**Tucson Iron & Metal**
**Tucson, Arizona**

**Pima County Department of Environmental Quality Permit127, Expires 04/21/15**

**Contraband Incineration System**

**Relative Accuracy Monitor Certification(RATA)**
**Test Report**

**Test Dates: 02/07-08/17**

**By:**

**Energy and Environmental Measurement Corporation (EEMC)**
**Fully accredited ASTM/STAC, February 6, 2015**

**3730 N. Pellegrino Drive, Tucson, Arizona 85749**
**Phone: (520) 749-2167 Fax: (520) 749-3582**
**EEMCorp@comcast.net**

**2751 Enterprise Ave. Ste. 2, Billings, Montana 59102**
**Phone: (406) 252-4450 Fax: (406) 252-6350**



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## REVIEW AND CERTIFICATION

**By EEMC Personnel:**

All work, calculations, other activities, tasks performed and documented in this report were carried out under my (Team Leader/QSTI) direction and supervision. This test project conforms to EEMC's Quality Manual and to the requirements of ASTM D-7036.

Date 3/23/17

Matthew Nurimba
Environmental Project Manager

I have reviewed all testing details, calculations, results, conclusions and other appropriate written material contained herein, and hereby certify that the presented material is authentic and accurate.

Date 3/23/2017

Ed Wadington
Executive Manager, EEMC

**By Company Personnel:**

I have reviewed the information being submitted in its entirety and based on information and belief formed after reasonable inquiry, I certify that the statements and information contained in this submittal are true, accurate, and complete.

Date _____

Signature

Name (Printed)

Title

Company

EEMCFILES/ReportResources/Forms: Revised 12/11/13 jll

## FIELD OBSERVATION CHECKLIST

| | |
|---|---|
| **Test Dates:** | **02/07-08/17** |
| **PDEQ Permit No.:** | **127, Expires 04/21/15** |
| **Plant Name:** | **Tucson Iron & Metal** |
| **Plant Address:** | **4484 East Tennessee Street**<br>**Tucson, Arizona 85714** |
| **Source Tested:** | **Contraband Incineration System** |
| **Company Contacts:** | **Dan Butwinski - Site Foreman** |
| **Phone:** | **(520) 884-1554** |
| | **Gary Kippur - Owner** |
| **Phone:** | **(520) 884-1554** |
| **Fax:** | **(520) 884-0860** |
| | **Email: gary@tucsoniron.net** |
| **Observer and Affiliation:** | **Pima County Dept. of Environmental Services Observer** |
| **EEMC Field Team:** | |
| **Team Leader:** | **Rafael Guillen, QSTI** |
| **Instrumentation:** | **Matt Nurimba, QSTI** |
| **Meterbox:** | **Rafael Guillen, QSTI/Joanne Sufi, QSTI** |
| **Stack/Sample Recovery:** | **John Bustin/Jodi Lunsford** |
| **Data Analysis/ Report Preparation:** | **Jodi Lunsford, Rhonda Wadington** |

**Energy and Environmental Measurement Corporation (EEMC)**
**3730 N. Pellegrino Drive, Tucson, Arizona 85749**
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## INTRODUCTION

Tucson Iron & Metal (TIM) contracted with Energy and Environmental Measurement Corporation (EEMC) to conduct monitor certification evaluations on the Contraband Incinerator located in Tucson, Arizona. The purpose of this report is to outline the sampling and analytical methods employed as described in the protocol submitted March 18, 2016, report field/laboratory data, and provide test results.

## TEST CHRONOLOG

**02/07/17**

| Time | Run | Location | Test Description |
|---|---|---|---|
| 10:13-10:33 | 1- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 10:43-11:03 | 2- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 11:13-11:33 | 3- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 11:49-12:09 | 4- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 12:19-12:39 | 5- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 12:49-13:09 | 6- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 13:22-13:42 | 7- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 13:52-14:12 | 8- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 14:23-14:43 | 9- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 14:55-15:15 | 10- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| **02/08/17** | | | |
| 10:40-11:00 | 11- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |
| 11:15-11:35 | 12- $CO/O_2$ | Contraband Incinerator | EPA Methods 3A/7E/10 |

## CEM DESCRIPTION/CEM DATA

CEM descriptions and CEM data were supplied by Tucson Iron & Metal (TIM) and are included as tabulated - CEM Descriptions/Data.

The ALTECH Environmental, model MIR-IS Multi CEMS gas analyzer certified:

$O_2$ CEMS - Range 0-25%
CO CEMS - Range 0-500 ppm

## SAMPLING EQUIPMENT AND PROCEDURES

Twelve twenty-one-minute relative accuracy runs were conducted on the Contraband Incinerator. Following is a synopsis of the test methods employed:

<u>CO Emissions</u>

EPA Method 10 was employed for determination of CO emissions. A TECO Model 48C NDIR analyzer was utilized for determination of CO gas stream concentration. The train was calibrated using EPA Protocol 1 CO in $N_2$ (span gas). CO data was recorded by an integrating computer/logger on a minute by minute basis. Sample range was 0 – 51.0 ppmvd.



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**SAMPLING EQUIPMENT AND PROCEDURES** - continued

$O_2$ Emissions

EPA Method 3A[1] was employed for determination of stack gas $O_2$ concentration. The stack gases were extracted from the stream and conveyed to Servomex 1400 Oxygen analyzer. EPA Protocol 1 calibration gases were utilized for instrument span checks. Zero was checked with zero $N_2$ gas. Results were recorded via an integrating/computer logger on a one-minute basis. Full spans of 0-20.99 %vd $O_2$ were utilized.

**UNITS OF REPORTING**

The data is reported with the following units:

1) $O_2$ - %vd - percent on a volume basis
2) CO
   ppmvd - parts per million on a volume basis w/o moisture
   ppmvd @7% $O_2$ - parts per million on a volume basis w/o moisture at seven percent oxygen

**RESULTS**

This report contains summarizations of all pertinent sampling and analytical results. Field and laboratory data, calculations and results are included as tabulated in this report. No process, environmental, or test conditions were observed that would affect the test data. Example calculations are included.

**REFERENCES**

[1] 40CFR60, App. A, Methods 3A and 10, 2016
40CFR60 App. B, Specifications 4, 2016
40CFR75 Appendix B Figure 2 p 406: Annual Testing



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**CEM CERTIFICATION PERFORMANCE SPECIFICATIONS**
**Tucson Iron & Metal**
**Tucson, Arizona**

**Contraband Incineration System**

**Standards**

| Species | Source | Limit |
|---|---|---|
| CO ppmvd | 40 CFR 60 Appendix B Spec. 4 | 5% ES |
| $O_2$ %v | 40 CFR 75 Appendix A Section 3 | 1% ABS |

| Measured | | |
|---|---|---|
| **02/07-08/17** | | |
| CO ppmvd | 40 CFR 60 Appendix B Spec. 4 | 4.2% ES |
| CO ppmvd @ 7%$O_2$ | 40 CFR 60 Appendix B Spec. 4 | 5.4% ES |
| $O_2$ %v | 40 CFR 75 Appendix A Section 3 | 0.2% ABS |

RM - Reference Mean
ABS - Absolute Difference
BAF - Bias Adjustment Factor

**Relative Accuracy Standards:**

CEM Specification 4: The Relative Accuracy (RA) of the CEMS must be no greater than 10% when the reference mean (RM) is used to calculate RA or 5% when the applicable emissions standard (ES) is used.



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August 4, 2015

**By E-MAIL:**
gary@tucsoniron.net

Gary Kippur, President
Tucson Iron and Metal
P.O. Box 28898
Tucson, Arizona 85726

RE: Air Quality Operating Permit Renewal Application for Tucson Iron and Metal (Permit #127)

Dear Mr. Kippur,

Pursuant to Pima County Code (PCC) 17.12.165.E.5, the Pima County Department of Environmental Quality (PDEQ), has determined that additional information is required to support your permit renewal application submitted September 9, 2014.

Based on the discussion at our last meeting on June 22, 2015, we focused on the applicability of the New Source Performance Standards (NSPS) for Other Solid Waste Incineration Units (OSWI) (40 CFR Subpart EEEE), on your Tucson facility operations. PDEQ contacted the following EPA office for guidance:

Fuel and Incineration Group
Sector Policies and Program Division,
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency

EPA has determined that the operation of a privately owned incineration unit that combusts contraband is not excluded from the applicable NSPS rule. Under the current NSPS OSWI rule, a privately owned unit(s) combusting contraband would be required to obtain a title V permit and comply with the emission limitations and other requirements of the OSWI rule.

PDEQ is hereby notifying you that an updated permit application to reflect the applicability of 40 CFR Part 60, Subpart EEEE rule is required for your Tucson facility. You must meet the operating limits established by the rule within 180 days.

If you would like to discuss this issue with PDEQ or the above EPA office, please contact me at 724-7341 and we can set up a meeting or conference call.

Sincerely,

Rupesh Patel

Rupesh Patel
Air Permit Manager

CC: Steve Kippur, Manager, Tucson Iron and Metal: steve@amcepmetals.com



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**DEPARTMENT OF ENVIRONMENTAL QUALITY**
**33 N. Stone Avenue, Suite 700**
**Tucson, Arizona 85701-1317**
**Visit our website at: www.deq.pima.gov**

**Ursula Kramer, P.E.**
**Director**

**(520) 243-7400**
**FAX (520) 838-7432**

April 28, 2011

**BY E-MAIL**
gary@tucsoniron.net

Mr. Gary Kippur
President
Tucson Iron & Metal
4484 E Tennessee Street
Tucson, Arizona, 85714

Re: Request for Administrative Revision, Air Quality Operating Permit #127
Permit Action 127-4P

Dear Mr. Kippur:

Pima County Department of Environmental Quality (PDEQ) has processed your administrative revision application (received on April 25, 2011) and accordingly added pharmaceuticals to the list of materials that may be destroyed within your incinerator.

Please note, PDEQ has provided a specific definition of pharmaceuticals which is identified in the permit and technical support document.

If you have any questions, please contact me at (520) 243-7400.

Sincerely,

Rupesh Patel
Air Permitting and Compliance.

Enclosures: Air Quality Operating Permit #127 (Revised April 28, 2011)
Technical Support Document (Dated April 28, 2011)

Printed on recycled paper

# PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY

**33 N. Stone Avenue, Suite 700 · Tucson, Arizona 85701 · Phone: (520) 243-7400**

# AIR QUALITY OPERATING PERMIT

(As required by Title 17.12, Article II, Pima County Code)

## ISSUED TO

## TUCSON IRON & METAL

## 4484 EAST TENNESSEE STREET
## TUCSON, ARIZONA 85701

*This air quality operating permit does not relieve applicant of responsibility for meeting all air pollution regulations*

THIS PERMIT ISSUED SUBJECT TO THE SPECIFIC CONDITIONS IDENTIFIED IN THIS PERMIT.

PDEQ PERMIT NUMBER **127** PERMIT CLASS **II**

PERMIT ISSUED **APRIL 22, 2010** EXPIRES **APRIL 21, 2015**

REVISED **APRIL 28, 2011**

***Mukonde Chama P.E., Air Permits Supervisor, PDEQ***

SIGNATURE TITLE



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## PERMIT SUMMARY

Tucson Iron and Metal (TIM) is a metal recycling facility located at 4484 East Tennessee Street, Tucson, Arizona. Permitted activities which produce air emissions include a secondary aluminum sweater and a incinerator.

The secondary aluminum sweat furnace is used exclusively to reclaim aluminum scrap. The incinerator is used to destroy materials that are limited to: *marijuana, cocaine, methamphetamine, pharmaceuticals, wood, paper, burlap/fabric and associated wrapping.*

For the purposes of this permit, "pharmaceutical" means any chemical product, vaccine or allergenic (including any product with the primary purpose to dispense or deliver a chemical product, vaccine or allergenic), not containing a radioactive component, that is intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease or injury in man or other animals; or any chemical product, vaccine or allergenic (including any product with the primary purpose to dispense or deliver a chemical product, vaccine or allergenic), not containing a radioactive component, that is intended to affect the structure or function of the body in man or other animals. This definition includes products such as transdermal patches, and oral delivery devices such as gums or lozenges. This definition does not include sharps or other infectious or biohazardous waste, dental amalgams, medical devices not used for delivery or dispensing purposes, equipment, contaminated personal protective equipment or contaminated cleaning materials.

This operating permit is the second five-year permit issued to TIM, the Permittee. Potential emissions resulting from the facility operations include $NO_X$, VOC, HAPs, $PM_{10}$, $SO_X$ and CO. This facility is a true minor source for all pollutants.

The following emission rates are for reference purposes only and are not intended to be enforced by direct measurement unless otherwise noted in the Specific Conditions of this permit.

| Pollutant | Potential Emissions* (Tons per Year) |
|---|---|
| Nitrogen Oxides (NOx) | 6.16 |
| Carbon Monoxide (CO) | 71.22 |
| Volatile Organic Compounds (VOC) | 4.49 |
| Particulate Matter (as $PM_{10}$) | 1.07 |
| Sulfur Oxides ($SO_2$ + $SO_3$) | 26.22 |
| Hazardous Air Pollutants (HAPs – total) | < 1.0 |

* Emissions extrapolated from stack test data dated 10/09/2007 and AP-42 Chapter 1, Section 4, Natural Gas Combustion.

All requirements of this permit that are Federally Enforceable or Material Permit Conditions are specifically indicated as such.

## APPLICABILITY

This is an existing Class II true minor stationary source. The affected sources at the facility to which this air quality permit applies are grouped into the following emission source categories:

Section A National Emission Standards for Hazardous Air Pollutants (NEHSAP) for Secondary Aluminum Production (Code of Federal Regulations (CFR) Title 40, Part 63, Subpart RRR).

Section B Incinerator.

Section C General Standards for the Facility.

## Section A

## Specific Conditions for NESHAP Affected Equipment

The provisions of Section A apply to the Aluminum Sweat Furnace identified in Table 1 of Attachment 2. Unless otherwise identified, all conditions in this Section are **Federally Enforceable Conditions.**

### A. Emission Limitations and Standards

1. Dioxin/Furan (D/F) Standard

   The Permittee must not discharge or cause to be discharged from the aluminum sweat furnace to the atmosphere emissions in excess of 0.80 nanogram (ng) of D/F TEQ[1] emissions per dscm (3.5 x $10^{-10}$ gr per dscf) at 11 percent oxygen ($O_2$). [40 CFR 63.1505(f)(2)]

2. Fuel Limitation Standard

   The Permittee shall fire the aluminum sweat furnace exclusively with pipeline quality natural gas. [PCC 17.12.190.B]
   **[Locally Enforceable & Material Permit Condition]**

### B. Monitoring Requirements

1. Afterburner Operation

   a. The aluminum sweat furnace afterburner shall be operated in accordance with the Operation, Maintenance and Monitoring (OM&M) Plan in B.3 of the Monitoring Requirements. [40 CFR 63.1506(h)(2)]

   b. The Permittee is not required to conduct a performance test to demonstrate compliance with the emission standard of A.1 of this Section, provided that, the Permittee operates and maintains an afterburner with a design residence time[2] of 0.8 seconds or greater <u>and</u> maintains the 3-hr block average operating temperature of the afterburner at or above 1600°F. [40 CFR 63.1505(f)(1) & 40 CFR 63.1506(h)(1)]
   **[Material Permit Condition]**

2. Afterburner Monitoring

   a. The Permittee must install, calibrate, maintain, and operate a device to continuously monitor and record the operating temperature of the afterburner consistent with the requirements for continuous monitoring systems in subpart A of 40 CFR 63. [40 CFR 63.1510 (g)(1)]

   b. The temperature monitoring device must meet each of these performance and equipment specifications: [40 CFR 63.1510 (g)(2)]

      i. The temperature monitoring device must be installed at the exit of the combustion zone of the afterburner; [40 CFR 63.1510 (g)(2)(i)]

[1] D/F means dioxin /furan. *TEQ* means the international method of expressing toxicity equivalents for dioxins and furans as defined in "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans (CDDs and CDFs) and 1989 Update" (EPA–625/3–89–016), available from the National Technical Information Service (NTIS).
[2] See Technical Support Document for the definition of Residence Time (Section VI.G).

ii. The monitoring system must record the temperature in 15-minute block averages and determine the average temperature for each 3-hour block period[3]. [40 CFR 63.1510 (g)(2)(ii)]

iii. If the aluminum sweat furnace does not run for three hours at a time, the Permittee may submit an application to the Control Officer to request for alternative monitoring options. Any such alternative monitoring application shall be processed according to the criteria and procedures set forth in 40 CFR 63.1510(w)(1) through (6). [40 CFR 63 1510 (w)]

iv. The recorder response range must include zero and 1.5 times the average temperature established by a performance evaluation[4] according to the requirements in 40 CFR 63.1512(m). [40 CFR 63 1510 (g)(2)(iii)]

c. The Permittee must conduct an inspection of each afterburner at least once a year and record the results. At a minimum, an inspection must include: [40 CFR 63 1510(g)(3(i) – (xi))]

i. Inspection of all burners, pilot light assemblies, and pilot light sensing devices for proper operation and clean pilot sensor;

ii. Inspection for proper adjustment of combustion air;

iii. Inspection of internal structures (e.g., baffles) to ensure structural integrity) baffles;

iv. Inspection of dampers, fans, and blowers for proper operation;

v. Inspection for proper sealing;

vi. Inspection of motors for proper operation;

vii. Inspection of combustion chamber refractory lining (the Permittee shall clean and replace lining as necessary); and

viii. Inspection of afterburner shell for corrosion and/or hot spots;

ix. Documentation, for the burn cycle that follows the inspection, that the afterburner is operating properly and any necessary adjustments have been made; and

x. Verification that the equipment is maintained in good operating condition.

xi. Following the afterburner equipment inspection, all necessary repairs must be completed in accordance with the requirements of the OM&M plan.

3. Operation, Maintenance and Monitoring Plan (OM&M)

a. The Permittee must prepare and implement a written operation, maintenance, and monitoring (OM&M) plan for the aluminum sweat furnace. The OM&M plan shall include: [40 CFR 63 1510(b)]

**[Federally Enforceable Conditions]**

[3] 15-minute block averages, for example, if the 15-minute blocks last from 3:00 to 3:15, 3:15 to 3:30, etc., then a 3-hour block could last from 3:00 to 6:00). It must record the temperature at least once in each 15-minute interval.

[4] Performance evaluation means the conduct of relative accuracy testing, calibration error testing, and other measurements used in validating the continuous monitoring system data.

i. Process and control device parameters to be monitored to determine compliance, along with established operating levels or ranges as applicable for the sweat furnace and afterburner; [40 CFR 63.1510(b)(1)]

ii. A monitoring schedule for the sweat furnace and afterburner; [40 CFR 63.1510(b)(2)]

iii. Procedures for the proper operation and maintenance of the sweat furnace and afterburner; [40 CFR 63.1510(b)(3)]

iv. Procedures for the proper operation and maintenance of monitoring devices used to determine compliance with the emission limitation in A.1 of this Section, including calibration and certification of accuracy of each monitoring device, at least once every 6 months, according to the manufacturer's instructions; [40 CFR 63.1510(b)(4) & 40 CFR 63.1510(b)(4)(i)]

v. Procedures for monitoring the aluminum sweat furnace process and afterburner parameters, including procedures for annual inspections of afterburners, and if applicable, the procedure to be used for determining charge/feed (or throughput) weight if a measurement device is not used; [40 CFR 63.1510(b)(5)]

vi. Corrective actions to be taken when the aluminum sweat furnace process or operating parameters or afterburner parameters deviate from the value or range established by B.3.a.i of this Section, including: [40 CFR 63.1510(b)(6)]

(A). Procedures to determine and record the cause of a deviation or excursion, and the time the deviation or excursion began and ended; and [40 CFR 63.1510(b)(6)(i)]

(B). Procedures for recording the corrective action taken, the time corrective action was initiated, and the time/date corrective action was completed. [40 CFR 63.1510(b)(6)(ii)]

vii. A maintenance schedule for the aluminum sweat furnace process and afterburner that is consistent with the manufacturer's instructions and recommendations for routine and long-term maintenance. [40 CFR 63.1510(b)(7)]

b. Based on the results from requirements under B.3 of this Section, the Control Officer may require that the Permittee make changes to the OM&M plan if the Control Officer or Administrator finds that the plan: [40 CFR 63.1510(b)]

i. Does not address a deficiency that has occurred;

ii. Fails to provide for the proper operation of, the affected source, the air pollution control techniques, or the control system and process monitoring equipment during a malfunction in a manner consistent with good air pollution control practices; or;

iii. Does not provide adequate procedures for correcting malfunctioning process equipment, air pollution control techniques, monitoring equipment or other deficiency's as quickly as practicable.

c. If the Permittee determines that any other revisions of the OM&M plan are necessary, such revisions will not become effective until the Permittee submits a description of the changes and a revised plan incorporating them to the Control Officer. [40 CFR 63.1510(b)]

4. Establishment of monitoring and operating parameter values

The Permittee must establish a minimum or maximum operating parameter value, or an operating parameter range for each parameter to be monitored as required by 40 CFR 63.1510 that ensures compliance with the applicable emission limit or standard. To establish the minimum or maximum value or range, the Permittee must use the appropriate procedures in 40 CFR 63.1511 and submit the information required by 40 CFR 63.1515(b)(4) in the notification of compliance status report. The Permittee may use existing data in addition to the results of performance tests to establish operating parameter values for compliance monitoring provided each of the following conditions are met to the satisfaction of the Control Officer: [40 CFR 63 1511(g)]

a. The complete emission test report(s) used as the basis of the parameter(s) is submitted. [40 CFR 63 1511(g)(1)]

b. The same test methods and procedures as required by the 40 CFR 63 Subpart RRR were used in the test. [40 CFR 63.1511(g)(2)]

c. The Permittee certifies that no design or work practice changes have been made to the source, process, or emission control equipment since the time of the report. [40 CFR 63.1511(g)(3)]

d. All process and control equipment operating parameters required to be monitored were monitored as required in 40 CFR 63 Subpart RRR and documented in the test report. [40 CFR 63 1511(g)(4)]

5. Furnace Temperature Determination

The Permittee shall install and utilize devices to continuously read out the combustion chamber temperature and the holding chamber temperature (with readouts that are readily accessible to the Control Officer) in degrees Fahrenheit during the operation of the sweat furnace. The Permittee shall not operate the sweat furnace without the devices used to determine temperature read out with accuracy within plus or minus 10 degrees of the actual temperature. The Permittee shall adhere to the manufacturer's recommended operating, calibration, and maintenance procedures for the temperature-measuring device. [PCC 17.12.185 A.3]

**[Locally Enforceable Condition]**

6. Fuel limitation

The Permittee shall be considered in compliance with the fuel limitation requirement in A.2 of this Section, by making available to the Control Officer for his inspection, documentation such as invoices or statements from the fuel supplier showing that only commercial natural gas was purchased for use in the equipment. Alternatively, the demonstration may be made by actual inspection of the equipment showing that pipeline natural gas is the only fuel supply plumbed to the equipment for firing. [PCC 17 12 185 A 3]

**[Locally Enforceable Condition]**

## C. Recordkeeping Requirements

1. Operational Log

The Permittee record the results of the required monitoring on the Aluminum Sweat Furnace according to the approved OM&M plan and the Start-up, Shutdown and Malfunction Plan (SSM). [PCC 17.12.185 A.4]

**[Locally Enforceable Condition]**

2. Afterburner Temperature Log

The Permittee shall maintain records of 15-minute block average afterburner operating temperature, including any period when the average temperature in any 3-hour block period falls below the compliant operating parameter value with a brief explanation of the cause of the excursion and the corrective action taken. The Permittee shall also maintain records of annual afterburner inspections. [40 CFR 63.1517(b)(2)]

3. Record Retention

The Permittee must retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained off site. [40 CFR 63.1517(a)(1)]

4. Other Recordkeeping Requirements

See Additional Permit Requirements.

## D. Reporting Requirements [PCC 17.12.185 A.5]

1. Startup, Shutdown, and Malfunction Plans (SSM)

The Permittee shall develop and implement a written plan as described in 40 CFR 63.6(e)(3) that contains specific procedures to be followed for operating and maintaining the source during periods of startup, shutdown, and malfunction, and a program of corrective action for malfunctioning process and air pollution control equipment used to comply with the standard. The Permittee shall also keep records of each event as required by 40 CFR 63.10(b) and record and report if an action taken during a startup, shutdown, or malfunction is not consistent with the procedures in the plan as described in 40 CFR 63.6(e)(3). In addition to the information required in 40 CFR 63.6(e)(3), the plan must include: [40 CFR 63.1516 (a)]

a. Procedures to determine and record the cause of the malfunction and the time the malfunction began and ended; and, [40 CFR 63.1516 (a)(1)]

b. Corrective actions to be taken in the event of a malfunction of aluminum sweat furnace or the afterburner, including procedures for recording the actions taken to correct the malfunction or minimize emissions. [40 CFR 63.1516 (a)(2)]

2. Excess Emissions/ Summary Report

Pursuant to 40 CFR 63.10(e)(3), the Permittee shall submit semiannual reports within 60 days after the end of each 6-month period. Each report must contain the information specified in 40 CFR 63.10(c). Reports shall be due February 28th and August 31st of each year covering the previous 6-month periods (July 1st through December 31st and January 1st through June 30th, respectively). When no deviation of parameters have occurred, the owner or operator must submit a report stating that no excess emissions occurred during the reporting period. The report must be submitted if any of these conditions occur during a 6-month reporting period: [40 CFR 63.1516 (b)]

a. An excursion of a compliant process or operating parameter value or range (e.g., afterburner operating temperature, definition of acceptable scrap, or other approved operating parameter); [40 CFR 63.1516 (b)(iv)]

b. An action taken during a startup, shutdown, or malfunction was not consistent with the procedure in the plan as described in 40 CFR 63.6(e)(3); and [40 CFR 63.1516 (b)(v)]

3. Other Reporting Requirements

See Additional Permit Requirements.

## E. Testing Requirements [PCC 17.12.050 & PCC 17.20.010]

For purposes of demonstrating compliance, these test methods shall be used, provided that for the purpose of establishing whether or not the facility has violated or is in violation of any provision of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable federal requirements if the appropriate performance or compliance procedures or methods had been performed.

1. Emission Limitation

Permittee shall not be required to conduct a performance test to demonstrate compliance with the emission standard in A.1 of this Section when in compliance with B.1 of this Section.
[40 CFR 63.1505 (f)(1)]
**[Material Permit Condition]**

2. Alternative Test Method

The Permittee may submit an alternate and equivalent test method(s) that is listed in 40 CFR Subpart 60, Appendix A, to the Control Officer in a test plan, for approval by the Control Officer.
[40 CFR 60.1511(d) & PCC 17.12.045.D]

## Section B

## Specific Conditions for the Incinerator

The provisions of Section B apply to the Incinerator identified in Table 2 of Attachment 2.

### A. Emission Limitations and Standards [PCC 17.12.185.A.2]

1. Operating Hour Limitation

Permittee shall limit the hours of operation of the incinerator to daylight hours between the times of official sunrise and sunset. [PCC 17.16.170.A]
**[Material Permit Condition]**

2. Emissions Limitation

Emissions from the incinerator stack shall not exceed 0.08 grains per cubic foot (0.18 grams/$m^3$), based on dry flue gas at standard conditions, corrected to 12 percent $CO_2$.
[PCC 17.16.170.C.1 & PCC 17.16.510.B]
**[Material Permit Condition]**

3. Operation and Maintenance

a. Permittee shall operate and maintain the incinerator in accordance with the approved operation and maintenance plan detailed in B.3 of this Section. [PCC 17.12.220.B]

b. All emissions from the incinerator (operating in either batch or rotary mode) must pass through the baghouse and exhaust out of the stack. The incinerator, baghouse, cooling towers and associated ductwork must be maintained and operated using good modern practices.
[PCC 17.12.185.A.2]
**[Material Permit Condition]**

c. The incinerator shall be operated in a manner that minimizes production of fugitive emissions.
[PCC 17.12.185.A.2]
**[Material Permit Condition]**

4. Process Limitation

Permittee shall not incinerate any substance other than marijuana, cocaine, metamphetamine, pharmaceuticals, wood, paper, burlap/fabric and associated wrapping. In no instance shall the Permittee use any other combustion material (other than that above) to facilitate burning. The Permittee may use propane gas to ignite or sustain the incineration process.

5. Opacity Limitation

Permittee shall not cause, allow, or permit to be emitted into the atmosphere, smoke, fumes, gases, particulate matter or other gas-borne material which exceeds 20 percent opacity. [PCC 17.16.170.B]
**[Federally Enforceable Condition]**

6. Emissions and Opacity Limitation Exemption

The incineration process shall be exempt from the emission and opacity requirements described in subsections A.2 and A.5 of this Section respectively for not more than 30 seconds in any 60-minute period. [PCC 17.16.170.E]

## B. Monitoring Requirements

[PCC 17.12.185.A.3]

1. To demonstrate compliance with the operational hour limitation in A.1 of this Section, the Permittee shall monitor the incinerator hours of operation.

2. To assure compliance with emissions limitation in A.2 of this Section, the Permittee shall operate and maintain the incinerator in accordance with the approved operation and maintenance plan.
[PCC 17.12.185.A.2]

3. The operational and maintenance plan shall specify the following:

   a. Procedures for incinerator start up and shut down:

      i. Mode of operation (rotary or batch).

      ii. Material description (confirm it meets permit conditions).

      iii. Date and time of inspection.

      iv. Full name of person undertaking the inspection.

      v. Condition status of the baghouse (# defective/torn).

      vi. Condition status of the ductwork.

      vii. Initial magnehelic gauge readings.

      viii. Record of all malfunctions/defects.

      ix. Before operation, any test, maintenance repair or other corrective measures taken during or after the inspection to ensure malfunctions/defects are resolved.

   b. Operational Procedure:

      i. Total lbs (pounds) of material processed on an hourly basis or per batch (if the operation is in batch mode) and the number of batches per day.

      ii. Time of operation and hours of operation per day.

      iii. Visible emissions monitoring from the stack at least twice during operation.

      iv. Periodic fugitive emissions monitoring from the incinerator ash storage chamber, ductwork and cooling towers.

      v. Monitoring of magnehelic gauges at least twice to ensure incinerator and ancillary equipment is operated within normal operational parameters.

      vi. Any repair or corrective measures taken during the operation to ensure malfunctions/defects are resolved and fugitive emissions are prevented.

      vii. Measures undertaken to control fugitive emissions from residue handling.

4. If the Control Officer determines that the operation and maintenance plan, detailed in B.2 of this Section, failed to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the Permittee shall revise the operation and maintenance plan within 30 days after such an event occurs.

5. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall operate and maintain the incinerator operations in a manner consistent with good air pollution control practices, consistent with the operation and maintenance plan required by B.2 of this Section.

**C. Recordkeeping Requirements** [PCC 17.12.185 A.4]

1. The Permittee shall record all monitoring results during start up, operation and shut down of the incinerator as detailed in the incinerator operation and maintenance plan.

2. The Permittee shall record all malfunctions/defects during start up, operation and shutdown of the incinerator (if none then the record shall state none).

3. All records shall be retained for a minimum of five years and shall be made available to the Control Officer upon request.

**D. Reporting Requirements** [PCC 17.12.185 A.5]

The Permittee shall report to the Control Officer any emissions in excess of the limits established by this permit. [PCC 17.12.040]

**E. Testing Requirements** [PCC 17.20.010]

1. The incinerator shall be tested for compliance with the mass emission limit in A.2 of this Section at least once during the permit term.

2. The reference methods in 40 CFR 60, Appendix A, shall be used to determine compliance with the mass emission standard as follows: [PCC 17.16.170.G.1]

   a. Method 4 and 5 for the concentration of particulate matter and the associated moisture content;

   b. Method 1 for sample and velocity traverses;

   c. Method 2 for velocity and volumetric flow rate;

   d. Method 3 for gas analysis and calculation of excess air, using the integrated sampling technique.

3. For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Control Officer. [PCC 17.16.170.G.2]

4. EPA Test Method 9 may be used to monitor compliance with the opacity standard in A.5 of this Section. [PCC 17.20.010]

## Section C

## General Standards For The Facility

The provisions of Section C apply facility wide.

### I. Odor Limitation

Permittee shall not cause or permit emissions from malodorous matter to cross a property line between the source and a residential, recreational, institutional, educational, retail sales, hotel or business premise without minimizing the emissions by applying good modern practices. [PCC 17.16.030]

### II. Opacity Limitation

Permittee shall not cause or permit the effluent from any non-point source to have emissions with an optical density equal to or greater than 20%. [PCC 17.16.050.B.1]

### III. Visible Emissions

No person shall cause, suffer, allow, or permit diffusion of visible emissions, including fugitive dust, beyond the property boundary line within which the emissions become airborne, without taking all necessary and feasible precautions to prevent particulate matter from becoming airborne. Sources may be required to cease entirely the activity or operation which is causing or contributing to the emissions. This shall not apply when wind speeds exceed twenty-five miles per hour (using the Beaufort Scale of Wind-Speed Equivalents, or as recorded by the National Weather Service). This exception does not apply if control measures have not been taken or were not commensurate with the size or scope of the emission source [PCC 17.16.050.D]

### IV. Maintenance Requirement

The Permittee shall, at all times, including periods of startup, shutdown, and malfunction, to the extent practicable, maintain and operate all equipment in a manner consistent with good air pollution control for minimizing emissions. [PCC 17.16.020.A]

**[Material Permit Condition]**

### V. Applicable Emission Limit /Emission Standard

If more than on emission limit or emission standard is applicable to the same source, the more stringent standard of emission limit shall apply. [PCC 17.16.010]

## ADDITIONAL PERMIT REQUIREMENTS

### I. Compliance with Permit Conditions [PCC 17.12.185.A.7.a & b]

A. The Permittee shall comply with all conditions of this permit including all applicable requirements of Arizona air quality statutes and the air quality rules. Any permit noncompliance constitutes a violation of the Arizona Revised Statutes and is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. In addition, noncompliance with any federally enforceable requirement constitutes a violation of the Clean Air Act.

B. The Permittee shall report to the Control Officer any emissions in excess of the limits established by this permit. The report shall be in 2 parts as specified below: [PCC 17.12.185.A.5 & PCC 17.12.040]

1 Notification by telephone or facsimile within 24 hours of the time the Permittee first learned of the occurrence of excess emission that includes all available information pursuant to PCC 17.12.040.B. To report excess emissions call **520-243-7400** or fax to **520-838-7432**.

2. Detailed written notification by submission of an excess emissions report within 72 hours of the notification in I.B.1 above. Send to **PDEQ 33 N. Stone Avenue, Suite 700, Tucson, Arizona 85701**.

C. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. The permit does not convey any property rights of any sort, or any exclusive privilege to the permit holder.

E. The Permittee shall pay fees to the Control Officer pursuant to PCC 17.12.510. [PCC 17.12.185.A.9 & PCC 17.12.510]

### II. Permit Revision, Reopening, Revocation and Reissuance, or Termination for Cause [PCC 17.12.185.A.7.c]

The permit may be revised, reopened, revoked and reissued, or terminated for cause pursuant to PCC 17.12.270. The filing of a request by the Permittee for a permit revision, revocation and reissuance, or termination; or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

### III. Duty To Provide Information [PCC 17.12.165.G & PCC 17.12.185.A.7.e]

A. The Permittee shall furnish to the Control Officer, within a reasonable time, any information that the Control Officer may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the Control Officer copies of records required to be kept by the permit. For information claimed to be confidential, the Permittee shall furnish a copy of such records to the Control Officer along with a claim of confidentiality.

B. If the Permittee has failed to submit any relevant facts or if the Permittee has submitted incorrect information in the permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information.

### IV. Severability Clause [PCC 17.12.185.A.6]

The provisions of this permit are severable. If any provision of this permit is held invalid, the remainder of this permit shall not be affected thereby.

## ATTACHMENT 1

## REQUIREMENTS SPECIFICALLY IDENTIFIED AS APPLICABLE

Code of Federal Regulations (CFR), Title 40, Chapter I, Subchapter C-Air Programs:

Part 63 Subpart RRR New Source Performance Standards for Secondary Aluminum Production.

Pima County Code (PCC) Title 17, Chapters:

17.16.010 Local Rules and Standards; Applicability of more than one Standard.
17.16.040 Standards and Applicability (Includes NESHAP).
17.16.050 Visibility Limiting Standard.
17.16.170 Incinerators.
17.20.010 Source Sampling, Monitoring, and Testing.

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## ATTACHMENT 2

## EQUIPMENT LIST

| Type of Equipment | Maximum Rated Capacity | Fuel(s) | Make | Model | Serial Number | Date of Manufacture |
|---|---|---|---|---|---|---|
| Aluminum Sweat Furnace | 5 MMBtu | Natural Gas | Al-Jon | AS-990 | 94980 | 1984 |
| Rotary Incinerator | 20,000 lbs/day | Natural Gas | Kipco | 1A | 001 | 2005 |
| Batch Incinerator | 8000 lbs/day | Natural Gas | Hoover (Custom) | N/A | N/A | Unknown |
| Baghouse | 35,000 CFM | Electricity | OSA Sheet Metal | D-774B | N/A | 1977 |
| Baghouse | 50,000 CFM | Electricity | Industrial Accessories Company | 120BHT-A3-364;608 | N/A | Unknown |
| Afterburner | 2.8 MM Btu | Natural Gas | Mideo | Incinamite Burners | N/A | Unknown |

*Heavy Metals Emission Limitation Calculations*

NSPS Subpart EEEE contains emission limitations for three heavy metals, cadmium (Cd), lead (Pb) and mercury (Hg). The limitations are:

| Heavy Metal Pollutant | Emission Limitation* |
|---|---|
| Cadmium | 18 $\mu g/dsm^3$ |
| Lead | 226 $\mu g/dsm^3$ |
| Mercury | 74 $\mu g/dsm^3$ |

* micrograms per dry standard cubic meter ($\mu g/dsm^3$)

The OSWI incinerator unit emission limitation for these heavy metals, on the basis of 5,629.9 $dscf/min_{@7\%O_2}$ exhaust flow rate at the afterburner exit, before dilution air is introduced, should be:

$(5{,}629.9 \text{ std ft}^3/\text{min})(60 \text{ min/hr})(18\times10^{-6} \text{ gm Cd/m}^3)(\text{lb}/454 \text{ gm})(\text{m}^3/35.31 \text{ ft}^3) = 0.000379 \text{ lb Cd/hr}$

$(5{,}629.9 \text{ std ft}^3/\text{min})(60 \text{ min/hr})(226\times10^{-6} \text{ gm Pb/m}^3)(\text{lb}/454 \text{ gm})(\text{m}^3/35.31 \text{ ft}^3) = 0.00476 \text{ lb Pb/hr}$

$(5{,}629.9 \text{ std ft}^3/\text{min})(60 \text{ min/hr})(74\times10^{-6} \text{ gm Hg/m}^3)(\text{lb}/454 \text{ gm})(\text{m}^3/35.31 \text{ ft}^3) = 0.00156 \text{ lb Hg/hr}$

TIM proposes the air permit heavy metals emission rate allowables be based upon the above-calculated NSPS Subpart EEEE limit.

*Emissions Summary Table*

The following table summarizes the instantaneous and annual emission rates of the products of combustion from the operation of the proposed incinerator. The maximum proposed operating schedule for the incinerator will be 12 hours/day, 5 days/week, 52 weeks/year (3,120 hr/yr).

**Summary of Incinerator Normal Operation Emissions Limitations**
**Without Startup and Shutdown Emissions Included**

| Pollutant | lb/hr | tons/year* |
|---|---|---|
| $PM_{10}$ | 0.63 | 0.82 |
| $SO_2$ | 0.19 | 0.25 |
| $NO_x$ | 3.24 | 4.21 |
| CO | 1.05 | 1.37 |
| TOC (VOC) | 0.62 | 0.81 |
| HCl | 0.52 | 0.68 |

* based upon 3,120 hours/year operation of which 520 hours/year is start-up using only start-up fuel and shut-down by cessation of feed, resulting in 2,600 hours/year contraband incineration during normal operation.

EEMC

## Relative Accuracy Example Calculation Sheet

| | |
|---|---|
| COMPANY NAME: Tucson Iron & Metal | TEST DATE: 2/7-8/17 |
| PLANT LOCATION: Tucson, Arizona | SPECIES: CO |
| SOURCE TESTED: Contraband Incinerator | UNITS: PPMvND |

| Run | Time | Reference Method (RM) | CEM Average | Difference $d_i$ | (Difference)$^2$ $d_i^2$ |
|---|---|---|---|---|---|
| 1 Gasc | 10:13-33 | 4.2 | 4.9 | — | — |
| 2 | 10:43-03 | 2.3 | 2.4 | -0.1 | 0.01 |
| 3 | 11:13-33 | 2.0 | 2.1 | -0.1 | 0.01 |
| 4 | 11:49-09 | 1.6 | 2.0 | -0.4 | 0.16 |
| 5 | 12:19-39 | 0.8 | 0.5 | 0.3 | 0.09 |
| 6 | 12:49-09 | 6.2 | 3.1 | — | — |
| 7 | 13:22-42 | 1.8 | 1.5 | 0.3 | 0.09 |
| 8 | 13:52-12 | 0.9 | 0.6 | 0.3 | 0.09 |
| 9 | 14:23-43 | 0.8 | 0.6 | 0.2 | 0.04 |
| 10 | 14:55-15 | 0.8 | 0.6 | 0.2 | 0.04 |
| 11 | 10:40-00 | 2.7 | 0.5 | — | — |
| 12 | 11:15-35 | 1.6 | 1.8 | -0.2 | 0.04 |
| Sum (Σ) | | — | — | 0.5 | 0.57 |
| Mean (X) | | 1.4 | 1.34 | .06 | — |

n (number of data points) = 9

$t_{0.975}$ (t-value, 9) = 2.306

Sd (Standard deviation) = $\sqrt{\frac{\sum di^2 - \frac{(\sum di)^2}{n}}{n-1}} = \sqrt{\frac{0.57 - \frac{(.25)^2}{9}}{8}} = 0.26$

CC (Confidence Coefficient) = $\frac{(2.306)(Sd)}{\sqrt{n}} = \frac{(2.306)(0.26)}{3} = 0.2$

% RA (Relative Accuracy) = $\frac{|(X)di| + CC}{(X)RM[or]ES} x100 = \frac{(0.06) + (.2)}{\cancel{1.4}\ 6.13} x100 = 4.2\%$

RM is used based on the ES when the RM is less than 50% of the ES.

ES = 6.13 ppmvND, RM = 1.4

RM = < 50% of the ES

EEMCFILES/ReportResources/Forms:Revised 03/20/14 jll

## CEM RELATIVE ACCURACY DETERMINATION

**CO - ppmvd**

**Plant:** **Tucson Iron & Metal** **Date:** **02/07-08/17**
**Location:** **Tucson, Arizona**
**Source:** **Contraband Incinerator**

| Run | Reference Run Time | Reference Method | CEM Average | Difference | Difference$^2$ |
|---|---|---|---|---|---|
| | | ppmvd | | | |
| *1-Gases* | *10:13-10:33* | *4.2* | *4.9* | | |
| 2-Gases | 10:43-11:03 | 2.3 | 2.4 | -0.1 | 0.01 |
| 3-Gases | 11:13-11:33 | 2.0 | 2.1 | -0.1 | 0.01 |
| 4-Gases | 11:49-12:09 | 1.6 | 2.0 | -0.4 | 0.16 |
| 5-Gases | 12:19-12:39 | 0.8 | 0.5 | 0.3 | 0.09 |
| *6-Gases* | *12:49-13:09* | *6.2* | *3.1* | | |
| 7-Gases | 13:22-13:42 | 1.8 | 1.5 | 0.3 | 0.09 |
| 8-Gases | 13:52-14:12 | 0.9 | 0.6 | 0.3 | 0.09 |
| 9-Gases | 14:23-14:43 | 0.8 | 0.6 | 0.2 | 0.04 |
| 10-Gases | 14:55-15:15 | 0.8 | 0.6 | 0.2 | 0.04 |
| *11-Gases* | *10:40-11:00* | *2.7* | *0.5* | | |
| 12-Gases | 11:15-11:35 | 1.6 | 1.8 | -0.2 | 0.04 |

| | | | | |
|---|---|---|---|---|
| Sum: | | | 0.5 | 0.57 |
| Mean: | 1.40 | 1.34 | 0.06 | |
| \|Mean\|: | | | 0.06 | |

**Statistical Data:**

| | |
|---|---|
| N (number of data points) = | 9 |
| t.975 (t-value) = | 2.306 |
| Sd (Standard Deviation) = | 0.260 |
| CC (Confidence Coefficient) = | 0.200 |

**Relative Accuracy (RA):** **4.2 ES**
Emission Standard: **6.1 ppmvd**
**40CFR60 Appendix B Performance Specification 4:**
The RA of the CEMS must be no greater than 10% RM or 5% ES

back caculation for emission standard:
C 7% $O_2$/(13.9/20.9-%$O_2$)
40/(13.9/20.9-18.77) = 6.13 ppm



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## CEM RELATIVE ACCURACY DETERMINATION

### CO - ppmvd @7% $O_2$

**Plant:** **Tucson Iron & Metal** **Date:** **02/07-08/17**
**Location:** **Tucson, Arizona**
**Source:** **Contraband Incinerator**

| Run | Reference Run Time | Reference Method | CEM Average | Difference | Difference$^2$ |
|---|---|---|---|---|---|
| | | ppmvd @7% $O_2$ | | | |
| *1-Gases* | *10:13-10:33* | *28.6* | *38.0* | | |
| 2-Gases | 10:43-11:03 | 13.2 | 13.9 | -0.7 | 0.49 |
| 3-Gases | 11:13-11:33 | 12.4 | 12.5 | -0.1 | 0.01 |
| 4-Gases | 11:49-12:09 | 9.8 | 10.9 | -1.1 | 1.21 |
| 5-Gases | 12:19-12:39 | 5.1 | 3.1 | 2.0 | 4.00 |
| *6-Gases* | *12:49-13:09* | *45.6* | *20.0* | | |
| 7-Gases | 13:22-13:42 | 12.6 | 9.2 | 3.4 | 11.56 |
| 8-Gases | 13:52-14:12 | 6.1 | 3.9 | 2.2 | 4.84 |
| 9-Gases | 14:23-14:43 | 5.4 | 3.7 | 1.7 | 2.89 |
| 10-Gases | 14:55-15:15 | 5.1 | 3.6 | 1.5 | 2.25 |
| *11-Gases* | *10:40-11:00* | *17.8* | *3.1* | | |
| 12-Gases | 11:15-11:35 | 10.2 | 10.2 | 0.0 | 0.00 |

| | | | | |
|---|---|---|---|---|
| Sum: | | | 8.9 | 27.25 |
| Mean: | 8.88 | 7.89 | 0.99 | |
| \|Mean\|: | | | 0.99 | |

**Statistical Data:**

| | |
|---|---|
| N (number of data points) = | 9 |
| t.975 (t-value) = | 2.306 |
| Sd (Standard Deviation) = | 1.519 |
| CC (Confidence Coefficient) = | 1.167 |

**Relative Accuracy (RA):** **5.4 ES**
Emission Standard: **40 ppmvd @7% $O_2$**

**40CFR60 Appendix B Performance Specification 4:**
The RA of the CEMS must be no greater than 10% RM or 5% ES



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## CEM RELATIVE ACCURACY DETERMINATION

**$O_2$ - %vd**

**Plant:** **Tucson Iron & Metal** **Date:** **02/07-08/17**
**Location:** **Tucson, Arizona**
**Source:** **Contraband Incinerator**

| Run | Reference Run Time | Reference Method | CEM Average | Difference | Difference$^2$ |
|---|---|---|---|---|---|
| | | %vd | | | |
| *1-Gases* | *10:13-10:33* | *18.9* | *18.7* | | |
| 2-Gases | 10:43-11:03 | 18.5 | 18.4 | 0.1 | 0.01 |
| 3-Gases | 11:13-11:33 | 18.7 | 18.5 | 0.2 | 0.04 |
| 4-Gases | 11:49-12:09 | 18.6 | 18.4 | 0.2 | 0.04 |
| 5-Gases | 12:19-12:39 | 18.7 | 18.6 | 0.1 | 0.01 |
| *6-Gases* | *12:49-13:09* | *19.0* | *18.8* | | |
| 7-Gases | 13:22-13:42 | 18.9 | 18.6 | 0.3 | 0.09 |
| 8-Gases | 13:52-14:12 | 18.9 | 18.7 | 0.2 | 0.04 |
| 9-Gases | 14:23-14:43 | 18.8 | 18.6 | 0.2 | 0.04 |
| 10-Gases | 14:55-15:15 | 18.7 | 18.6 | 0.1 | 0.01 |
| *11-Gases* | *10:40-11:00* | *18.8* | *18.6* | | |
| 12-Gases | 11:15-11:35 | 18.8 | 18.6 | 0.2 | 0.04 |
| | Sum | 168.6 | | | |
| | Mean: | 18.73 | 18.56 | 0.18 | |
| **Statistical Da** | \|Mean\|: | | | 0.18 | |

N (number of data points) = 9
t.975 (t-value) = 2.306
Sd (Standard Deviation) = 0.067
CC (Confidence Coefficient) = 0.051

**Relative Accuracy (RA):** **0.18 %vd Abs**



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**Tucson Iron & Metal**
**Contraband Incinerator**
**$CO/O_2$**
**02/07-08/17**

| | | EPA Methods | | |
|---|---|---|---|---|
| **Time** | **Run** | **10 - CO** | | **3A - $O_2$** |
| **02/07/17** | | **ppmvd** | **ppm @ 7% $O_2$** | **%vd** |
| 10:13-10:33 | 1-Gases | 4.2 | 28.6 | 18.86 |
| 10:43-11:03 | 2-Gases | 2.3 | 13.2 | 18.48 |
| 11:13-11:33 | 3-Gases | 2.0 | 12.4 | 18.66 |
| 11:49-12:09 | 4-Gases | 1.6 | 9.8 | 18.62 |
| 12:19-12:39 | 5-Gases | 0.8 | 5.1 | 18.72 |
| 12:49-13:09 | 6-Gases | 6.2 | 45.6 | 19.01 |
| 13:22-13:42 | 7-Gases | 1.8 | 12.6 | 18.91 |
| 13:52-14:12 | 8-Gases | 0.9 | 6.1 | 18.86 |
| 14:23-14:43 | 9-Gases | 0.8 | 5.4 | 18.84 |
| 14:55-15:15 | 10-Gases | 0.8 | 5.1 | 18.74 |
| **02/08/17** | | | | |
| 10:40-11:00 | 11-Gases | 2.7 | 17.8 | 18.79 |
| 11:15-11:35 | 12-Gases | 1.6 | 10.2 | 18.72 |



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**Stack Parameters Particulate/Velocity**
**EPA METHOD 1**
**Tucson Iron and Metal**
**Tucson, Arizona**
**CEM Contraband Incineration System**

Type of Testing: velocity

Number of ports available: 2
Number of ports to be used: 2
Port inside diameter: 4 inches

Distance from far wall to outside of port: 48.00 inches
Nipple length and/or wall thickness: 4.00 inches
Depth of stack/duct (D): 44.00 inches
Stack/duct width (IF Rectangular)(W): #N/A inches

Equivalent Diameter
De = 2*(depth)*(width)/(depth+width) = 44.00 inches

Stack/duct area = 10.559 sq.feet 1520.5 sq.inches

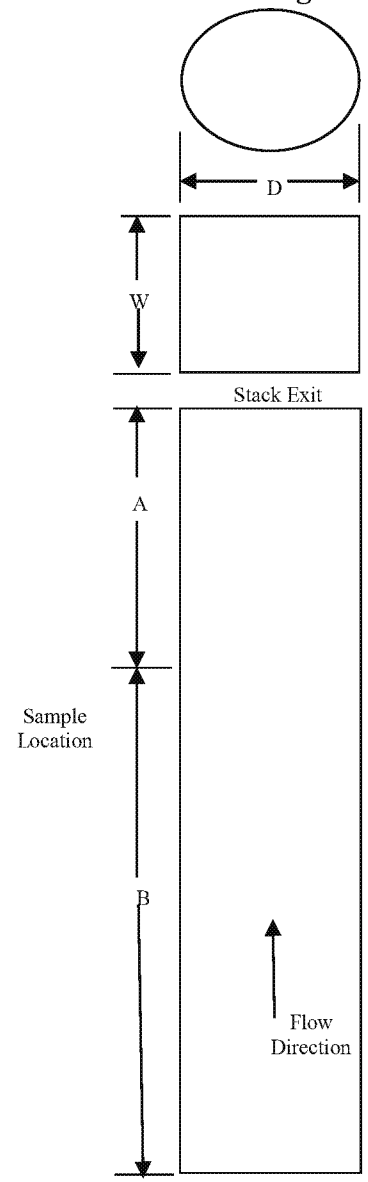
Sample Port Location:

| | Downstream from flow disturbance from process | Upstream from flow disturbance toward exit |
|---|---|---|
| | B | A |
| Number of Inches | 276.00 | 168.00 |
| Number of Diameters | 6.27 | 3.82 |

Minimum Number of Traverse Points: 12

| Points | % of diameter | Distance from inside wall (in.) | Distance including port (in.) |
|---|---|---|---|
| 1 | 4.4 | 1.94 | 5 7/8 |
| 2 | 14.6 | 6.42 | 10 3/8 |
| 3 | 29.6 | 13.02 | 17 |
| 4 | 70.4 | 30.98 | 35 |
| 5 | 85.4 | 37.58 | 41 5/8 |
| 6 | 95.6 | 42.06 | 46 1/8 |

**Reference Diagram**




Drawing NOT to scale and
NOT an acurate representation of stack.



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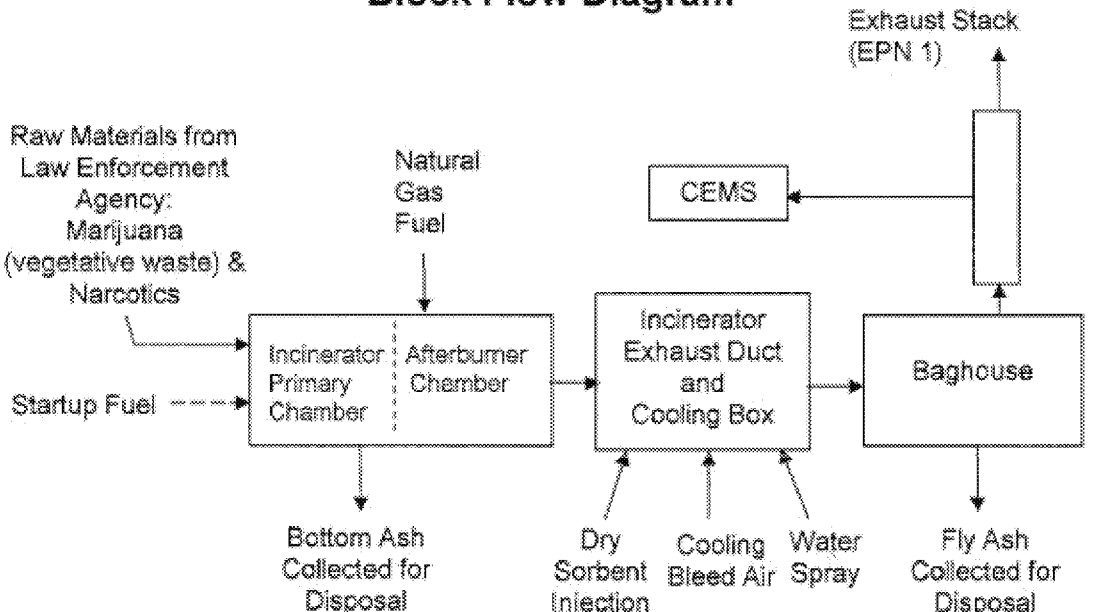
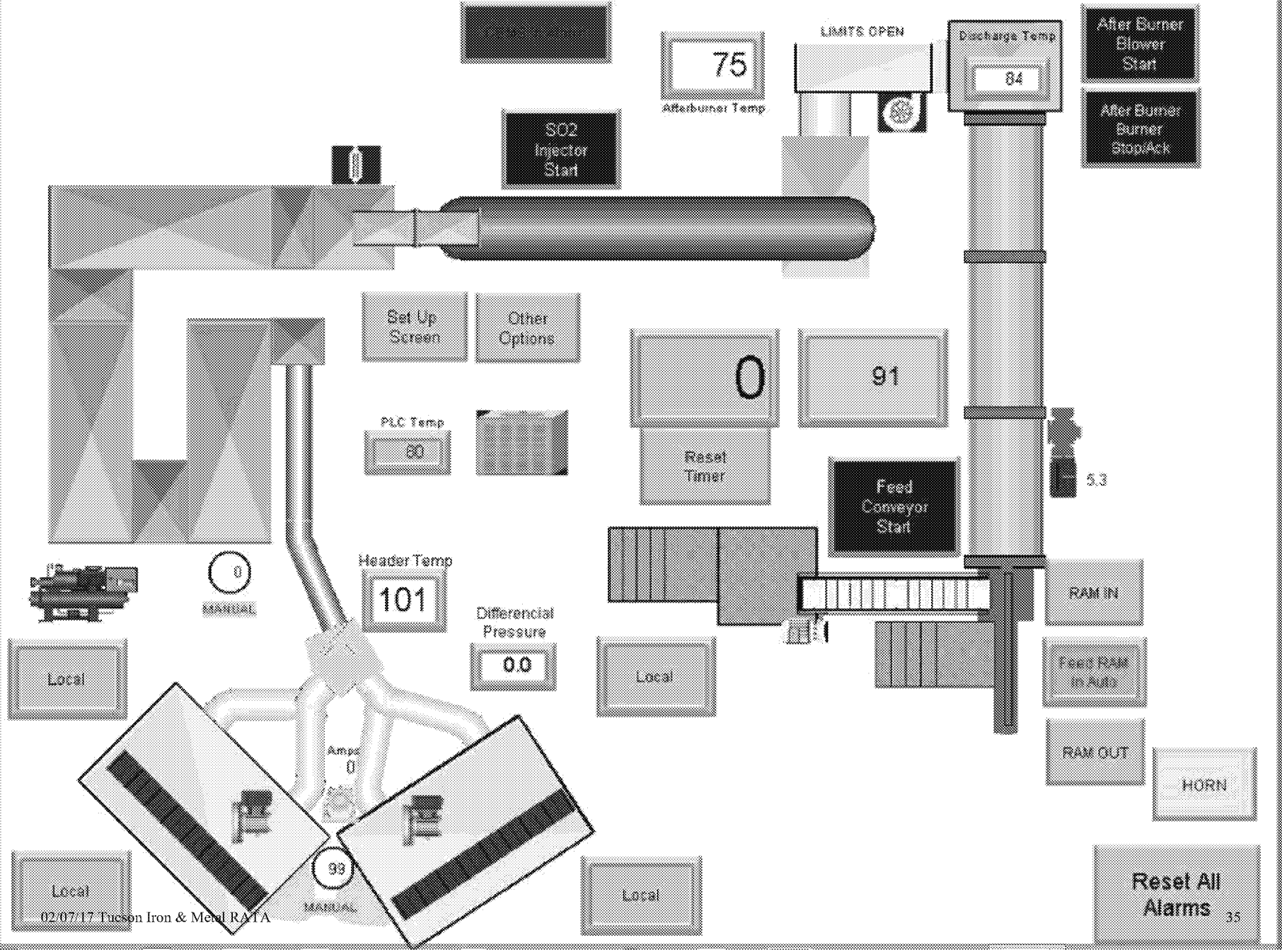
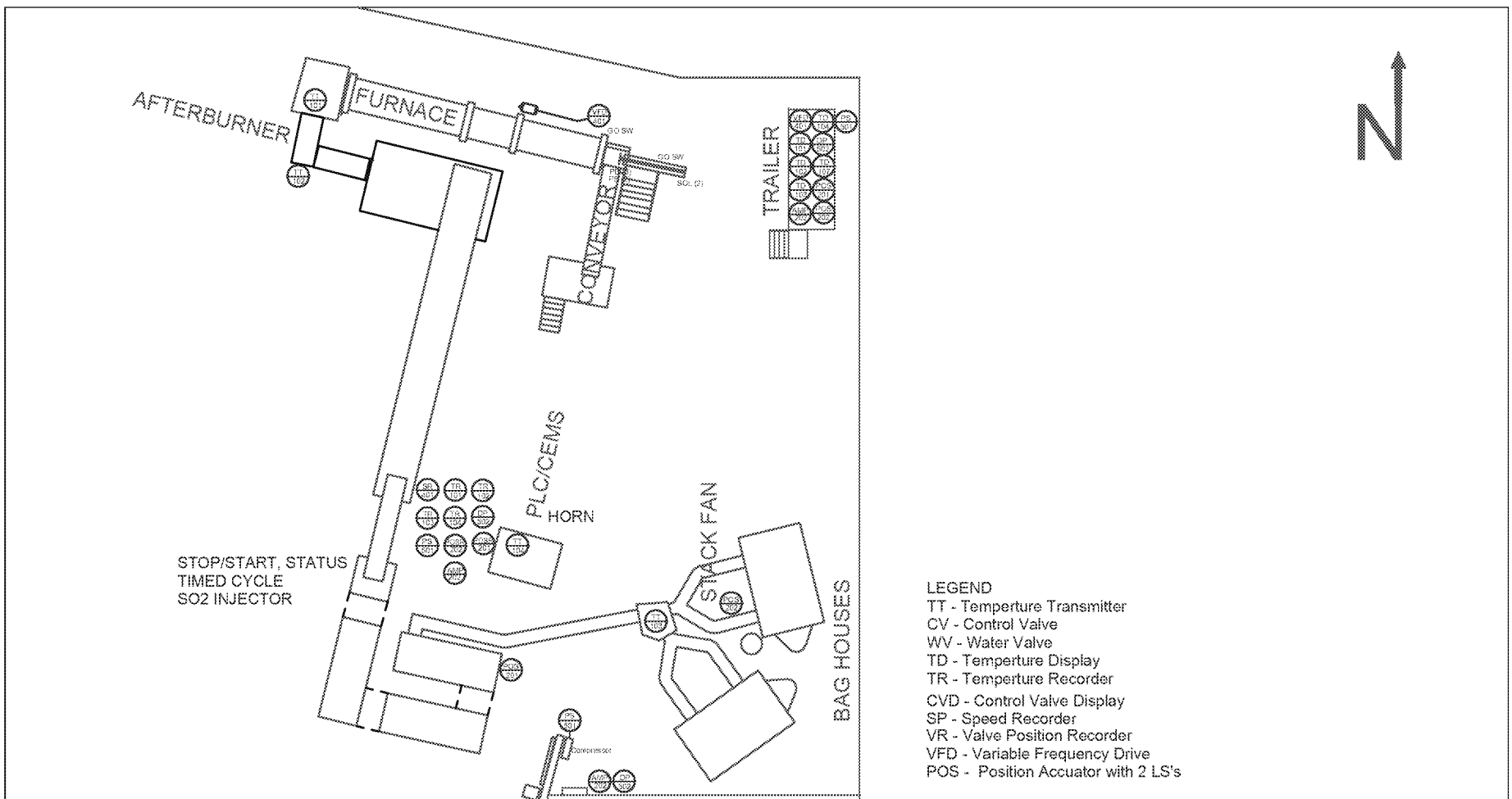
# Tucson Iron & Metal
# Block Flow Diagram




75
Afterburner Temp
LIMITS OPEN
Discharge Temp
84
After Burner Blower Start
After Burner Burner Stop/Ack
SO2 Injector Start
Set Up Screen
Other Options
0
91
PLC Temp
80
Reset Timer
Feed Conveyor Start
5.3
Header Temp
101
0
MANUAL
Differencial Pressure
0.0
RAM IN
Local
Local
Feed RAM in Auto
RAM OUT
HORN
Amps
0
99
MANUAL
Local
Local
Reset All Alarms




| REV. NO. | REVISIONS | BY | DATE | REFERENCE DRAWINGS | DRAWN BY | DATE |
|---|---|---|---|---|---|---|
| 1 | Reposition Dilution Air Damper | B. B | 10/4/15 | | B.Baker | 08/19/2015 |
| 2 | Reposition Afterburner and add South Bag house TC | B. B | 10/4/15 | | | |

| | |
|---|---|
| DRAWN BY | B.Baker |
| REF. NUMBER | .. |
| APPROVED BY | .. |
| DATE | .. |
| CHECKED BY | .. |
| DATE | .. |
| DRAWING TITLE | AMCEP<br>4484 E. Tennessee St. Tucson, AZ<br>Instrumentation |
| SCALE | NONE |
| SHEET NUMBER | 1 of 1 |
| DRAWING NUMBER | 705 |
| SIZE | |
| REV. | 2 |

# EPA Method 3A
**Oxygen/Example Calculation**

COMPANY NAME: Tucson Iron & Metal RUN: 1-Gases
PLANT LOCATION: Tucson, AZ TEST DATE: 2/7/17
SOURCE TESTED: Contraband Incinerator

**Calculate the "Calibration Corrected $O_2$ Value", $C_{GAS}$ - EPA Reference Method 3A**

$C_{GAS}$ = $(C_{Mean} - C_O)[C_{MA}/(C_M - C_O)]$
$C_{GAS}$ = corrected gas concentration, $O_2$%vd

$C_{Mean}$ = average gas % from analyzer
$C_{Mean}$ = 18.781 ②

$C_O$ = average of initial and final (post) system bias calibration check for zero calibration gas
$C_O$ = (0.05 % ① Initial Bias + 0.01 % ① Post Bias)/2 = 0.03 % ①

$C_{MA}$ = actual concentration of upscale calibration gas
$C_{MA}$ = 11.03 ① % (Tank Value)

$C_M$ = average of initial and final (post) system bias calibration check for upscale calibration gas
$C_M$ = (10.99 % ① Initial Bias + 11.00 % ① Post Bias)/2 = 10.995 % ①

$C_{GAS}$ = (18.781 $C_{Mean}$ - 0.03 $C_O$)[11.03 $C_{MA}$/(10.995 $C_M$ - 0.03 $C_O$)]
= 18.86 ①

EEMCFILES/ReportResources/Forms: Revised 11/25/13 jll

## Species 7% $O_2$
**Example Calculation**

EEMC

COMPANY NAME: Tucson Iron & Metal RUN: 1-Gases
PLANT LOCATION: Tucson, AZ TEST DATE: 2/7/17
SOURCE TESTED: Contraband Incinerator

**Calculate the species Concentration to 7% $O_2$**

Correction factor for 7% Oxygen($F_{O2}$):

$F_{O2}$ = [(13.9 )/(20.9 - %$O_2$)]

C = Species concentration

$C_{7\%O2}$ = ($F_{O2}$) (C)

Species CO

$F_{O2}$ = [(13.9 )/(20.9 - 18.86 %$O_2$ )] = 6.8137

$C_{7\%O2}$ = (6.8137 $F_{O2}$) (4.2 C) = 28.6

Species _____

$F_{O2}$ = [(13.9 )/(20.9 - _____ %$O_2$ )] = _____

$C_{7\%O2}$ = (_____ $F_{O2}$) (_____ C) = _____

EEMCFILES/ReportResources/Forms: Revised 11/26/13 jll

# EPA Methods 10
**Carbon Monoxide/ Example Calculation**

EEMC

COMPANY NAME: Tucson Iron & Metal RUN: 1-Gases
PLANT LOCATION: Tucson, AZ TEST DATE: 2/7/17
SOURCE TESTED: Contraband Incinerator

**Calculate the "Calibration Corrected CO Value", $C_{GAS}$ - EPA Reference Method 10**

$C_{GAS}$ = $(C_{Mean} - C_O)[C_{MA}/(C_M - C_O)]$
$C_{GAS}$ = corrected gas concentration, ppmvd

$C_{Mean}$ = average gas ppm from analyzer
$C_{Mean}$ = 4.27 ①

$C_O$ = average of initial and final (post) system bias calibration check for zero calibration gas (first)
$C_O$ = (-0.1 ppm ① Initial Bias + -0.1 ppm ① Post Bias)/2 = -0.1 ppm ①
$C_{MA}$ = actual concentration of upscale calibration gas
$C_{MA}$ = 25.0 ① ppm (Tank Value)
$C_M$ = average of initial and final (post) system bias calibration check for upscale calibration gas (last)
$C_M$ = (25.8 ppm ① Initial Bias + 25.6 ppm ① Post Bias)/2 = 25.7 ppm ①

$C_{GAS}$ = (4.27 $C_{Mean}$ - -0.1 $C_O$)[25.0 $C_{MA}$/(25.7 $C_M$ - -0.1 $C_O$)]

= 4.2 ①

EEMCFILES/ReportResources/Forms: Revised 11/28/13 jll

# INSTRUMENT CALIBRATION CHECKS

EEMC

COMPANY NAME: Tucson Iron & Metal RUN: 1-Gases
PLANT LOCATION: Tucson AZ TEST DATE: 2/7/17
SOURCE TESTED: Contraband Incinerator

Analyzer Calibration Error (ACE) must be ± < 2.0 % of calibration span for low-, mid-, and high- level calibration gases or 0.5 ppmv of absolute difference:
(ACE) = $(C_{Dir}-C_v)$ / CS x 100
$C_s$ = Measured concentration of a calibration gas when in system calibration mode
$C_v$ = Manufacturer certified concentration of gas
CS= Calibration Span = high - level calibration gas
CS = 51.0 ppm

| | $C_{Dir}$ | $C_v$ | $(C_{Dir}-C_v)$/CS x 100 = ACE |
|---|---|---|---|
| Low: | 0.0 | 0.0 | (0.0 - 0.0)/51.0 x 100 = 0.0 ✓ |
| Mid: | 25.8 | 25.0 | (25.8 - 25.0)/51.0 x 100 = 1.6 ✓ |
| High: | 51.7 | 51.0 | (51.7 - 51.0) / 51.0 x 100 = 1.4 ✓ |

System Bias (SB) must be ± < 5.0 % of the analyzer calibration span for low-scale and upscale calibration gases:
SB = $(C_s - C_{Dir})$ / CS x 100
$C_{Dir}$ = measured concentration of a calibration gas when in direct calibration mode

| Pre-System Bias | $C_s$ | $C_{Dir}$ | $(C_s - C_{Dir})$/ CS x 100 = $SB_{initial}$ |
|---|---|---|---|
| Low: | -0.1 | 0.0 | (-0.1 - 0.0)/51.0 x 100 = -0.2 ✓ |
| Upper: | 25.8 | 25.8 | (25.8 - 25.8)/51.0 x 100 = 0.0 ✓ |

| Post-System Bias | $C_s$ | $C_{Dir}$ | $(C_s - C_{Dir})$/ CS x 100 = $SB_{final}$ |
|---|---|---|---|
| Low: | -0.1 | 0.0 | (-0.1 - 0.0)/51.0 x 100 = -0.2 ✓ |
| Upper: | 25.6 | 25.8 | (25.6 - 25.8) / 51.0 x 100 = -0.4 ✓ |

Drift (D) must be ± 3.0% of calibration span for low-level and mid- or high-level gases:
D = $|SB_{final} - SB_{initial}|$

| | $SB_{final}$ | $SB_{initial}$ | $|SB_{final} - SB_{initial}|$ = D |
|---|---|---|---|
| Low: | -0.2 | -0.2 | \|-0.2 - -0.2\| = 0.0 ✓ |
| Upper: | -0.4 | 0.0 | \|-0.4 - 0.0\| = 0.4 ✓ |

EEMCFILES/ReportResources/Forms: Revised 08/29/14 rlw

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **1-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **10:13-10:33** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 10:13 | 16.0 | 19.81 |
| 2 | 10:14 | 12.6 | 19.77 |
| 3 | 10:15 | 17.6 | 19.74 |
| 4 | 10:16 | 4.9 | 19.40 |
| 5 | 10:17 | 1.8 | 19.04 |
| 6 | 10:18 | 6.1 | 19.17 |
| 7 | 10:19 | 5.2 | 19.04 |
| 8 | 10:20 | 3.8 | 18.94 |
| 9 | 10:21 | 3.7 | 18.82 |
| 10 | 10:22 | 2.8 | 18.75 |
| 11 | 10:23 | 3.3 | 18.70 |
| 12 | 10:24 | 2.8 | 18.61 |
| 13 | 10:25 | 2.3 | 18.54 |
| 14 | 10:26 | 2.1 | 18.53 |
| 15 | 10:27 | 1.2 | 18.40 |
| 16 | 10:28 | 0.6 | 18.29 |
| 17 | 10:29 | 0.4 | 18.27 |
| 18 | 10:30 | 0.4 | 18.23 |
| 19 | 10:31 | 0.6 | 18.10 |
| 20 | 10:32 | 0.7 | 18.16 |
| 21 | 10:33 | 0.7 | 18.10 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **4.27** | **18.781** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



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| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **1-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 8:46 | 0.0 | -0.1 | -0.2 | | |
| *Bias Check)* | 8:51 | 25.8 | 25.8 | 0.0 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 10:36 | 0.0 | -0.1 | -0.2 | | 0.0 |
| *Bias Check)* | 10:38 | 25.8 | 25.6 | -0.4 | | 0.4 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 8:46 | -0.03 | 0.05 | 0.4 | | |
| *Bias Check)* | 8:54 | 11.10 | 10.99 | -0.5 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 10:36 | -0.03 | 0.01 | 0.2 | | 0.2 |
| *Bias Check)* | 10:40 | 11.10 | 11.00 | -0.5 | | 0.0 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 4.27 ppmvd |
| $O_2$ | 18.781 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 4.2 ppmvd |
| $O_2$ | 18.86 %vd |

CO 28.6 ppm @ 7% $O_2$



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**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **2-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **10:43-11:03** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 10:43 | 1.2 | 18.13 |
| 2 | 10:44 | 1.4 | 18.20 |
| 3 | 10:45 | 1.5 | 18.24 |
| 4 | 10:46 | 1.4 | 18.28 |
| 5 | 10:47 | 1.5 | 18.31 |
| 6 | 10:48 | 1.9 | 18.41 |
| 7 | 10:49 | 2.8 | 18.52 |
| 8 | 10:50 | 3.2 | 18.54 |
| 9 | 10:51 | 2.6 | 18.50 |
| 10 | 10:52 | 3.0 | 18.50 |
| 11 | 10:53 | 2.9 | 18.51 |
| 12 | 10:54 | 3.0 | 18.60 |
| 13 | 10:55 | 2.4 | 18.59 |
| 14 | 10:56 | 3.3 | 18.71 |
| 15 | 10:57 | 3.7 | 18.76 |
| 16 | 10:58 | 4.1 | 18.80 |
| 17 | 10:59 | 3.4 | 18.57 |
| 18 | 11:00 | 1.0 | 18.08 |
| 19 | 11:01 | 0.9 | 18.10 |
| 20 | 11:02 | 1.2 | 18.16 |
| 21 | 11:03 | 1.2 | 18.17 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **2.27** | **18.413** |

**Instrument Response Times:**

| | Zero | High | |
|---|---|---|---|
| CO | 46 | 46 | seconds |
| $O_2$ | 38 | 38 | seconds |



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| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **2-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 10:36 | 0.0 | -0.1 | -0.2 | | |
| *Bias Check)* | 10:38 | 25.8 | 25.6 | -0.4 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 11:06 | 0.0 | -0.2 | -0.4 | 0.2 | |
| *Bias Check)* | 11:09 | 25.8 | 25.6 | -0.4 | 0.0 | |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 10:36 | -0.03 | 0.01 | 0.2 | | |
| *Bias Check)* | 10:40 | 11.10 | 11.00 | -0.5 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 11:06 | -0.03 | 0.05 | 0.4 | 0.2 | |
| *Bias Check)* | 11:11 | 11.10 | 11.00 | -0.5 | 0.0 | |

**Averages:**

Averages:

| | |
|---|---|
| CO | 2.27 ppmvd |
| $O_2$ | 18.413 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 2.3 ppmvd |
| $O_2$ | 18.48 %vd |
| CO | 13.2 ppm @ 7% $O_2$ |

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **3-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **11:13-11:33** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 11:13 | 2.0 | 18.44 |
| 2 | 11:14 | 1.3 | 18.18 |
| 3 | 11:15 | 1.1 | 18.17 |
| 4 | 11:16 | 1.2 | 18.30 |
| 5 | 11:17 | 1.2 | 18.38 |
| 6 | 11:18 | 1.0 | 18.44 |
| 7 | 11:19 | 1.2 | 18.51 |
| 8 | 11:20 | 1.2 | 18.60 |
| 9 | 11:21 | 1.2 | 18.68 |
| 10 | 11:22 | 2.3 | 18.81 |
| 11 | 11:23 | 2.9 | 18.88 |
| 12 | 11:24 | 2.6 | 18.81 |
| 13 | 11:25 | 1.8 | 18.81 |
| 14 | 11:26 | 2.0 | 18.71 |
| 15 | 11:27 | 1.8 | 18.63 |
| 16 | 11:28 | 1.5 | 18.57 |
| 17 | 11:29 | 2.0 | 18.50 |
| 18 | 11:30 | 2.1 | 18.59 |
| 19 | 11:31 | 2.7 | 18.45 |
| 20 | 11:32 | 2.6 | 18.48 |
| 21 | 11:33 | 3.3 | 18.42 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **1.86** | **18.541** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



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| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **3-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 11:06 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 11:09 | 25.8 | 25.6 | -0.4 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 11:36 | 0.0 | -0.2 | -0.4 | | 0.0 |
| *Bias Check)* | 11:40 | 25.8 | 25.6 | -0.4 | | 0.0 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 11:06 | -0.03 | 0.05 | 0.4 | | |
| *Bias Check)* | 11:11 | 11.10 | 11.00 | -0.5 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 11:36 | -0.03 | 0.08 | 0.5 | | 0.1 |
| *Bias Check)* | 11:42 | 11.10 | 10.97 | -0.6 | | 0.1 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 1.86 ppmvd |
| $O_2$ | 18.541 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 2.0 ppmvd |
| $O_2$ | 18.66 %vd |
| CO | 12.4 ppm @ 7% $O_2$ |



ED_005878_00000227-00049

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **4-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **11:49-12:09** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 11:49 | 2.2 | 18.50 |
| 2 | 11:50 | 2.0 | 18.50 |
| 3 | 11:51 | 2.5 | 18.50 |
| 4 | 11:52 | 1.8 | 18.48 |
| 5 | 11:53 | 1.7 | 18.60 |
| 6 | 11:54 | 1.7 | 18.47 |
| 7 | 11:55 | 1.2 | 18.39 |
| 8 | 11:56 | 0.9 | 18.28 |
| 9 | 11:57 | 1.2 | 18.32 |
| 10 | 11:58 | 1.5 | 18.40 |
| 11 | 11:59 | 1.1 | 18.40 |
| 12 | 12:00 | 1.1 | 18.36 |
| 13 | 12:01 | 1.2 | 18.34 |
| 14 | 12:02 | 1.2 | 18.38 |
| 15 | 12:03 | 1.3 | 18.46 |
| 16 | 12:04 | 1.4 | 18.59 |
| 17 | 12:05 | 1.3 | 18.55 |
| 18 | 12:06 | 1.4 | 18.59 |
| 19 | 12:07 | 1.2 | 18.66 |
| 20 | 12:08 | 1.3 | 18.70 |
| 21 | 12:09 | 1.1 | 18.79 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **1.44** | **18.489** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **4-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 11:36 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 11:40 | 25.8 | 25.6 | -0.4 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 12:12 | 0.0 | -0.2 | -0.4 | | 0.0 |
| *Bias Check)* | 12:14 | 25.8 | 25.6 | -0.4 | | 0.0 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 11:36 | -0.03 | 0.08 | 0.5 | | |
| *Bias Check)* | 11:42 | 11.10 | 10.97 | -0.6 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 12:12 | -0.03 | 0.03 | 0.3 | | 0.2 |
| *Bias Check)* | 12:16 | 11.10 | 10.98 | -0.6 | | 0.0 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 1.44 ppmvd |
| $O_2$ | 18.489 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 1.6 ppmvd |
| $O_2$ | 18.62 %vd |
| CO | 9.8 ppm @ 7% $O_2$ |



ED_005878_00000227-00051

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **5-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **12:19-12:39** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 12:19 | 0.7 | 18.33 |
| 2 | 12:20 | 0.7 | 18.36 |
| 3 | 12:21 | 0.7 | 18.40 |
| 4 | 12:22 | 0.7 | 18.40 |
| 5 | 12:23 | 0.6 | 18.36 |
| 6 | 12:24 | 0.7 | 18.47 |
| 7 | 12:25 | 0.6 | 18.57 |
| 8 | 12:26 | 0.6 | 18.75 |
| 9 | 12:27 | 0.6 | 18.73 |
| 10 | 12:28 | 0.9 | 18.84 |
| 11 | 12:29 | 0.7 | 18.83 |
| 12 | 12:30 | 0.8 | 18.73 |
| 13 | 12:31 | 0.6 | 18.73 |
| 14 | 12:32 | 0.6 | 18.66 |
| 15 | 12:33 | 0.6 | 18.69 |
| 16 | 12:34 | 0.6 | 18.79 |
| 17 | 12:35 | 0.6 | 18.80 |
| 18 | 12:36 | 0.7 | 18.76 |
| 19 | 12:37 | 0.6 | 18.62 |
| 20 | 12:38 | 0.6 | 18.62 |
| 21 | 12:39 | 0.6 | 18.67 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **0.66** | **18.624** |

**Instrument Response Times:**

| | Zero | High | |
|---|---|---|---|
| CO | 46 | 46 | seconds |
| $O_2$ | 38 | 38 | seconds |



ED_005878_00000227-00052

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **5-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 12:12 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 12:14 | 25.8 | 25.6 | -0.4 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 12:42 | 0.0 | -0.2 | -0.4 | | 0.0 |
| *Bias Check)* | 12:47 | 25.8 | 25.5 | -0.6 | | 0.2 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 12:12 | -0.03 | 0.03 | 0.3 | | |
| *Bias Check)* | 12:16 | 11.10 | 10.98 | -0.6 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 12:42 | -0.03 | 0.00 | 0.1 | | 0.2 |
| *Bias Check)* | 12:44 | 11.10 | 10.98 | -0.6 | | 0.0 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 0.66 ppmvd |
| $O_2$ | 18.624 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 0.8 ppmvd |
| $O_2$ | 18.72 %vd |
| CO | 5.1 ppm @ 7% $O_2$ |



ED_005878_00000227-00053

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **6-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **12:49-13:09** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 12:49 | 1.1 | 18.97 |
| 2 | 12:50 | 1.0 | 19.05 |
| 3 | 12:51 | 1.2 | 19.06 |
| 4 | 12:52 | 1.7 | 19.09 |
| 5 | 12:53 | 2.2 | 19.12 |
| 6 | 12:54 | 2.8 | 19.01 |
| 7 | 12:55 | 3.3 | 18.98 |
| 8 | 12:56 | 3.4 | 18.89 |
| 9 | 12:57 | 2.8 | 18.93 |
| 10 | 12:58 | 4.6 | 18.84 |
| 11 | 12:59 | 4.1 | 18.87 |
| 12 | 13:00 | 5.8 | 18.81 |
| 13 | 13:01 | 5.4 | 18.82 |
| 14 | 13:02 | 7.8 | 18.71 |
| 15 | 13:03 | 7.8 | 18.70 |
| 16 | 13:04 | 9.9 | 18.62 |
| 17 | 13:05 | 10.6 | 18.63 |
| 18 | 13:06 | 10.2 | 18.52 |
| 19 | 13:07 | 9.2 | 18.51 |
| 20 | 13:08 | 12.9 | 18.42 |
| 21 | 13:09 | 20.7 | 18.35 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **6.12** | **18.805** |

**Instrument Response Times:**

| | Zero | High | |
|---|---|---|---|
| CO | 46 | 46 | seconds |
| $O_2$ | 38 | 38 | seconds |



ED_005878_00000227-00054

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **6-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 12:42 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 12:47 | 25.8 | 25.5 | -0.6 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 13:12 | 0.0 | -0.2 | -0.4 | | 0.0 |
| *Bias Check)* | 13:16 | 25.8 | 25.1 | -1.4 | | 0.8 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 12:42 | -0.03 | 0.00 | 0.1 | | |
| *Bias Check)* | 12:44 | 11.10 | 10.98 | -0.6 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 13:12 | -0.03 | 0.00 | 0.1 | | 0.0 |
| *Bias Check)* | 13:18 | 11.10 | 10.84 | -1.2 | | 0.6 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 6.12 ppmvd |
| $O_2$ | 18.805 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 6.2 ppmvd |
| $O_2$ | 19.01 %vd |
| CO | 45.6 ppm @ 7% $O_2$ |



ED_005878_00000227-00055

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **7-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **13:22-13:42** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 13:22 | 1.5 | 18.79 |
| 2 | 13:23 | 1.3 | 18.94 |
| 3 | 13:24 | 2.2 | 18.77 |
| 4 | 13:25 | 1.7 | 18.83 |
| 5 | 13:26 | 2.4 | 18.78 |
| 6 | 13:27 | 2.3 | 18.73 |
| 7 | 13:28 | 2.2 | 18.72 |
| 8 | 13:29 | 2.6 | 18.63 |
| 9 | 13:30 | 2.8 | 18.50 |
| 10 | 13:31 | 2.0 | 18.56 |
| 11 | 13:32 | 1.9 | 18.53 |
| 12 | 13:33 | 1.4 | 18.47 |
| 13 | 13:34 | 1.6 | 18.53 |
| 14 | 13:35 | 1.6 | 18.47 |
| 15 | 13:36 | 1.0 | 18.65 |
| 16 | 13:37 | 1.1 | 18.51 |
| 17 | 13:38 | 0.8 | 18.62 |
| 18 | 13:39 | 0.9 | 18.53 |
| 19 | 13:40 | 1.0 | 18.60 |
| 20 | 13:41 | 0.9 | 18.52 |
| 21 | 13:42 | 0.8 | 18.65 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **1.62** | **18.635** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



ED_005878_00000227-00056

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **7-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 13:12 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 13:16 | 25.8 | 25.1 | -1.4 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 13:45 | 0.0 | -0.2 | -0.4 | 0.0 | |
| *Bias Check)* | 13:47 | 25.8 | 25.5 | -0.6 | 0.8 | |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 13:12 | -0.03 | 0.00 | 0.1 | | |
| *Bias Check)* | 13:18 | 11.10 | 10.84 | -1.2 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 13:45 | -0.03 | 0.00 | 0.1 | 0.0 | |
| *Bias Check)* | 13:49 | 11.10 | 10.90 | -1.0 | 0.2 | |

**Averages:**

Averages:

| | |
|---|---|
| CO | 1.62 ppmvd |
| $O_2$ | 18.635 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 1.8 ppmvd |
| $O_2$ | 18.91 %vd |
| CO | 12.6 ppm @ 7% $O_2$ |



ED_005878_00000227-00057

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **8-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **13:52-14:12** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 13:52 | 0.6 | 18.79 |
| 2 | 13:53 | 0.6 | 18.74 |
| 3 | 13:54 | 0.6 | 18.82 |
| 4 | 13:55 | 0.6 | 18.80 |
| 5 | 13:56 | 0.6 | 18.81 |
| 6 | 13:57 | 0.6 | 18.74 |
| 7 | 13:58 | 0.6 | 18.81 |
| 8 | 13:59 | 0.6 | 18.75 |
| 9 | 14:00 | 0.6 | 18.81 |
| 10 | 14:01 | 0.7 | 18.65 |
| 11 | 14:02 | 0.6 | 18.65 |
| 12 | 14:03 | 0.6 | 18.63 |
| 13 | 14:04 | 0.6 | 18.53 |
| 14 | 14:05 | 0.7 | 18.43 |
| 15 | 14:06 | 0.9 | 18.48 |
| 16 | 14:07 | 0.9 | 18.44 |
| 17 | 14:08 | 0.9 | 18.43 |
| 18 | 14:09 | 0.9 | 18.51 |
| 19 | 14:10 | 0.9 | 18.49 |
| 20 | 14:11 | 0.8 | 18.50 |
| 21 | 14:12 | 0.9 | 18.49 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **0.70** | **18.633** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



ED_005878_00000227-00058

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **8-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 13:45 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 13:47 | 25.8 | 25.5 | -0.6 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 14:15 | 0.0 | -0.2 | -0.4 | | 0.0 |
| *Bias Check)* | 14:17 | 25.8 | 25.4 | -0.8 | | 0.2 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 13:45 | -0.03 | 0.00 | 0.1 | | |
| *Bias Check)* | 13:49 | 11.10 | 10.90 | -1.0 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 14:15 | -0.03 | 0.00 | 0.1 | | 0.0 |
| *Bias Check)* | 14:20 | 11.10 | 10.90 | -1.0 | | 0.0 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 0.70 ppmvd |
| $O_2$ | 18.633 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 0.9 ppmvd |
| $O_2$ | 18.86 %vd |
| CO | 6.1 ppm @ 7% $O_2$ |



ED_005878_00000227-00059

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **9-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **14:23-14:43** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 14:23 | 0.6 | 18.49 |
| 2 | 14:24 | 0.6 | 18.59 |
| 3 | 14:25 | 0.7 | 18.56 |
| 4 | 14:26 | 0.6 | 18.59 |
| 5 | 14:27 | 0.8 | 18.42 |
| 6 | 14:28 | 0.7 | 18.58 |
| 7 | 14:29 | 0.6 | 18.54 |
| 8 | 14:30 | 0.7 | 18.61 |
| 9 | 14:31 | 0.6 | 18.65 |
| 10 | 14:32 | 0.6 | 18.61 |
| 11 | 14:33 | 0.6 | 18.62 |
| 12 | 14:34 | 0.6 | 18.57 |
| 13 | 14:35 | 0.6 | 18.70 |
| 14 | 14:36 | 0.6 | 18.58 |
| 15 | 14:37 | 0.7 | 18.49 |
| 16 | 14:38 | 0.9 | 18.36 |
| 17 | 14:39 | 0.6 | 18.48 |
| 18 | 14:40 | 0.6 | 18.54 |
| 19 | 14:41 | 0.6 | 18.58 |
| 20 | 14:42 | 0.6 | 18.70 |
| 21 | 14:43 | 0.6 | 18.55 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **0.64** | **18.562** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



ED_005878_00000227-00060

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **9-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 14:15 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 14:17 | 25.8 | 25.4 | -0.8 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 14:45 | 0.0 | -0.2 | -0.4 | 0.0 | |
| *Bias Check)* | 14:48 | 25.8 | 25.1 | -1.4 | 0.6 | |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 14:15 | -0.03 | 0.00 | 0.1 | | |
| *Bias Check)* | 14:20 | 11.10 | 10.90 | -1.0 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 14:45 | -0.03 | 0.16 | 0.9 | 0.8 | |
| *Bias Check)* | 14:52 | 11.10 | 10.90 | -1.0 | 0.0 | |

**Averages:**

Averages:

| | |
|---|---|
| CO | 0.64 ppmvd |
| $O_2$ | 18.562 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 0.8 ppmvd |
| $O_2$ | 18.84 %vd |
| CO | 5.4 ppm @ 7% $O_2$ |



ED_005878_00000227-00061

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **10-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **14:55-15:15** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 14:55 | 0.8 | 18.49 |
| 2 | 14:56 | 0.8 | 18.44 |
| 3 | 14:57 | 0.7 | 18.43 |
| 4 | 14:58 | 0.8 | 18.47 |
| 5 | 14:59 | 0.6 | 18.59 |
| 6 | 15:00 | 0.6 | 18.64 |
| 7 | 15:01 | 0.6 | 18.62 |
| 8 | 15:02 | 0.6 | 18.72 |
| 9 | 15:03 | 0.6 | 18.67 |
| 10 | 15:04 | 0.6 | 18.66 |
| 11 | 15:05 | 0.6 | 18.55 |
| 12 | 15:06 | 0.6 | 18.69 |
| 13 | 15:07 | 0.6 | 18.56 |
| 14 | 15:08 | 0.6 | 18.57 |
| 15 | 15:09 | 0.6 | 18.46 |
| 16 | 15:10 | 0.6 | 18.57 |
| 17 | 15:11 | 0.6 | 18.46 |
| 18 | 15:12 | 0.6 | 18.58 |
| 19 | 15:13 | 0.6 | 18.50 |
| 20 | 15:14 | 0.7 | 18.60 |
| 21 | 15:15 | 0.6 | 18.73 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **0.64** | **18.571** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



ED_005878_00000227-00062

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **10-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/07/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:31 | 0.0 | 0.0 | 0.0 | | |
| *Error Tests)* | 8:42 | 25.0 | 25.8 | 1.6 | | |
| | 8:38 | 51.0 | 51.7 | 1.4 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 14:45 | 0.0 | -0.2 | -0.4 | | |
| *Bias Check)* | 14:48 | 25.8 | 25.1 | -1.4 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 15:21 | 0.0 | -0.2 | -0.4 | 0.0 | |
| *Bias Check)* | 15:27 | 25.8 | 25.5 | -0.6 | 0.8 | |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 8:24 | 0.0 | -0.03 | -0.1 | | |
| *Error Tests)* | 8:34 | 11.03 | 11.10 | 0.3 | | |
| | 8:28 | 20.99 | 21.10 | 0.5 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 14:45 | -0.03 | -0.16 | -0.6 | | |
| *Bias Check)* | 14:52 | 11.10 | 10.90 | -1.0 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | D $\|SB_f$ - Sbi\| | *Drift* |
| *(Post System* | 15:21 | -0.03 | 0.00 | 0.1 | 0.7 | |
| *Bias Check)* | 15:29 | 11.10 | 10.90 | -1.0 | 0.0 | |

**Averages:**

Averages:

| | |
|---|---|
| CO | 0.64 ppmvd |
| $O_2$ | 18.571 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 0.8 ppmvd |
| $O_2$ | 18.74 %vd |
| CO | 5.1 ppm @ 7% $O_2$ |



ED_005878_00000227-00063

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **11-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **10:40-11:00** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/08/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 10:40 | 1.4 | 18.45 |
| 2 | 10:41 | 3.9 | 18.38 |
| 3 | 10:42 | 18.4 | 18.46 |
| 4 | 10:43 | 2.7 | 18.47 |
| 5 | 10:44 | 2.0 | 18.48 |
| 6 | 10:45 | 1.5 | 18.49 |
| 7 | 10:46 | 1.1 | 18.67 |
| 8 | 10:47 | 1.3 | 18.83 |
| 9 | 10:48 | 1.0 | 18.84 |
| 10 | 10:49 | 1.1 | 18.79 |
| 11 | 10:50 | 0.9 | 18.89 |
| 12 | 10:51 | 0.9 | 18.90 |
| 13 | 10:52 | 1.0 | 18.97 |
| 14 | 10:53 | 1.1 | 18.97 |
| 15 | 10:54 | 1.9 | 18.75 |
| 16 | 10:55 | 1.7 | 18.77 |
| 17 | 10:56 | 2.5 | 18.65 |
| 18 | 10:57 | 2.7 | 18.66 |
| 19 | 10:58 | 2.3 | 18.57 |
| 20 | 10:59 | 1.5 | 18.64 |
| 21 | 11:00 | 3.3 | 18.68 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **2.58** | **18.681** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



ED_005878_00000227-00064

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **11-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/08/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 10:04 | 0.0 | -0.2 | -0.4 | | |
| *Error Tests)* | 10:11 | 25.0 | 25.4 | 0.8 | | |
| | 10:06 | 51.0 | 51.0 | 0.0 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 10:15 | -0.2 | -0.2 | 0.0 | | |
| *Bias Check)* | 10:18 | 25.4 | 25.3 | -0.2 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 11:03 | -0.2 | -0.1 | 0.2 | | 0.2 |
| *Bias Check)* | 11:05 | 25.4 | 25.3 | -0.2 | | 0.0 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 7:38 | 0.0 | 0.10 | 0.5 | | |
| *Error Tests)* | 7:42 | 11.03 | 11.10 | 0.3 | | |
| | 7:46 | 20.99 | 20.98 | 0.0 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 9:58 | 0.10 | 0.08 | -0.1 | | |
| *Bias Check)* | 10:00 | 11.10 | 11.00 | -0.5 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 11:03 | 0.10 | 0.09 | 0.0 | | 0.1 |
| *Bias Check)* | 11:08 | 11.10 | 11.00 | -0.5 | | 0.0 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 2.58 ppmvd |
| $O_2$ | 18.681 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 2.7 ppmvd |
| $O_2$ | 18.79 %vd |
| CO | 17.8 ppm @ 7% $O_2$ |



ED_005878_00000227-00065

**Reference Data**
**EPA Methods 3A and 10**

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **12-Gases** |
| **Location:** | **Tucson, Arizona** | **Time:** | **11:15-11:35** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/08/17** |

| Minute | Time | CO ppmvd | $O_2$ %vd |
|---|---|---|---|
| 1 | 11:15 | 3.1 | 18.50 |
| 2 | 11:16 | 2.4 | 18.54 |
| 3 | 11:17 | 2.2 | 18.67 |
| 4 | 11:18 | 3.1 | 18.60 |
| 5 | 11:19 | 1.9 | 18.56 |
| 6 | 11:20 | 1.1 | 18.64 |
| 7 | 11:21 | 1.8 | 18.71 |
| 8 | 11:22 | 1.6 | 18.60 |
| 9 | 11:23 | 1.2 | 18.53 |
| 10 | 11:24 | 1.2 | 18.60 |
| 11 | 11:25 | 1.4 | 18.46 |
| 12 | 11:26 | 1.5 | 18.50 |
| 13 | 11:27 | 1.1 | 18.55 |
| 14 | 11:28 | 1.1 | 18.57 |
| 15 | 11:29 | 1.0 | 18.58 |
| 16 | 11:30 | 1.4 | 18.54 |
| 17 | 11:31 | 1.4 | 18.57 |
| 18 | 11:32 | 1.2 | 18.56 |
| 19 | 11:33 | 1.0 | 18.67 |
| 20 | 11:34 | 0.9 | 18.87 |
| 21 | 11:35 | 0.9 | 18.83 |

**Averages:**

| CO ppmvd | $O_2$ %vd |
|---|---|
| **1.55** | **18.602** |

**Instrument Response Times:**

| | Zero | High |
|---|---|---|
| CO | 46 | 46 seconds |
| $O_2$ | 38 | 38 seconds |



ED_005878_00000227-00066

| | | | |
|---|---|---|---|
| **Client:** | **Tucson Iron & Metal** | **Run:** | **12-Gases** |
| **Source:** | **Contraband Incinerator** | **Date:** | **02/08/17** |

**Instrument Calibration Checks**

| ACE (<2% span or 0.5 ppmvd) | $SB_i/SB_f$ (<5% span or 0.5 ppmvd) | D (<3% span or 0.5 ppmvd) |
|---|---|---|

CO Instrument

CO Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 51.0 ppmvd |
|---|---|---|---|---|---|---|
| *(Calibration* | 10:04 | 0.0 | -0.2 | -0.4 | | |
| *Error Tests)* | 10:11 | 25.0 | 25.4 | 0.8 | | |
| | 10:06 | 51.0 | 51.0 | 0.0 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 11:03 | -0.2 | -0.1 | 0.2 | | |
| *Bias Check)* | 11:05 | 25.4 | 25.3 | -0.2 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 11:37 | -0.2 | -0.1 | 0.2 | | 0.0 |
| *Bias Check)* | 11:40 | 25.4 | 25.3 | -0.2 | | 0.0 |

$O_2$ Instrument

$O_2$ Calibration Error Tests

| ACE | Time | Value, $C_v$ | Resp., $C_{Dir}$ | ACE, $SC_E$ | CS: | 20.99 %vd |
|---|---|---|---|---|---|---|
| *(Calibration* | 7:38 | 0.0 | 0.10 | 0.5 | | |
| *Error Tests)* | 7:42 | 11.03 | 11.10 | 0.3 | | |
| | 7:46 | 20.99 | 20.98 | 0.0 | | |
| $SB_i$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_i$ | | |
| *(Initial System* | 11:03 | 0.10 | 0.09 | 0.0 | | |
| *Bias Check)* | 11:08 | 11.10 | 11.00 | -0.5 | | |
| $SB_f$ | Time | Resp, $C_{Dir}$ | Resp, $C_s$ | $SB_f$ | | D $\|SB_f$ - Sbi\| *Drift* |
| *(Post System* | 11:38 | 0.10 | 0.09 | 0.0 | | 0.0 |
| *Bias Check)* | 11:42 | 11.10 | 11.00 | -0.5 | | 0.0 |

**Averages:**

Averages:

| | |
|---|---|
| CO | 1.55 ppmvd |
| $O_2$ | 18.602 %vd |

**Calculations:**

Calibration Corrected Values:

| | |
|---|---|
| CO | 1.6 ppmvd |
| $O_2$ | 18.72 %vd |
| CO | 10.2 ppm @ 7% $O_2$ |



ED_005878_00000227-00067

**EEMC Computer Logger CO/$O_2$**
**Tucson Iron & Metal**
**Tucson, Arizona**

**2/7-8/2017**
**Contraband Incinerator**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 08:22 | 2.6 | 11.24 | Tuesday, February 7, 2017 |
| 08:23 | 0.1 | -0.01 | **Calibrations, Instruments,** |
| 08:24 | 0.1 | -0.03 | **Calibration Tank IDs** |
| 08:25 | 0.1 | -0.08 | |
| 08:26 | 0.1 | 16.74 | **CO Tanks** |
| 08:27 | 0.1 | 21.09 | CC341178 @ 25.0 ppmvd; Exp. 07/14/23 |
| 08:28 | 0.1 | 21.10 | CC268790 @ 51.0 ppmvd; Exp. 06/17/24 |
| 08:29 | 0.1 | 21.10 | CO Instrument: Thermo Environmental 48-I |
| 08:30 | 0.1 | 21.10 | |
| 08:31 | 0.0 | 21.10 | |
| 08:32 | -0.2 | 18.58 | **$O_2$ Tank IDs:** |
| 08:33 | -0.2 | 11.20 | CC268790 @ 11.03 %vd; Exp. 06/10/24 |
| 08:34 | -0.2 | 11.10 | SA15470 @ 20.99 %vd; Exp. 05/12/23 |
| 08:35 | -0.1 | 11.09 | $O_2$ Instrument: Servomex 1400 |
| 08:36 | 1.7 | 11.10 | |
| 08:37 | 45.6 | 11.10 | |
| 08:38 | 51.7 | 11.10 | |
| 08:39 | 51.8 | 11.10 | |
| 08:40 | 44.2 | 11.10 | |
| 08:41 | 26.2 | 11.10 | |
| 08:42 | 25.8 | 11.10 | |
| 08:43 | 14.1 | 18.10 | |
| 08:44 | 0.1 | 16.90 | |
| 08:45 | -0.2 | 0.16 | |
| 08:46 | -0.1 | 0.05 | |
| 08:47 | -0.2 | 0.03 | |
| 08:48 | -0.1 | 0.00 | |
| 08:49 | 5.2 | 0.91 | |
| 08:50 | 25.4 | 0.00 | |
| 08:51 | 25.8 | 0.00 | |
| 08:52 | 25.8 | 0.00 | |
| 08:53 | 19.4 | 3.75 | |
| 08:54 | -0.1 | 10.99 | |
| 08:55 | -0.7 | 11.00 | |
| 08:56 | -0.6 | 11.19 | |
| 08:57 | -0.1 | 20.47 | |
| 08:58 | 0.1 | 20.91 | |
| 08:59 | 0.1 | 20.90 | |
| 09:00 | 0.1 | 20.90 | |
| 09:01 | 0.1 | 20.92 | |
| 09:02 | 0.1 | 20.97 | |



ED_005878_00000227-00068

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 09:03 | 0.1 | 20.98 | |
| 09:04 | 0.1 | 21.00 | 3 point stratification check okay 09:04-09:09 |
| 09:05 | 0.1 | 21.00 | |
| 09:06 | 0.1 | 21.00 | |
| 09:07 | 0.1 | 21.00 | |
| 09:08 | 0.1 | 21.00 | |
| 09:09 | 0.1 | 20.99 | |
| 09:10 | 0.1 | 21.00 | |
| 09:11 | 0.1 | 21.00 | |
| 09:12 | 0.1 | 21.00 | |
| 09:13 | 0.1 | 21.00 | |
| 09:14 | 0.1 | 21.00 | |
| 09:15 | 0.1 | 21.00 | |
| 09:16 | 0.1 | 21.00 | |
| 09:17 | 0.1 | 21.00 | |
| 09:18 | 0.1 | 21.00 | |
| 09:19 | 0.1 | 21.00 | |
| 09:20 | 0.1 | 21.00 | |
| 09:21 | 0.1 | 21.00 | |
| 09:22 | 0.1 | 21.00 | |
| 09:23 | 0.1 | 21.00 | |
| 09:24 | 0.1 | 21.00 | |
| 09:25 | 0.1 | 21.00 | |
| 09:26 | 0.1 | 21.00 | |
| 09:27 | 0.2 | 21.00 | |
| 09:28 | 0.1 | 21.00 | |
| 09:29 | 0.1 | 21.00 | |
| 09:30 | 0.1 | 21.00 | |
| 09:31 | 0.1 | 21.00 | |
| 09:32 | 0.1 | 21.00 | |
| 09:33 | 0.1 | 21.00 | |
| 09:34 | 0.1 | 21.00 | |
| 09:35 | 0.1 | 21.00 | |
| 09:36 | 0.1 | 21.00 | |
| 09:37 | 0.1 | 21.00 | |
| 09:38 | 0.1 | 21.00 | |
| 09:39 | 0.1 | 21.00 | |
| 09:40 | 0.1 | 21.00 | |
| 09:41 | 0.1 | 21.00 | |
| 09:42 | 0.1 | 20.99 | |
| 09:43 | 0.1 | 20.99 | |



ED_005878_00000227-00069

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 09:44 | 0.1 | 20.97 | |
| 09:45 | 0.1 | 20.98 | |
| 09:46 | 0.1 | 20.96 | |
| 09:47 | ND | 20.97 | |
| 09:48 | ND | 20.97 | |
| 09:49 | ND | 20.93 | |
| 09:50 | ND | 20.93 | |
| 09:51 | ND | 20.92 | |
| 09:52 | 0.1 | 20.94 | |
| 09:53 | 0.1 | 20.97 | |
| 09:54 | 0.1 | 20.99 | |
| 09:55 | 0.1 | 20.95 | |
| 09:56 | 0.1 | 20.92 | |
| 09:57 | 0.9 | 19.07 | |
| 09:58 | 2.2 | 16.70 | |
| 09:59 | 2.2 | 16.55 | |
| 10:00 | 2.0 | 16.47 | |
| 10:01 | 2.0 | 16.36 | |
| 10:02 | 1.9 | 16.38 | |
| 10:03 | 1.8 | 16.27 | |
| 10:04 | 1.7 | 16.26 | |
| 10:05 | 1.7 | 16.15 | |
| 10:06 | 1.7 | 16.13 | |
| 10:07 | 1.7 | 15.94 | |
| 10:08 | 1.7 | 15.77 | |
| 10:09 | 1.7 | 15.54 | |
| 10:10 | 1.4 | 16.08 | |
| 10:11 | 2.5 | 18.71 | |
| 10:12 | 13.1 | 19.75 | |
| 10:13 | 16.0 | 19.81 | Begin Run 1 Rata |
| 10:14 | 12.6 | 19.77 | |
| 10:15 | 17.6 | 19.74 | |
| 10:16 | 4.9 | 19.40 | |
| 10:17 | 1.8 | 19.04 | |
| 10:18 | 6.1 | 19.17 | |
| 10:19 | 5.2 | 19.04 | |
| 10:20 | 3.8 | 18.94 | |
| 10:21 | 3.7 | 18.82 | |
| 10:22 | 2.8 | 18.75 | |
| 10:23 | 3.3 | 18.70 | |
| 10:24 | 2.8 | 18.61 | |



ED_005878_00000227-00070

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 10:25 | 2.3 | 18.54 | |
| 10:26 | 2.1 | 18.53 | |
| 10:27 | 1.2 | 18.40 | |
| 10:28 | 0.6 | 18.29 | |
| 10:29 | 0.4 | 18.27 | |
| 10:30 | 0.4 | 18.23 | |
| 10:31 | 0.6 | 18.10 | |
| 10:32 | 0.7 | 18.16 | |
| 10:33 | 0.7 | 18.10 | End Run 1 Rata |
| 10:34 | 0.8 | 17.73 | |
| 10:35 | 0.0 | 0.89 | |
| 10:36 | -0.1 | 0.01 | |
| 10:37 | 19.0 | 0.00 | |
| 10:38 | 25.6 | 0.00 | |
| 10:39 | 8.5 | 8.06 | |
| 10:40 | -0.6 | 11.00 | |
| 10:41 | -0.2 | 13.25 | |
| 10:42 | 1.2 | 18.08 | |
| 10:43 | 1.2 | 18.13 | Begin Run 2 Rata |
| 10:44 | 1.4 | 18.20 | |
| 10:45 | 1.5 | 18.24 | |
| 10:46 | 1.4 | 18.28 | |
| 10:47 | 1.5 | 18.31 | |
| 10:48 | 1.9 | 18.41 | |
| 10:49 | 2.8 | 18.52 | |
| 10:50 | 3.2 | 18.54 | |
| 10:51 | 2.6 | 18.50 | |
| 10:52 | 3.0 | 18.50 | |
| 10:53 | 2.9 | 18.51 | |
| 10:54 | 3.0 | 18.60 | |
| 10:55 | 2.4 | 18.59 | |
| 10:56 | 3.3 | 18.71 | |
| 10:57 | 3.7 | 18.76 | |
| 10:58 | 4.1 | 18.80 | |
| 10:59 | 3.4 | 18.57 | |
| 11:00 | 1.0 | 18.08 | |
| 11:01 | 0.9 | 18.10 | |
| 11:02 | 1.2 | 18.16 | |
| 11:03 | 1.2 | 18.17 | End Run 2 Rata |
| 11:04 | 1.2 | 18.22 | |
| 11:05 | 0.6 | 9.10 | |



ED_005878_00000227-00071

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 11:06 | -0.2 | 0.05 | |
| 11:07 | 1.5 | 0.05 | |
| 11:08 | 23.6 | 0.01 | |
| 11:09 | 25.6 | 0.00 | |
| 11:10 | 9.4 | 7.59 | |
| 11:11 | -0.6 | 11.00 | |
| 11:12 | -0.4 | 12.48 | |
| 11:13 | 2.0 | 18.44 | Begin Run 3 Rata |
| 11:14 | 1.3 | 18.18 | |
| 11:15 | 1.1 | 18.17 | |
| 11:16 | 1.2 | 18.30 | |
| 11:17 | 1.2 | 18.38 | |
| 11:18 | 1.0 | 18.44 | |
| 11:19 | 1.2 | 18.51 | |
| 11:20 | 1.2 | 18.60 | |
| 11:21 | 1.2 | 18.68 | |
| 11:22 | 2.3 | 18.81 | |
| 11:23 | 2.9 | 18.88 | |
| 11:24 | 2.6 | 18.81 | |
| 11:25 | 1.8 | 18.81 | |
| 11:26 | 2.0 | 18.71 | |
| 11:27 | 1.8 | 18.63 | |
| 11:28 | 1.5 | 18.57 | |
| 11:29 | 2.0 | 18.50 | |
| 11:30 | 2.1 | 18.59 | |
| 11:31 | 2.7 | 18.45 | |
| 11:32 | 2.6 | 18.48 | |
| 11:33 | 3.3 | 18.42 | End Run 3 Rata |
| 11:34 | 3.0 | 18.40 | |
| 11:35 | 0.6 | 3.67 | |
| 11:36 | -0.2 | 0.08 | |
| 11:37 | -0.2 | 0.10 | |
| 11:38 | -0.2 | 0.00 | |
| 11:39 | 13.8 | 0.44 | |
| 11:40 | 25.6 | 0.00 | |
| 11:41 | 20.9 | 2.61 | |
| 11:42 | 0.2 | 10.97 | |
| 11:43 | -0.6 | 11.00 | |
| 11:44 | 0.3 | 14.83 | |
| 11:45 | 1.6 | 18.30 | |
| 11:46 | 1.3 | 18.32 | |



ED_005878_00000227-00072

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 11:47 | 1.2 | 18.30 | |
| 11:48 | 1.6 | 18.43 | |
| 11:49 | 2.2 | 18.50 | Begin Run 4 Rata |
| 11:50 | 2.0 | 18.50 | |
| 11:51 | 2.5 | 18.50 | |
| 11:52 | 1.8 | 18.48 | |
| 11:53 | 1.7 | 18.60 | |
| 11:54 | 1.7 | 18.47 | |
| 11:55 | 1.2 | 18.39 | |
| 11:56 | 0.9 | 18.28 | |
| 11:57 | 1.2 | 18.32 | |
| 11:58 | 1.5 | 18.40 | |
| 11:59 | 1.1 | 18.40 | |
| 12:00 | 1.1 | 18.36 | |
| 12:01 | 1.2 | 18.34 | |
| 12:02 | 1.2 | 18.38 | |
| 12:03 | 1.3 | 18.46 | |
| 12:04 | 1.4 | 18.59 | |
| 12:05 | 1.3 | 18.55 | |
| 12:06 | 1.4 | 18.59 | |
| 12:07 | 1.2 | 18.66 | |
| 12:08 | 1.3 | 18.70 | |
| 12:09 | 1.1 | 18.79 | End Run 4 Rata |
| 12:10 | 1.0 | 13.45 | |
| 12:11 | -0.1 | 0.07 | |
| 12:12 | -0.2 | 0.03 | |
| 12:13 | 17.3 | 0.00 | |
| 12:14 | 25.6 | 0.00 | |
| 12:15 | 14.5 | 5.55 | |
| 12:16 | -0.6 | 10.98 | |
| 12:17 | -0.1 | 14.58 | |
| 12:18 | 0.8 | 18.31 | |
| 12:19 | 0.7 | 18.33 | Begin Run 5 Rata |
| 12:20 | 0.7 | 18.36 | |
| 12:21 | 0.7 | 18.40 | |
| 12:22 | 0.7 | 18.40 | |
| 12:23 | 0.6 | 18.36 | |
| 12:24 | 0.7 | 18.47 | |
| 12:25 | 0.6 | 18.57 | |
| 12:26 | 0.6 | 18.75 | |
| 12:27 | 0.6 | 18.73 | |



ED_005878_00000227-00073

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 12:28 | 0.9 | 18.84 | |
| 12:29 | 0.7 | 18.83 | |
| 12:30 | 0.8 | 18.73 | |
| 12:31 | 0.6 | 18.73 | |
| 12:32 | 0.6 | 18.66 | |
| 12:33 | 0.6 | 18.69 | |
| 12:34 | 0.6 | 18.79 | |
| 12:35 | 0.6 | 18.80 | |
| 12:36 | 0.7 | 18.76 | |
| 12:37 | 0.6 | 18.62 | |
| 12:38 | 0.6 | 18.62 | |
| 12:39 | 0.6 | 18.67 | End Run 5 Rata |
| 12:40 | 0.6 | 17.80 | |
| 12:41 | -0.1 | 0.53 | |
| 12:42 | -0.2 | 0.00 | |
| 12:43 | -0.3 | 3.62 | |
| 12:44 | -0.7 | 10.98 | |
| 12:45 | 2.7 | 8.91 | |
| 12:46 | 24.2 | 0.05 | |
| 12:47 | 25.5 | 0.00 | |
| 12:48 | 15.7 | 9.11 | |
| 12:49 | 1.1 | 18.97 | Begin Run 6 Rata |
| 12:50 | 1.0 | 19.05 | |
| 12:51 | 1.2 | 19.06 | |
| 12:52 | 1.7 | 19.09 | |
| 12:53 | 2.2 | 19.12 | |
| 12:54 | 2.8 | 19.01 | |
| 12:55 | 3.3 | 18.98 | |
| 12:56 | 3.4 | 18.89 | |
| 12:57 | 2.8 | 18.93 | |
| 12:58 | 4.6 | 18.84 | |
| 12:59 | 4.1 | 18.87 | |
| 13:00 | 5.8 | 18.81 | |
| 13:01 | 5.4 | 18.82 | |
| 13:02 | 7.8 | 18.71 | |
| 13:03 | 7.8 | 18.70 | |
| 13:04 | 9.9 | 18.62 | |
| 13:05 | 10.6 | 18.63 | |
| 13:06 | 10.2 | 18.52 | |
| 13:07 | 9.2 | 18.51 | |
| 13:08 | 12.9 | 18.42 | |



ED_005878_00000227-00074

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 13:09 | 20.7 | 18.35 | End Run 6 Rata |
| 13:10 | 19.5 | 17.71 | |
| 13:11 | 2.7 | 0.62 | |
| 13:12 | -0.2 | 0.00 | |
| 13:13 | 0.0 | 0.01 | |
| 13:14 | -0.2 | 0.00 | |
| 13:15 | 5.0 | 0.17 | |
| 13:16 | 25.1 | 0.00 | |
| 13:17 | 22.0 | 1.97 | |
| 13:18 | 0.6 | 10.84 | |
| 13:19 | -0.7 | 10.91 | |
| 13:20 | -0.7 | 10.94 | |
| 13:21 | 0.5 | 15.83 | |
| 13:22 | 1.5 | 18.79 | Begin Run 7 Rata |
| 13:23 | 1.3 | 18.94 | |
| 13:24 | 2.2 | 18.77 | |
| 13:25 | 1.7 | 18.83 | |
| 13:26 | 2.4 | 18.78 | |
| 13:27 | 2.3 | 18.73 | |
| 13:28 | 2.2 | 18.72 | |
| 13:29 | 2.6 | 18.63 | |
| 13:30 | 2.8 | 18.50 | |
| 13:31 | 2.0 | 18.56 | |
| 13:32 | 1.9 | 18.53 | |
| 13:33 | 1.4 | 18.47 | |
| 13:34 | 1.6 | 18.53 | |
| 13:35 | 1.6 | 18.47 | |
| 13:36 | 1.0 | 18.65 | |
| 13:37 | 1.1 | 18.51 | |
| 13:38 | 0.8 | 18.62 | |
| 13:39 | 0.9 | 18.53 | |
| 13:40 | 1.0 | 18.60 | |
| 13:41 | 0.9 | 18.52 | |
| 13:42 | 0.8 | 18.65 | End Run 7 Rata |
| 13:43 | 0.8 | 18.69 | |
| 13:44 | 0.0 | 2.12 | |
| 13:45 | -0.2 | 0.00 | |
| 13:46 | 18.3 | 0.04 | |
| 13:47 | 25.5 | -0.01 | |
| 13:48 | 15.7 | 5.17 | |
| 13:49 | -0.5 | 10.90 | |



ED_005878_00000227-00075

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 13:50 | -0.7 | 10.91 | |
| 13:51 | 0.3 | 18.04 | |
| 13:52 | 0.6 | 18.79 | Begin Run 8 Rata |
| 13:53 | 0.6 | 18.74 | |
| 13:54 | 0.6 | 18.82 | |
| 13:55 | 0.6 | 18.80 | |
| 13:56 | 0.6 | 18.81 | |
| 13:57 | 0.6 | 18.74 | |
| 13:58 | 0.6 | 18.81 | |
| 13:59 | 0.6 | 18.75 | |
| 14:00 | 0.6 | 18.81 | |
| 14:01 | 0.7 | 18.65 | |
| 14:02 | 0.6 | 18.65 | |
| 14:03 | 0.6 | 18.63 | |
| 14:04 | 0.6 | 18.53 | |
| 14:05 | 0.7 | 18.43 | |
| 14:06 | 0.9 | 18.48 | |
| 14:07 | 0.9 | 18.44 | |
| 14:08 | 0.9 | 18.43 | |
| 14:09 | 0.9 | 18.51 | |
| 14:10 | 0.9 | 18.49 | |
| 14:11 | 0.8 | 18.50 | |
| 14:12 | 0.9 | 18.49 | End Run 8 Rata |
| 14:13 | 0.9 | 18.56 | |
| 14:14 | 0.1 | 3.23 | |
| 14:15 | -0.2 | 0.00 | |
| 14:16 | 8.3 | 0.06 | |
| 14:17 | 25.4 | 0.00 | |
| 14:18 | 25.3 | 0.00 | |
| 14:19 | 4.9 | 9.56 | |
| 14:20 | -0.7 | 10.90 | |
| 14:21 | -0.7 | 10.91 | |
| 14:22 | -0.2 | 14.39 | |
| 14:23 | 0.6 | 18.49 | Begin Run 9 Rata |
| 14:24 | 0.6 | 18.59 | |
| 14:25 | 0.7 | 18.56 | |
| 14:26 | 0.6 | 18.59 | |
| 14:27 | 0.8 | 18.42 | |
| 14:28 | 0.7 | 18.58 | |
| 14:29 | 0.6 | 18.54 | |
| 14:30 | 0.7 | 18.61 | |



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**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 14:31 | 0.6 | 18.65 | |
| 14:32 | 0.6 | 18.61 | |
| 14:33 | 0.6 | 18.62 | |
| 14:34 | 0.6 | 18.57 | |
| 14:35 | 0.6 | 18.70 | |
| 14:36 | 0.6 | 18.58 | |
| 14:37 | 0.7 | 18.49 | |
| 14:38 | 0.9 | 18.36 | |
| 14:39 | 0.6 | 18.48 | |
| 14:40 | 0.6 | 18.54 | |
| 14:41 | 0.6 | 18.58 | |
| 14:42 | 0.6 | 18.70 | |
| 14:43 | 0.6 | 18.55 | End Run 9 Rata |
| 14:44 | 0.5 | 15.95 | |
| 14:45 | -0.2 | 0.16 | |
| 14:46 | 2.7 | 0.05 | |
| 14:47 | 24.3 | 0.00 | |
| 14:48 | 25.1 | 0.00 | |
| 14:49 | 3.9 | 0.00 | |
| 14:50 | -0.2 | 0.29 | |
| 14:51 | -0.6 | 10.23 | |
| 14:52 | -0.7 | 10.90 | |
| 14:53 | -0.2 | 14.15 | |
| 14:54 | 0.6 | 18.58 | |
| 14:55 | 0.8 | 18.49 | Begin Run 10 Rata |
| 14:56 | 0.8 | 18.44 | |
| 14:57 | 0.7 | 18.43 | |
| 14:58 | 0.8 | 18.47 | |
| 14:59 | 0.6 | 18.59 | |
| 15:00 | 0.6 | 18.64 | |
| 15:01 | 0.6 | 18.62 | |
| 15:02 | 0.6 | 18.72 | |
| 15:03 | 0.6 | 18.67 | |
| 15:04 | 0.6 | 18.66 | |
| 15:05 | 0.6 | 18.55 | |
| 15:06 | 0.6 | 18.69 | |
| 15:07 | 0.6 | 18.56 | |
| 15:08 | 0.6 | 18.57 | |
| 15:09 | 0.6 | 18.46 | |
| 15:10 | 0.6 | 18.57 | |
| 15:11 | 0.6 | 18.46 | |



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**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 15:12 | 0.6 | 18.58 | |
| 15:13 | 0.6 | 18.50 | |
| 15:14 | 0.7 | 18.60 | |
| 15:15 | 0.6 | 18.73 | End Run 10 Rata |
| 15:16 | 0.7 | 18.74 | |
| 15:17 | 0.1 | 4.06 | |
| 15:18 | -0.2 | 0.00 | |
| 15:19 | -0.2 | 0.00 | |
| 15:20 | -0.2 | 0.00 | |
| 15:21 | -0.2 | 0.00 | |
| 15:22 | -0.2 | 0.00 | |
| 15:23 | -0.2 | -0.03 | |
| 15:24 | -0.2 | -0.07 | |
| 15:25 | 0.0 | -0.08 | |
| 15:26 | 20.5 | -0.08 | |
| 15:27 | 25.5 | -0.09 | |
| 15:28 | 9.7 | 7.47 | |
| 15:29 | -0.7 | 10.90 | |
| 07:37 | -0.2 | 0.10 | Wednesday, February 8, 2017 |
| 07:38 | -0.2 | 0.10 | |
| 07:39 | -0.3 | 2.94 | |
| 07:40 | -0.7 | 11.10 | |
| 07:41 | -0.7 | 11.10 | |
| 07:42 | -0.7 | 11.10 | |
| 07:43 | -0.7 | 11.10 | |
| 07:44 | -0.7 | 11.10 | |
| 07:45 | -0.5 | 15.72 | |
| 07:46 | 0.1 | 20.98 | |
| 09:56 | 2.7 | 18.65 | |
| 09:57 | 0.6 | 1.37 | |
| 09:58 | -0.2 | 0.08 | |
| 09:59 | -0.5 | 7.65 | |
| 10:00 | -0.7 | 11.00 | |
| 10:01 | -0.5 | 11.18 | |
| 10:02 | 0.3 | 11.61 | |
| 10:03 | -0.2 | 11.69 | |
| 10:04 | -0.2 | 11.70 | |
| 10:05 | 28.2 | 11.70 | |
| 10:06 | 51.0 | 11.72 | |
| 10:07 | 50.9 | 11.80 | |
| 10:08 | 48.3 | 11.83 | |



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**EEMC Computer Logger CO/$O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 10:09 | 27.0 | 11.90 | |
| 10:10 | 25.6 | 11.98 | |
| 10:11 | 25.4 | 12.24 | |
| 10:12 | 5.9 | 5.77 | |
| 10:13 | -0.1 | 0.06 | |
| 10:14 | -0.2 | 0.00 | |
| 10:15 | -0.2 | 0.01 | |
| 10:16 | 1.7 | 0.00 | |
| 10:17 | 23.5 | 0.01 | |
| 10:18 | 25.3 | 0.00 | |
| 10:19 | 12.3 | 13.01 | |
| 10:20 | 1.2 | 18.77 | |
| 10:21 | 1.2 | 18.80 | |
| 10:22 | 1.2 | 18.81 | |
| 10:23 | 1.3 | 18.86 | |
| 10:24 | 1.4 | 18.78 | |
| 10:25 | 1.2 | 18.77 | |
| 10:26 | 1.3 | 18.86 | |
| 10:27 | 1.1 | 18.81 | |
| 10:28 | 1.0 | 18.66 | |
| 10:29 | 0.9 | 18.65 | |
| 10:30 | 1.1 | 18.60 | |
| 10:31 | 0.9 | 18.64 | |
| 10:32 | 0.7 | 18.56 | |
| 10:33 | 0.7 | 18.54 | |
| 10:34 | 0.7 | 18.50 | |
| 10:35 | 1.6 | 18.45 | |
| 10:36 | 1.0 | 18.48 | |
| 10:37 | 0.8 | 18.52 | |
| 10:38 | 0.7 | 18.69 | |
| 10:39 | 1.2 | 18.58 | |
| 10:40 | 1.4 | 18.45 | Begin Run 11 Rata |
| 10:41 | 3.9 | 18.38 | |
| 10:42 | 18.4 | 18.46 | |
| 10:43 | 2.7 | 18.47 | |
| 10:44 | 2.0 | 18.48 | |
| 10:45 | 1.5 | 18.49 | |
| 10:46 | 1.1 | 18.67 | |
| 10:47 | 1.3 | 18.83 | |
| 10:48 | 1.0 | 18.84 | |
| 10:49 | 1.1 | 18.79 | |



ED_005878_00000227-00079

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 10:50 | 0.9 | 18.89 | |
| 10:51 | 0.9 | 18.90 | |
| 10:52 | 1.0 | 18.97 | |
| 10:53 | 1.1 | 18.97 | |
| 10:54 | 1.9 | 18.75 | |
| 10:55 | 1.7 | 18.77 | |
| 10:56 | 2.5 | 18.65 | |
| 10:57 | 2.7 | 18.66 | |
| 10:58 | 2.3 | 18.57 | |
| 10:59 | 1.5 | 18.64 | |
| 11:00 | 3.3 | 18.68 | End Run 11 Rata |
| 11:01 | 4.4 | 18.54 | |
| 11:02 | 1.5 | 4.58 | |
| 11:03 | -0.1 | 0.09 | |
| 11:04 | 11.6 | 0.04 | |
| 11:05 | 25.3 | 0.00 | |
| 11:06 | 23.0 | 1.81 | |
| 11:07 | 1.2 | 11.00 | |
| 11:08 | -0.7 | 11.00 | |
| 11:09 | 1.8 | 17.26 | |
| 11:10 | 3.5 | 18.42 | |
| 11:11 | 3.7 | 18.44 | |
| 11:12 | 10.7 | 18.39 | |
| 11:13 | 26.5 | 18.46 | |
| 11:14 | 21.8 | 18.52 | |
| 11:15 | 3.1 | 18.50 | Begin Run 12 Rata |
| 11:16 | 2.4 | 18.54 | |
| 11:17 | 2.2 | 18.67 | |
| 11:18 | 3.1 | 18.60 | |
| 11:19 | 1.9 | 18.56 | |
| 11:20 | 1.1 | 18.64 | |
| 11:21 | 1.8 | 18.71 | |
| 11:22 | 1.6 | 18.60 | |
| 11:23 | 1.2 | 18.53 | |
| 11:24 | 1.2 | 18.60 | |
| 11:25 | 1.4 | 18.46 | |
| 11:26 | 1.5 | 18.50 | |
| 11:27 | 1.1 | 18.55 | |
| 11:28 | 1.1 | 18.57 | |
| 11:29 | 1.0 | 18.58 | |
| 11:30 | 1.4 | 18.54 | |



ED_005878_00000227-00080

**EEMC Computer Logger $CO/O_2$** **2/7-8/2017**
**Tucson Iron & Metal** **Contraband Incinerator**
**Tucson, Arizona**

| Time | CO ppmvd | $O_2$ %vd | Comments |
|---|---|---|---|
| 11:31 | 1.4 | 18.57 | |
| 11:32 | 1.2 | 18.56 | |
| 11:33 | 1.0 | 18.67 | |
| 11:34 | 0.9 | 18.87 | |
| 11:35 | 0.9 | 18.83 | End Run 12 Rata |
| 11:36 | 1.0 | 17.35 | |
| 11:37 | -0.1 | 0.16 | |
| 11:38 | 0.1 | 0.09 | |
| 11:39 | 20.8 | 0.07 | |
| 11:40 | 25.3 | 0.00 | |
| 11:41 | 8.6 | 8.65 | |
| 11:42 | -0.7 | 11.00 | |



ED_005878_00000227-00081

**Tucson Iron & Metal**
**Tucson, Arizona**
**Contraband Incinerator**

**CEM Data**
**2/7-8/2017**

**Data provided by client**

| Date | Run | Time | $O_2$ %vd | CO ppmvd | $CO_2$ %vd | CO ppmvd @7% $O_2$ | Afterburner Temp. °F | Dust Collector $D_p$, "$H_2O$ |
|---|---|---|---|---|---|---|---|---|
| 2/7/2017 | Run 1 | 10:13-10:33 | 18.7 | 4.9 | 1.2 | 38.0 | 1,489.9 | 1.4 |
| | Run 2 | 10:43-11:03 | 18.4 | 2.4 | 1.4 | 13.9 | 1,629.1 | 2.0 |
| | Run 3 | 11:13-11:33 | 18.5 | 2.1 | 1.3 | 12.5 | 1,610.1 | 2.2 |
| | Run 4 | 11:49-12:09 | 18.4 | 2.0 | 1.4 | 10.9 | 1,674.1 | 2.5 |
| | Run 5 | 12:19-12:39 | 18.6 | 0.5 | 1.2 | 3.1 | 1,626.2 | 2.5 |
| | Run 6 | 12:49-13:09 | 18.8 | 3.1 | 1.0 | 20 | 1,530.5 | 2.6 |
| | Run 7 | 13:22-13:42 | 18.6 | 1.5 | 1.2 | 9.2 | 1,601.5 | 2.9 |
| | Run 8 | 13:52-14:12 | 18.7 | 0.6 | 1.2 | 3.9 | 1,654.2 | 3.1 |
| | Run 9 | 14:23-14:43 | 18.6 | 0.6 | 1.3 | 3.7 | 1,711.9 | 3.6 |
| | Run 10 | 14:55-15:15 | 18.6 | 0.6 | 1.3 | 3.6 | 1,718.2 | 3.7 |
| 2/8/2017 | Run 11 | 10:40-11:00 | 18.6 | 0.5 | 1.2 | 3.1 | 1,605.6 | 2.5 |
| | Run 12 | 11:15-11:35 | 18.6 | 1.8 | 1.3 | 10.2 | 1,645.1 | 2.9 |



ED_005878_00000227-00082

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:09

PERIOD: 02/07/2017 10:13 - 02/07/2017 10:33

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 10:13 | 8 | 1 | 16.2 | 2.1 | 2.3 | 6.2 | 1692.1 | 1.3 | 56 | 0 |
| 02/07/2017 10:14 | 8 | 1 | 17.7 | 2.2 | 1.7 | 9.4 | 1634.1 | 1.3 | 50 | 0 |
| 02/07/2017 10:15 | 8 | 1 | 19.1 | 3.9 | 0.9 | 31.9 | 1582.6 | 1.3 | 51 | 0 |
| 02/07/2017 10:16 | 8 | 1 | 19.4 | 11.7 | 0.6 | 105.3 | 1542.6 | 1.3 | 50 | 0 |
| 02/07/2017 10:17 | 8 | 1 | 19.4 | 12.8 | 0.6 | 118.2 | 1511.1 | 1.3 | 50 | 0 |
| 02/07/2017 10:18 | 8 | 1 | 19.4 | 11.3 | 0.5 | 104.5 | 1492.5 | 1.3 | 46 | 0 |
| 02/07/2017 10:19 | 8 | 1 | 19.4 | 12.8 | 0.6 | 118.4 | 1479.7 | 1.3 | 46 | 0 |
| 02/07/2017 10:20 | 8 | 1 | 19.2 | 4.7 | 0.9 | 38.9 | 1461.2 | 1.3 | 49 | 0 |
| 02/07/2017 10:21 | 8 | 1 | 18.9 | 2.9 | 1.0 | 20.1 | 1444.3 | 1.4 | 51 | 0 |
| 02/07/2017 10:22 | 8 | 1 | 18.9 | 6.0 | 0.9 | 41.6 | 1432.4 | 1.4 | 51 | 0 |
| 02/07/2017 10:23 | 8 | 1 | 18.9 | 5.3 | 1.1 | 36.7 | 1423.8 | 1.4 | 51 | 0 |
| 02/07/2017 10:24 | 8 | 1 | 18.9 | 4.3 | 1.1 | 29.4 | 1418.7 | 1.4 | 54 | 0 |
| 02/07/2017 10:25 | 8 | 1 | 18.8 | 4.2 | 1.3 | 27.8 | 1417.8 | 1.4 | 59 | 0 |
| 02/07/2017 10:26 | 8 | 1 | 18.8 | 2.9 | 1.3 | 19.0 | 1418.3 | 1.4 | 62 | 0 |
| 02/07/2017 10:27 | 8 | 1 | 18.7 | 3.5 | 1.3 | 22.0 | 1421.6 | 1.4 | 64 | 0 |
| 02/07/2017 10:28 | 8 | 1 | 18.7 | 2.7 | 1.4 | 16.5 | 1428.0 | 1.4 | 66 | 0 |
| 02/07/2017 10:29 | 8 | 1 | 18.6 | 2.9 | 1.3 | 17.6 | 1440.7 | 1.4 | 71 | 0 |
| 02/07/2017 10:30 | 8 | 1 | 18.6 | 2.3 | 1.4 | 14.0 | 1465.7 | 1.5 | 72 | 0 |
| 02/07/2017 10:31 | 8 | 1 | 18.6 | 2.0 | 1.4 | 11.8 | 1494.7 | 1.5 | 73 | 0 |
| 02/07/2017 10:32 | 8 | 1 | 18.5 | 1.2 | 1.6 | 6.6 | 1524.4 | 1.6 | 75 | 0 |
| 02/07/2017 10:33 | 8 | 1 | 18.4 | 0.5 | 1.5 | 2.9 | 1561.6 | 1.6 | 75 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.7 | 4.9 | 1.2 | 38.0 | 1489.9 | 1.4 | 58 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 16.2 | 0.5 | 0.5 | 2.9 | 1417.8 | 1.3 | 46 | |
| MIN TIME | | | 10:13 | 10:33 | 10:18 | 10:33 | 10:25 | 10:13 | 10:18 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 19.4 | 12.8 | 2.3 | 118.4 | 1692.1 | 1.6 | 75 | |
| MAX TIME | | | 10:19 | 10:19 | 10:13 | 10:19 | 10:13 | 10:33 | 10:33 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:11

PERIOD: 02/07/2017 10:43 - 02/07/2017 11:03

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 10:43 | 8 | 1 | 18.3 | 1.2 | 1.6 | 6.4 | 1714.7 | 2.0 | 91 | 0 |
| 02/07/2017 10:44 | 8 | 1 | 18.3 | 1.0 | 1.5 | 5.5 | 1719.4 | 2.1 | 96 | 0 |
| 02/07/2017 10:45 | 8 | 1 | 18.3 | 1.6 | 1.5 | 8.4 | 1724.3 | 2.1 | 95 | 0 |
| 02/07/2017 10:46 | 8 | 1 | 18.3 | 1.3 | 1.5 | 7.2 | 1720.4 | 2.1 | 96 | 0 |
| 02/07/2017 10:47 | 8 | 1 | 18.3 | 1.4 | 1.5 | 7.6 | 1709.0 | 2.1 | 102 | 0 |
| 02/07/2017 10:48 | 8 | 1 | 18.3 | 1.5 | 1.5 | 8.1 | 1695.9 | 2.1 | 103 | 0 |
| 02/07/2017 10:49 | 8 | 1 | 18.3 | 1.5 | 1.5 | 8.1 | 1684.3 | 2.1 | 110 | 0 |
| 02/07/2017 10:50 | 8 | 1 | 18.3 | 1.4 | 1.4 | 7.7 | 1667.6 | 2.1 | 108 | 0 |
| 02/07/2017 10:51 | 8 | 1 | 18.3 | 1.9 | 1.5 | 10.4 | 1646.0 | 2.1 | 114 | 0 |
| 02/07/2017 10:52 | 8 | 1 | 18.4 | 2.9 | 1.3 | 15.9 | 1624.6 | 2.1 | 114 | 0 |
| 02/07/2017 10:53 | 8 | 1 | 18.5 | 3.8 | 1.3 | 21.8 | 1610.2 | 2.1 | 117 | 0 |
| 02/07/2017 10:54 | 8 | 1 | 18.5 | 2.7 | 1.3 | 15.7 | 1598.9 | 2.0 | 123 | 0 |
| 02/07/2017 10:55 | 8 | 1 | 18.5 | 3.3 | 1.4 | 19.1 | 1590.1 | 2.0 | 127 | 0 |
| 02/07/2017 10:56 | 8 | 1 | 18.5 | 3.5 | 1.3 | 20.2 | 1580.6 | 2.0 | 132 | 0 |
| 02/07/2017 10:57 | 8 | 1 | 18.5 | 2.7 | 1.3 | 15.9 | 1572.7 | 2.0 | 134 | 0 |
| 02/07/2017 10:58 | 8 | 1 | 18.5 | 3.4 | 1.3 | 19.4 | 1562.1 | 2.0 | 141 | 0 |
| 02/07/2017 10:59 | 8 | 1 | 18.5 | 2.7 | 1.3 | 15.8 | 1548.5 | 2.0 | 147 | 0 |
| 02/07/2017 11:00 | 8 | 1 | 18.6 | 2.9 | 1.1 | 17.6 | 1535.7 | 2.0 | 146 | 0 |
| 02/07/2017 11:01 | 8 | 1 | 18.6 | 3.2 | 1.2 | 19.6 | 1529.5 | 2.0 | 153 | 0 |
| 02/07/2017 11:02 | 8 | 1 | 18.6 | 4.6 | 1.2 | 28.0 | 1564.1 | 2.0 | 154 | 0 |
| 02/07/2017 11:03 | 8 | 1 | 18.5 | 2.3 | 1.4 | 13.6 | 1613.4 | 2.0 | 155 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.4 | 2.4 | 1.4 | 13.9 | 1629.1 | 2.0 | 122 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.3 | 1.0 | 1.1 | 5.5 | 1529.5 | 2.0 | 91 | |
| MIN TIME | | | 10:43 | 10:44 | 11:00 | 10:44 | 11:01 | 10:43 | 10:43 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.6 | 4.6 | 1.6 | 28.0 | 1724.3 | 2.1 | 155 | |
| MAX TIME | | | 11:02 | 11:02 | 10:43 | 11:02 | 10:45 | 10:53 | 11:03 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:12

PERIOD: 02/07/2017 11:13 - 02/07/2017 11:33

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 11:13 | 8 | 1 | 18.4 | 1.4 | 1.3 | 7.9 | 1592.0 | 2.2 | 171 | 0 |
| 02/07/2017 11:14 | 8 | 1 | 18.5 | 1.8 | 1.2 | 10.7 | 1588.9 | 2.2 | 170 | 0 |
| 02/07/2017 11:15 | 8 | 1 | 18.5 | 2.1 | 1.4 | 12.3 | 1588.3 | 2.2 | 179 | 0 |
| 02/07/2017 11:16 | 8 | 1 | 18.5 | 2.2 | 1.4 | 12.9 | 1614.0 | 2.2 | 176 | 0 |
| 02/07/2017 11:17 | 8 | 1 | 18.5 | 2.5 | 1.4 | 14.3 | 1660.2 | 2.2 | 179 | 0 |
| 02/07/2017 11:18 | 8 | 1 | 18.3 | 2.0 | 1.6 | 10.6 | 1685.8 | 2.3 | 184 | 0 |
| 02/07/2017 11:19 | 8 | 1 | 18.3 | 2.0 | 1.5 | 10.6 | 1689.1 | 2.2 | 182 | 0 |
| 02/07/2017 11:20 | 8 | 1 | 18.3 | 1.5 | 1.5 | 7.9 | 1684.5 | 2.2 | 183 | 0 |
| 02/07/2017 11:21 | 8 | 1 | 18.3 | 1.7 | 1.4 | 9.0 | 1673.0 | 2.3 | 179 | 0 |
| 02/07/2017 11:22 | 8 | 1 | 18.3 | 1.7 | 1.5 | 9.1 | 1658.7 | 2.3 | 187 | 0 |
| 02/07/2017 11:23 | 8 | 1 | 18.4 | 2.2 | 1.4 | 12.2 | 1643.6 | 2.3 | 183 | 0 |
| 02/07/2017 11:24 | 8 | 1 | 18.4 | 2.2 | 1.3 | 12.4 | 1624.7 | 2.2 | 178 | 0 |
| 02/07/2017 11:25 | 8 | 1 | 18.5 | 1.9 | 1.3 | 11.3 | 1605.0 | 2.2 | 182 | 0 |
| 02/07/2017 11:26 | 8 | 1 | 18.6 | 2.9 | 1.2 | 17.5 | 1588.2 | 2.2 | 186 | 0 |
| 02/07/2017 11:27 | 8 | 1 | 18.6 | 2.6 | 1.2 | 16.0 | 1577.2 | 2.2 | 182 | 0 |
| 02/07/2017 11:28 | 8 | 1 | 18.6 | 2.8 | 1.2 | 17.1 | 1567.9 | 2.2 | 189 | 0 |
| 02/07/2017 11:29 | 8 | 1 | 18.6 | 2.0 | 1.2 | 12.2 | 1559.3 | 2.2 | 185 | 0 |
| 02/07/2017 11:30 | 8 | 1 | 18.6 | 2.3 | 1.2 | 14.0 | 1554.2 | 2.2 | 185 | 0 |
| 02/07/2017 11:31 | 8 | 1 | 18.6 | 2.1 | 1.2 | 12.7 | 1552.8 | 2.2 | 193 | 0 |
| 02/07/2017 11:32 | 8 | 1 | 18.6 | 2.6 | 1.3 | 15.9 | 1551.4 | 2.2 | 195 | 0 |
| 02/07/2017 11:33 | 8 | 1 | 18.6 | 2.5 | 1.4 | 15.0 | 1552.4 | 2.2 | 203 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.5 | 2.1 | 1.3 | 12.5 | 1610.1 | 2.2 | 183 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.3 | 1.4 | 1.2 | 7.9 | 1551.4 | 2.2 | 170 | |
| MIN TIME | | | 11:18 | 11:13 | 11:14 | 11:13 | 11:32 | 11:13 | 11:14 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.6 | 2.9 | 1.6 | 17.5 | 1689.1 | 2.3 | 203 | |
| MAX TIME | | | 11:33 | 11:26 | 11:18 | 11:26 | 11:19 | 11:23 | 11:33 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:13

PERIOD: 02/07/2017 11:49 - 02/07/2017 12:09

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 11:49 | 8 | 1 | 18.4 | 2.2 | 1.4 | 12.4 | 1696.2 | 2.5 | 213 | 0 |
| 02/07/2017 11:50 | 8 | 1 | 18.4 | 1.7 | 1.5 | 9.6 | 1697.2 | 2.5 | 216 | 0 |
| 02/07/2017 11:51 | 8 | 1 | 18.4 | 2.4 | 1.5 | 13.6 | 1687.2 | 2.6 | 214 | 0 |
| 02/07/2017 11:52 | 8 | 1 | 18.4 | 1.9 | 1.4 | 10.3 | 1676.3 | 2.6 | 212 | 0 |
| 02/07/2017 11:53 | 8 | 1 | 18.4 | 2.3 | 1.4 | 12.6 | 1668.6 | 2.6 | 218 | 0 |
| 02/07/2017 11:54 | 8 | 1 | 18.4 | 2.1 | 1.4 | 11.6 | 1663.3 | 2.6 | 213 | 0 |
| 02/07/2017 11:55 | 8 | 1 | 18.4 | 3.2 | 1.3 | 17.7 | 1656.5 | 2.5 | 215 | 0 |
| 02/07/2017 11:56 | 8 | 1 | 18.4 | 2.1 | 1.3 | 11.8 | 1649.3 | 2.5 | 216 | 0 |
| 02/07/2017 11:57 | 8 | 1 | 18.4 | 2.4 | 1.4 | 13.2 | 1650.7 | 2.5 | 218 | 0 |
| 02/07/2017 11:58 | 8 | 1 | 18.4 | 2.1 | 1.4 | 11.9 | 1666.9 | 2.5 | 219 | 0 |
| 02/07/2017 11:59 | 8 | 1 | 18.4 | 1.1 | 1.5 | 6.2 | 1684.6 | 2.5 | 220 | 0 |
| 02/07/2017 12:00 | 8 | 1 | 18.4 | 1.2 | 1.5 | 6.4 | 1687.5 | 2.5 | 220 | 0 |
| 02/07/2017 12:01 | 8 | 1 | 18.4 | 2.1 | 1.5 | 11.7 | 1686.9 | 2.5 | 221 | 0 |
| 02/07/2017 12:02 | 8 | 1 | 18.4 | 1.8 | 1.4 | 10.0 | 1687.6 | 2.5 | 225 | 0 |
| 02/07/2017 12:03 | 8 | 1 | 18.4 | 1.8 | 1.5 | 10.1 | 1689.2 | 2.5 | 228 | 0 |
| 02/07/2017 12:04 | 8 | 1 | 18.4 | 0.8 | 1.4 | 4.6 | 1691.5 | 2.5 | 226 | 0 |
| 02/07/2017 12:05 | 8 | 1 | 18.4 | 2.2 | 1.4 | 12.2 | 1687.0 | 2.5 | 229 | 0 |
| 02/07/2017 12:06 | 8 | 1 | 18.4-20 | 4.0-20 | 1.5-20 | 18.9-20 | 1675.6 | 2.5 | 244 | 0 |
| 02/07/2017 12:07 | 8 | 1 | 18.4-20 | 4.0-20 | 1.5-20 | 18.9-20 | 1661.8 | 2.5 | 243 | 0 |
| 02/07/2017 12:08 | 8 | 1 | 18.4-20 | 4.0-20 | 1.5-20 | 18.9-20 | 1651.1 | 2.5 | 244 | 0 |
| 02/07/2017 12:09 | 8 | 1 | 18.4-20 | 4.0-20 | 1.5-20 | 18.9-20 | 1641.4 | 2.5 | 244 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.4 | 2.0 | 1.4 | 10.9 | 1674.1 | 2.5 | 224 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.4 | 0.8 | 1.3 | 4.6 | 1641.4 | 2.5 | 212 | |
| MIN TIME | | | 11:49 | 12:04 | 11:55 | 12:04 | 12:09 | 11:49 | 11:52 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.4 | 3.2 | 1.5 | 17.7 | 1697.2 | 2.6 | 244 | |
| MAX TIME | | | 12:05 | 11:55 | 12:03 | 11:55 | 11:50 | 11:54 | 12:09 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:14

PERIOD: 02/07/2017 12:19 - 02/07/2017 12:39

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 12:19 | 8 | 1 | 18.7 | 0.3 | 1.3 | 1.7 | 1600.7 | 2.5 | 1355 | 0 |
| 02/07/2017 12:20 | 8 | 1 | 18.5 | 0.8 | 1.3 | 4.7 | 1610.0 | 2.5 | 921 | 0 |
| 02/07/2017 12:21 | 8 | 1 | 18.5 | 0.8 | 1.4 | 4.7 | 1623.7 | 2.5 | 806 | 0 |
| 02/07/2017 12:22 | 8 | 1 | 18.5 | 0.1 | 1.3 | 0.6 | 1638.5 | 2.5 | 1381 | 0 |
| 02/07/2017 12:23 | 8 | 1 | 18.5 | 1.0 | 1.4 | 5.5 | 1647.5 | 2.5 | 844 | 0 |
| 02/07/2017 12:24 | 8 | 1 | 18.5 | 0.7 | 1.3 | 3.9 | 1654.6 | 2.6 | 890 | 0 |
| 02/07/2017 12:25 | 8 | 1 | 18.5 | 0.6 | 1.3 | 3.2 | 1661.2 | 2.5 | 697 | 0 |
| 02/07/2017 12:26 | 8 | 1 | 18.5 | 0.2 | 1.3 | 1.1 | 1665.9 | 2.5 | 723 | 0 |
| 02/07/2017 12:27 | 8 | 1 | 18.5 | 0.5 | 1.4 | 2.9 | 1661.8 | 2.5 | 968 | 0 |
| 02/07/2017 12:28 | 8 | 1 | 18.5 | 0.5 | 1.3 | 2.8 | 1652.9 | 2.5 | 813 | 0 |
| 02/07/2017 12:29 | 8 | 1 | 18.5 | 0.9 | 1.3 | 5.1 | 1641.5 | 2.5 | 614 | 0 |
| 02/07/2017 12:30 | 8 | 1 | 18.6 | 0.6 | 1.1 | 3.4 | 1630.9 | 2.5 | 882 | 0 |
| 02/07/2017 12:31 | 8 | 1 | 18.6 | 0.2 | 1.1 | 1.3 | 1621.0 | 2.5 | 503 | 0 |
| 02/07/2017 12:32 | 8 | 1 | 18.7 | 0.7 | 1.1 | 4.2 | 1613.1 | 2.5 | 647 | 0 |
| 02/07/2017 12:33 | 8 | 1 | 18.7 | 0.8 | 1.1 | 5.3 | 1608.7 | 2.5 | 575 | 0 |
| 02/07/2017 12:34 | 8 | 1 | 18.7 | 0.2 | 1.1 | 1.4 | 1605.8 | 2.5 | 767 | 0 |
| 02/07/2017 12:35 | 8 | 1 | 18.7 | 0.6 | 1.1 | 4.0 | 1606.8 | 2.5 | 542 | 0 |
| 02/07/2017 12:36 | 8 | 1 | 18.7 | 0.7 | 1.3 | 4.4 | 1605.7 | 2.5 | 652 | 0 |
| 02/07/2017 12:37 | 8 | 1 | 18.7 | 0.2 | 1.3 | 1.5 | 1602.5 | 2.5 | 422 | 0 |
| 02/07/2017 12:38 | 8 | 1 | 18.7 | 0.0 | 1.1 | 0.0 | 1599.4 | 2.5 | 456 | 0 |
| 02/07/2017 12:39 | 8 | 1 | 18.7 | 0.6 | 1.1 | 3.7 | 1597.5 | 2.5 | 508 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.6 | 0.5 | 1.2 | 3.1 | 1626.2 | 2.5 | 760 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.5 | 0.0 | 1.1 | 0.0 | 1597.5 | 2.5 | 422 | |
| MIN TIME | | | 12:20 | 12:38 | 12:30 | 12:38 | 12:39 | 12:19 | 12:37 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.7 | 1.0 | 1.4 | 5.5 | 1665.9 | 2.6 | 1381 | |
| MAX TIME | | | 12:39 | 12:23 | 12:27 | 12:23 | 12:26 | 12:24 | 12:22 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:15

PERIOD: 02/07/2017 12:49 - 02/07/2017 13:09

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 12:49 | 8 | 1 | 18.7 | 1.1 | 1.1 | 6.8 | 1578.3 | 2.5 | 426 | 0 |
| 02/07/2017 12:50 | 8 | 1 | 18.7 | 0.5 | 1.0 | 3.3 | 1573.3 | 2.5 | 307 | 0 |
| 02/07/2017 12:51 | 8 | 1 | 18.8 | 0.8 | 1.0 | 5.1 | 1568.3 | 2.5 | 194 | 0 |
| 02/07/2017 12:52 | 8 | 1 | 18.9 | 0.6 | 0.9 | 4.0 | 1563.2 | 2.5 | 230 | 0 |
| 02/07/2017 12:53 | 8 | 1 | 18.9 | 0.8 | 1.0 | 5.9 | 1557.5 | 2.5 | 345 | 0 |
| 02/07/2017 12:54 | 8 | 1 | 18.9 | 0.6 | 0.9 | 3.9 | 1548.7 | 2.5 | 38 | 0 |
| 02/07/2017 12:55 | 8 | 1 | 18.9 | 0.9 | 0.9 | 6.4 | 1539.1 | 2.6 | 194 | 0 |
| 02/07/2017 12:56 | 8 | 1 | 18.9 | 1.7 | 0.9 | 12.0 | 1529.7 | 2.5 | 38 | 0 |
| 02/07/2017 12:57 | 8 | 1 | 18.9 | 1.8 | 1.0 | 12.5 | 1521.9 | 2.6 | 192 | 0 |
| 02/07/2017 12:58 | 8 | 1 | 18.9 | 1.6 | 1.0 | 11.3 | 1515.6 | 2.6 | 77 | 0 |
| 02/07/2017 12:59 | 8 | 1 | 18.9 | 2.6 | 1.0 | 17.8 | 1511.8 | 2.6 | 77 | 0 |
| 02/07/2017 13:00 | 8 | 1 | 18.9 | 1.7 | 1.1 | 11.5 | 1508.3 | 2.5 | 77 | 0 |
| 02/07/2017 13:01 | 8 | 1 | 18.9 | 2.9 | 1.1 | 20.3 | 1505.4 | 2.6 | 116 | 0 |
| 02/07/2017 13:02 | 8 | 1 | 18.8 | 3.7 | 1.0 | 24.5 | 1504.0 | 2.6 | 38 | 0 |
| 02/07/2017 13:03 | 8 | 1 | 18.8 | 3.6 | 1.1 | 24.0 | 1503.4 | 2.6 | 116 | 0 |
| 02/07/2017 13:04 | 8 | 1 | 18.8 | 5.2 | 1.1 | 34.3 | 1504.4 | 2.6 | 38 | 0 |
| 02/07/2017 13:05 | 8 | 1 | 18.8 | 5.0 | 1.2 | 32.9 | 1508.6 | 2.7 | 271 | 0 |
| 02/07/2017 13:06 | 8 | 1 | 18.7 | 6.9 | 1.1 | 43.4 | 1512.7 | 2.7 | 155 | 0 |
| 02/07/2017 13:07 | 8 | 1 | 18.7 | 7.2 | 1.1 | 45.4 | 1518.7 | 2.6 | 192 | 0 |
| 02/07/2017 13:08 | 8 | 1 | 18.7 | 7.1 | 1.3 | 44.7 | 1527.1 | 2.6 | 230 | 0 |
| 02/07/2017 13:09 | 8 | 1 | 18.7 | 7.8 | 1.2 | 49.4 | 1540.5 | 2.7 | 387 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.8 | 3.1 | 1.0 | 20.0 | 1530.5 | 2.6 | 178 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.7 | 0.5 | 0.9 | 3.3 | 1503.4 | 2.5 | 38 | |
| MIN TIME | | | 12:49 | 12:50 | 12:52 | 12:50 | 13:03 | 12:49 | 12:54 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.9 | 7.8 | 1.3 | 49.4 | 1578.3 | 2.7 | 426 | |
| MAX TIME | | | 13:01 | 13:09 | 13:08 | 13:09 | 12:49 | 13:09 | 12:49 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:16

PERIOD: 02/07/2017 13:22 - 02/07/2017 13:42

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 13:22 | 8 | 1 | 18.6 | 2.7 | 1.2 | 16.4 | 1605.7 | 2.8 | 39 | 0 |
| 02/07/2017 13:23 | 8 | 1 | 18.6 | 3.7 | 1.2 | 22.4 | 1598.6 | 2.8 | 39 | 0 |
| 02/07/2017 13:24 | 8 | 1 | 18.6 | 2.4 | 1.1 | 14.6 | 1592.1 | 2.9 | 39 | 0 |
| 02/07/2017 13:25 | 8 | 1 | 18.7 | 1.7 | 1.1 | 11.0 | 1585.9 | 2.9 | 0 | 0 |
| 02/07/2017 13:26 | 8 | 1 | 18.7 | 0.6 | 1.0 | 3.8 | 1581.1 | 2.9 | 0 | 0 |
| 02/07/2017 13:27 | 8 | 1 | 18.7 | 1.3 | 1.1 | 8.0 | 1577.6 | 2.8 | 0 | 0 |
| 02/07/2017 13:28 | 8 | 1 | 18.7 | 1.1 | 1.1 | 7.2 | 1575.6 | 2.9 | 0 | 0 |
| 02/07/2017 13:29 | 8 | 1 | 18.7 | 1.3 | 1.1 | 8.5 | 1576.1 | 2.9 | 39 | 0 |
| 02/07/2017 13:30 | 8 | 1 | 18.7 | 1.5 | 1.2 | 9.4 | 1577.1 | 2.9 | 0 | 0 |
| 02/07/2017 13:31 | 8 | 1 | 18.7 | 1.5 | 1.2 | 9.7 | 1579.1 | 2.9 | 0 | 0 |
| 02/07/2017 13:32 | 8 | 1 | 18.7 | 1.1 | 1.2 | 7.1 | 1584.7 | 2.9 | 0 | 0 |
| 02/07/2017 13:33 | 8 | 1 | 18.6 | 2.0 | 1.2 | 12.2 | 1593.7 | 2.9 | 0 | 0 |
| 02/07/2017 13:34 | 8 | 1 | 18.6 | 1.7 | 1.3 | 10.4 | 1600.1 | 2.9 | 39 | 0 |
| 02/07/2017 13:35 | 8 | 1 | 18.6 | 1.1 | 1.2 | 6.4 | 1610.1 | 2.9 | 0 | 0 |
| 02/07/2017 13:36 | 8 | 1 | 18.6 | 1.3 | 1.3 | 7.8 | 1616.4 | 2.9 | 0 | 0 |
| 02/07/2017 13:37 | 8 | 1 | 18.5 | 1.1 | 1.3 | 6.6 | 1622.2 | 2.9 | 0 | 0 |
| 02/07/2017 13:38 | 8 | 1 | 18.5 | 1.2 | 1.3 | 7.2 | 1626.6 | 3.0 | 0 | 0 |
| 02/07/2017 13:39 | 8 | 1 | 18.5 | 1.2 | 1.3 | 7.0 | 1628.2 | 2.9 | 0 | 0 |
| 02/07/2017 13:40 | 8 | 1 | 18.6 | 1.1 | 1.2 | 6.7 | 1632.1 | 3.0 | 0 | 0 |
| 02/07/2017 13:41 | 8 | 1 | 18.6 | 0.8 | 1.4 | 4.9 | 1633.2 | 3.0 | 0 | 0 |
| 02/07/2017 13:42 | 8 | 1 | 18.6 | 1.1 | 1.3 | 6.5 | 1635.3 | 3.0 | 0 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.6 | 1.5 | 1.2 | 9.2 | 1601.5 | 2.9 | 9 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.5 | 0.6 | 1.0 | 3.8 | 1575.6 | 2.8 | 0 | |
| MIN TIME | | | 13:37 | 13:26 | 13:26 | 13:26 | 13:28 | 13:22 | 13:25 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.7 | 3.7 | 1.4 | 22.4 | 1635.3 | 3.0 | 39 | |
| MAX TIME | | | 13:32 | 13:23 | 13:41 | 13:23 | 13:42 | 13:42 | 13:34 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:16

PERIOD: 02/07/2017 13:52 - 02/07/2017 14:12

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 13:52 | 8 | 1 | 18.7 | 1.6 | 1.2 | 9.9 | 1634.0 | 3.0 | 0 | 0 |
| 02/07/2017 13:53 | 8 | 1 | 18.7 | 0.3 | 1.1 | 2.0 | 1633.5 | 3.0 | 0 | 0 |
| 02/07/2017 13:54 | 8 | 1 | 18.7 | 0.7 | 1.1 | 4.3 | 1632.5 | 3.0 | 115 | 0 |
| 02/07/2017 13:55 | 8 | 1 | 18.7 | 0.0 | 1.1 | 0.1 | 1632.3 | 3.0 | 0 | 0 |
| 02/07/2017 13:56 | 8 | 1 | 18.7 | 0.5 | 1.1 | 3.0 | 1633.4 | 3.0 | 155 | 0 |
| 02/07/2017 13:57 | 8 | 1 | 18.7 | 0.4 | 1.2 | 2.3 | 1633.5 | 3.0 | 0 | 0 |
| 02/07/2017 13:58 | 8 | 1 | 18.7 | 0.5 | 1.1 | 2.9 | 1633.5 | 3.0 | 38 | 0 |
| 02/07/2017 13:59 | 8 | 1 | 18.7 | 0.7 | 1.1 | 4.6 | 1634.4 | 3.0 | 38 | 0 |
| 02/07/2017 14:00 | 8 | 1 | 18.7 | 0.5 | 1.2 | 3.2 | 1636.5 | 3.0 | 39 | 0 |
| 02/07/2017 14:01 | 8 | 1 | 18.7 | 1.3 | 1.2 | 8.2 | 1638.1 | 3.0 | 194 | 0 |
| 02/07/2017 14:02 | 8 | 1 | 18.7 | 0.9 | 1.1 | 5.4 | 1639.6 | 3.0 | 38 | 0 |
| 02/07/2017 14:03 | 8 | 1 | 18.7 | 0.6 | 1.2 | 3.8 | 1641.9 | 3.0 | 39 | 0 |
| 02/07/2017 14:04 | 8 | 1 | 18.7 | 0.4 | 1.1 | 2.5 | 1646.5 | 3.1 | 0 | 0 |
| 02/07/2017 14:05 | 8 | 1 | 18.7 | 0.6 | 1.3 | 3.7 | 1650.8 | 3.1 | 192 | 0 |
| 02/07/2017 14:06 | 8 | 1 | 18.7 | 0.5 | 1.2 | 3.2 | 1658.3 | 3.1 | 39 | 0 |
| 02/07/2017 14:07 | 8 | 1 | 18.6 | 0.7 | 1.3 | 4.1 | 1669.1 | 3.1 | 39 | 0 |
| 02/07/2017 14:08 | 8 | 1 | 18.6 | 1.2 | 1.3 | 7.0 | 1683.9 | 3.1 | 0 | 0 |
| 02/07/2017 14:09 | 8 | 1 | 18.5 | 0.6 | 1.3 | 3.3 | 1692.7 | 3.1 | 269 | 0 |
| 02/07/2017 14:10 | 8 | 1 | 18.5 | 0.1 | 1.3 | 0.7 | 1702.5 | 3.1 | 1 | 0 |
| 02/07/2017 14:11 | 8 | 1 | 18.5 | 1.2 | 1.4 | 6.7 | 1705.1 | 3.2 | 0 | 0 |
| 02/07/2017 14:12 | 8 | 1 | 18.5 | 0.3 | 1.3 | 2.0 | 1706.9 | 3.2 | 192 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.7 | 0.6 | 1.2 | 3.9 | 1654.2 | 3.1 | 66 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.5 | 0.0 | 1.1 | 0.1 | 1632.3 | 3.0 | 0 | |
| MIN TIME | | | 14:09 | 13:55 | 13:53 | 13:55 | 13:55 | 13:52 | 13:52 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.7 | 1.6 | 1.4 | 9.9 | 1706.9 | 3.2 | 269 | |
| MAX TIME | | | 14:06 | 13:52 | 14:11 | 13:52 | 14:12 | 14:12 | 14:09 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:18

PERIOD: 02/07/2017 14:23 - 02/07/2017 14:43

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 14:23 | 8 | 1 | 18.6 | 0.5 | 1.3 | 2.9 | 1709.0 | 3.4 | 0 | 0 |
| 02/07/2017 14:24 | 8 | 1 | 18.6 | 0.6 | 1.2 | 3.5 | 1709.1 | 3.4 | 39 | 0 |
| 02/07/2017 14:25 | 8 | 1 | 18.6 | 0.5 | 1.3 | 3.2 | 1709.0 | 3.4 | 0 | 0 |
| 02/07/2017 14:26 | 8 | 1 | 18.6 | 1.1 | 1.3 | 6.5 | 1708.8 | 3.5 | 77 | 0 |
| 02/07/2017 14:27 | 8 | 1 | 18.6 | 0.4 | 1.3 | 2.5 | 1708.4 | 3.5 | 0 | 0 |
| 02/07/2017 14:28 | 8 | 1 | 18.6 | 0.3 | 1.3 | 1.9 | 1709.1 | 3.5 | 39 | 0 |
| 02/07/2017 14:29 | 8 | 1 | 18.6 | 1.2 | 1.3 | 7.3 | 1711.8 | 3.4 | 0 | 0 |
| 02/07/2017 14:30 | 8 | 1 | 18.6 | 0.7 | 1.3 | 4.1 | 1715.4 | 3.5 | 0 | 0 |
| 02/07/2017 14:31 | 8 | 1 | 18.6 | 0.7 | 1.4 | 4.4 | 1715.3 | 3.5 | 0 | 0 |
| 02/07/2017 14:32 | 8 | 1 | 18.6 | 1.1 | 1.3 | 6.4 | 1715.7 | 3.6 | 0 | 0 |
| 02/07/2017 14:33 | 8 | 1 | 18.6 | 0.3 | 1.3 | 1.5 | 1712.5 | 3.6 | 0 | 0 |
| 02/07/2017 14:34 | 8 | 1 | 18.6 | 1.0 | 1.3 | 6.0 | 1710.2 | 3.6 | 0 | 0 |
| 02/07/2017 14:35 | 8 | 1 | 18.6 | 0.2 | 1.4 | 1.4 | 1708.9 | 3.6 | 0 | 0 |
| 02/07/2017 14:36 | 8 | 1 | 18.6 | 0.5 | 1.3 | 3.1 | 1709.1 | 3.6 | 0 | 0 |
| 02/07/2017 14:37 | 8 | 1 | 18.6 | 0.8 | 1.3 | 4.7 | 1709.0 | 3.6 | 0 | 0 |
| 02/07/2017 14:38 | 8 | 1 | 18.6 | 0.3 | 1.2 | 1.8 | 1709.2 | 3.7 | 0 | 0 |
| 02/07/2017 14:39 | 8 | 1 | 18.6 | 0.1 | 1.3 | 0.5 | 1711.3 | 3.6 | 0 | 0 |
| 02/07/2017 14:40 | 8 | 1 | 18.6 | 0.9 | 1.3 | 5.2 | 1715.3 | 3.6 | 0 | 0 |
| 02/07/2017 14:41 | 8 | 1 | 18.5 | 0.3 | 1.4 | 1.6 | 1717.7 | 3.7 | 0 | 0 |
| 02/07/2017 14:42 | 8 | 1 | 18.5 | 0.4 | 1.4 | 2.2 | 1717.2 | 3.7 | 0 | 0 |
| 02/07/2017 14:43 | 8 | 1 | 18.5 | 1.1 | 1.3 | 6.3 | 1717.1 | 3.7 | 0 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.6 | 0.6 | 1.3 | 3.7 | 1711.9 | 3.6 | 7 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.5 | 0.1 | 1.2 | 0.5 | 1708.4 | 3.4 | 0 | |
| MIN TIME | | | 14:41 | 14:39 | 14:24 | 14:39 | 14:27 | 14:23 | 14:23 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.6 | 1.2 | 1.4 | 7.3 | 1717.7 | 3.7 | 77 | |
| MAX TIME | | | 14:40 | 14:29 | 14:42 | 14:29 | 14:41 | 14:43 | 14:26 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 09:19

PERIOD: 02/07/2017 14:55 - 02/07/2017 15:15

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/07/2017 14:55 | 8 | 1 | 18.7 | 0.3 | 1.2 | 1.9 | 1710.5 | 3.7 | 77 | 0 |
| 02/07/2017 14:56 | 8 | 1 | 18.7 | 0.6 | 1.1 | 3.8 | 1712.1 | 3.7 | 77 | 0 |
| 02/07/2017 14:57 | 8 | 1 | 18.7 | 0.4 | 1.3 | 2.4 | 1714.8 | 3.7 | 192 | 0 |
| 02/07/2017 14:58 | 8 | 1 | 18.7 | 0.8 | 1.3 | 5.1 | 1718.7 | 3.7 | 232 | 0 |
| 02/07/2017 14:59 | 8 | 1 | 18.6 | 0.6 | 1.3 | 3.9 | 1721.8 | 3.8 | 418 | 0 |
| 02/07/2017 15:00 | 8 | 1 | 18.6 | 0.5 | 1.3 | 2.9 | 1723.1 | 3.8 | 194 | 0 |
| 02/07/2017 15:01 | 8 | 1 | 18.6 | 0.4 | 1.3 | 2.3 | 1721.5 | 3.8 | 39 | 0 |
| 02/07/2017 15:02 | 8 | 1 | 18.6 | 0.3 | 1.3 | 1.8 | 1717.1 | 3.8 | 155 | 0 |
| 02/07/2017 15:03 | 8 | 1 | 18.6 | 1.2 | 1.3 | 7.0 | 1717.2 | 3.8 | 116 | 0 |
| 02/07/2017 15:04 | 8 | 1 | 18.6 | 0.4 | 1.2 | 2.3 | 1716.0 | 3.7 | 0 | 0 |
| 02/07/2017 15:05 | 8 | 1 | 18.6 | 1.2 | 1.2 | 7.2 | 1715.0 | 3.8 | 78 | 0 |
| 02/07/2017 15:06 | 8 | 1 | 18.6 | 0.5 | 1.3 | 3.1 | 1714.5 | 3.7 | 39 | 0 |
| 02/07/2017 15:07 | 8 | 1 | 18.6 | 0.8 | 1.2 | 4.6 | 1715.4 | 3.7 | 39 | 0 |
| 02/07/2017 15:08 | 8 | 1 | 18.6 | 1.2 | 1.3 | 7.0 | 1716.9 | 3.7 | 39 | 0 |
| 02/07/2017 15:09 | 8 | 1 | 18.6 | 0.5 | 1.2 | 3.2 | 1718.0 | 3.7 | 0 | 0 |
| 02/07/2017 15:10 | 8 | 1 | 18.6 | 0.2 | 1.2 | 1.4 | 1721.0 | 3.7 | 38 | 0 |
| 02/07/2017 15:11 | 8 | 1 | 18.6 | 0.9 | 1.3 | 5.4 | 1721.7 | 3.7 | 116 | 0 |
| 02/07/2017 15:12 | 8 | 1 | 18.6 | 0.5 | 1.4 | 3.0 | 1723.1 | 3.7 | 0 | 0 |
| 02/07/2017 15:13 | 8 | 1 | 18.5 | 0.2 | 1.4 | 1.1 | 1721.5 | 3.7 | 0 | 0 |
| 02/07/2017 15:14 | 8 | 1 | 18.5 | 0.6 | 1.3 | 3.6 | 1723.1 | 3.7 | 39 | 0 |
| 02/07/2017 15:15 | 8 | 1 | 18.5 | 0.3 | 1.5 | 1.8 | 1719.6 | 3.7 | 194 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.6 | 0.6 | 1.3 | 3.6 | 1718.2 | 3.7 | 99 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.5 | 0.2 | 1.1 | 1.1 | 1710.5 | 3.7 | 0 | |
| MIN TIME | | | 15:13 | 15:10 | 14:56 | 15:13 | 14:55 | 14:55 | 15:04 | |
| MIN DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |
| MAX VALUE | | | 18.7 | 1.2 | 1.5 | 7.2 | 1723.1 | 3.8 | 418 | |
| MAX TIME | | | 14:58 | 15:08 | 15:15 | 15:05 | 15:14 | 15:05 | 14:59 | |
| MAX DATE | | | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | 02/07/2017 | |

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 11:50

PERIOD: 02/08/2017 10:40 - 02/08/2017 11:00

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/08/2017 10:40 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1599.5 | 2.4 | 159 | 0 |
| 02/08/2017 10:41 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1599.4 | 2.3 | 156 | 0 |
| 02/08/2017 10:42 | 8 | 1 | 18.6 | 0.0 | 1.2 | 0.0 | 1603.6 | 2.4 | 161 | 0 |
| 02/08/2017 10:43 | 8 | 1 | 18.6 | 0.0 | 1.2 | 0.0 | 1614.3 | 2.4 | 161 | 0 |
| 02/08/2017 10:44 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1621.3 | 2.4 | 160 | 0 |
| 02/08/2017 10:45 | 8 | 1 | 18.5 | 6.2 | 1.4 | 35.7 | 1623.9 | 2.5 | 163 | 0 |
| 02/08/2017 10:46 | 8 | 1 | 18.5 | 5.1 | 1.3 | 29.4 | 1627.6 | 2.5 | 160 | 0 |
| 02/08/2017 10:47 | 8 | 1 | 18.5 | 0.0 | 1.3 | 0.2 | 1630.3 | 2.5 | 164 | 0 |
| 02/08/2017 10:48 | 8 | 1 | 18.5 | 0.0 | 1.3 | 0.0 | 1632.7 | 2.5 | 165 | 0 |
| 02/08/2017 10:49 | 8 | 1 | 18.5 | 0.0 | 1.3 | 0.0 | 1627.5 | 2.5 | 160 | 0 |
| 02/08/2017 10:50 | 8 | 1 | 18.6 | 0.0 | 1.1 | 0.0 | 1620.0 | 2.5 | 161 | 0 |
| 02/08/2017 10:51 | 8 | 1 | 18.7 | 0.0 | 1.1 | 0.0 | 1613.4 | 2.6 | 160 | 0 |
| 02/08/2017 10:52 | 8 | 1 | 18.7 | 0.0 | 1.1 | 0.0 | 1608.1 | 2.6 | 163 | 0 |
| 02/08/2017 10:53 | 8 | 1 | 18.7 | 0.0 | 1.2 | 0.0 | 1602.7 | 2.6 | 165 | 0 |
| 02/08/2017 10:54 | 8 | 1 | 18.7 | 0.0 | 1.1 | 0.0 | 1596.9 | 2.5 | 161 | 0 |
| 02/08/2017 10:55 | 8 | 1 | 18.7 | 0.0 | 1.0 | 0.0 | 1590.1 | 2.6 | 161 | 0 |
| 02/08/2017 10:56 | 8 | 1 | 18.8 | 0.0 | 1.0 | 0.0 | 1584.7 | 2.6 | 161 | 0 |
| 02/08/2017 10:57 | 8 | 1 | 18.8 | 0.0 | 1.1 | 0.0 | 1581.8 | 2.6 | 162 | 0 |
| 02/08/2017 10:58 | 8 | 1 | 18.8 | 0.0 | 1.2 | 0.0 | 1580.2 | 2.6 | 162 | 0 |
| 02/08/2017 10:59 | 8 | 1 | 18.8 | 0.0 | 1.2 | 0.0 | 1579.3 | 2.6 | 161 | 0 |
| 02/08/2017 11:00 | 8 | 1 | 18.7 | 0.0 | 1.2 | 0.0 | 1581.3 | 2.6 | 166 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.6 | 0.5 | 1.2 | 3.1 | 1605.6 | 2.5 | 162 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.5 | 0.0 | 1.0 | 0.0 | 1579.3 | 2.3 | 156 | |
| MIN TIME | | | 10:45 | 10:40 | 10:55 | 10:40 | 10:59 | 10:41 | 10:41 | |
| MIN DATE | | | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | |
| MAX VALUE | | | 18.8 | 6.2 | 1.4 | 35.7 | 1632.7 | 2.6 | 166 | |
| MAX TIME | | | 10:59 | 10:45 | 10:45 | 10:45 | 10:48 | 11:00 | 11:00 | |
| MAX DATE | | | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | |

## MINUTE EMISSIONS

COMPANY: AMCEP
LOCATION: Tucson AZ.
SOURCE: Contraband Incinerator
CEMS ID: 1234567
DATE CREATED: 02/08/2017 @ 11:52

PERIOD: 02/08/2017 11:15 - 02/08/2017 11:35

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/08/2017 11:15 | 8 | 1 | 18.6 | 0.9 | 1.4 | 5.2 | 1640.1 | 2.8 | 165 | 0 |
| 02/08/2017 11:16 | 8 | 1 | 18.5 | 12.1 | 1.4 | 70.0 | 1643.0 | 2.8 | 163 | 0 |
| 02/08/2017 11:17 | 8 | 1 | 18.5 | 15.5 | 1.4 | 89.5 | 1644.1 | 2.8 | 165 | 0 |
| 02/08/2017 11:18 | 8 | 1 | 18.5 | 7.3 | 1.4 | 42.0 | 1645.5 | 2.8 | 165 | 0 |
| 02/08/2017 11:19 | 8 | 1 | 18.5 | 0.6 | 1.3 | 3.7 | 1641.7 | 2.8 | 164 | 0 |
| 02/08/2017 11:20 | 8 | 1 | 18.5 | 0.1 | 1.3 | 0.4 | 1634.3 | 2.8 | 167 | 0 |
| 02/08/2017 11:21 | 8 | 1 | 18.6 | 0.0 | 1.2 | 0.0 | 1631.3 | 2.8 | 163 | 0 |
| 02/08/2017 11:22 | 8 | 1 | 18.6 | 0.2 | 1.3 | 1.2 | 1631.4 | 2.8 | 167 | 0 |
| 02/08/2017 11:23 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1628.5 | 2.8 | 164 | 0 |
| 02/08/2017 11:24 | 8 | 1 | 18.6 | 0.0 | 1.2 | 0.0 | 1625.7 | 2.8 | 168 | 0 |
| 02/08/2017 11:25 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1629.2 | 2.9 | 167 | 0 |
| 02/08/2017 11:26 | 8 | 1 | 18.6 | 0.2 | 1.3 | 1.4 | 1632.1 | 2.9 | 169 | 0 |
| 02/08/2017 11:27 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1635.6 | 2.8 | 168 | 0 |
| 02/08/2017 11:28 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1645.6 | 2.8 | 168 | 0 |
| 02/08/2017 11:29 | 8 | 1 | 18.6 | 0.0 | 1.4 | 0.0 | 1651.7 | 2.9 | 168 | 0 |
| 02/08/2017 11:30 | 8 | 1 | 18.6 | 0.0 | 1.4 | 0.0 | 1656.8 | 2.9 | 170 | 0 |
| 02/08/2017 11:31 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1659.3 | 2.9 | 168 | 0 |
| 02/08/2017 11:32 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1664.1 | 2.9 | 170 | 0 |
| 02/08/2017 11:33 | 8 | 1 | 18.6 | 0.0 | 1.4 | 0.0 | 1666.6 | 2.9 | 169 | 0 |
| 02/08/2017 11:34 | 8 | 1 | 18.6 | 0.0 | 1.2 | 0.0 | 1669.8 | 2.9 | 171 | 0 |
| 02/08/2017 11:35 | 8 | 1 | 18.6 | 0.0 | 1.3 | 0.0 | 1670.5 | 3.1 | 174 | 0 |

| DATE-TIME | PROCESS CODE | SOURCE ON (MINS) | DRY O2 (%) | DRY CO (PPM) | CO2 (%) | CO @ 7% (PPM) | AFTERBURNER TEMPERATURE (DEG F) | DUST COLLECTOR DP (IN H2O) | MOISTURE (PPM) | DAS DOWN (MINS) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE | | | 18.6 | 1.8 | 1.3 | 10.2 | 1645.1 | 2.9 | 167 | |
| TOTAL | | 21 | | | | | | | | 0 |
| MIN VALUE | | | 18.5 | 0.0 | 1.2 | 0.0 | 1625.7 | 2.8 | 163 | |
| MIN TIME | | | 11:16 | 11:21 | 11:21 | 11:21 | 11:24 | 11:15 | 11:16 | |
| MIN DATE | | | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | |
| MAX VALUE | | | 18.6 | 15.5 | 1.4 | 89.5 | 1670.5 | 3.1 | 174 | |
| MAX TIME | | | 11:35 | 11:17 | 11:33 | 11:17 | 11:35 | 11:35 | 11:35 | |
| MAX DATE | | | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | 02/08/2017 | |

# DAILY OPERATORS LOG FOR INCINERATOR

DATE: 2/7/17 OPERATOR FULL NAME: Dan Butwinski

## DAILY INSPECTION REPORT

| BURN TYPE - ROTARY OR BATCH (CIRCLE ONE) | BAGHOUSE INSPECTED | BAGS REPAIRED OR REPLACED | REFRACTORY INSPECTED | DUCTWORK INSPECTED | MOTORS/ BEARINGS INSPECTED | BEARINGS GREASED | MISC. DEFICIENCIES NOTED (RECORDED ON REPAIR REPORT) |
|---|---|---|---|---|---|---|---|
| R / B | YES / NO | YES / NO | YES / NO | YES / NO | YES / NO | YES / NO | YES / NO |
| | REPAIRS YES / NO | | REPAIRS YES / NO | REPAIRS YES / NO | REPAIRS YES / NO | | VISIBLE EMISSIONS CHECKED (AT LEAST 2 TIMES DURING BURN) 1ST 4 HOURS YES / NO; 2nd 4 HOURS YES / NO |

| TIME (START TIME IS COINCIDENT WITH MATERIAL INSPECTION) | | TYPE OF MATERIAL | TOTAL TIME OF OPERATION | WEIGHT | CALCULATED DAILY FEED RATE | INITIAL MAGNAHELIC READING | MAGNAHELIC READINGS CHECKED (AT LEAST 2 TIMES DURING BURN) | | EMISSIONS PRESENT |
|---|---|---|---|---|---|---|---|---|---|
| Start Time | Shut-down Time | CIRCLE ALL THAT APPLY | | | | | 1ST 4 HOURS YES / NO | 2nd 4 HOURS YES / NO | YES / NO; IF YES CORRECTIVE ACTION ENTERED ON MALFUNCTION REPORT |
| 10:10 | 3:10 | MARIJUANA; COCAINE; METHAM-PHETAMINE; WOOD; PAPER; BURLAP/ FABRIC; ASSOCIATED WRAPPING | 5.0 | 7720 | 1544 lbs Per Hr | 1.3 | 2.6 | 3.6 | |

| REPAIRS YES / NO |
|---|
| |

| FUGITIVE EMISSIONS CHECKED (AT LEAST 2 TIMES DURING BURN) | | EMISSIONS PRESENT | |
|---|---|---|---|
| 1ST 4 HOURS | 2nd 4 HOURS | 1ST 4 HOURS | 2nd 4 HOURS |
| YES / NO | YES / NO | YES / NO | YES / NO |
| | | IF YES CORRECTIVE ACTION ENTERED ON MALFUNCTION REPORT | |

# DAILY OPERATORS LOG FOR INCINERATOR

DATE: 2/8/17 OPERATOR FULL NAME: Dan Butwinski

## DAILY INSPECTION REPORT

| BURN TYPE - ROTARY OR BATCH (CIRCLE ONE) | BAGHOUSE INSPECTED | BAGS REPAIRED OR REPLACED | REFRACTORY INSPECTED | DUCTWORK INSPECTED | MOTORS/ BEARINGS INSPECTED | BEARINGS GREASED | MISC. DEFICIENCIES NOTED (RECORDED ON REPAIR REPORT) |
|---|---|---|---|---|---|---|---|
| R / B | YES / NO | | YES / NO | YES / NO | YES / NO | | |
| | REPAIRS | YES / NO | REPAIRS | REPAIRS | REPAIRS | YES / NO | YES / NO |
| | YES / NO | | YES / NO | YES / NO | YES / NO | | |

| TIME (START TIME IS COINCIDENT WITH MATERIAL INSPECTION) | | TYPE OF MATERIAL | TOTAL TIME OF OPERATION | WEIGHT | CALCULATED DAILY FEED RATE | INITIAL MAGNAHELIC READING | MAGNAHELIC READINGS CHECKED (AT LEAST 2 TIMES DURING BURN) | | VISIBLE EMISSIONS CHECKED (AT LEAST 2 TIMES DURING BURN) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1ST 4 HOURS | 2nd 4 HOURS | 1ST 4 HOURS | 2nd 4 HOURS |
| | | | | | | | YES / NO | YES / NO | YES / NO | YES / NO |
| Start Time | Shut-down Time | CIRCLE ALL THAT APPLY | 6.0 | 8,980 | 1496 lbs Per HR | 1.1 | | | | |
| | | | | | | | 1ST 4 HOURS | 2nd 4 HOURS | EMISSIONS PRESENT | |
| | | | | | | | YES / NO | YES / NO | YES / NO | YES / NO |
| 8:40 | 2:40 | MARIJUANA | | | | REPAIRS | 2.7 | 3.3 | IF YES CORRECTIVE ACTION ENTERED ON MALFUNCTION REPORT | |
| | | COCAINE | | | | YES / NO | | | | |
| | | METHAM-PHETAMINE | | | | | | | | |
| | | WOOD | | | | | | | | |
| | | PAPER | | | | | | | | |
| | | BURLAP/ FABRIC | | | | | | | | |
| | | ASSOCIATED WRAPPING | | | | | | | | |

| FUGITIVE EMISSIONS CHECKED (AT LEAST 2 TIMES DURING BURN) | | EMISSIONS PRESENT | |
|---|---|---|---|
| 1ST 4 HOURS | 2nd 4 HOURS | 1ST 4 HOURS | 2nd 4 HOURS |
| YES / NO | YES / NO | YES / NO | YES / NO |
| | | IF YES CORRECTIVE ACTION ENTERED ON MALFUNCTION REPORT | |



ED_005878_00000227-00096

# DAILY OPERATORS LOG FOR INCINERATOR

DATE: 2/9/17 OPERATOR FULL NAME: Don Butwinski

## DAILY INSPECTION REPORT

| BURN TYPE - ROTARY OR BATCH (CIRCLE ONE) | BAGHOUSE INSPECTED | BAGS REPAIRED OR REPLACED | REFRACTORY INSPECTED | DUCTWORK INSPECTED | MOTORS/ BEARINGS INSPECTED | BEARINGS GREASED | MISC. DEFICIENCIES NOTED (RECORDED ON REPAIR REPORT) |
|---|---|---|---|---|---|---|---|
| R / B | YES / NO | | YES / NO | YES / NO | YES / NO | | |
| | REPAIRS | YES / NO | REPAIRS | REPAIRS | REPAIRS | YES / NO | YES / NO |
| | YES / NO | | YES / NO | YES / NO | YES / NO | | |

| TIME (START TIME IS COINCIDENT WITH MATERIAL INSPECTION) | | TYPE OF MATERIAL | TOTAL TIME OF OPERATION | WEIGHT | CALCULATED DAILY FEED RATE | INITIAL MAGNAHELIC READING | MAGNAHELIC READINGS CHECKED (AT LEAST 2 TIMES DURING BURN) | | VISIBLE EMISSIONS CHECKED (AT LEAST 2 TIMES DURING BURN) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1ST 4 HOURS | 2nd 4 HOURS | 1ST 4 HOURS | 2nd 4 HOURS |
| | | | | | | | YES / NO | YES / NO | YES / NO | YES / NO |
| Start Time | Shut-down Time | CIRCLE ALL THAT APPLY | 6.0 | 8,380 | 1396 lbs Per HR. | 0.8 | 1ST 4 HOURS | 2nd 4 HOURS | EMISSIONS PRESENT | |
| | | | | | | | YES / NO | YES / NO | YES / NO | YES / NO |
| 8:20 | 2:20 | MARIJUANA | | | | REPAIRS | 2.4 | 3.2 | IF YES CORRECTIVE ACTION ENTERED ON MALFUNCTION REPORT | |
| | | COCAINE | | | | YES / NO | | | | |
| | | METHAM-PHETAMINE | | | | | | | | |
| | | WOOD | | | | | | | | |
| | | PAPER | | | | | | | | |
| | | BURLAP/ FABRIC | | | | | | | | |
| | | ASSOCIATED WRAPPING | | | | | | | | |

| FUGITIVE EMISSIONS CHECKED (AT LEAST 2 TIMES DURING BURN) | | EMISSIONS PRESENT | |
|---|---|---|---|
| 1ST 4 HOURS | 2nd 4 HOURS | 1ST 4 HOURS | 2nd 4 HOURS |
| YES / NO | YES / NO | YES / NO | YES / NO |
| | | IF YES CORRECTIVE ACTION ENTERED ON MALFUNCTION REPORT | |

## EQUIPMENT CALIBRATION

**Tucson Iron & Metal**
**Tucson, Arizona**
**02/07-08/17**

$CO/O_2$
Vendor protocol span gases were utilized for calibration. $N_2$ zero gas was employed. Instrument calibration drift and bias determinations follow each run. $NO_x$ converter efficiency is included on the logger.

EEMC maintains its test equipment on a continuing and 'as needed' basis. As required by its ASTM-STAC certification maintenance records are available upon request. In addition, all test equipment is pre and post checked prior to each field project including calibrations as provided in each of its test reports. Certified calibration equipment documents are maintained as per manufacturers requirements and can be provided upon request.



ED_005878_00000227-00098

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22015

DocNumber: 000081770

# CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

*Customer & Order Information:*

PRAXAIR WHSE TUCSON AZ STO
800 SOUTH PARK AVE
TUCSON AZ 857190

*Praxair Order Number:* 31771151
*Customer P. O. Number:* 05617431
*Customer Reference Number:*

*Fill Date:* 7/9/2015
*Part Number:* NI CO25ME-AS
*Lot Number:* 109519006
*Cylinder Style & Outlet:* AS CGA 350
*Cylinder Pressure & Volume:* 2000 psig 140 cu. ft.

## *Certified Concentration:*

| | | | |
|---|---|---|---|
| Expiration Date: | 7/14/2023 | | NIST Traceable |
| Cylinder Number: | CC341178 | | Analytical Uncertainty: |
| 25.0 | ppm | CARBON MONOXIDE | ± 0.6 % |
| Balance | | NITROGEN | |

*Certification Information:* *Certification Date:* 7/14/2015 *Term:* 96 Months *Expiration Date:* 7/14/2023

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

*Analytical Data:* *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON MONOXIDE

Requested Concentration: 25 ppm
Certified Concentration: 25.0 ppm
Instrument Used: Horiba VIA-510 S/N 576876015
Analytical Method: NDIR
Last Multipoint Calibration: 6/26/2015

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC123291
Ref. Std. Conc: 25.0 ppm
Ref. Std. Traceable to SRM # : 2635a
SRM Sample # : 58-E-34
SRM Cylinder # : FF10656

| First Analysis Data: | | | | | | Date: | 7/14/2015 |
|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 25 | C: | 25 | Conc: | 24.967 |
| R: | 25.1 | Z: | 0 | C: | 25.1 | Conc: | 25.067 |
| Z: | 0 | C: | 25.1 | R: | 25 | Conc: | 25.067 |
| UOM: | ppm | | | Mean Test Assay: | | | 25.033 ppm |

| Second Analysis Data: | | | | | | Date: | |
|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 0 | C: | 0 | Conc: | 0 |
| R: | 0 | Z: | 0 | C: | 0 | Conc: | 0 |
| Z: | 0 | C: | 0 | R: | 0 | Conc: | 0 |
| UOM: | ppm | | | Mean Test Assay: | | | 0 ppm |

Analyzed by: Ying Yu

Certified by: Jack Fu

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information con tained herein exceed the fee established for providing such information.

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22016

DocNumber: 000095481

# CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

***Customer & Order Information:***

PRAXAIR WHSE TUCSON AZ STO
800 SOUTH PARK AVE
TUCSON AZ 857190

*Praxair Order Number:* 34399078
*Customer P. O. Number:* 06043358
*Customer Reference Number:*

*Fill Date:* 6/8/2016
*Part Number:* NI CO50ME-AS
*Lot Number:* 109616007
*Cylinder Style & Outlet:* AS CGA 350
*Cylinder Pressure & Volume:* 2000 psig 140 cu. ft.

***Certified Concentration:***

| | | | |
|---|---|---|---|
| Expiration Date: | 6/17/2024 | | NIST Traceable |
| Cylinder Number: | CC268790 | | Analytical Uncertainty: |
| 51.0 | ppm | CARBON MONOXIDE | ± 0.4 % |
| | Balance | NITROGEN | |

***Certifcation Information:*** *Certification Date:* 6/17/2016 *Term:* 96 Months *Expiration Date:* 6/17/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

***Analytical Data:*** *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

**1. Component: CARBON MONOXIDE**

Requested Concentration: 50 ppm
Certified Concentration: 51.0 ppm
Instrument Used: Horiba VIA-510, S/N 577172043
Analytical Method: NDIR
Last Multipoint Calibration: 6/10/2016

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC186877
Ref. Std. Conc: 50.3 ppm
Ref. Std. Traceable to SRM # : 1678c
SRM Sample # : 04-I-41
SRM Cylinder # : FF18402

**First Analysis Data:** **Date:** 6/17/2016

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 50.3 | C: | 51.2 | Conc: | 51.132 |
| R: | 50.4 | Z: | 0 | C: | 51.1 | Conc: | 51.032 |
| Z: | 0 | C: | 51 | R: | 50.4 | Conc: | 50.932 |

UOM: ppm **Mean Test Assay:** 51.032 ppm

**Second Analysis Data:** **Date:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 0 | C: | 0 | Conc: | 0 |
| R: | 0 | Z: | 0 | C: | 0 | Conc: | 0 |
| Z: | 0 | C: | 0 | R: | 0 | Conc: | 0 |

UOM: ppm **Mean Test Assay:** 0 ppm

Analyzed by: Ying Yu

Certified by: Maria Soberanis

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22015

DocNumber: 000079878

# CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

*Customer & Order Information:*

PRAXAIR WHSE PHOENIX HUB
3918 W LINCOLN ST
PHOENIX AZ 850095

*Praxair Order Number:* 31104203
*Customer P. O. Number:* 05508627
*Customer Reference Number:*

*Fill Date:* 5/5/2015
*Part Number:* NI CD20O3E-AS
*Lot Number:* 109512507
*Cylinder Style & Outlet:* AS CGA 590
*Cylinder Pressure & Volume:* 2000 psig 140 cu. ft.

## *Certified Concentration:*

| | | | |
|---|---|---|---|
| Expiration Date: | 5/12/2023 | | NIST Traceable |
| Cylinder Number: | SA15470 | | Analytical Uncertainty: |
| 19.49 | % | CARBON DIOXIDE | ± 0.2 % |
| 20.99 | % | OXYGEN | ± 0.3 % |
| | Balance | NITROGEN | |

*Certification Information:* *Certification Date:* 5/12/2015 *Term:* 96 Months *Expiration Date:* 5/12/2023

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

O2 responses have been corrected for CO2 interference.

*Analytical Data:* *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON DIOXIDE

Requested Concentration: 20 %
Certified Concentration: 19.49 %
Instrument Used: Horiba VIA-510 S/N 2807014
Analytical Method: NDIR
Last Multipoint Calibration: 4/24/2015

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC158146
Ref. Std. Conc: 19.79%
Ref. Std. Traceable to SRM # : 2745
SRM Sample # : 9-C-36
SRM Cylinder # : CAL016135

| First Analysis Data: | | | | | | | | Date: | 5/12/2015 |
|---|---|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 19.79 | C: | 19.49 | Conc: | 19.483 | | |
| R: | 19.8 | Z: | 0 | C: | 19.5 | Conc: | 19.493 | | |
| Z: | 0 | C: | 19.5 | R: | 19.8 | Conc: | 19.493 | | |
| UOM: | % | | | Mean Test Assay: | | | 19.49 % | | |

| Second Analysis Data: | | | | | | | | Date: | |
|---|---|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 0 | C: | 0 | Conc: | 0 | | |
| R: | 0 | Z: | 0 | C: | 0 | Conc: | 0 | | |
| Z: | 0 | C: | 0 | R: | 0 | Conc: | 0 | | |
| UOM: | % | | | Mean Test Assay: | | | 0 % | | |

2. Component: OXYGEN

Requested Concentration: 21 %
Certified Concentration: 20.99 %
Instrument Used: OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration 4/30/2015

Reference Standard Type: GMIS
Ref. Std. Cylinder # : SA16022
Ref. Std. Conc: 19.90%
Ref. Std. Traceable to SRM # : 2659a
SRM Sample # : 71-E-19
SRM Cylinder # : FF22331

| First Analysis Data: | | | | | | | | Date: | 5/12/2015 |
|---|---|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 19.9 | C: | 20.99 | Conc: | 20.99 | | |
| R: | 19.9 | Z: | 0 | C: | 20.99 | Conc: | 20.99 | | |
| Z: | 0 | C: | 20.99 | R: | 19.9 | Conc: | 20.99 | | |
| UOM: | % | | | Mean Test Assay: | | | 20.99 % | | |

| Second Analysis Data: | | | | | | | | Date: | |
|---|---|---|---|---|---|---|---|---|---|
| Z: | 0 | R: | 0 | C: | 0 | Conc: | 0 | | |
| R: | 0 | Z: | 0 | C: | 0 | Conc: | 0 | | |
| Z: | 0 | C: | 0 | R: | 0 | Conc: | 0 | | |
| UOM: | % | | | Mean Test Assay: | | | 0 % | | |

Analyzed by: Matthew Angerer

Certified by: Ying Ye

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Serial # CM12499031 ZER

Product Specifications

# Thermo Scientific Model 48*i* Carbon Monoxide Analyzer

Gas filter correlation analyzer

The Thermo Scientific™ Model 48*i* Carbon Monoxide (CO) Analyzer utilizes gas filter correlation technology to measures the amount of carbon monoxide in the air.

- Approved to meet the following standards: U.S. EPA , UK Environmental Agency and the European Union
- Ethernet connectivity for efficient remote access
- Enhanced user interface with one button programming and large display screen
- Flash memory for increased data storage and user downloadable software

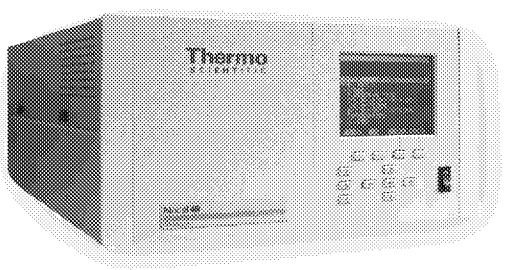
The Model 48*i* analyzer is based on the principle that carbon monoxide (CO) absorbs infrared radiation at a wavelength of 4.6 microns. Because infrared absorption is a nonlinear measurement technique, it is necessary for the instrument electronics to transform the basic analyzer signal into a linear output.

The Model 48*i* analyzer uses an exact calibration curve to accurately linearize the instrument output over any range up to a concentration of 10,000ppm.

This state-of-the-art gas analyzer offers features such as an Ethernet port as well as flash memory for increased data storage.

Ethernet connectivity provides efficient remote access, allowing the user to download measurement information directly from the instrument without having to be on-site.

Easily programmable short cut keys allow you to jump directly to frequently accessed functions, menus or screens. The larger interface screen can display up to five lines of measurement information while primary screen remains visible.




Thermo SCIENTIFIC

# Serial # CM12499031





| | |
|---|---|
| Preset Ranges | 0-1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000, 5000 and 10000 ppm<br>0-1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000, 5000 and 10000 mg/m$^3$ |
| Custom Ranges | 0-1 to 10000 ppm<br>0-1 to 10000 mg/m$^3$ |
| Zero Noise | 0.02 ppm RMS (60 second averaging time) |
| Lower Detectable Limit | 0.04 ppm |
| Zero Drift *(24 hour)* | < 0.1 ppm |
| Span Drift *(24 hour)* | +/-1% full scale |
| Response Time | 60 seconds (30 second average time) |
| Precision | +/-0.1 ppm |
| Linearity | +/-1% full scale < 1000 ppm<br>+/-2.5% full scale > 1000 ppm |
| Sample Flow Rate | 0.5-2 liters/min. |
| Operating Temperature | Performance specifications based on operation within 20°-30° C range (per U.S. EPA Guidelines).<br>Instrument may be safely operated over the range of 0°-45° C. |
| Power Requirements | 100 VAC, 115 VAC, 220-240 VAC +/-10% @ 275W |
| Size and Weight | 16.75"(W) x 8.62"(H) x 23"(D), 49 lbs. (22.2 kg) |
| Outputs | Selectable voltage, RS232/RS485, TCP/IP, 10 status relays and power fail indication (standard)<br>0-20 or 4-20 mA isolated current output (optional) |
| Inputs | 16 digital inputs (standard), 8 0-10 Vdc analog inputs (optional) |
| Approvals and Certifications | U.S. EPA Reference Method: RFCA-0981-054<br>MCERTS Certified: Sira MC070095/00<br>EN14626: TÜV 936/21203248/A Report |

## Ordering Information

**Model 48*i* Carbon Monoxide Analyzer**
Choose from the following configurations/options to customize your own Model 48*i* analyzer

**1. Voltage options:**
A = 120 VAC 50/60 Hz (standard)
B = 220 VAC 50/60 Hz
J = 100 VAC 50/60 Hz

**2. Internal zero / span and/or Oxygen Sensor:**
N = No zero / span valve assembly (standard)
A = No zero/ span valve w/ Zero Air Scrubber
Z = Internal zero / span valve assembly
C = Internal zero / span valve w/ Zero Air Scrubber
G = Oxygen Sensor with NO Zero/Span
R = Oxygen Sensor with Zero/Span

**3. Filter wheel purge:**
S = Standard plumbing (standard)
P = Filter wheel purge setup

**4. Optional I/O:**
A = No optional I/O (standard)
C = 4-20mA current output - 6 channels, 0-10v analog input - 8 channel

**5. Mounting hardware:**
A = Bench mounting (standard)
B = Ears & handles, EIA
C = Ears & handles, retrofit

**Your Order Code:**
**Model 48i - _ _ _ _ _**

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific products.

**For more information, visit our website at thermoscientific.com/ambient**

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This product is manufactured in a plant whose quality management system is ISO 9001 certified.

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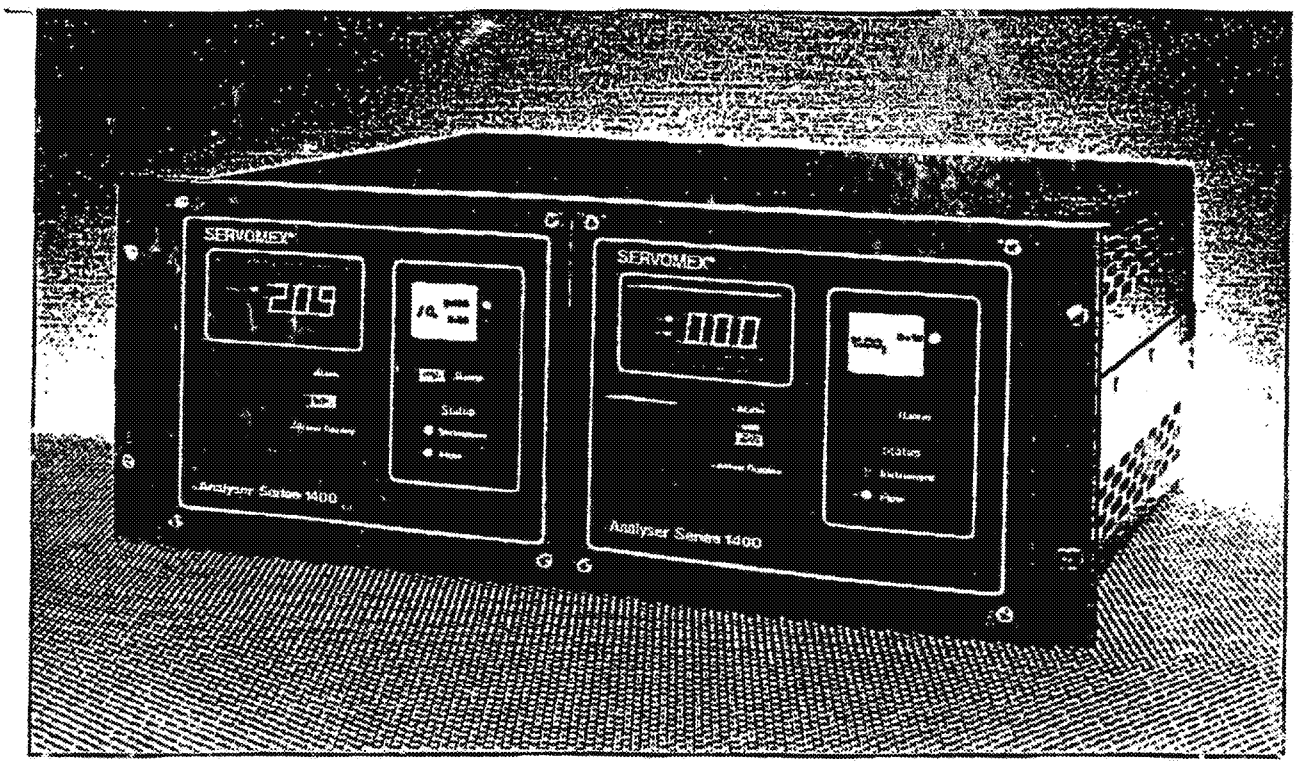
Lit_48iEPM_1212

Serial # 14150-3280

# SERVOMEX 1400B LIGHT INDUSTRIAL GAS ANALYSER

Servomex
LEADERS IN GAS ANALYSIS




| FEATURES | BENEFITS |
|---|---|
| ● Paramagnetic Oxygen and Infrared Transducers | Suitable for a wide range of applications |
| ● 19" Rack, Panel Mount and Bench-Top Cases | Meets User's configuration requirements |
| ● Voltage and Current Outputs | Interfaces with the user's data recording device |

## Introduction to 1400B Series

The Servomex 1400B Series meets the light industrial market's requirement for a moderately priced, high performance, general purpose analyser.

Servomex offers the 1400B in three user selected case configurations: 19" rack mounting, panel mounting and bench-top. The above picture shows a dual unit 1400B in a 19" rack mounting case.

The 1400B Series features high visibility LED displays, dual linear electrical outputs: 0-1VDC non-isolated, and 4-20mA isolated, dual concentration alarms and (for non flammable samples) flow alarm all as standard.

A back pressure regulator option is available on standard 1400B analysers to reduce the effects of barometric or sample vent pressure changes when the 1400B is used for measuring high concentrations of oxygen or other gases.

The 1400B Series now offers three types of transducers, each meeting a requirement of the light industrial market:

# Serial # 14150-3280

| Parameter | Conditions / Comments | $O_2$ FLS | $O_2$ STD | $CO_2$ STD | SPX | SPX |
|---|---|---|---|---|---|---|
| **Environmental** | | | | | | |
| Operating Ambient Temperature | a) Single or dual case | | 0-45°C (32-113°F) | | 0-40°C (32-104°F) | |
| | b) Fitted into bench-top case | | 0-40°C (32-104°F) | | 0-35°C (32-95°F) | |
| Sensor / Transducer Temperature | nominal control temperature | 50°C | | 60°C | | |
| Storage Temperature | | -20°C to +70°C (-4°F to 158°F) | | | | |
| Relative Humidity | | 0-90% non-condensing | | | 5 to 85% non-condensing | |
| AC Power Supply | | 88-264V 47-63Hz, 45VA max. | | | 120 or 240VAC±10% 48 to 62 Hz 30A max | |
| EMC | Designed for compliance with: | EN 50022 (1987) CLASS A for conducted interference and radiated electric field | | | | |
| Vibration | | Protect from excessive vibration | | | | |
| **Sample Requirements** | | | | | | |
| Condition | | Clean, dry gas with dew point at least 5°C below ambient temperature non-toxic, non-flammable | | | | |
| Inlet Pressure / Flow Rate | Refer to flow schematics overleaf: | See schematic a | See schematics b & c | | See schematic d | |
| Flammable Gases | ISA-S12.12 (1984) | groups B,C,D T3 | | Not Applicable | | groups C and D, T4 |
| | BS5345, Part 1 (1976) | group IIC, T3 | | Not Applicable | | groups IIA and IIB, T4 |
| Filtering | SPX & FLS require external 0.6 micron filter | | 0.6 micron replaceable | | 0.6 micron | |
| Gas Connection | located at the rear of the unit | 3.2mm (1/8" OD stub | 6.4mm (1/4 inch) O.D. tube stub suitable for 1/4 inch compression fittings | | | |
| **Physical Characteristics** | | | | | | |
| Case | a) Description | | Steel and aluminium, finished in epoxy powder paint | | | |
| | b) Classification | | IP20 (IEC 529) when fitted in the 19 inch rack case | | | |
| Overall Dimensions | a) Double case 4U | | 178mm high x 483mm wide x 380mm deep | | | |
| | b) Single case 4U | | 182mm high x 256mm wide x 420mm deep | | | |
| | c) Bench-top case | | 228mm high x 520mm wide x 400mm deep | | | |
| | d) Back pressure option | | depth becomes 460mm approx. | | | |
| Weight | single unit | | | 5.5kg (12lb) typical | | |
| | double unit | | | 12kg (26lb) typical | | |
| | bench unit | | | 20kg (44lb) typical | | |
| Unit Identification | Rear panel serial no. | 1421B NNN | 1420B NNN | 1415B NNN | 1410B NNN | 1411B NNN |

The Company reserves the right to alter the specification without prior notice.

## Listing of Quality Control Procedures for EPA Methods 3A and 7E Testing Methodology

### I. Calibration of Equipment ($NO_x$ in $N_2$ or Air)

A) Zero and Span

EPA Protocol 1 calibration gases are utilized for instrument zero/span purposes. The filtered air or $N_2$ tank is utilized for zero purposes. The concentration of these gases is determined as per EPA Method 7E, Section 7.1.

B) Chemiluminescent instrumentation or equivalent is utilized for $NO_x$ concentration determination. Converter efficiency is determined utilizing tank gas containing $NO_2$ as per Method 7E. Interferences have been determined (by the vendors) to meet selectivity requirements.

C) All calibrations must be drawn through the sample interface. All instruments are checked for linearity via EPA Protocol 1 gases before each test series (zero and two calibration gas concentrations).

D) Sample Moisture

Moisture removal is via a thermoelectric cooler at the head of the interface, and in the case of heavy moisture, additionally at the terminal end of the interface prior to injection to the instruments.

### II. Sampling ($NO_x$)

A) The results are recorded on an integrating computer/logger on a minute by minute basis.

B) Sample Interface

The interface is leak checked prior to and after each sampling session.

### III. Oxygen/Carbon dioxide ($O_2$/$CO_2$) Instrumentation

A) Zero and Span

EPA Protocol 1 is utilized for calibration of the $O_2$/$CO_2$ instrumentation as per Method 3A.

B) A Servomex 1400B $O_2$/$CO_2$ Analyzer is utilized.

C) The results are recorded on an integrating computer/logger on a minute by minute basis.



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## Listing of Quality Control Procedures
## EPA Method 10 Testing Methodology

### I. Calibration of Equipment (CO in $N_2$)

A) Zero and Span

EPA Protocol 1 gases are utilized for cell CO calibration. Linearity is initially determined by the introduction of zero and three calibration gas concentrations (~0% of scale, ~40-60% of scale, and one gas with a concentration that is equal to the calibration span).

B) Interferences ($CO_2$)

The NDIR Monitor utilized does not respond significantly to $CO_2$. A high concentration of $CO_2$ (~12%) when injected into the CO NDIR Monitors does not indicate any interference (<0.1% of scale or 5ppmvd @ 0-5000 ppmvd span). Ascarite as a result is not normally utilized in the sample train.

C) Sample Flow

The monitors pump their own gas sample. The flow rate is maintained during the sample run.

D) Sample Interface

The interface is leak checked prior to and after each sampling session. All calibrations must be drawn through the sample interface.

E) Sample Moisture

Moisture removal is via a thermoelectric cooler at the head of the interface. In the case of heavy moisture an additional cooler is located at the terminal end of the interface prior to injection to the instruments.

### II. Sampling (CO)

CO instrument data is computer logged automatically utilizing one minute integrations.



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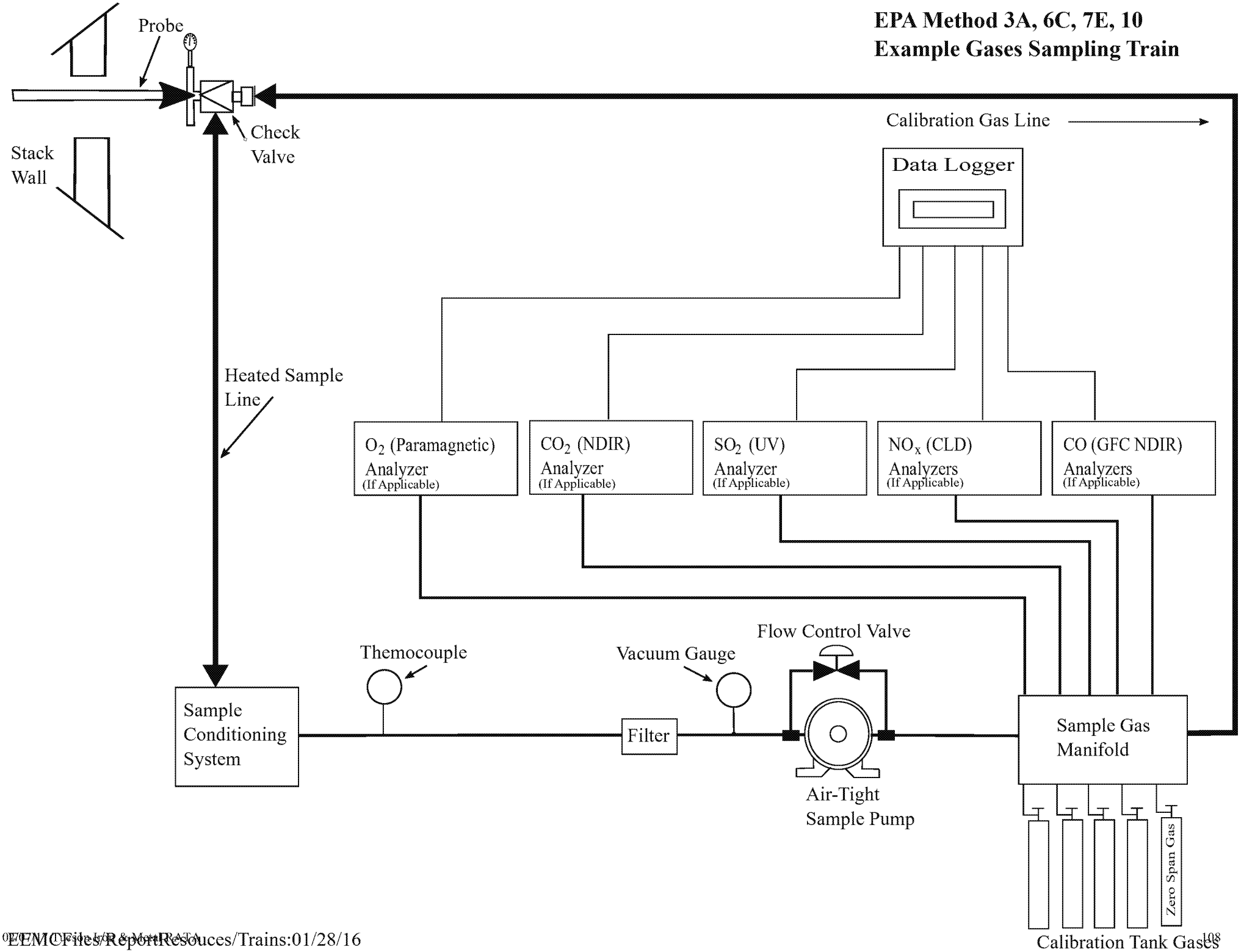
EPA Method 3A, 6C, 7E, 10
Example Gases Sampling Train
Probe
Check Valve
Stack Wall
Calibration Gas Line
Data Logger
Heated Sample Line
O2 (Paramagnetic) Analyzer (If Applicable)
CO2 (NDIR) Analyzer (If Applicable)
SO2 (UV) Analyzer (If Applicable)
NOx (CLD) Analyzers (If Applicable)
CO (GFC NDIR) Analyzers (If Applicable)
Flow Control Valve
Themocouple
Vacuum Gauge
Sample Conditioning System
Filter
Sample Gas Manifold
Air-Tight Sample Pump
Zero Span Gas
Calibration Tank Gases

# EPA Specification 4

CODE OF FEDERAL REGULATIONS

# Title 40
## Protection of Environment

Part 60 (Appendix B)

Containing a codification of documents
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ED_005878_00000227-00109

EPA Method 3A
40CFR60 App. A

CODE OF FEDERAL REGULATIONS

# Title 40
## Protection of Environment

Part 60 (Appendices)

Containing a codification of documents
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EPA Method 10
40CFR60 App. A

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**Txostenaren amaieran**
**Канец справаздачы**
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**Край на доклад**
**Informe de Cap d'**
**Sa katapusan sa Report**
**報告結束**
**Kraj Izvješća**
**Konec sestavy**
**Slut af rapport**
**Eind Rapport**

# End of Report

**Fino de Raporto**
**Raporti lõpp**
**Dulo ng Ulat**
**End of Raportti**
**Fin du rapport**
**Fin do Informe**
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**Τέλος της έκθεσης**
**Fen Rapò**
**ח"ודה הוס**
**Vége jelentés**
**Lok skýrslu**
**Akhir Laporan**
**Deireadh Tuairisc**
**Fine Rapporto**
**レポートの最後**
**보고서의 끝**
**Akhir Laporan**
**Slutten av Rapport**
**Koniec raportu**
**Fim do Relatório**
**Конец отчета**
**Informe de Fin de**
**Slut på rapporten**
**Rapor sonu**