	5.389	0.997	1.800	1.800	Pass							
5.394	152.8	5.395	152.8	5.389	1.000	1.797	1.797	Pass							
				Average	0.998	1.799	1.799	Pass							
5.335	151.1	5.383	152.4	5.347	1.009	1.857	1.857	Pass							
5.330	151.0	5.383	152.4	5.347	1.010	1.857	1.857	Pass							
5.323	150.7	5.383	152.4	5.347	1.011	1.857	1.857	Pass							
				Average	1.010	1.857	1.857	Pass							
				Average Yd:	1.002	dh@:	1.767								



DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: 18-WCS
 Readout Description: Control Box
 Date: 7/2/2018
 Performed By: JG/DA/RH

Calibrated Thermocouple ID: TC-CAL
 T1 Reference Thermometer ID: 201100
 T2 Reference Thermometer ID: 805002770
 T3 Reference Thermometer ID: 805002803

T/C ID TC-CAL	Readout ID	T/C - Readout °F				Reference Thermometer °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	18-WCS	360	360	360	360	359	359	359	359	1.0	0.1%	Pass
T2 (Boiling H ₂ O)	18-WCS	208	208	208	208	212	212	212	212	4.0	0.6%	Pass
T1 (Ice/Water)	18-WCS	30	30	30	30	32	32	32	32	2.0	0.4%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

Thermocouple Source Readings

T/C Source S/N		T/C - Readout °F				T/C Source °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T4 (~650 F)	S/N 106970	652	653	652	652	650	650	650	650	2.3	0.2%	Pass
T3 (~370 F)	S/N 106970	370	370	370	370	370	370	370	370	0.0	0.0%	Pass
T2 (~212 F)	S/N 106970	212	212	212	212	212	212	212	212	0.0	0.0%	Pass
T1 (~32 F)	S/N 106970	30	30	30	30	32	32	32	32	2.0	0.4%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

APPENDIX B

FACILITY CEMS DATA

1-MH3-U2

Babcock & Wilcox Power Generation Group NetDAHS®

Average Values Report
Generated: 8/23/2018 14:14

Period Start: 8/23/2018 12:08
Period End: 8/23/2018 13:10
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Company: City Of Anaheim
Plant: 3071 Miraloma Ave.,
City/St: Anaheim, CA, 92806
Source: unit2

Period Start:	Average 2_O2 %	Average 2_NOXPPM ppm	Average 2_NOX CORR ppm	Average 2_NOX LBHR #/hr	Average 2_NOX LBMM #/MBTU	Average 2_GasFlow kscfm	Average 2_LOAD MW	Average 2_STACKFLW kscfm	Average 2_COPPM ppm	Average 2_CO CORR ppm	Average 2_CO LBHR #/hr
08/23/2018 12:08	14.60	2.46	2.30	4.13	0.0085	462.9	50.05	234.1	2.55	2.39	2.62
08/23/2018 12:09	14.60	2.44	2.29	4.08	0.0084	462.1	49.67	233.7	2.55	2.39	2.62
08/23/2018 12:10	14.60	2.43	2.28	4.08	0.0084	463.0	49.74	234.1	2.56	2.40	2.63
08/23/2018 12:11	14.60	2.42	2.27	4.08	0.0084	462.3	49.68	233.8	2.56	2.40	2.62
08/23/2018 12:12	14.61	2.42	2.27	4.07	0.0084	462.0	49.79	234.0	2.51	2.35	2.57
08/23/2018 12:13	14.60	2.43	2.28	4.08	0.0084	462.2	49.84	233.7	2.47	2.31	2.52
08/23/2018 12:14	14.60	2.44	2.29	4.08	0.0084	462.6	49.81	233.9	2.65	2.48	2.72
08/23/2018 12:15	14.61	2.45	2.30	4.13	0.0085	463.0	49.81	234.5	2.72	2.55	2.77
08/23/2018 12:16	14.62	2.45	2.30	4.13	0.0085	462.5	49.73	234.6	2.68	2.52	2.72
08/23/2018 12:17	14.61	2.44	2.29	4.08	0.0084	462.3	49.79	234.1	2.52	2.36	2.57
08/23/2018 12:18	14.61	2.44	2.30	4.13	0.0085	462.5	49.84	234.2	2.56	2.40	2.62
08/23/2018 12:19	14.60	2.45	2.29	4.13	0.0085	462.4	50.00	233.8	2.60	2.43	2.67
08/23/2018 12:20	14.60	2.46	2.30	4.12	0.0085	462.1	49.70	233.7	2.72	2.55	2.77
08/23/2018 12:21	14.60	2.49	2.33	4.18	0.0086	462.6	49.66	233.9	2.78	2.60	2.82
08/23/2018 12:22	14.60	2.48	2.32	4.17	0.0086	462.0	49.63	233.6	2.73	2.56	2.77
08/23/2018 12:23	14.60	2.45	2.29	4.13	0.0085	462.8	49.69	234.0	2.55	2.39	2.62
08/23/2018 12:24	14.61	2.44	2.29	4.08	0.0084	462.3	49.52	234.1	2.51	2.35	2.57
08/23/2018 12:25	14.60	2.44	2.29	4.08	0.0084	463.0	49.80	234.1	2.54	2.38	2.58
08/23/2018 12:26	14.61	2.44	2.29	4.07	0.0084	462.0	49.80	234.0	2.63	2.47	2.67
08/23/2018 12:27	14.61	2.46	2.31	4.12	0.0085	462.0	50.18	234.0	2.77	2.60	2.81
08/23/2018 12:28	14.60	2.47	2.31	4.13	0.0085	462.5	49.79	233.9	2.83	2.65	2.87
08/23/2018 12:29	14.61	2.46	2.31	4.13	0.0085	462.4	49.87	234.2	2.69	2.52	2.77
08/23/2018 12:30	14.61	2.45	2.30	4.12	0.0085	462.0	50.05	234.0	2.66	2.50	2.72
08/23/2018 12:31	14.62	2.45	2.30	4.13	0.0085	462.7	49.67	234.7	2.67	2.51	2.72
08/23/2018 12:32	14.61	2.43	2.28	4.08	0.0084	462.3	49.77	234.1	2.67	2.50	2.72
08/23/2018 12:33	14.60	2.43	2.26	4.03	0.0083	462.7	49.90	234.0	2.61	2.44	2.67
08/23/2018 12:34	14.60	2.42	2.27	4.08	0.0084	462.4	49.72	233.8	2.73	2.56	2.77
08/23/2018 12:35	14.60	2.43	2.28	4.08	0.0084	462.6	49.70	233.9	2.79	2.61	2.86
08/23/2018 12:36	14.60	2.44	2.29	4.08	0.0084	462.9	49.76	233.9	2.80	2.62	2.87
08/23/2018 12:37	14.60	2.43	2.28	4.08	0.0084	462.9	49.76	234.1	2.71	2.54	2.77
08/23/2018 12:38	14.61	2.45	2.30	4.13	0.0085	462.3	49.76	234.1	2.68	2.51	2.72
08/23/2018 12:39	14.61	2.46	2.31	4.13	0.0085	462.4	49.95	234.2	2.60	2.44	2.67
08/23/2018 12:40	14.61	2.45	2.30	4.13	0.0085	462.8	49.74	234.4	2.52	2.36	2.58
08/23/2018 12:41	14.61	2.45	2.30	4.13	0.0085	462.5	49.93	234.2	2.52	2.36	2.57
08/23/2018 12:42	14.61	2.47	2.32	4.13	0.0085	462.6	49.74	234.3	2.55	2.39	2.62
08/23/2018 12:43	14.61	2.47	2.32	4.13	0.0085	462.3	49.88	234.1	2.68	2.51	2.72
08/23/2018 12:44	14.61	2.46	2.31	4.13	0.0085	462.6	49.70	234.3	2.76	2.59	2.82
08/23/2018 12:45	14.60	2.45	2.29	4.13	0.0085	462.5	49.84	233.9	2.74	2.57	2.82
08/23/2018 12:46	14.60	2.45	2.29	4.13	0.0085	462.9	49.70	234.1	2.63	2.46	2.67
08/23/2018 12:47	14.60	2.45	2.29	4.12	0.0085	461.8	49.79	233.5	2.55	2.39	2.62
08/23/2018 12:48	14.60	2.46	2.30	4.13	0.0085	462.7	49.98	234.0	2.58	2.42	2.62
08/23/2018 12:49	14.60	2.48	2.32	4.18	0.0086	463.2	49.67	234.2	2.62	2.45	2.68
08/23/2018 12:50	14.60	2.48	2.32	4.18	0.0086	462.4	49.82	233.8	2.58	2.42	2.62
08/23/2018 12:51	14.60	2.46	2.30	4.13	0.0085	462.8	49.74	234.0	2.53	2.37	2.58
08/23/2018 12:52	14.60	2.45	2.29	4.13	0.0085	462.5	49.82	233.9	2.54	2.38	2.57
08/23/2018 12:53	14.61	2.44	2.29	4.08	0.0084	462.6	49.95	234.3	2.59	2.43	2.67
08/23/2018 12:54	14.61	2.44	2.29	4.08	0.0084	462.6	49.88	234.3	2.61	2.45	2.67
08/23/2018 12:55	14.61	2.45	2.30	4.13	0.0085	462.6	49.67	234.3	2.56	2.40	2.62
08/23/2018 12:56	14.61	2.44	2.29	4.08	0.0084	462.4	49.64	234.2	2.54	2.38	2.57

1-NH3-42

Period Start:	Average 2_O2 %	Average 2_NOXPPM ppm	Average 2_NOX CORR ppm	Average 2_NOX LBHR #/hr	Average 2_NOX LBMM #/MBTU	Average 2_GasFlow kscfh	Average 2_LOAD MW	Average 2_STACKFLW kscfm	Average 2_COPPM ppm	Average 2_CO CORR ppm	Average 2_CO LBHR #/hr
08/23/2018 12:57	14.60	2.43	2.28	4.08	0.0084	462.5	49.91	233.9	2.57	2.41	2.62
08/23/2018 12:58	14.60	2.44	2.29	4.08	0.0084	462.8	49.86	234.0	2.72	2.55	2.77
08/23/2018 12:59	14.60	2.45	2.29	4.13	0.0085	462.3	49.90	233.8	2.73	2.56	2.77
08/23/2018 13:00	14.60	2.44	2.29	4.08	0.0084	462.1	49.74	233.7	2.64	2.47	2.67
08/23/2018 13:01	14.60	2.43	2.28	4.08	0.0084	462.5	49.78	233.9	2.59	2.43	2.62
08/23/2018 13:02	14.60	2.43	2.28	4.08	0.0084	462.3	50.13	233.8	2.63	2.46	2.67
08/23/2018 13:03	14.60	2.46	2.30	4.13	0.0085	462.5	49.92	233.9	2.79	2.61	2.87
08/23/2018 13:04	14.60	2.47	2.31	4.13	0.0085	462.9	49.81	234.1	2.91	2.73	2.96
08/23/2018 13:05	14.60	2.46	2.30	4.13	0.0085	462.6	49.83	233.9	2.83	2.65	2.87
08/23/2018 13:06	14.61	2.45	2.30	4.12	0.0085	462.0	49.91	234.0	2.69	2.52	2.77
08/23/2018 13:07	14.60	2.47	2.31	4.14	0.0085	463.4	49.66	234.3	2.80	2.62	2.87
08/23/2018 13:08	14.60	2.48	2.32	4.18	0.0086	462.9	49.71	234.1	2.83	2.65	2.87
08/23/2018 13:09	14.60	2.46	2.30	4.13	0.0085	462.8	50.06	234.0	2.68	2.51	2.72
08/23/2018 13:10	14.60	2.45	2.29	4.13	0.0085	462.9	49.81	234.1	2.52	2.36	2.58
Daily Average*	14.60	2.45	2.30	4.11	0.0085	462.5	49.81	234.0	2.64	2.48	2.70
Maximum*	14.62	2.49	2.33	4.18	0.0086	463.4	50.18	234.7	2.91	2.73	2.96
	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018
	12:31	12:21	12:21	13:08	13:08	13:07	12:27	12:31	13:04	13:04	13:04
Minimum*	14.60	2.41	2.26	4.03	0.0083	461.8	49.52	233.5	2.47	2.31	2.52
	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018
	13:10	12:33	12:33	12:33	12:33	12:47	12:24	12:47	12:13	12:13	12:13

* Does not include Invalid Averaging Periods ("N/A")

Average Values Report
Generated: 8/23/2018 15:16

Company: City Of Anaheim
Plant: 3071 Miraloma Ave.,
City/St: Anaheim, CA, 92806
Source: unit2

Period Start: 8/23/2018 13:46
Period End: 8/23/2018 14:48
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average 2_O2 %	Average 2_NOXPPM ppm	Average 2_NOX_CORR ppm	Average 2_NOX_LBHR #/hr	Average 2_NOX_LBMM #/MMBTU	Average 2_GasFlow kscfm	Average 2_LOAD MW	Average 2_STACKFLOW kscfm	Average 2_COPPM ppm	Average 2_CO_CORR ppm	Average 2_CO_LBHR #/hr
08/23/2018 13:46	14.59	2.47	2.31	4.13	0.0085	462.6	49.84	233.5	2.57	2.40	2.62
08/23/2018 13:47	14.59	2.48	2.32	4.13	0.0085	463.1	49.86	233.8	2.52	2.36	2.58
08/23/2018 13:48	14.59	2.47	2.31	4.14	0.0085	463.5	49.48	234.0	2.50	2.34	2.53
08/23/2018 13:49	14.58	2.49	2.32	4.18	0.0086	462.9	50.06	233.3	2.51	2.34	2.58
08/23/2018 13:50	14.58	2.50	2.33	4.18	0.0086	462.8	49.79	233.3	2.57	2.40	2.62
08/23/2018 13:51	14.58	2.48	2.32	4.13	0.0085	463.1	49.83	233.5	2.66	2.48	2.72
08/23/2018 13:52	14.57	2.48	2.31	4.13	0.0085	463.0	50.04	233.0	2.75	2.56	2.82
08/23/2018 13:53	14.58	2.48	2.32	4.14	0.0085	463.7	49.66	233.7	2.70	2.52	2.78
08/23/2018 13:54	14.59	2.46	2.30	4.13	0.0085	462.9	49.80	233.7	2.58	2.41	2.62
08/23/2018 13:55	14.59	2.44	2.28	4.09	0.0084	463.3	49.65	233.9	2.50	2.34	2.53
08/23/2018 13:56	14.60	2.45	2.29	4.13	0.0085	462.9	49.85	234.1	2.50	2.34	2.58
08/23/2018 13:57	14.60	2.44	2.29	4.08	0.0084	462.5	49.78	233.9	2.52	2.36	2.57
08/23/2018 13:58	14.59	2.43	2.27	4.08	0.0084	462.4	49.67	233.4	2.62	2.45	2.67
08/23/2018 13:59	14.59	2.44	2.28	4.08	0.0084	463.1	49.75	233.8	2.88	2.69	2.92
08/23/2018 14:00	14.60	2.45	2.29	4.13	0.0085	463.1	49.64	234.2	2.95	2.76	3.02
08/23/2018 14:01	14.59	2.45	2.29	4.09	0.0084	463.5	49.86	234.0	2.75	2.57	2.82
08/23/2018 14:02	14.58	2.43	2.27	4.08	0.0084	463.1	49.80	233.5	2.52	2.35	2.58
08/23/2018 14:03	14.58	2.43	2.27	4.08	0.0084	462.9	49.79	233.3	2.50	2.33	2.53
08/23/2018 14:04	14.58	2.43	2.27	4.08	0.0084	462.8	49.71	233.3	2.53	2.36	2.58
08/23/2018 14:05	14.58	2.43	2.27	4.09	0.0084	463.3	49.65	233.5	2.54	2.37	2.58
08/23/2018 14:06	14.57	2.43	2.26	4.03	0.0083	462.7	49.88	232.8	2.62	2.44	2.67
08/23/2018 14:07	14.58	2.45	2.29	4.09	0.0084	463.2	49.48	233.5	2.83	2.64	2.87
08/23/2018 14:08	14.59	2.48	2.32	4.13	0.0085	462.7	49.68	233.6	2.95	2.76	3.01
08/23/2018 14:09	14.57	2.49	2.32	4.18	0.0086	463.2	49.77	233.1	2.84	2.65	2.87
08/23/2018 14:10	14.58	2.48	2.32	4.13	0.0085	462.9	49.80	233.3	2.71	2.53	2.77
08/23/2018 14:11	14.58	2.48	2.32	4.13	0.0085	463.0	49.76	233.4	2.74	2.56	2.77
08/23/2018 14:12	14.58	2.49	2.32	4.18	0.0086	463.0	49.61	233.4	2.89	2.70	2.97
08/23/2018 14:13	14.58	2.50	2.33	4.18	0.0086	463.3	49.79	233.5	2.91	2.72	2.97
08/23/2018 14:14	14.58	2.51	2.34	4.18	0.0086	463.0	49.58	233.4	2.79	2.60	2.82
08/23/2018 14:15	14.57	2.49	2.32	4.19	0.0086	464.0	49.66	233.5	2.63	2.45	2.68
08/23/2018 14:16	14.57	2.47	2.30	4.13	0.0085	463.0	49.65	233.0	2.57	2.40	2.63
08/23/2018 14:17	14.56	2.47	2.30	4.14	0.0085	463.8	49.79	233.1	2.54	2.36	2.58
08/23/2018 14:18	14.57	2.45	2.28	4.09	0.0084	463.5	49.72	233.3	2.52	2.35	2.58
08/23/2018 14:19	14.57	2.44	2.27	4.09	0.0084	463.2	49.81	233.1	2.56	2.39	2.63
08/23/2018 14:20	14.58	2.44	2.28	4.09	0.0084	464.0	49.83	233.9	2.58	2.41	2.63
08/23/2018 14:21	14.58	2.45	2.29	4.08	0.0084	463.1	49.80	233.5	2.57	2.40	2.63
08/23/2018 14:22	14.58	2.46	2.30	4.14	0.0085	463.4	49.82	233.6	2.51	2.34	2.58
08/23/2018 14:23	14.58	2.46	2.30	4.14	0.0085	463.5	49.65	233.6	2.52	2.35	2.58
08/23/2018 14:24	14.58	2.46	2.30	4.14	0.0085	463.7	49.62	233.7	2.54	2.37	2.58
08/23/2018 14:25	14.57	2.45	2.28	4.09	0.0084	464.0	49.95	233.5	2.54	2.37	2.58
08/23/2018 14:26	14.57	2.44	2.27	4.09	0.0084	463.2	49.88	233.1	2.52	2.35	2.58
08/23/2018 14:27	14.57	2.44	2.27	4.09	0.0084	463.4	49.96	233.2	2.57	2.40	2.63
08/23/2018 14:28	14.57	2.46	2.29	4.09	0.0084	463.6	49.92	233.3	2.68	2.50	2.73
08/23/2018 14:29	14.57	2.47	2.30	4.14	0.0085	463.4	49.70	233.2	2.70	2.52	2.72
08/23/2018 14:30	14.56	2.48	2.31	4.14	0.0085	463.7	49.69	233.0	2.62	2.44	2.68
08/23/2018 14:31	14.56	2.49	2.32	4.14	0.0085	463.8	49.73	233.1	2.55	2.37	2.58
08/23/2018 14:32	14.56	2.48	2.31	4.14	0.0085	463.9	49.76	233.1	2.57	2.39	2.63
08/23/2018 14:33	14.57	2.48	2.31	4.13	0.0085	463.1	49.83	233.1	2.71	2.53	2.77
08/23/2018 14:34	14.57	2.49	2.32	4.19	0.0086	463.9	49.76	233.5	2.76	2.57	2.83

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Period Start:	Average 2_O2 %	Average 2_NOXPPM ppm	Average 2_NOX_CORR ppm	Average 2_NOX_LBHR #/hr	Average 2_NOX_LBMM #/MBTU	Average 2_GasFlow kscfh	Average 2_LOAD MW	Average 2_STACKFLOW kscfm	Average 2_COPPM ppm	Average 2_CO_CORR ppm	Average 2_CO_LBHR #/hr
08/23/2018 14:35	14.58	2.49	2.32	4.18	0.0086	463.1	49.67	233.5	2.69	2.51	2.72
08/23/2018 14:36	14.57	2.49	2.32	4.19	0.0086	464.2	49.85	233.6	2.56	2.39	2.63
08/23/2018 14:37	14.57	2.49	2.32	4.19	0.0086	464.2	50.13	233.6	2.55	2.38	2.58
08/23/2018 14:38	14.57	2.49	2.32	4.19	0.0086	463.9	49.82	233.5	2.56	2.39	2.63
08/23/2018 14:39	14.57	2.49	2.32	4.19	0.0086	463.9	49.93	233.5	2.65	2.47	2.68
08/23/2018 14:40	14.56	2.49	2.32	4.14	0.0085	463.4	49.73	232.9	2.81	2.61	2.87
08/23/2018 14:41	14.57	2.49	2.32	4.19	0.0086	463.6	49.92	233.3	2.79	2.60	2.82
08/23/2018 14:42	14.57	2.47	2.30	4.13	0.0085	463.1	49.62	233.1	2.62	2.44	2.67
08/23/2018 14:43	14.56	2.47	2.30	4.14	0.0085	463.3	49.83	232.8	2.69	2.50	2.72
08/23/2018 14:44	14.56	2.45	2.28	4.08	0.0084	463.1	49.93	232.7	2.77	2.58	2.82
08/23/2018 14:45	14.56	2.45	2.28	4.09	0.0084	463.6	49.89	233.0	2.73	2.54	2.77
08/23/2018 14:46	14.57	2.43	2.26	4.04	0.0083	464.0	49.93	233.5	2.58	2.40	2.63
08/23/2018 14:47	14.56	2.43	2.26	4.04	0.0083	463.3	49.76	232.8	2.57	2.39	2.63
08/23/2018 14:48	14.57	2.44	2.27	4.08	0.0084	463.1	49.50	233.1	2.63	2.45	2.67
Daily Average*	14.58	2.46	2.30	4.12	0.0085	463.3	49.78	233.4	2.64	2.46	2.69
Maximum*	14.60	2.51	2.34	4.19	0.0086	464.2	50.13	234.2	2.95	2.76	3.02
	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018
Minimum*	14.56	2.43	2.26	4.03	0.0083	462.4	49.48	232.7	2.50	2.33	2.53
	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018	08/23/2018
	14:47	14:47	14:47	14:06	14:47	13:58	14:07	14:44	14:03	14:03	14:03

* Does not include Invalid Averaging Periods ("N/A")

APPENDIX C

CALCULATIONS

APPENDIX C.1

GENERAL EMISSIONS CALCULATIONS

GENERAL EMISSION CALCULATIONS

I. Stack Gas Velocity

A. Stack gas molecular weight, lb/lb-mole

$$MW_{dry} = 0.44 * \%CO_2 + 0.32 * \%O_2 + 0.28 * \%N_2$$

$$MW_{wet} = MW_{dry} * (1 - B_{wo}) + 18 * B_{wo}$$

B. Absolute stack pressure, iwg

$$Ps = Pbar + \frac{Psg}{13.6}$$

C. Stack gas velocity, ft/sec

$$V_s = 2.9 * C_p * \sqrt{\Delta P} * \sqrt{T_s} * \sqrt{\frac{29.92 * 28.95}{P_s * MW_{wet}}}$$

II. Moisture

A. Sample gas volume, dscf

$$V_{mstd} = 0.03342 * V_m * (P_{bar} + \frac{\Delta H}{13.6}) * \frac{T_{ref}}{T_m} * Y_d$$

B. Water vapor volume, scf

$$V_{wstd} = 0.0472 * V_{lc} * \frac{T_{ref}}{528 ^\circ R}$$

C. Moisture content, dimensionless

$$B_{wo} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

III. Stack gas volumetric flow rate

A. Actual stack gas volumetric flow rate, wacfm

$$Q = V_s * A_s * 60$$

B. Standard stack gas flow rate, dscfm

$$Q_{sd} = Q * (1 - B_{wo}) * \frac{T_{ref}}{T_s} * \frac{P_s}{29.92}$$

IV. Gaseous Mass Emission Rates, lb/hr

$$M = \frac{\text{ppm} * MW_i * Q_{sd} * 60}{SV * 10^6}$$

V. Emission Rates, lb/MMBtu

$$\frac{\text{lb}}{\text{MMBtu}} = \frac{\text{ppm} * MW_i * F}{SV * 10^6} * \frac{20.9}{20.9 - \%O_2}$$

6. Percent Isokinetic

$$I = \frac{17.32 * T_s (V_{m \text{ std}})}{(1 - B_w) * 0 * V_s * P_s * D_n^2} * \frac{528^\circ R}{T_{ref}}$$

7. Particulate emissions

a) Grain loading, gr/dscf

$$C = 0.01543 (M_n / V_{m \text{ std}})$$

b) Grain loading at 12% CO₂, gr/dscf

$$C_{12\% \text{ CO}_2} = C (12 / \% \text{ CO}_2)$$

c) Mass emissions, lb/hr

$$M = C * Q_{sd} * (60 \text{ min/hr}) / (7000 \text{ gr/lb})$$

d) Particulate emission factor

$$\text{lb} / 10^6 \text{ Btu} = C * \frac{1 \text{ lb}}{7000 \text{ gr}} * F * \frac{20.9}{20.9 - \%O_2}$$

Nomenclature:

A_s	= stack area, ft ²
B_{wo}	= flue gas moisture content, dimensionless
$C_{12\%CO_2}$	= particulate grain loading, gr/dscf corrected to 12% CO ₂
C	= particulate grain loading, gr/dscf
C_p	= pitot calibration factor, dimensionless
D_n	= nozzle diameter, in.
F	= fuel F-Factor, dscf/MMBtu @ 0% O ₂
H	= orifice differential pressure, iwg
I	= % isokinetics
M_n	= mass of collected particulate, mg
M_i	= mass emission rate of specie i, lb/hr
MW	= molecular weight of flue gas, lb/lb-mole
M_{wi}	= molecular weight of specie i:
	SO ₂ : 64
	NO _x : 46
	CO: 28
	HC: 16
t	= sample time, min.
ΔP	= average velocity head, iwg = $(\sqrt{\Delta P})^2$
P_{bar}	= barometric pressure, inches Hg
P_s	= stack absolute pressure, inches Hg
P_{sg}	= stack static pressure, iwbg
Q	= wet stack flow rate at actual conditions, wacfm
Q_{sd}	= dry standard stack flow rate, dscfm
SV	= specific molar volume of an ideal gas at standard conditions, ft ³ /lb-mole
T_m	= meter temperature, °R
T_{ref}	= reference temperature, °R
T_s	= stack temperature, °R
V_s	= stack gas velocity, ft/sec
V_{lc}	= volume of liquid collected in impingers, ml
V_m	= uncorrected dry meter volume, dcf
V_{mstd}	= dry meter volume at standard conditions, dscf
V_{wstd}	= volume of water vapor at standard conditions, scf
Y_d	= meter calibration coefficient

APPENDIX C.2

SPREADSHEET SUMMARIES

SCAQMD 207.1 EXAMPLE CALCULATION **TEST NUMBER: 1-NH3-U2**

Identifier	Description	Units	Equation	Value
A	Reference Temperature	F	--	60
B	Reference Temperature	R	$A + 460$	520
C	Meter Calibration Factor (Yd)	--	--	1.002
D	Barometric Pressure	" Hg	--	29.74
E	Meter Volume	acf	--	42.616
F	Meter Temperature	F	--	82.9
G	Meter Temperature	R	$F + 460$	542.9
H	Delta H	" H ₂ O	--	1.5
I	Meter Volume (standard)	dscf	$0.03342 * E * (D + H/13.6) * B/G * C$	40.802
J	Liquid Collected	grams	--	115.1
K	Water vapor volume	scf	$0.0472 * J * B/528$	5.350
L	Moisture Content	--	$K/(K + I)$	0.116
M	Gas Constant	ft-lbf/lb-mole-R	--	1545.33
N	Specific Molar Volume	SCF/lb-mole	$385.3 * B / 528$	379.5
O	F-Factor	dscf/MMBtu	--	8,710
P	HHV	Btu/SCF	--	1,050
Q	Mass Conversion Factor	lb/ug	--	2.2046E-09
R	O ₂ Correction Factor	--	--	15
S	Stack Flow Rate @ 68 F	dscfm	--	234,000
T	Stack Flow Rate @ Tref	dscfm	$S * B/528$	230,455
U	Mass NH ₃	ug	--	1,708
V	Mass NH ₃	lb	$U * Q$	3.77E-06
W	MW of NH ₃	lb/lb-mole	--	17.03
X	NH ₃	ppm	$(V * N * 10^6)/(I * W)$	2.1
Y	Flue Gas O ₂	%	--	14.60
Z	NH ₃	ppmc	$X * (20.9 - R)/(20.9 - Y)$	1.9
AA	NH ₃	lb/hr	$X * T * W * 60/(N * 10^6)$	1.3
AB	NH ₃	lb/MMBtu	$(X * W * O)/(385.3 * 10^6) * 20.9/(20.9 - Y)$	0.003
AC	NH ₃	lb/MMSCF	$AB * P$	2.8

Note:

(1) Some values may be slightly different from those shown on the run sheets due to round off errors. This page is intended to show the calculation methodology only.

SCAQMD METHOD 207.1 DATA WORKSHEET AND SUMMARY

Facility.....	Canyon		Parameter.....	NH₃	
Unit.....	U2		Fuel.....	Natural gas	
Sample Location.....	Stack		Data By.....	SD	
Test Number.....	1-NH3-U2	2-NH3-U2	Average	Maximum	Limit
Reference Temperature (°F).....	60	60			
Test Date.....	8/23/2018	8/23/2018			
Test Method.....	SCAQMD 207.1	SCAQMD 207.1			
Sample Train.....	18-WCS	18-WCS			
Meter Calibration Factor.....	1.002	1.002			
Stack Area (ft ²).....	106.90	106.90			
Sample Time (Minutes).....	60	60			
Barometric Pressure ("Hg).....	29.74	29.74			
Start/Stop Time	1208/1311	1346/1449			
Meter Volume (acf).....	42.616	41.524			
Meter Temperature (°F).....	82.9	84.7			
Meter Pressure (iwg).....	1.5	1.5			
Liquid Volume (ml).....	115.1	105.5			
Stack O ₂ (%).....	14.60	14.58	14.59	(from facility CEMS)	
Unit Load (MW).....	50.0	50.0	50.0		
Standard Sample Volume (SCF).....	40.802	39.625			
Moisture Fraction.....	0.116	0.110			
Stack Flow Rate (dscfm, 68 °F).....	234,000	233,400	233,700	(from facility CEMS)	
Stack Flow Rate (@ Tref).....	230,455	229,864	230,159		
Gas Constant (ft-lbf/lb-mole-R).....	1545.33	1545.33			
Molecular Weight NH ₃ (lb/lb-mole).....	17.03	17.03			
Specific Molar Volume (ft ³ /lb-mole).....	379.5	379.5			
F-Factor (dscf/MMBtu).....	8,710	8,710			
HHV(Btu/SCF).....	1,050	1,050			
Mass Conversion (lb/ug).....	2.2046E-09	2.2046E-09			
O ₂ Correction Factor (%).....	15	15			
Mass NH ₃ (ug).....	1,708	1,533			
Mass NH ₃ (lb).....	3.77E-06	3.38E-06			
NH ₃ (ppmv, flue gas).....	2.1	1.9	2.0	2.1	
NH ₃ (ppmv @ O ₂ Correction Factor).....	1.9	1.8	1.9	1.9	5
NH ₃ (lb/hr).....	1.3	1.2	1.2	1.3	
NH ₃ (lb/MMBtu).....	0.003	0.002	0.003	0.003	
NH ₃ (lb/MMSCF).....	2.8	2.5	2.6	2.8	

Note: SCAQMD Method 207.1 requires the higher of the duplicate runs be reported as the test result.

APPENDIX D

QUALITY ASSURANCE

APPENDIX D.1

QUALITY ASSURANCE PROGRAM SUMMARY

QUALITY ASSURANCE PROGRAM SUMMARY

As part of Montrose Air Quality Services, LLC (Montrose) ASTM D7036-04 certification, Montrose is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. Montrose quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: Montrose has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: Montrose has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of Montrose QA efforts. The manual is revised upon periodic review and as Montrose adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. Montrose training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the Montrose QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of Montrose emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: Montrose maintains current copies of EPA, ARB, and SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: Montrose maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to Montrose source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to Montrose office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

“Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, Montrose Air Quality Services, LLC (Montrose) personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, Montrose personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04. The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report.”

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, will be present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)

The following safety measures will be followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

TABLE 1
EQUIPMENT MAINTENANCE SCHEDULE

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero, span gas	As recommended by manufacturer	As recommended by manufacturer
Integrated sampling tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobile van sampling system	1. Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry.

TABLE 2
MAJOR SAMPLING EQUIPMENT CALIBRATION REQUIREMENTS

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	< 2% of analyzer range
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	< 5% of analyzer range
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	< 3% of analyzer range
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO _x Analyzer	Daily	NO ₂ -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	+/- 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	+/- 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	+/- 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	+/- 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	+/- 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for $\Delta H@$	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	+/- 1.5%

Note: Calibration requirements will be used that meet applicable regulatory agency requirements.

APPENDIX D.2

SCAQMD AND STAC CERTIFICATIONS



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

October 4, 2017

Mr. John Peterson
Montrose Air Quality Services, LLC (MAQS-SNA, Delta, SCEC)
1631 E. Saint Andrew Place
Santa Ana, CA 92705

Subject: LAP Approval Notice
Reference # 96LA1220

Dear Mr. Peterson:

We have reviewed your renewal letter under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning September 30, 2017, and ending September 30, 2018 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 10.1 and 100.1	SCAQMD Methods 25.1 and 25.3 (Sampling)
USEPA CTM-030 and ASTM D6522-00	SCAQMD Rule 1121/ 1146.2 Protocol
SCAQMD Rule 1420/1420.1/1420.2 – (Lead) Source and Ambient Sampling	

Your LAP approval to perform nitrogen oxide emissions compliance testing for SCAQMD Rule 1121/ 1146.2 Protocols includes satellite facilities located at:

McKenna Boiler
1510 North Spring Street
Los Angeles, CA 90012

Noritz America Corp.
11160 Grace Avenue
Fountain Valley, CA 92708

Ajax Boiler, Inc.
2701 S. Harbor Blvd.
Santa Ana, CA 92704

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

A handwritten signature in black ink that reads 'D. Sarkar'.

Dipankar Sarkar
Program Supervisor
Source Test Engineering

DS:GK/gk

Attachment

171004 LapRenewalRev.doc

Cleaning the air that we breathe...



American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 5th day of March 2018.



President and CEO
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2020

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

APPENDIX D.3

INDIVIDUAL QI CERTIFICATE

CERTIFICATE OF COMPLETION

Sean Donovan

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

SCAQMD Method 207.1

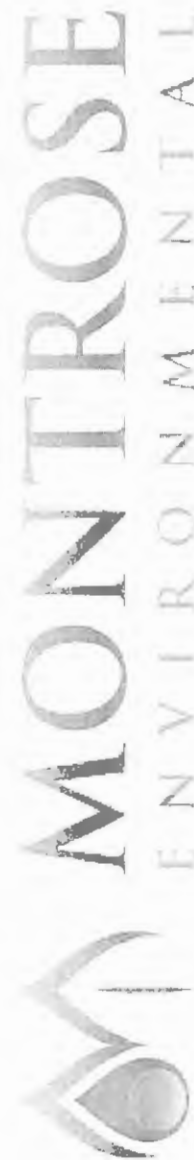
Certificate Number: 002-2016-06

Tate Strickler

Tate Strickler, Accreditation Director

DATE OF ISSUE: 11/30/16

DATE OF
EXPIRATION: 11/30/21



APPENDIX E

APPLICABLE PERMIT SECTIONS



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: POWER GENERATION					
GAS TURBINE, NO. 2, NATURAL GAS, GENERAL ELECTRIC, MODEL LM6000PC SPRINT, SIMPLE CYCLE, 479 MMBTU/HR AT 46 DEG F, WITH INLET CHILLING, WITH WATER INJECTION WITH A/N: 555829	D7	C9	NOX: MAJOR SOURCE**	CO: 4 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]; CO: 2000 PPMV NATURAL GAS (5) [RULE 407, 4-2-1982]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 2005, 6-3-2011]; NOX: 25 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; PM10: 0.01 GRAINS/SCF NATURAL GAS (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; PM10: 1.67 LBS/HR NATURAL GAS (5C) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR NATURAL GAS (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SOX: 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A63.1, A99.1, A99.2, A99.3, A195.1, A195.2, A195.3, A327.1, B61.1, D12.1, D29.2, D29.3, D82.1, D82.2, E193.1, H23.1, I298.2, K40.1
GENERATOR, 50.95 MW					

- * (1) (1A) (1B) Denotes RECLAIM emission factor
(3) Denotes RECLAIM concentration limit
(5) (5A) (5B) Denotes command and control emission limit
(7) Denotes NSR applicability limit
(9) See App B for Emission Limits
(2) (2A) (2B) Denotes RECLAIM emission rate
(4) Denotes BACT emission limit
(6) Denotes air toxic control rule limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: POWER GENERATION					
CO OXIDATION CATALYST, NO. 2, BASF, 110 CUBIC FEET OF TOTAL CATALYST VOLUME A/N: 476657	C9	D7 C10			
SELECTIVE CATALYTIC REDUCTION, NO. 2, CORMETECH CMHT-21, 1012 CU.FT.; WIDTH: 2 FT 6 IN; HEIGHT: 25 FT 9 IN; LENGTH: 18 FT WITH A/N: 476657	C10	C9 S12		NH3: 5 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.5, D12.2, D12.3, D12.4, E179.1, E179.2, E193.1
AMMONIA INJECTION					
STACK, TURBINE NO. 2, HEIGHT: 86 FT; DIAMETER: 11 FT 8 IN A/N: 555829	S12	C10			

- * (1) (1A) (1B) Denotes RECLAIM emission factor
(3) Denotes RECLAIM concentration limit
(5) (5A) (5B) Denotes command and control emission limit
(7) Denotes NSR applicability limit
(9) See App B for Emission Limits
(2) (2A) (2B) Denotes RECLAIM emission rate
(4) Denotes BACT emission limit
(6) Denotes air toxic control rule limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(10) See section J for NESHAP/MACT requirements
- ** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[Devices subject to this condition : C4, C10, C16, C22]

D12.5 The operator shall install and maintain a(n) non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

[**RULE 1110.2, 2-1-2008**; **RULE 1110.2, 9-7-2012**; **RULE 1303(b)(2)-Offset, 5-10-1996**;
RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 1401, 9-10-2010**; **RULE 1470, 5-4-2012**;
RULE 2012, 5-6-2005; **40CFR 60 Subpart III, 1-30-2013**]

[Devices subject to this condition : D25]

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR serving this equipment



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

The test(s) shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter. The AQMD shall be notified of the date and time of the test at least 10 days prior to the test.

If the turbine is not in operation during one calendar year, then no testing is required during that calendar year.

The NO_x concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NO_x emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted and the results submitted to the District within 60 days after the test date.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration limit.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D1, D7, D13, D19]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Sampling Time	Test Location
SOX emissions	AQMD Laboratory Method 307-91	Not Applicable	Fuel sample
VOC emissions	District Method 25.3	1 hour	Outlet of the SCR serving this equipment
PM emissions	District method 5.1	4 hours	Outlet of the SCR serving this equipment

THIS IS THE LAST PAGE OF THIS DOCUMENT

If you have any questions, please contact one of the following individuals by email or phone.

Name: Mr. Sean Donovan
Title: Filed Project Manager
Region: Southwest
E-Mail: SDonovan@montrose-env.com
Phone: (714) 279-6777

Name: Mr. Matt McCune
Title: Regional Vice President
Region: Southwest
E-Mail: MMccune@montrose-env.com
Phone: (714) 279-6777

**TEST REPORT FOR
AMMONIA SLIP TEST
AT CANYON POWER PLANT UNIT 3
FACILITY ID: 153992, DEVICE ID: D13**

Prepared For:

Canyon Power Plant
3071 E. Mira Loma Avenue
Anaheim, California 92806

For Submittal To:

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4178

Prepared By:

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, California 92705
(714) 282-8240

Sean Donovan

Test Date: **October 30, 2018**
Production Date: **November 19, 2018**
Report Number: **002AS-466620-RT-880**



CONFIDENTIALITY STATEMENT

Except as otherwise required by law or regulation, this information contained in this communication is intended exclusively for the individual or entity to which it is addressed. This communication may contain information that is proprietary, privileged or confidential or otherwise legally exempt from disclosure. If you are not the named addressee, you are not authorized to read, print, retain, copy, or disseminate this message or any part of it.

REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature: Sean Donovan Date: 11/19/2018

Name: Sean Donovan Title: Filed Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: Michael Chowsanitphon Date: 11/19/2018

Name: Michael Chowsanitphon Title: Client Project Manager

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1.0 INTRODUCTION AND SUMMARY

Montrose Air Quality Services, LLC (MAQS), was contracted the Canyon Power Plant to perform an ammonia slip test at Unit 3 as required by the facility Permit (Facility ID 153992) Condition Number D29.2. This report documents the results of the ammonia slip tests performed on October 30, 2018. The test was performed by Sean Donovan, Bryce Quinney, and Robert Howard. Sean Donovan was the on-site qualified individual for MAQS. Ms. Bertha Hernandez coordinated the test for Canyon Power Plant.

The test consisted of duplicate ammonia tests performed at 50 MW. The test program followed the procedures described in the initial compliance test protocol (MAQS document R038842). The results of the test are summarized in Table 1-1. The table shows that the ammonia slip from this unit was less than the permitted limit of 5 ppm corrected to 15% O₂.

**TABLE 1-1
AMMONIA SLIP TEST RESULTS SUMMARY
CANYON POWER PLANT UNIT 1
OCTOBER 30, 2018**

Parameter	Units	Result ⁽¹⁾	Limit
NH ₃	ppm	1.7	--
NH ₃	ppmc	1.6	5

(1) Maximum of duplicate runs, as required by SCAQMD Method 207.1

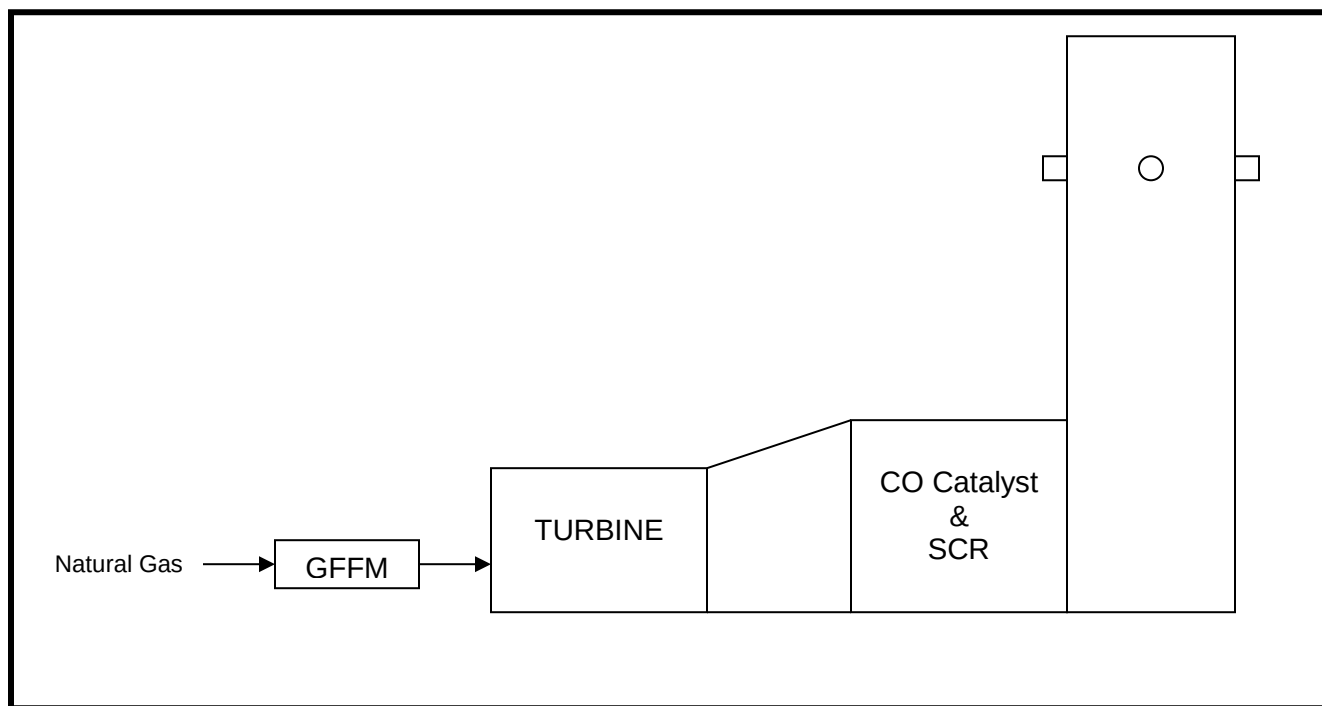
Section 2 of this document provides a brief description of the unit, test conditions, sample location, and CEMS. Details of the test procedures are provided in Section 3. Section 4 provides the results of each individual test. All raw data, calculations, quality assurance data, unit operating conditions, and CEMS data are provided in the appendices.

2.0 UNIT AND CEMS DESCRIPTION

2.1 UNIT DESCRIPTION

The City of Anaheim Canyon Power Plant is located at 3071 E. Mira Loma Avenue, Anaheim, California 92806. The facility consists of four identical generating units. Each unit consists of a natural gas fired, GE Model LM6000PC Sprint simple cycle, gas turbine. The units are natural gas fired with a rated heat input of 479 MMBtu per hour at 46 degrees Fahrenheit, with water injection. The units are equipped with a CO catalyst and Selective Catalytic Reduction (SCR) system for NO_x control. Figure 2-1 presents a block diagram of the unit.

**FIGURE 2-1
UNIT BLOCK DIAGRAM
CANYON POWER PLANT**



Stack Inside Diameter:	11 feet, 8 inches
Distance from Upstream Disturbance:	23 feet, 4 inches (2.0 Diameters)
Distance from Stack Exit:	16 feet, 6 inches (1.4 Diameters)

2.2 TEST CONDITIONS

The tests were performed with the unit operating at an average load of 50 MW. Tests were performed while the unit was firing natural gas and operating under normal conditions. Unit operation was established by the Canyon Power Plant operators.

2.3 SAMPLE LOCATION

The measurements were made from sample ports located on the exhaust stack. There are four sample ports equally spaced at this location. The stack inside diameter at the sample plane is 11 feet, 8 inches. The sample ports are located 23 feet, 4 inches (2.0 diameters) downstream of the nearest flow disturbance and 16 feet, 6 inches (1.4 diameters) from the stack exit.

3.0 TEST DESCRIPTION

Flue gas samples were collected non-isokinetically using a SCAQMD Method 207.1 sample train. The samples were collected using a 12-point traverse at the exhaust stack location. Each test was performed over a 60 minute interval. The sample gas was drawn through a glass probe, Teflon sample line, two impingers each containing 100 ml of 0.1N H₂SO₄, an empty impinger, an impinger containing silica gel, and a dry gas meter. The optional nozzle and filter were not used since the source is natural gas fired. The contents of the sample line and the first three impingers were recovered and analyzed by SCAQMD Method 207.1 for ammonia concentration by Ion Specific Electrode analysis.

Stack O₂ and NO_x concentrations and stack volumetric flow rate data were recorded from the Continuous Emission Monitoring System (CEMS) which is installed on the unit. These data were used to correct the ammonia concentration to 15% O₂.

4.0 TEST RESULTS AND OVERVIEW

4.1 TEST RESULTS

The results of the test are summarized in Table 4-1. The results show that the maximum ammonia slip was 1.6 ppm @ 15% O₂ which is less than the permitted limit of 5 ppm @ 15% O₂.

**TABLE 4-1
AMMONIA SLIP TEST RESULTS
CANYON POWER PLANT UNIT 1
OCTOBER 30, 2018**

Parameter	Units	Run 1	Run 2	Average	Maximum ⁽¹⁾	Limit
Test		1-NH3-U3	2-NH3-U3			--
Date		10/30/2018	10/30/2018			--
Time		1300/1406	1436/1542			--
O ₂ ⁽²⁾	%	14.53	14.51	14.52	--	--
Stack Flow ⁽²⁾	dscfm @ T _{ref}	230,159	229,273	229,716	--	--
NO _x ⁽²⁾	ppmc	2.1	2.2	2.1	--	2.5
NH ₃	ppm	1.7	1.4	1.5	1.7	--
NH ₃	ppmc	1.6	1.2	1.4	1.6	5
NH ₃	lb/hr	1.0	0.8	0.9	1.0	--
NH ₃	lb/MMBtu	0.002	0.002	0.002	0.002	--
NH ₃	lb/MMSCF	2.2	1.8	2.0	2.2	--

1) Maximum of duplicate test runs, as required by SCAQMD Method 207.1

2) From facility CEMS

APPENDIX A RAW DATA

Appendix A.1

Sample Data Sheets

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: City of Anaheim
LOCATION: 10-30-18
DATE: 10-30-18
RUN NO: 1-045-3
OPERATOR: JEH
METER BOX NO: 31-005
METER ID: 0-593
METER Yd: 1.01
STACK AREA, FT²:
TRAVERSE POINTS, MIN/POINT: 5/12
ΔH = — X ΔP:
Probe Condition, pre/post test: good/good
Silica Gel Expanded, Y/N: N/A
Filter Condition after Test: N/A
Check Weight: 144.7/500.0

AMBIENT TEMPERATURE: 75°
BAROMETRIC PRESSURE: 29.67
ASSUMED MOISTURE: 10%
PITOT TUBE COEFF, Cp: N/A
PROBE ID NO/MATERIAL: 64635
PROBE LENGTH: 16'
NOZZLE ID NO/MATERIAL: N/A
NOZZLE DIAMETER: N/A
FILTER NO/TYPE: N/A
PRE-TEST LEAK RATE: 20.005 CFM@ 13 in. Hg.
POST-TEST LEAK RATE: 20.005 CFM@ 13 in. Hg.
PITOT LEAK CHECK - PRE: — POST: —
CHAIN OF CUSTODY: SAMPLE CUSTODIAN WC
SAMPLER BC
SAMPLE CUSTODIAN LC

Imp. # Contents Post-Test - Pre-Test = Difference
1 0.1N H₂SO₄ 884.1 672.4
2 0.1N H₂SO₄ 585.0 582.5
3 empty 667.4 666.7
4 SG 915.5 901.8
LR
Total: 100

Point	Time	Meter Volume, ft ³	ΔP in. H ₂ O	ΔH in. H ₂ O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Out	Vacuum in. Hg.	O ₂ %	P. static in. H ₂ O
3	1300	470.100	N/A	1.5	N/A	N/A	N/A	50	76	73	6	—	—
2	1305												
1	1310												
E	1315	442.010											
3	1317	482.010		1.5				50	86	77	6		
2	1324												
1	1-21												
E	1332	483.440											
3	1334	493.440		1.5				53	91	81	6		
2	1339												
1	1344												
E	1349	505.255											
3	1351	505.255		1.5				53	93	85	6		
2	1356												
1	1401												
E	1406	517.075											
Average:													

Comments: _____

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: City of Anaheim
 LOCATION: Canoga 1 Unit 3
 DATE: 10-6-16
 RUN NO: 2-WH3-3
 OPERATOR: BO
 METER BOX NO: 31-W-5
 METER AH@: 0.003
 METER Yd: 1.011
 STACK AREA, FT²:
 TRAVERSE POINTS, MIN/POINT: 5/12
 AH= X AP
 Probe Condition, pre/post test: good/good
 Silica Gel Expanded, Y/N: N
 Filter Condition after Test: N/A
 Check Weight: 491.7

AMBIENT TEMPERATURE: 75°
 BAROMETRIC PRESSURE: 29.67
 ASSUMED MOISTURE: 10%
 PLOT TUBE COEFF, CP: N/A
 PROBE ID NOMATERIAL: Class
 PROBE LENGTH: 6'
 NOZZLE ID NO/MATERIAL: N/A
 NOZZLE DIAMETER: N/A
 FILTER NO/TYPE: N/A
 PRE-TEST LEAK RATE: 20.005 CFM@ 12 in. Hg.
 POST-TEST LEAK RATE: 20.005 CFM@ 12 in. Hg.
 PLOT LEAK CHECK - PRE: - POST: -
 CHAIN OF CUSTODY: SAMPLE CUSTODIAN YK
SAMPLER BO
SAMPLE CUSTODIAN KL

Imp. # Contents Post-Test - Pre-Test = Difference
 1 CONH2SO4 949.8 735.6
 2 CONH2SO4 680.2 677.5
 3 empty 629.6 628.9
 4 SC 874.4 862.5
 LR 0 100
 Total: -

Point	Time	Meter Volume, ft ³	ΔP in. H ₂ O	ΔH in. H ₂ O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In Out	Vacuum in. Hg.	O ₂ %	P. static in. H ₂ O
E	3 1436	518.300	N/A	1.5	N/A	N/A	N/A	50	87 84	5	-	-
2	41											
1	14											
E	14 51	529.935		1.5				52	87 63	5		
N	3 14 53	529.955										
2	58											
1	5 03											
E	15 08	542.040										
N	3 15 10	541.040		1.5				53	86 82	6		
2	15											
1	20											
E	15 25	554.675										
5	3 15 27	554.675		1.5				54	88 82	6		
2	32											
1	37											
E	15 42	566.630										
Average:												

Comments:

Appendix A.2 Laboratory Data

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS

Project #: _____ District Method: SCAQMD 207.1 Sample Date: 10/30/2018
Client/Location: Canyon Power Calibration Date: 10/30/2018 Analysis Date: 10/30/2018
Sample Location: Stack Calibration Curve: $y = -53.8043x + 105.1043$ Analyst's Initials: KC
Test #'s: _____ R²: 0.9999

[illegible]

Notes:

Total volume of samples and standards used: 100 ml
Volume of pH adjusting ISA used in ml: 2 ml
Absorbing solution: 0.1 N H₂SO₄

Calculations:

Conc. ($\mu\text{g NH}_3 - \text{N} / \text{ml}$) = $10^{(P-B)/M}$
P = electrode potential, B = y-intercept and M = slope
Cavg = average result of duplicate analyses ($\mu\text{g NH}_3 - \text{N} / \text{ml}$) = $(C1+C2)/2$
 $\mu\text{g NH}_3 / \text{sample} = \text{Cavg} * 17.03 / 14.01 * \text{TV}$
 $\text{mg} / \text{sample} = \mu\text{g} / \text{sample} \times 1000$
 $\text{ppm NH}_3 = \text{mg NH}_3 / \text{sample} \times 1 / \text{Vstd} \times 1 / 454000 \times \text{SV} / 17 \times 10^6$

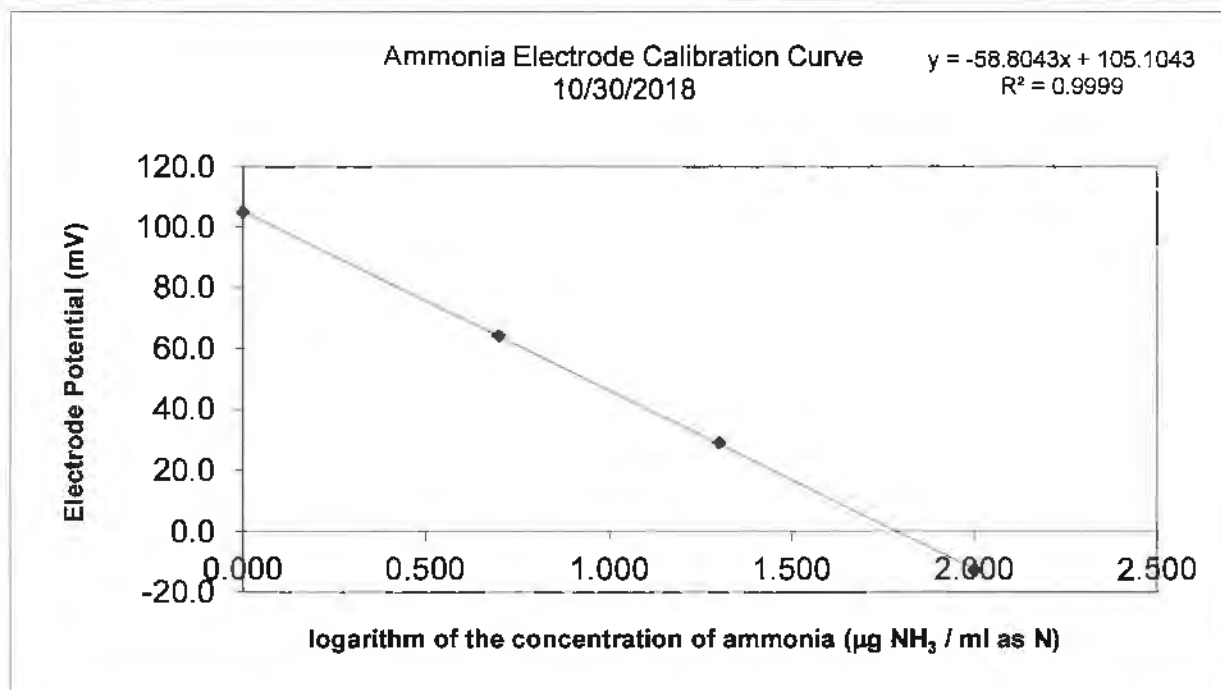
DS834059

Date of last revision 2/14/2017

Master Document Storage\Forms\Datasheets\Lab Forms

AMMONIA ELECTRODE CALIBRATION CURVE

NH ₃ concentration (µg NH ₃ / ml as N)	log NH ₃ concentration	Electrode potential (mV)	Sample Temperature (C)	Standard Temperature (C)
1	0.000	104.8	14	14
5	0.699	64.2	14	14
20	1.301	29.1	14	14
100	2.000	-12.9	14	14



slope -58.8043
y-intercept 105.1043

Concentration (µg NH ₃ / ml as N)	Value LR line	Difference	% Difference
1	1.0120	0.0120	1.1986
5	4.9614	-0.0386	-0.7729
20	19.6108	-0.3892	-1.9459
100	101.5615	1.5615	1.5615

Calculation:

Regression Line: $P = M \cdot \log(\mu\text{g of NH}_3 / \text{ml as N}) + B$

Measured Concentration of Ammonia (C) in µg / ml NH₃ as N: $C = 10^{(P-B)/M}$

where P = electrode potential, M= slope (must be -57 ± 3) and B= intercept

All standards were prepared in 0.04N H₂SO₄ and allowed to cool down to sample temperature.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS QUALITY CONTROL

Client/ Location: Canyon Power Plant
Sample Location: Unit 3 Stack
District Method: SCAQMD 207.1
Sample Date: 02018/10/30
Analysis Date: 2018/10/30
Analyst's Initials: KC

Sample	% recovery	RPD %	RPA %
28 ug NH ₃ / ml as N repeat 28 ug NH ₃ /ml as N	NA	0.39	-2.111
1-NH3 repeat 1- NH3	NA	-3.13	NA
2-NH3 repeat 2- NH3	NA	-2.74	NA
spike 2-NH3 repeat spike	101.90	3.52	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	-1.96	-2.489
Reagent Blank repeat Reagent Blank	NA	2.74	NA
DI H2O Blank Repeat DI H2O Blank	NA	1.96	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	-2.35	-1.527

Notes:

spike: 100 ml sample + 2 ml (1000 µg NH₃ / ml as N)

Matrix Spike Percent Recovery (%R)

$\%R = (C_{\text{spike}} \cdot 0.104 - C_{\text{sample}} \cdot 0.102) / 2 \cdot 100$

Cspike = average result of matrix spike (µg NH₃/ ml as N)

Relative Percent Difference (RPD) = $(C1 - C2) / C_{\text{avg}} \cdot 100$ (must be 5% or less)

Relative Percent Accuracy (RPA) (must be 10% or less)

RPA = $(C_{\text{avg}} - \text{theoretical value of standard}) / \text{theoretical value of standard} \cdot 100$

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS CALCULATION

Client/ Location: Canyon Power Plant
Sample Location: Unit 3 Stack
District Method: SCAQMD 207.1
Sample Date: 02018/10/30
Analysis Date: 2018/10/30
Analyst's Initials: KC
Calibration Curve Slope -58.8043
Y-intercept 105.1043
R² 0.9999

Sample	P mV	Conc. µg NH ₃ /ml as N	C avg as N	TV (ml)	C avg as NH ₃	µg NH ₃ / sample
28 ug NH ₃ / ml as N	20.5	27.463				
repeat 28 ug NH ₃ /ml as N	20.6	27.355	27.409	NA	33.317	NA
1-NH ₃	85.7	2.138				
repeat 1- NH ₃	84.9	2.206	2.172	591.2	2.640	1560.800
2-NH ₃	90.8	1.751				
repeat 2- NH ₃	90.1	1.800	1.775	591	2.158	1275.291
spike 2-NH ₃	26.5	21.713				
repeat spike	27.4	20.961	21.337	NA	25.936	NA
28 NH ₃ /ml as N	20.9	27.036				
repeat 28 ug NH ₃ /ml as N	20.4	27.570	27.303	NA	33.189	NA
Reagent Blank	183.9	0.046				
repeat Reagent Blank	184.6	0.044	0.0451	NA	0.055	NA
DI H ₂ O Blank	191.4	0.034				
Repeat DI H ₂ O Blank	191.9	0.033	0.0337	NA	0.041	NA
28 NH ₃ /ml as N	20.7	27.248				
repeat 28 ug NH ₃ /ml as N	20.1	27.896	27.572	NA	33.516	NA

Notes:

Measured Concentration of Ammonia (C) in µg NH₃ / ml as N

$$C=10^{(P-B)/M}$$

P = electrode potential (mV), M=slope and B=intercept

Average Measured Ammonia Concentration (Cavg) = (C1 + C2)/2

where C1, C2 results from duplicate analyses (µg NH₃ /ml as N)

Cavg (µg NH₃/ml as NH₃) = Cavg (µg NH₃/ ml as N) * 17.03/ 14.01

µg NH₃ / sample = Cavg (µg NH₃/ml as NH₃) * TV

Used 100 ml of samples and standards with 2 ml ISA and constant stirring rate.

All solutions turned blue and remained blue with ISA unless otherwise indicated.

Sample PH and Temperatures can be found on the laboratory datasheet.

Maximum samples (including blanks) between 28 ug/ml check standard is 5 samples analyzed in duplicate.

Appendix A.3

QA/QC Data

SEMI-ANNUAL DRY GAS METER/ORIFICE CALIBRATION

Orifice Method - Triplicate Run/Four Calibration Points
English Meter Box Units, English K Factor
Filename: C:\Users\donovan\Desktop\Canyon US Certs\semi annual cal 31wca 7-10-18.xlsx\WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

IO #: c-5000
31-wca
Date: 7/10/2018
Bar. Pressure: 29.95 (in. Hg)
Performed By: R. Howard
Meter Serial #:

DRY GAS METER READINGS										CRITICAL ORIFICE READINGS			
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temp. (deg F)	Inlet (deg F)	Outlet (deg F)	Final Temp. (deg F)	Orifice Serial# (number)	K Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Average Final (deg F)
0.11	26.00	890.200	904.605	5.405	89.0	88.0	88.0	86.0	33	0.1553	20.0	86.0	86.0
0.11	26.00	904.503	910.015	5.410	88.0	88.0	89.0	87.0	33	0.1553	20.0	87.0	87.0
0.11	26.00	910.015	915.427	5.412	90.0	89.0	89.0	87.0	33	0.1553	20.0	87.0	87.0
0.53	12.00	917.200	922.557	5.357	90.0	90.0	91.0	87.0	48	0.3465	18.0	87.0	87.0
0.53	12.00	922.557	927.949	5.392	91.0	90.0	92.0	87.0	48	0.3465	18.0	87.0	87.0
0.53	12.00	927.949	933.335	5.386	92.0	91.0	92.0	86.0	48	0.3465	18.0	86.0	86.0
1.80	7.00	879.800	885.205	5.405	87.0	86.0	89.0	84.0	63	0.5888	12.0	84.0	84.0
1.80	7.00	885.205	890.614	5.408	86.0	85.0	90.0	84.0	63	0.5888	12.0	84.0	84.0
1.80	7.00	890.614	896.017	5.403	90.0	87.0	87.0	84.0	63	0.5888	12.0	84.0	84.0
3.50	5.00	906.500	941.865	5.365	92.0	91.0	92.0	88.0	73	0.8202	12.0	88.0	88.0
3.50	5.00	941.865	947.265	5.390	92.0	91.0	93.0	88.0	73	0.8202	12.0	88.0	88.0
3.50	5.00	947.265	952.630	5.375	93.0	91.0	93.0	89.0	73	0.8202	12.0	89.0	89.0

DRY GAS METER										ORIFICE			
CORRECTED VOLUME					VOLUME					CALIBRATION FACTOR			
Vm(Std) (cu ft)	Vm(Std) (liters)	Vm(Std) (cu ft)	Vm(Std) (liters)	Vm(Std) (cu ft)	Vm(Std) (liters)	Vm(Std) (cu ft)	Vm(Std) (liters)	Vm(Std) (cu ft)	Vm(Std) (liters)	Y Value (number)	dH@ Value (in H ₂ O)	Individual Run	Orifice Average
5.210	147.5	5.180	146.7	5.344	146.7	5.344	146.7	5.344	146.7	0.994	1.503	Pass	Pass
5.210	147.5	5.171	146.4	5.354	146.4	5.354	146.4	5.354	146.4	0.992	1.507	Pass	Pass
5.202	147.3	5.171	146.4	5.354	146.4	5.354	146.4	5.354	146.4	0.994	1.506	Pass	Pass
Average					Average					Average			
5.150	145.9	5.325	150.8	5.513	150.8	5.513	150.8	5.513	150.8	1.034	1.455	Pass	Pass
5.177	146.6	5.325	150.8	5.513	150.8	5.513	150.8	5.513	150.8	1.029	1.454	Pass	Pass
5.186	146.3	5.320	150.7	5.518	150.7	5.518	150.7	5.518	150.7	1.030	1.455	Pass	Pass
Average					Average					Average			
5.248	148.6	5.283	149.9	5.450	149.9	5.450	149.9	5.450	149.9	1.008	1.718	Pass	Pass
5.240	148.4	5.293	149.9	5.450	149.9	5.450	149.9	5.450	149.9	1.010	1.714	Pass	Pass
5.227	148.0	5.293	148.9	5.450	148.9	5.450	148.9	5.450	148.9	1.012	1.711	Pass	Pass
Average					Average					Average			
5.184	146.8	5.247	148.6	5.442	148.6	5.442	148.6	5.442	148.6	1.012	1.715	Pass	Pass
5.205	147.4	5.247	148.6	5.442	148.6	5.442	148.6	5.442	148.6	1.008	1.715	Pass	Pass
5.189	146.9	5.242	148.5	5.447	148.5	5.447	148.5	5.447	148.5	1.010	1.718	Pass	Pass
Average					Average					Average			
Average Yd: 1.011					Average Yd: 1.011					Average Yd: 1.011			
dH@: 1.598					dH@: 1.598					dH@: 1.598			
Q @ dH = 1: 0.583					Q @ dH = 1: 0.583					Q @ dH = 1: 0.583			

SIGNED: Signature on File

Date: 7/10/2018



DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: 31-WCS
 Readout Description: Control Box
 Date: 7/2/2018
 Performed By: JG/DA/RH

Calibrated Thermocouple ID: TC-CAL
 T1 Reference Thermometer ID: 201100
 T2 Reference Thermometer ID: 805002770
 T3 Reference Thermometer ID: 805002803

T/C I.D. TC-CAL	Readout I.D.	T/C - Readout °F				Reference Thermometer °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	31-WCS	361	361	361	361	359	359	359	359	2.0	0.2%	Pass
T2 (Boiling H ₂ O)	31-WCS	209	209	209	209	212	212	212	212	3.0	0.4%	Pass
T1 (Ice/Water)	31-WCS	33	33	33	33	32	32	32	32	1.0	0.2%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

Thermocouple Source Readings

T/C Source S/N	T/C - Readout °F				T/C Source °F				Difference		
	Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T4 (~650 F)	S/N 106970	652	652	652	652	650	650	650	2.0	0.2%	Pass
T3 (~370 F)	S/N 106970	372	372	372	372	370	370	370	2.0	0.2%	Pass
T2 (~212 F)	S/N 106970	213	213	213	213	212	212	212	1.0	0.1%	Pass
T1 (~32 F)	S/N 106970	34	34	34	34	32	32	32	2.0	0.4%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

SCAQMD METHOD 207.1 - AMMONIA DETERMINATION OF SAMPLE TIME

Source: Canyon U3
Date: 10/30/2018
Performed by: SD

Constants:

	1,000	mg/gram
	454	grams/lb
	35.315	SCF/SCM
	379.5	SCF/lb-mole
	1,000,000	parts/million parts
MW _{NH3}	17.03	lb/lb-mole
MW _{N2}	14.01	lb/lb-mole

Variables:

Target concentration	5	ppm @ O ₂ correction factor
O ₂ correction factor	15	% O ₂
Expected Flue Gas O ₂	14.5	% O ₂
F	2	Safety Factor
P	128.5	electrode potential corresponding to minimum value on calibration curve (mV)
B	128.83	y-intercept
M	-58.676	slope
V _r	0.5	Assumed liquid volume of probe rinse and first impinger (L)
Q @ dH = 1	0.55	cfm

Calculated Values:

Target concentration	5.4	ppm - raw
Target concentration	3.90	mg/dscm
C ₁	1.013	Lowest concentration on a calibration curve (mg NH ₃ -N/L)
RL	0.616	analytical mass reporting limit, mg
PSV	0.316	Planned sample volume, cubic meters
PSV	11.144	Planned sample volume, cubic feet
VSR	33.0	achievable volumetric sampling rate (dscf/hr)

PST	20.3	Planned sample time, minutes (minimum)
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Notes:

- 1) A minimum of 1 hour sample time is required for any mass per hour limits.
- 2) Facility Permit or Rule may specify sample time

APPENDIX B FACILITY CEMS DATA

Average Values Report

Generated: 10/30/2018 14:18

Company: City Of Anaheim
Plant: 3071 Miraloma Ave.,
City/St: Anaheim, CA, 92806
Source: unit3

Period Start: 10/30/2018 13:00
Period End: 10/30/2018 14:05
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average 3_O2 %	Average 3_NOXPPM ppm	Average 3_NOX CORR ppm	Average 3_NOX LBHR #/hr	Average 3_NOX LBMM #/MMBTU	Average 3_CO ppm ppm	Average 3_CO CORR ppm	Average 3_CO LBHR #/hr	Average 3_CO LBMM #/MMBTU	Average 3_Gasflow kscfm	Average 3_LOAD MW	Average 3_STACEFLW kscfm
10/30/2018 13:00	14.52	2.50	2.31	4.43	0.009	3.08	2.85	3.15	0.0064	468.7	50.12	234.0
10/30/2018 13:01	14.52	2.43	2.25	3.94	0.008	3.17	2.93	3.25	0.0066	468.5	50.01	233.9
10/30/2018 13:02	14.52	2.37	2.19	3.94	0.008	3.23	2.99	3.30	0.0067	468.9	50.16	234.1
10/30/2018 13:03	14.52	2.33	2.15	3.94	0.008	3.30	3.05	3.35	0.0068	469.0	49.81	234.2
10/30/2018 13:04	14.52	2.27	2.10	3.94	0.008	3.35	3.10	3.45	0.0070	469.1	49.99	234.3
10/30/2018 13:05	14.52	2.25	2.08	3.95	0.008	3.39	3.13	3.45	0.0070	469.8	50.09	234.6
10/30/2018 13:06	14.53	2.23	2.07	3.94	0.008	3.44	3.19	3.50	0.0071	469.5	49.88	234.8
10/30/2018 13:07	14.53	2.19	2.03	3.45	0.007	3.48	3.22	3.55	0.0072	469.6	49.99	234.9
10/30/2018 13:08	14.52	2.18	2.02	3.45	0.007	3.49	3.23	3.60	0.0073	469.7	49.90	234.9
10/30/2018 13:09	14.52	2.18	2.02	3.45	0.007	3.49	3.23	3.55	0.0072	469.9	50.08	234.6
10/30/2018 13:10	14.51	2.18	2.01	3.45	0.007	3.50	3.23	3.55	0.0072	469.7	49.84	234.2
10/30/2018 13:11	14.52	2.19	2.03	3.45	0.007	3.48	3.22	3.55	0.0072	469.6	49.97	234.5
10/30/2018 13:12	14.51	2.21	2.04	3.94	0.008	3.45	3.19	3.50	0.0071	469.2	50.02	233.9
10/30/2018 13:13	14.52	2.24	2.07	3.94	0.008	3.42	3.16	3.50	0.0071	469.6	49.90	234.5
10/30/2018 13:14	14.52	2.24	2.07	3.94	0.008	3.40	3.14	3.50	0.0071	469.6	49.97	234.5
10/30/2018 13:15	14.53	2.23	2.07	3.94	0.008	3.40	3.15	3.49	0.0071	468.8	50.01	234.4
10/30/2018 13:16	14.54	2.23	2.07	3.94	0.008	3.39	3.14	3.50	0.0071	469.0	49.84	234.9
10/30/2018 13:17	14.52	2.23	2.06	3.94	0.008	3.38	3.13	3.45	0.0070	469.4	50.16	234.4
10/30/2018 13:18	14.52	2.23	2.06	3.94	0.008	3.38	3.13	3.45	0.0070	469.5	49.99	234.4
10/30/2018 13:19	14.52	2.24	2.07	3.94	0.008	3.37	3.12	3.45	0.0070	469.2	50.00	234.3
10/30/2018 13:20	14.52	2.26	2.09	3.94	0.008	3.37	3.13	3.45	0.0070	468.9	49.85	234.1
10/30/2018 13:21	14.52	2.25	2.08	3.94	0.008	3.38	3.13	3.45	0.0070	469.3	49.98	234.3
10/30/2018 13:22	14.52	2.26	2.09	3.94	0.008	3.37	3.12	3.45	0.0070	469.2	50.12	234.3
10/30/2018 13:23	14.52	2.26	2.09	3.93	0.008	3.34	3.09	3.39	0.0069	468.3	49.91	233.8
10/30/2018 13:24	14.53	2.25	2.08	3.94	0.008	3.33	3.08	3.40	0.0069	468.2	49.92	233.8
10/30/2018 13:25	14.53	2.24	2.07	3.94	0.008	3.35	3.10	3.44	0.0070	468.6	49.98	234.3
10/30/2018 13:26	14.53	2.21	2.05	3.94	0.008	3.35	3.10	3.45	0.0070	468.9	49.72	234.5
10/30/2018 13:27	14.53	2.23	2.07	3.93	0.008	3.32	3.08	3.39	0.0069	468.2	50.00	234.1
10/30/2018 13:28	14.52	2.26	2.09	3.93	0.008	3.29	3.04	3.34	0.0068	468.3	49.92	233.8
10/30/2018 13:29	14.52	2.27	2.10	3.93	0.008	3.25	3.01	3.29	0.0067	467.9	49.84	233.6
10/30/2018 13:30	14.51	2.29	2.11	3.93	0.008	3.23	2.98	3.29	0.0067	468.2	49.92	233.4
10/30/2018 13:31	14.52	2.31	2.14	3.93	0.008	3.21	2.97	3.29	0.0067	467.6	50.01	233.5
10/30/2018 13:32	14.52	2.33	2.15	3.93	0.008	3.20	2.96	3.24	0.0066	467.9	50.00	233.6
10/30/2018 13:33	14.53	2.32	2.15	3.93	0.008	3.19	2.95	3.24	0.0066	467.8	49.81	234.0
10/30/2018 13:34	14.52	2.34	2.16	3.93	0.008	3.15	2.91	3.19	0.0065	467.4	49.90	233.4
10/30/2018 13:35	14.53	2.35	2.18	3.93	0.008	3.14	2.91	3.19	0.0065	467.4	49.86	233.8
10/30/2018 13:36	14.54	2.35	2.18	3.92	0.008	3.19	2.96	3.24	0.0066	467.1	50.25	234.0
10/30/2018 13:37	14.52	2.32	2.15	3.93	0.008	3.26	3.01	3.34	0.0068	467.7	50.01	233.5
10/30/2018 13:38	14.51	2.29	2.11	3.93	0.008	3.29	3.04	3.34	0.0068	467.7	50.04	233.2
10/30/2018 13:39	14.52	2.28	2.11	3.92	0.008	3.23	2.99	3.28	0.0067	466.9	49.92	233.1
10/30/2018 13:40	14.51	2.31	2.13	3.91	0.008	3.14	2.90	3.18	0.0065	465.5	50.13	232.1
10/30/2018 13:41	14.52	2.36	2.18	3.92	0.008	3.06	2.83	3.08	0.0063	466.3	50.03	232.8
10/30/2018 13:42	14.52	2.39	2.21	3.91	0.008	3.04	2.81	3.08	0.0063	465.6	49.99	232.5
10/30/2018 13:43	14.52	2.38	2.20	3.92	0.008	3.03	2.80	3.09	0.0063	466.5	49.88	232.9
10/30/2018 13:44	14.52	2.38	2.20	3.92	0.008	3.03	2.80	3.08	0.0063	466.3	49.98	232.8
10/30/2018 13:45	14.53	2.39	2.21	3.92	0.008	3.02	2.80	3.09	0.0063	466.5	50.10	233.3
10/30/2018 13:46	14.52	2.38	2.20	3.93	0.008	3.05	2.82	3.09	0.0063	467.4	49.91	233.4
10/30/2018 13:47	14.52	2.37	2.19	3.92	0.008	3.08	2.85	3.14	0.0064	466.9	49.88	233.1
10/30/2018 13:48	14.51	2.39	2.21	3.92	0.008	3.07	2.83	3.14	0.0064	466.6	49.82	232.6
10/30/2018 13:49	14.51	2.41	2.23	3.93	0.008	3.07	2.83	3.14	0.0064	467.4	49.94	233.0
10/30/2018 13:50	14.51	2.40	2.22	3.92	0.008	3.07	2.83	3.14	0.0064	466.8	50.19	232.7
10/30/2018 13:51	14.52	2.39	2.21	3.92	0.008	3.12	2.89	3.19	0.0065	466.7	49.97	233.0
10/30/2018 13:52	14.52	2.37	2.19	3.92	0.008	3.14	2.90	3.19	0.0065	466.9	49.97	233.1
10/30/2018 13:53	14.52	2.33	2.15	3.93	0.008	3.16	2.92	3.24	0.0066	467.4	50.02	233.4

1-NH3

Period Start:	Average 3_O2 %	Average 3_NOXPPM Ppm	Average 3_NOX_COBR Ppm	Average 3_NOX_LBHR #/hr	Average 3_NOX_LHMM #/MFTU	Average 3_COPPM Ppm	Average 3_CO_COBR Ppm	Average 3_CO_LBHR #/hr	Average 3_CO_LHMM #/MFTU	Average 3_Gasflow kscfm	Average 3_LOAD MW	Average 3_STACKPLM kscfm
10/30/2018 13:54	14.52	2.32	2.15	3.92	0.008	3.15	2.91	3.19	0.0065	457.2	50.13	233.3
10/30/2018 13:55	14.52	2.32	2.15	3.93	0.008	3.14	2.90	3.20	0.0065	458.2	49.93	233.8
10/30/2018 13:56	14.52	2.33	2.15	3.93	0.008	3.13	2.89	3.19	0.0065	457.6	50.24	233.5
10/30/2018 13:57	14.51	2.35	2.17	3.93	0.008	3.12	2.88	3.19	0.0065	457.6	49.90	233.1
10/30/2018 13:58	14.51	2.37	2.19	3.93	0.008	3.15	2.91	3.19	0.0065	457.3	50.07	233.0
10/30/2018 13:59	14.51	2.35	2.17	3.93	0.008	3.23	2.98	3.29	0.0067	458.0	49.99	233.3
10/30/2018 14:00	14.50	2.30	2.12	3.93	0.008	3.28	3.02	3.34	0.0068	458.4	49.95	233.1
10/30/2018 14:01	14.51	2.26	2.09	3.94	0.008	3.33	3.07	3.39	0.0069	458.5	49.94	233.6
10/30/2018 14:02	14.52	2.24	2.07	3.93	0.008	3.34	3.09	3.39	0.0069	458.3	49.93	233.8
10/30/2018 14:03	14.52	2.24	2.07	3.93	0.008	3.35	3.10	3.44	0.0070	457.7	50.07	233.5
10/30/2018 14:04	14.51	2.24	2.07	3.93	0.008	3.36	3.10	3.44	0.0070	457.9	50.02	233.3
10/30/2018 14:05	14.52	2.23	2.06	3.93	0.008	3.37	3.12	3.44	0.0070	458.2	49.85	233.8
Daily Average*	14.52	2.30	2.12	3.90	0.008	3.26	3.01	3.32	0.0068	458.1	49.98	233.7
Maximum*	14.54	2.50	2.31	4.43	0.009	3.50	3.23	3.60	0.0073	459.5	50.25	234.9
10/30/2018 10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018
Minimum*	13.36	13.00	13.00	13.00	13.00	13.10	13.10	13.08	13.08	13.09	13.36	13.16
10/30/2018 10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018
14:00	14:00	13:10	13:10	13:11	13:11	13:45	13:45	13:44	13:46	13:40	13:26	13:40

* Does not include Invalid Averaging Periods ("N/A")

2-NH3

Average Values Report
Generated: 10/30/2018 16:07

Company: City Of Anaheim
Plant: 3071 Miraloma Ave.,
City/St: Anaheim, CA, 92806
Source: unit3

Period Start: 10/30/2018 14:36
Period End: 10/30/2018 15:41
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average 3_O2 %	Average 3_NOXPPM PPM	Average 3_NOX_COBR PPM	Average 3_NOX_LBHR #/hr	Average 3_NOX_LBMM #/MMBTU	Average 3_CO2PPM PPM	Average 3_CO_COBR PPM	Average 3_CO_LBHR #/hr	Average 3_CO_LBMM #/MMBTU	Average 3_GasFlow Kscfh	Average 3_LOAD MW	Average 3_STACKFMM Kscfh
10/30/2018 14:36	14.51	2.29	2.11	3.93	0.008	3.18	2.94	3.24	0.0066	467.4	49.98	233.0
10/30/2018 14:37	14.51	2.32	2.14	3.93	0.008	3.17	2.93	3.24	0.0066	467.6	49.90	233.1
10/30/2018 14:38	14.51	2.33	2.15	3.92	0.008	3.18	2.94	3.24	0.0066	467.2	50.01	232.9
10/30/2018 14:39	14.50	2.34	2.16	3.93	0.008	3.15	2.90	3.19	0.0065	467.5	50.01	232.7
10/30/2018 14:40	14.51	2.34	2.16	3.92	0.008	3.13	2.89	3.19	0.0065	466.7	50.09	232.7
10/30/2018 14:41	14.51	2.34	2.16	3.93	0.008	3.16	2.92	3.19	0.0065	467.6	50.00	233.1
10/30/2018 14:42	14.51	2.32	2.14	3.93	0.008	3.20	2.95	3.24	0.0066	467.5	49.98	233.1
10/30/2018 14:43	14.51	2.30	2.12	3.92	0.008	3.20	2.95	3.23	0.0066	466.8	49.98	232.7
10/30/2018 14:44	14.51	2.29	2.11	3.93	0.008	3.19	2.95	3.24	0.0066	467.6	49.91	233.1
10/30/2018 14:45	14.51	2.30	2.12	3.92	0.008	3.16	2.92	3.19	0.0065	466.9	49.91	232.7
10/30/2018 14:46	14.51	2.34	2.16	3.93	0.008	3.13	2.89	3.19	0.0065	467.4	49.94	233.0
10/30/2018 14:47	14.50	2.38	2.19	3.92	0.008	3.11	2.87	3.14	0.0064	467.2	50.00	232.6
10/30/2018 14:48	14.50	2.38	2.19	3.92	0.008	3.13	2.89	3.19	0.0065	467.1	50.06	232.5
10/30/2018 14:49	14.50	2.37	2.18	3.93	0.008	3.13	2.89	3.19	0.0065	467.5	49.88	232.7
10/30/2018 14:50	14.51	2.36	2.18	3.93	0.008	3.14	2.90	3.19	0.0065	467.5	49.86	233.1
10/30/2018 14:51	14.51	2.34	2.16	3.93	0.008	3.15	2.91	3.19	0.0065	467.6	50.10	233.1
10/30/2018 14:52	14.51	2.34	2.16	3.92	0.008	3.14	2.90	3.19	0.0065	467.2	50.09	232.9
10/30/2018 14:53	14.51	2.35	2.17	3.93	0.008	3.11	2.87	3.14	0.0064	467.8	49.77	233.2
10/30/2018 14:54	14.51	2.35	2.17	3.93	0.008	3.10	2.86	3.14	0.0064	467.4	49.98	233.0
10/30/2018 14:55	14.51	2.35	2.17	3.92	0.008	3.13	2.89	3.19	0.0065	467.1	49.82	232.9
10/30/2018 14:56	14.50	2.36	2.18	3.93	0.008	3.15	2.90	3.19	0.0065	467.6	49.99	232.8
10/30/2018 14:57	14.50	2.36	2.18	3.93	0.008	3.15	2.90	3.19	0.0065	467.6	50.15	232.8
10/30/2018 14:58	14.51	2.36	2.18	3.92	0.008	3.15	2.91	3.19	0.0065	467.2	50.11	232.9
10/30/2018 14:59	14.51	2.36	2.18	3.93	0.008	3.15	2.91	3.19	0.0065	467.3	49.99	233.0
10/30/2018 15:00	14.52	2.35	2.17	3.92	0.008	3.15	2.91	3.19	0.0065	466.9	50.01	233.1
10/30/2018 15:01	14.51	2.35	2.17	3.93	0.008	3.15	2.91	3.19	0.0065	467.4	49.82	233.0
10/30/2018 15:02	14.51	2.34	2.16	3.93	0.008	3.14	2.90	3.19	0.0065	468.1	49.91	233.4
10/30/2018 15:03	14.51	2.33	2.15	3.92	0.008	3.13	2.89	3.19	0.0065	467.2	49.98	232.9
10/30/2018 15:04	14.51	2.34	2.16	3.93	0.008	3.12	2.88	3.19	0.0065	467.8	50.09	233.2
10/30/2018 15:05	14.51	2.37	2.19	3.92	0.008	3.08	2.84	3.14	0.0064	466.9	49.95	232.7
10/30/2018 15:06	14.50	2.40	2.21	3.93	0.008	3.05	2.81	3.09	0.0063	467.3	49.92	232.6
10/30/2018 15:07	14.50	2.42	2.23	3.93	0.008	3.05	2.81	3.09	0.0063	467.5	50.04	232.7
10/30/2018 15:08	14.50	2.43	2.24	3.92	0.008	3.06	2.82	3.09	0.0063	467.0	49.79	232.5
10/30/2018 15:09	14.50	2.43	2.24	3.92	0.008	3.05	2.81	3.09	0.0063	466.7	50.02	232.3
10/30/2018 15:10	14.51	2.42	2.23	3.92	0.008	3.03	2.80	3.08	0.0063	466.2	49.81	232.4
10/30/2018 15:11	14.51	2.42	2.23	3.93	0.008	3.02	2.79	3.09	0.0063	467.5	49.99	233.1
10/30/2018 15:12	14.50	2.42	2.23	3.92	0.008	3.05	2.81	3.09	0.0063	466.8	49.83	232.3
10/30/2018 15:13	14.51	2.38	2.20	3.92	0.008	3.12	2.88	3.19	0.0065	466.8	49.99	232.7
10/30/2018 15:14	14.51	2.35	2.17	3.92	0.008	3.14	2.90	3.19	0.0065	466.9	50.06	232.7
10/30/2018 15:15	14.50	2.35	2.17	3.92	0.008	3.14	2.89	3.19	0.0065	466.9	49.92	232.4
10/30/2018 15:16	14.49	2.35	2.16	3.92	0.008	3.16	2.91	3.19	0.0065	466.8	49.76	232.0
10/30/2018 15:17	14.50	2.36	2.18	3.93	0.008	3.19	2.94	3.24	0.0066	467.3	49.97	232.6
10/30/2018 15:18	14.50	2.35	2.17	3.93	0.008	3.19	2.94	3.24	0.0066	467.4	50.12	232.7
10/30/2018 15:19	14.51	2.33	2.15	3.93	0.008	3.20	2.95	3.24	0.0066	467.3	50.05	233.0
10/30/2018 15:20	14.51	2.31	2.13	3.93	0.008	3.22	2.97	3.29	0.0067	467.6	49.75	233.1
10/30/2018 15:21	14.51	2.29	2.11	3.92	0.008	3.23	2.98	3.28	0.0067	466.9	50.06	232.7
10/30/2018 15:22	14.51	2.27	2.10	3.93	0.008	3.22	2.97	3.29	0.0067	467.5	49.96	233.1
10/30/2018 15:23	14.50	2.27	2.09	3.93	0.008	3.22	2.97	3.29	0.0067	467.3	49.86	232.6
10/30/2018 15:24	14.50	2.30	2.12	3.93	0.008	3.21	2.96	3.24	0.0066	467.8	49.93	232.9
10/30/2018 15:25	14.50	2.31	2.13	3.92	0.008	3.21	2.96	3.24	0.0066	467.0	49.85	232.5
10/30/2018 15:26	14.50	2.31	2.13	3.92	0.008	3.22	2.97	3.28	0.0067	466.5	50.05	232.2
10/30/2018 15:27	14.50	2.31	2.13	3.92	0.008	3.22	2.97	3.29	0.0067	467.0	50.02	232.5
10/30/2018 15:28	14.51	2.30	2.12	3.93	0.008	3.23	2.98	3.29	0.0067	467.4	49.76	233.0
10/30/2018 15:29	14.51	2.30	2.12	3.92	0.008	3.24	2.99	3.28	0.0067	466.9	50.12	233.7

2-NH3

Period Start:	Average 3_O2 %	Average 3_NOXPPM PPM	Average 3_NOX_COBA PPM	Average 3_NOX_LBHR #/hr	Average 3_NOX_LBMM #/MMBTU	Average 3_COXPPM PPM	Average 3_CO_COBR PPM	Average 3_CO_LBHR #/hr	Average 3_CO_LBMM #/MMBTU	Average 3_GasFlow kscfh	Average 3_LOAD MW	Average 3_STACKFLM kscfh
10/30/2018 15:30	14.51	2.28	2.11	3.93	0.008	3.26	3.01	3.34	0.0068	467.6	50.11	233.1
10/30/2018 15:31	14.51	2.27	2.10	3.92	0.008	3.27	3.02	3.33	0.0068	466.8	49.86	232.7
10/30/2018 15:32	14.51	2.26	2.09	3.92	0.008	3.28	3.03	3.34	0.0068	467.2	49.84	232.9
10/30/2018 15:33	14.51	2.27	2.10	3.92	0.008	3.24	2.99	3.29	0.0067	467.0	50.02	232.8
10/30/2018 15:34	14.51	2.29	2.11	3.93	0.008	3.22	2.97	3.29	0.0067	467.5	49.98	233.1
10/30/2018 15:35	14.51	2.30	2.12	3.92	0.008	3.23	2.98	3.28	0.0067	466.9	50.34	232.7
10/30/2018 15:36	14.51	2.30	2.12	3.92	0.008	3.23	2.98	3.28	0.0067	466.6	49.97	232.6
10/30/2018 15:37	14.51	2.31	2.13	3.92	0.008	3.23	2.98	3.28	0.0067	466.9	49.94	232.7
10/30/2018 15:38	14.51	2.31	2.13	3.92	0.008	3.24	2.99	3.29	0.0067	467.1	49.99	232.9
10/30/2018 15:39	14.51	2.30	2.12	3.92	0.008	3.23	2.98	3.29	0.0067	467.2	49.86	232.9
10/30/2018 15:40	14.52	2.30	2.13	3.92	0.008	3.20	2.96	3.23	0.0066	466.8	49.99	233.1
10/30/2018 15:41	14.51	2.30	2.12	3.92	0.008	3.20	2.95	3.23	0.0066	466.3	50.03	232.5
Daily Average*	14.51	2.34	2.15	3.92	0.008	3.16	2.92	3.21	0.0066	467.2	49.97	232.8
Maximum*	14.52	2.43	2.24	3.93	0.008	3.28	3.03	3.34	0.0068	468.1	50.34	233.4
10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018
Minimum*	15:40	15:09	15:09	15:34	15:41	15:32	15:32	15:32	15:32	15:02	15:35	15:02
10/30/2018	14.49	2.26	2.09	3.92	0.008	3.02	2.79	3.08	0.0063	466.2	49.75	232.0
10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018	10/30/2018
15:16	15:32	15:32	15:41	15:41	15:41	15:11	15:11	15:10	15:12	15:10	15:20	15:16

* Does not include Invalid Averaging Periods ("N/A")

APPENDIX C CALCULATIONS

Appendix C.1

General Emissions Calculations

GENERAL EMISSION CALCULATIONS

I. Stack Gas Velocity

A. Stack gas molecular weight, lb/lb-mole

$$MW_{dry} = 0.44 * \%CO_2 + 0.32 * \%O_2 + 0.28 * \%N_2$$

$$MW_{wet} = MW_{dry} * (1 - B_{wo}) + 18 * B_{wo}$$

B. Absolute stack pressure, iwg

$$Ps = Pbar + \frac{Psg}{13.6}$$

C. Stack gas velocity, ft/sec

$$V_s = 2.9 * C_p * \sqrt{\Delta P} * \sqrt{T_s} * \sqrt{\frac{29.92 * 28.95}{P_s * MW_{wet}}}$$

II. Moisture

A. Sample gas volume, dscf

$$V_{mstd} = 0.03342 * V_m * (P_{bar} + \frac{\Delta H}{13.6}) * \frac{T_{ref}}{T_m} * Y_d$$

B. Water vapor volume, scf

$$V_{wstd} = 0.0472 * V_{lc} * \frac{T_{ref}}{528 ^\circ R}$$

C. Moisture content, dimensionless

$$B_{wo} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

III. Stack gas volumetric flow rate

A. Actual stack gas volumetric flow rate, wacfm

$$Q = V_s * A_s * 60$$

B. Standard stack gas flow rate, dscfm

$$Q_{sd} = Q * (1 - B_{wo}) * \frac{T_{ref}}{T_s} * \frac{P_s}{29.92}$$

IV. Gaseous Mass Emission Rates, lb/hr

$$M = \frac{\text{ppm} * MW_i * Q_{sd} * 60}{SV * 10^6}$$

V. Emission Rates, lb/MMBtu

$$\frac{\text{lb}}{\text{MMBtu}} = \frac{\text{ppm} * MW_i * F}{SV * 10^6} * \frac{20.9}{20.9 - \%O_2}$$

6. Percent Isokinetic

$$I = \frac{17.32 * T_s (V_{m \text{ std}})}{(1 - B_w) * 0 * V_s * P_s * D_n^2} * \frac{528^\circ R}{T_{ref}}$$

7. Particulate emissions

a) Grain loading, gr/dscf

$$C = 0.01543 (M_n / V_{m \text{ std}})$$

b) Grain loading at 12% CO₂, gr/dscf

$$C_{12\% \text{ CO}_2} = C (12 / \% \text{ CO}_2)$$

c) Mass emissions, lb/hr

$$M = C * Q_{sd} * (60 \text{ min/hr}) / (7000 \text{ gr/lb})$$

d) Particulate emission factor

$$\text{lb} / 10^6 \text{ Btu} = C * \frac{1 \text{ lb}}{7000 \text{ gr}} * F * \frac{20.9}{20.9 - \%O_2}$$

Nomenclature:

A_s	= stack area, ft ²
B_{wo}	= flue gas moisture content, dimensionless
$C_{12\%CO_2}$	= particulate grain loading, gr/dscf corrected to 12% CO ₂
C	= particulate grain loading, gr/dscf
C_p	= pitot calibration factor, dimensionless
D_n	= nozzle diameter, in.
F	= fuel F-Factor, dscf/MMBtu @ 0% O ₂
H	= orifice differential pressure, iwg
I	= % isokinetics
M_n	= mass of collected particulate, mg
M_i	= mass emission rate of specie i, lb/hr
MW	= molecular weight of flue gas, lb/lb-mole
M_{wi}	= molecular weight of specie i:
	SO ₂ : 64
	NO _x : 46
	CO: 28
	HC: 16
t	= sample time, min.
ΔP	= average velocity head, iwg = $(\sqrt{\Delta P})^2$
P_{bar}	= barometric pressure, inches Hg
P_s	= stack absolute pressure, inches Hg
P_{sg}	= stack static pressure, iwbg
Q	= wet stack flow rate at actual conditions, wacfm
Q_{sd}	= dry standard stack flow rate, dscfm
SV	= specific molar volume of an ideal gas at standard conditions, ft ³ /lb-mole
T_m	= meter temperature, °R
T_{ref}	= reference temperature, °R
T_s	= stack temperature, °R
V_s	= stack gas velocity, ft/sec
V_{lc}	= volume of liquid collected in impingers, ml
V_m	= uncorrected dry meter volume, dcf
V_{mstd}	= dry meter volume at standard conditions, dscf
V_{wstd}	= volume of water vapor at standard conditions, scf
Y_d	= meter calibration coefficient

Appendix C.2

Spreadsheet Summaries

SCAQMD 207.1 EXAMPLE CALCULATION

TEST NUMBER: 1-NH3-U3

Identifier	Description	Units	Equation	Value
A	Reference Temperature	F	--	60
B	Reference Temperature	R	$A + 460$	520
C	Meter Calibration Factor (Yd)	--	--	1.011
D	Barometric Pressure	" Hg	--	29.67
E	Meter Volume	acf	--	46.975
F	Meter Temperature	F	--	83.0
G	Meter Temperature	R	$F + 460$	543.0
H	Delta H	" H ₂ O	--	1.5
I	Meter Volume (standard)	dscf	$0.03342 * E * (D + H/13.6) * B/G * C$	45.264
J	Liquid Collected	grams	--	128.6
K	Water vapor volume	scf	$0.0472 * J * B/528$	5.978
L	Moisture Content	--	$K/(K + I)$	0.117
M	Gas Constant	ft-lbf/lb-mole-R	--	1545.33
N	Specific Molar Volume	SCF/lb-mole	$385.3 * B / 528$	379.5
O	F-Factor	dscf/MMBtu	--	8,710
P	HHV	Btu/SCF	--	1,050
Q	Mass Conversion Factor	lb/ug	--	2.2046E-09
R	O ₂ Correction Factor	--	--	15
S	Stack Flow Rate @ 68 F	dscfm	--	233,700
T	Stack Flow Rate @ Tref	dscfm	$S * B/528$	230,159
U	Mass NH ₃	ug	--	1,561
V	Mass NH ₃	lb	$U * Q$	3.44E-06
W	MW of NH ₃	lb/lb-mole	--	17.03
X	NH ₃	ppm	$(V * N * 10^6)/(I * W)$	1.7
Y	Flue Gas O ₂	%	--	14.53
Z	NH ₃	ppmc	$X * (20.9 - R)/(20.9 - Y)$	1.6
AA	NH ₃	lb/hr	$X * T * W * 60/(N * 10^6)$	1.0
AB	NH ₃	lb/MMBtu	$(X * W * O)/(385.3 * 10^6) * 20.9/(20.9 - Y)$	0.002
AC	NH ₃	lb/MMSCF	$AB * P$	2.2

Note:

(1) Some values may be slightly different from those shown on the run sheets due to round off errors. This page is intended to show the calculation methodology only.

SCAQMD METHOD 207.1 DATA WORKSHEET AND SUMMARY

Facility.....	Canyon		Parameter.....	NH₃	
Unit.....	U3		Fuel.....	Natural gas	
Sample Location.....	Stack		Data By.....	SD	
Test Number.....	1-NH3-U3	2-NH3-U3	Average	Maximum	Limit
Reference Temperature (°F).....	60	60			
Test Date.....	10/30/2018	10/30/2018			
Test Method.....	SCAQMD 207.1	SCAQMD 207.1			
Sample Train.....	31-WCS	31-WCS			
Meter Calibration Factor.....	1.011	1.011			
Stack Area (ft ²).....	106.90	106.90			
Sample Time (Minutes).....	60	60			
Barometric Pressure ("Hg).....	29.67	29.67			
Start/Stop Time	1300/1406	1436/1542			
Meter Volume (acf).....	46.975	48.330			
Meter Temperature (°F).....	83.0	84.9			
Meter Pressure (iwg).....	1.5	1.5			
Liquid Volume (ml).....	128.6	129.5			
Stack O ₂ (%).....	14.52	14.51	14.52	(from facility CEMS)	
Unit Load (MW).....	50.0	50.0	50.0		
Standard Sample Volume (SCF).....	45.264	46.408			
Moisture Fraction.....	0.117	0.115			
Stack Flow Rate (dscfm, 68 °F).....	233,700	232,800	233,250	(from facility CEMS)	
Stack Flow Rate (@ Tref).....	230,159	229,273	229,716		
Gas Constant (ft-lbf/lb-mole-R).....	1545.33	1545.33			
Molecular Weight NH ₃ (lb/lb-mole).....	17.03	17.03			
Specific Molar Volume (ft ³ /lb-mole).....	379.5	379.5			
F-Factor (dscf/MMBtu).....	8,710	8,710			
HHV(Btu/SCF).....	1,050	1,050			
Mass Conversion (lb/ug).....	2.2046E-09	2.2046E-09			
O ₂ Correction Factor (%).....	15	15			
Mass NH ₃ (ug).....	1,561	1,275			
Mass NH ₃ (lb).....	3.44E-06	2.81E-06			
NH ₃ (ppmv, flue gas).....	1.7	1.4	1.5	1.7	
NH ₃ (ppmv @ O ₂ Correction Factor).....	1.6	1.2	1.4	1.6	5
NH ₃ (lb/hr).....	1.0	0.8	0.9	1.0	
NH ₃ (lb/MMBtu).....	0.002	0.002	0.002	0.002	
NH ₃ (lb/MMSCF).....	2.2	1.8	2.0	2.2	

Note: SCAQMD Method 207.1 requires the higher of the duplicate runs be reported as the test result.

APPENDIX D QUALITY ASSURANCE

Appendix D.1

Quality Assurance Program Summary

QUALITY ASSURANCE PROGRAM SUMMARY

As part of Montrose Air Quality Services, LLC (Montrose) ASTM D7036-04 certification, Montrose is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. Montrose quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: Montrose has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: Montrose has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of Montrose QA efforts. The manual is revised upon periodic review and as Montrose adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. Montrose training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the Montrose QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of Montrose emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: Montrose maintains current copies of EPA, ARB, and SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: Montrose maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to Montrose source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to Montrose office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

“Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, Montrose Air Quality Services, LLC (Montrose) personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, Montrose personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04. The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report.”

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, will be present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)

The following safety measures will be followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

TABLE 1
EQUIPMENT MAINTENANCE SCHEDULE

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero, span gas	As recommended by manufacturer	As recommended by manufacturer
Integrated sampling tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobile van sampling system	1. Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry.

TABLE 2
MAJOR SAMPLING EQUIPMENT CALIBRATION REQUIREMENTS

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	< 2% of analyzer range
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	< 5% of analyzer range
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	< 3% of analyzer range
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO _x Analyzer	Daily	NO ₂ -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	+/- 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	+/- 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	+/- 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	+/- 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	+/- 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for $\Delta H@$	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	+/- 1.5%

Note: Calibration requirements will be used that meet applicable regulatory agency requirements.

Appendix D.2

SCAQMD and STAC Certifications



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

August 30, 2018

Mr. John Peterson
Montrose Air Quality Services, LLC
1631 E. Saint Andrew Place
Santa Ana, CA 92705

Subject: LAP Approval Notice
Reference # 96LA1220

Dear Mr. Peterson:

We have reviewed your renewal letter under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning September 30, 2018, and ending September 30, 2019 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 10.1 and 100.1	SCAQMD Methods 25.1 and 25.3 (Sampling)
USEPA CTM-030 and ASTM D6522-00	SCAQMD Rule 1121/ 1146.2 Protocol
SCAQMD Rule 1420/1420.1/1420.2 – (Lead) Source and Ambient Sampling	

Your LAP approval to perform nitrogen oxide emissions compliance testing for SCAQMD Rule 1121/ 1146.2 Protocols includes satellite facilities located at:

McKenna Boiler
1510 North Spring Street
Los Angeles, CA 90012

Noritz America Corp.
11160 Grace Avenue
Fountain Valley, CA 92708

Ajax Boiler, Inc.
2701 S. Harbor Blvd.
Santa Ana, CA 92704

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

A handwritten signature in black ink that reads "D. Sarkar".

Dipankar Sarkar
Program Supervisor
Source Test Engineering

DS:GK/gk

Attachment

180830 LapRenewalRev.doc

Cleaning the air that we breathe...™



American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 5th day of March 2018.



President and CEO
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2020

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

Appendix D.3

Individual QI Certificate

CERTIFICATE OF COMPLETION

Sean Donovan

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

SCAQMD Method 207.1

Certificate Number: 002-2016-06

Tate Strickler

Tate Strickler, Accreditation Director

DATE OF ISSUE: 11/30/16

DATE OF
EXPIRATION: 11/30/21



APPENDIX E

APPLICABLE PERMIT SECTIONS



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: POWER GENERATION					
GAS TURBINE, NO. 1, NATURAL GAS, GENERAL ELECTRIC, MODEL LM6000PC SPRINT, SIMPLE CYCLE, 479 MMBTU/HR AT 46 DEG F, WITH INLET CHILLING, WITH WATER INJECTION WITH A/N: 555828	D1	C3	NOX: MAJOR SOURCE**	CO: 4 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]; CO: 2000 PPMV NATURAL GAS (5) [RULE 407, 4-2-1982]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 2005, 6-3-2011]; NOX: 25 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; PM10: 0.01 GRAINS/SCF NATURAL GAS (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; PM10: 1.67 LBS/HR NATURAL GAS (5C) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR NATURAL GAS (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SOX: 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A63.1, A99.1, A99.2, A99.3, A195.1, A195.2, A195.3, A327.1, B61.1, D12.1, D29.2, D29.3, D82.1, D82.2, E193.1, H23.1, I298.1, K40.1
GENERATOR, 50.95 MW					

- * (1) (1A) (1B) Denotes RECLAIM emission factor
(3) Denotes RECLAIM concentration limit
(5) (5A) (5B) Denotes command and control emission limit
(7) Denotes NSR applicability limit
(9) See App B for Emission Limits
(2) (2A) (2B) Denotes RECLAIM emission rate
(4) Denotes BACT emission limit
(6) Denotes air toxic control rule limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process 1: POWER GENERATION					
CO OXIDATION CATALYST, NO. 1, BASE, 110 CUBIC FEET OF TOTAL CATALYST VOLUME A/N: 476654	C3	D1 C4			
SELECTIVE CATALYTIC REDUCTION, NO. 1, CORMETECH CMHT-21, 1012 CU.FT.; WIDTH: 2 FT 6 IN; HEIGHT: 25 FT 9 IN; LENGTH: 18 FT WITH A/N: 476654 AMMONIA INJECTION	C4	C3 S6		NH3: 5 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.4, D12.2, D12.3, D12.4, E179.1, E179.2, E193.1
STACK, TURBINE NO. 1, HEIGHT: 86 FT; DIAMETER: 11 FT 8 IN A/N: 555828	S6	C4			

- * (1) (1A) (1B) Denotes RECLAIM emission factor
(3) Denotes RECLAIM concentration limit
(5) (5A) (5B) Denotes command and control emission limit
(7) Denotes NSR applicability limit
(9) See App B for Emission Limits

- (2) (2A) (2B) Denotes RECLAIM emission rate
(4) Denotes BACT emission limit
(6) Denotes air toxic control rule limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[Devices subject to this condition : C4, C10, C16, C22]

- D12.5 The operator shall install and maintain a(n) non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

[**RULE 1110.2, 2-1-2008**; **RULE 1110.2, 9-7-2012**; **RULE 1303(b)(2)-Offset, 5-10-1996**;
RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 1401, 9-10-2010**; **RULE 1470, 5-4-2012**;
RULE 2012, 5-6-2005; **40CFR 60 Subpart III, 1-30-2013**]

[Devices subject to this condition : D25]

- D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR serving this equipment



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

The test(s) shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter. The AQMD shall be notified of the date and time of the test at least 10 days prior to the test.

If the turbine is not in operation during one calendar year, then no testing is required during that calendar year.

The NO_x concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NO_x emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted and the results submitted to the District within 60 days after the test date.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration limit.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D1, D7, D13, D19]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Sampling Time	Test Location
SOX emissions	AQMD Laboratory Method 307-91	Not Applicable	Fuel sample
VOC emissions	District Method 25.3	1 hour	Outlet of the SCR serving this equipment
PM emissions	District method 5.1	4 hours	Outlet of the SCR serving this equipment

THIS IS THE LAST PAGE OF THIS DOCUMENT

If you have any questions, please contact one of the following individuals by email or phone.

Name: Mr. Sean Donovan
Title: Filed Project Manager
Region: Southwest
E-Mail: SDonovan@montrose-env.com
Phone: (714) 279-6777

Name: Mr. Matt McCune
Title: Regional Vice President
Region: Southwest
E-Mail: MMccune@montrose-env.com
Phone: (714) 279-6777

TEST REPORT FOR AMMONIA SLIP TEST AT CANYON POWER PLANT UNIT 4 FACILITY ID 153992, DEVICE ID D19

Prepared For:

Canyon Power Plant

3071 E. Mira Loma Avenue
Anaheim, California 92806

For Submittal To:

South Coast Air Quality Management District

21865 Copley Drive
Diamond Bar, California 91765-4178

Prepared By:

Montrose Air Quality Services, LLC

1631 E. St. Andrew Pl.
Santa Ana, California 92705
(714) 282-8240

Sean M. Donovan

Test Date: **May 16, 2018**

Production Date: **May 29, 2018**

Report Number: **002AS-436003-RT-380**



CONFIDENTIALITY STATEMENT

Except as otherwise required by law or regulation, this information contained in this communication is intended exclusively for the individual or entity to which it is addressed. This communication may contain information that is proprietary, privileged or confidential or otherwise legally exempt from disclosure. If you are not the named addressee, you are not authorized to read, print, retain, copy, or disseminate this message or any part of it.

REPORT REVIEW AND CERTIFICATION

I certify that all work performed in the preparation and production of this report was performed by me or under my supervision and that all data presented is authentic.



Date: 5/29/2018

Sean Donovan
Field Project Manager

I certify that I have also reviewed this report, both in form and content, and that all data, calculations, and presentations are authentic, accurate, and complete.

To the best of our knowledge, the report has been checked for completeness, and the results presented are accurate, error-free, legible, and representative of the actual emissions measured during the test, and conform to the requirements of ASTM D7036-04, Standard Practice for Competence of Air Emission Testing Bodies (AETBs).



Date: 5/29/2018

Matthew R. McCune, P.E.
Regional Vice President

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1.0 INTRODUCTION AND SUMMARY

Montrose Air Quality Services, LLC (MAQS), was contracted the Canyon Power Plant to perform an ammonia slip test at Unit 4 as required by the facility Permit (Facility ID 153992) Condition Number D29.2. This report documents the results of the ammonia slip tests performed on May 16, 2018. The test was performed by Sean Donovan, Bryce Quinney, and Kevin Sandoval. Ms. Bertha Hernandez coordinated the test for Canyon Power Plant.

The test consisted of duplicate ammonia tests performed at 50 MW. The test program followed the procedures described in the initial compliance test protocol (Delta document R038842). The results of the test are summarized in Table 1-1. The table shows that the ammonia slip from this unit was less than the permitted limit of 5 ppm corrected to 15% O₂.

**TABLE 1-1
AMMONIA SLIP TEST RESULTS
CANYON POWER PLANT UNIT 4
MAY 16, 2018**

Parameter	Units	Result ⁽¹⁾	Limit
NH ₃	ppm	1.5	--
NH ₃	ppmc	1.3	5

1) Maximum of duplicate runs, as required by SCAQMD Method 207.1

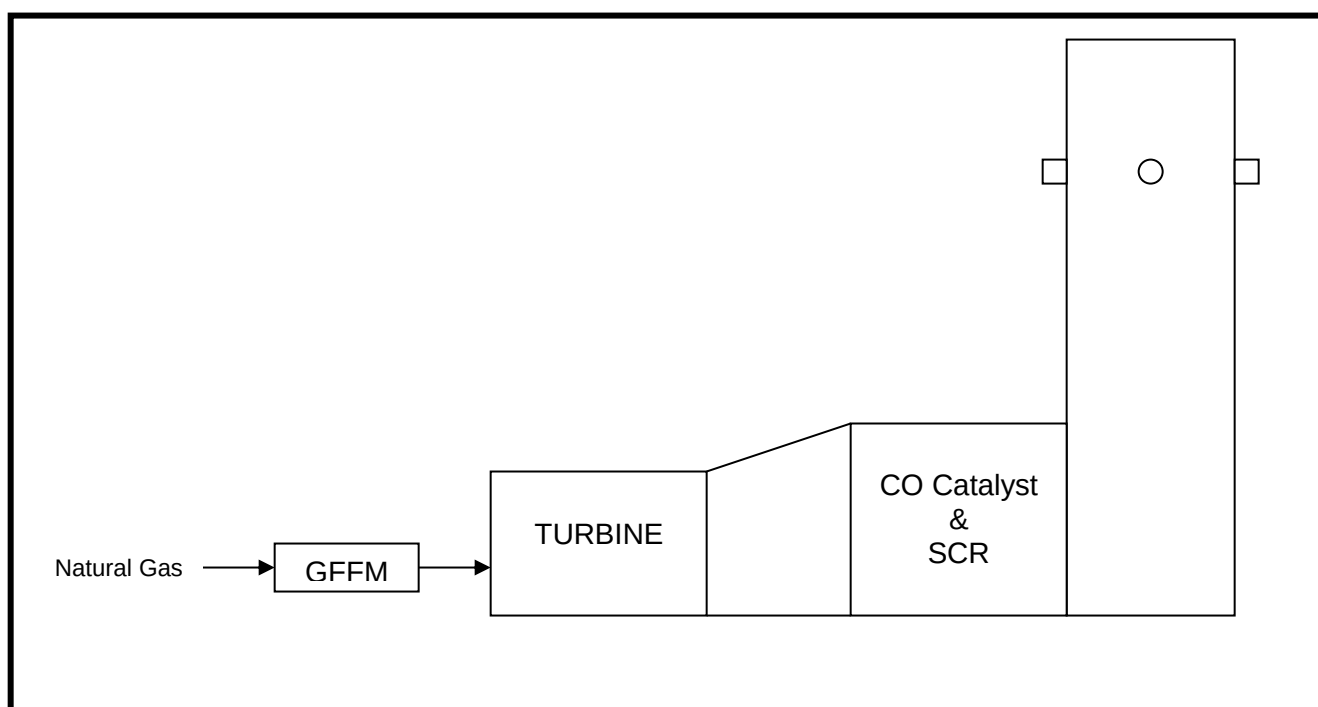
Section 2 of this document provides a brief description of the unit, test conditions, sample location, and CEMS. Details of the test procedures are provided in Section 3. Section 4 provides the results of each individual test. All raw data, calculations, quality assurance data, unit operating conditions, and CEMS data are provided in the appendices.

2.0 UNIT AND CEMS DESCRIPTION

2.1 UNIT DESCRIPTION

The City of Anaheim Canyon Power Plant is located at 3071 E. Mira Loma Avenue, Anaheim, California 92806. The facility consists of four identical generating units. Each unit consists of a natural gas fired, GE Model LM6000PC Sprint simple cycle, gas turbine. The units are natural gas fired with a rated heat input of 479 MMBtu per hour at 46 degrees Fahrenheit, with water injection. The units are equipped with a CO catalyst and Selective Catalytic Reduction (SCR) system for NO_x control. Figure 2-1 presents a block diagram of the unit.

**FIGURE 2-1
UNIT BLOCK DIAGRAM
CANYON POWER PLANT**



Stack Inside Diameter:	11 feet, 8 inches
Distance from Upstream Disturbance:	23 feet, 4 inches (2.0 Diameters)
Distance from Stack Exit:	16 feet, 6 inches (1.4 Diameters)

2.2 TEST CONDITIONS

The tests were performed with the unit operating at an average load of 50 MW. Tests were performed while the unit was firing natural gas and operating under normal conditions. Unit operation was established by the Canyon Power Plant operators.

2.3 SAMPLE LOCATION

The measurements were made from sample ports located on the exhaust stack. There are four sample ports equally spaced at this location. The stack inside diameter at the sample plane is 11 feet, 8 inches. The sample ports are located 23 feet, 4 inches (2.0 diameters) downstream of the nearest flow disturbance and 16 feet, 6 inches (1.4 diameters) from the stack exit.

3.0 TEST DESCRIPTION

Flue gas samples were collected non-isokinetically using a SCAQMD Method 207.1 sample train. The samples were collected using a 12-point traverse at the exhaust stack location. Each test was performed over a 60 minute interval. The sample gas was drawn through a glass probe, Teflon sample line, two impingers each containing 100 ml of 0.1N H₂SO₄, an empty impinger, an impinger containing silica gel, and a dry gas meter. The optional nozzle and filter were not used since the source is natural gas fired. The contents of the sample line and the first three impingers were recovered and analyzed by SCAQMD Method 207.1 for ammonia concentration by Ion Specific Electrode analysis.

Stack O₂ and NO_x concentrations and stack volumetric flow rate data were recorded from the Continuous Emission Monitoring System (CEMS) which is installed on the unit. These data were used to correct the ammonia concentration to 15% O₂.

4.0 TEST RESULTS AND OVERVIEW

4.1 TEST RESULTS

The results of the test are summarized in Table 4-1. The results show that the maximum ammonia slip was 1.3 ppm @ 15% O₂ which is less than the permitted limit of 5 ppm @ 15% O₂.

**TABLE 4-1
AMMONIA SLIP TEST RESULTS
CANYON POWER PLANT UNIT 4
MAY 16, 2018**

Parameter	Units	Run 1	Run 2	Average	Maximum ⁽¹⁾	Limit
Test		1-NH ₃ -U4	2-NH ₃ -U4			--
Date		5/16/2018	5/16/2018			--
Time		1100/1203	1232/1335			--
O ₂ ⁽²⁾	%	14.55	14.55	14.55	--	--
Stack Flow ⁽²⁾	dscfm @ T _{ref}	229,371	229,470	229,420	--	--
NO _x ⁽²⁾	ppmc	2.2	2.4	2.3	--	2.5
NH ₃	ppm	1.5	1.3	1.4	1.5	--
NH ₃	ppmc	1.3	1.2	1.3	1.3	5
NH ₃	lb/hr	0.9	0.8	0.8	0.9	--
NH ₃	lb/MMBtu	0.002	0.002	0.002	0.002	--
NH ₃	lb/MMSCF	1.9	1.7	1.8	1.9	--

1) Maximum of duplicate test runs, as required by SCAQMD Method 207.1

2) From facility CEMS

APPENDIX A

RAW DATA

APPENDIX A.1

SAMPLE DATA SHEETS



WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: Canyon Power
LOCATION: Unit 4
DATE: 5-16-18
RUN NO: 1-NH3-4
OPERATOR: BQ
METER BOX NO: 3-WCS
METER ΔH@: 0.590
METER Yd: 1.001
STACK AREA, FT²: 5/12
TRAVERSE POINTS, MIN/POINT: 5/12
ΔH= X ΔP:
Probe Condition, pre/post test: N/A
Silica Gel Expanded, Y/N: N
Filter Condition after Test: N/A
Check Weight: 499.9/500.0

AMBIENT TEMPERATURE: 75'
BAROMETRIC PRESSURE: 29.69
ASSUMED MOISTURE: 10%
PITOT TUBE COEFF, Cp: N/A
PROBE ID NO/MATERIAL: N/A / Glass
PROBE LENGTH: 10'
NOZZLE ID NO/ MATERIAL: N/A
NOZZLE DIAMETER: N/A
FILTER NO/TYPE: N/A
PRE-TEST LEAK RATE: 20.05 CFM@ 12 in. Hg.
POST-TEST LEAK RATE: 20.05 CFM@ 12 in. Hg.
PITOT LEAK CHECK - PRE: POST:
CHAIN OF CUSTODY: SAMPLE CUSTODIAN SD
SAMPLER BQ
SAMPLE CUSTODIAN SD

Imp. # Contents Post-Test - Pre-Test = Difference
1 112504 907.8 721.2
2 112504 749.8 747.8
3 07 561.5 561.2
4 56 963.2 954.6
UR -100m
Total:

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
3	1100	454.135	N/A	1.0	N/A	N/A	N/A	52	87	4	-	-
2	1105											
1	1110											
E	1115	462.805										
3	1116	462.805		1.0				55	84	4		
2	1121											
1	1126											
E	1131	471.720										
3	1132	471.720		1.0				55	84	4		
2	1137											
1	1142											
E	1147	480.570										
3	1148	480.570		1.0				54	82	4		
2	1153											
1	1158											
E	1203	489.360										
Average:												

Comments: _____



WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET - STANDARD

CLIENT: Canyon Power
LOCATION: Unit 4
DATE: 5-16-18
RUN NO: 2-NH3-484
OPERATOR: BD
METER BOX NO: 3-WES
METER ΔH@: 0.590
METER Yd: 1.001
STACK AREA, FT²:
TRAVERSE POINTS, MIN/POINT: 5/12
ΔH= X ΔP:
Probe Condition, pre/post test: N/A
Silica Gel Expanded, Y/N: N
Filter Condition after Test: N/A
Check Weight: 499.9 / 500.0

AMBIENT TEMPERATURE: 75'
BAROMETRIC PRESSURE: 29.69
ASSUMED MOISTURE: 10%
PITOT TUBE COEFF, Cp: N/A
PROBE ID NO/MATERIAL: N/A / Glass
PROBE LENGTH: 6'
NOZZLE ID NO/MATERIAL: N/A
FILTER NO/TYPER: N/A
PRE-TEST LEAK RATE: 10.05 CFM@ 12 in. Hg.
POST-TEST LEAK RATE: 20.05 CFM@ 12 in. Hg.
PITOT LEAK CHECK - PRE: POST: -
CHAIN OF CUSTODY: SAMPLE CUSTODIAN SD
SAMPLER DQ
SAMPLE CUSTODIAN SD

Imp. # Contents Post-Test - Pre-Test = Difference
1 H₂SO₄ 888.0 652.0
2 H₂SO₄ 799.1 797.6
3 MT 538.0 537.4
4 Sb 901.6 891.2
UR 100 mL
Total:

Point	Time	Meter Volume, ft ³	ΔP in. H ₂ O	ΔH in. H ₂ O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In Out	Vacuum in. Hg.	O ₂ %	P, static in. H ₂ O
3	1232	440.100	N/A	1.0	N/A	N/A	N/A	51	75	4		
2	1237											
1	1242											
E	1247	449.115		1.0				52	80	4		
3	1248	449.115										
2	1253											
1	1258											
E	1303	508.485										
3	1304	508.485		1.0				53	83	4		
2	1309											
1	1314											
E	1319	517.475										
3	1320	517.475		1.0				54	84	4		
2	1325											
1	1330											
E	1335	527.305										
Average:												

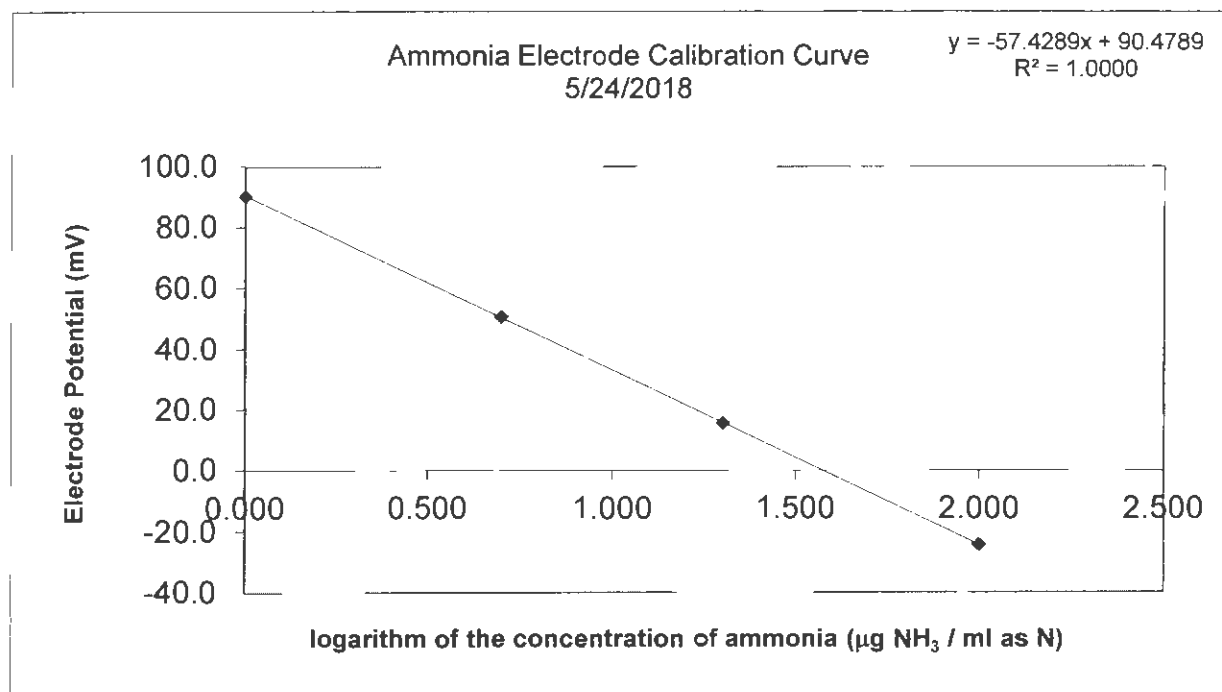
Comments: _____

APPENDIX A.2

LABORATORY DATA

AMMONIA ELECTRODE CALIBRATION CURVE

NH ₃ concentration (µg NH ₃ / ml as N)	log NH ₃ concentration	Electrode potential (mV)	Sample Temperature (C)	Room Temperature (C)
1	0.000	90.3	19	19
5	0.699	50.7	19	19
20	1.301	15.6	19	19
100	2.000	-24.4	19	19



slope -57.4289
y-intercept 90.4789

Concentration (µg NH ₃ / ml as N)	Value LR line	Difference	% Difference
1	1.0072	0.0072	0.7200
5	4.9279	-0.0721	-1.4416
20	20.1305	0.1305	0.6523
100	100.0845	0.0845	0.0845

Calculation:

Regression Line: $P = M \cdot \log(\mu\text{g of NH}_3 / \text{ml as N}) + B$

Measured Concentration of Ammonia (C) in µg / ml NH₃ as N: $C = 10^{(P-B)/M}$

where P = electrode potential, M= slope (must be -57 ± 3) and B= intercept

All standards were prepared in 0.04N H₂SO₄ and allowed to equilibrate to room temperature.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS CALCULATION

Client/ Location: SCPPA- Canyon
Sample Location: Unit 4
District Method: SCAQMD 207.1
Sample Date: 5/16/2018
Analysis Date: 5/24/2018
Analyst's Initials: RF
Calibration Curve Slope -57.4289
Y-intercept 90.4789
R² 1.0000

Sample	P mV	Conc. µg NH ₃ /ml as N	C avg as N	TV (ml)	C avg as NH ₃	µg NH ₃ / sample
28 ug NH ₃ / ml as N	6.5	28.994				
repeat 28 ug NH ₃ /ml as N	7.3	28.079	28.537	NA	34.688	NA
1-NH ₃	82.3	1.388				
repeat 1- NH ₃	82.8	1.361	1.374	596	1.671	995.657
2--NH ₃	84.9	1.251				
repeat 2- NH ₃	84.6	1.266	1.258	610	1.529	932.977
spike 2-NH ₃	14.2	21.293				
repeat spike	14.6	20.954	21.123	NA	25.677	NA
28 NH ₃ /ml as N	6.8	28.648				
repeat 28 ug NH ₃ /ml as N	6.8	28.648	28.648	NA	34.823	NA
Reagent Blank	192.8	0.017				
repeat Reagent Blank	192.6	0.017	0.0166	NA	0.020	NA
Field Blank	183.5	0.024				
repeat Field Blank	184.0	0.024	0.0238	396	0.029	11.439
DI H2O Blank	192.6	0.017				
Repeat DI H2O Blank	192.1	0.017	0.0168	NA	0.020	NA
28 NH ₃ /ml as N	7.0	28.419				
repeat 28 ug NH ₃ /ml as N	7.1	28.305	28.362	NA	34.476	NA

Notes:

Measured Concentration of Ammonia (C) in µg NH₃ / ml as N

$$C = 10^{(P-B)/M}$$

P = electrode potential (mV), M=slope and B=intercept

Average Measured Ammonia Concentration (Cavg) = (C1 + C2)/2

where C1, C2 results from duplicate analyses (µg NH₃/ml as N)

Cavg (µg NH₃/ml as NH₃) = Cavg (µg NH₃/ ml as N) * 17.03/ 14.01

µg NH₃ / sample = Cavg (µg NH₃/ml as NH₃) * TV

Used 100 ml of samples and standards with 2 ml ISA and constant stirring rate.

All solutions turned blue and remained blue with ISA unless otherwise indicated.

Sample PH and Temperatures can be found on the laboratory datasheet.

Maximum samples (including blanks) between 28 ug/ml check standard is 5 samples analyzed in duplicate.

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS QUALITY CONTROL

Client/ Location: SCPPA- Canyon
Sample Location: Unit 4
District Method: SCAQMD 207.1
Sample Date: 5/16/2018
Analysis Date: 5/24/2018
Analyst's Initials: RF

Sample	% recovery	RPD %	RPA %
28 ug NH ₃ / ml as N repeat 28 ug NH ₃ /ml as N	NA	3.21	1.916
1-NH3 repeat 1- NH3	NA	2.00	NA
2--NH3 repeat 2- NH3	NA	-1.20	NA
spike 2-NH3 repeat spike	103.42	1.60	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	0.00	2.313
Reagent Blank repeat Reagent Blank	NA	-0.80	NA
Field Blank repeat Field Blank	NA	2.00	NA
DI H2O Blank Repeat DI H2O Blank	NA	-2.00	NA
28 NH ₃ /ml as N repeat 28 ug NH ₃ /ml as N	NA	0.40	1.292

Notes:

spike: 100 ml sample + 2 ml (1000 µg NH₃ / ml as N)

Matrix Spike Percent Recovery (%R)

%R = (C spike*0.104 - Csample*0.102)/2 *100

Cspike = average result of matrix spike (µg NH₃/ ml as N)

Relative Percent Difference (RPD) = (C1-C2)/ Cavg *100 (must be 5% or less)

Relative Percent Accuracy (RPA) (must be 10% or less)

RPA = (Cavg-theoretical value of standard)/ theoretical value of standard * 100

AMMONIA BY ION SELECTIVE ELECTRODE ANALYSIS

Project #: 002AS-436003 District Method: SCAQMD 207.1 Sample Date: 5/16/2018
 Client/Location: SCAPA Canyon Calibration Date: 5/24/2018 Analysis Date: 5/24/2018
 Sample Location: Unit 4 Calibration Curve: $y = -57.4289x + 90.4789$ Analyst's Initials: RZ
 Test #s: _____ R²: 1.0000

Sample	Electrode Potential (mV)	TV (ml)	Conc. $\mu\text{g NH}_3 - \text{N / ml}$	Cavg ($\mu\text{g NH}_3 - \text{N / ml}$)	$\mu\text{g NH}_3 / \text{sample}$	Comments/ Temp/pH
Standard Check: 28 $\mu\text{g NH}_3/\text{ml}$	65		28.994			Percent Recovery:
Repeat 28 $\mu\text{g NH}_3/\text{ml}$	7.3					
1 NH_3	82.3		1.358			
Repeat 1 NH_3	82.8	594	1.361	1.374	995.6	pH < 2 T = 19 °C
2 NH_3	84.9		1.251			
Repeat 2 NH_3	84.6	60	1.266	1.258	932.9	pH < 2 T = 19 °C
Spike 2 NH_3	14.2		21.293			
Repeat spike	14.6		20.954	21.123		Recovery = %
28 NH_3	6.8		28.648			
Repeat 28 NH_3	6.8		28.648	28.648		
Reagent Blank	192.8		0.017			
Repeat Reagent BIK	192.6		0.017	0.0166		
Field Blank	183.5		0.024			
Repeat Field BIK	184.0		0.024	0.0238		All solutions
DH ₂ O Blank	192.6		0.017			tested at
Repeat DH ₂ O BIK	192.1		0.017	0.0168		19 °C
28 NH_3	7.0		28.919			
Repeat 28 NH_3	7.1		28.305	28.362		

Notes: Total volume of samples and standards used: 100 ml
 Volume of pH adjusting ISA used in ml: 2 ml
 Absorbing solution: 0.1 NH_4SO_4

Calculations: Conc. ($\mu\text{g NH}_3 - \text{N / ml}$) = $10^{(P-B)/M}$
 P = electrode potential, B = y-intercept and M = slope
 Cavg = average result of duplicate analyses ($\mu\text{g NH}_3 - \text{N / ml}$) = $(C_1 + C_2)/2$
 $\mu\text{g NH}_3 / \text{sample} = \text{Cavg} \times 17.03 / 14.01 \times \text{TV}$
 $\text{mg / sample} = \mu\text{g / sample} \div 1000$
 $\text{ppm NH}_3 = \text{mg NH}_3 / \text{sample} \times 1/\text{mstd} \times 1/454000 \times \text{SV}/17 \times 10^6$

APPENDIX A.3

QA/QC DATA

SEMI-ANNUAL DRY GAS METER/ORIFICE CALIBRATION

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: C:\Users\donovan\Desktop\Canyon U4\Semi-Annual Meter Calibration -3-wcs 2-5-18.xlsx\WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

Model #: 522 00
ID #: 3-WCS
Date: 2/5/2018
Bar Pressure: 29.99 (in Hg)
Performed By: R Howard

DRY GAS METER READINGS										CRITICAL ORIFICE READINGS			
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial Ambient Temperature (deg F)	Average Ambient Temperature (deg F)
0.12	26.00	987.231	992.611	5.380	67.0	66.0	67.0	66.0	33	0.1553	17.0	59.0	59.0
0.12	26.00	992.611	998.002	5.391	67.0	66.0	67.0	66.0	33	0.1553	17.0	59.0	59.0
0.12	26.00	998.002	1003.391	5.389	68.0	66.0	69.0	67.0	33	0.1553	17.0	59.0	59.0
0.61	12.00	1005.310	1010.688	5.378	67.0	66.0	67.0	66.0	48	0.3465	15.0	63.0	63.0
0.61	12.00	1010.688	1016.019	5.351	67.0	66.0	67.0	66.0	48	0.3465	15.0	63.0	63.0
0.61	12.00	1016.019	1021.374	5.355	69.0	66.0	69.0	69.0	48	0.3465	15.0	63.0	63.0
1.70	7.00	1023.788	1029.159	5.371	72.0	68.0	72.0	69.0	63	0.5888	14.0	63.0	63.0
1.70	7.00	1029.159	1034.526	5.367	72.0	68.0	72.0	68.0	63	0.5888	14.0	63.0	63.0
1.70	7.00	1034.526	1039.906	5.380	72.0	68.0	72.0	68.0	63	0.5888	14.0	63.0	63.0
3.20	5.00	969.333	974.636	5.303	69.0	65.0	69.0	65.0	73	0.8202	13.0	59.0	59.0
3.20	5.00	974.636	979.945	5.309	69.0	65.0	69.0	65.0	73	0.8202	13.0	59.0	59.0
3.20	5.00	979.945	985.249	5.304	69.0	65.0	69.0	65.0	73	0.8202	13.0	59.0	59.0

DRY GAS METER				ORIFICE		DRY GAS METER		ORIFICE		ORIFICE		ORIFICE	
VOLUME		VOLUME		VOLUME		CALIBRATION FACTOR		CALIBRATION FACTOR		CALIBRATION FACTOR		CALIBRATION FACTOR	
CORRECTED	CORRECTED	CORRECTED	CORRECTED	CORRECTED	CORRECTED	VOLUME	NOMINAL	Y	Value	dH@	Individual	Individual	Orifice
Vm(std)	Vm(std)	Vc(std)	Vc(std)	Vc(std)	Vc(std)	Vcr	(cu ft)	(number)	(in H2O)	(in H2O)	Run	Orifice	Average
5.407	153.1	5.315	150.5	5.215	0.983	1.625					Pass	0.95 < Y	0.98 < Y/Yd
5.418	153.5	5.315	150.5	5.215	0.981	1.623					Pass	< 0.010?	< 1.02?
5.406	153.1	5.315	150.5	5.215	0.983	1.624					Pass		
					Average	1.624					Pass	Pass	Pass
5.412	153.3	5.453	154.4	5.391	1.008	1.672					Pass		
5.385	152.5	5.453	154.4	5.391	1.013	1.672					Pass		
5.371	152.1	5.453	154.4	5.391	1.015	1.667					Pass		
					Average	1.670					Pass	Pass	Pass
5.381	152.4	5.405	153.1	5.343	1.004	1.606					Pass		
5.379	152.3	5.405	153.1	5.343	1.005	1.608					Pass		
5.392	152.7	5.405	153.1	5.343	1.002	1.608					Pass		
					Average	1.607					Pass	Pass	Pass
5.365	151.9	5.399	152.9	5.296	1.006	1.556					Pass		
5.371	152.1	5.399	152.9	5.296	1.005	1.556					Pass		
5.366	152.0	5.399	152.9	5.296	1.006	1.556					Pass		
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
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					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass
					Average	1.556					Pass	Pass	Pass

SIGNED: Signature on File

Date:

2/5/18



DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: 3-WCS
 Readout Description: Control Box
 Date: 1/3/2018
 Performed By: S. Donovan/R. Monzon

Calibrated Thermocouple ID: TC-CAL
 T1 Reference Thermometer ID: 201100
 T2 Reference Thermometer ID: 805002770
 T3 Reference Thermometer ID: 805002803

T/C I.D. TC-CAL	Readout I.D.	T/C - Readout °F				Reference Thermometer °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (Oil)	3-WCS	356	356	355	356	358	358	358	358	2.3	0.3%	Pass
T2 (Boiling H ₂ O)	3-WCS	211	211	211	211	212	212	212	212	1.0	0.1%	Pass
T1 (Ice/Water)	3-WCS	31	31	31	31	32	32	32	32	1.0	0.2%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

Thermocouple Source Readings

T/C Source S/N		T/C - Readout °F				T/C Source °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T4 (~650 F)	S/N 106970	650	651	652	651	650	650	651	650	0.7	0.1%	Pass
T3 (~370 F)	S/N 106970	366	366	365	366	370	370	370	370	4.3	0.5%	Pass
T2 (~212 F)	S/N 106970	213	213	212	213	212	212	212	212	0.7	0.1%	Pass
T1 (~32 F)	S/N 106970	31	31	30	31	32	32	32	32	1.3	0.3%	Pass

- 1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
 2) Pass if all Differences are less than 1.5% (°R)

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OUTSIDE LAB REQUIRED?: No

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Boyle Quinney 	1800 5-16-18		5/23/18 8:00

Chain of Custody - DS834001 - Excel
Master Document Storage\Forms\Datasheets\Lab Forms

Date of Last Revision 9/1/2017

[illegible]

DS834049

APPENDIX B

FACILITY CEMS DATA

Average Values Report
Generated: 5/16/2018 13:27Company: City Of Anaheim
Plant: 3071 Miraloma Ave...
City/St: Anaheim, CA, 92806
Source: unit4Period Start: 5/16/2018 11:00
Period End: 5/16/2018 12:02
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average 4_O2 %	Average 4_NOXPPM ppm	Average 4_NOX_CORR ppm	Average 4_NOX_LBHM #/MBTU	Average 4_NOX_LBHR #/hr	Average 4_CORPDM ppm	Average 4_CO_CORR ppm	Average 4_CO_LBHR #/hr	Average 4_CO_LBHM #/MBTU	Average 4_GasFlow kscfh	Average 4_LOAD MW	Average 4_STACKFWM kscfm
05/16/2018 11:00	14.55	2.36	2.19	0.0081	3.94	3.04	2.82	3.07	0.0063	463.7	50.14	232.6
05/16/2018 11:01	14.54	2.40	2.23	0.0082	4.00	3.33	3.09	3.36	0.0069	464.4	50.15	232.6
05/16/2018 11:02	14.55	2.41	2.24	0.0083	4.05	3.47	3.22	3.51	0.0072	464.2	50.14	232.9
05/16/2018 11:03	14.55	2.40	2.23	0.0082	4.00	3.41	3.17	3.46	0.0071	464.4	49.93	233.0
05/16/2018 11:04	14.55	2.38	2.21	0.0081	3.95	3.19	2.96	3.22	0.0066	464.1	50.18	232.8
05/16/2018 11:05	14.56	2.36	2.20	0.0081	3.95	3.01	2.80	3.07	0.0063	464.7	50.12	233.5
05/16/2018 11:06	14.56	2.35	2.19	0.0081	3.95	2.87	2.67	2.93	0.0060	464.7	50.17	233.5
05/16/2018 11:07	14.57	2.34	2.18	0.0080	3.90	2.86	2.67	2.93	0.0060	464.5	50.29	233.8
05/16/2018 11:08	14.56	2.33	2.17	0.0080	3.90	2.92	2.72	2.98	0.0061	464.7	50.18	233.5
05/16/2018 11:09	14.56	2.35	2.19	0.0081	3.95	2.96	2.75	3.02	0.0062	464.7	50.02	233.5
05/16/2018 11:10	14.55	2.35	2.18	0.0081	3.90	2.93	2.72	2.97	0.0061	464.3	50.08	232.9
05/16/2018 11:11	14.54	2.36	2.19	0.0081	3.95	2.98	2.76	3.02	0.0062	464.2	50.06	232.5
05/16/2018 11:12	14.55	2.39	2.22	0.0082	4.00	3.12	2.90	3.17	0.0065	464.5	50.15	233.0
05/16/2018 11:13	14.54	2.40	2.23	0.0082	4.00	3.15	2.92	3.22	0.0066	464.4	50.15	232.6
05/16/2018 11:14	14.54	2.38	2.21	0.0081	3.95	3.10	2.88	3.17	0.0065	464.6	50.19	232.7
05/16/2018 11:15	14.55	2.39	2.22	0.0082	3.99	3.25	3.02	3.31	0.0068	463.8	50.22	232.7
05/16/2018 11:16	14.55	2.39	2.22	0.0082	4.00	3.54	3.29	3.61	0.0074	464.2	50.11	232.9
05/16/2018 11:17	14.56	2.39	2.22	0.0082	4.00	3.54	3.37	3.71	0.0076	464.5	50.19	233.4
05/16/2018 11:18	14.57	2.38	2.21	0.0082	4.00	3.62	3.30	3.61	0.0074	464.3	50.11	233.7
05/16/2018 11:19	14.56	2.38	2.21	0.0082	4.00	3.38	3.15	3.47	0.0071	464.9	50.01	233.6
05/16/2018 11:20	14.55	2.34	2.17	0.0080	3.90	3.23	3.00	3.27	0.0067	464.8	50.19	233.2
05/16/2018 11:21	14.54	2.31	2.14	0.0079	3.85	3.12	2.89	3.17	0.0065	464.0	50.27	232.4
05/16/2018 11:22	14.55	2.32	2.16	0.0079	3.85	3.20	2.97	3.27	0.0067	464.4	50.09	233.0
05/16/2018 11:23	14.55	2.36	2.19	0.0081	3.95	3.35	3.11	3.41	0.0070	464.3	50.04	232.9
05/16/2018 11:24	14.55	2.38	2.21	0.0081	3.95	3.43	3.19	3.46	0.0071	464.8	50.13	233.2
05/16/2018 11:25	14.54	2.38	2.21	0.0081	3.95	3.20	2.97	3.27	0.0067	464.6	50.16	232.7
05/16/2018 11:26	14.56	2.38	2.21	0.0082	4.00	2.96	2.75	3.02	0.0062	464.4	50.16	233.3
05/16/2018 11:27	14.55	2.38	2.21	0.0081	3.95	2.85	2.65	2.88	0.0059	464.4	50.15	233.0
05/16/2018 11:28	14.55	2.38	2.21	0.0081	3.95	2.97	2.76	3.02	0.0062	464.4	50.17	233.0
05/16/2018 11:29	14.54	2.38	2.21	0.0081	3.95	3.11	2.89	3.17	0.0065	464.2	50.34	232.5
05/16/2018 11:30	14.54	2.38	2.21	0.0081	3.95	3.12	2.89	3.17	0.0065	464.1	50.15	232.5
05/16/2018 11:31	14.55	2.38	2.21	0.0081	3.95	3.03	2.82	3.07	0.0063	464.4	50.25	233.0
05/16/2018 11:32	14.55	2.39	2.22	0.0082	4.00	2.92	2.71	2.97	0.0061	464.2	50.06	232.9
05/16/2018 11:33	14.56	2.38	2.21	0.0082	4.00	2.84	2.64	2.88	0.0059	464.4	50.18	233.3
05/16/2018 11:34	14.55	2.37	2.20	0.0081	3.95	2.81	2.61	2.88	0.0059	464.4	50.28	233.0
05/16/2018 11:35	14.56	2.37	2.21	0.0081	3.95	2.81	2.61	2.88	0.0059	464.6	50.16	233.4
05/16/2018 11:36	14.56	2.37	2.21	0.0081	3.95	2.82	2.62	2.88	0.0059	464.5	50.10	233.4
05/16/2018 11:37	14.55	2.39	2.22	0.0082	4.00	2.80	2.60	2.83	0.0058	464.7	50.15	233.1
05/16/2018 11:38	14.55	2.38	2.21	0.0081	3.95	2.83	2.63	2.88	0.0059	464.8	50.16	233.2
05/16/2018 11:39	14.54	2.38	2.21	0.0081	3.95	2.84	2.63	2.88	0.0059	464.1	50.24	232.5
05/16/2018 11:40	14.55	2.38	2.21	0.0081	3.95	2.85	2.65	2.88	0.0059	464.1	50.22	232.8
05/16/2018 11:41	14.55	2.38	2.21	0.0081	3.95	2.84	2.64	2.88	0.0059	464.1	50.03	232.8
05/16/2018 11:42	14.55	2.38	2.21	0.0081	3.95	2.85	2.65	2.88	0.0059	464.5	50.37	233.0
05/16/2018 11:43	14.55	2.39	2.22	0.0082	3.99	2.82	2.62	2.87	0.0059	463.7	50.14	232.6
05/16/2018 11:44	14.56	2.40	2.23	0.0082	3.99	2.78	2.59	2.82	0.0058	463.8	50.14	233.1
05/16/2018 11:45	14.56	2.42	2.25	0.0083	4.04	2.75	2.56	2.78	0.0057	463.7	50.17	233.0
05/16/2018 11:46	14.56	2.44	2.27	0.0084	4.09	2.75	2.56	2.78	0.0057	463.7	50.17	233.0
05/16/2018 11:47	14.56	2.44	2.27	0.0084	4.09	2.75	2.56	2.78	0.0057	464.0	50.25	233.1
05/16/2018 11:48	14.55	2.43	2.26	0.0083	4.04	2.78	2.58	2.82	0.0058	463.3	50.02	232.4
05/16/2018 11:49	14.55	2.43	2.27	0.0084	4.09	2.92	2.71	2.97	0.0061	463.5	50.16	232.5
05/16/2018 11:50	14.55	2.43	2.26	0.0083	4.04	2.97	2.76	3.02	0.0062	464.0	50.14	232.8
05/16/2018 11:51	14.55	2.41	2.24	0.0083	4.04	2.91	2.70	2.97	0.0061	463.2	50.12	232.4

1-NH3-04

Period Start:	Average 4_O2 %	Average 4_NOXPPM ppm	Average 4_NOX_CORR ppm	Average 4_NOX_LBMM #/MBTU	Average 4_NOX_LBHR #/hr	Average 4_COPPM ppm	Average 4_CO_CORR ppm	Average 4_CO_LBHR #/hr	Average 4_CO_LBMM #/MBTU	Average 4_GasFlow kscfh	Average 4_LOAD MW	Average 4_STACKFLW kscfm
05/16/2018 11:52	14.55	2.40	2.23	0.0082	3.99	2.87	2.67	2.92	0.0060	463.8	50.13	232.7
05/16/2018 11:53	14.56	2.38	2.21	0.0082	3.99	2.85	2.65	2.92	0.0060	463.8	50.03	233.1
05/16/2018 11:54	14.56	2.36	2.20	0.0081	3.94	2.82	2.62	2.87	0.0059	463.3	50.03	232.8
05/16/2018 11:55	14.55	2.37	2.20	0.0081	3.94	2.97	2.76	3.02	0.0062	463.2	50.07	232.4
05/16/2018 11:56	14.55	2.38	2.21	0.0081	3.95	3.16	2.94	3.22	0.0066	464.2	50.14	232.9
05/16/2018 11:57	14.56	2.39	2.22	0.0082	3.99	3.09	2.88	3.16	0.0065	463.6	50.17	233.0
05/16/2018 11:58	14.55	2.37	2.20	0.0081	3.94	2.84	2.64	2.87	0.0059	463.7	50.14	232.6
05/16/2018 11:59	14.55	2.38	2.21	0.0081	3.94	2.88	2.68	2.92	0.0060	463.3	50.28	232.4
05/16/2018 12:00	14.55	2.40	2.23	0.0082	3.99	2.97	2.76	3.02	0.0062	463.4	50.04	232.5
05/16/2018 12:01	14.55	2.40	2.23	0.0082	4.00	2.90	2.69	2.92	0.0060	464.1	50.17	232.8
05/16/2018 12:02	14.56	2.38	2.21	0.0082	3.99	2.77	2.58	2.83	0.0058	463.9	50.07	233.1
Daily Average*	14.55	2.38	2.21	0.0082	3.97	3.02	2.80	3.07	0.0063	464.2	50.14	232.9
Maximum*	14.57	2.44	2.27	0.0084	4.09	3.62	3.37	3.71	0.0076	464.9	50.37	233.8
	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018
Minimum*	14.54	2.31	2.14	0.0079	3.85	2.75	2.56	2.78	0.0057	463.2	49.93	232.4
	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018
	11:39	11:21	11:21	11:22	11:22	11:47	11:47	11:47	11:47	11:55	11:03	11:59

* Does not include Invalid Averaging Periods ("N/A")

Average Values Report
Generated: 5/16/2018 14:17Company: City Of Anaheim
Plant: 3071 Miraloma Ave.,
City: St. Anaheim, CA, 92806
Source: unit4Period Start: 5/16/2018 12:32
Period End: 5/16/2018 13:34
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

002AS-436003-RT-380

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Period Start:	Average 4_O2 %	Average 4_NOXPPM ppm	Average 4_NOX_CORR ppm	Average 4_NOX_LBHM #/MBTU	Average 4_NOX_LBHR #/hr	Average 4_CO2PPM ppm	Average 4_CO2_LBHM #/MBTU	Average 4_CO2_LBHR #/hr	Average 4_CO_CORR ppm	Average 4_CO_LBHM #/MBTU	Average 4_CO_LBHR #/hr	Average 4_GasFlow kacfh	Average 4_LOAD MW	Average 4_STACKFLOW kacfm
05/16/2018 12:32	14.57	2.35	2.19	0.0081	3.95	3.22	3.00	3.26	0.0067	464.0	50.21	233.5	50.21	233.5
05/16/2018 12:33	14.57	2.36	2.20	0.0081	3.94	3.17	3.00	3.21	0.0066	463.5	50.17	233.3	50.17	233.3
05/16/2018 12:34	14.56	2.35	2.19	0.0081	3.94	3.09	2.88	3.16	0.0065	463.7	50.13	233.0	50.13	233.0
05/16/2018 12:35	14.56	2.36	2.20	0.0081	3.94	3.11	2.89	3.17	0.0085	463.8	50.01	233.1	50.01	233.1
05/16/2018 12:36	14.56	2.36	2.20	0.0081	3.94	3.13	2.91	3.16	0.0065	463.5	50.04	232.9	50.04	232.9
05/16/2018 12:37	14.55	2.36	2.19	0.0081	3.95	3.05	2.83	3.12	0.0064	464.0	50.08	232.8	50.08	232.8
05/16/2018 12:38	14.56	2.37	2.21	0.0081	3.95	2.90	2.70	2.97	0.0061	464.2	50.16	233.2	50.16	233.2
05/16/2018 12:39	14.56	2.38	2.21	0.0082	3.99	2.88	2.68	2.92	0.0060	463.8	50.29	233.1	50.29	233.1
05/16/2018 12:40	14.56	2.39	2.22	0.0082	3.99	2.93	2.73	2.97	0.0061	463.8	50.12	233.1	50.12	233.1
05/16/2018 12:41	14.56	2.39	2.22	0.0082	4.00	2.99	2.72	3.02	0.0062	464.1	50.13	233.2	50.13	233.2
05/16/2018 12:42	14.56	2.38	2.21	0.0082	4.00	2.92	2.72	2.97	0.0061	464.2	50.03	233.2	50.03	233.2
05/16/2018 12:43	14.57	2.37	2.21	0.0081	3.94	2.85	2.66	2.92	0.0060	463.4	50.13	233.2	50.13	233.2
05/16/2018 12:44	14.56	2.35	2.19	0.0081	3.95	2.77	2.58	2.83	0.0058	464.0	50.17	233.1	50.17	233.1
05/16/2018 12:45	14.57	2.36	2.20	0.0081	3.95	2.74	2.55	2.78	0.0057	463.9	50.27	233.5	50.27	233.5
05/16/2018 12:46	14.55	2.37	2.20	0.0081	3.95	2.72	2.53	2.78	0.0057	464.1	50.24	232.8	50.24	232.8
05/16/2018 12:47	14.55	2.38	2.21	0.0081	3.95	2.70	2.51	2.73	0.0056	464.1	50.24	232.8	50.24	232.8
05/16/2018 12:48	14.56	2.38	2.21	0.0082	3.99	2.71	2.52	2.78	0.0057	463.9	50.12	233.1	50.12	233.1
05/16/2018 12:49	14.56	2.39	2.22	0.0082	3.99	2.78	2.59	2.83	0.0058	463.9	50.16	233.1	50.16	233.1
05/16/2018 12:50	14.57	2.38	2.22	0.0082	3.99	2.80	2.61	2.87	0.0059	463.8	50.07	233.4	50.07	233.4
05/16/2018 12:51	14.57	2.38	2.22	0.0082	4.00	2.76	2.57	2.83	0.0058	464.5	50.47	233.8	50.47	233.8
05/16/2018 12:52	14.56	2.38	2.21	0.0082	3.99	2.72	2.53	2.77	0.0057	463.3	50.15	232.8	50.15	232.8
05/16/2018 12:53	14.56	2.39	2.22	0.0082	4.00	2.92	2.72	2.98	0.0061	464.6	50.17	233.4	50.17	233.4
05/16/2018 12:54	14.56	2.38	2.21	0.0082	4.00	3.04	2.83	3.07	0.0063	464.1	50.19	233.2	50.19	233.2
05/16/2018 12:55	14.56	2.36	2.20	0.0081	3.95	2.97	2.76	3.02	0.0062	464.1	50.14	233.2	50.14	233.2
05/16/2018 12:56	14.55	2.36	2.19	0.0081	3.95	2.79	2.59	2.83	0.0058	464.0	50.16	232.8	50.16	232.8
05/16/2018 12:57	14.55	2.36	2.19	0.0081	3.95	2.79	2.59	2.83	0.0058	464.0	50.16	232.8	50.16	232.8
05/16/2018 12:58	14.55	2.36	2.19	0.0081	3.95	2.79	2.59	2.83	0.0058	464.0	50.16	232.8	50.16	232.8
05/16/2018 12:59	14.55	2.36	2.19	0.0081	3.95	2.79	2.59	2.83	0.0058	464.0	50.16	232.8	50.16	232.8
05/16/2018 13:00	14.56	2.34	2.18	0.0080	3.90	2.75	2.56	2.78	0.0057	464.5	50.15	233.4	50.15	233.4
05/16/2018 13:01	14.56	2.34	2.18	0.0080	3.90	2.74	2.55	2.78	0.0057	464.1	50.34	233.2	50.34	233.2
05/16/2018 13:02	14.55	2.34	2.17	0.0080	3.90	2.72	2.53	2.78	0.0057	464.0	50.23	232.8	50.23	232.8
05/16/2018 13:03	14.55	2.34	2.17	0.0080	3.90	2.78	2.58	2.83	0.0058	464.2	50.45	232.9	50.45	232.9
05/16/2018 13:04	14.55	2.36	2.19	0.0081	3.95	2.84	2.64	2.88	0.0059	464.1	50.07	232.8	50.07	232.8
05/16/2018 13:05	14.56	2.36	2.20	0.0081	3.95	2.82	2.62	2.88	0.0059	464.4	50.36	233.3	50.36	233.3
05/16/2018 13:06	14.56	2.35	2.19	0.0081	3.95	2.77	2.58	2.83	0.0058	464.4	50.28	233.3	50.28	233.3
05/16/2018 13:07	14.55	2.33	2.16	0.0080	3.90	2.74	2.55	2.78	0.0057	464.6	50.40	233.1	50.40	233.1
05/16/2018 13:08	14.56	2.33	2.17	0.0080	3.90	2.74	2.55	2.78	0.0057	464.3	50.09	233.3	50.09	233.3
05/16/2018 13:09	14.55	2.32	2.16	0.0079	3.85	2.74	2.55	2.78	0.0057	464.1	50.07	232.8	50.07	232.8
05/16/2018 13:10	14.56	2.32	2.16	0.0080	3.90	2.74	2.55	2.78	0.0057	464.5	50.31	233.4	50.31	233.4
05/16/2018 13:11	14.56	2.36	2.19	0.0081	3.95	2.73	2.54	2.78	0.0057	463.8	50.18	233.1	50.18	233.1
05/16/2018 13:12	14.56	2.35	2.19	0.0081	3.95	2.85	2.65	2.93	0.0060	464.1	50.22	233.2	50.22	233.2
05/16/2018 13:13	14.55	2.36	2.20	0.0081	3.95	2.73	2.54	2.78	0.0057	464.1	50.00	233.3	50.00	233.3
05/16/2018 13:14	14.55	2.37	2.20	0.0081	3.95	2.93	2.72	2.97	0.0061	464.3	50.21	232.9	50.21	232.9
05/16/2018 13:15	14.54	2.37	2.20	0.0081	3.95	2.94	2.73	2.97	0.0061	464.0	50.07	232.4	50.07	232.4
05/16/2018 13:16	14.54	2.38	2.21	0.0081	3.95	2.98	2.76	3.02	0.0062	464.0	50.22	232.4	50.22	232.4
05/16/2018 13:17	14.54	2.39	2.22	0.0082	4.00	3.09	2.87	3.12	0.0064	464.9	50.25	232.8	50.25	232.8
05/16/2018 13:18	14.54	2.37	2.20	0.0081	3.95	3.01	2.79	3.07	0.0063	464.2	50.21	232.5	50.21	232.5
05/16/2018 13:19	14.53	2.36	2.19	0.0081	3.95	2.93	2.71	2.97	0.0061	464.1	50.08	232.1	50.08	232.1
05/16/2018 13:20	14.54	2.38	2.21	0.0081	3.95	3.03	2.81	3.07	0.0063	464.3	50.05	232.6	50.05	232.6
05/16/2018 13:21	14.54	2.37	2.20	0.0081	3.95	3.14	2.91	3.17	0.0065	464.4	50.15	232.6	50.15	232.6
05/16/2018 13:22	14.56	2.37	2.21	0.0081	3.94	3.22	3.00	3.26	0.0067	463.8	50.17	233.1	50.17	233.1
05/16/2018 13:23	14.54	2.35	2.18	0.0080	3.90	3.15	2.92	3.22	0.0066	464.1	50.12	232.5	50.12	232.5

2-2013-04

Period Start:		Average 4_O2 %	Average 4_NOXPPM ppm	Average 4_NOX_CORR ppm	Average 4_NOX_LBMM #/MBTU	Average 4_NOX_LBRR #/hr	Average 4_COEFM ppm	Average 4_CO_CORR ppm	Average 4_CO_LBHR #/hr	Average 4_CO_LBMM #/MBTU	Average 4_GasFlow kscfh	Average 4_LOAD MW	Average 4_STACKFWM kscfm
05/16/2018 13:24		14.54	2.34	2.17	0.0080	3.90	2.92	2.71	2.97	0.0061	464.4	50.21	232.6
05/16/2018 13:25		14.53	2.32	2.15	0.0079	3.85	2.78	2.57	2.83	0.0058	464.5	50.12	232.3
05/16/2018 13:26		14.54	2.31	2.14	0.0079	3.85	2.81	2.61	2.83	0.0058	464.4	50.34	232.4
05/16/2018 13:27		14.54	2.31	2.14	0.0079	3.85	2.82	2.62	2.87	0.0059	464.0	50.02	232.4
05/16/2018 13:28		14.54	2.30	2.13	0.0079	3.85	2.80	2.60	2.83	0.0058	464.3	50.32	232.6
05/16/2018 13:29		14.54	2.31	2.14	0.0079	3.85	2.80	2.60	2.83	0.0058	464.6	50.05	232.7
05/16/2018 13:30		14.55	2.32	2.16	0.0079	3.85	2.80	2.60	2.83	0.0058	464.5	50.45	233.0
05/16/2018 13:31		14.56	2.33	2.17	0.0080	3.90	2.81	2.61	2.88	0.0059	464.8	50.26	233.5
05/16/2018 13:32		14.54	2.34	2.17	0.0080	3.90	2.80	2.60	2.83	0.0058	464.7	50.01	232.7
05/16/2018 13:33		14.55	2.35	2.18	0.0080	3.91	2.82	2.62	2.88	0.0059	465.1	50.33	233.4
05/16/2018 13:34		14.54	2.34	2.17	0.0080	3.91	2.88	2.67	2.93	0.0060	465.3	50.26	233.1
Daily Average*		14.55	2.36	2.19	0.0081	3.94	2.88	2.67	2.92	0.0060	464.2	50.18	233.0
Maximum*		14.57	2.39	2.22	0.0082	4.00	3.22	3.00	3.26	0.0067	465.3	50.47	233.8
	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018
	13:51	13:17	13:17	13:17	13:17	13:17	13:22	13:22	13:22	13:22	13:34	12:51	12:51
Minimum*		14.53	2.30	2.13	0.0079	3.85	2.70	2.51	2.73	0.0056	463.3	50.00	232.1
	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018	05/16/2018
	13:25	13:28	13:28	13:30	13:30	13:30	12:47	12:47	12:47	12:47	12:52	13:13	13:19

* Does not include Invalid Averaging Periods ("N/A")

APPENDIX C

CALCULATIONS

APPENDIX C.1

GENERAL EMISSIONS CALCULATIONS

GENERAL EMISSION CALCULATIONS

I. Stack Gas Velocity

A. Stack gas molecular weight, lb/lb-mole

$$MW_{dry} = 0.44 * \%CO_2 + 0.32 * \%O_2 + 0.28 * \%N_2$$

$$MW_{wet} = MW_{dry} * (1 - B_{wo}) + 18 * B_{wo}$$

B. Absolute stack pressure, iwg

$$Ps = Pbar + \frac{Psg}{13.6}$$

C. Stack gas velocity, ft/sec

$$V_s = 2.9 * C_p * \sqrt{\Delta P} * \sqrt{T_s} * \sqrt{\frac{29.92 * 28.95}{P_s * MW_{wet}}}$$

II. Moisture

A. Sample gas volume, dscf

$$V_{mstd} = 0.03342 * V_m * (P_{bar} + \frac{\Delta H}{13.6}) * \frac{T_{ref}}{T_m} * Y_d$$

B. Water vapor volume, scf

$$V_{wstd} = 0.0472 * V_{lc} * \frac{T_{ref}}{528 ^\circ R}$$

C. Moisture content, dimensionless

$$B_{wo} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

III. Stack gas volumetric flow rate

A. Actual stack gas volumetric flow rate, wacfm

$$Q = V_s * A_s * 60$$

B. Standard stack gas flow rate, dscfm

$$Q_{sd} = Q * (1 - B_{wo}) * \frac{T_{ref}}{T_s} * \frac{P_s}{29.92}$$

IV. Gaseous Mass Emission Rates, lb/hr

$$M = \frac{\text{ppm} * MW_i * Q_{sd} * 60}{SV * 10^6}$$

V. Emission Rates, lb/MMBtu

$$\frac{\text{lb}}{\text{MMBtu}} = \frac{\text{ppm} * MW_i * F}{SV * 10^6} * \frac{20.9}{20.9 - \%O_2}$$

6. Percent Isokinetic

$$I = \frac{17.32 * T_s (V_m \text{ std})}{(1 - B_w) * 0 * V_s * P_s * D_n^2} * \frac{528 * R}{T_{ref}}$$

7. Particulate emissions

a) Grain loading, gr/dscf

$$C = 0.01543 (M_n / V_m \text{ std})$$

b) Grain loading at 12% CO₂, gr/dscf

$$C_{12\% \text{ CO}_2} = C (12 / \% \text{ CO}_2)$$

c) Mass emissions, lb/hr

$$M = C * Q_{sd} * (60 \text{ min/hr}) / (7000 \text{ gr/lb})$$

d) Particulate emission factor

$$\text{lb} / 10^6 \text{ Btu} = C * \frac{1 \text{ lb}}{7000 \text{ gr}} * F * \frac{20.9}{20.9 - \%O_2}$$

Nomenclature:

A _s	= stack area, ft ²
B _{wo}	= flue gas moisture content, dimensionless
C _{12%CO₂}	= particulate grain loading, gr/dscf corrected to 12% CO ₂
C	= particulate grain loading, gr/dscf
C _p	= pitot calibration factor, dimensionless
D _n	= nozzle diameter, in.
F	= fuel F-Factor, dscf/MMBtu @ 0% O ₂
H	= orifice differential pressure, iwg
I	= % isokinetics
M _n	= mass of collected particulate, mg
M _i	= mass emission rate of specie i, lb/hr
MW	= molecular weight of flue gas, lb/lb-mole
M _{wi}	= molecular weight of specie i: SO ₂ : 64 NO _x : 46 CO: 28 HC: 16
0	= sample time, min.
ΔP	= average velocity head, iwg = $(\sqrt{\Delta P})^2$
P _{bar}	= barometric pressure, inches Hg
P _s	= stack absolute pressure, inches Hg
P _{sg}	= stack static pressure, iwb
Q	= wet stack flow rate at actual conditions, wacfm
Q _{sd}	= dry standard stack flow rate, dscfm
SV	= specific molar volume of an ideal gas at standard conditions, ft ³ /lb-mole
T _m	= meter temperature, °R
T _{ref}	= reference temperature, °R
T _s	= stack temperature, °R
V _s	= stack gas velocity, ft/sec
V _{lc}	= volume of liquid collected in impingers, ml
V _m	= uncorrected dry meter volume, dcf
V _{mstd}	= dry meter volume at standard conditions, dscf
V _{wstd}	= volume of water vapor at standard conditions, scf
Y _d	= meter calibration coefficient

APPENDIX C.2

SPREADSHEET SUMMARIES

SCAQMD METHOD 207.1 DATA WORKSHEET AND SUMMARY

Facility.....	Canyon		Parameter.....	NH₃	
Unit.....	U4		Fuel.....	Natural gas	
Sample Location.....	U4		Data By.....	SD	
Test Number.....	1-NH3-U4	2-NH3-U4	Average	Maximum	Limit
Reference Temperature (°F).....	60	60			
Test Date.....	5/16/2018	5/16/2018			
Test Method.....	SCAQMD 207.1	SCAQMD 207.1			
Sample Train.....	3-WCS	3-WCS			
Meter Calibration Factor.....	1.001	1.001			
Stack Area (ft ²).....	106.90	106.90			
Sample Time (Minutes).....	60	60			
Barometric Pressure ("Hg).....	29.69	29.69			
Start/Stop Time	1100/1203	1232/1335			
Meter Volume (acf).....	35.225	36.705			
Meter Temperature (°F).....	81.0	78.3			
Meter Pressure (iwg).....	1.0	1.0			
Liquid Volume (ml).....	97.5	98.5			
Stack O ₂ (%).....	14.55	14.55	14.55	(from facility CEMS)	
Unit Load (MW).....	50.0	50.0	50.0		
Standard Sample Volume (SCF).....	33.712	35.304			
Moisture Fraction.....	0.119	0.115			
Stack Flow Rate (dscfm, 68 °F).....	232,900	233,000	232,950	(from facility CEMS)	
Stack Flow Rate (@ Tref).....	229,371	229,470	229,420		
Gas Constant (ft-lbf/lb-mole-R).....	1545.33	1545.33			
Molecular Weight NH ₃ (lb/lb-mole).....	17.03	17.03			
Specific Molar Volume (ft ³ /lb-mole).....	379.5	379.5			
F-Factor (dscf/MMBtu).....	8,710	8,710			
HHV(Btu/SCF).....	1,050	1,050			
Mass Conversion (lb/ug).....	2.2046E-09	2.2046E-09			
O ₂ Correction Factor (%).....	15	15			
Mass NH ₃ (ug).....	996	933			
Mass NH ₃ (lb).....	2.20E-06	2.06E-06			
NH ₃ (ppmv, flue gas).....	1.5	1.3	1.4	1.5	
NH ₃ (ppmv @ O ₂ Correction Factor)...	1.3	1.2	1.3	1.3	5
NH ₃ (lb/hr).....	0.9	0.8	0.8	0.9	
NH ₃ (lb/MMBtu).....	0.002	0.002	0.002	0.002	
NH ₃ (lb/MMSCF).....	1.9	1.7	1.8	1.9	

Note: SCAQMD Method 207.1 requires the higher of the duplicate runs be reported as the test result.

SCAQMD 207.1 EXAMPLE CALCULATION
TEST NUMBER: 1-NH3-U4

Identifier	Description	Units	Equation	Value
A	Reference Temperature	F	--	60
B	Reference Temperature	R	$A + 460$	520
C	Meter Calibration Factor (Yd)	--	--	1.001
D	Barometric Pressure	" Hg	--	29.69
E	Meter Volume	acf	--	35.225
F	Meter Temperature	F	--	81.0
G	Meter Temperature	R	$F + 460$	541.0
H	Delta H	" H ₂ O	--	1.0
I	Meter Volume (standard)	dscf	$0.03342 * E * (D + H/13.6) * B/G * C$	33.712
J	Liquid Collected	grams	--	97.5
K	Water vapor volume	scf	$0.0472 * J * B/528$	4.532
L	Moisture Content	--	$K/(K + 1)$	0.119
M	Gas Constant	ft-lbf/lb-mole-R	--	1545.33
N	Specific Molar Volume	SCF/lb-mole	$385.3 * B / 528$	379.5
O	F-Factor	dscf/MMBtu	--	8,710
P	HHV	Btu/SCF	--	1,050
Q	Mass Conversion Factor	lb/ug	--	2.2046E-09
R	O ₂ Correction Factor	--	--	15
S	Stack Flow Rate @ 68 F	dscfm	--	232,900
T	Stack Flow Rate @ Tref	dscfm	$S * B/528$	229,371
U	Mass NH ₃	ug	--	996
V	Mass NH ₃	lb	$U * Q$	2.20E-06
W	MW of NH ₃	lb/lb-mole	--	17.03
X	NH ₃	ppm	$(V * N * 10^6)/(I * W)$	1.5
Y	Flue Gas O ₂	%	--	14.55
Z	NH ₃	ppmc	$X * (20.9 - R)/(20.9 - Y)$	1.3
AA	NH ₃	lb/hr	$X * T * W * 60/(N * 10^6)$	0.9
AB	NH ₃	lb/MMBtu	$(X * W * O)/(385.3 * 10^6) * 20.9/(20.9 - Y)$	0.002
AC	NH ₃	lb/MMSCF	$AB * P$	1.9

Note:

(1) Some values may be slightly different from those shown on the run sheets due to round off errors. This page is intended to show the calculation methodology only.

APPENDIX D

QUALITY ASSURANCE

APPENDIX D.1

QUALITY ASSURANCE PROGRAM SUMMARY

QUALITY ASSURANCE PROGRAM SUMMARY

As part of Montrose Air Quality Services, LLC (Montrose) ASTM D7036-04 certification, Montrose is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. Montrose quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: Montrose has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: Montrose has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of Montrose QA efforts. The manual is revised upon periodic review and as Montrose adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. Montrose training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the Montrose QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of Montrose emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: Montrose maintains current copies of EPA, ARB, and SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: Montrose maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to Montrose source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to Montrose office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

“Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, Montrose Air Quality Services, LLC (Montrose) personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, Montrose personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04. The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report.”

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, will be present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)

The following safety measures will be followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

TABLE 1
EQUIPMENT MAINTENANCE SCHEDULE

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero, span gas	As recommended by manufacturer	As recommended by manufacturer
Integrated sampling tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobile van sampling system	1. Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry.

TABLE 2
MAJOR SAMPLING EQUIPMENT CALIBRATION REQUIREMENTS

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	< 2% of analyzer range
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	< 5% of analyzer range
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	< 3% of analyzer range
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO _x Analyzer	Daily	NO ₂ -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	+/- 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	+/- 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	+/- 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	+/- 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	+/- 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for ΔH@	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	+/- 1.5%

Note: Calibration requirements will be used that meet applicable regulatory agency requirements.

APPENDIX D.2

SCAQMD AND STAC CERTIFICATIONS



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

October 4, 2017

Mr. John Peterson
Montrose Air Quality Services, LLC (MAQS-SNA, Delta, SCEC)
1631 E. Saint Andrew Place
Santa Ana, CA 92705

Subject: LAP Approval Notice
Reference # 96LA1220

Dear Mr. Peterson:

We have reviewed your renewal letter under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning September 30, 2017, and ending September 30, 2018 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 10.1 and 100.1	SCAQMD Methods 25.1 and 25.3 (Sampling)
USEPA CTM-030 and ASTM D6522-00	SCAQMD Rule 1121/ 1146.2 Protocol
SCAQMD Rule 1420/1420.1/1420.2 – (Lead) Source and Ambient Sampling	

Your LAP approval to perform nitrogen oxide emissions compliance testing for SCAQMD Rule 1121/ 1146.2 Protocols includes satellite facilities located at:

McKenna Boiler
1510 North Spring Street
Los Angeles, CA 90012

Noritz America Corp.
11160 Grace Avenue
Fountain Valley, CA 92708

Ajax Boiler, Inc.
2701 S. Harbor Blvd.
Santa Ana, CA 92704

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

A handwritten signature in black ink that reads 'D. Sarkar'.

Dipankar Sarkar
Program Supervisor
Source Test Engineering

DS:GK/gk

Attachment

171004 LapRenewalRev.doc

Cleaning the air that we breathe...



American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 5th day of March 2018.



President and CEO
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2020

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

APPENDIX D.3

INDIVIDUAL QI CERTIFICATES

CERTIFICATE OF COMPLETION

Sean Donovan

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

SCAQMD Method 207.1

Certificate Number: 002-2016-06

Tate Strickler

DATE OF ISSUE: 11/30/16

Tate Strickler, Accreditation Director

DATE OF
EXPIRATION: 11/30/21



APPENDIX E

APPLICABLE PERMIT SECTIONS



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process F: POWER GENERATION					
GAS TURBINE, NO. 1, NATURAL GAS, GENERAL ELECTRIC, MODEL LM6000PC SPRINT, SIMPLE CYCLE, 479 MMBTU/HR AT 46 DEG F, WITH INLET CHILLING, WITH WATER INJECTION WITH A/N: 555828	D1	C3	NOX: MAJOR SOURCE**	CO: 4 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]; CO: 2000 PPMV NATURAL GAS (5) [RULE 407, 4-2-1982]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 2005, 6-3-2011]; NOX: 25 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; PM10: 0.0 GRAINS/SCF NATURAL GAS (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; PM10: 1.67 LBS/HR NATURAL GAS (5C) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 1.1 LBS/HR NATURAL GAS (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SOX: 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (6) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A63.1, A99.1, A99.2, A99.3, A195.1, A195.2, A195.3, A327.1, B61.1, D12.1, D29.2, D29.3, D82.1, D82.2, E193.1, H23.1, I298.1, K40.1
GENERATOR, 50.95 MW					

- | | |
|---|---|
| <p>* (1) (1A) (1B) Denotes RECLAIM emission factor
(3) Denotes RECLAIM concentration limit
(5) (5A) (5B) Denotes command and control emission limit
(7) Denotes NSR applicability limit
(9) See App B for Emission Limits</p> | <p>(2) (2A) (2B) Denotes RECLAIM emission rate
(4) Denotes BACT emission limit
(6) Denotes air toxic control rule limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(10) See section J for NESHAP/MACT requirements</p> |
|---|---|

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process 1: POWER GENERATION					
CO OXIDATION CATALYST, NO. 1, BASF, 110 CUBIC FEET OF TOTAL CATALYST VOLUME A/N: 476554	C3	D1 C4			
SELECTIVE CATALYTIC REDUCTION, NO. 1, CORMETECH CMR1-21, 1012 CU.FT. WIDTH 2 FT 6 IN; HEIGHT 25 FT 9 IN; LENGTH 18 FT WITH A/N: 476654	C4	C3 S6		NH3: 5 PPMV NATURAL GAS (4) (RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(e)(1)-BACT, 12-6-2002)	A195.4, D12.2, D12.3, D12.4, E179.1, E179.2, E193.1
AMMONIA INJECTION					
STACK, TURBINE NO. 1, HEIGHT: 86 FT, DIAMETER: 11 FT 8 IN A/N: 555828	S6	C4			

- * (1) (1A) (1B) Denotes RECLAIM emission factor
(3) Denotes RECLAIM concentration limit
(5) (5A) (5B) Denotes command and control emission limit
(7) Denotes NSR applicability limit
(9) See App B for Emission Limits
(2) (2A) (2B) Denotes RECLAIM emission rate
(4) Denotes BACT emission limit
(6) Denotes air toxic control rule limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(10) See section J for NESHAP/MACT requirements
- ** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[Devices subject to this condition : C4, C10, C16, C22]

- D12.5 The operator shall install and maintain a(n) non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

[RULE 1110.2, 2-1-2008; RULE 1110.2, 9-7-2012; RULE 1303(b)(2)-Offset, 5-10-1996;
RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1401, 9-10-2010; RULE 1470, 5-4-2012;
RULE 2012, 5-6-2005; 40CFR 60 Subpart III, 1-30-2013]

[Devices subject to this condition : D25]

- D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR serving this equipment



South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

Section ID Page 30
Facility ID 153492
Revision # 3
Date: November 06, 2015

FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

The test(s) shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter. The AQMD shall be notified of the date and time of the test at least 10 days prior to the test.

If the turbine is not in operation during one calendar year, then no testing is required during that calendar year.

The NO_x concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NO_x emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted and the results submitted to the District within 60 days after the test date.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration limit.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D1, D7, D13, D19]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Sampling Time	Test Location
SOX emissions	AQMD Laboratory Method 307-91	Not Applicable	Fuel sample
VOC emissions	District Method 25.3	1 hour	Outlet of the SCR serving this equipment
PM emissions	District method 5.1	4 hours	Outlet of the SCR serving this equipment

THIS IS THE LAST PAGE OF THIS DOCUMENT

If you have any questions, please contact one of the following individuals by email or phone.

Name: Mr. Sean Donovan
Title: Field Project Manager
Region: Southwest
E-Mail: Sdonovan@montrose-env.com
Phone: (714) 279-6777

Name: Mr. Matt McCune
Title: Regional Vice President
Region: Southwest
E-Mail: MMccune@montrose-env.com
Phone: (714) 279-6777

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 17

AQ-14 & AQ-24
RTC INVENTORY



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NO_x RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NO_x emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin End (month/year)	Zone	NO _x RTC Initially Allocated	NO _x RTC ¹ Holding as of 01/01/2018 (pounds)	Non-Tradable ² Non-Usable RTCs (pounds)
7/2015 6/2016	Coastal	0	5672	0
1/2016 12/2016	Coastal	0	7526	3248
7/2016 6/2017	Coastal	0	8877	2548
1/2017 12/2017	Coastal	0	43827	0
7/2017 6/2018	Coastal	0	34377	0
1/2018 12/2018	Coastal	0	42179	1648
7/2018 6/2019	Coastal	0	33085	1292
1/2019 12/2019	Coastal	0	40532	1648
7/2019 6/2020	Coastal	0	31792	1292
1/2020 12/2020	Coastal	0	37283	3248
7/2020 6/2021	Coastal	0	29245	2548
1/2021 12/2021	Coastal	0	33988	3295
7/2021 6/2022	Coastal	0	26660	2585
1/2022 12/2022	Coastal	0	27445	6543
7/2022 6/2023	Coastal	0	21527	5133
1/2023 12/2023	Coastal	0	27445	0
7/2023 6/2024	Coastal	0	21527	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.
2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NO_x RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NO_x emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin End (month/year)	Zone	NO _x RTC Initially Allocated	NO _x RTC ¹ Holding as of 01/01/2018 (pounds)	Non-Tradable ² Non-Usable RTCs (pounds)
1/2024 12/2024	Coastal	0	27445	0
7/2024 6/2025	Coastal	0	21527	0
1/2025 12/2025	Coastal	0	27445	0
7/2025 6/2026	Coastal	0	21527	0
1/2026 12/2026	Coastal	0	27445	0
7/2026 6/2027	Coastal	0	21527	0
1/2027 12/2027	Coastal	0	27445	0
7/2027 6/2028	Coastal	0	21527	0
1/2028 12/2028	Coastal	0	27445	0
7/2028 6/2029	Coastal	0	21527	0
1/2029 12/2029	Coastal	0	27445	0
7/2029 6/2030	Coastal	0	21527	0
1/2030 12/2030	Coastal	0	27445	0
7/2030 6/2031	Coastal	0	21527	0
1/2031 12/2031	Coastal	0	27445	0
7/2031 6/2032	Coastal	0	21527	0
1/2032 12/2032	Coastal	0	27445	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.
2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NO_x RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NO_x emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin End (month/year)	Zone	NO _x RTC Initially Allocated	NO _x RTC ¹ Holding as of 01/01/2018 (pounds)	Non-Tradable ² Non-Usable RTCs (pounds)
7/2032 6/2033	Coastal	0	21527	0
1/2033 12/2033	Coastal	0	27445	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.
2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.



FACILITY PERMIT TO OPERATE CANYON POWER PLANT

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. If the facility submits a permit application to increase in an annual allocation to a level greater than the facility's starting Allocation plus Non-Tradable credits as listed below, the application will be evaluated for compliance with Rule 2005 (c)(4). Rule 2005 (e) - Trading Zone Restrictions applies if an annual allocation is increased to a level greater than the facility's Starting Allocation plus Non-Tradable Credits:

Year	Zone	RTC	Non-Tradable
Begin End		Starting Allocation	Credits(NTC)
(month/year)		(pounds)	(pounds)

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

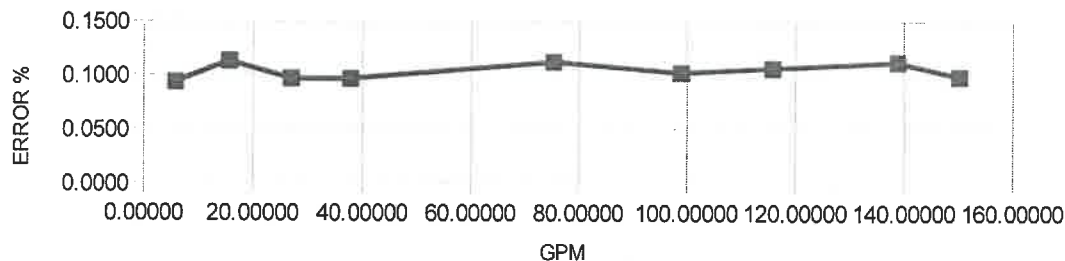
ATTACHMENT 18

AQ-17
NH3 FLOW METER ACCURACY REPORTS

CERTIFICATE OF CALIBRATION

CUSTOMER: CANYON POWER PLANT (CITY OF ANAHEIM) **CALIBRATION DATE:** 05/01/18
PO NUMBER: N/A **CALIBRATION DUE:** 05/01/19
INST. MANUFACTURER: MICRO MOTION **PROCEDURE:** NAVAIR17-20MG,NIST250
INST. DESCRIPTION: MASS FLOWMETER / DISPLAY **CALIBRATION FLUID:** H2O @ 70F(*)
MODEL NUMBER: CMF025M313NQBUEZZZ / 1700R11ABUEZZZ **ARRIVAL CONDITIONS:** WITHIN MFG. SPEC.
SERIAL NUMBER: 3127345 / 14236418 (ID# 01-FIT-423 / 02-FE-423) **RETURNED CONDITIONS:** WITHIN MFG. SPEC.
RATED UNCERTAINTY: +/- .25% R.D. **AMBIENT CONDITIONS:** 761mmHGA 50%RH 72°F
UNCERTAINTY GIVEN: TOTAL measurement uncertainty +/- .156% RD K=2 **CERTIFICATE FILE #:** 442735.2018
NOTES: (*) FOR USE WITH NH3

TEST POINT NUMBER	INDICATED UUT	INDICATED UUT	ACTUAL DM.STD.	ACTUAL R.D.
	mA OUT DC	LB/HR	LB/HR	% ERROR
1	4.000	0.0000	0.00000	0.0000
2	4.615	5.7656	5.77102	0.0937
3	5.667	15.6319	15.64958	0.1132
4	6.871	26.9156	26.94169	0.0968
5	8.024	37.7259	37.76240	0.0967
6	12.022	75.2063	75.29088	0.1125
7	14.541	98.8219	98.92302	0.1024
8	16.334	115.6313	115.75444	0.1065
9	18.784	138.6000	138.75572	0.1124
10	19.998	149.9813	150.12941	0.0988



STANDARDS USED:

A6 (VOLUME PROVER .002-1GPM) +/- .02% BY VOLUME -CMC .168% RD TRACE# 1424762294, 1424683640	DUE	08/01/18
A305 VA & mA STANDARD (0-10 VDC & 0-100mA) TRACE# 1425285074	DUE	02/07/19

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5/1/2018

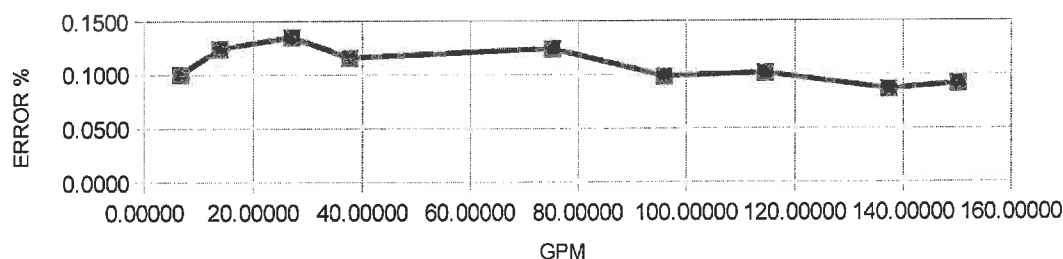
[Signature]

[Signature]

CERTIFICATE OF CALIBRATION

CUSTOMER: CANYON POWER PLANT (CITY OF ANAHEIM) **CALIBRATION DATE:** 05/03/18
PO NUMBER: N/A **CALIBRATION DUE:** 05/03/19
INST. MANUFACTURER: MICRO MOTION **PROCEDURE:** NAVAIR17-20MG,NIST250
INST. DESCRIPTION: MASS FLOWMETER / DISPLAY **CALIBRATION FLUID:** H2O @ 70F(*)
MODEL NUMBER: CMF025M313NQBUEZZZ / 1700R11ABUEZZZ **ARRIVAL CONDITIONS:** WITHIN MFG. SPEC.
SERIAL NUMBER: 3127334 / 14136005 (ID# 02-FIT-423 / FE-423) **RETURNED CONDITIONS:** WITHIN MFG. SPEC.
RATED UNCERTAINTY: +/- .25% R.D. **AMBIENT CONDITIONS:** 761mmHGA 50%RH 72°F
UNCERTAINTY GIVEN: TOTAL measurement uncertainty +/- .156% RD K=2 **CERTIFICATE FILE #:** 442734.2018
NOTES: (*) FOR USE WITH NH3

TEST POINT NUMBER	INDICATED UUT mA OUT DC	INDICATED UUT LB/HR	ACTUAL DM.STD. LB/HR	ACTUAL R.D. % ERROR
1	4.000	0.0000	0.00000	0.0000
2	4.712	6.6750	6.68169	0.1002
3	5.478	13.8563	13.87345	0.1241
4	6.882	27.0188	27.05527	0.1351
5	8.012	37.6125	37.65607	0.1158
6	12.011	75.1031	75.19637	0.1241
7	14.224	95.8500	95.94443	0.0985
8	16.203	114.4031	114.51929	0.1015
9	18.636	137.2125	137.33094	0.0863
10	19.996	149.9625	150.09978	0.0915



STANDARDS USED:

A6 (VOLUME PROVER .002-1GPM) +/- .02% BY VOLUME -CMC .168% RD TRACE# 1424762294, 1424683640	DUE	08/01/18
A305 VA & mA STANDARD (0-10 VDC & 0-100mA) TRACE# 1425285074	DUE	02/07/19

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Approved By:

Calibration Technician:

5-3-2018

[Signature]

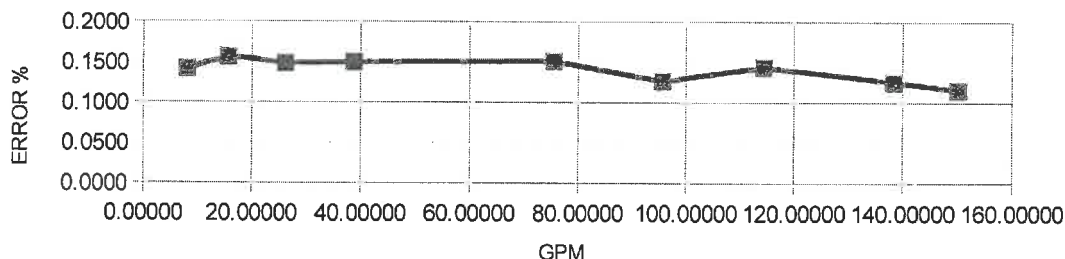
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Page 1 of 1

CERTIFICATE OF CALIBRATION

CUSTOMER: CANYON POWER PLANT (CITY OF ANAHEIM) **CALIBRATION DATE:** 05/08/18
PO NUMBER: N/A **CALIBRATION DUE:** 05/08/19
INST. MANUFACTURER: MICRO MOTION **PROCEDURE:** NAVAIR17-20MG,NIST250
INST. DESCRIPTION: MASS FLOWMETER / DISPLAY **CALIBRATION FLUID:** H2O @ 70F(*)
MODEL NUMBER: CMF025M313NQBUEZZZ / 1700R11ABUEZZZ **ARRIVAL CONDITIONS:** WITHIN MFG. SPEC.
SERIAL NUMBER: 14134531 / 3125463 (ID# 03-FIT-423 / FE-423) **RETURNED CONDITIONS:** WITHIN MFG. SPEC.
RATED UNCERTAINTY: +/- .25% R.D. **AMBIENT CONDITIONS:** 765mmHGA 52%RH 72°F
UNCERTAINTY GIVEN: TOTAL measurement uncertainty +/- .156% RD K=2 **CERTIFICATE FILE #:** 442733.2018
NOTES: (*) FOR USE WITH NH3

TEST POINT NUMBER	INDICATED UUT mA OUT DC	INDICATED UUT LB/HR	ACTUAL DM.STD. LB/HR	ACTUAL R.D. % ERROR
1	4.000	0.0000	0.00000	0.0000
2	4.856	8.0250	8.03636	0.1415
3	5.662	15.5813	15.60562	0.1564
4	6.784	26.1000	26.13886	0.1489
5	8.126	38.6813	38.73935	0.1502
6	12.041	75.3844	75.49828	0.1511
7	14.189	95.5219	95.64261	0.1264
8	16.187	114.2531	114.41742	0.1438
9	18.741	138.1969	138.37017	0.1254
10	19.994	149.9438	150.11679	0.1154



STANDARDS USED:

A6 (VOLUME PROVER .002-1GPM) +/- .02% BY VOLUME -CMC .168% RD TRACE# 1424762294, 1424683640	DUE	08/01/18
A305 VA & mA STANDARD (0-10 VDC & 0-100mA) TRACE# 1425285074	DUE	02/07/19

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5/8/2018

[Signature]

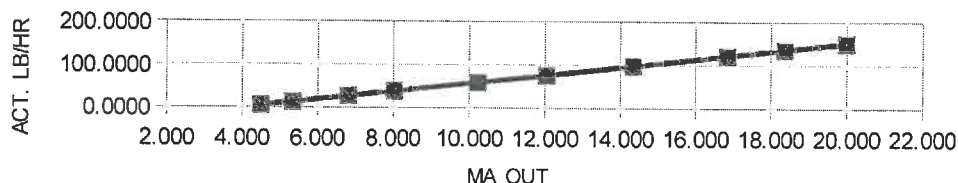
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CERTIFICATE OF CALIBRATION

CUSTOMER: CANYON POWER PLANT (CITY OF ANAHEIM)
PO NUMBER: N/A
INST. MANUFACTURER: MICRO MOTION INC.
INST. DESCRIPTION: MASS FLOW METER & READOUT
MODEL NUMBER: CMF025M313NQBUEZZZ & 1700R11ABUEZZZ
SERIAL NUMBER: 3127429 & 14139410 (ID# 04-FIT 423 / FE-423)
RATED UNCERTAINTY: +/- 0.25% RD
UNCERTAINTY GIVEN: TOTAL measurement uncertainty +/- 0.168% RD K=2
NOTES:

CALIBRATION DATE: 05/10/18
CALIBRATION DUE: 05/10/19
PROCEDURE: NAVAIR17-20MG,NIST250
CALIBRATION FLUID: H2O @ 70F
ARRIVAL CONDITIONS: WITHIN MFG. SPEC.
RETURNED CONDITIONS: WITHIN MFG. SPEC.
AMBIENT CONDITIONS: 772mmHGA 53%RH 72°F
CERTIFICATE FILE #: 442736.2018

TEST POINT NUMBER	INDICATED UUT MA OUT	INDICATED UUT LB/HR	ACTUAL DM STD LB/HR	ACTUAL % R.D. ERROR
1	4.489	4.5844	4.5891	0.1021
2	5.336	12.5250	12.5373	0.0982
3	6.815	26.3906	26.4134	0.0864
4	8.024	37.7250	37.7595	0.0915
5	10.226	58.3688	58.4179	0.0842
6	12.041	75.3844	75.4420	0.0764
7	14.336	96.9021	96.9685	0.0685
8	16.841	120.3844	120.4989	0.0952
9	18.365	134.6691	134.7948	0.0933
10	19.989	149.8969	150.0280	0.0874



STANDARDS USED:

A150 (BALANCE 0-200MIL) +/- .0002 GRAMS (.0002MIL) TRACE# 1453384583	DUE	03/12/19
A6 (VOLUME PROVER .002-1GPM) +/- .02% BY VOLUME -CMC .168% RD TRACE# 1424762294, 1424683640	DUE	08/01/18
A305 VA & mA STANDARD (0-10 VDC & 0-100mA) TRACE# 1425285074	DUE	02/07/19

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5/10/2018

[Signature]

[Signature]

Page 1 of 1

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 19

AQ-18
SCR INLET TEMPERATURE SENSOR
CALIBRATION REPORTS

Calibration: SCR Inlet Temperature
Unit 1 TE-403A-403D

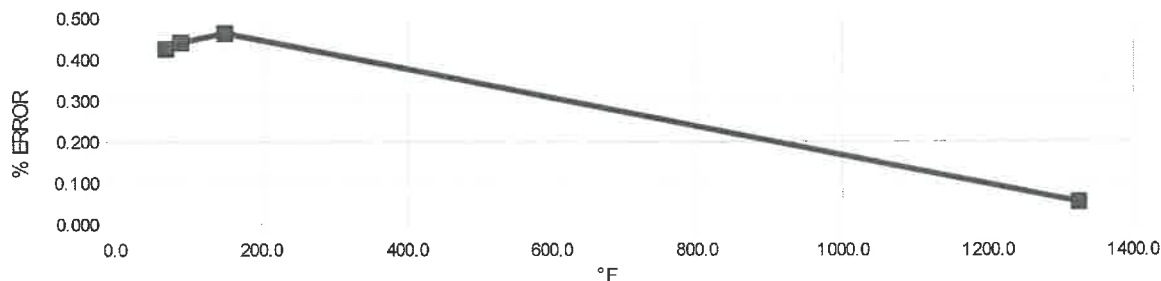
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 1-TE-403A
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/01/2018
CALIBRATION DUE: 05/01/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 758 mmHGA, 55% RH, 70F
CERTIFICATE FILE #: 448079.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT	UUT	DM.STD.	
NUMBER	NOMINAL	ACTUAL	% RD. ERROR
	°F	°F	
1	70.1	70.4	0.428
2	90.2	90.6	0.443
3	150.1	150.8	0.466
4	1325.5	1326.2	0.053



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5-1-2018

Page 1 of 1

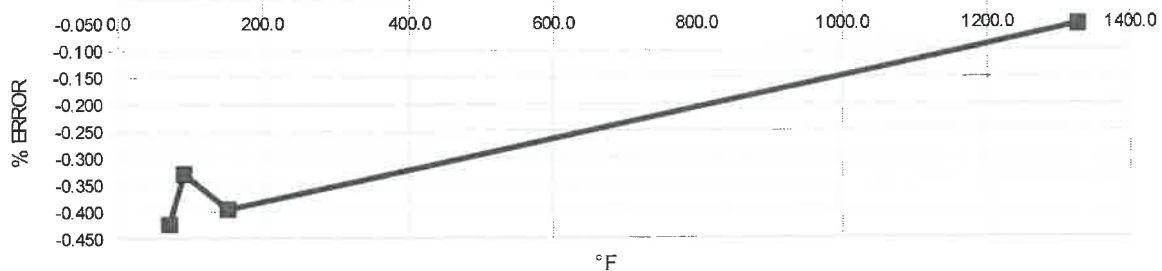
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 1-TE-403B
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/01/2018
CALIBRATION DUE: 05/01/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE #'S: 1390386562
AMBIENT CONDITIONS: 758 mmHGA, 55% RH, 70F
CERTIFICATE FILE #: 448078.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	70.7	70.4	-0.424
2	90.9	90.6	-0.330
3	151.4	150.8	-0.396
4	1326.9	1326.2	-0.053



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Calibration Technician:

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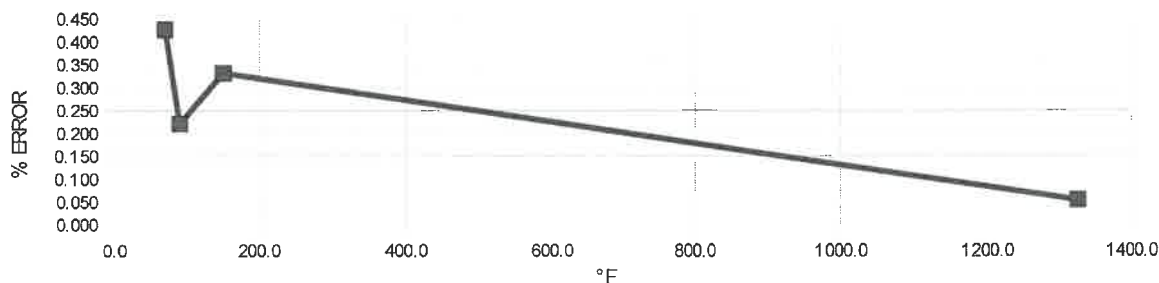
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 1-TE-403C
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/01/2018
CALIBRATION DUE: 05/01/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 7589 mmHGA, 55% RH, 70F
CERTIFICATE FILE #: 448077.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT	UUT	DM.STD.	
NUMBER	NOMINAL	ACTUAL	% RD. ERROR
	°F	°F	
1	70.1	70.4	0.428
2	90.4	90.6	0.221
3	150.3	150.8	0.333
4	1325.5	1326.2	0.053



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSS-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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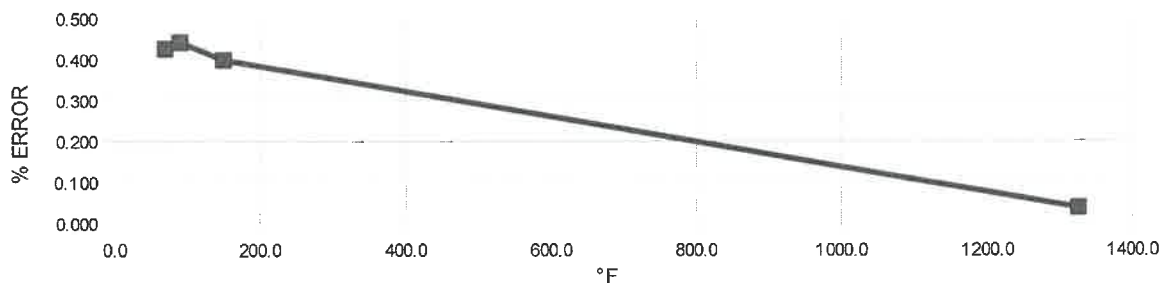
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 1-TE-403D
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S.; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/01/2018
CALIBRATION DUE: 05/01/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 758 mmHGA, 55% RH, 70F
CERTIFICATE FILE #: 448080.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT	UUT	DM.STD.	
NUMBER	NOMINAL	ACTUAL	% RD. ERROR
	°F	°F	
1	70.1	70.4	0.428
2	90.2	90.6	0.443
3	150.2	150.8	0.399
4	1325.7	1326.2	0.038



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Calibration: SCR Inlet Temperature
Unit 2 TE-403A-403D

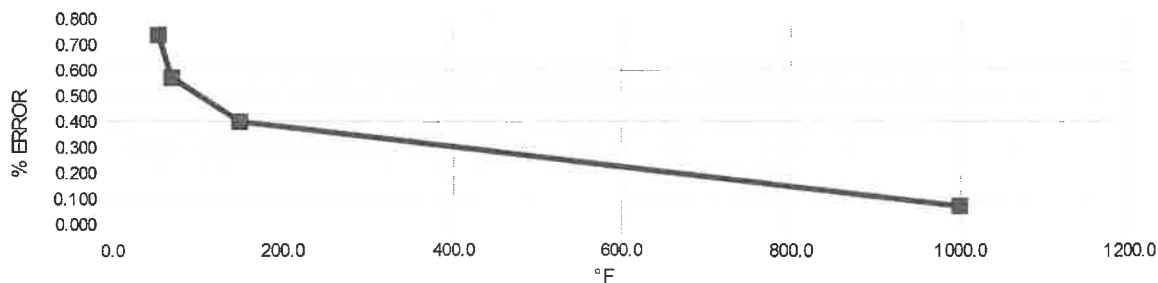
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 2-TE-403A
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S.; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/03/2018
CALIBRATION DUE: 05/03/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE #'S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 45% RH, 70F
CERTIFICATE FILE #: 448280.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	54.1	54.5	0.739
2	69.8	70.2	0.573
3	149.9	150.5	0.400
4	998.8	999.5	0.070



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Page 1 of 1

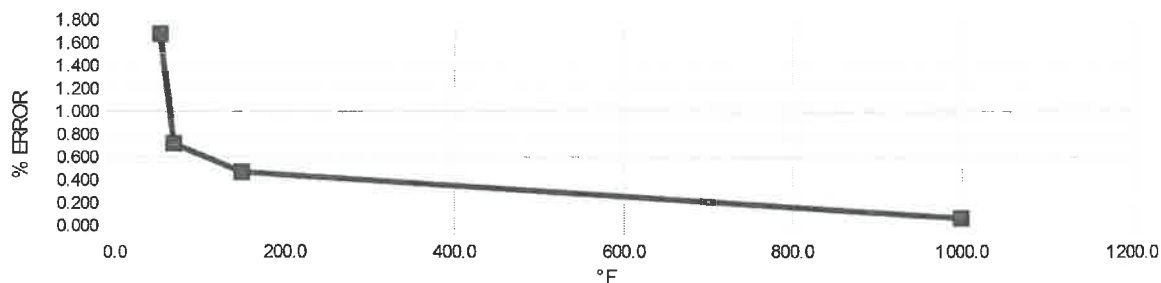
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 2-TE-403B
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S.; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/03/2018
CALIBRATION DUE: 05/03/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 45% RH, 70F
CERTIFICATE FILE #: 448282.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	53.6	54.5	1.679
2	69.7	70.2	0.717
3	149.8	150.5	0.467
4	998.9	999.5	0.060



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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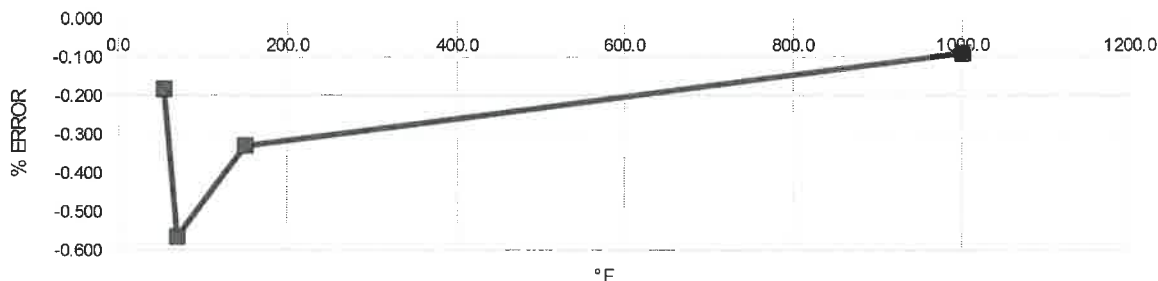
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 2-TE-403C
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S.; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/03/2018
CALIBRATION DUE: 05/03/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 45% RH, 70F
CERTIFICATE FILE #: 448281.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	54.6	54.5	-0.183
2	70.6	70.2	-0.567
3	151.0	150.5	-0.331
4	1000.4	999.5	-0.090



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSS-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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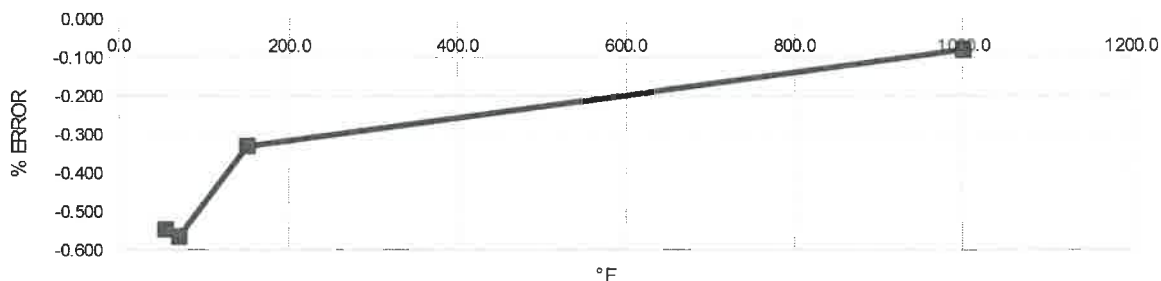
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 2-TE-403D
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S.; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/03/2018
CALIBRATION DUE: 05/03/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE #'S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 45% RH, 70F
CERTIFICATE FILE #: 448283.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	54.8	54.5	-0.547
2	70.6	70.2	-0.567
3	151.0	150.5	-0.331
4	1000.3	999.5	-0.080



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Calibration: SCR Inlet Temperature
Unit 3 TE-403A-403D

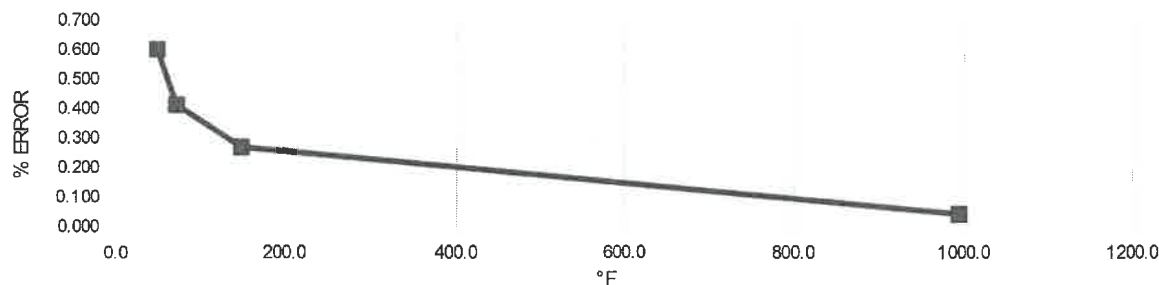
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 3-TE-403A
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/07/2018
CALIBRATION DUE: 05/07/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 40% RH, 73F
CERTIFICATE FILE #: 448332.2017

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT	UUT	DM.STD.	
NUMBER	NOMINAL	ACTUAL	% RD.
	°F	°F	ERROR
1	49.9	50.2	0.601
2	72.8	73.1	0.412
3	149.4	149.8	0.268
4	994.1	994.5	0.040



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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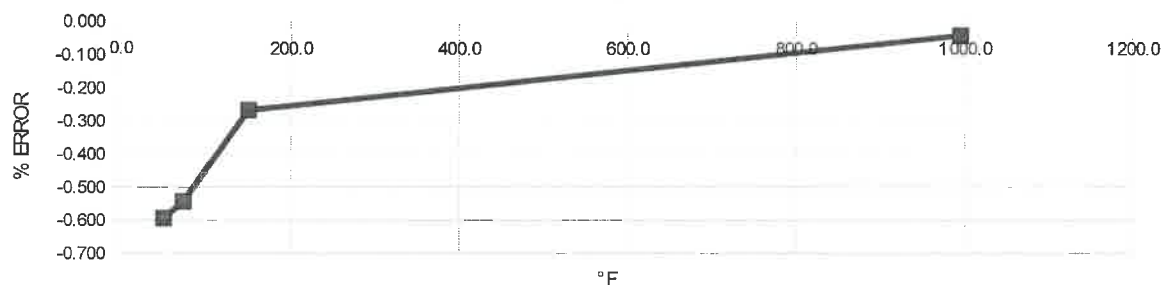
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 3-TE-403B
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/07/2018
CALIBRATION DUE: 05/07/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 40% RH, 73F
CERTIFICATE FILE #: 448329.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	50.5	50.2	-0.594
2	73.5	73.1	-0.544
3	150.2	149.8	-0.266
4	994.9	994.5	-0.040



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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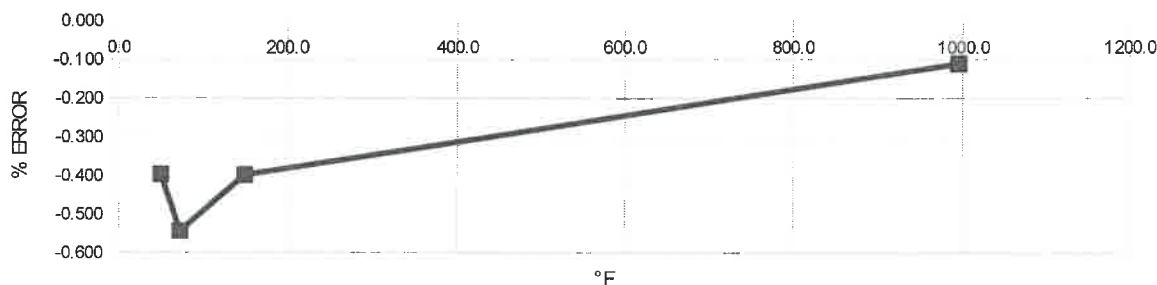
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 3-TE-403C
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/07/2018
CALIBRATION DUE: 05/07/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE #'S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 40% RH, 73F
CERTIFICATE FILE #: 448331.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT	UUT	DM.STD.	
NUMBER	NOMINAL	ACTUAL	% RD. ERROR
	°F	°F	
1	50.4	50.2	-0.397
2	73.5	73.1	-0.544
3	150.4	149.8	-0.399
4	995.6	994.5	-0.110



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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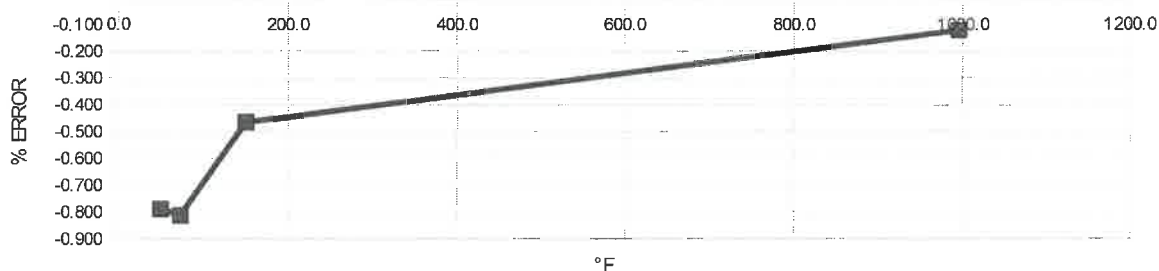
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 3-TE-403D
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/07/2018
CALIBRATION DUE: 05/07/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE #'S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 40% RH, 73F
CERTIFICATE FILE #: 448330.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	50.6	50.2	-0.791
2	73.7	73.1	-0.814
3	150.5	149.8	-0.465
4	995.7	994.5	-0.121



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Approved By:

Calibration Technician:

5-7-2018

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Calibration: SCR Inlet Temperature
Unit 4 TE-403A-403D

CERTIFICATE OF CALIBRATION

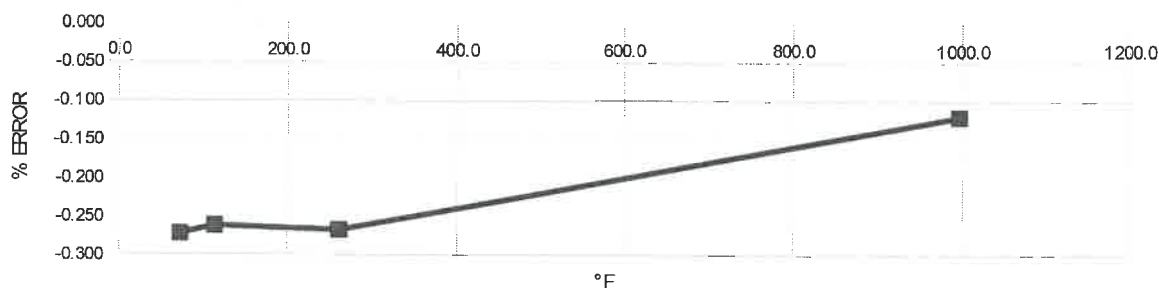
CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 4-TE-403A
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2

CALIBRATION DATE: 05/09/2018
CALIBRATION DUE: 05/09/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 762 mmHGA, 43% RH, 73F
CERTIFICATE FILE #: 448370.2018

NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	73.4	73.2	-0.272
2	114.5	114.2	-0.262
3	261.2	260.5	-0.268
4	996.3	995.1	-0.120



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Calibration Technician:

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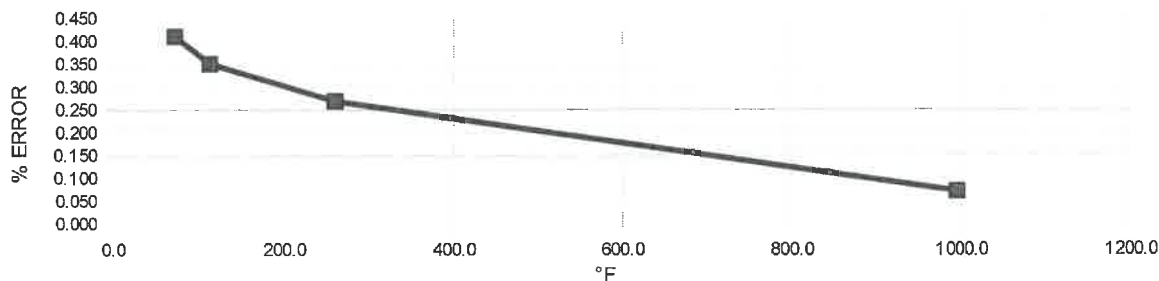
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 4-TE-403B
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/09/2018
CALIBRATION DUE: 05/09/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE # S: 1390386562
AMBIENT CONDITIONS: 762 mmHGA, 43% RH, 73F
CERTIFICATE FILE #: 448368.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT	UUT	DM.STD.	
NUMBER	NOMINAL	ACTUAL	% RD. ERROR
	°F	°F	
1	72.9	73.2	0.412
2	113.8	114.2	0.351
3	259.8	260.5	0.269
4	994.4	995.1	0.070



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5-9-2018

Page 1 of 1

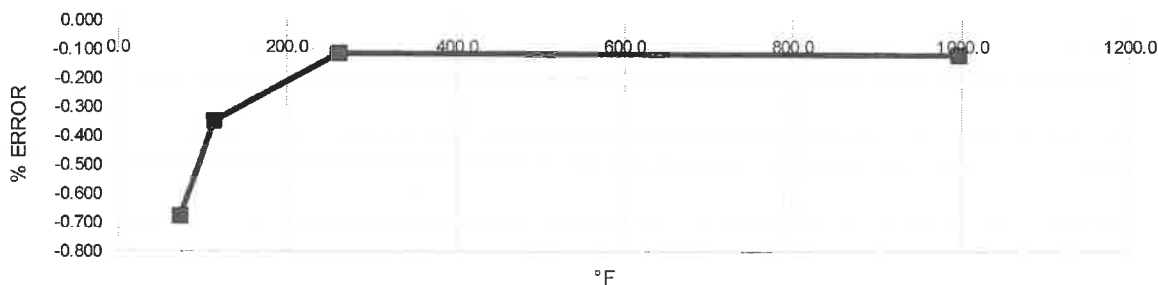
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 4-TE-403C
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/09/2018
CALIBRATION DUE: 05/09/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE #'S: 1390386562
AMBIENT CONDITIONS: 762 mmHGA, 43% RH, 73F
CERTIFICATE FILE #: 448367.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT NUMBER	UUT NOMINAL °F	DM.STD. ACTUAL °F	% RD. ERROR
1	73.7	73.2	-0.678
2	114.6	114.2	-0.349
3	260.8	260.5	-0.115
4	996.3	995.1	-0.120



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Date:

Approved By:

Calibration Technician:

5-9-2018

Page 1 of 1

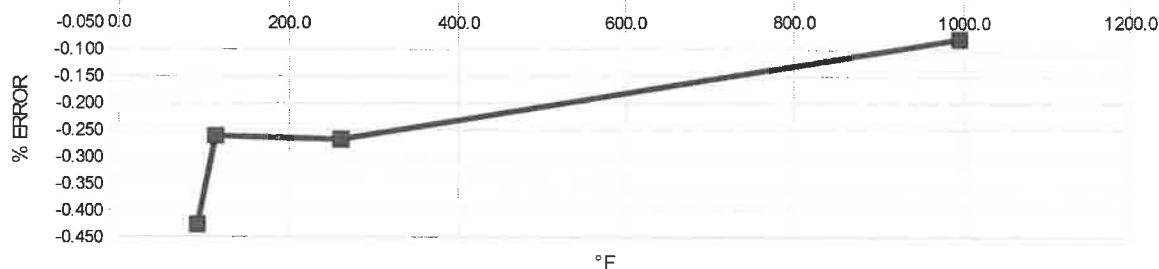
CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 4-TE-403D
INST. MANUFACTURER: JMS
INST. DESCRIPTION: TEMPERATURE SENSOR
MODEL NUMBER: RTD
SERIAL NUMBER: N/A
RATED UNCERTAINTY: +/- 1.8°F
UNCERTAINTY GIVEN: +/- .024% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/09/2018
CALIBRATION DUE: 05/09/2019
PROCEDURE: NAVAIR-17-20ST-104
CALIBRATION FLUID: AIR
STANDARD(S) USED: A24 DUE 2-2019
NIST TRACE #'S: 1390386562
AMBIENT CONDITIONS: 762 mmHGA, 43% RH, 73F
CERTIFICATE FILE #: 448369.2018

*** CALIBRATED WITH D.M. TEMP. READER ***

TEST POINT	UUT	DM.STD.	
NUMBER	NOMINAL	ACTUAL	% RD. ERROR
	°F	°F	
1	93.6	93.2	-0.427
2	114.5	114.2	-0.262
3	261.2	260.5	-0.268
4	995.9	995.1	-0.080



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5-9-2018

[Signature]

[Signature]

Page 1 of 1

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 20

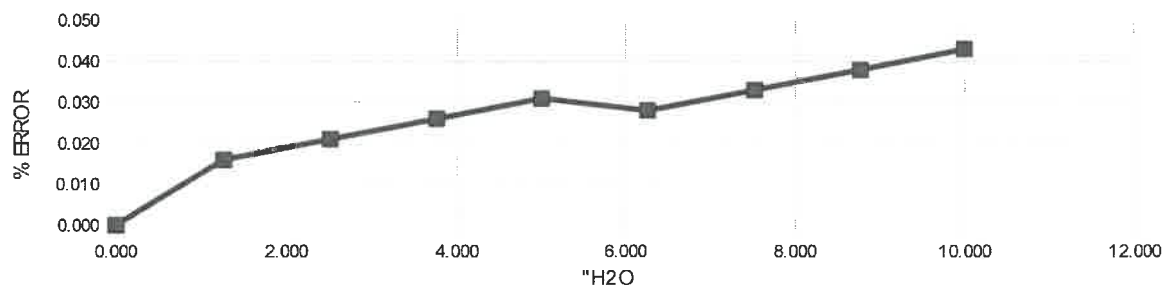
AQ-19
SCR DIFFERENTIAL PRESSURE SENSOR
CALIBRATION REPORTS

CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 1-PDIT-403
INST. MANUFACTURER: ROSEMOUNT
INST. DESCRIPTION: PRESSURE TRANSMITTER
MODEL NUMBER: 3051S
SERIAL NUMBER: 0393478
RATED UNCERTAINTY: +/- .055% F.S.
UNCERTAINTY GIVEN: +/- .008% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/01/2018
CALIBRATION DUE: 05/01/2019
PROCEDURE: NAVAIR-17-20MP-03
CALIBRATION FLUID: AIR @ 70F
STANDARD(S) USED: A321 DUE 2-2019
NIST TRACE # S: 1236086968
AMBIENT CONDITIONS: 758 mmHGA, 55% RH, 70F
CERTIFICATE FILE #: 447444.2018

TEST POINT NUMBER	UUT INDICATED mA DC	UUT INDICATED "H2O DP.	DM.STD. ACTUAL "H2O DP.	% F.S. ERROR
1	4.000	0.000	0.0000	0.000
2	6.025	1.266	1.2672	0.016
3	8.014	2.509	2.5109	0.021
4	10.022	3.764	3.7664	0.026
5	12.015	5.009	5.0125	0.031
6	14.018	6.261	6.2641	0.028
7	16.032	7.520	7.5233	0.033
8	18.021	8.763	8.7669	0.038
9	19.995	9.997	10.0012	0.043



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5-1-2018

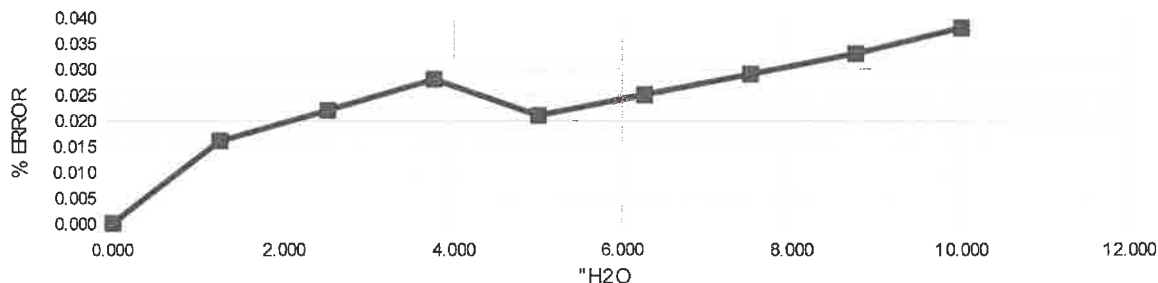
Page 1 of 1

CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 2-PDIT-403
INST. MANUFACTURER: ROSEMOUNT
INST. DESCRIPTION: PRESSURE TRANSMITTER
MODEL NUMBER: 3051S
SERIAL NUMBER: 0393479
RATED UNCERTAINTY: +/- .055% F.S.
UNCERTAINTY GIVEN: +/- .008% F.S.; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/03/2018
CALIBRATION DUE: 05/03/2019
PROCEDURE: NAVAIR-17-20MP-03
CALIBRATION FLUID: AIR @ 70F
STANDARD(S) USED: A321 DUE 2-2019
NIST TRACE #'S: 1236086968
AMBIENT CONDITIONS: 763 mmHGA, 45% RH, 70F
CERTIFICATE FILE #: 447441.2018

TEST POINT	UUT	UUT	DM.STD.	
NUMBER	INDICATED	INDICATED	ACTUAL	% F.S.
	mA DC	"H2O DP.	"H2O DP.	ERROR
1	4.000	0.000	0.0000	0.000
2	6.011	1.257	1.2585	0.016
3	8.025	2.516	2.5178	0.022
4	10.019	3.762	3.7647	0.028
5	12.006	5.004	5.0059	0.021
6	14.023	6.264	6.2669	0.025
7	16.025	7.516	7.5185	0.029
8	18.007	8.754	8.7577	0.033
9	19.997	9.998	10.0019	0.038



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5-3-2018

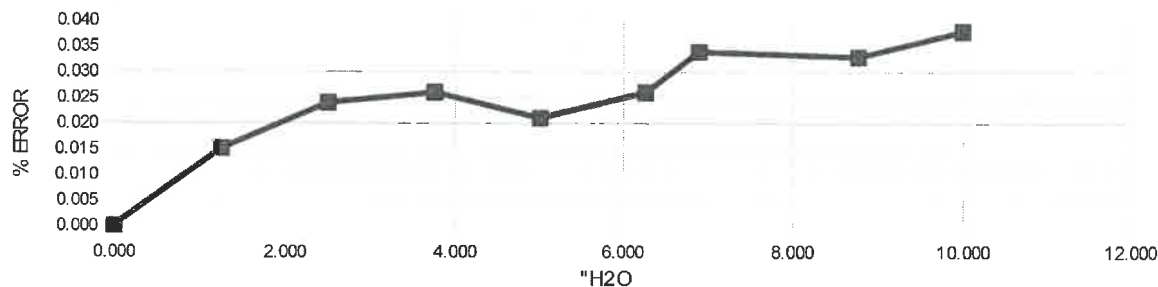
Page 1 of 1

CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 3-PDIT-403
INST. MANUFACTURER: ROSEMOUNT
INST. DESCRIPTION: PRESSURE TRANSMITTER
MODEL NUMBER: 3051S
SERIAL NUMBER: 0393480
RATED UNCERTAINTY: +/- .055% F.S.
UNCERTAINTY GIVEN: +/- .008% F.S...; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/07/2018
CALIBRATION DUE: 05/07/2019
PROCEDURE: NAVAIR-17-20MP-03
CALIBRATION FLUID: AIR @ 70F
STANDARD(S) USED: A321 DUE 2-2019
NIST TRACE #S: 1390386562
AMBIENT CONDITIONS: 763 mmHGA, 40% RH, 73F
CERTIFICATE FILE #: 447475.2018

TEST POINT	UUT	UUT	DM.STD.	
NUMBER	INDICATED	INDICATED	ACTUAL	% F.S.
	mA DC	"H2O DP.	"H2O DP.	ERROR
1	4.000	0.000	0.0000	0.000
2	6.025	1.266	1.2671	0.015
3	8.014	2.509	2.5112	0.024
4	10.011	3.757	3.7595	0.026
5	12.019	5.012	5.0140	0.021
6	14.025	6.266	6.2682	0.026
7	15.033	6.896	6.8990	0.034
8	18.024	8.765	8.7683	0.033
9	19.992	9.995	9.9988	0.038



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

Approved By:

Calibration Technician:

5-7-2018

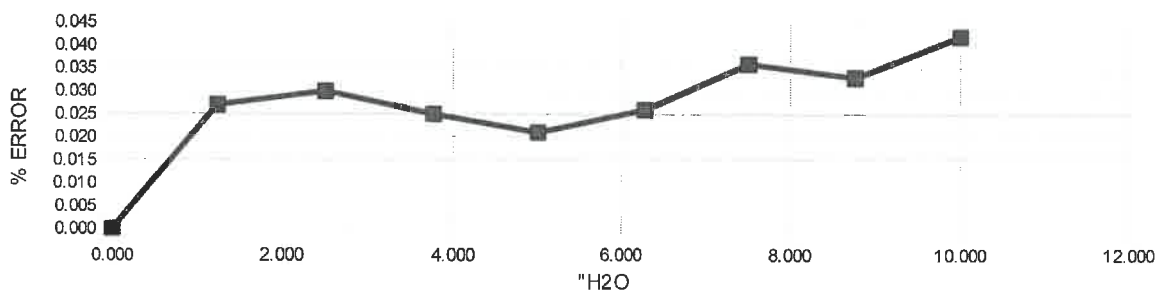
Page 1 of 1

CERTIFICATE OF CALIBRATION

CUSTOMER: CITY OF ANAHEIM
ID NUMBER: 4-PDIT-403
INST. MANUFACTURER: ROSEMOUNT
INST. DESCRIPTION: PRESSURE TRANSMITTER
MODEL NUMBER: 3051S
SERIAL NUMBER: 0393481
RATED UNCERTAINTY: +/- .055% F.S.
UNCERTAINTY GIVEN: +/- .008% F.S.; K=2
NOTES: AS RECEIVED / AS LEFT WITHIN SPECS.

CALIBRATION DATE: 05/09/2018
CALIBRATION DUE: 05/09/2019
PROCEDURE: NAVAIR-17-20MP-03
CALIBRATION FLUID: AIR @ 70F
STANDARD(S) USED: A321 DUE 2-2019
NIST TRACE # 'S: 1236086968
AMBIENT CONDITIONS: 762 mmHGA, 43% RH, 73F
CERTIFICATE FILE #: 447438.2018

TEST POINT NUMBER	UUT INDICATED mA DC	UUT INDICATED "H2O DP.	DM.STD. ACTUAL "H2O DP.	% F.S. ERROR
1	4.000	0.000	0.0000	0.000
2	5.998	1.249	1.2515	0.027
3	8.011	2.507	2.5099	0.030
4	10.033	3.771	3.7731	0.025
5	12.015	5.009	5.0115	0.021
6	14.058	6.286	6.2889	0.026
7	16.022	7.514	7.5174	0.036
8	18.014	8.759	8.7621	0.033
9	19.998	9.999	10.0030	0.042



All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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Date:

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Page 1 of 1

CANYON POWER PLANT
ANNUAL COMPLIANCE REPORT

ATTACHMENT 21

WASTE-10
COOLING TOWER SLUDGE TESTING

No Sludge developed for CY 2018