

AIR TOXICS EMISSION FACTORS FOR COMBUSTION SOURCES USING PETROLEUM-BASED FUELS

VOLUME 2 DEVELOPMENT OF EMISSION FACTORS USING API/WSPA APPROACH

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**DEVELOPMENT OF TOXICS EMISSION FACTORS FOR PETROLEUM
INDUSTRY COMBUSTION SOURCES**

**Draft Final Report
Volume 2 - Development of Emission Factors
Using CARB Approach**

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ACRONYMS

4D 2378	Same as 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
4D Other	Same as Tetrachlorodibenzo-p-dioxin other.
4D Total	Same as Tetrachlorodibenzo-p-dioxin total.
4F 2378	Same as 2,3,7,8-Tetrachlorodibenzofuran.
4F Other	Same as Tetrachlorodibenzofuran other.
4F Total	Same as Tetrachlorodibenzofuran total.
5D 12378	Same as 1,2,3,7,8-Pentachlorodibenzo-p-dioxin.
5D Other	Same as Pentachlorodibenzo-p-dioxin other.
5D Total	Same as Pentachlorodibenzo-p-dioxin total.
5F 12378	Same as 1,2,3,7,8-Pentachlorodibenzofuran.
5F 23478	Same as 2,3,4,7,8-Pentachlorodibenzofuran.
5F Other	Same as Pentachlorodibenzofuran other.
5F Total	Same as Pentachlorodibenzofuran total.
6D 123478	Same as 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin.
6D 123678	Same as 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin.
6D 123789	Same as 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin.
6D Other	Same as Hexachlorodibenzo-p-dioxin other.
6D Total	Same as Hexachlorodibenzo-p-dioxin.
6F 123478	Same as 1,2,3,4,7,8-Hexachlorodibenzofuran.
6F 123678	Same as 1,2,3,6,7,8-Hexachlorodibenzofuran.
6F 123789	Same as 1,2,3,7,8,9-Hexachlorodibenzofuran.
6F 234678	Same as 2,3,4,6,7,8-Hexachlorodibenzofuran.
6F Other	Same as Hexachlorodibenzofuran other.
6F Total	Same as Hexachlorodibenzofuran total.
7D 1234678	Same as 1,2,3,4,7,8-Heptachlorodibenzo-p-dioxin.
7D Other	Same as Heptachlorodibenzo-p-dioxin other.
7D Total	Same as Heptachlorodibenzo-p-dioxin total.
7F 1234678	Same as 1,2,3,4,6,7,8-Heptachlorodibenzofuran.
7F 1234789	Same as 1,2,3,4,7,8,9-Heptachlorodibenzofuran.
7F Other	Same as Heptachlorodibenzofuran other.
7F Total	Same as Heptachlorodibenzofuran total.
8D	Same as Octachlorodibenzo-p-dioxin.
8F	Same as Octachlorodibenzofuran.
AB2588	Air Toxics "Hot Spots" Information and Assessment Act of 1987
AB	Afterburner
APC	Air Pollution Control
API	American Petroleum Institute
APS	Air Pollution Control System
ATEDS	Air Toxic Emission Data System
B	Benzene
BAAQMD	Bay Area Air Quality Management District
BD	Blank Data
BF	Baffle Filter
BTX	Benzene, Toluene, and Xylene
C	Cyclone or Carbon
CD	Calibration Data
CARB	California Air Resources Board
CO	Carbon Monoxide
COC	Carbon Monoxide Oxidation Catalyst

CVAAS	Cold Vapor Atomic Absorption Spectrometry
CVR	Case Vapors Recovered
Cr	Chromium
D	Dioxins
DD	Device Description
DM	Demister
dscfm	Dry Standard Cubic Feet per Minute
dscf	Dry Standard Cubic Feet
EER	Energy and Environmental Research Corporation
EF	Emission Factor
EPA	Environmental Protection Agency
USG	United States Government
F	Formaldehyde
GFAAS	Graphite Furnace Atomic Absorption Spectrometry
H ₂ S	Hydrogen Sulfide
HC	Hexavalent Chromium
HCHO	Formaldehyde
HCl	Hydrogen Chloride
HF	Hydrogen Fluoride
HI	Hydrogen Chloride
HNO ₃	Nitric acid
HO	Halogenated Organics
Hp	Horse Power
HS	Hydrogen Sulfide
ICAP	Inductively Coupled Argon Plasma
ICE	Internal Combustion Engine
IS	Internal Standards
LD	Laboratory Data or Location Data
lbs/MMcf	Pounds per Million Cubic Feet
lbs/Mgal	Pounds per Thousand Gallons
lbs/ton coke	Pounds per Ton Coke
lbs/1000 Barrels	Pounds per Thousand Barrels
LP	Liquid Petroleum
M	Metals
MMBtu	Million British Thermal Units
MMcf	Million Cubic Feet
MD	Method Description
MDL	Method Detection Limit
Mgal	Thousand Gallons
MMT	Multiple Metals Train
Ni	Nickel
NIOSH	National Institute of Occupation Safety and Hazard
NO _x	Nitrogen oxides
O ₂	Oxygen
O	Oxygen
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCDD	Polychlorinated Dibenzo-p-dioxin
PCDF	Polychlorinated Dibenzofuran
PH	Polycyclic Aromatic Hydrocarbons
ppbv	Parts per Billion Volume

PQL	Practical Quantitation Limit
PR	Process Rate
QA/QC	Quality Assurance/Quality Control
QD	Quality Assurance/Quality Control Data
RFG	Refinery Fuel Gas
ROC	Reactive Organic Compound
RSD	Relative Standard Deviation
S	Strokes per Cycle
SCAQMD	South Coast Air Quality Management District
SCC	Source Classification Code
SCR	Selective Catalytic Reduction
SD	Sample Data or Spray Dryer
SG	Steam Generator
SIC	Standard Industrial Classification
SO ₂	Sulfur Dioxide
SVOC	Semi-Volatile Organic Compounds
THC	Total Hydrocarbons
Ti	Titanium
TO	Thermal Oxidizer
VC	Vinyl Chloride
VOC	Volatile Organic Compound
WSPA	Western States Petroleum Association

1.0 Introduction

A wide range of air toxics source test results have been generated since the California Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) was initiated. The Western States Petroleum Association (WSPA) funded a project in the early 1990's to develop an emission factor database from WSPA funded tests. Emission factors resulting from this project are provided in the document titled "Pooled Source Testing of Combustion Devices: Database Users Guidance Manual" which was released on January 13, 1994. The California Air Resources Board (CARB) recently funded a project to collect all AB2588 source test reports including petroleum and nonpetroleum sources. Over 800 tests were collected by CARB. CARB developed over 2000 emission factors from 200 of the collected tests. These emission factors are available in the report titled "Development of Toxics Emission Factors from Source Test Data Collected under the Air Toxics Hot Spots Program" which was released on April 11, 1996. CARB did not develop emission factors for petroleum industry sources because they believe the petroleum industry has already developed and is continuing to develop emission factors.

As the primary contractor for the CARB emission factor project, Energy and Environmental Research (EER) identified several tests collected by CARB which were not included in the WSPA emission factor database. Under joint funding from WSPA and the American Petroleum Institute (API), EER was contracted to update the existing WSPA database with the additional CARB test reports. CARB agreed to provide WSPA and API access to the source test reports provided the emission factors were developed using CARB procedures. In addition to providing access to the test data, CARB allowed WSPA to use its emission factor graphical user interface (GUI). The GUI permits users to sort, list, print, and export emission factors from personal computers. This project benefited the petroleum industry in the following ways:

- Districts, CARB, EPA, and the petroleum industry have the most representative and complete database available for petroleum industry combustion devices.
- All source test results were reviewed using procedures developed by CARB. These procedures were developed to assess the quality of source test results allowing emission factors of known quality to be developed. Using emission factors developed from CARB procedures and approved by CARB add credibility to the resulting emission inventories.
- All emission factors are available in an easy to use GUI. The GUI allows users to search for emission factors, generate reports, and export data for use in spreadsheets and other programs. Industry could not access the previous WSPA emission factor database by computer.

This report describes the procedures used to validate and develop emission factors for petroleum industry combustion sources. The report also provides the results of the validation efforts and emission factor calculation procedures. It should be noted that the procedures were developed by CARB for the project discussed previously. Section 2 provides a brief description of the CARB data collection efforts. A description of the screening procedures applied by CARB are provided in Section 3 along with a list of priority sources for emission factor development. The validation procedures and results are described in Section 4. Data extraction procedures are described in Section 5. Emission factor calculation procedures and results are described in Section 6. Supporting documentation such as statistical analyses are provided in Volume 3. The GUI is described in a document titled the "Database User's Manual".

2.0 Data Collection

The California Air Resource Board (CARB) recently completed a project to collect all air toxics source test reports prepared in response to the California Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588). The CARB data collection efforts included the following activities:

- **District survey.** The survey was designed to locate key sources of test data. In addition, copies of the tests were requested from the smaller districts. Imperial, Glenn, Lassen, North Coast Unified, Kern, and Great Basin mailed copies of their test reports; and
- **District data collection.** Teams were sent to the major districts identified through the survey. In a similar program, the EPA also was collecting air toxics test data at districts throughout the State. The EPA sent teams to Ventura, Santa Barbara, Sacramento, and the Bay Area. EER sent teams to San Joaquin, South Coast, San Diego, Mojave, Monterey, Mendocino, Colusa, Yolo, and Placer.

Through these activities, most of the test data available in the State has been collected. Table 1 lists the number of tests collected at each district. 799 tests were collected at 19 out of 31 districts. A test includes the quantification of air toxics and other emissions from a device or group of interconnected devices operating under one condition. A report provides the results of one or more tests.

3.0 Screening

One of the key goals of this project was to develop emission factors which can be used to accurately assess air toxics emissions from key sources. Before developing emission factors it is critical to eliminate test results of unknown accuracy and device types which are not of primary interest. This allows for the best use of project resources. This section describes the procedures used to screen tests. Results from the initial screening also are provided. It should be noted that the initial screening of petroleum sources was conducted by CARB.

3.1 Procedures

Table 2a-c lists the data types extracted from each test report for the screening analysis. The information is divided into three categories including:

- **Report Information (Table 2a).** This information describes the complete report.
- **Device Information (Table 2b).** This information describes each device type tested. Each report can have multiple devices. For example, a report may include results for a boiler test and an IC engine test.
- **Substance Information (Table 2c).** This information describes measurements conducted on the fuel and air emissions for each device. For example, a boiler test may have included metals analysis of the fuel and PAH analysis of the stack emissions.

3.2 Results

All the information described in Section 3.1 has been extracted from each petroleum industry test report collected by CARB. Section 2 of Volume 3 lists the device type, test documentation information available, and substances quantified for the fuel and air emissions.

Tables 3a and b summarize the test documentation information available and substances quantified for several device/process and material categories. Table 3a lists the percent of tests in each device/process and material category which provided device, QA/QC and method descriptions, sample, lab, calibration, location and blank data, and included enough information to develop emission factors. The devices and processes listed as required are those given in AB 2588 appendix D. Appendix D specifies source testing requirements for key device and process types. The greatest number of required tests were conducted on catalytic crackers. It should be noted that catalytic reformers were included with the catalytic crackers. Of the 9 tests for this category, 22% provided enough information to develop emission factors as shown in Table 3a. The fuel or raw material feed rate or production rate and emission rate are required to calculate an emission factor. The main substances quantified for catalytic crackers are metals, formaldehyde, and benzene as shown in Table 3b.

Tables 3a and b also list several device and process types for which source testing is not required. Testing may have been conducted on these sources because of district requirements, a lack of accurate estimation techniques, or other facility specific concerns. Of the 161 tests evaluated, 134 are non-required tests. Gas fired internal combustion engines have the most source test data of any non-required category. Formaldehyde was quantified in 29% of the internal combustion engine tests.

3.3 Source Prioritization

To develop emission factors of known quality requires a detailed evaluation of each test collected. To conduct an effective evaluation, the test should include device and method descriptions, and sample, laboratory, QA/QC, calibration, sample location, and blank data. In addition, the test must provide representative process rate information so that emission rates can be normalized to develop emission factors. To evaluate the quality of the collected tests, seven queries or search cases were conducted as shown in Table 4. Search cases 1-3 were for required tests and search cases 4-6 were for non-required tests. Search cases 1-6 required that process rates be available. Tests with process rates can be used to develop emission factors. Search case 7 included tests without process rates. Search cases 1 and 4 required that all supporting information be provided. These tests have the information necessary to develop emission factors of known quality. Search cases 2 and 5 did not require that QA/QC, calibration, or location data be provided. In general, this information is not of primary concern when assessing the accuracy of emission data. Search cases 3, 6, and 7 did not require any supporting information for the emission results. Test data matching these conditions cannot be effectively evaluated for quality. Table 4 shows that the number of tests matching the search cases ranged from 2 (search case 1) to 60 (search case 6). Overall search cases 1, 2, 4 and 5 would provide the best pool of data for emission factor development. In general, search cases 3 and 6 do not provide enough information to validate the results.

As mentioned previously, 161 petroleum tests were collected by CARB. Each of these tests is listed in Section 2 of Volume 3. Search case 7 tests cannot be used to develop emission factors and will not be considered for this project. In addition, fugitive sources such as bulk terminals were not considered because the focus of this project is on combustion sources. Several

data sets also were collected which did not provide any useful air toxic emissions and thus were eliminated from further consideration. Table 5 lists the final set of sources which be validated in detail and included in the emission factor calculations. It should be noted that some of these tests may be eliminated based on the detailed validation results. As shown in the Search Case column of Table 5, some search case 3 and 6 sources were selected. In general, these sources were selected to increase the size of the sample for emission factor development or to ensure that a wide range of source types were represented. Search case 3 and 6 tests do not provide all of the information necessary to evaluate data quality. Table 5 also lists supporting information including Number of Tests, Control Device Used, Report Information, Report Year, Sample Location, and Substance Group as described in Tables 2a-c. In the Report Information columns, a yes (Y) or no (N) is provided if the report provides the specific type of information requested such as Device Description (DD). In the Substance Group columns, a yes (Y) is provided if substances in the group were quantified. For example, if Arsenic and Chromium were quantified in a test, a Y would be listed in the Metals (M) Substance Group column. A blank in the substance group column indicates no substances in the group were quantified.

Table 6 lists tests which will not be included in the emission factor development process. These tests were eliminated for one of the following reasons: emission factors cannot be developed (search case 7); not combustion sources; or no air toxics information.

4.0 Detailed Validation

The detailed validation procedures include checking to ensure the correct sampling and analysis procedures were used, qualifying significant problems such as high field blanks, checking calculations, and evaluating the accuracy of the test results. All methods needed to quantify the substances listed in AB2588 appendix D have been reviewed including:

CARB Methods Reviewed

- 11 - Hydrogen Sulfide (1983)
- 12 - Inorganic Lead (March, 1986)
- 15 - Hydrogen Sulfide (June, 1983)
- 101A - Mercury (1986)
- 104 - Beryllium (1986)
- 106 - Vinyl Chloride (June, 1983)
- 410A/B - Benzene (March, 1986)
- 421 - Hydrogen Chloride (January, 1987 and December, 1991)
- 422 - Volatile Halogenated Organics (January, 1987 and December, 1991)
- 423 - Inorganic Arsenic (January, 1987)
- 424 - Cadmium (1987)
- 425 - Total and Hexavalent Chromium (January, 1987 and September, 1990)
- 428 - PCDD/PCDF and PCB (March, 1988 and September, 1990)
- 429 - PAH (September, 1989)
- 430 - Aldehydes (September, 1989 and December, 1991)
- 433 - Nickel (1989)
- 436 - Trace Metals (March, 1991 and 1992)
- EPA MMT - Trace Metals (1989)

Section 3 of Volume 3 provides validation procedures for each method. These procedures were developed using experience gained conducting air toxic source tests, and reviewing AB2588 test reports, EPA and CARB test method documentation and CARB method review sheets.

Primary parameters were identified to ensure critical data quality indicators were checked. The primary parameters provide an overall assessment of data quality but may not provide an indication of why a particular problem occurred. For example, if a method required field, reagent, and method blanks, only the field blank was considered a primary parameter because it indicates the total interference and/or contamination resulting from the field and laboratory activities. However, the field blank does not indicate if the contamination resulted from the field and/or laboratory activities. For this project, it was more important to evaluate the overall quality of the emissions data.

Only those parameters provided in the test reports in the form required by the method were checked. For example, if the method required that field blank levels over 20% be flagged, the flags were transferred from the test report to the emission factor database. However, if the field blank levels were reported but not divided by the sample value, the ratios were not calculated. Instead, a notation was made to indicate that field blanks were collected and analyzed but the results were not flagged appropriately. The only exceptions to this rule were for CARB Methods 430 and 436. For these two methods, field blank ratios were calculated because they were rarely reported by the contractors.

All versions of the methods effective during the AB2588 program have been reviewed. This allowed review of source test data which was gathered using old test methods. Review sheets were not prepared for the fuel analyses because these results were not extracted from the reports. Fuel analyses do not provide a direct measurement of emissions from a source but are used instead to estimate emissions. The emission factors developed during this program had to provide accurate assessments of emissions.

4.1 Detailed Validation Results

Summary

- 72 tests were selected for detailed data validation and extraction.
- Of the 72 tests, 33 “old” tests evaluated in a previous project funded by the CARB to develop emission factors.
- 2 of the 39 “new” tests were eliminated from the detailed review process.
- 70 tests had data validated and extracted.

This section presents the results of the method validation and calculation checks discussed above for the 72 tests selected for air toxic emission factor development. A test includes the quantification of air toxics and other emissions from a device or group of interconnected devices operating under one condition. Specifically, this section first chronicles the major problems associated with the data validation and extraction procedures and then discusses the details of the method validation results.

Overall, of the 39 “new” tests that passed the initial screening and were selected to undergo the method validation and calculation check procedures, 2 tests were eliminated from the process. One test was excluded from the detailed validation screening because emission factors could not be calculated from the reported data. Originally, this test passed the initial screening because at first glance the test appeared to report all the necessary data to develop a validated emission factor, but a more detailed review of the reports revealed data deficiencies. The other test was dropped because it was determined the device tested was not a petroleum device. Considering the 2 tests that were dismissed from the original group of 72, a total of 70 tests (33 “old” tests and 37 “new”) had data validated, checked, and extracted.

4.1.1 Validation Problems and Calculation Check Failures

- Of all tests validated, the most common problem was the lack of a full set of internal standards used during Method 429 (PAH) analyses.
- Of 5 calculation check failures documented, all of them were Method 430 (HCHO) failures.

Major problems encountered during the method validation and extraction procedures are documented in Table 7. The table lists all 72 tests according to Report ID, Device ID, Number of Tests, Contractor ID, Device Type, Material Used, Review Date, Comment, and Calculation Check Status. These criteria are discussed in detail below:

- **Report ID:** This is the number that was assigned to a device or similar group of devices in each document during the initial screening phase. Similar devices all have the same primary characteristics such as an internal combustion engine. The report ID is a four digit number followed by a letter. The four digit number distinguishes different documents. A unique letter is assigned to each device or group of devices in a document. If, for example, a document contained results for two boilers and an internal combustion engine, the devices would be given the same four digit number (####), but each would have its own letter identifier (e.g., ####A for the two boilers and ####B for the ICE).
- **Device ID:** This three digit number is assigned to each device or group of interconnected devices upon entry into the database. Some facilities have a group of devices which emit to a common stack. For example, a facility may have six steam generators exhausting to one stack. These six steam generators would receive a single device ID. Each engineer entering data had his/her own assigned set of device ID numbers so the person responsible for validating and extracting the results from a particular test could be tracked. In many cases, the report ID and device ID can be used to reference a device or group of interconnected devices. In some cases, however, a report ID references multiple devices. For example, Report ID 2409A references 14 devices (Device IDs 114 to 127) as shown in Table 7.
- **Number of Tests:** As mentioned earlier, a test includes the quantification of air toxics and other emissions from a device or group of interconnected devices operating under one condition. A condition is defined as a set of operating constraints which are fixed during a test. For example, one condition would be a boiler fired on natural gas under normal load. Another condition might be the same boiler fired on fuel oil under normal load. In this case, a single device ID would be assigned and 2 tests would be listed in Table 7.
- **Contractor ID:** This field lists the ID of the contractor responsible for conducting the tests. The name of the contractor is not provided to protect the source of the data.
- **Device Type:** This field displays the type of device whose emissions are characterized in the test.
- **Material Used:** This field describes the materials consumed by each device or group of interconnected devices during all tests. In other words, if the device is a combustion source, this field lists the fuels that were fired during each test. If the device is not a non-combustion source, this field lists the materials processed by the device.

- **Review Date:** This is the date when the method validation and extraction were completed.
- **Comment:** This field lists the problem number. If a significant problem was discovered while validating a test, a problem number was placed in the "Comment" field. If the problem was new and had not already been encountered, then a new number was added to the list. This was continued until all major problems had been documented. There were a total of 5 major problems encountered during the data validation and extraction procedures.
- **Calculation Check Status:** This field describes each test's performance during the calculation checks. This field lists four codes: F - Failed calculation check; P - Passed calculation check; NR - Calculation check not required because calculations were checked for another device in the report; and, ND - Not enough data to check calculations. If a test failed a calculation check, the "F" is followed by the method number that failed the check. A "P" is listed only if all calculation checks passed. The ND code means one of two things, either there is enough data in the test report to conduct a calculation check or there is not enough information in the test report to verify whether the checked passed or failed. Lastly, an "NR" implies that there was more than one device in the test report. In such cases, it was assumed that the contractor conducted all calculations in the same fashion and to perform calculation checks for the same method on all devices would be redundant.

Listed below is an itemized summary of Table 7. It lists all major problems (#1-5) and which reports experienced them. Also, a brief explanation of EER's course of action following the problem is given. Problems associated with calculation checks are also discussed. It should be noted that each line in Table 7 describes a device, group or interconnected devices, or group of similar devices. If a device ID is given, the line describes a device or group of interconnected devices.

- (1) An emission factor cannot be calculated for reports 2599M and 2511A. The results were not extracted or validated.
- (2) Dioxins/Furans and PAH were sampled using a single train for reports 2484A and 2541A. CARB approved the use combined sample train results for emission factor development in the previous project.
- (3) Naphthalene was sampled using Method 410 for report 2409A. Since naphthalene was quantified using an incorrect method, these results were not validated or extracted.
- (4) Method 429 sampling was not isokinetic for reports 2375B and 2375C. The sampling methodology for these tests was modified for non-isokinetic testing by eliminating the glass nozzle and probe from the sampling train. The diesel IC engines were sampled using a 3/8 inch diameter glass probe placed in the center of the exhaust stack. The glass probe was connected directly to a Teflon sample line. No mention of CARB approval was given for these modification. The results were validated, extracted, and noted in the database.
- (5) A full set of Method 429 internal standard recoveries was not reported for reports 2599L, 2599A, 2599N, 2599B, 2599C, 2599D, 2599E, 2599J, 2599G, 2599H, 2599I, 2513C, 2513A, 2598A, 2375B, and 2375C. CARB Method 429 requires the spiking of 14 internal standards into each sample. For no known reason, these tests did not spike all 14 standards. Instead, most spiked and reported recoveries for about half of them. The results were validated and extracted and noted in the database.

(F) Reports 2460B (Method 430) and 2007A (430) failed calculation checks.

Method 430: The two reports which failed Method 430 did not provide the reporting limit when the sample to blank ratio was less than 5. The results for these reports were not corrected.

4.1.2 Detailed Validation Flags

Summary

- The majority of detailed flags complied denote poor procedures by the contractors, not actual parameter failures.

After all the test results were validated and extracted, the method validation sheets were compiled and the validation flags were entered into the database. The validation flags were then condensed and exported to a spreadsheet for tabular summation. The results of the detailed data validation are summarized in the tables located in Section 4 of Volume 3. There is one table per method. Each test method has a set of validation parameters that are used to verify proper sampling and analytical procedures. These parameters are organized into sections by type of sampling or analytical check. The sections are in boldface and shaded gray in the tables. A detailed review of a source test report can produce three basic responses with the corresponding flag notations for each validation parameter:

- Pass: A blank cell in the table
- Insufficient information to report a parameter: R, V, N, P, RN, PN
- Fail: Y, RF, PF

Consider Method 428 (1988) as an example. This method is applicable to the determination of Polychlorinated Dibenzo-p-dioxin (PCDD), Polychlorinated Dibenzofuran (PCDF) and Polychlorinated Biphenyl (PCB) emissions from stationary sources. Section 4 of Volume 3 shows a total of 2 stacks (14210, 14610) were sampled and analyzed using this method. The first three digits of the stack ID are the device ID and the last two digits identify each stack on the device. The stack ID is used in Section 4 of Volume 3 because some devices have multiple stacks. Each of these stacks may have been tested and therefore validation was conducted on each stack. "Sample runs < 3" parameter shows a blank cell for each stack. This means that 3 Method 428 runs were conducted at the stack listed. The following is a brief explanation of each notation.

- R This notation is used when it cannot be determined whether the parameter was conducted or not.
- V If values were not provided for a parameter, this notation was used.
- N This notation is used when a parameter was not conducted.
- P This notation is used specifically for the Pitot tube semi-annual calibration sheet parameter.
- RN* Similar to the V notation but applied to more detailed parameters that require run quantification.

PN* Again, similar to the V notation but applied to more detailed parameters that require both run and substance quantification.

Y This notation is used when a parameter was conducted and failed.

RF* Similar to the Y notation but applied to more detailed parameters that require run quantification.

PF* Again, similar to the Y notation but applied to more detailed parameters that require run and substance quantification.

* Numbers before these notations represent how many times a parameter failed or could not be checked.

The following is a list summarizing the validation tables for each method. The list contains those parameters which were flagged for 50% or more of the devices in each table unless noted. By far, the most prevalent type of flags found in the tables are those associated with reporting. Still, there are plenty of failures which are noteworthy, but they are much less frequent. Note, primary validation parameters are underlined and failures are in italics. For more details on specific parameter failures, please refer to the tables in Section 4 of Volume 3.

Method 11 (1983): Single stack tested - see Section 4 of Volume 3

Method 12 (1986): Insufficient reporting - Swirl check
Insufficient reporting - Semi-annual pitot tube calibration
Failure - Field reagent blank not used to correct samples
Insufficient reporting - Atomic absorption spectrometry not used
Insufficient reporting - Atomic absorption spectrometry not conducted in triplicate

Method 15 (1983): No parameters flagged 50% or more

Method 101A (1986): Insufficient reporting - Swirl check
Insufficient reporting - Method 1 not used for sample location
Insufficient reporting - Dry gas meter pre- and post-test check
Insufficient reporting - Semi-annual pitot tube calibration
Insufficient reporting - Filter temperature
Failure - Field reagent blank not used to correct samples
Failure - Combined analysis not used

Method 104 (1986): Insufficient reporting - Swirl check
Insufficient reporting - Nozzle size check
Insufficient reporting - Dry gas meter pre- and post-test check
Insufficient reporting - Semi-annual pitot tube calibration
Insufficient reporting - Field reagent blank not conducted for acetone
Failure - Field reagent blank not used to correct samples

Method 410 (1986): No parameter flagged 50% or more

Method 421 (1987): Single stack tested - see Section 4 of Volume 3

- Method 422 (1987): *Failure - Analysis date not within 24 hours of collection*
- Method 422 (1991): Single stack tested - see Section 4 of Volume 3
- Method 423 (1987): Single stack tested - see Section 4 of Volume 3
- Method 424 (1987): Single stack tested - see Section 4 of Volume 3
- Method 425 (1987): Insufficient reporting - Swirl check
 Insufficient reporting - Nozzle size check
 Insufficient reporting - Dry gas meter pre- and post-test check
 Insufficient reporting - Semi-annual pitot tube calibration
 Insufficient reporting - Matrix spike not conducted once per test (Hexavalent Chromium)
 Insufficient reporting - Matrix spike percent recovery (Hexavalent Chromium)
 Insufficient reporting - Duplicates not conducted for every 10 samples (Total Chromium)
- Method 425 (1990): Insufficient reporting - Swirl check
 Insufficient reporting - Probe proof not conducted per probe
 Insufficient reporting - Probe proof total chrome > detection limit
 Insufficient reporting - Matrix spike percent recovery (Hexavalent Chromium)
 Insufficient reporting - Matrix spike not conducted daily (Total Chromium)
- Method 428 (1988): Insufficient reporting - Swirl check
 Insufficient reporting - Nozzle size check
 Insufficient reporting - Dry gas meter pre- and post-test check
 Insufficient reporting - Semi-annual pitot tube calibration
 Insufficient reporting - Surrogate standards not conducted one per run
 Insufficient reporting - Surrogate standards percent recovery (37Cl-2,3,7,8-TCDD)
 Insufficient reporting - Surrogate standard percent recovery (13C-1,2,3,4,6,7,8-HpCDF)
 Insufficient reporting - Laboratory control spike percent accuracy
 Insufficient reporting - Internal standards not conducted one per sample
 Insufficient reporting - Internal standards percent recovery
- Method 428 (1990): Single stack tested - see Section 4 of Volume 3
- Method 429 (1989): Insufficient reporting - Swirl check
 Insufficient reporting - Dry gas meter pre- and post-test check
 Insufficient reporting - Semi-annual pitot tube calibration
 Insufficient reporting - Surrogate standards percent recovery
 Insufficient reporting - Laboratory control spike percent accuracy
 Insufficient reporting - Internal standards percent accuracy
 Insufficient reporting - Analysis date

- Method 430 (1989): Insufficient reporting - Pre- and post-test sample flow
 Insufficient reporting - Matrix spike not conducted per test
 Failure - Matrix spike not reported
- Method 430 (1991): Insufficient reporting - Rotometer calibration check
 Insufficient reporting - Pre- and post-test sample flow
 Insufficient reporting - Sampling date not within 2 days of reagent blank check
 Insufficient reporting - Extraction date
 Insufficient reporting - Analysis date
- Method 433 (1989): Insufficient reporting - Swirl check
 Insufficient reporting - Semi-annual pitot tube calibration
 Insufficient reporting - Field reagent blank not conducted for two filters and 0.1N HNO₃
 Failure - Field reagent blank not used to correct sample
 Failure - Atomic absorption spectrometry not used
 Insufficient reporting - Atomic absorption spectrometry not used
 Insufficient reporting - Atomic absorption spectrometry not conducted in triplicate
- EPA MMT (1989): Insufficient reporting - Swirl check
 Insufficient reporting - Nozzle size check
 Insufficient reporting - Dry gas meter pre- and post-test check
 Insufficient reporting - Semi-annual pitot tube calibration
 Failure - Field reagent blank not used to correct samples
 Insufficient reporting - Duplicates percent difference (ICAP)
 Insufficient reporting - Duplicates not conducted per run (GFAAS)
 Insufficient reporting - Duplicates not conducted per run (CVAAS)
 Insufficient reporting - Matrix spikes percent recovery (GFAAS)
 Insufficient reporting - Matrix spikes percent recovery (CVAAS)
- Method 436 (1992): Insufficient reporting - Swirl check
 Insufficient reporting - Dry gas meter pre- and post-test check
 Insufficient reporting - Pre-test leak check
 Insufficient reporting - Post-test leak check
 Failure - Field blank not collected once per test
 Insufficient reporting - Sample/field blank ratio
 Failure - Sample/field blank ratio
 Insufficient reporting - Field reagent blank not used to correct samples
 Insufficient reporting - Analysis dates (ICAP)
 Failure - Analysis dates (CVAAS)
 Insufficient reporting - Duplicates percent difference (ICAP)
 Insufficient reporting - Duplicates not conducted per run (GFAAS)
 Failure - Duplicates not conducted per run (CVAAS)
 Insufficient reporting - Matrix spikes not conducted on front- and back-half (GFAAS)
 Insufficient reporting - Matrix spikes percent recovery (GFAAS)
 Failure - Matrix spike not conducted on one nitric impinger (CVAAS)
 Insufficient reporting - Matrix spike not conducted on one nitric impinger (CVAAS)

Insufficient reporting - Matrix spike percent recovery

Lastly, the tables in Section 4 of Volume 3 do not specify validation results for individual hazardous air pollutants. Consequently, one cannot determine if any one substance failed method parameters more than others by using these tables alone. Section 5 of Volume 3, however, contains a table which provides such information. The table lists how many times a particular substance failed a validation parameter. It includes the Method, Version (Year), Failed Check, Substance, and Count. The table presents results for both isokinetic and non-isokinetic trains.

5.0 Data Extraction

Data extraction is the process of entering design and operating information, and emission results into a database. After the validation activities were completed as described in Section 4.0, the emissions data were extracted. If a critical validation parameter was not satisfied for a method, such as analyzing the front- and back-half component of a CARB 436 train, the emissions data for the method were not extracted. If several methods were not suitable for extraction in a single test report, the complete test report was rejected. If the test report did not provide sufficient information to develop emission factors, it also was rejected. For each test that was not rejected, the following information was extracted.

Device Information

- 1.) Source classification code (SCC)
- 2.) Standard industrial code (SIC)
- 3.) Control device type
- 4.) Fuel type or material processed
- 5.) Capacity
- 6.) Company
- 7.) Location (City, Address, Zip, Facility ID, District Code)
- 8.) Report Date

Sample and Analysis Procedures

- 1.) Sampling method
- 2.) Analysis method
- 3.) Contractor
- 4.) Detection limit based on MDL or PQL

Run Information

- 1.) Process rate and unit (must be appropriate for emission factor development)
- 2.) Site run ID
- 3.) Date of Run
- 4.) Fuel/Material type burned during test
- 5.) Description of operation during test
- 6.) Stack flow rate (dscfm)
- 7.) Stack moisture (%)
- 8.) Stack temperature (F)
- 9.) Stack oxygen (%)

Emission Information

- 1.) Substance
- 2.) Detection indicator (Detected or Not Detected)
- 3.) Data quality flags
- 4.) Concentration value and unit
- 5.) Emission rate value and unit
- 6.) Emission factor value and unit

6.0 Emission Factors

A procedure was developed to provide emission factors of known quality for a wide range of air toxics and source types. This procedure considers the design and operation of the sources, process stream characteristics, data quality, source population size, and emission factor variability. The procedure includes the following steps:

- Identify Design and Operating Parameters
- Identify Normalizing Units
- Assign Run Specific Method Ratings
- Calculate Run Specific Emission Factors
- Identify Major and Sub Group Evaluation Parameters
- Compile Detailed Data Listings
- Conduct Outlier Analysis
- Identify Sub Groups
- Calculate Emission Factors for each Sub Group
- Assign Sub Group Method and Population Ratings
- Assign CARB Overall Quality Rating
- Assign EPA Overall Quality Rating

Each of these steps is discussed below. The discussion includes a brief background which describes why the step is needed and the approach used. The background is followed by a presentation of the results of applying the subject step to the data.

6.1 Design and Operating Parameters.

Background. To develop emission factors, sources must be grouped by their design and operating characteristics. Ideally, emissions from devices in each group should be similar or have low variability when normalized. To define design and operating parameters, a literature review was conducted. AP-42 was one of the best sources of information identified. In addition to AP-42, EER used its experience in past programs such as the WSPA air toxic emission factor project to define design and operating parameters. Table 8 lists key parameters which may affect emissions from external combustion, internal combustion, and gas turbines.

Results. Few reports contained all of the information listed in Table 8. Basic system type, feed material or fuel, and air pollution control system type were available for most sources. Unit capacity, load, and burner type were available for most external combustion sources. If a primary parameter was not described in a report, the appropriate facility was contacted.

6.2 Normalizing Units.

Background. An emission factor characterizes air toxic emissions as a ratio of the amount of pollutant released to a process related parameter. Emission factors are typically expressed in terms of mass of emission per mass or volume of fuel or material fed or product produced. Thus, the emission rate is normalized by the production rate or by the feed rate of fuel or material. This method of normalizing assumes that emissions are directly proportional to production rate or fuel or material feed rate. Based on established procedure, normalizing units were assigned based on the source classification codes (SCC).

Results. The first step in determining the appropriate normalizing units is to assign SCCs.

Using a SCC look-up table from the EPA and descriptions provided in the test reports, SCCs were assigned for each test. Table 9 lists the SCCs assigned. For several tests, no SCC was available which adequately described the test. For example, several of the reciprocating internal combustion engines were fired on field gas. For these sources, a natural gas SCC was used as noted in Table 9. In addition, five steam generators, one heater, and three gas turbines fired natural and process gas simultaneously. SCCs were available for natural gas and process gas separately. However, SCCs were not available for simultaneous burning of natural and process gas. Therefore, dummy SCCs were assigned as shown in Table 9. For the internal combustion engines, steam generators, gas turbines and heaters, additional SCCs must be requested from the EPA. The required normalizing units for each SCC also are provided in Table 9. Emission factors have been expressed in these units.

6.3 Run Specific Method Rating.

Background. To compare and evaluate test results, it is important to denote the test methods that were used and the level of documentation that was provided. Various systems have been developed to categorize test methods and the level of documentation. For example, the EPA developed the system described below.

EPA Method Rating

- A When tests are performed by a sound methodology and are reported in enough detail for adequate validation.
- B When tests are performed by a generally sound methodology but lack enough detail for adequate validation.
- C When tests are based on an untested or new methodology or are lacking a significant amount of background data.
- D When tests are based on a generally unacceptable method but the method may provide an order-of-magnitude value for the source.
- U Unrateable.

The EPA method ratings were used for the Factor Information Retrieval (FIRE) system which includes criteria and air toxic emission factors. For the CARB emission factor project the EPA system was modified to distinguish between EPA and CARB methods as well as tests which provide sufficient documentation and those that do not. The method rating system used for CARB emission factor project is described below.

CARB Method Rating

- A Test was performed using a new or old CARB methodology and sufficient documentation was provided to validate the results.
- B Test was performed using a new or old EPA methodology and sufficient documentation was provided to validate the results.
- C Test was performed using a new or old CARB methodology and insufficient documentation was provided to validate the results.

- D Test was performed using a new or old EPA methodology and insufficient documentation was provided to validate the results.
- E An assumption was made in the emission factor calculation which could significantly affect the accuracy of the results. Methods which do not have validation check procedures also were rated under this category.
- F Emission data is unacceptable for inclusion in emission factor database. If a sampling problem or process upset occurred which significantly impacted the emission results, the emission results were excluded from emission factor calculations. A statistical test was used to identify outliers as described in section 6.7.

****** It should be noted that the EPA methods are not considered inferior. However, the majority of the test methods were CARB's because they were mandated by the Hot Spots program. An EPA method could be used if there was no corresponding CARB test method or if the source asked for an equivalency determination. CARB and EPA test methods are different in many cases and can lead to different results. CARB test methods were rated higher than EPA's to provide consistent test result comparisons.

A test received an A or B (C or D) rating if a specified number of primary validation parameters could be checked. Primary validation parameters are those that indicate overall contamination, poor recovery, and imprecision. Primary parameters are identified in Table 10 for CARB and EPA methods. The table also provides the number of primary parameters per method and the number of primary parameters required to determine if sufficient documentation was provided. The number of parameters required to determine if sufficient documentation was provided was based on the following criteria.

Primary Parameters	Sufficient Documentation if
0 to 2	0 Missing
3 to 4	1 Missing
5 to 6	2 or fewer Missing

Results. Table 11 summaries the method ratings by method. The table lists the number of times the method was used for the tests extracted and validated during this project. Several tests received E ratings because no validation check procedures have been developed. Data from two tests were assigned F ratings because they were identified as outliers as discussed in Section 6.7.

6.4 Run Specific Emission Factor Calculation.

Background. A source test usually includes three runs per sample method. Emission factors must be calculated for each of these runs. Once appropriate groups have been defined (see Sections 6.5 and 6.8), run emission factors from one or more source tests are averaged together. In general, emission factors are calculated on a run basis using feed or production rates and air toxic emission rates. For combustion sources, when feed rates are not available, F-Factors can be used in combination with the stack oxygen and air toxic emission concentration using the following equation.

$$EF = FF \cdot HV \cdot (21 / (21 - O_2)) \cdot C$$

For Gas Fired:

EF = Emission Factor, lb/MMcf
FF = Fuel F-Factor, dscf @ No Excess Air/MMBtu
HV = Fuel Heating Value, MMBtu/MMcf
O₂ = Stack Oxygen
C = Substance Concentration, lb/dscf @ Stack Oxygen

For Liquid Fired:

EF = Emission Factor, lb/Mgal
FF = Fuel F-Factor, dscf @ No Excess Air/MMBtu
HV = Fuel Heating Value, MMBtu/Mgal
O₂ = Stack Oxygen
C = Substance Concentration, lb/dscf @ Stack Oxygen

For Solid Fired:

EF = Emission Factor, lb/ton
FF = Fuel F-Factor, dscf @ No Excess Air/MMBtu
HV = Fuel Heating Value, MMBtu/ton
O₂ = Stack Oxygen
C = Substance Concentration, lb/dscf @ Stack Oxygen

Results. Run specific emission factors were calculated for each source in the appropriate unit (see Table 9).

6.5 Major and Sub Group Evaluation Parameters

Background. A key step in the emission factor development process is to identify devices which have similar designs and operation. The design and operating parameters selected to categorize the devices should impact air toxic emissions. If the parameters are defined appropriately and correct normalizing units are assigned, emission factors developed for each group of devices will be distinctive and will have low variability. These emission factors can be used to accurately assess emissions from similar devices. The first step in the categorization process is to divide the sources into major groups based on their primary design characteristics. Primary design characteristics are those parameters which are known to impact emissions such as basic system and feed type. For this study, emission data from different major groups were not combined when calculating emission factors.

The second step in the grouping process is to identify if any sub groups are present within each major group. Sub group identification is based on an evaluation of secondary design and operating parameters. Before sub groups can be established, secondary design and operating parameters must be identified, detailed data listings must be prepared, and outliers must be identified and eliminated from the analysis if sampling problems occurred. In addition, guidelines and statistical tests should be established to determine if sub groups are needed and appropriate. Secondary design and operating parameters are discussed and listed in this section. Detailed data listings are described in Section 6.6. The outlier analysis is discussed in Section 6.7 and guidelines for establishing sub groups are presented in Section 6.8.

Results. Major groups have been identified for all devices as shown in Table 12. The first column of this table describes each major group. Horizontal lines are used in Table 12 to segregate the sources contained in each major group. For example, the "Boiler, Ref. Gas" major group contains 5 tests.

Secondary parameters which were considered when developing sub groups are listed in the table. For the major group "Boiler, Ref. Gas", the impact of air pollution control (APC) system, load, and burner type was investigated. NC indicates no comparison was made. For example, the only SCC for the major group "Boiler, Ref. Gas" is 10200701, therefore no comparison of SCC was made.

It should also be noted that the oxygen level was examined for all combustion sources. Potential divisions based on an analysis of the data have been listed in Table 12. For the gas fired internal combustion engines, lean refers to oxygen levels greater than 2%. Due to the limited operating data present in the reports, the oxygen level compared in all cases was the stack oxygen level. If a source has significant air dilution after the combustion chamber, the stack oxygen will not reflect the true combustion environment.

6.6 Detailed Data Listings.

Background. To investigate the impact of secondary design and operating parameters and evaluate outliers, lists of emission factors, design and operating parameters and data quality parameters must be compiled. These lists are used to identify trends and as inputs to the statistical evaluation procedures.

Results. The comparison parameters listed in Table 12 and normalized emissions data were compiled into 9 tables, one for each device type. Each of these tables was sorted by major group, category, substance, and normalized emissions. The number and type of design and operating parameters listed depended on the device type. For example, Fuel type, SCC, strokes per cycle, capacity, APC system, stack oxygen, and stack flow were listed for internal combustion engines. Because the detailed data listings contain confidential information they have not been provided in this report.

6.7 Outlier Analysis

Background. Before establishing subgroups, outliers must be identified and evaluated. If an outlier results from a calculation or data entry error, it can be corrected. Outliers resulting from sampling and analysis problems may be eliminated from data analysis activities. There are many approaches for identifying and handling outliers. For this study, the outlier analysis was conducted in two steps as indicated below.

- i.) Conduct an outlier analysis per substance per test and per substance per major group. The Dixon test was used to identify outliers per substance per test and per substance per major group. To use the Dixon test, a group of data is selected and sorted from lowest to highest emissions. Then the high and low points are examined statistically in relation to the other points in the data set. The test will identify if the high and low points are outliers at a prescribed level of confidence. For this study the confidence level was 95%. It should be noted that when applying the Dixon test to samples with three points many outliers are identified where two of the points in the data set have approximately equal values and the third point is slightly higher. This commonly occurs when two points are not

detected and the third point is detected. For this analysis, if the other two points in a data set had similar values and the outlier was within _ order of magnitude of their value, no other checks or action was taken. These values were accepted as being within the expected precision of the test method.

- ii.) Evaluate outlier points identified in Step I to determine if sampling problems, calculation errors, and process upsets occurred. Outliers with calculation errors were corrected and outliers with sampling problems were assigned a method rating of F for unacceptable. Emissions with method ratings of F were not used to develop emission factors. Outliers were not eliminated unless a sampling or process problem occurred. A major component of the outlier evaluation are problems found during the detailed validation of the test reports. These problems are indicated by the flags described in Section 4 of Volume 3.

Results. Table 13 summarizes the results of the outlier analysis by device and substance. Each data point in the table is an outlier. An "x" in the calculation, process or method column indicates that no problems of that type could be found in the test report or database. A "0" indicates that a problem was located and some action was taken. The problem and action are described in the comment column. 22 outliers were identified in the analysis by device and substance. These outliers were assigned an F method rating and excluded from the emission factor calculations.

The results of the outlier analysis by major group and substance are given in Table 14. The outliers in this analysis were due to suspect data resulting from apparent contamination of samples. A total of 4 outliers were identified in the analysis by major group and substance. These outliers will receive an F method rating and will be excluded from the emission factor calculations.

6.8 Sub Group Evaluation

Background. Subgroups may be developed for major groups with two or more sources. Major groups are discussed and identified in Section 6.5. As the number of sources increases, the potential for subgroup development also increases. Subgroups are developed when a secondary design or operating parameter is identified which impacts emissions. Engineering judgement and statistical analysis can be used to determine if the secondary parameters have a significant impact on emissions. If a secondary parameter does impact emissions, subgroups are established resulting in lower emission variability than present across the major group. If the statistical analysis contradicts commonly accepted knowledge about emission behavior, subgroups should not be developed.

In cases where a secondary parameter impacts one substance but not another, the data for both substances could be segregated into different subgroups. Another approach would be to segregate the data for the substance which was impacted by the parameter into different subgroups and combine the data for the substance which was not impacted. This approach can generate a large number of subgroups with high variability. To reduce the number of subgroups and the variability of emissions data in each subgroup, subgroups were identified in this project using the following two step process.

- I.) Identify which secondary parameters (comparison parameters) identified in Table 12 impact the emissions data by reviewing data listings and using the t-Test. The t-Test uses the t distribution to determine if two samples are from the same population when the variances are unknown but equal. The test is applicable to

samples containing less than 30 data points. A sample is a group of data with a distinct value or range of values of the secondary parameter considered. If the t-Test indicates that two samples are not from the same population, the secondary parameter which the samples were grouped by has a significant impact on emissions. It should be noted that the t-Test was only used to support the development of subgroups. In no case was the t-Test used to blindly develop subgroups. Before developing subgroups, the results of the t-Test were examined to ensure they were reasonable based on engineering judgement.

- ii.) Segregate tests in each major group into subgroups based on those secondary parameters identified in Step I which impact the emissions data. Results from one device were not split into different subgroups. This approach is appropriate when a substance is impacted by the secondary parameter and when it is not impacted.

Results. The impact of the secondary parameters identified in Table 12 is quantified statistically in Section 6 of Volume 3. Section 6 of Volume 3 includes a series of similar table containing the results of the t-Test evaluation of each comparison listed in Table 12. The tables are listed below.

Volume 3 Section 6 Statistical Analysis Reference Tables:

Table 6-1.	Source Classification Code comparison
Table 6-2.	Air pollution control system comparison
Table 6-3.	Internal combustion engine strokes per cycle comparison
Table 6-4.	Internal combustion engine oxygen comparison
Table 6-5.	Internal combustion engine capacity comparison
Table 6-6.	Internal combustion engine strokes per cycle and oxygen comparison
Table 6-7.	Internal combustion engine strokes per cycle and capacity comparison
Table 6-8.	Internal combustion engine strokes per cycle, oxygen and capacity
Table 6-9.	Gas turbine duct burner comparison
Table 6-10.	External combustion source load comparison
Table 6-11.	External combustion source burner type comparison
Table 6-12.	External combustion source load and burner comparison

Each of these tables includes a description of the data sets being compared, number of points, average, standard deviation, and detection limit ratio (Detect Ratio). The detect ratio is the ratio of the sum of detected values to the sum of detected and non-detected values. A detect ratio of one indicates all of the data was detected. A detect ratio of zero indicates all of the data was not detected. If the difference between the data sets is significant based on the t-Test, a "Yes" is provided in the last column of the table. If the comparison includes more than three runs (two tests or more), the significantly higher data set is shaded. For comparisons where the difference is not significant or the difference is significant but contains three or fewer runs, the higher data set is underlined. It should be noted that if the difference is significant but none of the data was detected, no shading is provided. If the lower data set includes all non-detect data and the higher data set includes detected data, then the higher data set is shaded provided each data set in the comparison includes more than three runs. If the sample sizes are too small, one run only, for statistical comparison, an "NA" is given in the last column.

No Subgroup Development Possible

Major Group	Reason
*Asphalt Blowing - Blow Cycle	Single Source

*Asphalt Blowing - No Blow Cycle	Single Source
*Coke Calcining	Single Source
*Heater - Natural Gas	Single Source
*Heater - Natural/Refinery Gas	Single Source
*Heater - Oil	Single Source
*Reboiler - Ethylene Glycol	Single Source
*Reboiler - Triethylene Glycol	Single Source
*Turbine - Natural/Refinery/Liquid Petroleum Gas	Single Source
*Turbine - Refinery Gas	Single Source

For the remaining major groups, subgroup development is possible. Each section below provides a brief description of the subgroup analysis for the remaining major groups. A complete list of final subgroups is provided in Table 15. Subgroups are compared in Table 16.

6.8.1 Boiler - Fuel Oil

Number of Tests - 2
Significant Parameters - None
Subgroups - None

Comment - There is no observed difference in design and operation of the two units tested so no subgroups were developed.

6.8.2 Heater - Refinery Gas

Number of Tests - 16
Significant Parameters - None
Rejected Tests - PAH data for Reports 2599A, B, C, D, N
Subgroups - None

Comments - Based on a review of the PAH data it was found that PAH data from tests in document 2599 are two to three orders of magnitude higher than the other tests. PAH data from Report 2599 are significantly higher. Several reasons for the difference include: LRMS was used yielding high detection limits, none of the required internal standards were used in the analytical procedures, and high levels of contaminants were found in many samples. The omission of the required internal standards is major failure and can impact the emission results significantly. Because one of the objectives of this project is to develop accurate emission factors, PAH data from document 2599 were eliminated from the emission factor development procedures. Similar reasoning was used to eliminate PAH data from asphalt production devices in the project titled "Development of Toxics Emission Factors from Source Test Data Collected under the Air Toxics Hot Spots Program" (see Final Report prepared for California Air Resources Board dated April 11, 1996).

The statistical analysis of heaters included a comparison of post combustion air pollution control devices, load, burner type, and load/burner type. Statistical analyses for these parameters are provided in Tables 6-2, 6-10, 6-11, and 6-12 of Volume 3. Observations from the comparisons are provided below.

- The comparison of post combustion air pollution control devices indicated several significant differences. It is likely that these differences were a result of the small sample sizes compared.

- Several substances from low load sources do have significantly higher emissions. However, several substances from high load sources also have significantly higher emissions. This inconsistent impact of load indicates another parameter is probably responsible for the difference.
- Only one substance (Chrysene) in the CB/LNB burner comparison indicates a significant difference. This comparison is based on a small data set. If burner type was a key parameter it should impact the emissions of other PAH substances significantly.
- When grouping by burner type and load the number of significant differences increase but the number of sources also drops. Most significant differences are based on single source comparisons. In particular, one source with low load and CBs accounts for most of the instances where PAH emissions are significantly higher. For several PAH substances additional data for low load/ CBs is available. In these instances, the low load/CB sources do not have significantly higher emissions. This indicates the single source may have design/operating difference besides load and CBs which account for the significant difference.

Based on the above review all of the heater data were lumped into a single source category with no subgroups. Most significant differences are based on single test comparisons. In addition, these significant differences are not consistent from one HAP to the next. For example for acenaphthene low load sources to have higher emissions while for benzo (a) pyrene high load sources appear to have higher emissions. The lack of strong trends in the field data and results from recent laboratory evaluations which indicate no difference in emissions from conventional and low Nox burners operated under a range of typical refinery conditions (PERF project) support the lumping of the field data into a single group. In addition, a more robust emission factor can be developed by combining all data into a single group especially when the variability cannot be effectively explained by observed differences in operation.

6.8.3 Boiler - Refinery Gas

Number of Tests - 5

Significant Parameters - None

Rejected Tests - PAH data for Reports 2599B, E, G, H

Subgroups - None

Comments - The PAH data for reports 2599B, E, G, and H were eliminated for the reasons described in Section 6.8.2. The statistical analysis of boilers included a comparison of post combustion air pollution control devices, load, burner type, and load/burner type. Statistical analyses for these parameters are provided in Tables 6-2, 6-10, 6-11, and 6-12 of Volume 3. Observations from the comparisons are provided below.

- The comparison of post combustion air pollution control devices indicated no significant differences.
- Emissions of phenol are significantly higher for high load sources. This observation is based on the comparison of a single high load test to several low load tests.
- The CB/LNB burner comparison does not indicate any significant differences.

- When grouping by burner type and load the number of significant differences goes up but the number of sources also drops. All significant differences are based on single source comparisons.

Based on the above review all of the boiler data were lumped into a single source category with no subgroups. All significant differences are based on single test comparisons. In addition, these significant differences are not consistent from one HAP to the next. The lack of strong trends in the field data and results from recent laboratory evaluations which indicate no difference in emissions from conventional and low Nox burners operated under a range of typical refinery conditions (PERF project) support the lumping of the field data into a single group. In addition, a more robust emission factor can be developed by combining all data into a single group especially when the variability cannot be effectively explained by observed differences in operation.

6.8.4 Internal Combustion Engine - Diesel

Number of Tests - 3

Significant Parameters - Oxygen Level ($> 13\%$ or $< 13\%$)

Subgroups - 2

Comments - The statistical analysis of diesel internal combustion engines included a comparison of stack oxygen, size, and oxygen/size. Statistical analyses for these parameters are provided in Tables 6-4, 6-5, and 6-8 of Volume 3. In all of the comparisons conducted, one of the data sets compared included results from a single source test. In general, these comparisons are not considered reliable. However, when the differences are large and supported by process knowledge subgroups can be developed. In particular, it was found that the source with stack oxygen level $\leq 13\%$ has higher PAH emissions than the sources with a stack oxygen level $> 13\%$ as shown in Table 6-4 in Section 6 of Volume 3. This is not the case for formaldehyde and acetaldehyde emissions. These substances have higher emissions at higher oxygen levels. While the impact of oxygen on emissions is in general based on small data sets, the behavior is supported by theory and subgroups were developed.

6.8.5 Internal Combustion Engine - Field Gas

Number of Tests - 6

Significant Parameters - Strokes (2 or 4)

- Oxygen Level (Lean or Rich)

Subgroups - 3

Comments - The statistical analysis of field gas internal combustion engines included a comparison of strokes per cycle, stack oxygen, size, strokes per cycle/oxygen, strokes per cycle/size, and strokes per cycle/oxygen/size. Statistical analyses for these parameters are provided in Tables 6-3, 6-4, 6-5, 6-6, 6-7 and 6-8 of Volume 3. All 2 stroke engines have higher emissions than the 4 stroke engines as shown in Table 6-3 of Section 6 of Volume 3. It should also be noted that all of the 2 stroke engines also have high oxygen levels. For the 4 stroke engines, the data indicated that sources with oxygen levels of less than 2% have higher BTX emissions than sources with oxygen levels greater than 2% as shown in Table 6-6 of Section 6 of Volume 3. Sources with oxygen levels greater than 2% had higher formaldehyde emissions. Sources with oxygen levels greater than 2% are characterized as lean burning and sources with oxygen levels less than 2% are characterized as rich burning. An examination of capacity indicated no significant differences as shown in Table 6-5 of Section 6 of Volume 3. When strokes per cycle, and rich or lean combustion are used to develop subgroups, the following subgroups are

obtained as shown in Table 15.

1 - 2 stroke/lean
2 - 4 stroke/lean
3 - 4 stroke/rich

6.8.6 Internal Combustion Engine - Natural Gas

Number of Tests - 13
Significant Parameters - Oxygen Level (Lean or Rich)
Rejected Tests - 4 tests rejected from report 2460B
Subgroups - 2

Comments - Report 2460B included results from four units fired on natural gas. Results from this report were rejected because the strokes per cycle could not be verified. In addition, the formaldehyde results were much lower than all other internal combustion engines. After reviewing the report it was found that the results were reported at levels well below those found in the blank. In these cases the reporting limit should be provided. Insufficient information was available to determine the reporting limit so the results were eliminated.

All of the remaining tests are for 4 stroke engines with capacities less than 650 hp. The statistical analysis for lean and rich engines clearly shows that rich burning engines have higher BTX emissions as shown in Table 6-4 of Section 6 of Volume 3. Lean burn engines have higher formaldehyde emissions. Based on these observations, the following subgroups were established as shown in Table 15.

1 - 4 stroke/lean
2 - 4 stroke/rich

6.8.7 Steam Generator - Crude Oil

Number of Tests - 3
Significant Parameters - None
Subgroups - None

Comments - The statistical analysis of crude oil fired steam generators included a comparison of post combustion air pollution control devices, load, burner type, and load/burner type. Statistical analyses for these parameters are provided in Tables 6-2, 6-10, 6-11, and 6-12 of Volume 3. Observations from the comparisons are provided below.

- The comparison of devices without control to devices with SO₂ control indicated lead was significantly higher for devices without SO₂ control. This result is likely a result of another parameter and is based on a comparison of small data sets.
- Low load sources do have significantly higher metal emissions. This statement is based on a comparison of small data sets. It is likely that another parameter such as feed metal content is responsible for the observed difference. Organic emissions from high load sources are generally higher. It should be noted that the difference in load is small between the low load (75%) and high load (86%). It is not likely that this small change in load would account for the change in emissions.

- Only two substances (lead and pyrene) in the CB/LNB burner comparison indicates a significant difference. The presence of conventional burners probably did not result in higher lead emissions rather a feed difference is probably responsible.
- When grouping by burner and load the number of significant difference goes up but the number of sources also drops. All significant differences are based on single source comparisons. Most of the significant differences occur for metals where feed is probably responsible for the differences.

The lack of strong trends in the field data and results from recent laboratory evaluations which indicate no difference in emissions from conventional and low Nox burners operated under a range of typical refinery conditions (PERF project) support the lumping of the field data into a single group. In addition, a more robust emission factor can be developed by combining all data into a single group especially when the variability cannot be effectively explained by observed differences in operation.

6.8.8 Steam Generator - Natural/CVRG

Number of Tests - 5
Significant Parameters - None
Subgroups - None

Comments - All sources in this category have lower loads and no post combustion controls so no comparison of the impact of these parameters was made. For naphthalene conventional burners had higher emissions than low Nox burner. This comparison was based on single source data sets.

6.8.9 Steam Generator - Natural Gas

Number of Tests - 2
Significant Parameters - None
Subgroups - None

Comment - There is no observed difference in design and operation of the two units tested so no subgroups were developed.

6.8.10 Turbine - Natural Gas

Number of Tests - 3
Significant Parameters - Duct Burners (Yes or No)
Subgroups - 2

Comments - The comparison of APC system indicated that systems with SCR/COC had higher emissions of some organics as shown in Table 6-2 of Section 6 of Volume 3. The observed difference is likely a result of another difference in design or operation. The comparison of formaldehyde emissions indicate the source with duct burners has higher emissions than the source without duct burners as shown in Table 6-9 of Section 6 of Volume 3. Duct burners are used to provide supplemental heat for the waste heat boiler in the cogeneration cycle. These burners effectively add an external combustion unit to the gas turbine resulting in a difference in emissions from turbines without duct burners.

6.8.11 Turbine - Natural/Refinery Gas

Number of Tests - 3

Significant Parameters - None

Rejected Tests - PAH data for Reports 2599I

Subgroups - None

Comments -There is no observed difference in design and operation of the three units tested so no subgroups were developed. The PAH data for report 2599I were eliminated for the reasons described in Section 6.8.2.

6.9 Sub Group Emission Factor Calculation.

Background. Once sub groups have been established, run specific emission factors must be averaged for each substance in each sub group. For this project, the run specific emission factors were averaged arithmetically. It should be noted that most tests included three runs. Therefore, if a sub group included two tests the corresponding six run emission factors would be averaged. In addition to the arithmetic average, several statistics were calculated including the uncertainty, relative standard deviation, number of sources, detection ratio, and median, maximum and minimum emission factors. The detect ratio is defined as the ratio of the sum of detected values to the sum of detected and non-detected values. A detect ratio of one indicates all of the data was detected. A detect ratio of zero indicates all of the data was not detected. The relative standard deviation and uncertainty are indicators of the precision and accuracy of the emission factors. The relative standard deviation is calculated as 100 times the standard deviation divided by the arithmetic average. The uncertainty is calculated as 100 times the 95% confidence interval divided by the arithmetic average. Ideally the relative standard deviation and uncertainty should be zero.

Results. Table 20 lists emission factors and corresponding sample statistics. The relative standard deviation and uncertainty information in Table 20 is summarized in Table 17 for each substance. The relative standard deviation ranges from 0 to 345% (52% average) and the uncertainty ranges from 0 to 195 (53% average). To reduce these ranges would require additional sub groups. However, no additional sub groups were found. It should also be noted that creating additional sub groups reduces the size of the sample which reduces the representativeness of the emission factors.

It should be noted that not all emission factors listed in Table 20 are unique. One set of emission factors has been developed for each major and sub group as described above. Many of the groups contain results from several different source tests conducted on devices with different characteristics. These devices do not have identical designs, however, the statistical and engineering analyses indicated that the differences in each device did not impact emissions significantly. Therefore, the emission factors from all of the devices within each group were averaged together for each substance. This averaging resulted in a single emission factor per substance per group. When developing the Graphical User Interface (GUI) and Table 20, the average results were applied to each distinct design from the set of sources that were averaged together. This was done to allow users to easily find data matching their specific device. This procedure also resulted in duplicate emission factors in the GUI and Table 20. These duplicate emission factors are illustrated in Table 15 as the major/sub groups which apply to more than one line. For example, each emission factor from the group with a major group identification of "Heater, Ref. Gas" and a sub group identification of "1" is repeated three times in the GUI and Table 20.

6.10 Sub Group Method and Population Rating.

Background. Once the emission factors have been calculated it is important to assign quality ratings to each emission factor. Several ratings can be assigned to each emission factor including method and population ratings. The method rating describes the test method that was used and the level of supporting document provided. The method rating used for this project is described in Section 6.3. It should be noted that the method rating is assigned on a run basis. When the runs are averaged together to calculate emission factors for each substance in each sub group, the method rating must also be averaged. For example, if an average emission factor was derived from one A rated run and one C rated run, B would be the resulting method rating.

The second rating is used to describe how well emissions can be estimated from the entire pool of sources. To provide an accurate estimate of emissions from the source pool, an emission factor should be derived from many randomly chosen facilities in the industry population. For this study, one of the following population ratings was assigned to each emission factor.

- 1- Source test data taken from many randomly chosen facilities in the industry population (5 or more sources).
- 2- Source test data taken from a reasonable number of facilities (3 to 4 sources).
- 3- Source test data taken from a small number of facilities, and there may be reason to suspect that the facilities do not represent a random sample of the industry (< 3 sources).

Population ratings were assigned based on a recommendation from the California Air Resources Board. This recommendation was to assign the population rating based on the number of sources as described above.

Results. Average method ratings are provided in Table 20 for each emission factor. The method rating is the first character of the CARB rating. The population ratings are provided in Table 20. The second character of the CARB rating is the population rating.

6.11 CARB Overall Quality Rating.

Background. Several indicators of data quality have been assigned to each emission factor. These indicators include the method rating, population rating, and indicators of variability such as the relative standard deviation and uncertainty. To summarize all of these indicators, a single CARB overall rating was developed. The CARB overall rating has the format "xy-vn" where "x" is the method rating, "y" is the population rating, and "n" is the order of magnitude difference between the minimum and maximum emission factors for each substance in each sub group. It should be noted that if the emission factor was developed from a single run, n was set to "-".

Results. CARB overall ratings are provided in the "ARB Rating" column of Table 20 for each emission factor. The number of emission factors with each CARB overall rating are provided within parentheses in Table 18. It should be noted that the EPA methods are not considered inferior. However, the Hot Spots Program mandated that an EPA method could be used only if there was no corresponding CARB test method or if the source asked for an equivalency determination. CARB and EPA test methods are different in many cases and can lead to different results. CARB test methods were rated higher than the EPA's to provide consistent test result comparisons.

6.12 EPA Overall Quality Rating.

Background. Similar to the CARB overall quality rating, the EPA has developed an overall quality rating used to designate the quality of each emission factor. This rating termed “factor quality rating” by the EPA considers the type of method used, level of supporting documentation available, and how well the population is represented. The EPA assigns factor quality ratings of A, B, C, D, and E as described below.

EPA Factor Quality Rating or Overall Quality Rating

- A Excellent. Factors developed only from A-rated source test data taken from many randomly chosen facilities in the industry population. The source category is specific enough to minimize variability within the source population.
- B Above average. Developed only from A-rated test data from a reasonable number of facilities. Although no specific bias is evident, it is not clear if the facilities tested represent a random sample of the industry. As with the A rating, the source is specific enough to minimize variability within the source population.
- C Average. Developed only from A- and B-rated test data from a reasonable number of facilities. Although no specific bias is evident, it is not clear if the facilities tested represent a random sample of the industry. As with the A rating, the source category is specific enough to minimize variability within the source population.
- D Below average. Developed from A- and B-rated test data from a small number of facilities, and there may be reason to suspect that these facilities do not represent a random sample of the industry. There also may be evidence of variability within the source population.
- E Poor. The emission factor was developed from C- and D-rated test data, and there may be reason to suspect that the facilities tested do not represent a random sample of the industry. There also may be evidence of variability within the source category population.

EPA A through D test data/method ratings used to assign EPA factor quality ratings are listed and described below

EPA Test Data Rating or Method Rating

- A When tests are performed by a sound methodology and are reported in enough detail for adequate validation.
- B When tests are performed by a generally sound methodology but lack enough detail for adequate validation.
- C When tests are based on an untested or new methodology or are lacking a significant amount of background data.
- D When tests are based on a generally unacceptable method but the method may provide an order-of-magnitude value for the source.

Results. To allow comparison of the quality of CARB and EPA emission factors on a similar basis, EPA overall quality ratings or factor quality ratings were assigned to each CARB emission factor using the criteria provided in Table 19. The number of CARB emission factors with each EPA overall rating are provided within parentheses in Table 19. The EPA overall ratings shown in Table 19 were assigned for this project and are not official EPA ratings.

The definitions of the CARB and EPA method ratings provided in Tables 18 and 19 are different. The CARB method rating system was developed to distinguish between tests conducted using EPA and CARB methods as well as tests which provide and do not provide sufficient documentation. The EPA method rating system does not identify the local, state or federal government agency which developed the test method. The CARB system does not denote tests based on untested/new methodologies or tests based on generally unacceptable order of magnitude methods (see EPA method ratings C and D). A CARB method rating for tests based on generally unacceptable order of magnitude methods is not needed, because these tests were not included in the CARB database.

To assign EPA overall quality ratings as described in the background section above, various terms such as many randomly chosen facilities, reasonable number of facilities, and small number of facilities had to be defined. In addition since EPA method ratings must be assigned to assign EPA overall quality ratings, EPA method rating terms such as sound methodology, adequate validation, and untested/new methodology had to be defined. Each EPA term along with the CARB definition used for this project is provided below.

EPA Term	CARB Definition
1. Many Randomly \Chosen Facilities	5 or More Sources
2. Reasonable Number of Facilities	3 to 4 Sources
3. Small Number of Facilities	<3 Sources
4. Sound Methodology	Current EPA or CARB Method
5. Adequate Validation	Adequate Validation if Specified Number of Primary Validation Parameters could be Checked (see Section 6.3)
6. Untested/New Methodology	Old versions of CARB or EPA test methods.

The CARB definitions were applied to assign EPA method and overall quality ratings.

TABLE 1. DATA COLLECTION SUMMARY FOR CARB-PROJECT*.

DISTRICT	TESTS		COMMENT
	Available	Collected	
Bay Area	92 (a)	92 (a)	Completed
Colusa	1	1	Completed
Glenn	1	1	Completed
Great Basin	10	10	Completed
Imperial	4	4	Completed
Kern	12	12	Completed
Lassen	1	1	Completed
Mendocino	5	5	Completed
Mojave	29	29	Completed
Monterey Bay	20	20	Completed
North Coast	6	6	Completed
Placer	5	5	Completed
Sacramento	14	14	Completed
San Diego	59	59	Completed
San Joaquin	127	127	Completed
Santa Barbara	149 (c)	39	Completed
South Coast	322	322	Completed
Ventura	236 (b)	50	Completed
Yolo Solano	2	2	Completed
Calaveras	0	0	Completed. No tests
Feather River	0	0	Completed. No tests
Mariposa	0	0	Completed. No tests
Modoc	0	0	Completed. No tests
Northern Sierra	0	0	Completed. No tests
San Luis Obispo	0	0	Completed. No tests
Butte	1	0	Not Collected
El Dorado	1 (d)	0	Not Collected
Shasta	7	0	Not Collected
Tuolumne	4 (d)	0	Not Collected
Northern Sonoma	21 (d)	0	No widely applicable source tests; not collected.
Lake	7 (d)	0	No widely applicable source tests; not collected.

a. 49 of these are one page summary reports

b. 179 of these tests were conducted using lab analysis of composition and will not be collected.

c. 102 of these tests were conducted using lab analysis of composition. and will not be collected.

d. Estimated using 1/2 ATEDs source test number.

*These test reports were collected under funding from the the California Air Resource Board.

TABLE 2a. REPORT INFORMATION EXTRACTED FOR SCREENING,

- 1.) **Document ID:** Assigned at entry. The number must be in the 2000 series and must be unique.
- 2.) **Review Info:** Reviewer initials and review date.
- 3.) **Submitted to:** Name of company or association the report was submitted to.
- 4.) **Confidential:** Indicates if the report contains confidential information.
- 5.) **Contractor:** Name of the company that conducted the test(s).
- 6.) **Device Description:** Indicates if the report describes the device(s) being tested.
- 7.) **Method Description:** Indicates if report describes the source test methods used.
- 8.) **Sample Data:** Indicates if the report provides run sheets containing train parameters such as sample volume, probe or stack temperature, pitot tube pressures, flow rates, etc. This information is usually contained in an appendix.
- 9.) **Lab Data:** Indicates if the report includes the lab data. Lab data includes the raw analytical numbers and tracking sheets and is usually contained in an appendix. The unit of the lab data is usually mass per sample or ppmv.
- 10.) **QA/QC Description:** Indicates if the report includes a separate QA/QC discussion section.
- 11.) **Calibration Data:** Indicates if the report includes Calibration data. Calibration data should include pitot tube cals, dry gas meter cals, and thermocouple cals.
- 12.) **Location Data:** Indicates if the report includes the stack diameter and number of sample points. The stack diameter and sample points may be given in a figure or on the sampling run sheets.
- 13.) **Blank Data:** Indicates if the report includes blank data. Blank data should be located in one of the following areas: results tables, raw data, or lab data.
- 14.) **Report Date:** Date report was issued.

TABLE 2b. DEVICE INFORMATION EXTRACTED FOR SCREENING.

- 1.) **Report ID:** The document ID plus alphabet character. The first device or group of similar devices receives an "A" and the second a "B" and so on.
- 2.) **Device Category:** This is the ARB device category.
- 3.) **#of Tests:** Number of tests for each report ID. Since most facilities only test one device of each type, this will usually be 1.
- 4.) **Company:** The name of the company where the test was conducted. The company name given on the title page is not always correct. Sometimes the name on the title page is an association which sponsored the test. The facility description in the report usually gives the name of the company where the test was conducted.
- 5.) **City:** The city where the test was conducted. Use the same cautions as described above for the company.
- 7.) **Device:** The device/process of the source being tested. For example, if the test is on a refinery gas fired process heater with an SCR and Baghouse, the device would be process heater.
- 8.) **Material:** The material being processed which is primarily responsible for the emissions. For example, if the test is on a refinery gas fired process heater with an SCR and Baghouse, the material would be refinery gas. In an aluminum shredding facility, the material would be aluminum.
- 9.) **Phase:** The phase of the material being processed. For example, if the test is on a refinery gas fired process heater with an SCR and Baghouse, the phase would be gas.
- 10.) **Control Devices:** Indicates if a control device(s) used to reduce emissions of air toxics.
- 11.) **EF Unit:** Indicates if an emission factor is provided.
- 12.) **Process Rate:** Indicates if process rates for the material in item 8 are provided. These process rates will be used to develop emission factors.
- 13.) **Mass Rate:** Indicates if pollutant mass rates at the stack were provided.

TABLE 2c. SUBSTANCE INFORMATION EXTRACTED FOR SCREENING

- 1.) **Location:** The location of the measurement, fuel or stack.
- 2.) **Substances:** Indicates if Metals, HCl, PAH, Dioxin, Formaldehyde, Benzene, Vinyl Chloride, PCBs, Halogenated Organics, Arsenic, Gas Vapors, H₂S, or Hexavalent Chromium were quantified.
- 3.) **Others:** Indicates if other substances were quantified.

TABLE 3a. SCREENING SUMMARY BY SOURCE TYPE (Report Information).

DEVICE/PROCESS	MATERIAL	NUMBER OF TESTS	PERCENT OF TESTS IN EACH CATEGORY WITH:									
			Device Description (e)	Method Description (e)	Sample Data (e)	Lab Data (e)	QA/QC Description (e)	Calibration Data (e)	Location Data (e)	Blank Data (c)	Control Devices (f)	Emission Factor (g)
REQUIRED SOURCE TESTS (a)	PETROLEUM REFINERIES	1	0%	100%	100%	100%	100%	100%	100%	100%	0%	100%
	PETROLEUM REFINERIES	2	0%	100%	100%	100%	0%	0%	100%	100%	0%	0%
	COMBUSTION	2	100%	100%	50%	100%	100%	100%	50%	100%	50%	50%
	COMBUSTION	6	83%	83%	100%	100%	100%	17%	100%	100%	33%	100%
	COMBUSTION	7	57%	57%	57%	100%	57%	0%	57%	100%	0%	100%
	PETROLEUM REFINERIES	9	33%	89%	100%	100%	67%	78%	78%	100%	44%	22%
	NONREQUIRED SOURCE TESTS (b)											
	AFTERBURNER	1	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
	REBOILER	2	100%	100%	100%	100%	100%	100%	100%	0%	50%	100%
NOT ENOUGH INFORMATION (c)	THERMAL OXIDIZER	2	50%	50%	100%	100%	50%	100%	100%	100%	0%	100%
	BULK PLANT/TERMINAL	2	100%	50%	50%	100%	50%	50%	50%	0%	50%	50%
	ASPHALTIC CONCRETE PROD	2	100%	100%	100%	100%	0%	0%	100%	100%	100%	100%
	FUGITIVES	4	100%	100%	50%	75%	100%	75%	25%	50%	0%	0%
	BOILER	6	83%	100%	100%	100%	33%	17%	83%	100%	0%	83%
	STEAM GENERATOR	7	100%	100%	57%	57%	100%	57%	43%	57%	0%	100%
	TURBINE	14	71%	64%	57%	100%	36%	29%	50%	93%	14%	100%
	HEATER	18	83%	100%	83%	100%	61%	39%	78%	100%	0%	100%
	INTERNAL COMBUSTION ENGINE	69	80%	100%	38%	100%	100%	97%	10%	94%	29%	71%
	NOT ENOUGH INFORMATION (c)	4	25%	100%	50%	100%	25%	50%	25%	25%	0%	25%
MISC. NON-REQUIRED (d)		3	100%	67%	67%	67%	33%	67%	67%	67%	0%	67%

(a) Source testing required by AB2588 Appendix D

(b) Source testing not required by AB2588 Appendix D

(c) Device/process is not described in enough detail to categorize.

(d) Includes three device/process categories.

(e) Described in Table 2a.

(f) Described in Table 2b.

(g) Emissions factors can be developed for a device if feed or production rate and emission rate is provided in the test report.

TABLE 3b. SCREENING SUMMARY BY SOURCE TYPE (Substance Information).

DEVICE/PROCESS	MATERIAL	NUMBER OF TESTS	PERCENT OF TESTS IN EACH CATEGORY WITH (e):										Chromium (hex)	Others
			Metals	HCl	PAH	Dioxin	Formaldehyde	Benzene	Vinyl Chloride	PCBs	Halogenated Organics	Arsenic	H2S	
REQUIRED SOURCE TESTS (a)	PETROLEUM REFINERIES	1	100%	0%	100%	100%	100%	100%	0%	0%	0%	100%	0%	0%
	PETROLEUM REFINERIES	2	100%	0%	50%	0%	100%	100%	0%	0%	0%	0%	0%	0%
	COMBUSTION	2	100%	0%	100%	50%	50%	50%	0%	0%	0%	0%	0%	50%
	COMBUSTION	6	100%	17%	100%	0%	0%	0%	0%	0%	0%	33%	0%	83%
	COMBUSTION	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	43%
PETROLEUM REFINERIES	DIESEL	9	100%	11%	44%	33%	100%	100%	0%	0%	0%	11%	44%	67%
	CATALYTIC CRACKERS		100%	100%	100%	100%	100%	100%	0%	0%	0%	100%	100%	100%
	VARIOUS	1	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
	REBOILER	2	0%	0%	0%	0%	50%	50%	0%	0%	0%	0%	0%	100%
	THERMAL OXIDIZER	2	50%	0%	50%	0%	50%	100%	0%	0%	0%	0%	0%	100%
NONREQUIRED SOURCE TESTS (b)	BULK PLANT/THERMAL	2	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	100%
	ASPHALTIC CONCRETE PROD	2	100%	0%	100%	0%	100%	100%	0%	0%	0%	0%	100%	100%
	FUGITIVES	4	25%	0%	0%	0%	0%	75%	0%	0%	0%	25%	25%	100%
	BOILER	6	33%	0%	83%	17%	83%	100%	0%	0%	0%	17%	17%	33%
	STEAM GENERATOR	7	0%	0%	29%	0%	71%	86%	0%	0%	0%	0%	43%	100%
GAS	TURBINE	14	36%	0%	57%	0%	57%	64%	0%	0%	0%	0%	36%	29%
	HEATER	18	22%	0%	100%	0%	72%	72%	0%	0%	0%	6%	0%	44%
	INTERNAL COMBUSTION ENGINE	69	0%	0%	20%	0%	29%	22%	0%	0%	0%	0%	6%	100%
	NOT ENOUGH INFORMATION (c)	4	25%	0%	25%	0%	25%	50%	0%	0%	0%	0%	75%	100%
	MISC. NON-REQUIRED (d)	3	0%	0%	0%	0%	33%	67%	0%	0%	0%	0%	33%	67%

(a) Source testing required by AB2588 Appendix D

(b) Source testing not required by AB2588 Appendix D

(c) Device/process is not described in enough detail to categorize.

(d) Includes three device/process categories.

(e) Shaded areas are required AB2588 source tests.

TABLE 4. SOURCE RANKING SUMMARY (d).

Search Case	1 (b)	2	3	4 (b)	5	6	7 (c)
Search Parameters							
Required Test (a)?	Y	Y	Y	N	N	N	Y/N
Device Description Provided?	Y	Y	Y/N	Y	Y	Y/N	Y/N
Method Description Provided?	Y	Y	Y/N	Y	Y	Y/N	Y/N
Sample Data Provided?	Y	Y	Y/N	Y	Y	Y/N	Y/N
Laboratory Data Provided?	Y	Y	Y/N	Y	Y	Y/N	Y/N
QA/QC Data Provided?	Y	Y/N	Y/N	Y	Y/N	Y/N	Y/N
Calibration Data Provided?	Y	Y/N	Y/N	Y	Y/N	Y/N	Y/N
Location Data Provided?	Y	Y/N	Y/N	Y	Y/N	Y/N	Y/N
Blank Data Provided?	Y	Y	Y/N	Y	Y	Y/N	Y/N
Process Rates Provided?	Y	Y	Y	Y	Y	Y	N
Tests Found	2	12	6	12	28	60	41

(a) Required tests are those listed in AB2588 appendix D.

(b) All information needed to evaluate report provided.

(c) Emission factor cannot be developed.

(d) Table described in Section 3.3.

TABLE 5. LISTING OF SOURCES CONSIDERED FOR EMISSION FACTOR DEVELOPMENT (a).

Device	Material	Search Case	Number of Tests	Control Device Used	Report ID	Report Information										Report Year	Sample Location	Substance Group											
						DD	MD	SD	LD	QD	CD	LD	BD	PR	EF			M	HI	PH	D	F	B	VC	PB	HO	HS	HC	O
ASPHALT RECOVERY INCINERATOR	ASPHALT FUMES	2	2	Y	2599L	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y		Y		Y							Y
BOILER	CRUDE OIL	1	1	N	2487A	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y				Y							Y
BOILER	NO. 6 FUEL OIL	6	1	N	2484A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
BOILER	REFINERY GAS	5	1	N	2599E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
BOILER	REFINERY GAS	5	1	N	2599F	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
BOILER	REFINERY GAS	5	1	N	2599G	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
BOILER	REFINERY GAS	5	1	N	2599H	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
BOILER, REBOILER	GLYCOL	6	1	Y	2492A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y				Y							Y
BOILER, REBOILER	GLYCOL	6	1	N	2492B	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y				Y							Y
HEATER	NATURAL GAS	5	1	N	2405A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y	Y			Y							Y
HEATER	NATURAL/REFINERY GAS	5	1	N	2481A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1991	STACK	Y				Y							Y
HEATER	PIPELINE OIL	3	1	N	2541A	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
HEATER	REFINERY GAS	4	5	N	2300A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1991	STACK	Y				Y							Y
HEATER	REFINERY GAS	4	1	N	2598A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y	Y			Y							Y
HEATER	REFINERY GAS	5	3	N	2599A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
HEATER	REFINERY GAS	5	1	N	2599C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
HEATER	REFINERY GAS	5	1	N	2599D	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
HEATER	REFINERY GAS	6	3	?	2124A	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y				Y							Y
HEATER & BOILER	DIESEL	5	2	N	2599B	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
INTERNAL COMBUSTION ENGINE	DIESEL	2	2	N	2375C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
INTERNAL COMBUSTION ENGINE	DIESEL	2	1	N	2513C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
INTERNAL COMBUSTION ENGINE	NATURAL GAS	4	4	N	2460B	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y				Y							Y
INTERNAL COMBUSTION ENGINE	NATURAL GAS	5	1	N	2355A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1993	STACK	Y				Y							Y
INTERNAL COMBUSTION ENGINE	NATURAL GAS	6	4	N	2352A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1993	STACK	Y				Y							Y
INTERNAL COMBUSTION ENGINE	NATURAL/FIELD GAS	6	14	N	2409A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
KILN, CALCINING COKE TO PETRO PRODUCTS	COKE	1	1	Y	2007A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1993	STACK	Y	Y			Y							Y
STEAM GENERATOR	CASING/NATURAL GAS	6	3	N	2407A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y	Y			Y							Y
STEAM GENERATOR	CRUDE OIL	2	1	Y	2375B	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
STEAM GENERATOR	CRUDE OIL	2	1	Y	2513A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
STEAM GENERATOR	CRUDE OIL	3	1	N	2536A	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
STEAM GENERATOR	NATURAL GAS	5	1	N	2375A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y	Y			Y							Y
STEAM GENERATOR	NATURAL/CVR GAS	5	1	N	2405B	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y	Y			Y							Y
STEAM GENERATOR	NATURAL/CVR GAS	5	1	N	2444A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1991	STACK	Y	Y			Y							Y
SULFUR RECOVERY UNIT	?	5	1	N	2599M	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
TURBINE	NATURAL GAS	4	1	Y	2511A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y	Y			Y							Y
TURBINE	NATURAL GAS	5	1	N	2405C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1992	STACK	Y	Y			Y							Y
TURBINE	NATURAL GAS	5	1	Y	2444B	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1991	STACK	Y	Y			Y							Y
TURBINE	NATURAL GAS	6	1	N	2459A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
TURBINE	NATURAL/LP/REFINERY GAS	5	2	N	2599J	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
TURBINE	REFINERY GAS	5	1	N	2599I	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y
TURBINE	REFINERY GAS	5	2	N	2599K	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1990	STACK	Y	Y			Y							Y

Report Information: DD-Device Description, MD-Method Description, SD-Sample Data, LD-Lab Data, QD-QA/QC Data, CD-Calibration Data, LD-Location Data, BD-Blank Data, PR-Process Rate, EF-Emission Factor
Substance Group: M-Metals, HI-HCl, PH-PAH, D-Dioxins, F-Formaldehyde, B-Benzene, VC-Vinyl Chloride, PB-PCB, HO-Halogenated Organics, HS-H2S, HC-Hex Chlorine, O-Other
Other Comments: NR - Not required, Y - Yes, N - No, Blank - No, ? - Additional investigation required.
(a) Table described in Section 3.3.

TABLE 6. LISTING OF SOURCES NOT CONSIDERED FOR EMISSION FACTOR DEVELOPMENT (a).

Device	Material	Search Case	Number of Tests	Control Device Used	Report ID	Report Information										Sample Location	Substance Group											
						DD	MD	SD	LD	QD	CD	LD	BD	PR	EF		M	III	PII	D	F	B	VC	PB	HO	HS	HC	O
?	?	7	2	N	2369A	N	Y	Y	Y	N	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
BOILER	?	7	1	N	2505A	N	Y	Y	Y	N	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
BOILER, CO	?	7	1	N	2122A	N	Y	Y	Y	N	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
BOILER, CO	COKE	7	1	?	2122B	N	Y	Y	Y	N	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
BOILER, REBOILER	GAS	7	1	N	2494A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
BULK TERMINAL (VAPOR RECOVERY)	GASOLINE	7	1	N	2447A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
BURNER	GASOLINE	3	1	Y	2578A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
CARBON CANISTER	GAS	6	1	N	2410A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
CATALYTIC REFORMER	OIL	6	1	N	2411A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
COKER	COKE	7	1	N	2408A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
FLUID CATALYTIC CRACKING UNIT	CARBON & HYDROCARBONS	7	1	N	2327A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
FLUID CATALYTIC CRACKING UNIT	CARBON & HYDROCARBONS	7	1	?	2068A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
FLUID CATALYTIC CRACKING UNIT	CARBON & HYDROCARBONS	7	1	N	2122C	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
FLUID CATALYTIC CRACKING UNIT	CARBON & HYDROCARBONS	7	1	N	2125A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
FLUID CATALYTIC CRACKING UNIT	CARBON & HYDROCARBONS	7	1	Y	2320A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
FUGITIVES, CRUDE OIL STORAGE TANK VAPOR	GAS	7	1	Y	2326A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
FUGITIVES, OIL SAMPLE	OIL	7	1	N	2466A	N	Y	Y	Y	Y	N	N	N	N	N	DUST	Y		NR	NR	NR	NR	NR	NR	NR	NR	Y	Y
FUGITIVES, WELL	PETROLEUM	7	1	N	2466B	N	Y	Y	Y	Y	N	N	N	N	N	DUST	Y		NR	NR	NR	NR	NR	NR	NR	NR	Y	Y
FURNACE	LIGHT HYDROCARBON	7	1	N	2054A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INCINERATOR, AFTERBURNER	STRIPPING WASTE GAS	7	1	N	2432A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INTERNAL COMBUSTION ENGINE	DIESEL	7	1	N	2108A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INTERNAL COMBUSTION ENGINE	FIELD GAS	2	1	N	2513K	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INTERNAL COMBUSTION ENGINE	GAS	5	1	N	2513D	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INTERNAL COMBUSTION ENGINE	GAS	5	1	N	2513G	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INTERNAL COMBUSTION ENGINE	GAS	6	1	N	2464A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INTERNAL COMBUSTION ENGINE	GAS	7	1	Y	2460A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
INTERNAL COMBUSTION ENGINE	GAS	7	19	Y	2463A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
STEAM GENERATOR	CRUDE OIL	2	1	N	2513E	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
STEAM GENERATOR	CRUDE OIL	2	1	N	2513L	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
STEAM GENERATOR	NATURAL GAS/1:1 RI:3 TEORING	5	1	N	2513B	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
THERMAL OXIDIZER	GAS	6	1	N	2502A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
THERMAL OXIDIZER	VAPOR GASOLINA	4	1	N	2446A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y
TURBINE	GAS	6	1	N	2461A	N	Y	Y	Y	Y	N	N	N	N	N	STACK	Y		Y		Y						Y	Y

Report Information: DD-Device Description, MD-Mechanical Description, SD-Sample Data, LD-Lab Data, OD-Occ Data, CD-Calibration Data, BD-Blank Data, PR-Process Rate, EF-Emission Factor
Substance Group: M-Metals, III-HCl, PII-PAH, D-Dioxins, F-Formaldehyde, B-Benzene, VC-Vinyl Chloride, PB-PCB, HO-Halogenated Organics, HS-H2S, HC-Hex Chromium, O-Other
Other Comments: NR - Not required, Y - Yes, N - No, Blank - No, ? - Additional investigation required.
(a) Table described in Section 3.3.

TABLE 7. SUMMARY OF MAJOR VALIDATION AND EXTRACTION PROBLEMS

Report ID	Device ID*	Number of Tests	Contractor ID	Device Type	Material Used	Review Date	Comment	Calculation Check Status
2599L	160	2*	A	Asphalt blowing with blow/no blow cycle	Asphalt fumes	1/31/95	5	P
2444B	177	1	A	Turbine	Natural gas	3/17/95		P
2444A	178	1	A	Steam generator	Natural/CVR gas	3/17/95		P
2599A	437	1	A	Heater	Refinery fuel gas	12/21/95	5	P
2599N	438	1	A	Heater	Refinery fuel gas	12/22/95	5	P
2599A	444	2*	A	Heater	Refinery fuel gas	12/22/95	5	P
2599K	451	1	A	Turbine	Refinery fuel gas	1/10/96		P
2599K	452	1	A	Turbine	Refinery fuel gas	1/10/96		P
2599B	505	1	A	Boiler	Refinery fuel gas	12/20/95	5	P
2599C	506	1	A	Heater	Refinery fuel gas	12/21/95	5	P
2599D	507	1	A	Heater	Refinery fuel gas	12/21/95	5	P
2599E	508	1	A	Boiler	Refinery fuel gas	12/21/95	5	P
2599B	509	1	A	Heater	Refinery fuel gas	12/21/95	5	P
2599J	510	2*	A	Turbine	Refinery fuel gas	12/21/95	5	P
2599G	642	1	A	Boiler	NG/Liquid petroleum gas/RFG	12/22/95	5	P
2599H	643	1	A	Boiler	Refinery fuel gas	12/20/95	5	P
2599J	644	1	A	Turbine	Refinery fuel gas	12/21/95	5	P
2599F	646	1	A	Boiler	Refinery fuel gas	12/22/95	5	P
2599M	**	1	A	Sulfur recovery unit	Refinery fuel gas	1/8/96	1	P
2124A	445	3*	B	Heater	Refinery fuel gas	1/4/96		P
2356A	435	1	C	Steam generator	Crude oil	4/21/95		ND-430
2355A	448	1	D	Internal combustion engine	Natural gas	1/11/96		ND-430
2513C	637	1	E	Internal combustion engine	Diesel	3/9/95	5	P
2513A	638	1	E	Steam generator	Crude oil	3/14/95	5	P
2598A	436	1	F	Heater	Refinery fuel gas	12/20/95	5	P
2460B	168	1	G	Internal combustion engine	Natural gas	3/1/95		F-430
2460B	169	1	G	Internal combustion engine	Natural gas	3/1/95		F-430
2460B	170	1	G	Internal combustion engine	Natural gas	3/1/95		F-430
2460B	171	1	G	Internal combustion engine	Natural gas	3/1/95		F-430
2459A	449	1	G	Turbine	Natural gas	1/12/96		ND-430
2511A	**	1	G	Turbine	Natural gas		1	
2375A	110	1	H	Steam generator	Natural gas	12/6/94		P
2375B	111	1	H	Steam generator	Crude oil	12/6/94	4,5	P
2375C	112	1	H	Internal combustion engine	Diesel	12/6/94	4,5	NR
2375C	113	1	H	Internal combustion engine	Diesel	12/6/94	4,5	NR
2409A	114	1	H	Internal combustion engine	Field gas	12/8/94	3	P
2409A	115	1	H	Internal combustion engine	Field gas	12/8/94	3	NR
2409A	116	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	117	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	118	1	H	Internal combustion engine	Field gas	12/8/94	3	NR

TABLE 7. SUMMARY OF MAJOR VALIDATION AND EXTRACTION PROBLEMS

Report ID	Device ID*	Number of Tests	Contractor ID	Device Type	Material Used	Review Date	Comment	Calculation Check Status
2409A	119	1	H	Internal combustion engine	Field gas	12/8/94	3	NR
2409A	120	1	H	Internal combustion engine	Field gas	12/8/94	3	NR
2409A	121	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	122	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	123	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	124	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	125	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	126	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2409A	127	1	H	Internal combustion engine	Natural gas	12/8/94	3	NR
2492A	446	1	H	Reboiler	Glycol	1/9/96	3	NR
2492B	447	1	H	Reboiler	Glycol	1/9/96		ND-430
2407A	511	2	H	Steam generator	Natural/CVR gas, Natural gas	1/2/96		ND-430
2407A	512	1	H	Steam generator	Natural/CVR gas	1/2/96		P
2407A	513	1	H	Steam generator	Natural/CVR gas	1/2/96		P
2007A	425	1	I	Kiln, calcining coke to petroleum products	Coke, natural gas	4/3/95		F-430
2484A	142	1	J	Boiler	No. 6 fuel oil	1/11/95	2	P
2541A	146	1	J	Heater	Pipeline oil	1/17/95	2	P
2405A	107	1	K	Heater	Natural gas	12/5/94		P
2405B	108	1	K	Steam generator	Natural/CVR gas	12/5/94		NR
2405C	109	1	K	Turbine	Natural gas	12/5/94		NR
2300A	439	1	K	Heater	Refinery fuel gas	1/3/96		P
2300A	440	1	K	Heater	Refinery fuel gas	1/3/96		P
2300A	441	1	K	Heater	Refinery fuel gas	1/3/96		P
2300A	442	1	K	Heater	Refinery fuel gas	1/3/96		P
2300A	443	1	K	Heater	Refinery fuel gas	1/3/96		P
2481A	411	1	L	Heater	Natural/Refinery fuel gas	3/15/95		P
2487A	645	1	L	Boiler	Crude oil	1/2/96		P

Underlined Report IDs extracted and validated using WSPA funding.

*Device ID assigned on entry.

**Data not extracted for this device.

a = number of conditions tested.

b = number of locations tested.

F = Failed calculation check.

P = Passed calculation check.

NR = Calculation check not required because calculations checked for another device in report.

ND = Not enough data to check calculations.

1. Emission factor cannot be calculated (data not validated or extracted).

2. Dioxin/PAH sampled using a single train (data extracted and noted in the database).

3. Naphthalene analyzed by method 410 (data not extracted).

4. Non-isokinetic sampling method 429.

5. Full set of internal standards not used for method 429.

TABLE 8. KEY DESIGN AND OPERATING PARAMETERS.

External Combustion Sources

- Type of unit - boiler, heater, steam generator
- Manufacturer
- Capacity and load - MMBtu/hr, MWe
- Type of fuel - grade and composition
- Firing configuration - horizontally opposed-fired, tangential-fired, turbo-fired, wall-fired
- Burner Type - conventional, low NO_x
- Operating parameters - combustion temperature, oxygen concentration, residence time
- NO_x control - flue gas recirculation, low excess air firing, reduced air preheat, staged combustion, steam injection, water injection
- Type of add-on air pollution control (APC) equipment, if any

Internal Combustion Engines

- Manufacturer
- Capacity and load - bhp
- Type of fuel
- Engine speed - rpm
- Stroke - 2 or 4
- Lean or rich combustion
- Injection - direct injection or natural aspiration
- Ignition - compression or spark
- Compression ratio
- NO_x control - charge cooling, flue gas recirculation, fuel injection retardation, ignition retardation, lean burning torch ignition, steam injection, turbocharging, water injection
- Type of add-on air pollution control (APC) equipment, if any

Turbines

- Manufacturer
- Capacity and load - MWe
- Type of fuel
- Engine speed, rpm
- NO_x control - flue gas recirculation, steam injection, water injection
- Compression ratio
- Type of add-on air pollution control (APC) equipment, if any

TABLE 9. ASSIGNED SOURCE CLASSIFICATION CODES AND UNITS.

SCC	Description 1	Description 2	Description 3	Description 4	EF Unit
10200403	External Combustion Boilers	Industrial	Residual Oil	<10 MMBTU/hr	lbs/Mgal
10200701	External Combustion Boilers	Industrial	Process Gas	Petroleum Refinery Gas	lbs/MMcf
20200102	Internal Combustion Engines	Industrial	Distillate Oil/Diesel	Reciprocating	lbs/Mgal
20200202**	Internal Combustion Engines	Industrial	Natural Gas	Reciprocating	lbs/MMcf
20200203	Internal Combustion Engines	Industrial	Natural Gas	Turbine: Cogeneration	lbs/MMcf
20200252**	Internal Combustion Engines	Industrial	Natural Gas	2-Cycle Lean Burn	lbs/MMcf
20200254**	Internal Combustion Engines	Industrial	Natural Gas	4-Cycle Rich Burn	lbs/MMcf
20200299*	Internal Combustion Engines	Industrial	Natural/LP/Process Gas	Turbine	lbs/MMcf
20200701	Internal Combustion Engines	Industrial	Process Gas	Turbine	lbs/MMcf
30600106	Miscellaneous Industries	Petroleum Industry	Petroleum Refining	Process Heaters: Process Gas-Fired	lbs/MMcf
30600199*	Miscellaneous Industries	Petroleum Industry	Petroleum Refining	Process Heaters: Other - Not Classified	lbs/MMcf
30601101	Miscellaneous Industries	Petroleum Industry	Petroleum Refining	Asphalt Blowing: General	lbs/MMcf
30601401	Miscellaneous Industries	Petroleum Industry	Petroleum Refining	Petroleum Coke: Calciner	lbs/MMcf
31000301	Miscellaneous Industries	Oil and Gas Production	Natural Gas Processing Facilities	Petroleum Coke: Calciner	lbs/ton coke
31000304	Miscellaneous Industries	Oil and Gas Production	Natural Gas Processing Facilities	Glycol Dehydrators - Reboiler Still Vent - Triethylene Glycol	lbs/MMcf
31000403	Miscellaneous Industries	Oil and Gas Production	Fuel Fired Equipment	Glycol Dehydrators - Ethylene Glycol: General	lbs/MMcf
31000404	Miscellaneous Industries	Oil and Gas Production	Fuel Fired Equipment	Process Heaters: Crude Oil	lbs/Mgal
31000413	Miscellaneous Industries	Oil and Gas Production	Fuel Fired Equipment	Process Heaters: Natural Gas	lbs/MMcf
31000414	Miscellaneous Industries	Oil and Gas Production	Fuel Fired Equipment	Steam Generators: Crude Oil	lbs/Mgal
31000499*	Miscellaneous Industries	Oil and Gas Production	Fuel Fired Equipment	Steam Generators: Natural Gas	lbs/MMcf
				Steam Generators: Natural/Process Gas	lbs/MMcf

*No SCC available.

**Also used for field gas fired engines.

TABLE 10. LISTING OF SECONDARY AND PRIMARY VALIDATION CHECKS FOR CARB AND EPA METHODS APPLICABLE TO PROJECT (a).

CHECK	11 83	12 86	15 83	101A 86	104 86	106 83	410 86	421 87	422 87	422 91	423 87	424 87	425 87	425 90	428 88	428 90	429 89	430 91	433 89	EPA Metals	436 91, 92
SAMPLE LOCATION																					
Swirl Check		S		S	S			S			S	S	S	S	S	S	S		S	S	S
Stack Size		S		S	S			S			S	S	S	S	S	S	S		S	S	S
Number of Sample Points		S		S	S			S			S	S	S	S	S	S	S		S	S	S
SAMPLING EQUIPMENT																					
Nozzle Size Check		S		S	S			S			S	S	S	S	S	S	S		S	S	S
Field Gas Dry Meter Calibration	S	S		S	S			S			S	S	S	S	S	S	S		S	S	S
Pilot Tube Semi-Annual Calibration		S		S	S			S			S	S	S	S	S	S	S		S	S	S
Tedlar Bag Contamination Check							P		P												
SAMPLING PROCEDURES																					
Number of Sample Runs																					
Length of Sample Time																					
Leak Check	S	S	S	S	S		S	S	S		S	S	S	S	S	S	S	S	S	S	S
Sample Line Loss			S																		
Isokinetic Variation		S		S	S			S			S	S	S	S	S	S	S		S	S	S
Field Reagent Blank	P	P		P	P			P		P	P	P	P	P	P	P	P	P	P	P	P
Field Blank																					
Field Spike																					
Surrogate Recovery																					
Probe Proof																					
Filter Temperature																					
Flow Rate Level																					
Sample Date																					
Correct Impinger Solution	S	S	S		S			S			S							S			S
ANALYSIS																					
Correct Method Used	S	S		S	S		S	S	S		S	S						S			
Extraction Date																					
Analysis Date																					
3-Point Calibration							P	P													P
Matrix Spike Recovery													P	P							P
Lab Spike Recovery								P													
Lab Control Spike Recovery																					
Internal Standard Recovery																					
Duplicate Percent Difference																					
Separate Impinger Analysis																					
PRIMARY PARAMETER SUMMARY																					
Sufficient Documentation	1	1	0	1	1	1	2	2	3	3	1	1	2	3	3	3	4	3	1	2	3
Total	1	1	0	1	1	1	2	3	5	5	1	1	3	4	4	4	6	5	1	3	5

P - Primary Validation Parameter
S - Secondary Validation Parameter.
Blank - Check not applicable for method
(a) - Table described in Section 6.3 Background

TABLE 11. METHOD RATING SUMMARY.

Sample Method	Version	Substance	Number of Tests at Method Rating					
			A	B	C	D	E	F
CARB 101A	86	Mercury	5	0	0	0	0	0
CARB 104	86	Beryllium	0	0	0	0	0	0
CARB 11	83	Hydrogen Sulfide	0	0	1	0	0	0
CARB 12	86	Lead	2	0	0	0	0	0
CARB 15	83	Hydrogen Sulfide	16	0	0	0	0	0
CARB 410A	86	BTX	30	0	27	0	0	0
CARB 421	87	HCl	0	0	2	0	0	0
CARB 422	87	VOC	2	0	0	0	0	0
	91	VOC	0	0	1	0	0	0
CARB 423	87	Arsenic	0	0	0	0	0	0
CARB 424	87	Cadmium	0	0	1	0	0	0
CARB 425	87	Chromium (Hex)	3	0	5	0	0	0
	90	Chromium (Hex)	0	0	5	0	0	0
CARB 428	88	Dioxin & Furan	0	0	2	0	0	0
	90	Dioxin & Furan	1	0	0	0	0	0
CARB 429	89	PAH	20	0	24	0	0	1
CARB 430	89	Aldehydes	26	0	14	0	0	0
	91	Aldehydes	11	0	6	0	0	0
CARB 433	89	Nickel	0	0	1	0	0	0
CARB 436	92	Trace Metals	0	0	2	0	0	0
EPA 30	86	BTX	0	0	0	0	14	0
EPA MMT	89	Trace Metals	0	3	0	7	0	1

TABLE 12. MAJOR GROUPS AND COMPARISON MATRIX.

Major Group	Device ID	Comparison Parameter							
		SCC	APC System	Strokes per Cycle	Oxygen Level	Capacity	Duct Burners	Load	Burner Type
Asphalt Blowing	160	NC	NC	NC	NC	NC	NC	NC	NC
Asphalt Blowing	160	NC	NC	NC	NC	NC	NC	NC	NC
Boiler, Fuel Oil	142	NC	NC	NC	NC	NC	NC	NC	NC
Boiler, Fuel Oil	645	NC	NC	NC	NC	NC	NC	NC	NC
Boiler, Ref. Gas	505	NC	SCR	NC	NC	NC	NC	<80%	Conventional
Boiler, Ref. Gas	508	NC	None	NC	NC	NC	NC	<80%	Low NOx
Boiler, Ref. Gas	642	NC	None	NC	NC	NC	NC	>80%	Low NOx
Boiler, Ref. Gas	643	NC	None	NC	NC	NC	NC	<80%	Conventional
Boiler, Ref. Gas	646	NC	None	NC	NC	NC	NC	<80%	Conventional
Coke Calcining	425	NC	NC	NC	NC	NC	NC	NC	NC
Heater, Natural Gas	107	NC	NC	NC	NC	NC	NC	NC	NC
Heater, Natural/Ref. Gas	411	NC	NC	NC	NC	NC	NC	NC	NC
Heater, Oil	146	NC	NC	NC	NC	NC	NC	NC	NC
Heater, Ref. Gas	436	NC	DeNOx	NC	NC	NC	NC	<80%	Low NOx
Heater, Ref. Gas	437	NC	SCR	NC	NC	NC	NC	>80%	Conventional
Heater, Ref. Gas	438	NC	SCR	NC	NC	NC	NC	<80%	Low NOx
Heater, Ref. Gas	439	NC	None	NC	NC	NC	NC	<80%	Conventional
Heater, Ref. Gas	440	NC	None	NC	NC	NC	NC	<80%	Conventional
Heater, Ref. Gas	441	NC	None	NC	NC	NC	NC	>80%	Conventional
Heater, Ref. Gas	442	NC	None	NC	NC	NC	NC	<80%	Low NOx
Heater, Ref. Gas	443	NC	None	NC	NC	NC	NC	<80%	Low NOx
Heater, Ref. Gas	444	NC	None	NC	NC	NC	NC	<80%	Low NOx
Heater, Ref. Gas	444	NC	None	NC	NC	NC	NC	<80%	Low NOx
Heater, Ref. Gas	445	NC	None	NC	NC	NC	NC	>80%	Conventional
Heater, Ref. Gas	445	NC	None	NC	NC	NC	NC	>80%	Conventional
Heater, Ref. Gas	445	NC	None	NC	NC	NC	NC	<80%	Conventional
Heater, Ref. Gas	506	NC	None	NC	NC	NC	NC	>80%	Low NOx
Heater, Ref. Gas	507	NC	None	NC	NC	NC	NC	>80%	Low NOx
Heater, Ref. Gas	509	NC	None	NC	NC	NC	NC	>80%	Conventional
ICE, Diesel	112	NC	NC	NC	O2>13%	>650 Hp	NC	NC	NC
ICE, Diesel	113	NC	NC	NC	O2<13%	<650 Hp	NC	NC	NC
ICE, Diesel	637	NC	NC	NC	O2>13%	<650 Hp	NC	NC	NC
ICE, Field Gas	114	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Field Gas	115	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Field Gas	118	20200252	NC	2S	Lean	<650 Hp	NC	NC	NC
ICE, Field Gas	119	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Field Gas	120	20200254	NC	4S	Rich	<650 Hp	NC	NC	NC
ICE, Field Gas	127	20200252	NC	2S	Lean	>650 Hp	NC	NC	NC
ICE, Natural Gas	116	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Natural Gas	117	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Natural Gas	121	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Natural Gas	122	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Natural Gas	123	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Natural Gas	124	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Natural Gas	125	20200202	NC	4S	Lean	<650 Hp	NC	NC	NC
ICE, Natural Gas	126	20200254	NC	4S	Rich	<650 Hp	NC	NC	NC
ICE, Natural Gas	448	20200254	NC	4S	Rich	<650 Hp	NC	NC	NC
Reboiler, Ethylene Glycol	447	NC	NC	NC	NC	NC	NC	NC	NC
Reboiler, Triethylene Glycol	446	NC	NC	NC	NC	NC	NC	NC	NC
SG, Crude Oil	111	NC	SO2 Scrub	NC	NC	NC	NC	>80%	Low NOx
SG, Crude Oil	435	NC	None	NC	NC	NC	NC	>80%	Conventional
SG, Crude Oil	638	NC	SO2 Scrub	NC	NC	NC	NC	<80%	Low NOx
SG, Natural Gas	110	NC	None	NC	NC	NC	NC	??	??
SG, Natural Gas	511	NC	None	NC	NC	NC	NC	<80%	??

TABLE 12. MAJOR GROUPS AND COMPARISON MATRIX.

Major Group	Device ID	Comparison Parameter							
		SCC	APC System	Strokes per Cycle	Oxygen Level	Capacity	Duct Burners	Load	Burner Type
SG, Natural/CVR Gas	108	NC	None	NC	NC	NC	NC	<80%	Low NOx
SG, Natural/CVR Gas	178	NC	None	NC	NC	NC	NC	<80%	Conventional
SG, Natural/CVR Gas	511	NC	None	NC	NC	NC	NC	<80%	??
SG, Natural/CVR Gas	512	NC	None	NC	NC	NC	NC	<80%	??
SG, Natural/CVR Gas	513	NC	None	NC	NC	NC	NC	<80%	??
Turbine, Natural Gas	109	NC	None	NC	NC	NC	N	NC	NC
Turbine, Natural Gas	177	NC	SCR/COC	NC	NC	NC	N	NC	NC
Turbine, Natural Gas	449	NC	SCR	NC	NC	NC	Y	NC	NC
Turbine, Natural/Ref. Gas	451	NC	NC	NC	NC	NC	NC	NC	NC
Turbine, Natural/Ref. Gas	452	NC	NC	NC	NC	NC	NC	NC	NC
Turbine, Natural/Ref. Gas	510	NC	NC	NC	NC	NC	NC	NC	NC
Turbine, Natural/Ref./LP Gas	510	NC	NC	NC	NC	NC	NC	NC	NC
Turbine, Ref. Gas	644	NC	NC	NC	NC	NC	NC	NC	NC

NC - No comparison

SCR - Selective catalytic reduction

COC - CO Oxidation Catalyst

Hp - Horse power

LP - Liquid petroleum

AC - Activated Carbon

TABLE 13. OUTLIER ACTION REPORT BY DEVICE AND SUBSTANCE

Device ID	EER Run ID	Substance	Emission Factor	Unit	Calculation	Method	Process	Comment
107	107CIR1	Acenaphthylene	3.23E-05	lbs/MMcf	X	X	X	IS recovery is 46%; signal-to-noise ratio > 10:1 so run accepted.
107	107CIR1	Pyrene	1.16E-05	lbs/MMcf	X	X	X	
111	111CIR1	Acetaldehyde	5.10E-03	lbs/Mgal	X	X	X	
112	112CIR1	Benzo(a)anthracene	2.45E-04	lbs/Mgal	X	X	X	The sampling methodology was modified for non-leak tests by eliminating the glass traps and probe from the sampling train.
112	112CIR1	Indeno(1,2,3-cd)pyrene	7.77E-06	lbs/Mgal	X	X	X	
112	112CIR3	Fluorene	2.10E-04	lbs/Mgal	X	X	X	
113	113CIR1	Benzo(b)fluoranthene	6.92E-05	lbs/Mgal	X	X	X	The sampling methodology was modified for non-leak tests by eliminating the glass traps and probe from the sampling train.
122	122CIR6	Benzo(b)fluoranthene	9.29E-04	lbs/MMcf	X	X	X	
122	122CIR8	Benzo(g,h,i)perylene	2.58E-04	lbs/MMcf	X	X	X	
122	122CIR8	Indeno(1,2,3-cd)pyrene	2.95E-04	lbs/MMcf	X	X	X	
127	127CIR2	Formaldehyde	6.56E+01	lbs/MMcf	X	X	X	
142	142CIR3	Dibenz(a,h)anthracene	2.68E-06	lbs/Mgal	X	X	X	
142	142CIR1	Acetaldehyde	3.35E-03	lbs/Mgal	X	X	X	
142	142CIR6	Manitane	1.22E-02	lbs/Mgal	X	X	X	
146	146CIR3	4F 2378	2.66E-07	lbs/Mgal	X	X	X	
146	146CIR3	5D 12378	6.57E-09	lbs/Mgal	X	X	X	
146	146CIR3	5F 12378	2.48E-08	lbs/Mgal	X	X	X	
146	146CIR3	5F 23478	4.48E-08	lbs/Mgal	X	X	X	
146	146CIR3	6D 123478	5.68E-09	lbs/Mgal	X	X	X	
146	146CIR3	6D 123678	8.07E-09	lbs/Mgal	X	X	X	
146	146CIR3	6D 123789	1.34E-08	lbs/Mgal	X	X	X	
146	146CIR3	6F 123478	5.68E-08	lbs/Mgal	X	X	X	
146	146CIR3	6F 123678	1.79E-08	lbs/Mgal	X	X	X	
146	146CIR3	6F 234678	2.48E-08	lbs/Mgal	X	X	X	
146	146CIR3	7D 1234678	3.29E-08	lbs/Mgal	X	X	X	
146	146CIR3	7F 1234678	5.68E-08	lbs/Mgal	X	X	X	
146	146CIR1	Fluorene	1.67E-04	lbs/Mgal	X	X	X	
146	146CIR3	2-Chloronaphthalene	3.50E-05	lbs/Mgal	X	X	X	
146	146CIR3	Benzo(a)anthracene	1.12E-05	lbs/Mgal	X	X	X	
146	146CIR3	Benzo(g,h,i)perylene	5.57E-06	lbs/Mgal	X	X	X	
146	146CIR3	Chrysene	2.92E-05	lbs/Mgal	X	X	X	
146	146CIR3	dibenz(a,h)anthracene	5.09E-06	lbs/Mgal	X	X	X	
146	146CIR3	Indeno(1,2,3-cd)pyrene	5.12E-06	lbs/Mgal	X	X	X	
146	146CIR4	Chromium	4.81E-03	lbs/Mgal	X	X	X	
146	146CIR4	Lead	5.48E-04	lbs/Mgal	X	X	X	
146	146CIR6	Cadmium	4.29E-05	lbs/Mgal	X	X	X	Run #1 reporting limit raised due to high level of analyte present in sample. Runs #1 & 2 reporting limit raised due to matrix interference. Run #2 possible elevated level due to excessive field spiking.
177	177CIR2	Anthracene	1.53E-04	lbs/MMcf	X	X	X	
177	177CIR3	Benzo(b)fluoranthene	8.93E-06	lbs/MMcf	X	X	X	
178	178CIR3	Anthracene	4.12E-07	lbs/MMcf	X	X	X	
411	411CIR1	Acenaphthene	1.81E-05	lbs/MMcf	X	X	X	IS recovery is 33%; signal-to-noise ratio > 10:1 so run accepted.
411	411CIR1	Acenaphthylene	1.72E-04	lbs/MMcf	X	X	X	IS recovery is 24%; signal-to-noise ratio > 10:1 so run accepted.
411	411CIR1	Benzo(g,h,i)perylene	9.55E-07	lbs/MMcf	X	X	X	IS recovery is 34%; signal-to-noise ratio > 10:1 so run accepted.
411	411CIR1	Fluorene	1.69E-03	lbs/MMcf	X	X	X	IS recovery is 36%; signal-to-noise ratio > 10:1 so run accepted.
411	411CIR1	Naphthalene	6.18E-03	lbs/MMcf	X	X	X	IS recovery is 27%; signal-to-noise ratio > 10:1 so run accepted.
425	425CIR9	Mercury	1.12E-04	lbs/ton coke	X	X	X	
425	425CIR9	Nickel	1.76E-04	lbs/ton coke	X	X	X	
436	436CIR3	Nickel	2.88E-02	lbs/MMcf	X	X	X	
440	440CIR1	Benzo(b)fluoranthene	3.00E-05	lbs/MMcf	X	X	X	
441	441CIR1	Benzo(a)pyrene	6.37E-06	lbs/MMcf	X	X	X	
441	441CIR2	Benzo(a)pyrene	1.19E-03	lbs/MMcf	X	X	X	
441	441CIR3	Benzo(a)pyrene	1.32E-03	lbs/MMcf	X	X	X	
442	442CIR3	Benzo(a)pyrene	1.05E-05	lbs/MMcf	X	X	X	
442	442CIR3	dibenz(a,h)anthracene	1.31E-04	lbs/MMcf	X	X	X	
442	442CIR3	Indeno(1,2,3-cd)pyrene	1.57E-05	lbs/MMcf	X	X	X	
444	444CIR2	Naphthalene	4.36E-02	lbs/MMcf	X	X	X	
444	444CIR1	Formaldehyde	1.76E+00	lbs/MMcf	X	X	X	

TABLE 13. OUTLIER ACTION REPORT BY DEVICE AND SUBSTANCE

Device ID	BER Run ID	Substance	Emission Factor	Unit	Calculation	Method	Process	Comment
445	445C1R5	Ethylbenzene	9.50E-02	lbs/MMcf	X	X	X	
445	445C1R5	Total Xylene	9.90E-02	lbs/MMcf	X	X	X	
445	445C2R4	Ethylbenzene	6.12E-02	lbs/MMcf	X	X	X	
445	445C2R4	Total Xylene	5.65E-02	lbs/MMcf	X	X	X	
445	445C3R4	Benzene	2.05E-02	lbs/MMcf	X	X	X	
445	445C3R4	Toluene	6.04E-02	lbs/MMcf	X	X	X	
445	445C3R2	Acenaphthene	1.21E-03	lbs/MMcf	X	O	X	
445	445C3R2	Acenaphthylene	4.29E-04	lbs/MMcf	X	O	X	
445	445C3R2	Anthracene	9.13E-04	lbs/MMcf	X	O	X	
445	445C3R2	Benzo(a)anthracene	4.03E-04	lbs/MMcf	X	O	X	
445	445C3R2	Benzo(b)pyrene	1.34E-05	lbs/MMcf	X	O	X	
445	445C3R2	Benzo(k)fluoranthene	5.64E-05	lbs/MMcf	X	O	X	
445	445C3R2	Benzo(g,h,i)perylene	1.34E-05	lbs/MMcf	X	O	X	
445	445C3R2	Benzo(k)fluoranthene	1.34E-05	lbs/MMcf	X	O	X	
445	445C3R2	Chrysene	2.68E-04	lbs/MMcf	X	O	X	
445	445C3R2	dibenz(a,h)anthracene	1.34E-05	lbs/MMcf	X	O	X	
445	445C3R2	Fluoranthene	7.25E-04	lbs/MMcf	X	O	X	
445	445C3R2	Fluorene	6.44E-03	lbs/MMcf	X	O	X	
445	445C3R2	Indeno(1,2,3-cd)pyrene	1.34E-05	lbs/MMcf	X	O	X	
445	445C3R2	Naphthalene	9.66E-02	lbs/MMcf	X	O	X	
445	445C3R2	Phenanthrene	6.98E-03	lbs/MMcf	X	O	X	
445	445C3R2	Pyrene	5.10E-04	lbs/MMcf	X	O	X	
451	451C1R1	Benzo(a)anthracene	4.15E-05	lbs/MMcf	X	X	X	
505	505C1R1	Benzene	1.40E+00	lbs/MMcf	X	X	X	
505	505C1R1	Toluene	5.00E+00	lbs/MMcf	X	X	X	
508	508C1R4	Anthracene	4.41E-02	lbs/MMcf	X	X	X	
510	510C1R6	Formaldehyde	3.42E-01	lbs/MMcf	X	X	X	
510	510C2R1	Copper	8.74E-02	lbs/MMcf	X	X	X	
510	510C2R1	Nickel	6.60E-01	lbs/MMcf	X	X	X	
511	511C1R4	Propylene	6.71E-03	lbs/MMcf	X	X	X	
513	513C1R2	Formaldehyde	7.01E-02	lbs/MMcf	X	X	X	
638	638C1R4	Acenaphthene	1.47E-05	lbs/Mgal	X	X	X	
642	642C1R6	Anthracene	1.69E-02	lbs/MMcf	X	X	X	
643	643C1R2	Anthracene	4.64E-03	lbs/MMcf	X	X	X	
643	643C1R9	Phenol	5.39E-03	lbs/MMcf	X	X	X	
644	644C1T1	Total Xylene	8.85E+00	lbs/MMcf	X	X	X	Formaldehyde was found in Test 13 in effluent samples when compared to the blank. Only the probe line and the first three feet of the analytical line were analyzed because the second three feet of the analytical line was not analyzed during the test.
645	645C1R2	Formaldehyde	7.15E-03	lbs/Mgal	X	X	X	
646	646C1R2	Acetaldehyde	1.21E-02	lbs/MMcf	X	X	X	
646	646C1R3	Beryllium	8.71E-04	lbs/MMcf	X	X	O	
646	646C1R3	Copper	2.02E+01	lbs/MMcf	X	X	O	
646	646C1R3	Lead	1.54E-01	lbs/MMcf	X	X	O	
646	646C1R3	Manganese	2.06E-01	lbs/MMcf	X	X	O	
646	646C1R3	Nickel	2.66E-01	lbs/MMcf	X	X	O	
646	646C1R3	Zinc	9.78E+00	lbs/MMcf	X	X	O	

TABLE 14. OUTLIER ACTION REPORT BY MAJOR GROUP AND SUBSTANCE

Major Group	Substance	BER Run ID	Emission Factor	Unit	Calculation	Method	Process	Comment
Boiler, Fuel Oil	Acenaphthylene	142CIR3	2.34E-07	lbs/Mgal	X	X	X	
Boiler, Fuel Oil	Acetaldehyde	142CIR1	3.35E-03	lbs/Mgal	X	X	X	
Boiler, Fuel Oil	Dibenz(a,h)anthracene	142CIR2	2.07E-07	lbs/Mgal	X	X	X	
Boiler, Fuel Oil	Dibenz(a,h)anthracene	142CIR3	2.68E-06	lbs/Mgal	X	X	X	
Boiler, Refinery Gas	Anthracene	508CIR4	4.41E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	642CIR6	1.69E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	505CIR1	1.40E-00	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	646CIR1	6.08E-01	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	646CIR2	6.43E-01	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Dibenz(a,h)anthracene	642CIR6	1.13E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Formaldehyde	505CIR6	4.14E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Toluene	505CIR1	5.00E-00	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Acetaldehyde	444CIR1	1.12E-01	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	444CIR4	5.81E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	444CIR5	1.54E-01	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	444CIR2	1.62E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	444CIR5	4.34E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	507CIR2	2.87E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	507CIR4	2.08E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	507CIR5	3.09E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Anthracene	509CIR1	2.76E-01	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	444CIR4	4.00E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	444CIR5	4.12E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	437CIR2	9.98E-04	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	437CIR4	9.63E-04	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	437CIR6	9.73E-04	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	438CIR1	2.23E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	438CIR4	2.47E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	438CIR6	2.11E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	440CIR1	4.69E-06	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	441CIR1	6.37E-06	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	441CIR2	1.19E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	441CIR3	1.32E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	442CIR3	1.05E-05	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	442CIR2	2.73E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	444CIR4	4.00E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	444CIR5	4.12E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	444CIR2	2.95E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	444CIR5	8.03E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	444CIR4	1.01E-02	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	445CIR2	1.34E-05	lbs/MMcf	X	O	X	
Boiler, Refinery Gas	Benzene	506CIR2	2.54E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	506CIR4	1.48E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	506CIR6	2.41E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	507CIR2	2.90E-04	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	507CIR4	3.14E-04	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	507CIR5	2.93E-04	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	509CIR2	6.58E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	509CIR3	3.23E-03	lbs/MMcf	X	X	X	
Boiler, Refinery Gas	Benzene	509CIR5	4.70E-03	lbs/MMcf	X	X	X	

Appears to have been contaminated. Data are suspect and are not included in the average values.
All runs (425) for Benzene by test had non-quantified (NQ) interference (not unknown compound).

TABLE 14. OUTLIER ACTION REPORT BY MAJOR GROUP AND SUBSTANCE

Major Group	Substance	EER Run ID	Emission Factor	Unit	Calculation	Method	Process	Comment
Heater, Refinery Gas	Benzo(b)fluoranthene	444CIR4	4.00E-03	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Benzo(b)fluoranthene	444CIR5	4.12E-03	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Benzo(g,h,i)perylene	444CIR5	1.03E-02	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Benzo(k)fluoranthene	444CIR5	4.00E-03	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Benzo(k)fluoranthene	444CIR5	4.12E-03	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Dibenz(a,h)anthracene	444CIR4	4.00E-03	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Dibenz(a,h)anthracene	444CIR5	1.24E-02	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Fluorene	445CIR2	6.4E-03	lbs/MMcf	X	O	X	Appears to have been contaminated. Data are suspect and are not included in the average values.
Heater, Refinery Gas	Formaldehyde	444CIR1	1.76E+00	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Formaldehyde	444CIR3	3.71E-01	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Formaldehyde	509CIR1	3.54E-01	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Formaldehyde	509CIR4	1.72E-01	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Indeno(1,2,3-cd)pyrene	444CIR4	4.00E-03	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Indeno(1,2,3-cd)pyrene	444CIR5	1.24E-02	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Indeno(1,2,3-cd)pyrene	445CIR2	1.34E-05	lbs/MMcf	X	O	X	Appears to have been contaminated. Data are suspect and are not included in the average values.
Heater, Refinery Gas	Naphthalene	445CIR2	4.36E-02	lbs/MMcf	X	O	X	Appears to have been contaminated. Data are suspect and are not included in the average values.
Heater, Refinery Gas	Naphthalene	445CIR5	9.65E-02	lbs/MMcf	X	O	X	Appears to have been contaminated. Data are suspect and are not included in the average values.
Heater, Refinery Gas	Phenanthrene	444CIR5	9.44E-03	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Phenanthrene	445CIR2	6.98E-03	lbs/MMcf	X	O	X	Appears to have been contaminated. Data are suspect and are not included in the average values.
Heater, Refinery Gas	Phenol	438CIR1	2.68E-02	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Toluene	444CIR6	1.21E+00	lbs/MMcf	X	X	X	
Heater, Refinery Gas	Toluene	509CIR1	3.25E-01	lbs/MMcf	X	X	X	
ICE, Diesel	Acrolein	112CIR1	3.16E-02	lbs/Mgal	X	X	X	
ICE, Diesel	Benzo(a)anthracene	637CIR1	6.75E-04	lbs/Mgal	X	X	X	
ICE, Diesel	Benzo(g,h,i)perylene	112CIR2	1.55E-04	lbs/Mgal	X	X	X	
ICE, Field Gas	o-xylene	118CIR4	5.37E-01	lbs/MMcf	X	X	X	
ICE, Field Gas	o-xylene	118CIR5	5.91E-01	lbs/MMcf	X	X	X	
ICE, Field Gas	o-xylene	120CIR4	2.81E-01	lbs/MMcf	X	X	X	
ICE, Field Gas	o-xylene	120CIR5	2.56E-01	lbs/MMcf	X	X	X	
ICE, Field Gas	Propylene	118CIR4	4.02E+01	lbs/MMcf	X	X	X	
ICE, Field Gas	Propylene	118CIR5	4.02E+01	lbs/MMcf	X	X	X	
ICE, Natural Gas	Benzene	126CIR4	9.51E+00	lbs/MMcf	X	X	X	
ICE, Natural Gas	Benzene	126CIR5	1.02E+01	lbs/MMcf	X	X	X	
ICE, Natural Gas	m,p-xylene	126CIR4	4.28E-01	lbs/MMcf	X	X	X	
ICE, Natural Gas	m,p-xylene	126CIR5	4.54E-01	lbs/MMcf	X	X	X	
ICE, Natural Gas	o-xylene	116CIR5	9.14E-02	lbs/MMcf	X	X	X	
ICE, Natural Gas	o-xylene	126CIR4	2.12E-01	lbs/MMcf	X	X	X	
ICE, Natural Gas	o-xylene	126CIR5	2.22E-01	lbs/MMcf	X	X	X	
ICE, Natural Gas	Toluene	126CIR4	2.41E+00	lbs/MMcf	X	X	X	
ICE, Natural Gas	Toluene	126CIR5	2.62E+00	lbs/MMcf	X	X	X	
SG, Crude Oil	Cadinene	111CIR5	5.45E-04	lbs/Mgal	X	X	X	
SG, Crude Oil	Fluoranthene	111CIR2	5.23E-05	lbs/Mgal	X	X	X	
SG, Crude Oil	Phenanthrene	111CIR1	2.35E-05	lbs/Mgal	X	X	X	
SG, Crude Oil	Phenanthrene	111CIR2	1.62E-04	lbs/Mgal	X	X	X	
SG, Crude Oil	Pyrene	435CIR1	7.22E-05	lbs/Mgal	X	X	X	
SG, Crude Oil	Toluene	638CIR7	1.16E-02	lbs/Mgal	X	X	X	
SG, Natural/CVR Gas	Acenaphthylene	178CIR1	3.50E-06	lbs/MMcf	X	X	X	
SG, Natural/CVR Gas	Acenaphthylene	178CIR2	1.03E-05	lbs/MMcf	X	X	X	
SG, Natural/CVR Gas	Benzo(a)anthracene	108CIR2	2.16E-06	lbs/MMcf	X	X	X	
SG, Natural/CVR Gas	Benzo(a)anthracene	178CIR2	1.33E-06	lbs/MMcf	X	X	X	
SG, Natural/CVR Gas	Total Xylene	108CIR7	4.03E-02	lbs/MMcf	X	X	X	

The sampling methodology was modified for wet-lookback testing by eliminating the glass nozzle and probe from the sampling train.

IS recovery is 28 %; signal-to-noise ratio > 10:1; chemical interferences.

TABLE 14. OUTLIER ACTION REPORT BY MAJOR GROUP AND SUBSTANCE

Major Group	Substance	EBR Run ID	Emission Factor	Unit	Calculation	Method	Process	Comment
Turbine, Nat/Ref Gas	Chromium	451CIR6	1.84E-01	lbs/MMcf	X	X	X	
Turbine, Natural Gas	Anthracene	109CIR1	3.48E-05	lbs/MMcf	X	X	X	
Turbine, Natural Gas	Anthracene	177CIR2	1.53E-04	lbs/MMcf	X	X	X	
Turbine, Natural Gas	Benzo(a)anthracene	109CIR1	5.89E-06	lbs/MMcf	X	X	X	
Turbine, Natural Gas	Benzo(b)fluoranthene	177CIR3	8.93E-06	lbs/MMcf	X	X	X	
Turbine, Natural Gas	Fluorene	109CIR1	3.17E-05	lbs/MMcf	X	X	X	

X - Checked

O - Action Required

C - Emission Factor Corrected

Run #2 possible identified and due to excessive field spiking

TABLE 15. EMISSION FACTOR GROUPS.

Major Group*	Sub Group	Material/Fuel	System Type	SCC -	APC Device	Other
Asphalt Blowing	1	Asphalt fumes	Asphalt Blowing	30601101	TO	Blow Cycle
Asphalt Blowing	2	Asphalt fumes	Asphalt Blowing	30601101	TO	No Blow Cycle
Boiler, Fuel Oil	1	No. 6 fuel oil	Boiler	10200403	None	None
Boiler, Ref. Gas	1	Refinery gas	Boiler	10200701	SCR	None
Boiler, Ref. Gas	1	Refinery gas	Boiler	10200701	None	None
Coke Calcining	1	Natural gas	Coke Calcining	30601401	SD/FF	None
Heater, Natural Gas	1	Natural gas	Heater	31000404	None	None
Heater, Natural/Ref. Gas	1	Natural/Refinery gas	Heater	30600199	None	None
Heater, Oil	1	Pipeline oil	Heater	31000403	None	None
Heater, Ref. Gas	1	Refinery gas	Heater	30600106	DeNOx	None
Heater, Ref. Gas	1	Refinery gas	Heater	30600106	SCR	None
Heater, Ref. Gas	1	Refinery gas	Heater	30600106	None	None
ICE, Diesel	1	Diesel	Reciprocating ICE	20200102	None	Oxygen<13%
ICE, Diesel	2	Diesel	Reciprocating ICE	20200102	None	Oxygen>13%
ICE, Field Gas	1	Field gas	Reciprocating ICE	20200252	None	2S/Lean
ICE, Field Gas	2	Field gas	Reciprocating ICE	20200202	None	4S/Lean
ICE, Field Gas	3	Field gas	Reciprocating ICE	20200254	None	4S/Rich
ICE, Natural Gas	1	Natural gas	Reciprocating ICE	20200202	None	4S/Lean
ICE, Natural Gas	2	Natural gas	Reciprocating ICE	20200254	None	4S/Rich
Reboiler, Ethylene Glycol	1	Ethylene glycol	Reboiler	31000304	None	None
Reboiler, Triethylene Glycol	2	Triethylene glycol	Reboiler	31000301	None	None
SG, Crude Oil	1	Crude oil	Steam Generator	31000413	None	None
SG, Crude Oil	1	Crude oil	Steam Generator	31000413	SO2 Scrub	None
SG, Natural Gas	1	Natural gas	Steam Generator	31000414	None	None
SG, Natural/CVR Gas	1	Natural/CVR gas	Steam Generator	31000499	None	None
Turbine, Natural Gas	1	Natural gas	Turbine	20200203	None	No Duct Burners
Turbine, Natural Gas	1	Natural gas	Turbine	20200203	SCR/COC	No Duct Burners
Turbine, Natural Gas	2	Natural gas	Turbine	20200203	SCR	Duct Burners
Turbine, Natural/Ref. Gas	1	Natural/Refinery gas	Turbine	20200299	SCR/COC	None
Turbine, Natural/Ref./LP Gas	1	Natural/LP/Refinery gas	Turbine	20200299	SCR/COC	None
Turbine, Ref. Gas	1	Refinery gas	Turbine	20200701	COC	None

*A set of emission factors is provided in Table 20 for each row of data given above.

Emission factors in sets not separated by lines are the same.

TABLE 16. EMISSION FACTOR GROUP COMPARISON.

Major Group	Category	Substance	Factor Unit	First Sample Statistics				Second Sample Statistics				Significant Difference at 95% Confidence		
				Description Sub Group	Size	Average	Standard Deviation	Detect Ratio	Description Sub Group	Size	Average		Standard Deviation	Detect Ratio
Asphalt Blowing	Halogens	HCl	lbs/MMcf	Blow Cycle	1	2.21E-03		1.00	No Blow Cycle	1	8.22E-04		1.00	NA
	Metals	Arsenic	lbs/MMcf	Blow Cycle	1	1.31E-02		0.00	No Blow Cycle	1	1.16E-02		0.00	NA
	Metals	Beryllium	lbs/MMcf	Blow Cycle	1	2.63E-03		0.00	No Blow Cycle	1	2.33E-03		0.00	NA
	Metals	Cadmium	lbs/MMcf	Blow Cycle	1	5.25E-03		0.00	No Blow Cycle	1	4.65E-03		0.00	NA
	Metals	Chromium (Hex)	lbs/MMcf	Blow Cycle	1	3.17E-03		1.00	No Blow Cycle	1	3.28E-03		0.00	NA
	Metals	Chromium (Total)	lbs/MMcf	Blow Cycle	1	4.18E-02		1.00	No Blow Cycle	1	1.42E-02		0.00	NA
	Metals	Copper	lbs/MMcf	Blow Cycle	1	4.75E-02		1.00	No Blow Cycle	1	3.79E-02		1.00	NA
	Metals	Lead	lbs/MMcf	Blow Cycle	1	5.25E-02		0.00	No Blow Cycle	1	4.65E-02		0.00	NA
	Metals	Manganese	lbs/MMcf	Blow Cycle	1	1.23E-01		1.00	No Blow Cycle	1	2.07E-01		1.00	NA
	Metals	Mercury	lbs/MMcf	Blow Cycle	1	9.07E-03		1.00	No Blow Cycle	1	8.53E-03		1.00	NA
	Metals	Nickel	lbs/MMcf	Blow Cycle	1	6.65E-02		0.00	No Blow Cycle	1	6.01E-02		0.00	NA
	Metals	Selenium	lbs/MMcf	Blow Cycle	1	1.31E-02		0.00	No Blow Cycle	1	1.16E-02		0.00	NA
	Metals	Zinc	lbs/MMcf	Blow Cycle	1	8.41E-01		1.00	No Blow Cycle	1	5.35E-01		1.00	NA
	SVOC	Ethylbenzene	lbs/MMcf	Blow Cycle	1	8.61E-01		0.00	No Blow Cycle	1	7.62E-01		0.00	NA
	SVOC	Phenol	lbs/MMcf	Blow Cycle	1	7.57E-02		1.00	No Blow Cycle	1	4.64E-02		1.00	NA
	VOC	Acetaldehyde	lbs/MMcf	Blow Cycle	1	1.78E-03		1.00	No Blow Cycle	1	4.32E-03		1.00	NA
	VOC	Benzene	lbs/MMcf	Blow Cycle	1	3.16E-01		0.00	No Blow Cycle	1	2.80E-01		0.00	NA
	VOC	Formaldehyde	lbs/MMcf	Blow Cycle	1	3.55E-03		1.00	No Blow Cycle	1	1.30E-02		1.00	NA
	VOC	Hydrogen Sulfide	lbs/MMcf	Blow Cycle	1	2.07E+00		0.00	No Blow Cycle	1	1.83E+00		0.00	NA
	Asphalt Blowing	VOC	Xylene (Total)	lbs/MMcf	Blow Cycle	1	8.61E-01		0.00	No Blow Cycle	1	7.62E-01		0.00
ICE, Diesel	PAH	Acenaphthene	lbs/Mgal	4S, O2<13%	3	6.94E-04	2.47E-04	1.00	4S, O2>13%	6	1.98E-04	2.69E-04	1.00	Yes
	PAH	Acenaphthylene	lbs/Mgal	4S, O2<13%	2	1.27E-03	7.76E-05	1.00	4S, O2>13%	6	7.03E-04	8.81E-04	1.00	No
	PAH	Anthracene	lbs/Mgal	4S, O2<13%	3	1.70E-04	1.06E-04	1.00	4S, O2>13%	6	2.60E-04	1.18E-04	1.00	No
	PAH	Benzo(a)anthracene	lbs/Mgal	4S, O2<13%	3	8.71E-05	8.47E-06	1.00	4S, O2>13%	6	2.34E-04	2.43E-04	1.00	No
	PAH	Benzo(a)pyrene	lbs/Mgal	4S, O2<13%	2	3.54E-05	1.41E-05	0.45	4S, O2>13%	6	2.60E-05	2.82E-05	0.00	No
	PAH	Benzo(b)fluoranthene	lbs/Mgal	4S, O2<13%	3	1.51E-04	3.46E-05	0.27	4S, O2>13%	3	2.59E-05	1.36E-05	0.50	Yes
	PAH	Benzo(g,h,i)perylene	lbs/Mgal	4S, O2<13%	2	7.69E-05	7.05E-06	1.00	4S, O2>13%	6	6.78E-05	4.86E-05	0.43	No
	PAH	Benzo(k)fluoranthene	lbs/Mgal	4S, O2<13%	3	3.02E-05	3.38E-05	0.76	4S, O2>13%	2	4.14E-05	2.14E-05	0.50	No
	PAH	Chrysene	lbs/Mgal	4S, O2<13%	3	2.11E-04	2.33E-05	1.00	4S, O2>13%	6	4.90E-05	1.67E-05	1.00	Yes
	PAH	Dibenz(a,h)anthracene	lbs/Mgal	4S, O2<13%	3	4.77E-05	2.66E-06	0.00	4S, O2>13%	6	8.12E-05	4.12E-05	0.35	No
	PAH	Fluoranthene	lbs/Mgal	4S, O2<13%	3	5.56E-04	2.50E-05	1.00	4S, O2>13%	6	1.06E-03	9.59E-04	1.00	No
	PAH	Indeno(1,2,3-cd)pyrene	lbs/Mgal	4S, O2<13%	3	1.77E-03	4.62E-05	1.00	4S, O2>13%	6	4.06E-03	3.56E-03	0.99	No
	PAH	Naphthalene	lbs/Mgal	4S, O2<13%	3	5.69E-05	1.01E-05	0.34	4S, O2>13%	6	6.43E-05	5.39E-05	0.30	No
	PAH	Phenanthrene	lbs/Mgal	4S, O2<13%	3	1.80E-02	6.72E-04	1.00	4S, O2>13%	6	1.18E-02	9.44E-03	1.00	No
	VOC	Acetaldehyde	lbs/Mgal	4S, O2<13%	3	5.62E-03	1.45E-04	1.00	4S, O2>13%	6	4.09E-03	2.68E-03	1.00	No
	VOC	Acrolein	lbs/Mgal	4S, O2<13%	3	5.11E-04	4.17E-05	1.00	4S, O2>13%	6	6.66E-04	3.46E-04	1.00	No
	VOC	Benzene	lbs/Mgal	4S, O2<13%	3	3.47E-03	2.61E-03	1.00	4S, O2>13%	6	1.07E-02	9.44E-03	1.00	No
	VOC	Benzene	lbs/Mgal	4S, O2<13%	3	1.07E-03	6.19E-04	0.56	4S, O2>13%	6	1.30E-02	9.64E-03	0.82	No
	VOC	Formaldehyde	lbs/Mgal	4S, O2<13%	3	1.01E-01	2.73E-03	1.00	4S, O2>13%	6	1.22E-01	5.91E-02	1.00	No
	VOC	Propylene	lbs/Mgal	4S, O2<13%	3	1.09E-02	1.34E-02	1.00	4S, O2>13%	6	1.63E-01	9.22E-02	1.00	Yes
VOC	Toluene	lbs/Mgal	4S, O2<13%	3	3.85E-01	3.10E-02	1.00	4S, O2>13%	6	3.58E-01	2.03E-01	1.00	Yes	
VOC	Xylene (Total)	lbs/Mgal	4S, O2<13%	3	3.74E-02	1.22E-03	1.00	4S, O2>13%	6	5.50E-02	2.10E-02	1.00	No	
ICE, Diesel	VOC	Benzene	lbs/Mgal	4S, O2<13%	3	2.68E-02	1.03E-03	1.00	4S, O2>13%	3	3.59E-02	1.48E-02	1.00	No
ICE, Field Gas	VOC	Benzene	lbs/MMcf	2S, Lean	5	7.85E+00	4.77E+00	1.00	4S, Lean	6	1.72E+00	6.13E-01	1.00	Yes
ICE, Field Gas	VOC	Benzene	lbs/MMcf	2S, Lean	5	7.85E+00	4.77E+00	1.00	4S, Rich	2	1.10E+01	1.26E-01	1.00	No
ICE, Field Gas	VOC	Benzene	lbs/MMcf	4S, Lean	6	1.72E+00	6.13E-01	1.00	4S, Rich	2	1.10E+01	1.26E-01	1.00	Yes
ICE, Field Gas	VOC	Formaldehyde	lbs/MMcf	2S, Lean	6	5.09E+01	3.55E+01	1.00	4S, Lean	9	4.15E+01	3.18E+01	1.00	No
ICE, Field Gas	VOC	Formaldehyde	lbs/MMcf	2S, Lean	6	5.09E+01	3.55E+01	1.00	4S, Rich	3	5.05E+00	8.04E-01	1.00	No

TABLE 16. EMISSION FACTOR GROUP COMPARISON.

Major Group	Category	Substance	Factor Unit	First Sample Statistics				Second Sample Statistics				Significant Difference at 95% Confidence		
				Description Sub Group	Size	Average	Standard Deviation	Detect Ratio	Description Sub Group	Size	Average		Standard Deviation	Detect Ratio
ICE, Field Gas	VOC	Formaldehyde	lbs/MMcf	4S, Lean	2	4.15E-01	3.18E-01	1.00	4S, Rich	3	5.05E+00	8.04E-01	1.00	No
ICE, Field Gas	VOC	Propylene	lbs/MMcf	2S, Lean	2	2.49E-01	1.41E-01	1.00	4S, Lean	6	1.59E+01	4.86E+00	1.00	No
ICE, Field Gas	VOC	Propylene	lbs/MMcf	2S, Lean	5	2.49E-01	1.41E-01	1.00	4S, Rich	2	3.04E+00	0.00E+00	0.00	No
ICE, Field Gas	VOC	Propylene	lbs/MMcf	4S, Lean	1	2.49E-01	1.41E-01	1.00	4S, Rich	2	3.04E+00	0.00E+00	0.00	Yes
ICE, Field Gas	VOC	Toluene	lbs/MMcf	2S, Lean	1	2.49E-01	1.41E-01	1.00	4S, Lean	6	7.68E-01	3.92E-01	1.00	Yes
ICE, Field Gas	VOC	Toluene	lbs/MMcf	2S, Lean	5	2.86E+00	2.08E+00	1.00	4S, Rich	2	3.44E+00	1.57E-01	1.00	No
ICE, Field Gas	VOC	Toluene	lbs/MMcf	4S, Lean	6	7.68E-01	3.92E-01	1.00	4S, Rich	2	3.44E+00	1.57E-01	1.00	Yes
ICE, Field Gas	VOC	Xylene (m,p)	lbs/MMcf	2S, Lean	5	6.04E-01	4.88E-01	1.00	4S, Lean	6	3.02E-01	3.01E-01	1.00	No
ICE, Field Gas	VOC	Xylene (m,p)	lbs/MMcf	2S, Lean	5	6.04E-01	4.88E-01	1.00	4S, Rich	2	5.37E-01	3.62E-02	1.00	No
ICE, Field Gas	VOC	Xylene (m,p)	lbs/MMcf	4S, Lean	6	3.02E-01	3.01E-01	1.00	4S, Rich	2	5.37E-01	3.62E-02	1.00	No
ICE, Field Gas	VOC	Xylene (o)	lbs/MMcf	2S, Lean	5	2.88E-01	2.54E-01	1.00	4S, Lean	6	8.97E-02	2.30E-02	1.00	No
ICE, Field Gas	VOC	Xylene (o)	lbs/MMcf	2S, Lean	5	2.88E-01	2.54E-01	1.00	4S, Rich	2	2.68E-01	1.81E-02	1.00	No
ICE, Field Gas	VOC	Xylene (o)	lbs/MMcf	4S, Lean	6	8.97E-02	2.30E-02	1.00	4S, Rich	2	2.68E-01	1.81E-02	1.00	Yes
ICE, Natural Gas	VOC	Acetaldehyde	lbs/MMcf	4S, Lean	15	3.99E+00	2.59E+00	1.00	4S, Rich	3	1.71E+00	1.10E-01	1.00	No
ICE, Natural Gas	VOC	Acrolein	lbs/MMcf	4S, Lean	14	1.63E+00	1.50E+00	1.00	4S, Rich	6	5.40E-01	5.71E-01	1.00	No
ICE, Natural Gas	VOC	Benzene	lbs/MMcf	4S, Lean	14	1.21E+00	5.70E-01	1.00	4S, Rich	3	9.87E-01	4.33E-01	1.00	Yes
ICE, Natural Gas	VOC	Formaldehyde	lbs/MMcf	4S, Lean	21	2.49E-01	1.41E-01	1.00	4S, Rich	6	5.32E+00	5.35E+00	1.00	Yes
ICE, Natural Gas	VOC	Propylene	lbs/MMcf	4S, Lean	14	1.87E-01	2.04E-01	0.97	4S, Rich	2	3.95E+01	3.54E+00	1.00	No
ICE, Natural Gas	VOC	Toluene	lbs/MMcf	4S, Lean	14	4.12E-01	1.40E-01	1.00	4S, Rich	2	3.95E+01	3.54E+00	1.00	Yes
ICE, Natural Gas	VOC	Xylene (m,p)	lbs/MMcf	4S, Lean	14	8.63E-02	3.99E-02	1.00	4S, Rich	2	3.95E+01	3.54E+00	1.00	Yes
ICE, Natural Gas	VOC	Xylene (o)	lbs/MMcf	4S, Lean	14	4.94E-02	1.95E-02	0.95	4S, Rich	2	3.95E+01	3.54E+00	1.00	Yes
Turbine, Natural Gas	VOC	Formaldehyde	lbs/MMcf	Duct Burner	3	2.09E-02	6.23E-03	0.45	No Duct Burner	3	2.09E-02	6.23E-03	0.45	Yes

Shaded: Significantly higher at 95% confidence

Underline: higher

TABLE 17. SUBSTANCE SPECIFIC UNCERTAINTY AND RELATIVE STANDARD DEVIATION (a)

Category	Substance	Relative Standard Deviation, %			Uncertainty, %		
		Mean	Minimum	Maximum	Mean	Minimum	Maximum
Dioxin/Furan	Dioxin:4D 2378	24.59	18.56	34.70	27.82	21.00	39.26
Dioxin/Furan	Dioxin:4D Other	96.53	96.53	96.53	109.23	109.23	109.23
Dioxin/Furan	Dioxin:5D 12378	76.34	39.05	142.30	86.38	44.19	161.02
Dioxin/Furan	Dioxin:5D Other	23.10	23.10	23.10	26.14	26.14	26.14
Dioxin/Furan	Dioxin:6D 123478	80.29	47.67	138.10	90.86	53.94	156.28
Dioxin/Furan	Dioxin:6D 123678	79.86	44.48	147.43	90.37	50.33	166.83
Dioxin/Furan	Dioxin:6D 123789	76.53	24.83	157.08	86.60	28.10	177.75
Dioxin/Furan	Dioxin:6D Other	44.09	44.09	44.09	49.89	49.89	49.89
Dioxin/Furan	Dioxin:7D 1234678	80.48	51.62	127.05	91.07	58.41	143.76
Dioxin/Furan	Dioxin:7D Other	38.24	38.24	38.24	43.27	43.27	43.27
Dioxin/Furan	Dioxin:8D	56.06	42.12	69.66	63.44	47.67	78.83
Dioxin/Furan	Furan:4F 2378	74.17	19.13	171.19	83.93	21.65	193.71
Dioxin/Furan	Furan:4F Other	47.70	47.70	47.70	53.98	53.98	53.98
Dioxin/Furan	Furan:5F 12378	71.58	13.01	164.20	80.99	14.72	185.80
Dioxin/Furan	Furan:5F 23478	76.51	23.87	168.14	86.58	27.01	190.26
Dioxin/Furan	Furan:5F Other	42.57	42.57	42.57	48.17	48.17	48.17
Dioxin/Furan	Furan:6F 123478	75.19	12.27	169.85	85.08	13.89	192.20
Dioxin/Furan	Furan:6F 123678	70.81	4.51	166.91	80.13	5.10	188.87
Dioxin/Furan	Furan:6F 123789	37.13	29.03	47.67	42.02	32.85	53.94
Dioxin/Furan	Furan:6F 234678	70.64	2.55	158.52	79.94	2.88	179.38
Dioxin/Furan	Furan:6F Other	49.18	49.18	49.18	55.66	55.66	55.66
Dioxin/Furan	Furan:7F 1234678	73.24	15.51	165.30	82.87	17.55	187.05
Dioxin/Furan	Furan:7F 1234789	66.58	17.09	109.22	75.34	19.33	123.59
Dioxin/Furan	Furan:7F Other	0.00	0.00	0.00	0.00	0.00	0.00
Dioxin/Furan	Furan:8F	87.66	45.27	125.10	99.19	51.23	141.57
Halogens	HCl	2.97	0.00	8.92	3.36	0.00	10.09
Metals	Antimony	29.08	4.04	54.13	32.91	4.57	61.25
Metals	Arsenic	24.32	0.00	83.25	23.54	0.00	74.80
Metals	Barium	14.98	2.45	27.51	16.96	2.78	31.13
Metals	Beryllium	7.09	0.00	22.77	7.61	0.00	25.76
Metals	Cadmium	40.34	0.00	100.53	41.27	0.00	97.85
Metals	Chromium (Hex)	21.78	0.00	83.96	19.20	0.00	67.18
Metals	Chromium (Total)	53.49	0.00	122.51	52.47	0.00	138.63
Metals	Copper	52.03	0.00	108.86	57.55	0.00	123.19
Metals	Lead	31.28	0.00	98.91	33.90	0.00	111.92
Metals	Manganese	56.53	0.00	97.56	62.72	0.00	110.40
Metals	Mercury	47.49	0.00	122.81	47.24	0.00	138.71
Metals	Nickel	48.20	0.00	149.30	55.13	0.00	168.95
Metals	Phosphorus	36.43	2.45	101.41	30.02	2.78	81.14
Metals	Selenium	31.69	0.00	107.66	30.71	0.00	70.34
Metals	Silver	48.34	5.45	91.23	54.70	6.17	103.24
Metals	Thallium	3.88	2.45	5.31	4.39	2.78	6.01
Metals	Zinc	55.65	0.00	161.24	57.44	0.00	182.45
PAH	Acenaphthene	64.85	8.97	136.01	61.67	10.15	137.64
PAH	Acenaphthylene	67.83	2.04	166.69	66.17	2.31	188.62
PAH	Anthracene	61.86	9.02	167.76	56.89	10.20	134.23
PAH	Benzo(a)anthracene	72.97	2.17	261.62	61.36	3.01	187.35
PAH	Benzo(a)pyrene	73.71	4.04	344.55	60.64	4.57	147.52
PAH	Benzo(b)fluoranthene	73.51	4.04	315.76	62.24	4.57	180.94
PAH	Benzo(b+k)fluoranthene	2.98	1.90	4.07	3.38	2.14	4.61

TABLE 17. SUBSTANCE SPECIFIC UNCERTAINTY AND RELATIVE STANDARD DEVIATION (a)

Category	Substance	Relative Standard Deviation, %			Uncertainty, %		
		Mean	Minimum	Maximum	Mean	Minimum	Maximum
PAH	Benzo(e)pyrene	41.29	37.44	45.15	46.73	42.36	51.09
PAH	Benzo(g,h,i)perylene	54.07	4.04	140.55	53.85	4.57	159.04
PAH	Benzo(k)fluoranthene	70.92	2.04	309.39	61.19	2.31	126.37
PAH	Chrysene	53.34	9.43	139.73	50.72	12.48	158.12
PAH	Dibenz(a,h)anthracene	58.83	2.04	262.22	46.64	2.31	185.78
PAH	Fluoranthene	57.28	4.50	116.13	53.56	5.09	110.92
PAH	Fluorene	72.50	2.62	139.64	69.93	2.96	158.01
PAH	Indeno(1,2,3-cd)pyrene	69.08	2.04	342.12	54.56	2.31	179.59
PAH	Naphthalene	45.05	1.88	145.12	42.16	2.61	164.21
PAH	Phenanthrene	62.26	2.58	208.44	57.85	2.92	140.04
PAH	Pyrene	61.81	8.16	110.05	58.95	9.24	109.08
SVOC	2-Chloronaphthalene	99.84	27.13	172.55	112.97	30.70	195.25
SVOC	2-Methylnaphthalene	74.29	11.52	137.05	84.06	13.04	155.09
SVOC	Benzaldehyde	6.50	6.29	6.71	7.36	7.12	7.60
SVOC	Ethylbenzene	28.86	0.00	100.75	21.52	0.00	57.01
SVOC	Perylene	97.66	87.56	107.75	110.51	99.09	121.93
SVOC	Phenol	54.06	0.00	131.32	45.28	0.00	148.60
VOC	1,3-Butadiene	32.29	0.00	93.74	26.19	0.00	75.01
VOC	Acetaldehyde	42.42	0.00	129.02	32.63	0.00	92.82
VOC	Acrolein	48.79	0.68	108.34	41.72	0.77	120.84
VOC	Benzene	32.92	0.00	180.67	23.57	0.00	88.53
VOC	Chloroform	3.16	3.06	3.26	3.58	3.46	3.69
VOC	Formaldehyde	60.99	0.00	254.14	48.39	0.00	139.41
VOC	Hydrogen Sulfide	41.04	0.00	94.42	33.43	0.00	106.85
VOC	Propylene	39.03	0.00	145.15	28.22	0.00	94.83
VOC	Toluene	50.22	0.57	189.87	39.19	0.46	134.23
VOC	Xylene (Total)	35.86	0.00	157.44	32.19	0.00	178.16
VOC	Xylene (m)	21.86	6.19	37.54	24.74	7.01	42.48
VOC	Xylene (m,p)	39.64	4.04	99.71	33.57	5.60	79.78
VOC	Xylene (o)	23.70	0.00	88.41	20.98	0.00	77.49
VOC	Xylene (p)	17.71	7.10	28.33	20.05	8.03	32.06

(a) Table described in Section 6.9 Results

TABLE 18. CARB OVERALL RATING.

CARB Method Rating*	Population Rating		
	1. Many random facilities [5 or more sources]	2. Reasonable number of facilities [3 to 4 sources]	3. Small number of facilities [<3 sources]
A Test was performed using a new or old CARB methodology and sufficient documentation was provided to validate the results.	v0 (5), v1 (5) v2 (4), v3 (2)	v0 (17), v1 (5)	v- (4), v0 (223) v1 (21), v2 (2)
B Test was performed using a new or old EPA methodology and sufficient documentation was provided to validate the results.	v0 (3), v2 (1), v3 (2)	v0 (1) v1 (1)	v0 (46), v1 (9)
C Test was performed using a new or old CARB methodology and insufficient documentation was provided to validate the results.	v1 (2), v2 (1), v3 (1)	v0 (2), v1 (9)	v- (12), v0 (151) v1 (39) v2 (6), v3 (1)
D Test was performed using a new or old EPA methodology and insufficient documentation was provided to validate the results.	v2 (1)	v0 (4), v1 (3) v2 (2)	v- (18), v0 (19) v1 (2), v2 (1)
E An assumption was made in the emission factor calculation which could significantly affect the accuracy of the results.	None	v2 (1)	v- (6), v0 (2) v1 (2)

vN - N is the order of magnitude difference between minimum and maximum.

() - Number of emission factors

* - The EPA methods are not considered inferior. However, the Hot Spots Program mandated that an EPA method could be used only if there was no corresponding CARB test method or if the source asked for an equivalency determination. CARB and EPA test methods are different in many cases and can lead to different results. CARB test methods were rated higher than the EPA's to provide consistent test result comparisons.

TABLE 19. EPA OVERALL RATING THAT WOULD BE ASSIGNED TO CALIFORNIA DATA*.

EPA Method Rating		Population Rating		
		1. Many random facilities [5 or more sources]	2. Reasonable number of facilities [3 to 4 sources]	3. Small number of facilities [<3 sources]
A	Current EPA or CARB method with supporting documentation	A (13)	B (21)	D (406)
B	Current EPA or CARB method no supporting documentation		C (11)	
C	Old EPA or CARB method with and without supporting documentation	NR (27)		E (158)
D	Order of magnitude method			

NR - Not rated in EPA system

() - Number of emission factors

*EPA overall ratings shown were assigned for this project and are not official EPA ratings.

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Asphalt Blowing/1	30601101	TO	Blow Cycle	Halogens	HCl	C3-v-	2.21E-03	2.21E-03	2.21E-03	2.21E-03	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Arsenic	D3-v-	1.31E-02	1.31E-02	1.31E-02	1.31E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Beryllium	D3-v-	2.63E-03	2.63E-03	2.63E-03	2.63E-03	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Cadmium	D3-v-	5.25E-03	5.25E-03	5.25E-03	5.25E-03	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Chromium (Hex)	C3-v-	3.17E-03	3.17E-03	3.17E-03	3.17E-03	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Chromium (Total)	C3-v-	4.18E-02	4.18E-02	4.18E-02	4.18E-02	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Copper	D3-v-	4.75E-02	4.75E-02	4.75E-02	4.75E-02	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Lead	D3-v-	5.25E-02	5.25E-02	5.25E-02	5.25E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Manganese	D3-v-	1.23E-01	1.23E-01	1.23E-01	1.23E-01	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Mercury	A3-v-	9.07E-03	9.07E-03	9.07E-03	9.07E-03	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Nickel	D3-v-	6.65E-02	6.65E-02	6.65E-02	6.65E-02	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Selenium	D3-v-	1.31E-02	1.31E-02	1.31E-02	1.31E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Zinc	D3-v-	8.41E-01	8.41E-01	8.41E-01	8.41E-01	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	SVOC	Ethylbenzene	E3-v-	8.61E-01	8.61E-01	8.61E-01	8.61E-01	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	SVOC	Phenol	C3-v-	1.78E-03	1.78E-03	1.78E-03	1.78E-03	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Acetaldehyde	E3-v-	3.16E-01	3.16E-01	3.16E-01	3.16E-01	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Benzene	E3-v-	3.55E-03	3.55E-03	3.55E-03	3.55E-03	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Formaldehyde	A3-v-	2.07E+00	2.07E+00	2.07E+00	2.07E+00	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Hydrogen Sulfide	E3-v-	8.61E-01	8.61E-01	8.61E-01	8.61E-01	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Halogens	HCl	C3-v-	8.22E-04	8.22E-04	8.22E-04	8.22E-04	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Arsenic	D3-v-	1.16E-02	1.16E-02	1.16E-02	1.16E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Beryllium	D3-v-	2.33E-03	2.33E-03	2.33E-03	2.33E-03	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Cadmium	D3-v-	4.65E-03	4.65E-03	4.65E-03	4.65E-03	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Chromium (Hex)	C3-v-	1.42E-02	1.42E-02	1.42E-02	1.42E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Chromium (Total)	D3-v-	3.79E-02	3.79E-02	3.79E-02	3.79E-02	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Copper	D3-v-	4.65E-02	4.65E-02	4.65E-02	4.65E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Lead	D3-v-	2.07E-01	2.07E-01	2.07E-01	2.07E-01	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Manganese	A3-v-	8.53E-03	8.53E-03	8.53E-03	8.53E-03	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Mercury	D3-v-	6.01E-02	6.01E-02	6.01E-02	6.01E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Nickel	D3-v-	1.16E-02	1.16E-02	1.16E-02	1.16E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Selenium	D3-v-	5.35E-01	5.35E-01	5.35E-01	5.35E-01	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	SVOC	Ethylbenzene	E3-v-	7.62E-01	7.62E-01	7.62E-01	7.62E-01	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	SVOC	Phenol	C3-v-	4.64E-02	4.64E-02	4.64E-02	4.64E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Acetaldehyde	C3-v-	4.32E-03	4.32E-03	4.32E-03	4.32E-03	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Benzene	E3-v-	2.80E-01	2.80E-01	2.80E-01	2.80E-01	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Formaldehyde	C3-v-	1.30E-02	1.30E-02	1.30E-02	1.30E-02	lbs/MMcf	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Hydrogen Sulfide	A3-v-	1.83E+00	1.83E+00	1.83E+00	1.83E+00	lbs/MMcf	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Xylene (Total)	E3-v-	7.62E-01	7.62E-01	7.62E-01	7.62E-01	lbs/MMcf	1	0.00	0.00	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:4D 2378	C3-v0	6.33E-10	5.71E-10	7.83E-10	5.46E-10	lbs/Mgal	1	20.50	23.20	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:5D 12378	C3-v0	3.68E-10	2.73E-10	5.71E-10	2.61E-10	lbs/Mgal	1	47.67	53.94	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:6D 123478	C3-v0	3.68E-10	2.73E-10	5.71E-10	2.61E-10	lbs/Mgal	1	47.67	53.94	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:6D 123678	C3-v0	3.68E-10	2.73E-10	5.71E-10	2.61E-10	lbs/Mgal	1	47.67	53.94	0.25
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:6D 123789	C3-v0	3.68E-10	2.73E-10	5.71E-10	2.61E-10	lbs/Mgal	1	47.67	53.94	0.25
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:7D 1234678	C3-v0	3.12E-09	2.86E-09	5.19E-09	1.30E-09	lbs/Mgal	1	62.77	71.03	1.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:8D	C3-v0	7.50E-08	8.28E-08	1.23E-07	1.93E-08	lbs/Mgal	1	69.66	78.83	1.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-4F 2378	C3-v0	8.16E-10	7.83E-10	1.09E-09	5.71E-10	lbs/Mgal	1	32.18	36.42	1.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-5F 12378	C3-v0	4.59E-10	5.46E-10	5.71E-10	2.61E-10	lbs/Mgal	1	37.52	42.46	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-5F 23478	C3-v0	4.59E-10	5.46E-10	5.71E-10	2.61E-10	lbs/Mgal	1	37.52	42.46	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 123478	C3-v0	3.64E-10	2.86E-10	4.66E-10	2.61E-10	lbs/Mgal	1	43.44	49.15	0.50
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 123678	C3-v0	2.73E-10	2.73E-10	2.86E-10	2.61E-10	lbs/Mgal	1	4.51	5.10	0.33
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 123789	C3-v0	3.68E-10	2.73E-10	5.71E-10	2.61E-10	lbs/Mgal	1	47.67	53.94	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 234678	C3-v0	5.51E-10	5.71E-10	8.20E-10	2.61E-10	lbs/Mgal	1	50.85	57.54	0.50
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-7F 1234678	C3-v0	1.44E-09	1.14E-09	2.09E-09	1.09E-09	lbs/Mgal	1	38.89	44.01	1.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-7F 1234789	C3-v0	4.64E-10	2.73E-10	8.57E-10	2.61E-10	lbs/Mgal	1	73.43	83.10	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-8F	C3-v0	7.15E-09	7.14E-09	1.04E-08	3.91E-09	lbs/Mgal	1	45.27	51.23	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Arsenic	B3-v0	1.44E-03	1.44E-03	1.68E-03	1.19E-03	lbs/Mgal	1	17.00	19.24	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Beryllium	B3-v0	6.29E-05	6.35E-05	7.03E-05	5.50E-05	lbs/Mgal	1	12.22	13.83	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Cadmium	B3-v0	8.56E-04	6.58E-04	1.26E-03	6.47E-04	lbs/Mgal	1	41.15	46.57	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Chromium (Hex)	A3-v0	1.15E-03	1.15E-03	1.21E-03	1.09E-03	lbs/Mgal	1	4.95	5.60	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Chromium (Total)	A3-v0	4.83E-03	5.18E-03	5.85E-03	3.43E-03	lbs/Mgal	1	25.70	29.08	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Copper	B3-v0	3.86E-03	2.02E-03	8.67E-03	8.92E-04	lbs/Mgal	1	108.86	123.19	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Lead	B3-v0	1.56E-03	8.59E-04	3.32E-03	4.89E-04	lbs/Mgal	1	98.91	111.92	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Manganese	B3-v0	5.81E-03	2.82E-03	1.22E-02	2.40E-03	lbs/Mgal	1	95.34	107.89	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Mercury	B3-v0	1.03E-05	9.04E-06	1.47E-05	7.19E-06	lbs/Mgal	1	38.06	43.07	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Nickel	B3-v0	3.34E-01	3.05E-01	4.06E-01	2.90E-01	lbs/Mgal	1	18.95	21.44	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Selenium	B3-v0	2.88E-03	3.59E-03	3.61E-03	1.45E-03	lbs/Mgal	1	43.13	48.81	0.17
Boiler, Fuel Oil/I	10200403	None	None	Metals	Zinc	B3-v0	1.60E-02	8.61E-03	3.09E-02	8.56E-03	lbs/Mgal	1	80.41	90.99	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Acenaphthene	B3-v0	8.93E-07	8.50E-07	1.56E-06	3.34E-07	lbs/Mgal	2	67.31	53.86	0.87
Boiler, Fuel Oil/I	10200403	None	None	PAH	Acenaphthylene	B3-v0	3.17E-07	3.28E-07	3.58E-07	2.34E-07	lbs/Mgal	2	14.29	11.43	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Anthracene	B3-v1	3.22E-07	2.84E-07	7.42E-07	1.90E-08	lbs/Mgal	2	98.99	79.20	0.94
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(a)anthracene	B3-v1	2.04E-07	2.21E-07	3.58E-07	2.98E-08	lbs/Mgal	2	78.58	62.87	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(e)pyrene	B3-v0	2.09E-07	2.24E-07	3.58E-07	4.61E-08	lbs/Mgal	2	73.55	58.85	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(b)fluoranthene	B3-v0	1.21E-06	1.02E-06	2.36E-06	3.34E-07	lbs/Mgal	2	73.99	59.20	0.40
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(c)pyrene	B3-v0	8.53E-07	1.03E-06	1.12E-06	4.11E-07	lbs/Mgal	1	45.15	51.09	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(g,h,i)perylene	B3-v0	9.99E-07	8.47E-07	2.20E-06	3.34E-07	lbs/Mgal	2	77.58	62.08	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(k)fluoranthene	B3-v1	2.08E-07	2.37E-07	3.58E-07	2.98E-08	lbs/Mgal	2	76.76	61.42	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Chrysene	B3-v0	3.88E-06	3.26E-06	8.57E-06	1.16E-06	lbs/Mgal	2	78.87	63.11	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Dibenz(a,h)anthracene	B3-v1	7.78E-06	6.18E-06	1.65E-05	9.31E-07	lbs/Mgal	2	136.88	109.53	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Fluoranthene	B3-v0	4.65E-06	4.60E-06	8.48E-06	8.93E-07	lbs/Mgal	2	83.31	66.66	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Fluorene	B3-v0	4.59E-07	3.55E-07	7.82E-07	2.90E-07	lbs/Mgal	2	43.75	35.01	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Indeno(1,2,3-cd)pyrene	B3-v0	6.07E-05	6.22E-05	8.12E-05	4.25E-05	lbs/Mgal	2	25.60	20.48	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Naphthalene	B3-v0	1.10E-05	1.10E-05	1.99E-05	3.29E-06	lbs/Mgal	2	57.86	46.30	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Phenanthrene	B3-v1	4.01E-06	2.35E-06	1.08E-05	3.53E-07	lbs/Mgal	2	110.05	88.06	0.97
Boiler, Fuel Oil/I	10200403	None	None	SVOC	Pyrene	C3-v0	2.27E-08	2.33E-08	2.86E-08	1.63E-08	lbs/Mgal	1	27.13	30.70	0.00
Boiler, Fuel Oil/I	10200403	None	None	SVOC	2-Chloronaphthalene	C3-v0	1.09E-05	1.07E-05	1.22E-05	9.76E-06	lbs/Mgal	1	11.52	13.04	1.00
Boiler, Fuel Oil/I	10200403	None	None	SVOC	2-Methylnaphthalene	C3-v0	1.09E-07	5.95E-08	2.20E-07	4.88E-08	lbs/Mgal	1	87.56	99.09	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Perylene	B3-v1	6.17E-03	5.97E-03	1.18E-02	8.95E-04	lbs/Mgal	2	93.74	75.01	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	1,3-Butadiene	A3-v1	1.04E-03	4.98E-04	3.35E-03	2.80E-04	lbs/Mgal	2	116.00	92.82	0.75
Boiler, Fuel Oil/I	10200403	None	None	VOC	Acetaldehyde	A3-v0	2.17E-03	1.75E-03	3.35E-03	1.43E-03	lbs/Mgal	1	47.31	53.53	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Acrolein	A3-v0	4.63E-03	4.67E-03	4.76E-03	4.47E-03	lbs/Mgal	1	3.26	3.69	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Benzene	A3-v0	4.96E-03	5.00E-03	5.10E-03	4.78E-03	lbs/Mgal	1	3.26	3.69	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Chloroform	A3-v0	4.96E-03	5.00E-03	5.10E-03	4.78E-03	lbs/Mgal	1	3.26	3.69	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Boiler, Fuel Oil/I	10200403	None	None	VOC	Formaldehyde	A3-v1	6.72E-03	7.14E-03	1.67E-02	2.83E-04	lbs/MMcf	2	91.09	72.89	0.18
Boiler, Fuel Oil/I	10200403	None	None	VOC	Propylene	A3-v0	2.19E-02	2.21E-02	2.25E-02	2.11E-02	lbs/MMcf	1	3.26	3.69	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Toluene	A3-v0	5.75E-03	5.79E-03	5.91E-03	5.55E-03	lbs/MMcf	1	3.26	3.69	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Xylene (Total)	A3-v0	1.10E-02	1.11E-02	1.14E-02	1.06E-02	lbs/MMcf	1	3.26	3.69	0.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Arsenic	D3-v0	7.04E-04	7.65E-04	1.13E-03	2.11E-04	lbs/MMcf	1	66.10	74.80	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Beryllium	D3-v0	1.55E-04	1.55E-04	1.56E-04	1.53E-04	lbs/MMcf	1	1.35	1.87	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Cadmium	D3-v0	2.38E-03	2.05E-03	3.13E-03	1.98E-03	lbs/MMcf	1	27.01	30.57	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Chromium (Hex)	C3-v0	7.70E-03	7.56E-03	1.09E-02	4.67E-03	lbs/MMcf	1	40.17	45.45	0.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Chromium (Total)	C3-v1	1.28E-02	5.43E-03	3.08E-02	2.16E-02	lbs/MMcf	1	122.51	138.63	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Copper	D3-v0	6.30E-03	6.30E-03	7.71E-03	4.89E-03	lbs/MMcf	1	31.59	43.78	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Lead	D3-v0	2.42E-03	2.42E-03	2.49E-03	2.36E-03	lbs/MMcf	1	3.87	5.36	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Manganese	D3-v0	2.39E-03	2.39E-03	3.14E-03	1.64E-03	lbs/MMcf	1	44.52	61.70	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Mercury	D3-v0	3.23E-04	3.18E-04	3.82E-04	2.70E-04	lbs/MMcf	1	17.33	19.60	0.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Nickel	D3-v0	5.59E-03	5.59E-03	7.03E-03	4.16E-03	lbs/MMcf	1	36.33	50.35	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Selenium	D3-v0	2.06E-03	2.36E-03	2.83E-03	9.79E-04	lbs/MMcf	1	46.79	52.94	0.16
Boiler, Ref. Gas/I	10200701	None	None	Metals	Zinc	D3-v2	3.42E+00	3.82E-01	9.78E+00	9.27E-02	lbs/MMcf	1	161.24	182.45	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Acenaphthene	A3-v0	5.88E-06	5.75E-06	6.47E-06	5.44E-06	lbs/MMcf	1	8.97	10.15	0.37
Boiler, Ref. Gas/I	10200701	None	None	PAH	Acenaphthylene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Anthracene	A3-v0	2.28E-05	2.50E-05	3.89E-05	4.40E-06	lbs/MMcf	1	76.23	86.26	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(a)anthracene	A3-v0	1.83E-05	1.79E-05	2.46E-05	1.25E-05	lbs/MMcf	1	33.08	37.44	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(a)pyrene	A3-v0	3.42E-06	3.37E-06	4.40E-06	2.50E-06	lbs/MMcf	1	27.72	31.36	0.76
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(b)fluoranthene	A3-v0	6.76E-06	7.24E-06	8.28E-06	4.75E-06	lbs/MMcf	1	26.90	30.44	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	3.85E-06	3.89E-06	5.17E-06	2.50E-06	lbs/MMcf	1	34.64	39.20	0.78
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(k)fluoranthene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Chrysene	A3-v0	3.47E-06	2.59E-06	5.17E-06	2.50E-06	lbs/MMcf	1	44.30	50.13	0.50
Boiler, Ref. Gas/I	10200701	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Fluoranthene	A3-v0	4.25E-05	3.10E-05	7.24E-05	2.40E-05	lbs/MMcf	1	61.63	69.74	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Fluorene	A3-v0	9.78E-06	5.75E-06	1.82E-05	5.44E-06	lbs/MMcf	1	74.23	84.00	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Naphthalene	A3-v0	2.06E-04	1.94E-04	2.40E-04	1.85E-04	lbs/MMcf	1	14.51	16.42	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Phenanthrene	A3-v0	5.64E-05	4.49E-05	8.80E-05	3.62E-05	lbs/MMcf	1	49.24	55.72	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Pyrene	A3-v0	5.98E-05	5.17E-05	8.28E-05	4.49E-05	lbs/MMcf	1	33.82	38.27	1.00
Boiler, Ref. Gas/I	10200701	None	None	SVOC	Phenol	C2-v0	2.18E-03	8.64E-04	5.66E-03	7.28E-04	lbs/MMcf	4	95.89	54.25	0.85
Boiler, Ref. Gas/I	10200701	None	None	VOC	Acetaldehyde	C1-v3	3.97E-03	2.43E-03	1.21E-02	4.92E-06	lbs/MMcf	5	100.80	51.01	1.00
Boiler, Ref. Gas/I	10200701	None	None	VOC	Benzene	C1-v2	2.06E-01	6.24E-02	1.40E+00	3.39E-03	lbs/MMcf	5	180.67	88.53	0.80
Boiler, Ref. Gas/I	10200701	None	None	VOC	Formaldehyde	C1-v1	1.60E-02	1.41E-02	4.14E-02	3.24E-03	lbs/MMcf	5	62.29	31.52	1.00
Boiler, Ref. Gas/I	10200701	None	None	VOC	Hydrogen Sulfide	A1-v1	2.74E-01	2.37E-01	7.15E-01	5.94E-02	lbs/MMcf	5	89.81	44.00	0.00
Boiler, Ref. Gas/I	10200701	None	None	VOC	Toluene	E2-v2	8.40E-01	8.35E-02	5.00E+00	4.14E-02	lbs/MMcf	3	189.87	124.04	0.97
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Arsenic	D3-v0	7.04E-04	7.65E-04	1.13E-03	2.11E-04	lbs/MMcf	1	66.10	74.80	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Beryllium	D3-v0	1.55E-04	1.55E-04	1.56E-04	1.53E-04	lbs/MMcf	1	1.35	1.87	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Cadmium	D3-v0	2.38E-03	2.05E-03	3.13E-03	1.98E-03	lbs/MMcf	1	27.01	30.57	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Chromium (Hex)	C3-v0	7.70E-03	7.56E-03	1.09E-02	4.67E-03	lbs/MMcf	1	40.17	45.45	0.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Chromium (Total)	C3-v1	1.28E-02	5.43E-03	3.08E-02	2.16E-02	lbs/MMcf	1	122.51	138.63	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Copper	D3-v0	6.30E-03	6.30E-03	7.71E-03	4.89E-03	lbs/MMcf	1	31.59	43.78	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Lead	D3-v0	2.42E-03	2.42E-03	2.49E-03	2.36E-03	lbs/MMcf	1	3.87	5.36	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Manganese	D3-v0	2.39E-03	2.39E-03	3.14E-03	1.64E-03	lbs/MMcf	1	44.52	61.70	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Mercury	D3-v0	3.23E-04	3.18E-04	3.82E-04	2.70E-04	lbs/MMcf	1	17.33	19.60	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Boiler, Ref. Gas/1	10200701	SCR	None	Metals	Nickel	D3-v0	5.59E-03	5.59E-03	7.03E-03	4.16E-03	lbs/MMcf	1	36.33	50.35	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	Metals	Selenium	D3-v0	2.06E-03	2.36E-03	2.83E-03	9.79E-04	lbs/MMcf	1	46.79	52.94	0.16
Boiler, Ref. Gas/1	10200701	SCR	None	Metals	Zinc	D3-v2	3.42E+00	3.82E-01	9.78E-01	9.27E-02	lbs/MMcf	1	161.24	182.45	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Acenaphthene	A3-v0	5.88E-06	5.75E-06	6.47E-06	5.44E-06	lbs/MMcf	1	8.97	10.15	0.37
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Acenaphthylene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Anthracene	A3-v0	2.28E-05	2.50E-05	3.89E-05	4.40E-06	lbs/MMcf	1	76.23	86.26	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Benzo(a)anthracene	A3-v0	1.83E-05	1.79E-05	2.46E-05	1.25E-05	lbs/MMcf	1	33.08	37.44	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Benzo(a)pyrene	A3-v0	3.42E-06	3.37E-06	4.40E-06	2.50E-06	lbs/MMcf	1	27.72	31.36	0.76
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Benzo(b)fluoranthene	A3-v0	6.76E-06	7.24E-06	8.28E-06	4.75E-06	lbs/MMcf	1	26.90	30.44	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Benzo(g,h,i)perylene	A3-v0	3.85E-06	3.89E-06	5.17E-06	2.50E-06	lbs/MMcf	1	34.64	39.20	0.78
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Benzo(k)fluoranthene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Chrysene	A3-v0	3.42E-06	2.59E-06	5.17E-06	2.50E-06	lbs/MMcf	1	44.30	50.13	0.50
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Dibenz(a,h)anthracene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Fluoranthene	A3-v0	4.25E-05	3.10E-05	7.24E-05	2.40E-05	lbs/MMcf	1	61.63	69.74	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Fluorene	A3-v0	9.78E-06	5.75E-06	1.82E-05	5.44E-06	lbs/MMcf	1	74.23	84.00	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.56E-06	2.59E-06	2.59E-06	2.50E-06	lbs/MMcf	1	2.04	2.31	0.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Naphthalene	A3-v0	2.06E-04	1.94E-04	2.40E-04	1.85E-04	lbs/MMcf	1	14.51	16.42	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Phenanthrene	A3-v0	5.64E-05	4.49E-05	8.80E-05	3.62E-05	lbs/MMcf	1	49.24	55.72	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	PAH	Pyrene	A3-v0	5.98E-05	5.17E-05	8.28E-05	4.49E-05	lbs/MMcf	1	33.82	38.27	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	SVOC	Phenol	C2-v0	2.18E-03	5.64E-04	5.66E-03	7.28E-04	lbs/MMcf	4	95.89	54.25	0.85
Boiler, Ref. Gas/1	10200701	SCR	None	VOC	Acetaldehyde	Cl-v3	3.97E-03	2.43E-03	1.21E-02	4.92E-06	lbs/MMcf	5	100.80	51.01	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	VOC	Benzene	Cl-v2	2.06E-01	6.24E-02	1.40E+00	3.39E-03	lbs/MMcf	5	180.67	88.53	0.80
Boiler, Ref. Gas/1	10200701	SCR	None	VOC	Formaldehyde	Cl-v1	1.60E-02	1.41E-02	4.14E-02	3.24E-03	lbs/MMcf	5	62.29	31.52	1.00
Boiler, Ref. Gas/1	10200701	SCR	None	VOC	Hydrogen Sulfide	A1-v1	2.74E-01	2.37E-01	7.15E-01	5.94E-02	lbs/MMcf	5	89.81	44.00	0.00
Boiler, Ref. Gas/1	10200701	SCR	None	VOC	Toluene	E2-v2	8.40E-01	8.35E-02	5.00E+00	4.14E-02	lbs/MMcf	3	189.87	124.04	0.97
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:4D 2378	A3-v0	1.14E-11	1.18E-11	1.32E-11	9.05E-12	lbs/ton coke	1	18.56	21.00	0.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:4D Other	A3-v0	1.44E-10	1.01E-10	2.99E-10	3.17E-11	lbs/ton coke	1	96.53	109.23	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:5D 12378	A3-v0	9.56E-12	9.20E-12	1.35E-11	6.01E-12	lbs/ton coke	1	39.05	44.19	0.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:5D Other	A3-v0	8.45E-11	8.83E-11	1.02E-10	6.34E-11	lbs/ton coke	1	23.10	26.14	0.40
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D 123478	A3-v0	9.93E-12	9.24E-12	1.57E-11	4.83E-12	lbs/ton coke	1	55.10	62.35	0.31
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D 123678	A3-v0	1.38E-11	1.27E-11	2.04E-11	8.30E-12	lbs/ton coke	1	44.48	50.33	0.69
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D 123789	A3-v0	1.29E-11	1.45E-11	1.50E-11	9.20E-12	lbs/ton coke	1	24.83	28.10	0.39
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D Other	A3-v0	6.36E-11	6.71E-11	8.96E-11	3.39E-11	lbs/ton coke	1	44.09	49.89	0.65
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:7D 1234678	A3-v0	1.38E-10	1.18E-10	2.18E-10	7.96E-11	lbs/ton coke	1	51.62	58.41	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:7D Other	A3-v0	1.32E-10	1.09E-10	1.90E-10	9.72E-11	lbs/ton coke	1	38.24	43.27	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Dioxin:8D	A3-v0	1.77E-09	1.79E-09	2.76E-09	7.60E-10	lbs/ton coke	1	56.40	63.82	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:4F 2378	A3-v0	1.33E-11	1.19E-11	1.63E-11	1.18E-11	lbs/ton coke	1	19.13	21.65	0.70
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:4F Other	A3-v0	1.39E-10	1.10E-10	2.15E-10	9.21E-11	lbs/ton coke	1	47.70	53.98	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:5F 12378	A3-v0	1.36E-11	1.43E-11	1.50E-11	1.16E-11	lbs/ton coke	1	13.01	14.72	0.65
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:5F 23478	A3-v0	1.25E-11	1.38E-11	1.46E-11	9.10E-12	lbs/ton coke	1	23.87	27.01	0.63
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:5F Other	A3-v0	1.20E-10	9.47E-11	1.79E-10	8.70E-11	lbs/ton coke	1	42.57	48.17	0.74
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 123478	A3-v0	2.44E-11	2.49E-11	2.71E-11	2.12E-11	lbs/ton coke	1	12.27	13.89	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 123678	A3-v0	2.21E-11	2.19E-11	3.13E-11	1.31E-11	lbs/ton coke	1	41.02	46.42	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 123789	A3-v0	9.19E-12	8.96E-12	1.20E-11	6.64E-12	lbs/ton coke	1	29.03	32.85	0.67
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 234678	A3-v0	2.01E-11	2.04E-11	2.04E-11	1.96E-11	lbs/ton coke	1	2.55	2.88	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:6F Other	A3-v0	1.52E-10	1.31E-10	2.36E-10	9.04E-11	lbs/ton coke	1	49.18	55.66	1.00
Coke Calcining/1	30601401	SD/FF	None	Dioxin/Furan	Furan:7F 1234678	A3-v0	1.50E-10	1.42E-10	1.76E-10	1.32E-10	lbs/ton coke	1	15.51	17.55	1.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan-7F 1234789	A3-v0	2.56E-11	2.56E-11	2.99E-11	2.12E-11	lbs/ton coke	1	17.09	19.33	0.72
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan-7F Other	A3-v0	5.16E-11	5.16E-11	5.16E-11	5.16E-11	lbs/ton coke	1	0.00	0.00	0.50
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan-8F	A3-v1	1.46E-10	1.36E-10	2.86E-10	1.61E-11	lbs/ton coke	1	92.60	104.78	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Antimony	C3-v0	4.61E-05	4.64E-05	4.79E-05	4.41E-05	lbs/ton coke	1	4.04	4.57	0.34
Coke Calcining/I	30601401	SD/FF	None	Metals	Arsenic	C3-v0	4.66E-06	4.64E-06	4.92E-06	4.41E-06	lbs/ton coke	1	5.42	6.13	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Barium	C3-v0	1.95E-05	1.99E-05	2.46E-05	1.39E-05	lbs/ton coke	1	27.51	31.13	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Beryllium	C3-v0	1.93E-06	1.72E-06	2.43E-06	1.63E-06	lbs/ton coke	1	22.77	25.76	0.42
Coke Calcining/I	30601401	SD/FF	None	Metals	Cadmium	C3-v0	9.32E-06	9.27E-06	9.84E-06	8.84E-06	lbs/ton coke	1	5.34	6.04	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Chromium (Hex)	C3-v0	6.31E-07	6.30E-07	7.17E-07	5.43E-07	lbs/ton coke	1	13.63	15.42	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Chromium (Total)	C3-v0	2.05E-05	2.04E-05	2.09E-05	2.01E-05	lbs/ton coke	1	1.82	2.06	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Copper	C3-v0	9.32E-06	9.27E-06	9.84E-06	8.84E-06	lbs/ton coke	1	5.34	6.04	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Lead	C3-v0	6.20E-05	4.92E-05	9.27E-05	4.41E-05	lbs/ton coke	1	43.08	48.75	0.50
Coke Calcining/I	30601401	SD/FF	None	Metals	Manganese	C3-v0	4.56E-05	4.41E-05	7.63E-05	1.63E-05	lbs/ton coke	1	65.87	74.54	0.88
Coke Calcining/I	30601401	SD/FF	None	Metals	Mercury	C3-v1	4.63E-05	1.63E-05	1.12E-04	1.08E-05	lbs/ton coke	1	122.58	138.71	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Nickel	C3-v0	9.06E-05	4.92E-05	1.76E-04	4.64E-05	lbs/ton coke	1	81.90	92.67	0.65
Coke Calcining/I	30601401	SD/FF	None	Metals	Phosphorus	C3-v0	4.66E-04	4.64E-04	4.92E-04	4.41E-04	lbs/ton coke	1	5.42	6.13	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Selenium	C3-v0	4.66E-06	4.64E-06	4.92E-06	4.41E-06	lbs/ton coke	1	5.42	6.13	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Silver	C3-v0	1.63E-05	1.63E-05	1.72E-05	1.54E-05	lbs/ton coke	1	5.45	6.17	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Thallium	C3-v0	6.99E-05	6.96E-05	7.38E-05	6.64E-05	lbs/ton coke	1	5.31	6.01	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Zinc	C3-v0	1.17E-04	1.04E-04	1.63E-04	8.37E-05	lbs/ton coke	1	35.15	39.78	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Acenaphthene	A3-v0	1.46E-08	1.38E-08	1.64E-08	1.37E-08	lbs/ton coke	1	10.68	12.08	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Acenaphthylene	A3-v0	1.83E-08	1.69E-08	2.81E-08	9.87E-09	lbs/ton coke	1	50.39	57.02	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Anthracene	A3-v0	1.82E-08	1.84E-08	1.97E-08	1.64E-08	lbs/ton coke	1	9.02	10.20	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(a)anthracene	A3-v0	8.71E-09	8.25E-09	1.02E-08	7.67E-09	lbs/ton coke	1	15.15	17.15	0.39
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(a)pyrene	A3-v0	8.05E-09	8.22E-09	8.25E-09	7.67E-09	lbs/ton coke	1	4.04	4.57	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(b)fluoranthene	A3-v0	8.05E-09	8.22E-09	8.25E-09	7.67E-09	lbs/ton coke	1	4.04	4.57	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(g,h,i)perylene	A3-v0	8.05E-09	8.22E-09	8.25E-09	7.67E-09	lbs/ton coke	1	4.04	4.57	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(k)fluoranthene	A3-v0	8.05E-09	8.22E-09	8.25E-09	7.67E-09	lbs/ton coke	1	4.04	4.57	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Chrysene	A3-v0	1.28E-08	1.18E-08	1.84E-08	8.25E-09	lbs/ton coke	1	40.02	45.28	0.79
Coke Calcining/I	30601401	SD/FF	None	PAH	Dibenz(a,h)anthracene	A3-v0	8.05E-09	8.22E-09	8.25E-09	7.67E-09	lbs/ton coke	1	4.04	4.57	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Fluoranthene	A3-v0	3.58E-08	3.30E-08	4.30E-08	3.13E-08	lbs/ton coke	1	17.64	19.96	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Fluorene	A3-v0	5.64E-08	5.21E-08	6.61E-08	5.10E-08	lbs/ton coke	1	14.90	16.86	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	8.05E-09	8.22E-09	8.25E-09	7.67E-09	lbs/ton coke	1	4.04	4.57	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Naphthalene	A3-v0	2.41E-06	2.46E-06	3.14E-06	1.64E-06	lbs/ton coke	1	31.02	35.10	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Phenanthrene	A3-v0	1.88E-07	1.81E-07	2.15E-07	1.69E-07	lbs/ton coke	1	12.67	14.34	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Pyrene	A3-v0	2.67E-08	2.64E-08	3.23E-08	2.15E-08	lbs/ton coke	1	20.27	22.94	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Acetaldehyde	A3-v0	1.02E-03	1.16E-03	1.22E-03	6.77E-04	lbs/ton coke	1	29.23	33.07	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Acrolein	A3-v0	3.36E-04	3.41E-04	3.60E-04	3.08E-04	lbs/ton coke	1	7.79	8.82	0.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Benzene	C3-v0	3.24E-04	4.06E-04	4.50E-04	1.15E-04	lbs/ton coke	1	56.20	63.60	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Formaldehyde	A3-v0	3.36E-04	3.41E-04	3.60E-04	3.08E-04	lbs/ton coke	1	7.79	8.82	0.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Toluene	C3-v0	5.34E-05	4.46E-05	7.17E-05	4.39E-05	lbs/ton coke	1	29.73	33.64	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Xylene (m,p)	C3-v0	3.09E-05	3.44E-05	3.79E-05	2.04E-05	lbs/ton coke	1	29.89	33.82	0.22
Coke Calcining/I	30601401	SD/FF	None	VOC	Xylene (o)	C3-v0	4.49E-05	4.34E-05	4.79E-05	4.34E-05	lbs/ton coke	1	5.72	6.47	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Acenaphthene	A3-v0	1.39E-06	1.40E-06	1.62E-06	1.15E-06	lbs/MMcf	1	16.72	18.92	0.72
Heater, Natural Gas/I	31000404	None	None	PAH	Acenaphthylene	A3-v1	1.21E-05	2.84E-06	3.23E-05	1.15E-06	lbs/MMcf	1	144.82	163.88	0.97
Heater, Natural Gas/I	31000404	None	None	PAH	Anthracene	A3-v0	1.61E-06	1.83E-06	1.85E-06	1.15E-06	lbs/MMcf	1	24.62	27.86	0.76
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(a)anthracene	A3-v0	1.41E-06	1.18E-06	1.90E-06	1.15E-06	lbs/MMcf	1	29.86	33.79	0.45

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(a)pyrene	A3-v0	1.14E-06	1.15E-06	1.18E-06	1.08E-06	lbs/MMcf	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(b)fluoranthene	A3-v0	1.14E-06	1.15E-06	1.18E-06	1.08E-06	lbs/MMcf	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	1.25E-06	1.18E-06	1.42E-06	1.15E-06	lbs/MMcf	1	11.81	13.36	0.38
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(k)fluoranthene	A3-v0	1.14E-06	1.15E-06	1.18E-06	1.08E-06	lbs/MMcf	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Chrysene	A3-v0	1.39E-06	1.18E-06	1.83E-06	1.15E-06	lbs/MMcf	1	27.63	31.27	0.44
Heater, Natural Gas/I	31000404	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	1.14E-06	1.15E-06	1.18E-06	1.08E-06	lbs/MMcf	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Fluoranthene	A3-v0	1.19E-05	1.07E-05	1.79E-05	7.15E-06	lbs/MMcf	1	46.07	52.14	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Fluorene	A3-v0	4.59E-06	4.50E-06	5.82E-06	3.46E-06	lbs/MMcf	1	25.79	29.19	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	1.14E-06	1.15E-06	1.18E-06	1.08E-06	lbs/MMcf	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Naphthalene	A3-v0	2.37E-04	2.37E-04	2.80E-04	1.94E-04	lbs/MMcf	1	18.28	20.69	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Phenanthrene	A3-v0	3.37E-05	3.31E-05	4.74E-05	2.05E-05	lbs/MMcf	1	39.96	45.22	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Pyrene	A3-v0	5.60E-06	2.84E-06	1.16E-05	2.31E-06	lbs/MMcf	1	93.70	106.03	1.00
Heater, Natural Gas/I	31000404	None	None	SVOC	Ethylbenzene	A3-v0	2.25E-03	2.25E-03	2.25E-03	2.25E-03	lbs/MMcf	1	0.00	0.00	0.00
Heater, Natural Gas/I	31000404	None	None	VOC	Acetaldehyde	A3-v0	4.61E-03	4.61E-03	4.82E-03	4.41E-03	lbs/MMcf	1	4.47	5.06	0.32
Heater, Natural Gas/I	31000404	None	None	VOC	Acrolein	A3-v0	4.51E-03	4.56E-03	4.64E-03	4.32E-03	lbs/MMcf	1	3.66	4.14	0.00
Heater, Natural Gas/I	31000404	None	None	VOC	Benzene	A3-v0	2.34E-03	1.65E-03	3.71E-03	1.65E-03	lbs/MMcf	1	50.72	57.40	0.53
Heater, Natural Gas/I	31000404	None	None	VOC	Formaldehyde	A3-v0	4.75E-03	4.61E-03	5.32E-03	4.32E-03	lbs/MMcf	1	10.76	12.18	0.37
Heater, Natural Gas/I	31000404	None	None	VOC	Propylene	A3-v0	4.63E-01	4.57E-01	3.20E-01	3.20E-01	lbs/MMcf	1	31.59	35.74	1.00
Heater, Natural Gas/I	31000404	None	None	VOC	Toluene	A3-v0	3.23E-02	1.38E-02	7.47E-02	8.37E-03	lbs/MMcf	1	114.08	129.09	1.00
Heater, Natural Gas/I	31000404	None	None	VOC	Xylene (Total)	A3-v0	1.87E-02	2.05E-02	2.97E-02	5.71E-03	lbs/MMcf	1	64.92	73.46	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Acenaphthene	A3-v0	7.53E-06	2.44E-06	1.81E-05	2.05E-06	lbs/MMcf	1	121.63	137.64	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Acenaphthylene	A3-v1	5.88E-05	2.32E-06	1.72E-04	2.11E-06	lbs/MMcf	1	166.69	188.62	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Anthracene	A3-v0	1.04E-05	8.97E-06	1.43E-05	7.89E-06	lbs/MMcf	1	33.12	37.48	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(a)anthracene	A3-v0	9.57E-06	7.66E-06	1.67E-05	4.34E-06	lbs/MMcf	1	66.91	75.72	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(a)pyrene	A3-v1	6.07E-06	6.67E-06	1.10E-05	5.25E-07	lbs/MMcf	1	86.79	98.21	0.97
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(b)fluoranthene	A3-v0	2.63E-06	1.91E-06	4.19E-06	1.79E-06	lbs/MMcf	1	51.36	58.12	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	4.13E-07	1.59E-07	9.55E-07	1.25E-07	lbs/MMcf	1	113.74	128.71	0.77
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(k)fluoranthene	A3-v0	1.46E-06	8.35E-07	3.18E-06	3.70E-07	lbs/MMcf	1	103.06	116.62	0.92
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Chrysene	A3-v0	7.91E-07	6.38E-07	1.24E-06	4.91E-07	lbs/MMcf	1	50.32	56.94	0.52
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	1.38E-07	1.07E-07	2.08E-07	1.01E-07	lbs/MMcf	1	43.36	49.06	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Fluoranthene	A3-v0	1.80E-05	1.03E-05	3.82E-05	5.49E-06	lbs/MMcf	1	98.02	110.92	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Fluorene	A3-v1	6.48E-04	1.50E-04	1.69E-03	1.01E-04	lbs/MMcf	1	139.64	158.01	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	4.56E-07	4.04E-07	6.67E-07	2.96E-07	lbs/MMcf	1	41.87	47.38	0.49
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Naphthalene	A3-v1	2.31E-03	4.04E-04	6.18E-03	3.45E-04	lbs/MMcf	1	145.12	164.21	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Phenanthrene	A3-v0	2.06E-04	1.06E-04	4.30E-04	3.36E-05	lbs/MMcf	1	93.74	106.07	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Pyrene	A3-v0	1.25E-05	7.14E-06	2.62E-05	4.04E-06	lbs/MMcf	1	96.40	109.08	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	SVOC	Phenol	A3-v0	1.72E-03	1.82E-03	2.08E-03	1.26E-03	lbs/MMcf	1	24.34	27.54	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Acetaldehyde	C3-v0	1.47E-02	1.43E-02	1.67E-02	1.30E-02	lbs/MMcf	1	12.83	14.52	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Acrolein	C3-v0	2.29E-03	2.10E-03	2.84E-03	1.93E-03	lbs/MMcf	1	21.23	24.03	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Benzene	A3-v0	2.12E-02	1.99E-02	2.44E-02	1.94E-02	lbs/MMcf	1	13.02	14.73	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Formaldehyde	C3-v0	4.33E-02	2.38E-02	8.89E-02	1.73E-02	lbs/MMcf	1	91.33	103.35	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Propylene	A3-v0	1.20E-02	1.13E-02	1.38E-02	1.10E-02	lbs/MMcf	1	13.02	14.73	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Toluene	A3-v0	2.63E-02	2.46E-02	3.03E-02	2.41E-02	lbs/MMcf	1	13.02	14.73	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Xylene (Total)	A3-v0	3.03E-02	2.84E-02	3.49E-02	2.77E-02	lbs/MMcf	1	13.02	14.73	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:4D 2378	C3-v0	4.96E-10	5.94E-10	5.97E-10	2.97E-10	lbs/Mgal	1	34.70	39.26	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:5D 12378	C3-v1	2.49E-09	5.94E-10	6.57E-09	2.97E-10	lbs/Mgal	1	142.30	161.02	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:6D 123478	C3-v1	2.19E-09	5.94E-10	5.68E-09	2.97E-10	lbs/Mgal	1	138.10	156.28	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:6D 123678	C3-v1	2.99E-09	5.94E-10	8.07E-09	2.97E-10	lbs/Mgal	1	147.43	166.83	0.07
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:6D 123789	C3-v1	4.78E-09	5.94E-10	1.34E-08	2.97E-10	lbs/Mgal	1	157.08	177.75	0.04
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:7D 1234678	C3-v1	1.33E-08	4.45E-09	3.29E-08	2.68E-09	lbs/Mgal	1	127.05	143.76	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:8D	C3-v0	4.68E-08	5.64E-08	5.97E-08	2.41E-08	lbs/Mgal	1	42.12	47.67	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:4F 2378	C3-v2	8.93E-08	1.48E-07	2.66E-07	5.95E-10	lbs/Mgal	1	171.19	193.71	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:5F 12378	C3-v1	8.56E-09	5.94E-10	2.48E-08	2.97E-10	lbs/Mgal	1	164.20	185.80	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:5F 23478	C3-v2	1.52E-08	5.94E-10	4.48E-08	2.97E-10	lbs/Mgal	1	168.14	190.26	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 123478	C3-v2	1.92E-08	5.94E-10	5.68E-08	1.49E-10	lbs/Mgal	1	169.85	192.20	0.01
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 123678	C3-v2	6.12E-09	2.97E-10	1.79E-08	1.49E-10	lbs/Mgal	1	166.91	188.87	0.02
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 123789	C3-v0	4.96E-10	5.94E-10	5.97E-10	2.97E-10	lbs/Mgal	1	34.70	39.26	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 234678	C3-v1	8.76E-09	8.91E-10	2.48E-08	5.95E-10	lbs/Mgal	1	158.52	179.38	0.03
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:7F 1234678	C3-v1	1.95E-08	1.19E-09	5.68E-08	5.95E-10	lbs/Mgal	1	165.30	187.05	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:7F 1234789	C3-v0	1.19E-09	5.94E-10	2.69E-09	2.97E-10	lbs/Mgal	1	109.22	123.59	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:8F	C3-v1	1.04E-08	4.75E-09	2.54E-08	1.19E-09	lbs/Mgal	1	125.10	141.57	1.00
Heater, Oil/I	31000403	None	None	Metals	Arsenic	D3-v0	8.34E-04	8.28E-04	8.62E-04	8.13E-04	lbs/Mgal	1	3.01	3.41	1.00
Heater, Oil/I	31000403	None	None	Metals	Beryllium	D3-v0	7.78E-05	7.64E-05	8.66E-05	7.04E-05	lbs/Mgal	1	10.51	11.89	0.00
Heater, Oil/I	31000403	None	None	Metals	Cadmium	D3-v1	8.21E-04	1.19E-03	1.23E-03	4.29E-03	lbs/Mgal	1	82.13	92.94	1.00
Heater, Oil/I	31000403	None	None	Metals	Chromium (Hex)	A3-v0	2.86E-04	3.06E-04	3.13E-04	2.39E-04	lbs/Mgal	1	14.20	16.07	0.00
Heater, Oil/I	31000403	None	None	Metals	Chromium (Total)	D3-v0	2.54E-03	2.66E-03	2.74E-03	2.22E-03	lbs/Mgal	1	11.14	12.60	1.00
Heater, Oil/I	31000403	None	None	Metals	Copper	D3-v0	2.62E-03	1.64E-03	4.58E-03	1.63E-03	lbs/Mgal	1	64.94	73.48	1.00
Heater, Oil/I	31000403	None	None	Metals	Lead	D3-v0	2.96E-04	1.79E-04	5.48E-04	1.62E-04	lbs/Mgal	1	73.61	83.30	0.62
Heater, Oil/I	31000403	None	None	Metals	Manganese	D3-v0	1.89E-03	1.79E-03	2.22E-03	1.67E-03	lbs/Mgal	1	15.12	17.11	0.39
Heater, Oil/I	31000403	None	None	Metals	Mercury	D3-v0	1.72E-05	1.29E-05	2.83E-05	1.04E-05	lbs/Mgal	1	56.41	63.84	0.00
Heater, Oil/I	31000403	None	None	Metals	Nickel	D3-v0	3.46E-01	3.47E-01	4.09E-01	2.81E-01	lbs/Mgal	1	18.57	21.01	1.00
Heater, Oil/I	31000403	None	None	Metals	Selenium	D3-v0	4.63E-03	3.96E-03	6.59E-03	3.33E-03	lbs/Mgal	1	37.32	42.23	0.00
Heater, Oil/I	31000403	None	None	Metals	Zinc	D3-v0	8.93E-03	8.35E-03	1.22E-02	6.27E-03	lbs/Mgal	1	33.43	37.83	1.00
Heater, Oil/I	31000403	None	None	PAH	Acenaphthene	C3-v1	1.75E-06	2.20E-06	2.99E-06	6.81E-08	lbs/Mgal	1	86.27	97.62	1.00
Heater, Oil/I	31000403	None	None	PAH	Acenaphthylene	C3-v0	8.02E-08	5.33E-08	1.37E-07	5.03E-08	lbs/Mgal	1	61.23	69.29	1.00
Heater, Oil/I	31000403	None	None	PAH	Anthracene	C3-v0	6.62E-08	6.81E-08	7.41E-08	5.65E-08	lbs/Mgal	1	13.48	15.25	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(a)anthracene	C3-v1	3.84E-06	2.03E-07	1.12E-05	1.33E-07	lbs/Mgal	1	165.56	187.35	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(a)pyrene	C3-v0	9.80E-08	8.63E-08	1.84E-07	2.40E-08	lbs/Mgal	1	82.16	92.97	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(b)fluoranthene	C3-v0	7.95E-07	6.37E-07	1.15E-06	5.98E-07	lbs/Mgal	1	38.74	43.84	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(e)pyrene	C3-v0	5.54E-07	5.30E-07	7.73E-07	3.60E-07	lbs/Mgal	1	37.44	42.36	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(g,h,i)perylene	C3-v1	2.12E-06	5.50E-07	5.57E-06	2.55E-07	lbs/Mgal	1	140.55	159.04	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(k)fluoranthene	C3-v0	3.36E-08	2.08E-08	6.81E-08	1.18E-08	lbs/Mgal	1	90.02	101.86	1.00
Heater, Oil/I	31000403	None	None	PAH	Chrysene	C3-v1	1.12E-05	2.80E-06	2.92E-05	1.54E-06	lbs/Mgal	1	139.73	158.12	1.00
Heater, Oil/I	31000403	None	None	PAH	Dibenz(a,h)anthracene	C3-v1	1.76E-06	1.18E-07	5.09E-06	6.54E-08	lbs/Mgal	1	164.18	185.78	1.00
Heater, Oil/I	31000403	None	None	PAH	Fluoranthene	C3-v0	1.97E-06	2.28E-06	2.48E-06	1.13E-06	lbs/Mgal	1	37.09	41.97	1.00
Heater, Oil/I	31000403	None	None	PAH	Fluorene	C3-v0	7.48E-05	3.25E-05	1.67E-04	2.52E-05	lbs/Mgal	1	106.53	120.55	1.00
Heater, Oil/I	31000403	None	None	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	1.81E-06	1.55E-07	5.12E-06	1.48E-07	lbs/Mgal	1	158.71	179.59	1.00
Heater, Oil/I	31000403	None	None	PAH	Naphthalene	C3-v0	8.46E-04	1.04E-03	1.11E-03	3.88E-04	lbs/Mgal	1	47.07	53.26	1.00
Heater, Oil/I	31000403	None	None	PAH	Phenanthrene	C3-v1	2.49E-05	1.18E-05	6.02E-05	2.83E-06	lbs/Mgal	1	123.75	140.04	1.00
Heater, Oil/I	31000403	None	None	PAH	Pyrene	C3-v0	1.32E-06	1.19E-06	2.14E-06	6.28E-07	lbs/Mgal	1	57.94	65.56	1.00
Heater, Oil/I	31000403	None	None	SVOC	2-Chloronaphthalene	C3-v2	1.17E-05	5.33E-08	3.50E-05	3.57E-08	lbs/Mgal	1	172.55	195.25	1.00
Heater, Oil/I	31000403	None	None	SVOC	2-Methylnaphthalene	C3-v1	3.60E-05	1.06E-05	9.29E-05	4.54E-06	lbs/Mgal	1	137.05	155.09	1.00
Heater, Oil/I	31000403	None	None	SVOC	Perylene	C3-v0	7.41E-08	3.57E-08	1.66E-07	2.07E-08	lbs/Mgal	1	107.75	121.93	1.00
Heater, Oil/I	31000403	None	None	VOC	1,3-Butadiene	A3-v0	1.95E-02	1.96E-02	2.01E-02	1.89E-02	lbs/Mgal	1	3.14	3.55	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Oil/I	31000403	None	None	VOC	Acetaldehyde	C3-v0	5.43E-04	5.44E-04	5.48E-04	5.38E-04	lbs/Mgal	1	0.98	1.11	0.00
Heater, Oil/I	31000403	None	None	VOC	Acrolein	C3-v0	5.98E-04	5.99E-04	6.03E-04	5.91E-04	lbs/Mgal	1	0.95	1.07	0.00
Heater, Oil/I	31000403	None	None	VOC	Benzene	A3-v0	8.47E-03	8.49E-03	8.74E-03	8.19E-03	lbs/Mgal	1	3.22	3.65	0.00
Heater, Oil/I	31000403	None	None	VOC	Chloroform	A3-v0	8.63E-03	8.65E-03	8.88E-03	8.35E-03	lbs/Mgal	1	3.06	3.46	0.00
Heater, Oil/I	31000403	None	None	VOC	Formaldehyde	C3-v0	3.80E-03	3.81E-03	3.84E-03	3.77E-03	lbs/Mgal	1	0.95	1.08	0.00
Heater, Oil/I	31000403	None	None	VOC	Propylene	A3-v0	1.52E-02	1.52E-02	1.56E-02	1.47E-02	lbs/Mgal	1	3.01	3.41	0.00
Heater, Oil/I	31000403	None	None	VOC	Toluene	A3-v0	9.99E-03	1.00E-02	1.03E-02	9.67E-03	lbs/Mgal	1	3.06	3.46	0.00
Heater, Oil/I	31000403	None	None	VOC	Xylene (Total)	A3-v0	1.92E-02	1.92E-02	1.98E-02	1.86E-02	lbs/Mgal	1	3.21	3.63	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Antimony	C3-v0	5.81E-04	5.81E-04	8.51E-04	2.36E-04	lbs/MMcf	1	54.13	61.25	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Arsenic	C3-v0	9.54E-04	1.11E-03	1.43E-03	3.19E-04	lbs/MMcf	1	60.10	68.00	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Barium	C3-v0	6.49E-03	6.49E-03	6.64E-03	6.33E-03	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Beryllium	C3-v0	2.88E-04	2.89E-04	2.95E-04	2.81E-04	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Cadmium	C3-v0	1.11E-03	1.08E-03	1.33E-03	9.15E-04	lbs/MMcf	1	18.76	21.23	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Chromium (Hex)	C3-v0	2.43E-03	2.48E-03	2.51E-03	2.30E-03	lbs/MMcf	1	4.62	5.23	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Chromium (Total)	C3-v0	1.20E-03	7.38E-04	2.16E-03	7.03E-04	lbs/MMcf	1	69.39	78.52	0.60
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Copper	C3-v0	4.73E-03	2.16E-03	1.05E-02	1.48E-03	lbs/MMcf	1	106.76	120.81	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Lead	C3-v0	5.49E-03	4.43E-03	8.43E-03	3.61E-03	lbs/MMcf	1	47.03	53.22	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Manganese	C3-v0	7.65E-03	7.03E-03	1.37E-02	2.21E-03	lbs/MMcf	1	75.45	85.38	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Mercury	C3-v0	2.02E-04	1.97E-04	2.17E-04	1.92E-04	lbs/MMcf	1	6.49	7.34	0.36
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Nickel	C3-v1	1.06E-02	1.48E-03	2.88E-02	1.44E-03	lbs/MMcf	1	149.30	168.95	0.95
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Phosphorus	C3-v0	7.21E-04	7.22E-04	7.38E-04	7.03E-04	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Selenium	C3-v0	2.20E-05	2.28E-05	2.85E-05	1.48E-05	lbs/MMcf	1	31.23	35.34	0.78
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Silver	C3-v1	1.81E-03	1.48E-03	3.61E-03	3.53E-04	lbs/MMcf	1	91.23	103.24	0.94
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Thallium	C3-v0	6.49E-03	6.49E-03	6.64E-03	6.33E-03	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Zinc	C3-v0	2.34E-02	2.89E-02	3.18E-02	9.52E-03	lbs/MMcf	1	51.72	58.53	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Acenaphthene	A2-v0	2.33E-06	1.46E-06	5.28E-06	1.11E-06	lbs/MMcf	4	65.80	38.88	0.95
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Acenaphthylene	A2-v0	1.52E-06	1.39E-06	2.64E-06	9.83E-07	lbs/MMcf	4	38.62	22.82	0.51
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Anthracene	A2-v0	2.81E-06	2.40E-06	5.93E-06	1.01E-06	lbs/MMcf	4	57.37	33.90	0.92
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(a)anthracene	A1-v2	3.70E-05	7.11E-06	3.97E-04	1.00E-06	lbs/MMcf	9	261.62	100.56	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(a)pyrene	A1-v3	9.89E-05	2.20E-06	1.32E-03	9.83E-07	lbs/MMcf	9	344.55	132.44	0.98
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(b)fluoranthene	A1-v2	4.61E-05	4.20E-06	6.04E-04	9.83E-07	lbs/MMcf	9	315.76	121.37	0.99
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(g,h,i)perylene	A2-v0	1.17E-06	1.04E-06	1.41E-06	9.83E-07	lbs/MMcf	4	16.09	9.51	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(k)fluoranthene	A1-v2	2.72E-05	2.66E-06	3.40E-04	9.83E-07	lbs/MMcf	9	309.39	118.92	0.96
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Chrysene	A2-v0	1.66E-06	1.29E-06	5.37E-06	9.83E-07	lbs/MMcf	4	76.71	45.33	0.63
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Dibenz(a,h)anthracene	A1-v2	1.06E-05	1.95E-06	1.31E-04	6.78E-07	lbs/MMcf	9	262.22	100.79	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Fluoranthene	A2-v0	3.06E-06	3.03E-06	5.66E-06	1.72E-06	lbs/MMcf	4	37.95	22.43	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Fluorene	A2-v0	1.06E-05	8.55E-06	2.64E-05	3.33E-06	lbs/MMcf	4	67.66	39.98	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Indeno(1,2,3-cd)pyrene	A1-v3	1.15E-04	2.29E-06	1.55E-03	9.83E-07	lbs/MMcf	9	342.12	131.50	0.99
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Naphthalene	A2-v0	3.02E-04	2.43E-04	6.96E-04	1.33E-04	lbs/MMcf	4	62.74	37.08	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Phenanthrene	A2-v0	1.44E-05	1.49E-05	2.17E-05	7.69E-06	lbs/MMcf	4	32.45	19.18	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Pyrene	A2-v0	2.84E-06	2.63E-06	5.09E-06	1.78E-06	lbs/MMcf	4	33.95	20.06	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	SVOC	Ethylbenzene	A2-v1	3.04E-02	1.74E-02	9.50E-02	2.53E-03	lbs/MMcf	4	100.75	57.01	0.51
Heater, Ref. Gas/I	30600106	DeNOx	None	SVOC	Phenol	Cl-v1	6.96E-03	4.70E-03	2.68E-02	2.93E-04	lbs/MMcf	7	103.61	44.32	0.97
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Acetaldehyde	Bl-v3	1.95E-02	1.08E-02	1.12E-01	1.10E-04	lbs/MMcf	8	129.02	51.62	0.88
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Benzene	Bl-v2	8.42E-02	6.76E-02	2.76E-01	2.35E-03	lbs/MMcf	11	93.71	31.97	0.02
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Formaldehyde	Bl-v3	1.51E-01	3.03E-02	1.76E+00	7.92E-04	lbs/MMcf	7	254.14	108.70	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Hydrogen Sulfide	A1-v1	4.03E-01	3.27E-01	1.20E+00	1.82E-02	lbs/MMcf	7	84.49	36.13	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Propylene	A2-v0	2.05E-03	2.14E-03	2.91E-03	1.00E-03	lbs/MMcf	3	25.36	16.57	0.05
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Toluene	D1-v2	1.37E-01	7.81E-02	1.21E+00	3.71E-03	lbs/MMcf	11	154.31	52.65	0.55
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Xylene (Total)	A2-v1	3.74E-02	3.37E-02	9.90E-02	4.27E-03	lbs/MMcf	4	95.86	54.24	0.60
Heater, Ref. Gas/I	30600106	None	None	Metals	Antimony	C3-v0	5.81E-04	6.56E-04	8.51E-04	2.36E-04	lbs/MMcf	1	54.13	61.25	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Arsenic	C3-v0	9.54E-04	1.11E-03	1.43E-03	3.19E-04	lbs/MMcf	1	60.10	68.00	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Barium	C3-v0	6.49E-03	6.64E-03	6.64E-03	6.64E-03	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Beryllium	C3-v0	2.88E-04	2.89E-04	2.95E-04	2.81E-04	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Cadmium	C3-v0	1.11E-03	1.08E-03	1.33E-03	9.15E-04	lbs/MMcf	1	18.76	21.23	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Chromium (Hex)	C3-v0	2.43E-03	2.48E-03	2.51E-03	2.30E-03	lbs/MMcf	1	4.62	5.23	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Chromium (Total)	C3-v0	1.20E-03	7.38E-04	2.16E-03	7.03E-04	lbs/MMcf	1	69.39	78.52	0.60
Heater, Ref. Gas/I	30600106	None	None	Metals	Copper	C3-v0	4.73E-03	2.16E-03	1.05E-02	1.48E-03	lbs/MMcf	1	106.76	120.81	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Lead	C3-v0	5.49E-03	4.43E-03	8.43E-03	3.61E-03	lbs/MMcf	1	47.03	53.22	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Manganese	C3-v0	7.65E-03	7.03E-03	1.37E-02	2.21E-03	lbs/MMcf	1	75.45	85.38	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Mercury	C3-v0	2.02E-04	1.97E-04	2.17E-04	1.92E-04	lbs/MMcf	1	149.30	168.95	0.95
Heater, Ref. Gas/I	30600106	None	None	Metals	Nickel	C3-v1	1.06E-02	1.48E-03	2.88E-02	1.44E-03	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Phosphorus	C3-v0	7.21E-04	7.22E-04	7.38E-04	7.03E-04	lbs/MMcf	1	31.23	35.34	0.78
Heater, Ref. Gas/I	30600106	None	None	Metals	Selenium	C3-v0	2.20E-05	2.28E-05	2.85E-05	1.48E-05	lbs/MMcf	1	91.23	103.24	0.94
Heater, Ref. Gas/I	30600106	None	None	Metals	Silver	C3-v1	1.81E-03	1.48E-03	3.61E-03	3.53E-04	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Thallium	C3-v0	6.49E-03	6.49E-03	6.64E-03	6.33E-03	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Zinc	C3-v0	2.34E-02	2.89E-02	3.18E-02	9.52E-03	lbs/MMcf	1	51.72	58.53	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Acenaphthene	A2-v0	2.33E-06	1.46E-06	5.28E-06	1.11E-06	lbs/MMcf	4	65.80	38.88	0.95
Heater, Ref. Gas/I	30600106	None	None	PAH	Acenaphthylene	A2-v0	1.52E-06	1.39E-06	2.64E-06	9.83E-07	lbs/MMcf	4	38.62	22.82	0.51
Heater, Ref. Gas/I	30600106	None	None	PAH	Anthracene	A2-v0	2.81E-06	2.40E-06	5.93E-06	1.01E-06	lbs/MMcf	4	57.37	33.90	0.92
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(a)anthracene	A1-v2	3.70E-05	7.11E-06	3.97E-04	1.00E-06	lbs/MMcf	9	261.62	100.56	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(a)pyrene	A1-v3	9.89E-05	2.20E-06	1.32E-05	9.83E-07	lbs/MMcf	9	344.55	132.44	0.98
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(b)fluoranthene	A1-v2	4.61E-05	4.20E-06	6.04E-04	9.83E-07	lbs/MMcf	9	315.76	121.37	0.99
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(g,h,i)perylene	A2-v0	1.17E-06	1.04E-06	1.41E-06	9.83E-07	lbs/MMcf	4	16.09	9.51	0.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(k)fluoranthene	A1-v2	2.72E-05	2.66E-06	3.40E-04	9.83E-07	lbs/MMcf	9	309.39	118.92	0.96
Heater, Ref. Gas/I	30600106	None	None	PAH	Chrysene	A2-v0	1.66E-06	1.29E-06	5.37E-06	9.83E-07	lbs/MMcf	4	76.71	45.33	0.63
Heater, Ref. Gas/I	30600106	None	None	PAH	Dibenz(a,h)anthracene	A1-v2	1.06E-05	1.95E-06	1.31E-04	6.78E-07	lbs/MMcf	9	262.22	100.79	0.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Fluoranthene	A2-v0	3.06E-06	3.03E-06	5.66E-06	1.72E-06	lbs/MMcf	4	37.95	22.43	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Fluorene	A2-v0	1.06E-05	8.55E-06	2.64E-05	3.33E-06	lbs/MMcf	4	67.66	39.98	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Indeno(1,2,3-cd)pyrene	A1-v3	1.15E-04	2.29E-06	1.55E-03	9.83E-07	lbs/MMcf	9	342.12	131.50	0.99
Heater, Ref. Gas/I	30600106	None	None	PAH	Naphthalene	A2-v0	3.02E-04	2.43E-04	6.96E-04	1.33E-04	lbs/MMcf	4	62.74	37.08	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Phenanthrene	A2-v0	1.44E-05	1.49E-05	2.17E-05	7.69E-06	lbs/MMcf	4	32.45	19.18	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Pyrene	A2-v0	2.84E-06	2.63E-06	5.09E-06	1.78E-06	lbs/MMcf	4	33.95	20.06	1.00
Heater, Ref. Gas/I	30600106	None	None	SVOC	Ethylbenzene	A2-v1	3.04E-02	1.74E-02	9.50E-02	2.53E-03	lbs/MMcf	4	100.75	57.01	0.51
Heater, Ref. Gas/I	30600106	None	None	SVOC	Phenol	C1-v1	6.96E-03	4.70E-03	2.68E-02	2.93E-04	lbs/MMcf	7	103.61	44.32	0.97
Heater, Ref. Gas/I	30600106	None	None	VOC	Acetaldehyde	B1-v3	1.95E-02	1.08E-02	1.12E-01	1.10E-04	lbs/MMcf	8	129.02	51.62	0.88
Heater, Ref. Gas/I	30600106	None	None	VOC	Benzene	B1-v2	8.42E-02	6.76E-02	2.76E-01	2.35E-03	lbs/MMcf	11	93.71	31.97	0.02
Heater, Ref. Gas/I	30600106	None	None	VOC	Formaldehyde	B1-v3	1.51E-01	3.03E-02	1.76E+00	7.92E-04	lbs/MMcf	7	254.14	108.70	1.00
Heater, Ref. Gas/I	30600106	None	None	VOC	Hydrogen Sulfide	A1-v1	4.05E-01	3.27E-01	1.20E+00	1.82E-02	lbs/MMcf	7	84.49	36.13	0.00
Heater, Ref. Gas/I	30600106	None	None	VOC	Propylene	A2-v0	2.05E-03	2.14E-03	2.91E-03	1.00E-03	lbs/MMcf	3	25.36	16.57	0.05
Heater, Ref. Gas/I	30600106	None	None	VOC	Toluene	D1-v2	1.37E-01	7.81E-02	1.21E+00	3.71E-03	lbs/MMcf	11	154.31	52.65	0.55
Heater, Ref. Gas/I	30600106	None	None	VOC	Xylene (Total)	A2-v1	3.74E-02	3.37E-02	9.90E-02	4.27E-03	lbs/MMcf	4	95.86	54.24	0.60
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Antimony	C3-v0	5.81E-04	6.56E-04	8.51E-04	2.36E-04	lbs/MMcf	1	54.13	61.25	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Arsenic	C3-v0	9.54E-04	1.11E-03	1.43E-03	3.19E-04	lbs/MMcf	1	60.10	68.00	1.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Barium	C3-v0	6.49E-03	6.49E-03	6.64E-03	6.33E-03	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Beryllium	C3-v0	2.88E-04	2.89E-04	2.95E-04	2.81E-04	lbs/MMcf	1	18.75	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Cadmium	C3-v0	1.11E-03	1.08E-03	1.33E-03	9.15E-04	lbs/MMcf	1	18.76	21.23	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Chromium (Hex)	C3-v0	2.43E-03	2.48E-03	2.51E-03	2.30E-03	lbs/MMcf	1	4.62	5.23	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Chromium (Total)	C3-v0	1.20E-03	7.38E-04	2.16E-03	7.03E-04	lbs/MMcf	1	69.39	78.52	0.60
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Copper	C3-v0	4.73E-03	2.16E-03	1.05E-02	1.48E-03	lbs/MMcf	1	106.76	120.81	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Lead	C3-v0	5.49E-03	4.43E-03	8.43E-03	2.21E-03	lbs/MMcf	1	47.03	53.22	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Manganese	C3-v0	7.65E-03	7.03E-03	1.37E-02	2.21E-03	lbs/MMcf	1	75.45	85.38	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Mercury	C3-v0	2.02E-04	1.97E-04	2.17E-04	1.92E-04	lbs/MMcf	1	6.49	7.34	0.36
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Nickel	C3-v1	1.06E-02	1.48E-03	2.88E-02	1.44E-03	lbs/MMcf	1	149.30	168.95	0.95
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Phosphorus	C3-v0	7.21E-04	7.22E-04	7.38E-04	7.03E-04	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Selenium	C3-v0	2.20E-05	2.28E-05	2.85E-05	1.48E-05	lbs/MMcf	1	31.23	35.34	0.78
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Silver	C3-v1	1.81E-03	1.48E-03	3.61E-03	3.53E-04	lbs/MMcf	1	91.23	103.24	0.94
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Thallium	C3-v0	6.49E-03	6.49E-03	6.64E-03	6.33E-03	lbs/MMcf	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Zinc	C3-v0	2.34E-02	2.89E-02	3.18E-02	9.52E-03	lbs/MMcf	1	51.72	58.53	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Acenaphthene	A2-v0	2.33E-06	1.46E-06	5.28E-06	1.11E-06	lbs/MMcf	4	65.80	38.88	0.95
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Acenaphthylene	A2-v0	1.52E-06	1.39E-06	2.64E-06	9.83E-07	lbs/MMcf	4	38.62	22.82	0.51
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Anthracene	A2-v0	2.81E-06	2.40E-06	5.93E-06	1.01E-06	lbs/MMcf	9	57.37	33.90	0.92
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(a)anthracene	A1-v2	3.70E-05	7.11E-06	3.97E-04	1.00E-06	lbs/MMcf	9	261.62	100.56	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(a)pyrene	A1-v3	9.89E-05	2.20E-06	1.32E-03	9.83E-07	lbs/MMcf	9	344.55	132.44	0.98
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(b)fluoranthene	A1-v2	4.61E-05	4.20E-06	6.04E-04	9.83E-07	lbs/MMcf	9	315.76	121.37	0.99
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(g,h,i)perylene	A2-v0	1.17E-06	1.04E-06	1.41E-06	9.83E-07	lbs/MMcf	4	16.09	9.51	0.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(k)fluoranthene	A1-v2	2.72E-05	2.66E-06	3.40E-04	9.83E-07	lbs/MMcf	9	309.39	118.92	0.96
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Chrysene	A2-v0	1.66E-06	1.29E-06	5.37E-06	9.83E-07	lbs/MMcf	4	76.71	45.33	0.63
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Dibenz(a,h)anthracene	A1-v2	1.06E-05	1.95E-06	1.31E-04	6.78E-07	lbs/MMcf	9	262.22	100.79	0.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Fluoranthene	A2-v0	3.06E-06	3.03E-06	5.66E-06	1.72E-06	lbs/MMcf	4	37.95	22.43	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Fluorene	A2-v0	1.06E-05	8.55E-06	2.64E-05	3.33E-06	lbs/MMcf	4	67.66	39.98	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Indeno(1,2,3-cd)pyrene	A1-v3	1.15E-04	2.29E-06	1.55E-03	9.83E-07	lbs/MMcf	9	342.12	131.50	0.99
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Naphthalene	A2-v0	3.02E-04	2.43E-04	6.96E-04	1.33E-04	lbs/MMcf	4	62.74	37.08	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Phenanthrene	A2-v0	1.44E-05	1.49E-05	2.17E-05	7.69E-06	lbs/MMcf	4	32.45	19.18	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Pyrene	A2-v0	2.84E-06	2.63E-06	5.09E-06	1.78E-06	lbs/MMcf	4	33.95	20.06	1.00
Heater, Ref. Gas/I	30600106	SCR	None	SVOC	Ethylbenzene	A2-v1	3.04E-02	1.74E-02	9.50E-02	2.53E-03	lbs/MMcf	4	100.75	57.01	0.51
Heater, Ref. Gas/I	30600106	SCR	None	SVOC	Phenol	C1-v1	6.96E-03	4.70E-03	2.68E-02	2.93E-04	lbs/MMcf	7	103.61	44.32	0.97
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Acetaldehyde	B1-v3	1.95E-02	1.08E-02	1.12E-01	1.10E-04	lbs/MMcf	8	129.02	51.62	0.88
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Benzene	B1-v2	8.42E-02	6.76E-02	2.76E-01	2.33E-03	lbs/MMcf	11	93.71	31.97	0.02
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Formaldehyde	B1-v3	1.51E-01	3.03E-02	1.76E+00	7.92E-04	lbs/MMcf	7	254.14	108.70	1.00
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Hydrogen Sulfide	A1-v1	4.05E-01	3.27E-01	1.20E+00	1.82E-02	lbs/MMcf	7	84.49	36.13	0.00
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Propylene	A2-v0	2.05E-03	1.24E-03	2.91E-03	1.00E-03	lbs/MMcf	3	25.36	16.57	0.05
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Toluene	D1-v2	1.37E-01	7.81E-02	2.12E+00	1.07E-03	lbs/MMcf	11	154.31	52.65	0.55
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Xylene (Total)	A2-v1	3.74E-02	3.37E-02	9.90E-02	4.27E-03	lbs/MMcf	4	95.86	54.24	0.60
ICE, Diesel/I	20200102	None	O2<13%	PAH	Acenaphthene	C3-v0	6.44E-04	6.87E-04	8.67E-04	3.78E-04	lbs/Mgal	1	38.39	43.44	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Acenaphthylene	C3-v0	1.27E-03	1.31E-03	1.32E-03	1.18E-03	lbs/Mgal	1	6.10	6.91	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Anthracene	C3-v0	1.70E-04	1.34E-04	2.89E-04	8.61E-05	lbs/Mgal	1	62.56	70.79	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(a)anthracene	C3-v0	8.71E-05	8.30E-05	9.69E-05	8.15E-05	lbs/Mgal	1	9.72	11.00	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(a)pyrene	C3-v0	3.54E-05	3.84E-05	4.77E-05	2.00E-05	lbs/Mgal	1	39.85	45.09	0.45
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(b)fluoranthene	C3-v0	1.53E-04	1.41E-04	1.92E-04	1.26E-04	lbs/Mgal	1	22.58	25.55	0.27
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(g,h,i)perylene	C3-v0	7.69E-05	7.84E-05	8.30E-05	6.92E-05	lbs/Mgal	1	9.17	10.37	1.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(k)fluoranthene	C3-v0	3.02E-05	1.23E-05	6.92E-05	9.22E-06	lbs/Mgal	1	111.67	126.37	0.76
ICE, Diesel/I	20200102	None	O2<13%	PAH	Chrysene	C3-v0	2.11E-04	2.21E-04	2.28E-04	1.84E-04	lbs/Mgal	1	11.03	12.48	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Dibenz(a,h)anthracene	C3-v0	4.77E-05	4.61E-05	5.07E-05	4.61E-05	lbs/Mgal	1	5.59	6.32	0.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Fluoranthene	C3-v0	5.56E-04	5.47E-04	5.84E-04	5.37E-04	lbs/Mgal	1	4.50	5.09	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Fluorene	C3-v0	1.77E-04	1.76E-04	1.81E-04	1.72E-04	lbs/Mgal	1	2.62	2.96	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Indeno(1,2,3-cd)pyrene	C3-v0	5.69E-05	5.84E-05	6.61E-05	4.61E-05	lbs/Mgal	1	17.72	20.05	0.34
ICE, Diesel/I	20200102	None	O2<13%	PAH	Naphthalene	C3-v0	1.80E-02	1.81E-02	1.85E-02	1.72E-02	lbs/Mgal	1	3.74	4.24	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Phenanthrene	C3-v0	5.62E-03	5.63E-03	5.76E-03	5.76E-03	lbs/Mgal	1	2.58	2.92	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Pyrene	C3-v0	5.11E-04	4.89E-04	5.60E-04	4.86E-04	lbs/Mgal	1	8.16	9.24	1.00
ICE, Diesel/I	20200102	None	O2<13%	VOC	Acetaldehyde	A3-v0	3.47E-03	2.23E-03	6.46E-03	1.69E-03	lbs/Mgal	1	75.34	85.25	1.00
ICE, Diesel/I	20200102	None	O2<13%	VOC	Acrolein	A3-v0	1.07E-03	7.13E-04	1.79E-03	7.13E-04	lbs/Mgal	1	57.74	65.33	0.56
ICE, Diesel/I	20200102	None	O2<13%	VOC	Benzene	A3-v0	1.01E-01	9.93E-02	1.04E-01	9.93E-02	lbs/Mgal	1	2.71	3.06	1.00
ICE, Diesel/I	20200102	None	O2<13%	VOC	Formaldehyde	A3-v1	1.09E-02	4.64E-03	2.63E-02	1.74E-03	lbs/Mgal	1	123.19	139.41	1.00
ICE, Diesel/I	20200102	None	O2<13%	VOC	Propylene	A3-v0	3.85E-01	4.03E-01	4.03E-01	3.49E-01	lbs/Mgal	1	8.06	9.12	1.00
ICE, Diesel/I	20200102	None	O2<13%	VOC	Toluene	A3-v0	3.74E-02	3.70E-02	3.87E-02	3.64E-02	lbs/Mgal	1	3.27	3.70	1.00
ICE, Diesel/I	20200102	None	O2<13%	VOC	Xylene (Total)	A3-v0	2.68E-02	2.70E-02	2.77E-02	2.57E-02	lbs/Mgal	1	3.85	4.36	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Acenaphthene	C3-v2	1.98E-04	1.15E-04	6.88E-04	1.41E-06	lbs/Mgal	2	136.01	108.83	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Acenaphthylene	C3-v3	7.03E-04	3.13E-04	1.86E-03	1.41E-06	lbs/Mgal	2	125.21	100.19	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Anthracene	C3-v1	2.60E-04	2.95E-04	3.71E-04	3.11E-05	lbs/Mgal	2	45.24	36.20	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(a)anthracene	C3-v1	2.34E-04	2.04E-04	2.75E-04	1.55E-05	lbs/Mgal	2	104.10	83.30	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(a)pyrene	C3-v1	2.60E-05	1.82E-05	5.83E-05	1.41E-06	lbs/Mgal	2	108.55	86.85	0.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(b)fluoranthene	C3-v0	2.59E-05	2.72E-05	3.88E-05	1.17E-05	lbs/Mgal	1	52.68	59.61	0.50
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(b,k)fluoranthene	C3-v1	1.44E-06	1.45E-06	1.46E-06	1.41E-06	lbs/Mgal	1	1.90	2.14	0.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(g,h,i)perylene	C3-v1	6.78E-05	5.89E-05	1.55E-04	1.17E-05	lbs/Mgal	2	71.76	57.42	0.43
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(k)fluoranthene	C3-v0	4.14E-05	4.27E-05	6.22E-05	1.94E-05	lbs/Mgal	1	51.63	58.43	0.50
ICE, Diesel/2	20200102	None	O2>13%	PAH	Chrysene	C3-v0	4.90E-05	5.23E-05	6.75E-05	2.72E-05	lbs/Mgal	2	33.96	27.17	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Dibenz(a,h)anthracene	C3-v0	8.12E-05	6.41E-05	1.44E-04	4.42E-05	lbs/Mgal	2	50.80	40.65	0.35
ICE, Diesel/2	20200102	None	O2>13%	PAH	Fluoranthene	C3-v1	1.06E-03	8.29E-04	2.70E-03	6.99E-05	lbs/Mgal	2	90.38	72.32	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Fluorene	C3-v1	4.06E-03	3.96E-03	7.57E-03	2.10E-04	lbs/Mgal	2	87.57	70.07	0.99
ICE, Diesel/2	20200102	None	O2>13%	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	6.43E-05	4.08E-05	1.32E-04	7.77E-06	lbs/Mgal	2	83.82	67.07	0.30
ICE, Diesel/2	20200102	None	O2>13%	PAH	Naphthalene	C3-v0	1.18E-02	7.84E-03	3.04E-02	5.92E-03	lbs/Mgal	2	80.11	64.10	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Phenanthrene	C3-v1	4.09E-03	4.23E-03	7.54E-03	3.11E-04	lbs/Mgal	2	65.51	52.42	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Pyrene	C3-v0	6.66E-04	6.10E-04	1.07E-03	1.17E-04	lbs/Mgal	2	51.99	41.60	1.00
ICE, Diesel/2	20200102	None	O2>13%	SVOC	Benzaldehyde	A3-v0	1.26E-02	1.24E-02	1.35E-02	1.20E-02	lbs/Mgal	1	6.29	7.12	0.68
ICE, Diesel/2	20200102	None	O2>13%	VOC	1,3-Butadiene	C3-v0	5.41E-03	5.41E-03	5.41E-03	5.41E-03	lbs/Mgal	1	0.00	0.00	0.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Acetaldehyde	A3-v0	1.07E-01	1.07E-01	1.52E-01	5.82E-02	lbs/Mgal	2	43.11	34.50	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Acrolein	A3-v0	1.30E-02	8.43E-03	3.16E-02	6.62E-03	lbs/Mgal	2	74.07	59.27	0.82
ICE, Diesel/2	20200102	None	O2>13%	VOC	Benzene	B3-v0	1.22E-01	1.13E-01	1.91E-01	6.57E-02	lbs/Mgal	2	48.35	38.69	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Formaldehyde	A3-v0	1.65E-01	1.45E-01	3.35E-01	8.55E-02	lbs/Mgal	2	55.71	44.58	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Propylene	B3-v0	3.58E-01	3.38E-01	5.83E-01	1.45E-01	lbs/Mgal	2	56.61	45.30	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Toluene	B3-v0	5.50E-02	5.49E-02	7.56E-02	3.44E-02	lbs/Mgal	2	38.06	30.45	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Xylene (Total)	A3-v0	3.59E-02	4.44E-02	4.44E-02	1.88E-02	lbs/Mgal	1	41.24	46.67	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Xylene (mp)	C3-v0	2.16E-02	2.09E-02	2.40E-02	1.98E-02	lbs/Mgal	1	10.07	11.40	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Xylene (o)	C3-v0	2.09E-02	2.09E-02	2.09E-02	2.09E-02	lbs/Mgal	1	0.00	0.00	0.00
ICE, Field Gas/I	20200252	None	2S/Lean	PAH	Acenaphthene	A3-v0	7.41E-04	7.41E-04	1.08E-03	4.00E-04	lbs/MMcf	1	65.08	90.19	0.00
ICE, Field Gas/I	20200252	None	2S/Lean	PAH	Acenaphthylene	A3-v0	1.11E-02	1.11E-02	1.57E-02	6.44E-03	lbs/MMcf	1	59.06	81.86	1.00
ICE, Field Gas/I	20200252	None	2S/Lean	PAH	Anthracene	A3-v0	4.50E-03	4.50E-03	6.67E-03	2.34E-03	lbs/MMcf	1	67.84	94.02	1.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(a)anthracene	A3-v0	8.97E-04	8.97E-04	9.11E-04	8.83E-04	lbs/MMcf	1	2.17	3.01	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(a)pyrene	A3-v0	8.75E-04	8.75E-04	1.53E-03	2.16E-04	lbs/MMcf	1	106.44	147.52	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(b)fluoranthene	A3-v0	1.48E-04	1.48E-04	1.71E-04	1.24E-04	lbs/MMcf	1	22.41	31.05	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(g,h,i)perylene	A3-v0	9.40E-05	9.40E-05	9.92E-05	8.89E-05	lbs/MMcf	1	7.74	10.72	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(k)fluoranthene	A3-v0	4.57E-03	4.57E-03	4.69E-03	4.44E-03	lbs/MMcf	1	3.78	5.23	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Chrysene	A3-v0	1.69E-03	1.69E-03	1.80E-03	1.58E-03	lbs/MMcf	1	9.43	13.07	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Dibenz(a,h)anthracene	A3-v0	7.70E-05	7.70E-05	8.29E-05	7.11E-05	lbs/MMcf	1	10.86	15.06	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Fluorene	A3-v0	1.66E-04	1.66E-04	1.66E-04	1.16E-04	lbs/MMcf	1	42.96	59.53	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Fluoranthene	A3-v0	2.44E-03	2.44E-03	3.61E-03	1.27E-03	lbs/MMcf	1	67.90	94.10	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	1.37E-04	1.37E-04	1.46E-04	1.29E-04	lbs/MMcf	1	8.83	12.24	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Naphthalene	A3-v0	2.19E-01	2.19E-01	2.22E-01	2.16E-01	lbs/MMcf	1	1.88	2.61	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Phenanthrene	A3-v0	4.91E-03	4.91E-03	6.49E-03	3.33E-03	lbs/MMcf	1	45.46	63.00	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Pyrene	A3-v0	2.39E-04	2.39E-04	3.06E-04	1.71E-04	lbs/MMcf	1	40.10	55.57	0.64
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Acetaldehyde	A3-v1	8.77E+00	9.42E+00	1.14E+01	5.53E+00	lbs/MMcf	1	33.90	38.37	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Acrolein	A3-v0	2.00E+00	1.44E+00	4.36E+00	2.00E-01	lbs/MMcf	1	106.79	120.84	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Benzene	A3-v0	7.85E+00	4.60E+00	1.36E+01	4.23E+00	lbs/MMcf	2	60.68	53.19	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Formaldehyde	A3-v1	5.09E+01	6.79E+01	8.53E+01	4.21E+00	lbs/MMcf	2	69.80	55.85	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Propylene	A3-v0	2.49E+01	1.77E+01	4.02E+01	1.14E+01	lbs/MMcf	2	56.74	49.73	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Toluene	A3-v1	2.86E+00	3.66E+00	5.74E+00	2.23E-01	lbs/MMcf	2	72.83	63.84	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Xylene (m,p)	A3-v0	6.04E-01	3.17E-01	1.25E+00	1.89E-01	lbs/MMcf	2	80.76	70.79	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Xylene (o)	A3-v0	2.88E-01	1.36E-01	5.91E-01	6.80E-02	lbs/MMcf	2	88.41	77.49	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Benzene	A2-v0	1.72E+00	2.07E+00	2.24E+00	9.25E-01	lbs/MMcf	3	35.58	28.47	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Formaldehyde	A2-v1	4.15E+01	3.14E+01	9.78E+01	4.62E+00	lbs/MMcf	3	76.73	50.13	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Propylene	A2-v0	1.59E+01	1.84E+01	2.02E+01	9.48E+00	lbs/MMcf	3	30.49	24.40	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Toluene	A2-v0	7.68E-01	1.17E+00	1.17E+00	2.69E-01	lbs/MMcf	3	51.12	40.90	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Xylene (m,p)	A2-v1	3.02E-01	1.90E-01	9.03E-01	7.74E-02	lbs/MMcf	3	99.71	79.78	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Xylene (o)	A2-v0	8.97E-02	9.57E-02	1.22E-01	6.13E-02	lbs/MMcf	3	25.60	20.49	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Benzene	A3-v0	1.10E+01	1.10E+01	1.11E+01	1.09E+01	lbs/MMcf	1	1.15	1.59	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Formaldehyde	A3-v0	5.05E+00	4.65E+00	5.98E+00	4.57E+00	lbs/MMcf	1	15.91	18.00	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Propylene	A3-v0	3.04E+00	3.04E+00	3.04E+00	3.04E+00	lbs/MMcf	1	0.00	0.00	0.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Toluene	A3-v0	3.44E+00	3.44E+00	3.55E+00	3.33E+00	lbs/MMcf	1	4.56	6.32	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Xylene (m,p)	A3-v0	5.37E-01	5.37E-01	5.62E-01	5.11E-01	lbs/MMcf	1	6.73	9.33	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Xylene (o)	A3-v0	2.68E-01	2.68E-01	2.81E-01	2.56E-01	lbs/MMcf	1	6.73	9.33	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Acenaphthene	A3-v0	7.17E-04	6.36E-04	9.60E-04	5.57E-04	lbs/MMcf	1	29.79	33.71	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Acenaphthylene	A3-v0	7.59E-03	7.65E-03	1.07E-02	4.40E-03	lbs/MMcf	1	41.56	47.03	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Anthracene	A3-v0	2.56E-04	2.40E-04	3.69E-04	1.60E-04	lbs/MMcf	1	41.20	46.62	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(a)anthracene	A3-v0	7.78E-05	7.83E-05	9.60E-05	5.91E-05	lbs/MMcf	1	23.70	26.82	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(a)pyrene	A3-v0	3.55E-05	2.93E-05	5.17E-05	2.54E-05	lbs/MMcf	1	39.97	45.23	0.76
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(b)fluoranthene	A3-v2	3.27E-04	4.43E-05	9.29E-04	6.26E-06	lbs/MMcf	1	159.90	180.94	0.95
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(g,h,i)perylene	A3-v1	1.03E-04	2.93E-05	2.58E-04	2.09E-05	lbs/MMcf	1	131.00	148.24	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(k)fluoranthene	A3-v1	5.30E-04	4.87E-04	1.07E-03	3.08E-05	lbs/MMcf	1	98.44	111.40	0.98
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Chrysene	A3-v0	9.64E-05	1.11E-04	1.12E-04	6.61E-05	lbs/MMcf	1	27.27	30.86	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Dibenz(a,h)anthracene	A3-v0	1.09E-05	1.11E-05	1.47E-05	6.96E-06	lbs/MMcf	1	35.41	40.07	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Fluoranthene	A3-v0	2.50E-04	2.64E-04	3.32E-04	1.53E-04	lbs/MMcf	1	36.21	40.98	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Fluorene	A3-v0	4.60E-04	4.16E-04	6.28E-04	3.37E-04	lbs/MMcf	1	32.63	36.92	0.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Indeno(1,2,3-cd)pyrene	A3-v1	1.20E-04	3.91E-05	2.95E-04	2.43E-05	lbs/MMcf	1	127.40	144.16	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Naphthalene	A3-v0	1.22E-01	1.60E-01	1.86E-01	1.99E-02	lbs/MMcf	1	73.21	82.85	1.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Phenanthrene	A3-v0	8.93E-04	8.31E-04	1.26E-03	5.91E-04	lbs/MMcf	1	37.66	42.62	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Pyrene	A3-v0	1.23E-04	1.42E-04	1.62E-04	6.61E-05	lbs/MMcf	1	41.10	46.51	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Acetaldehyde	A1-v0	3.99E+00	2.96E+00	9.94E+00	1.52E+00	lbs/MMcf	5	64.91	32.85	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Acrolein	A1-v1	1.63E+00	1.10E+00	5.48E+00	2.01E-01	lbs/MMcf	5	92.02	48.20	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Benzene	A1-v1	1.21E+00	1.22E+00	2.47E+00	2.47E-01	lbs/MMcf	7	47.28	24.77	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Formaldehyde	A1-v0	2.87E+01	2.77E+01	4.79E+01	9.68E+00	lbs/MMcf	7	38.56	16.49	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Propylene	A1-v1	1.87E+01	8.81E+00	5.65E+01	4.12E+00	lbs/MMcf	7	109.05	57.12	0.97
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Toluene	A1-v0	4.12E-01	3.96E-01	5.70E-01	1.65E-01	lbs/MMcf	7	33.98	17.80	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Xylene (m,p)	A1-v0	8.63E-02	8.13E-02	1.59E-01	3.53E-02	lbs/MMcf	7	46.27	24.24	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Xylene (o)	A1-v0	4.94E-02	4.95E-02	9.14E-02	1.06E-02	lbs/MMcf	7	39.52	20.70	0.95
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Acetaldehyde	A3-v0	1.71E+00	1.70E+00	1.82E+00	1.60E+00	lbs/MMcf	1	6.46	7.31	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Acrolein	A3-v2	5.40E-01	4.16E-01	1.37E+00	2.59E-03	lbs/MMcf	2	105.82	84.67	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Benzene	A3-v0	9.87E+00	9.87E+00	1.02E+01	9.51E+00	lbs/MMcf	1	5.05	7.00	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Formaldehyde	A3-v1	5.32E+00	4.48E+00	1.14E+01	4.21E-01	lbs/MMcf	2	100.69	80.57	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Propylene	A3-v0	3.95E+01	3.95E+01	4.20E+01	3.70E+01	lbs/MMcf	1	8.95	12.40	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Toluene	A3-v0	2.51E+00	2.51E+00	2.62E+00	2.41E+00	lbs/MMcf	1	6.15	8.52	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Xylene (m,p)	A3-v0	4.41E-01	4.41E-01	4.54E-01	4.28E-01	lbs/MMcf	1	4.04	5.60	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Xylene (o)	A3-v0	2.17E-01	2.17E-01	2.22E-01	2.12E-01	lbs/MMcf	1	3.29	4.56	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	SVOC	Ethylbenzene	C3-v0	7.29E-03	7.23E-03	9.15E-03	5.49E-03	lbs/MMcf	1	25.12	28.43	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	VOC	Benzene	C3-v0	2.45E-01	2.43E-01	2.09E-01	2.09E-01	lbs/MMcf	1	15.16	17.15	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	VOC	Formaldehyde	C3-v0	3.79E-05	3.28E-05	4.90E-05	3.20E-05	lbs/MMcf	1	25.40	28.74	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	VOC	Hydrogen Sulfide	C3-v0	5.49E-02	2.94E-02	1.15E-01	2.07E-02	lbs/MMcf	1	94.42	106.85	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	VOC	Toluene	C3-v0	1.64E-01	1.51E-01	1.92E-01	1.51E-01	lbs/MMcf	1	14.68	16.61	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	VOC	Xylene (m)	C3-v0	1.67E-02	1.64E-02	2.31E-02	1.06E-02	lbs/MMcf	1	37.54	42.48	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	VOC	Xylene (o)	C3-v0	6.36E-03	6.65E-03	8.58E-03	3.85E-03	lbs/MMcf	1	37.33	42.24	1.00
Reboiler, Ethylene Glycol/1	31000304	None	None	VOC	Xylene (p)	C3-v0	6.14E-03	6.26E-03	7.81E-03	4.34E-03	lbs/MMcf	1	28.33	32.06	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	SVOC	Ethylbenzene	C3-v0	2.69E-02	2.74E-02	2.88E-02	2.45E-02	lbs/MMcf	1	8.18	9.26	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	VOC	Benzene	C3-v0	1.51E-01	1.41E-01	1.92E-01	1.21E-01	lbs/MMcf	1	24.04	27.20	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	VOC	Formaldehyde	C3-v0	3.50E-05	2.20E-05	6.97E-05	1.33E-05	lbs/MMcf	1	86.74	98.15	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	VOC	Hydrogen Sulfide	C3-v0	4.42E-03	3.75E-03	6.49E-03	3.01E-03	lbs/MMcf	1	41.43	46.89	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	VOC	Toluene	C3-v0	1.75E-01	1.63E-01	2.00E-01	1.63E-01	lbs/MMcf	1	12.37	14.00	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	VOC	Xylene (m)	C3-v0	3.56E-02	3.61E-02	3.75E-02	3.32E-02	lbs/MMcf	1	6.19	7.01	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	VOC	Xylene (o)	C3-v0	2.50E-02	2.60E-02	2.60E-02	2.31E-02	lbs/MMcf	1	6.66	7.54	1.00
Reboiler, Triethylene Glycol/2	31000301	None	None	VOC	Xylene (p)	C3-v0	1.32E-02	1.33E-02	1.41E-02	1.23E-02	lbs/MMcf	1	7.10	8.03	1.00
SG, Crude Oil/1	31000413	None	None	Halogens	HCl	C3-v0	1.90E-04	1.83E-04	2.09E-04	1.77E-04	lbs/Mgal	1	8.92	10.09	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Arsenic	D2-v0	9.97E-04	6.35E-04	2.85E-03	3.58E-04	lbs/Mgal	3	83.25	54.39	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Beryllium	D3-v0	2.87E-04	3.02E-04	3.19E-04	2.39E-04	lbs/Mgal	2	13.52	10.81	0.51
SG, Crude Oil/1	31000413	None	None	Metals	Cadmium	D2-v1	1.63E-04	1.46E-04	5.45E-04	2.40E-05	lbs/Mgal	3	100.53	65.68	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Chromium (Hex)	B2-v0	1.65E-04	1.50E-04	3.36E-04	5.73E-05	lbs/Mgal	3	55.52	36.27	0.47
SG, Crude Oil/1	31000413	None	None	Metals	Chromium (Total)	B2-v1	8.58E-04	5.76E-04	2.16E-03	1.53E-04	lbs/Mgal	3	84.23	55.03	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Copper	D2-v0	9.93E-04	9.31E-04	1.84E-03	4.78E-04	lbs/Mgal	3	47.12	30.79	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Lead	D2-v0	2.83E-04	2.60E-04	4.90E-04	1.79E-04	lbs/Mgal	3	33.44	21.85	0.52
SG, Crude Oil/1	31000413	None	None	Metals	Manganese	D2-v1	3.02E-03	2.81E-03	5.73E-03	2.44E-04	lbs/Mgal	3	63.89	47.33	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Mercury	D2-v2	2.19E-03	5.18E-05	5.17E-03	6.63E-06	lbs/Mgal	3	122.81	90.98	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Nickel	D2-v0	3.61E-01	3.58E-01	4.01E-01	3.26E-01	lbs/Mgal	3	5.82	3.80	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Phosphorus	D3-v1	2.65E-02	1.45E-02	6.78E-02	2.73E-03	lbs/Mgal	2	101.41	81.14	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Selenium	D2-v1	1.18E-03	4.44E-04	3.09E-03	1.79E-04	lbs/Mgal	3	107.66	70.34	0.96

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
SG, Crude Oil/I	31000413	None	None	Metals	Zinc	D2-v2	8.11E-02	2.87E-02	2.60E-01	2.40E-03	lbs/Mgal	3	127.20	83.10	0.94
SG, Crude Oil/I	31000413	None	None	PAH	Acenaphthene	C3-v1	3.80E-05	2.07E-05	9.22E-05	1.07E-06	lbs/Mgal	2	110.99	88.81	1.00
SG, Crude Oil/I	31000413	None	None	PAH	Acenaphthylene	C2-v1	7.48E-06	6.56E-06	1.79E-05	2.13E-07	lbs/Mgal	3	83.42	54.50	0.47
SG, Crude Oil/I	31000413	None	None	PAH	Anthracene	C2-v1	7.69E-06	3.14E-06	2.51E-05	3.20E-07	lbs/Mgal	3	134.01	92.86	1.00
SG, Crude Oil/I	31000413	None	None	PAH	Benzo(a)anthracene	C2-v1	7.74E-06	8.22E-06	1.49E-05	5.34E-07	lbs/Mgal	3	72.06	49.94	0.42
SG, Crude Oil/I	31000413	None	None	PAH	Benzo(a)pyrene	C3-v1	8.03E-06	9.50E-06	1.25E-05	5.34E-07	lbs/Mgal	2	60.41	48.34	0.24
SG, Crude Oil/I	31000413	None	None	PAH	Benzo(b)fluoranthene	C3-v1	7.11E-06	4.27E-06	1.60E-05	1.07E-06	lbs/Mgal	1	110.57	125.12	0.00
SG, Crude Oil/I	31000413	None	None	PAH	Benzo(b+k)fluoranthene	C3-v0	1.20E-05	1.19E-05	1.25E-05	1.15E-05	lbs/Mgal	1	4.07	4.61	0.00
SG, Crude Oil/I	31000413	None	None	PAH	Benzo(g,h,i)perylene	C3-v1	7.76E-06	8.96E-06	1.25E-05	1.07E-06	lbs/Mgal	2	63.37	50.71	0.21
SG, Crude Oil/I	31000413	None	None	PAH	Benzo(k)fluoranthene	C3-v0	6.05E-07	5.34E-07	1.07E-06	2.13E-07	lbs/Mgal	1	71.32	80.70	0.00
SG, Crude Oil/I	31000413	None	None	PAH	Chrysene	C2-v1	1.12E-05	1.15E-05	3.45E-05	1.07E-06	lbs/Mgal	3	93.50	61.09	0.64
SG, Crude Oil/I	31000413	None	None	PAH	Dibenz(a,h)anthracene	C3-v1	7.94E-06	9.50E-06	1.25E-05	1.07E-06	lbs/Mgal	2	61.45	49.17	0.00
SG, Crude Oil/I	31000413	None	None	PAH	Fluoranthene	C2-v1	1.31E-05	1.15E-05	5.23E-05	1.07E-06	lbs/Mgal	3	116.13	75.87	0.70
SG, Crude Oil/I	31000413	None	None	PAH	Fluorene	C2-v1	1.42E-05	7.13E-06	4.59E-05	1.07E-06	lbs/Mgal	3	116.91	76.38	1.00
SG, Crude Oil/I	31000413	None	None	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	7.94E-06	1.00E-05	1.25E-05	1.07E-06	lbs/Mgal	2	64.32	51.47	0.22
SG, Crude Oil/I	31000413	None	None	PAH	Naphthalene	C2-v0	7.96E-04	4.51E-04	1.62E-03	2.12E-04	lbs/Mgal	3	81.32	56.35	1.00
SG, Crude Oil/I	31000413	None	None	PAH	Phenanthrene	C2-v1	2.49E-05	6.99E-06	1.62E-04	2.20E-06	lbs/Mgal	3	208.44	136.18	1.00
SG, Crude Oil/I	31000413	None	None	PAH	Pyrene	C2-v1	2.27E-05	1.25E-05	7.22E-05	1.07E-06	lbs/Mgal	3	95.89	62.64	0.82
SG, Crude Oil/I	31000413	None	None	SVOC	Benzaldehyde	A3-v0	7.03E-03	7.27E-03	7.34E-03	6.49E-03	lbs/Mgal	1	6.71	7.60	0.00
SG, Crude Oil/I	31000413	None	None	VOC	Acetaldehyde	A3-v0	2.67E-03	2.16E-03	5.10E-03	1.18E-03	lbs/Mgal	2	52.69	34.42	0.54
SG, Crude Oil/I	31000413	None	None	VOC	Acrolein	A3-v0	1.78E-03	4.99E-04	4.55E-03	4.99E-04	lbs/Mgal	2	108.34	70.78	0.00
SG, Crude Oil/I	31000413	None	None	VOC	Benzene	B3-v0	6.13E-04	6.60E-04	9.90E-04	3.00E-04	lbs/Mgal	2	44.18	28.86	0.36
SG, Crude Oil/I	31000413	None	None	VOC	Formaldehyde	A3-v0	9.44E-04	8.09E-04	1.64E-03	4.05E-04	lbs/Mgal	2	52.64	34.39	0.44
SG, Crude Oil/I	31000413	None	None	VOC	Propylene	B3-v1	5.80E-02	1.87E-03	1.70E-01	1.87E-03	lbs/Mgal	2	145.15	94.83	0.00
SG, Crude Oil/I	31000413	None	None	VOC	Toluene	B3-v0	3.56E-03	2.05E-03	1.16E-02	2.05E-03	lbs/Mgal	2	88.54	57.84	0.74
SG, Crude Oil/I	31000413	None	None	VOC	Xylene (Total)	B3-v1	3.29E-03	4.72E-03	4.72E-03	4.29E-04	lbs/Mgal	2	65.22	42.61	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Halogens	HCl	C3-v0	1.90E-04	1.83E-04	2.09E-04	1.77E-04	lbs/Mgal	1	8.92	10.09	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Arsenic	D2-v0	9.97E-04	6.35E-04	2.85E-03	3.58E-04	lbs/Mgal	3	83.25	54.39	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Beryllium	D3-v0	2.87E-04	3.02E-04	3.19E-04	2.39E-04	lbs/Mgal	2	13.52	10.81	0.51
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Cadmium	D2-v1	1.63E-04	1.46E-04	5.45E-04	2.40E-05	lbs/Mgal	3	100.53	65.68	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Chromium (Hex)	B2-v0	1.65E-04	1.50E-04	3.36E-04	5.73E-05	lbs/Mgal	3	55.52	36.27	0.47
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Chromium (Total)	B2-v1	8.58E-04	5.76E-04	2.16E-03	1.53E-04	lbs/Mgal	3	84.23	55.03	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Copper	D2-v0	9.93E-04	9.31E-04	1.84E-03	4.78E-04	lbs/Mgal	3	47.12	30.79	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Lead	D2-v1	2.83E-04	2.60E-04	4.90E-04	1.79E-04	lbs/Mgal	3	33.44	21.85	0.52
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Manganese	D2-v1	3.02E-03	2.81E-03	5.73E-03	2.44E-04	lbs/Mgal	3	63.89	47.33	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Mercury	D2-v2	2.19E-03	5.18E-05	5.17E-03	8.63E-06	lbs/Mgal	3	122.81	90.98	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Nickel	D2-v0	3.61E-01	3.58E-01	4.01E-01	3.26E-01	lbs/Mgal	3	5.82	3.80	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Phosphorus	D3-v1	2.65E-02	1.45E-02	6.78E-02	2.73E-03	lbs/Mgal	2	101.41	81.14	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Selenium	D2-v1	1.18E-03	4.44E-04	3.09E-03	1.79E-04	lbs/Mgal	3	107.66	70.34	0.96
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Zinc	D2-v2	8.11E-02	2.87E-02	2.60E-01	2.40E-03	lbs/Mgal	3	127.20	83.10	0.94
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Acenaphthene	C3-v1	3.80E-05	2.07E-05	9.22E-05	1.07E-06	lbs/Mgal	2	110.99	88.81	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Acenaphthylene	C2-v1	7.48E-06	6.56E-06	1.79E-05	2.13E-07	lbs/Mgal	3	83.42	54.50	0.47
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Anthracene	C2-v1	7.69E-06	3.14E-06	2.51E-05	3.20E-07	lbs/Mgal	3	134.01	92.86	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(a)anthracene	C2-v1	7.74E-06	8.22E-06	1.49E-05	5.34E-07	lbs/Mgal	3	72.06	49.94	0.42
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(a)pyrene	C3-v1	8.03E-06	9.50E-06	1.25E-05	5.34E-07	lbs/Mgal	2	60.41	48.34	0.24
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(b)fluoranthene	C3-v1	7.11E-06	4.27E-06	1.60E-05	1.07E-06	lbs/Mgal	1	110.57	125.12	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(b+k)fluoranthene	C3-v0	1.20E-05	1.19E-05	1.25E-05	1.15E-05	lbs/Mgal	1	4.07	4.61	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(g,h,i)perylene	C3-v1	7.76E-06	8.96E-06	1.25E-05	1.07E-06	lbs/Mgal	2	63.37	50.71	0.21
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(k)fluoranthene	C3-v0	6.05E-07	5.34E-07	1.07E-06	2.13E-07	lbs/Mgal	1	71.32	80.70	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Chrysene	C2-v1	1.12E-05	1.15E-05	3.45E-05	1.07E-06	lbs/Mgal	3	93.50	61.09	0.64
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Dibenz(a,h)anthracene	C3-v1	7.94E-06	9.50E-06	1.25E-05	1.07E-06	lbs/Mgal	2	61.45	49.17	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Fluoranthene	C2-v1	1.31E-05	1.15E-05	5.23E-05	1.07E-06	lbs/Mgal	3	116.13	75.87	0.70
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Fluorene	C2-v1	1.42E-05	7.13E-06	4.59E-05	1.07E-06	lbs/Mgal	3	116.91	76.38	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	7.94E-06	1.00E-05	1.25E-05	1.07E-06	lbs/Mgal	2	64.32	51.47	0.22
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Naphthalene	C2-v0	7.96E-04	4.51E-04	1.62E-03	2.12E-04	lbs/Mgal	3	81.32	56.35	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Phenanthrene	C2-v1	2.49E-05	6.99E-06	1.62E-04	2.20E-06	lbs/Mgal	3	208.44	136.18	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Pyrene	C2-v1	1.27E-05	1.25E-05	7.22E-05	1.07E-06	lbs/Mgal	3	95.89	62.64	0.82
SG, Crude Oil/I	31000413	SO2 Scrub	None	SVOC	Benzaldehyde	A3-v0	7.03E-03	7.27E-03	7.34E-03	6.49E-03	lbs/Mgal	1	6.71	7.60	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Acetaldehyde	A3-v0	2.67E-03	2.16E-03	5.10E-03	1.18E-03	lbs/Mgal	2	52.69	34.42	0.54
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Acrolein	A3-v0	1.78E-03	4.99E-04	4.53E-03	4.99E-04	lbs/Mgal	2	108.34	70.78	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Benzene	B3-v0	6.13E-04	6.60E-04	9.90E-04	3.00E-04	lbs/Mgal	2	44.18	28.86	0.36
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Formaldehyde	A3-v0	9.44E-04	8.09E-04	1.64E-03	4.05E-04	lbs/Mgal	2	52.64	34.39	0.44
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Propylene	B3-v1	5.80E-02	1.87E-03	1.70E-01	1.87E-03	lbs/Mgal	2	145.15	94.83	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Toluene	B3-v0	3.56E-03	2.05E-03	1.16E-02	2.05E-03	lbs/Mgal	2	88.54	57.84	0.74
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Xylene (Total)	B3-v1	3.29E-03	4.72E-03	4.72E-03	4.29E-04	lbs/Mgal	2	65.22	42.61	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Acetaldehyde	A3-v0	1.56E-02	1.57E-02	1.66E-02	1.44E-02	lbs/MMcf	1	7.27	8.22	1.00
SG, Natural Gas/I	31000414	None	None	VOC	Acrolein	A3-v0	1.84E-02	1.75E-02	2.22E-02	1.55E-02	lbs/MMcf	1	18.73	21.19	1.00
SG, Natural Gas/I	31000414	None	None	VOC	Benzene	B3-v0	3.86E-03	3.87E-03	3.88E-03	3.83E-03	lbs/MMcf	2	0.57	0.46	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Formaldehyde	A3-v1	2.95E-02	1.83E-02	9.16E-02	3.96E-03	lbs/MMcf	2	111.23	89.00	1.00
SG, Natural Gas/I	31000414	None	None	VOC	Propylene	C3-v0	1.09E-01	1.09E-01	1.09E-01	1.09E-01	lbs/MMcf	1	0.36	0.41	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Toluene	B3-v0	1.20E-02	1.20E-02	1.20E-02	1.19E-02	lbs/MMcf	2	0.57	0.46	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Xylene (Total)	B3-v0	2.76E-02	2.76E-02	2.77E-02	2.74E-02	lbs/MMcf	2	0.57	0.46	0.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Acenaphthene	A3-v0	1.04E-06	7.23E-07	2.38E-06	4.12E-07	lbs/MMcf	2	69.67	55.75	0.72
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Acenaphthylene	A3-v1	2.70E-06	6.70E-07	1.03E-05	4.12E-07	lbs/MMcf	2	144.60	115.70	0.85
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Anthracene	A3-v0	2.09E-06	2.28E-06	3.82E-06	4.12E-07	lbs/MMcf	2	62.45	49.97	0.97
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(a)anthracene	A3-v0	1.22E-06	1.12E-06	2.16E-06	6.82E-07	lbs/MMcf	2	40.32	32.26	0.45
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(a)pyrene	A3-v0	6.86E-07	6.46E-07	1.33E-06	3.98E-07	lbs/MMcf	2	49.51	39.61	0.32
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(b)fluoranthene	A3-v0	2.00E-06	9.18E-07	4.78E-06	6.36E-07	lbs/MMcf	2	95.49	76.41	0.84
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	9.80E-07	6.70E-07	1.75E-06	4.12E-07	lbs/MMcf	2	61.38	49.11	0.59
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(k)fluoranthene	A3-v0	8.21E-07	6.70E-07	1.39E-06	4.12E-07	lbs/MMcf	2	44.95	35.97	0.52
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Chrysene	A3-v0	1.55E-06	1.83E-06	2.16E-06	6.82E-07	lbs/MMcf	2	38.63	30.91	0.33
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	5.30E-07	5.24E-07	6.82E-07	3.96E-07	lbs/MMcf	2	26.65	21.32	0.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Fluoranthene	A3-v0	3.66E-06	1.71E-06	9.03E-06	1.01E-06	lbs/MMcf	2	98.55	78.86	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Fluorene	A3-v0	5.63E-06	2.47E-06	1.30E-05	1.77E-06	lbs/MMcf	2	95.48	76.40	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	1.17E-06	6.70E-07	2.38E-06	4.12E-07	lbs/MMcf	2	76.13	60.92	0.66
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Naphthalene	A3-v0	2.89E-04	2.24E-04	5.54E-04	1.50E-04	lbs/MMcf	2	56.04	44.84	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Phenanthrene	A3-v0	1.64E-05	1.21E-05	3.17E-05	6.59E-06	lbs/MMcf	2	64.15	51.33	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Pyrene	A3-v1	6.00E-06	2.78E-06	1.74E-05	8.19E-07	lbs/MMcf	2	109.69	87.77	1.00
SG, Natural/CVR Gas/I	31000499	None	None	SVOC	Ethylbenzene	A3-v0	9.22E-03	7.34E-03	1.86E-02	3.69E-03	lbs/MMcf	2	55.96	44.77	0.54
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Acetaldehyde	A2-v0	1.12E-02	1.02E-02	2.67E-02	5.02E-03	lbs/MMcf	4	55.73	31.53	0.84
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Acrolein	A2-v0	1.05E-02	1.07E-02	1.82E-02	5.02E-03	lbs/MMcf	4	37.86	21.42	0.88
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Benzene	B1-v0	3.33E-03	2.68E-03	6.21E-03	2.36E-03	lbs/MMcf	5	44.41	22.47	0.00
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Formaldehyde	A2-v1	1.58E-02	9.51E-03	7.01E-02	5.02E-03	lbs/MMcf	4	117.82	66.66	0.70
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Hydrogen Sulfide	C3-v0	1.48E-01	1.43E-01	2.28E-01	7.39E-02	lbs/MMcf	1	51.99	58.83	1.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Propylene	C2-v1	1.83E-01	7.80E-02	6.30E-01	6.71E-03	lbs/MMcf	4	117.13	66.27	0.72
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Toluene	B1-v0	1.37E-02	9.47E-03	3.08E-02	7.33E-03	lbs/MMcf	5	59.41	30.07	0.64
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Xylene (Total)	B1-v0	1.85E-02	1.70E-02	4.03E-02	1.11E-02	lbs/MMcf	5	36.66	18.55	0.23
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Acenaphthene	A3-v0	3.39E-06	2.11E-06	8.87E-06	1.26E-06	lbs/MMcf	2	88.62	70.91	0.67
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Acenaphthylene	A3-v0	3.00E-06	2.87E-06	5.78E-06	1.26E-06	lbs/MMcf	2	56.64	45.32	0.54
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Anthracene	A3-v1	3.52E-05	7.45E-06	1.53E-04	3.77E-06	lbs/MMcf	2	167.76	134.23	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(a)anthracene	A3-v0	2.89E-06	2.39E-06	5.89E-06	1.84E-06	lbs/MMcf	2	53.67	42.94	0.34
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(b)fluoranthene	A3-v0	2.13E-06	2.09E-06	3.17E-06	1.26E-06	lbs/MMcf	2	43.24	34.60	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(k)fluoranthene	A3-v0	3.40E-06	2.87E-06	8.93E-06	1.26E-06	lbs/MMcf	2	83.26	66.62	0.44
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(g,h,i)perylene	A3-v0	2.47E-06	2.87E-06	3.31E-06	1.26E-06	lbs/MMcf	2	37.62	30.10	0.22
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(k)fluoranthene	A3-v0	2.67E-06	2.87E-06	4.54E-06	1.26E-06	lbs/MMcf	2	46.39	37.12	0.28
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Chrysene	A3-v0	5.08E-06	5.99E-06	6.34E-06	2.89E-06	lbs/MMcf	2	31.73	25.39	0.31
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Dibenz(a,h)anthracene	A3-v0	2.13E-06	2.09E-06	3.17E-06	1.26E-06	lbs/MMcf	2	43.24	34.60	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Fluoranthene	A3-v0	1.20E-05	1.21E-05	1.74E-05	5.78E-06	lbs/MMcf	2	36.16	28.93	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Fluorene	A3-v0	1.55E-05	1.42E-05	3.17E-05	8.05E-06	lbs/MMcf	2	54.85	43.89	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.38E-06	2.82E-06	3.17E-06	1.26E-06	lbs/MMcf	2	35.90	28.73	0.20
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Naphthalene	A3-v0	7.51E-04	8.01E-04	9.51E-04	4.56E-04	lbs/MMcf	2	28.73	22.99	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Phenanthrene	A3-v0	6.71E-05	4.95E-05	1.46E-04	2.62E-05	lbs/MMcf	2	64.08	51.28	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Pyrene	A3-v0	2.31E-05	2.09E-05	4.23E-05	5.78E-06	lbs/MMcf	2	63.17	50.55	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	SVOC	Ethylbenzene	A3-v0	1.53E-02	1.52E-02	2.20E-02	9.49E-03	lbs/MMcf	2	40.90	32.72	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Acetaldehyde	A3-v0	3.96E-02	4.76E-02	5.38E-02	1.73E-02	lbs/MMcf	1	49.40	55.90	0.85
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Acrolein	A3-v0	1.81E-02	1.81E-02	1.82E-02	1.79E-02	lbs/MMcf	1	0.68	0.77	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Benzene	A3-v0	1.24E-02	1.23E-02	1.83E-02	6.96E-03	lbs/MMcf	2	47.07	37.67	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Formaldehyde	A3-v0	2.09E-02	1.73E-02	2.81E-02	1.73E-02	lbs/MMcf	1	29.80	33.72	0.45
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Propylene	A3-v0	1.71E+00	1.68E+00	2.00E+00	1.46E+00	lbs/MMcf	1	15.66	17.72	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Toluene	A3-v1	7.17E-02	5.89E-02	1.68E-01	8.22E-03	lbs/MMcf	2	88.92	71.15	0.98
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Xylene (Total)	A3-v0	3.63E-02	4.11E-02	6.26E-02	9.70E-03	lbs/MMcf	2	52.17	41.75	0.38
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Acenaphthene	A3-v0	3.39E-06	2.11E-06	8.87E-06	1.26E-06	lbs/MMcf	2	88.62	70.91	0.67
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Acenaphthylene	A3-v0	3.00E-06	2.87E-06	5.78E-06	1.26E-06	lbs/MMcf	2	56.64	45.32	0.54
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Anthracene	A3-v1	3.52E-05	7.45E-06	1.53E-04	3.77E-06	lbs/MMcf	2	167.76	134.23	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(a)anthracene	A3-v0	2.89E-06	2.39E-06	5.89E-06	1.84E-06	lbs/MMcf	2	53.67	42.94	0.34
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(b)fluoranthene	A3-v0	2.13E-06	2.09E-06	3.17E-06	1.26E-06	lbs/MMcf	2	43.24	34.60	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(k)fluoranthene	A3-v0	3.40E-06	2.87E-06	8.93E-06	1.26E-06	lbs/MMcf	2	83.26	66.62	0.44
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(g,h,i)perylene	A3-v0	2.47E-06	2.87E-06	3.31E-06	1.26E-06	lbs/MMcf	2	37.62	30.10	0.22
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(k)fluoranthene	A3-v0	2.67E-06	2.87E-06	4.54E-06	1.26E-06	lbs/MMcf	2	46.39	37.12	0.28
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Chrysene	A3-v0	5.08E-06	5.99E-06	6.34E-06	2.89E-06	lbs/MMcf	2	31.73	25.39	0.31
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Dibenz(a,h)anthracene	A3-v0	2.13E-06	2.09E-06	3.17E-06	1.26E-06	lbs/MMcf	2	43.24	34.60	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Fluoranthene	A3-v0	1.20E-05	1.21E-05	1.74E-05	5.78E-06	lbs/MMcf	2	36.16	28.93	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Fluorene	A3-v0	1.55E-05	1.42E-05	3.17E-05	8.05E-06	lbs/MMcf	2	54.85	43.89	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.38E-06	2.82E-06	3.17E-06	1.26E-06	lbs/MMcf	2	35.90	28.73	0.20
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Naphthalene	A3-v0	7.51E-04	8.01E-04	9.51E-04	4.56E-04	lbs/MMcf	2	28.73	22.99	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Phenanthrene	A3-v0	6.71E-05	4.95E-05	1.46E-04	2.62E-05	lbs/MMcf	2	64.08	51.28	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Pyrene	A3-v0	2.31E-05	2.09E-05	4.23E-05	5.78E-06	lbs/MMcf	2	63.17	50.55	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	SVOC	Ethylbenzene	A3-v0	1.53E-02	1.52E-02	2.20E-02	9.49E-03	lbs/MMcf	2	40.90	32.72	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Acetaldehyde	A3-v0	3.96E-02	4.76E-02	5.38E-02	1.73E-02	lbs/MMcf	1	49.40	55.90	0.85
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Acrolein	A3-v0	1.81E-02	1.81E-02	1.82E-02	1.79E-02	lbs/MMcf	1	0.68	0.77	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Benzene	A3-v0	1.24E-02	1.23E-02	1.83E-02	6.96E-03	lbs/MMcf	2	47.07	37.67	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Turbine, Natural Gas/1	20200203	SCR/COC	No Duct Burners	VOC	Formaldehyde	A3-v0	2.09E-02	1.73E-02	2.81E-02	1.73E-02	lbs/MMcf	1	29.80	33.72	0.45
Turbine, Natural Gas/1	20200203	SCR/COC	No Duct Burners	VOC	Propylene	A3-v0	1.71E+00	1.68E+00	2.00E+00	1.46E+00	lbs/MMcf	1	15.66	17.72	1.00
Turbine, Natural Gas/1	20200203	SCR/COC	No Duct Burners	VOC	Toluene	A3-v1	1.71E-02	5.89E-02	1.68E-01	8.22E-03	lbs/MMcf	2	88.92	71.15	0.98
Turbine, Natural Gas/1	20200203	SCR/COC	No Duct Burners	VOC	Xylene (Total)	A3-v0	3.63E-02	4.11E-02	6.26E-02	9.70E-03	lbs/MMcf	2	52.17	41.75	0.38
Turbine, Natural Gas/2	20200203	SCR	Duct Burners	VOC	Formaldehyde	C3-v0	6.22E+00	6.09E+00	6.87E+00	5.71E+00	lbs/MMcf	1	9.57	10.83	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Cadmium	C3-v0	2.08E-03	1.06E-03	4.16E-03	1.03E-03	lbs/MMcf	1	86.47	97.85	0.67
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Chromium (Hex)	C3-v0	7.46E-03	7.08E-03	1.50E-02	1.53E-03	lbs/MMcf	2	83.96	67.18	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Chromium (Total)	C3-v1	5.35E-02	3.36E-02	1.84E-01	1.51E-02	lbs/MMcf	2	121.46	97.19	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Copper	A3-v0	1.89E-03	1.98E-03	2.64E-03	1.04E-03	lbs/MMcf	1	42.72	48.34	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Manganese	A3-v0	3.49E-03	2.36E-03	6.79E-03	1.32E-03	lbs/MMcf	1	83.26	94.21	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Mercury	A3-v0	4.63E-03	4.01E-03	8.27E-03	2.55E-03	lbs/MMcf	2	51.31	41.05	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Nickel	C3-v0	8.18E-03	6.79E-03	1.43E-02	3.40E-03	lbs/MMcf	1	68.51	77.52	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	Metals	Zinc	A3-v0	1.65E-02	1.56E-02	1.93E-02	1.45E-02	lbs/MMcf	1	15.37	17.39	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Acenaphthene	C3-v0	2.37E-05	2.15E-05	3.82E-05	1.15E-05	lbs/MMcf	1	56.84	64.32	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Acenaphthylene	C3-v0	1.15E-05	1.29E-05	1.32E-05	8.53E-06	lbs/MMcf	1	22.70	25.68	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Anthracene	C3-v0	2.66E-05	2.43E-05	3.66E-05	1.89E-05	lbs/MMcf	1	34.03	38.51	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Benzo(a)anthracene	C3-v1	1.60E-05	3.47E-06	4.15E-05	3.03E-06	lbs/MMcf	1	138.05	156.22	0.86
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Benzo(a)pyrene	C3-v0	1.02E-05	1.05E-05	1.36E-05	6.63E-06	lbs/MMcf	1	34.09	38.57	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Benzo(b)fluoranthene	C3-v0	2.69E-05	3.19E-05	3.44E-05	1.45E-05	lbs/MMcf	1	40.14	45.42	0.82
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Benzo(g,h,i)perylene	C3-v0	2.06E-05	2.00E-05	2.71E-05	1.45E-05	lbs/MMcf	1	30.62	34.65	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Benzo(k)fluoranthene	C3-v0	1.34E-05	1.21E-05	2.00E-05	8.05E-06	lbs/MMcf	1	45.53	51.52	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Chrysene	C3-v0	1.16E-04	6.85E-05	2.43E-04	3.47E-05	lbs/MMcf	1	96.95	109.70	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Dibenz(a,h)anthracene	C3-v0	7.10E-06	8.12E-06	8.59E-06	4.58E-06	lbs/MMcf	1	30.92	34.99	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Fluorene	C3-v0	1.06E-04	1.07E-04	1.58E-04	5.53E-05	lbs/MMcf	1	48.01	54.33	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	1.90E-04	8.02E-05	4.46E-04	4.26E-05	lbs/MMcf	1	117.53	132.99	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Naphthalene	C3-v0	9.83E-06	1.06E-05	1.18E-05	7.10E-06	lbs/MMcf	1	24.76	28.02	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Phenanthrene	C3-v0	4.02E-02	3.98E-02	4.30E-02	3.79E-02	lbs/MMcf	1	6.36	7.20	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	PAH	Pyrene	C3-v0	6.85E-04	5.53E-04	9.72E-04	5.30E-04	lbs/MMcf	1	36.34	41.12	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	SVOC	Phenol	C3-v0	1.28E-04	1.04E-04	2.29E-04	5.21E-05	lbs/MMcf	1	71.00	80.34	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	VOC	Acetaldehyde	A3-v0	1.53E-02	1.58E-02	1.59E-02	1.43E-02	lbs/MMcf	1	5.81	6.57	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	VOC	Benzene	A3-v0	4.54E-03	3.41E-03	6.83E-03	3.38E-03	lbs/MMcf	1	43.72	49.48	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	VOC	Formaldehyde	C3-v0	1.66E-01	1.68E-01	1.81E-01	1.46E-01	lbs/MMcf	2	9.66	7.73	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	VOC	Hydrogen Sulfide	A3-v0	1.71E-01	9.23E-02	3.42E-01	7.76E-02	lbs/MMcf	1	87.01	98.46	1.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	VOC	Toluene	A3-v0	1.65E-01	1.64E-01	1.72E-01	1.59E-01	lbs/MMcf	1	4.20	4.76	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	VOC	Xylene (Total)	E3-v0	1.79E-01	1.78E-01	1.87E-01	1.72E-01	lbs/MMcf	1	4.37	4.94	0.00
Turbine, Natural/Ref. Gas/1	20200299	SCR/COC	Duct Burners	VOC	Arsenic	E3-v0	4.13E-01	4.14E-01	4.15E-01	4.11E-01	lbs/MMcf	1	0.50	0.56	0.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Beryllium	B3-v0	1.70E-02	1.71E-02	1.79E-02	1.61E-02	lbs/MMcf	1	5.27	5.96	0.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Cadmium	B3-v0	3.40E-03	3.43E-03	3.57E-03	3.21E-03	lbs/MMcf	1	5.28	5.97	0.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Copper	B3-v0	7.41E-03	6.85E-03	8.94E-03	6.44E-03	lbs/MMcf	1	18.06	20.43	0.40
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Lead	B3-v0	4.08E-02	1.88E-02	8.74E-02	1.61E-02	lbs/MMcf	1	99.07	112.11	0.87
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Manganese	B3-v0	6.82E-02	6.85E-02	7.16E-02	6.44E-02	lbs/MMcf	1	5.25	5.94	0.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Nickel	B3-v0	1.75E-01	9.89E-02	3.71E-01	5.58E-02	lbs/MMcf	1	97.56	110.40	1.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Selenium	B3-v0	2.78E-01	9.70E-02	6.60E-01	7.79E-02	lbs/MMcf	1	118.86	134.50	1.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Zinc	B3-v0	1.70E-02	1.71E-02	1.79E-02	1.61E-02	lbs/MMcf	1	5.27	5.96	0.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	SVOC	Phenol	B3-v0	4.12E-01	4.08E-01	6.80E-01	1.47E-01	lbs/MMcf	1	64.69	73.20	1.00
Turbine, Natural/Ref. L/P Gas/1	20200299	SCR/COC	Duct Burners	Metals	Arsenic	C3-v1	5.80E-02	2.31E-02	1.45E-01	5.55E-03	lbs/MMcf	1	131.32	148.60	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Arsenic	B3-v0	4.09E-03	4.15E-03	4.18E-03	3.95E-03	lbs/MMcf	1	3.09	3.49	0.00

TABLE 20. EMISSION FACTORS SCC UNITS.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Beryllium	B3-v0	2.05E-03	2.08E-03	2.08E-03	1.98E-03	lbs/MMcf	1	2.78	3.14	0.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Cadmium	B3-v0	7.41E-03	5.21E-03	1.29E-02	4.15E-03	lbs/MMcf	1	64.24	72.70	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Chromium (Hex)	C3-v0	2.04E-03	2.04E-03	2.05E-03	2.02E-03	lbs/MMcf	1	0.70	0.79	0.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Chromium (Total)	C3-v0	1.84E-02	1.01E-02	3.93E-02	5.93E-03	lbs/MMcf	1	98.65	111.63	0.82
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Copper	B3-v0	5.78E-02	5.49E-02	9.72E-02	2.12E-02	lbs/MMcf	1	65.90	74.57	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Lead	B3-v0	3.99E-02	4.15E-02	4.18E-02	3.64E-02	lbs/MMcf	1	7.62	8.62	0.30
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Manganese	B3-v0	1.80E-01	1.45E-01	3.40E-01	5.55E-02	lbs/MMcf	1	80.76	91.39	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Mercury	A3-v0	2.15E-02	1.55E-02	3.63E-02	1.27E-02	lbs/MMcf	1	59.94	67.83	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Nickel	B3-v0	2.33E-01	2.64E-01	2.86E-01	1.48E-01	lbs/MMcf	1	31.93	36.13	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Selenium	B3-v0	5.42E-03	4.18E-03	7.93E-03	4.15E-03	lbs/MMcf	1	40.11	45.39	0.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	Metals	Zinc	B3-v0	6.99E+00	8.23E+00	9.17E+00	3.56E+00	lbs/MMcf	1	42.95	48.60	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	SVOC	Phenol	C3-v0	9.41E-03	5.99E-03	1.72E-02	5.07E-03	lbs/MMcf	1	71.54	80.95	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Acetaldehyde	C3-v0	2.18E-02	2.22E-02	2.65E-02	1.67E-02	lbs/MMcf	1	22.53	25.49	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Benzene	C3-v0	1.49E-01	1.51E-01	1.53E-01	1.44E-01	lbs/MMcf	1	3.34	3.78	0.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Formaldehyde	C3-v0	8.41E-01	8.36E-01	8.90E-01	7.97E-01	lbs/MMcf	1	5.57	6.31	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Hydrogen Sulfide	A3-v0	1.63E-01	1.64E-01	1.67E-01	1.58E-01	lbs/MMcf	1	3.06	3.46	0.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Toluene	E3-v1	1.09E+00	4.34E-01	2.58E+00	2.56E-01	lbs/MMcf	1	118.63	134.23	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Xylene (Total)	E3-v1	3.14E+00	3.39E-01	8.85E+00	2.33E-01	lbs/MMcf	1	157.44	178.16	1.00

Det Ratio: Ratio of detected values to the sum of detected and nondetected values.

RSD: 100 times the standard deviation divided by the arithmetic average.

Uncertainty: 100 times the 95% confidence interval divided by the arithmetic average.

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Asphalt Blowing/1	30601101	TO	Blow Cycle	Halogens	HCl	C3-v-	2.08E-06	2.08E-06	2.08E-06	2.08E-06	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Arsenic	D3-v-	1.23E-05	1.23E-05	1.23E-05	1.23E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Beryllium	D3-v-	2.47E-06	2.47E-06	2.47E-06	2.47E-06	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Cadmium	D3-v-	4.94E-06	4.94E-06	4.94E-06	4.94E-06	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Chromium (Hex)	C3-v-	2.99E-06	2.99E-06	2.99E-06	2.99E-06	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Chromium (Total)	C3-v-	3.94E-05	3.94E-05	3.94E-05	3.94E-05	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Copper	D3-v-	4.47E-05	4.47E-05	4.47E-05	4.47E-05	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Lead	D3-v-	4.94E-05	4.94E-05	4.94E-05	4.94E-05	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Manganese	D3-v-	1.16E-04	1.16E-04	1.16E-04	1.16E-04	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Mercury	A3-v-	8.53E-06	8.53E-06	8.53E-06	8.53E-06	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Nickel	D3-v-	6.26E-05	6.26E-05	6.26E-05	6.26E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Selenium	D3-v-	1.23E-05	1.23E-05	1.23E-05	1.23E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	Metals	Zinc	D3-v-	7.91E-04	7.91E-04	7.91E-04	7.91E-04	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	SVOC	Ethylbenzene	E3-v-	8.10E-04	8.10E-04	8.10E-04	8.10E-04	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	SVOC	Phenol	C3-v-	7.12E-05	7.12E-05	7.12E-05	7.12E-05	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Acetaldehyde	C3-v-	1.67E-06	1.67E-06	1.67E-06	1.67E-06	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Benzene	E3-v-	2.98E-04	2.98E-04	2.98E-04	2.98E-04	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Formaldehyde	C3-v-	3.34E-06	3.34E-06	3.34E-06	3.34E-06	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Hydrogen Sulfide	A3-v-	1.95E-03	1.95E-03	1.95E-03	1.95E-03	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/1	30601101	TO	Blow Cycle	VOC	Xylene (Total)	E3-v-	8.10E-04	8.10E-04	8.10E-04	8.10E-04	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Halogens	HCl	C3-v-	7.74E-07	7.74E-07	7.74E-07	7.74E-07	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Arsenic	D3-v-	1.09E-05	1.09E-05	1.09E-05	1.09E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Beryllium	D3-v-	2.19E-06	2.19E-06	2.19E-06	2.19E-06	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Cadmium	D3-v-	4.37E-06	4.37E-06	4.37E-06	4.37E-06	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Chromium (Hex)	C3-v-	3.09E-06	3.09E-06	3.09E-06	3.09E-06	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Chromium (Total)	C3-v-	1.34E-05	1.34E-05	1.34E-05	1.34E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Copper	D3-v-	3.56E-05	3.56E-05	3.56E-05	3.56E-05	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Lead	D3-v-	4.38E-05	4.38E-05	4.38E-05	4.38E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Manganese	D3-v-	1.95E-04	1.95E-04	1.95E-04	1.95E-04	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Mercury	A3-v-	8.03E-06	8.03E-06	8.03E-06	8.03E-06	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Nickel	D3-v-	5.65E-05	5.65E-05	5.65E-05	5.65E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Selenium	D3-v-	1.09E-05	1.09E-05	1.09E-05	1.09E-05	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	Metals	Zinc	D3-v-	5.04E-04	5.04E-04	5.04E-04	5.04E-04	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	SVOC	Ethylbenzene	E3-v-	7.17E-04	7.17E-04	7.17E-04	7.17E-04	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	SVOC	Phenol	C3-v-	4.37E-05	4.37E-05	4.37E-05	4.37E-05	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Acetaldehyde	C3-v-	4.07E-06	4.07E-06	4.07E-06	4.07E-06	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Benzene	E3-v-	2.64E-04	2.64E-04	2.64E-04	2.64E-04	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Formaldehyde	C3-v-	1.22E-05	1.22E-05	1.22E-05	1.22E-05	lb/MMBtu	1	0.00	0.00	1.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Hydrogen Sulfide	A3-v-	1.73E-03	1.73E-03	1.73E-03	1.73E-03	lb/MMBtu	1	0.00	0.00	0.00
Asphalt Blowing/2	30601101	TO	No Blow Cycle	VOC	Xylene (Total)	E3-v-	7.17E-04	7.17E-04	7.17E-04	7.17E-04	lb/MMBtu	1	0.00	0.00	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:4D 2378	C3-v0	4.31E-12	3.88E-12	5.32E-12	3.71E-12	lb/MMBtu	1	20.50	23.20	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:5D 12378	C3-v0	2.50E-12	1.86E-12	3.88E-12	1.77E-12	lb/MMBtu	1	47.67	53.94	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:6D 123478	C3-v0	2.50E-12	1.86E-12	3.88E-12	1.77E-12	lb/MMBtu	1	47.67	53.94	0.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:6D 123678	C3-v0	2.50E-12	1.86E-12	3.88E-12	1.77E-12	lb/MMBtu	1	47.67	53.94	0.25
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:6D 123789	C3-v0	2.50E-12	1.86E-12	3.88E-12	1.77E-12	lb/MMBtu	1	47.67	53.94	0.25
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:7D 1234678	C3-v0	2.12E-11	1.94E-11	3.53E-11	8.87E-12	lb/MMBtu	1	62.77	71.03	1.00
Boiler, Fuel Oil/1	10200403	None	None	Dioxin/Furan	Dioxin:8D	C3-v0	5.10E-10	5.63E-10	8.36E-10	1.31E-10	lb/MMBtu	1	69.66	78.83	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-4F 2378	C3-v0	5.54E-12	5.32E-12	7.43E-12	3.88E-12	lb/MMBtu	1	32.18	36.42	1.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-5F 12378	C3-v0	3.12E-12	3.71E-12	3.88E-12	1.77E-12	lb/MMBtu	1	37.52	42.46	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-5F 23478	C3-v0	3.12E-12	3.71E-12	3.88E-12	1.77E-12	lb/MMBtu	1	37.52	42.46	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 123478	C3-v0	2.48E-12	1.94E-12	3.71E-12	1.77E-12	lb/MMBtu	1	43.44	49.15	0.50
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 123678	C3-v0	1.86E-12	1.86E-12	1.94E-12	1.77E-12	lb/MMBtu	1	4.51	5.10	0.33
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 123789	C3-v0	2.50E-12	1.86E-12	3.88E-12	1.77E-12	lb/MMBtu	1	47.67	53.94	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-6F 234678	C3-v0	3.74E-12	3.88E-12	5.57E-12	1.77E-12	lb/MMBtu	1	50.85	57.54	0.50
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-7F 1234678	C3-v0	9.79E-12	7.76E-12	1.42E-11	7.43E-12	lb/MMBtu	1	38.89	44.01	1.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-7F 1234789	C3-v0	3.15E-12	1.86E-12	5.82E-12	1.77E-12	lb/MMBtu	1	73.43	83.10	0.00
Boiler, Fuel Oil/I	10200403	None	None	Dioxin/Furan	Furan-8F	C3-v0	4.86E-11	4.85E-11	7.06E-11	2.66E-11	lb/MMBtu	1	45.27	51.23	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Arsenic	B3-v0	9.76E-06	9.76E-06	1.14E-05	8.10E-06	lb/MMBtu	1	17.00	19.24	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Beryllium	B3-v0	4.28E-07	4.32E-07	4.78E-07	3.74E-07	lb/MMBtu	1	12.22	13.83	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Cadmium	B3-v0	5.82E-06	4.47E-06	8.58E-06	4.40E-06	lb/MMBtu	1	41.15	46.57	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Chromium (Hex)	A3-v0	7.82E-06	7.85E-06	8.20E-06	7.43E-06	lb/MMBtu	1	4.95	5.60	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Chromium (Total)	A3-v0	3.28E-05	3.52E-05	3.98E-05	2.34E-05	lb/MMBtu	1	25.70	29.08	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Copper	B3-v0	2.62E-05	1.37E-05	5.89E-05	6.07E-06	lb/MMBtu	1	108.86	123.19	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Lead	B3-v0	1.06E-05	5.84E-06	2.26E-05	3.32E-06	lb/MMBtu	1	98.91	111.92	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Manganese	B3-v0	3.93E-05	1.92E-05	8.29E-05	1.63E-05	lb/MMBtu	1	95.34	107.89	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Mercury	B3-v0	7.02E-08	6.15E-08	1.00E-07	4.89E-08	lb/MMBtu	1	38.06	43.07	0.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Nickel	B3-v0	2.27E-03	2.08E-03	2.76E-03	1.97E-03	lb/MMBtu	1	18.95	21.44	1.00
Boiler, Fuel Oil/I	10200403	None	None	Metals	Selenium	B3-v0	1.96E-05	2.44E-05	2.45E-05	9.83E-06	lb/MMBtu	1	43.13	48.81	0.17
Boiler, Fuel Oil/I	10200403	None	None	Metals	Zinc	B3-v0	1.09E-04	5.86E-05	2.10E-04	5.82E-05	lb/MMBtu	1	80.41	90.99	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Acenaphthene	B3-v0	6.00E-09	5.71E-09	1.06E-08	2.14E-09	lb/MMBtu	2	69.26	55.42	0.87
Boiler, Fuel Oil/I	10200403	None	None	PAH	Acenaphthylene	B3-v0	2.09E-09	2.16E-09	2.29E-09	1.59E-09	lb/MMBtu	2	12.32	9.86	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Anthracene	B3-v1	2.07E-09	1.83E-09	4.76E-09	1.29E-10	lb/MMBtu	2	98.24	78.60	0.94
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(a)anthracene	B3-v1	1.32E-09	1.44E-09	2.29E-09	2.03E-10	lb/MMBtu	2	77.09	61.68	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(a)pyrene	B3-v0	1.36E-09	1.46E-09	2.29E-09	3.13E-10	lb/MMBtu	2	71.84	57.48	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(b)fluoranthene	B3-v0	8.11E-09	6.77E-09	1.60E-08	2.14E-09	lb/MMBtu	2	75.81	60.66	0.40
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(e)pyrene	B3-v0	5.80E-09	7.00E-09	7.60E-09	2.80E-09	lb/MMBtu	1	45.15	51.09	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(g,h,i)perylene	B3-v0	6.72E-09	5.69E-09	1.50E-08	2.14E-09	lb/MMBtu	2	79.36	63.50	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Benzo(k)fluoranthene	B3-v1	1.34E-09	1.55E-09	2.29E-09	2.03E-10	lb/MMBtu	2	75.32	60.26	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Chrysene	B3-v0	2.62E-08	2.19E-08	5.83E-08	7.46E-09	lb/MMBtu	2	80.59	64.48	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Dibenz(a,h)anthracene	B3-v1	4.73E-09	2.20E-09	1.82E-08	1.41E-09	lb/MMBtu	2	139.45	111.58	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Fluoranthene	B3-v1	5.25E-08	4.14E-08	1.12E-07	5.97E-09	lb/MMBtu	2	89.14	71.33	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Fluorene	B3-v1	3.14E-08	3.10E-08	5.76E-08	5.73E-09	lb/MMBtu	2	84.62	67.71	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Indeno(1,2,3-cd)pyrene	B3-v0	3.05E-09	2.28E-09	5.32E-09	1.97E-09	lb/MMBtu	2	46.19	36.96	0.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Naphthalene	B3-v0	4.04E-07	4.11E-07	5.52E-07	2.73E-07	lb/MMBtu	2	28.11	22.49	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Phenanthrene	B3-v0	7.39E-08	7.35E-08	1.35E-07	2.11E-08	lb/MMBtu	2	60.02	48.02	1.00
Boiler, Fuel Oil/I	10200403	None	None	PAH	Pyrene	B3-v1	2.72E-08	1.58E-08	7.37E-08	2.26E-09	lb/MMBtu	2	110.83	88.68	0.97
Boiler, Fuel Oil/I	10200403	None	None	SVOC	2-Chloronaphthalene	C3-v0	1.54E-10	1.58E-10	1.94E-10	1.11E-10	lb/MMBtu	1	27.13	30.70	0.00
Boiler, Fuel Oil/I	10200403	None	None	SVOC	2-Methylnaphthalene	C3-v0	7.40E-08	7.25E-08	8.32E-08	6.63E-08	lb/MMBtu	1	11.52	13.04	1.00
Boiler, Fuel Oil/I	10200403	None	None	SVOC	Perylene	C3-v0	7.44E-10	4.05E-10	1.49E-09	3.32E-10	lb/MMBtu	1	87.56	99.09	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	1,3-Butadiene	B3-v1	4.18E-05	4.04E-05	8.00E-05	5.74E-06	lb/MMBtu	2	94.58	75.68	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Acetaldehyde	A3-v1	6.99E-06	3.33E-06	2.28E-05	1.79E-06	lb/MMBtu	2	117.49	94.01	0.75
Boiler, Fuel Oil/I	10200403	None	None	VOC	Acrolein	A3-v0	1.48E-05	1.19E-05	2.28E-05	9.69E-06	lb/MMBtu	1	47.31	53.53	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Benzene	A3-v0	3.15E-05	3.17E-05	3.24E-05	3.04E-05	lb/MMBtu	1	3.26	3.69	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Chloroform	A3-v0	3.37E-05	3.40E-05	3.47E-05	3.25E-05	lb/MMBtu	1	3.26	3.69	0.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Boiler, Fuel Oil/I	10200403	None	None	VOC	Formaldehyde	A3-v1	4.52E-05	4.72E-05	1.14E-04	1.82E-06	lb/MMBtu	2	92.14	73.72	0.18
Boiler, Fuel Oil/I	10200403	None	None	VOC	Propylene	A3-v0	1.49E-04	1.50E-04	1.53E-04	1.44E-04	lb/MMBtu	1	3.26	3.69	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Toluene	A3-v0	3.91E-05	3.94E-05	4.02E-05	3.77E-05	lb/MMBtu	1	3.26	3.69	0.00
Boiler, Fuel Oil/I	10200403	None	None	VOC	Xylene (Total)	A3-v0	7.51E-05	7.56E-05	7.72E-05	7.24E-05	lb/MMBtu	1	3.26	3.69	0.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Arsenic	D3-v0	5.88E-07	6.46E-07	9.40E-07	1.78E-07	lb/MMBtu	1	65.36	73.95	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Beryllium	D3-v0	1.31E-07	1.31E-07	1.32E-07	1.29E-07	lb/MMBtu	1	1.35	1.87	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Cadmium	D3-v0	2.00E-06	1.70E-06	2.64E-06	1.67E-06	lb/MMBtu	1	27.60	31.23	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Chromium (Hex)	C3-v0	6.32E-06	6.29E-06	8.78E-06	3.89E-06	lb/MMBtu	1	38.70	43.79	0.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Chromium (Total)	C3-v1	1.04E-05	4.51E-06	2.49E-05	1.80E-06	lb/MMBtu	1	121.39	137.36	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Copper	D3-v0	5.32E-06	5.32E-06	6.51E-06	4.13E-06	lb/MMBtu	1	31.59	43.78	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Lead	D3-v0	2.05E-06	2.05E-06	2.10E-06	1.99E-06	lb/MMBtu	1	3.87	5.36	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Manganese	D3-v0	2.02E-06	2.02E-06	2.65E-06	1.38E-06	lb/MMBtu	1	44.52	61.70	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Mercury	D3-v0	2.72E-07	2.69E-07	3.22E-07	2.24E-07	lb/MMBtu	1	18.19	20.58	0.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Nickel	D3-v0	4.72E-06	4.72E-06	5.94E-06	3.51E-06	lb/MMBtu	1	36.33	50.35	1.00
Boiler, Ref. Gas/I	10200701	None	None	Metals	Selenium	D3-v0	1.73E-06	1.99E-06	2.39E-06	8.11E-07	lb/MMBtu	1	47.44	53.68	0.16
Boiler, Ref. Gas/I	10200701	None	None	Metals	Zinc	D3-v2	2.83E-03	3.22E-04	8.10E-03	7.83E-05	lb/MMBtu	1	161.02	182.20	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Acenaphthene	A3-v0	4.90E-09	4.65E-09	5.46E-09	4.59E-09	lb/MMBtu	1	9.89	11.20	0.37
Boiler, Ref. Gas/I	10200701	None	None	PAH	Acenaphthylene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	4.43	5.01	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Anthracene	A3-v0	1.89E-08	2.02E-08	3.28E-08	3.71E-09	lb/MMBtu	1	77.14	87.30	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(a)anthracene	A3-v0	1.53E-08	1.51E-08	2.07E-08	1.01E-08	lb/MMBtu	1	34.78	39.35	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(a)pyrene	A3-v0	2.86E-09	2.84E-09	3.71E-09	2.02E-09	lb/MMBtu	1	29.49	33.37	0.76
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(b)fluoranthene	A3-v0	5.65E-09	6.11E-09	6.99E-09	3.84E-09	lb/MMBtu	1	28.79	32.57	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	3.22E-09	3.28E-09	4.36E-09	2.02E-09	lb/MMBtu	1	36.33	41.11	0.78
Boiler, Ref. Gas/I	10200701	None	None	PAH	Benzo(k)fluoranthene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	4.43	5.01	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Chrysene	A3-v0	2.86E-09	2.19E-09	4.36E-09	2.02E-09	lb/MMBtu	1	45.70	51.71	0.50
Boiler, Ref. Gas/I	10200701	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	4.43	5.01	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Fluoranthene	A3-v0	3.56E-08	2.62E-08	6.11E-08	1.94E-08	lb/MMBtu	1	62.95	71.23	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Fluorene	A3-v0	8.19E-09	4.65E-09	1.53E-08	4.59E-09	lb/MMBtu	1	75.53	85.46	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	4.43	5.01	0.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Naphthalene	A3-v0	1.72E-07	1.63E-07	2.03E-07	1.49E-07	lb/MMBtu	1	16.13	18.25	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Phenanthrene	A3-v0	4.71E-08	3.63E-08	7.43E-08	3.06E-08	lb/MMBtu	1	50.50	57.15	1.00
Boiler, Ref. Gas/I	10200701	None	None	PAH	Pyrene	A3-v0	5.00E-08	4.36E-08	6.99E-08	3.63E-08	lb/MMBtu	1	35.35	40.00	1.00
Boiler, Ref. Gas/I	10200701	None	None	SVOC	Phenol	C2-v0	1.83E-06	7.04E-07	4.91E-06	5.45E-07	lb/MMBtu	4	99.84	56.49	0.85
Boiler, Ref. Gas/I	10200701	None	None	VOC	Acetaldehyde	C1-v3	3.01E-06	2.11E-06	1.01E-05	4.10E-07	lb/MMBtu	5	95.45	48.30	1.00
Boiler, Ref. Gas/I	10200701	None	None	VOC	Benzene	C1-v2	1.74E-04	5.03E-05	1.22E-03	2.86E-06	lb/MMBtu	5	186.11	91.19	0.80
Boiler, Ref. Gas/I	10200701	None	None	VOC	Formaldehyde	C1-v1	1.32E-05	1.16E-05	3.62E-05	2.81E-06	lb/MMBtu	5	66.84	33.82	1.00
Boiler, Ref. Gas/I	10200701	None	None	VOC	Hydrogen Sulfide	A1-v1	2.21E-04	1.69E-04	5.93E-04	5.01E-05	lb/MMBtu	5	92.80	45.47	0.00
Boiler, Ref. Gas/I	10200701	None	None	VOC	Toluene	E2-v2	7.23E-04	7.25E-04	4.37E-03	3.59E-05	lb/MMBtu	3	193.00	126.09	0.97
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Arsenic	D3-v0	5.88E-07	6.46E-07	9.40E-07	1.78E-07	lb/MMBtu	1	65.36	73.95	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Beryllium	D3-v0	1.31E-07	1.31E-07	1.32E-07	1.29E-07	lb/MMBtu	1	1.35	1.87	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Cadmium	D3-v0	2.00E-06	1.70E-06	2.64E-06	1.67E-06	lb/MMBtu	1	27.60	31.23	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Chromium (Hex)	C3-v0	6.32E-06	6.29E-06	8.78E-06	3.89E-06	lb/MMBtu	1	38.70	43.79	0.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Chromium (Total)	C3-v1	1.04E-05	4.51E-06	2.49E-05	1.80E-06	lb/MMBtu	1	121.39	137.36	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Copper	D3-v0	5.32E-06	5.32E-06	6.51E-06	4.13E-06	lb/MMBtu	1	31.59	43.78	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Lead	D3-v0	2.05E-06	2.05E-06	2.10E-06	1.99E-06	lb/MMBtu	1	3.87	5.36	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Manganese	D3-v0	2.02E-06	2.02E-06	2.65E-06	1.38E-06	lb/MMBtu	1	44.52	61.70	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Mercury	D3-v0	2.72E-07	2.69E-07	3.22E-07	2.24E-07	lb/MMBtu	1	18.19	20.58	0.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Nickel	D3-v0	4.72E-06	4.72E-06	5.94E-06	3.51E-06	lb/MMBtu	1	36.33	50.35	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Selenium	D3-v0	1.73E-06	1.99E-06	2.39E-06	8.11E-07	lb/MMBtu	1	47.44	53.68	0.16
Boiler, Ref. Gas/I	10200701	SCR	None	Metals	Zinc	D3-v2	2.83E-03	3.22E-04	8.10E-03	7.83E-05	lb/MMBtu	1	161.02	182.20	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Acenaphthene	A3-v0	4.90E-09	4.65E-09	5.46E-09	4.59E-09	lb/MMBtu	1	9.89	11.20	0.37
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Acenaphthylene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	4.43	5.01	0.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Anthracene	A3-v0	1.89E-08	2.02E-08	3.28E-08	3.71E-09	lb/MMBtu	1	77.14	87.30	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Benzo(a)anthracene	A3-v0	1.53E-08	1.51E-08	2.07E-08	1.01E-08	lb/MMBtu	1	34.78	39.35	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Benzo(a)pyrene	A3-v0	2.86E-09	2.84E-09	3.71E-09	2.02E-09	lb/MMBtu	1	29.49	33.37	0.76
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Benzo(b)fluoranthene	A3-v0	5.65E-09	6.11E-09	6.99E-09	3.84E-09	lb/MMBtu	1	28.79	32.57	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Benzo(k)fluoranthene	A3-v0	3.22E-09	3.28E-09	4.36E-09	2.02E-09	lb/MMBtu	1	36.33	41.11	0.78
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Chrysene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	4.43	5.01	0.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Dibenz(a,h)anthracene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	45.70	51.71	0.50
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Fluoranthene	A3-v0	3.56E-08	2.62E-08	6.11E-08	1.94E-08	lb/MMBtu	1	62.95	71.23	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Fluorene	A3-v0	8.19E-09	4.65E-09	1.53E-08	4.59E-09	lb/MMBtu	1	75.53	85.46	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.13E-09	2.19E-09	2.19E-09	2.02E-09	lb/MMBtu	1	4.43	5.01	0.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Naphthalene	A3-v0	1.72E-07	1.63E-07	2.03E-07	1.49E-07	lb/MMBtu	1	16.13	18.25	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Phenanthrene	A3-v0	4.71E-08	3.63E-08	7.43E-08	3.06E-08	lb/MMBtu	1	50.50	57.15	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	PAH	Pyrene	A3-v0	5.00E-08	4.36E-08	6.99E-08	3.63E-08	lb/MMBtu	1	35.35	40.00	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	SVOC	Phenol	C2-v0	1.83E-06	7.04E-07	4.91E-06	5.45E-07	lb/MMBtu	4	99.84	56.49	0.85
Boiler, Ref. Gas/I	10200701	SCR	None	VOC	Acetaldehyde	C1-v3	3.01E-06	2.11E-06	1.01E-05	4.10E-09	lb/MMBtu	5	95.45	48.30	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	VOC	Benzene	C1-v2	1.74E-04	5.03E-05	1.22E-03	2.86E-06	lb/MMBtu	5	186.11	91.19	0.80
Boiler, Ref. Gas/I	10200701	SCR	None	VOC	Formaldehyde	C1-v1	1.32E-05	1.16E-05	3.62E-05	2.81E-06	lb/MMBtu	5	66.84	33.82	1.00
Boiler, Ref. Gas/I	10200701	SCR	None	VOC	Hydrogen Sulfide	A1-v1	2.21E-04	1.69E-04	5.93E-04	5.01E-05	lb/MMBtu	5	92.80	45.47	0.00
Boiler, Ref. Gas/I	10200701	SCR	None	VOC	Toluene	E2-v2	7.23E-04	7.25E-05	4.37E-03	3.59E-05	lb/MMBtu	3	193.00	126.09	0.97
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:4D 2378	A3-v0	3.68E-11	3.66E-11	4.86E-11	2.51E-11	lb/MMBtu	1	31.88	36.08	0.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:4D Other	A3-v0	4.44E-10	4.14E-10	8.31E-10	8.11E-11	lb/MMBtu	1	83.85	94.88	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:5D 12378	A3-v0	2.92E-11	2.56E-11	3.74E-11	2.47E-11	lb/MMBtu	1	24.24	27.43	0.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:5D Other	A3-v0	2.74E-10	2.83E-10	3.63E-10	1.76E-10	lb/MMBtu	1	34.15	38.64	0.40
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D 123478	A3-v0	3.45E-11	2.57E-11	6.45E-11	1.34E-11	lb/MMBtu	1	77.21	87.37	0.31
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D 123678	A3-v0	4.40E-11	5.23E-11	5.68E-11	2.30E-11	lb/MMBtu	1	41.59	47.07	0.69
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D 123789	A3-v0	4.22E-11	4.16E-11	5.95E-11	2.56E-11	lb/MMBtu	1	40.22	45.52	0.39
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:6D Other	A3-v0	2.06E-10	2.49E-10	2.76E-10	9.42E-11	lb/MMBtu	1	47.47	53.72	0.65
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:7D 1234678	A3-v0	4.19E-10	3.27E-10	6.05E-10	3.27E-10	lb/MMBtu	1	38.30	43.34	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:7D Other	A3-v0	4.09E-10	3.99E-10	5.27E-10	3.02E-10	lb/MMBtu	1	27.59	31.22	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Dioxin:8D	A3-v0	5.25E-09	4.98E-09	7.65E-09	3.12E-09	lb/MMBtu	1	43.40	49.11	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:4F 2378	A3-v0	4.23E-11	4.53E-11	4.85E-11	3.31E-11	lb/MMBtu	1	19.19	21.72	0.70
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:4F Other	A3-v0	4.35E-10	4.51E-10	5.97E-11	2.56E-10	lb/MMBtu	1	39.34	44.51	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:5F 12378	A3-v0	4.42E-11	4.16E-11	5.87E-11	3.23E-11	lb/MMBtu	1	30.36	34.35	0.65
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:5F 23478	A3-v0	4.09E-11	4.07E-11	5.66E-11	2.53E-11	lb/MMBtu	1	38.39	43.44	0.63
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:5F Other	A3-v0	3.76E-10	3.89E-10	4.98E-10	2.42E-10	lb/MMBtu	1	34.21	38.71	0.74
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 123478	A3-v0	7.88E-11	7.53E-11	1.02E-10	5.88E-11	lb/MMBtu	1	27.77	31.43	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 123678	A3-v0	7.11E-11	8.68E-11	9.00E-11	3.65E-11	lb/MMBtu	1	42.25	47.81	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 123789	A3-v0	2.95E-11	3.32E-11	3.68E-11	1.84E-11	lb/MMBtu	1	33.01	37.36	0.67
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:6F 234678	A3-v0	6.50E-11	5.68E-11	8.39E-11	5.43E-11	lb/MMBtu	1	25.28	28.60	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:6F Other	A3-v0	4.81E-10	5.38E-10	6.54E-10	2.51E-10	lb/MMBtu	1	43.15	48.82	1.00
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan:7F 1234678	A3-v0	4.75E-10	4.90E-10	5.42E-10	3.94E-10	lb/MMBtu	1	15.81	17.89	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan-7F 1234789	A3-v0	8.04E-11	8.31E-11	8.70E-11	7.12E-11	lb/MMBTU	1	10.23	11.58	0.72
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan-7F Other	A3-v0	1.77E-10	1.77E-10	2.12E-10	1.43E-10	lb/MMBTU	1	27.28	37.81	0.50
Coke Calcining/I	30601401	SD/FF	None	Dioxin/Furan	Furan-8F	A3-v1	4.13E-10	3.77E-10	7.94E-10	6.63E-11	lb/MMBTU	1	88.52	100.16	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Antimony	C3-v0	1.44E-04	1.42E-04	1.92E-04	1.37E-04	lb/MMBTU	1	5.19	5.87	0.34
Coke Calcining/I	30601401	SD/FF	None	Metals	Arsenic	C3-v0	1.45E-05	1.42E-05	1.56E-05	1.37E-05	lb/MMBTU	1	6.73	7.62	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Barium	C3-v0	6.10E-05	6.40E-05	7.79E-05	4.11E-05	lb/MMBTU	1	30.51	34.52	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Beryllium	C3-v0	6.03E-06	5.45E-06	7.83E-06	4.81E-06	lb/MMBTU	1	26.41	29.88	0.42
Coke Calcining/I	30601401	SD/FF	None	Metals	Cadmium	C3-v0	2.90E-05	2.85E-05	3.12E-05	2.74E-05	lb/MMBTU	1	6.71	7.59	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Chromium (Hex)	C3-v0	2.12E-06	1.93E-06	2.88E-06	1.54E-06	lb/MMBTU	1	32.38	36.64	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Chromium (Total)	C3-v0	6.90E-05	5.92E-05	9.35E-05	5.44E-05	lb/MMBTU	1	30.92	34.99	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Copper	C3-v0	2.90E-05	2.85E-05	3.12E-05	2.74E-05	lb/MMBTU	1	6.71	7.59	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Lead	C3-v0	1.91E-04	1.56E-04	2.74E-04	1.42E-04	lb/MMBTU	1	37.94	42.93	0.50
Coke Calcining/I	30601401	SD/FF	None	Metals	Manganese	C3-v0	1.44E-04	1.42E-04	2.42E-04	4.81E-05	lb/MMBTU	1	67.22	76.06	0.88
Coke Calcining/I	30601401	SD/FF	None	Metals	Mercury	C3-v1	1.48E-04	4.81E-05	3.60E-04	3.43E-05	lb/MMBTU	1	124.89	141.33	1.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Nickel	C3-v0	2.87E-04	1.56E-04	5.68E-04	1.37E-04	lb/MMBTU	1	84.93	96.10	0.65
Coke Calcining/I	30601401	SD/FF	None	Metals	Phosphorus	C3-v0	1.45E-03	1.42E-03	1.56E-03	1.37E-03	lb/MMBTU	1	6.73	7.62	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Selenium	C3-v0	1.45E-05	1.42E-05	1.56E-05	1.37E-05	lb/MMBTU	1	6.73	7.62	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Silver	C3-v0	5.07E-05	4.97E-05	5.45E-05	4.81E-05	lb/MMBTU	1	6.52	7.37	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Thallium	C3-v0	2.18E-04	2.14E-04	2.34E-04	2.06E-04	lb/MMBTU	1	6.65	7.53	0.00
Coke Calcining/I	30601401	SD/FF	None	Metals	Zinc	C3-v0	3.66E-04	3.08E-04	5.25E-04	2.65E-04	lb/MMBTU	1	38.08	43.10	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Acenaphthene	A3-v0	4.40E-08	4.06E-08	5.43E-08	3.70E-08	lb/MMBTU	1	20.68	23.40	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Acenaphthylene	A3-v0	5.59E-08	4.58E-08	9.29E-08	2.90E-08	lb/MMBTU	1	59.27	67.06	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Anthracene	A3-v0	5.40E-08	5.43E-08	5.79E-08	4.98E-08	lb/MMBTU	1	7.50	8.48	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(a)anthracene	A3-v0	2.60E-08	2.72E-08	2.99E-08	2.08E-08	lb/MMBTU	1	18.05	20.43	0.39
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(a)pyrene	A3-v0	2.41E-08	2.42E-08	2.72E-08	2.08E-08	lb/MMBTU	1	13.35	15.10	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(b)fluoranthene	A3-v0	2.41E-08	2.42E-08	2.72E-08	2.08E-08	lb/MMBTU	1	13.35	15.10	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(g,h,i)perylene	A3-v0	2.41E-08	2.42E-08	2.72E-08	2.08E-08	lb/MMBTU	1	13.35	15.10	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Benzo(k)fluoranthene	A3-v0	2.41E-08	2.42E-08	2.72E-08	2.08E-08	lb/MMBTU	1	13.35	15.10	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Chrysene	A3-v0	3.73E-08	3.48E-08	4.98E-08	2.72E-08	lb/MMBTU	1	13.35	15.10	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Dibenz(a,h)anthracene	A3-v0	2.41E-08	2.42E-08	2.72E-08	2.08E-08	lb/MMBTU	1	13.35	15.10	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Fluoranthene	A3-v0	1.06E-07	1.09E-07	1.16E-07	9.18E-08	lb/MMBTU	1	11.95	13.52	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Fluorene	A3-v0	1.70E-07	1.50E-07	2.18E-07	1.41E-07	lb/MMBTU	1	24.78	28.04	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.41E-08	2.42E-08	2.72E-08	2.08E-08	lb/MMBTU	1	13.35	15.10	0.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Naphthalene	A3-v0	7.29E-06	6.67E-06	1.04E-05	4.83E-06	lb/MMBTU	1	38.67	43.75	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Phenanthrene	A3-v0	5.66E-07	5.31E-07	7.09E-07	4.58E-07	lb/MMBTU	1	22.80	25.80	1.00
Coke Calcining/I	30601401	SD/FF	None	PAH	Pyrene	A3-v0	7.86E-08	7.75E-08	8.76E-08	7.09E-08	lb/MMBTU	1	10.68	12.09	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Acetaldehyde	A3-v0	3.12E-03	3.14E-03	3.89E-03	2.33E-03	lb/MMBTU	1	24.96	28.25	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Acrolein	A3-v0	1.04E-03	1.06E-03	1.14E-03	9.25E-04	lb/MMBTU	1	10.62	12.02	0.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Benzene	C3-v0	1.03E-03	1.39E-03	1.45E-03	2.62E-04	lb/MMBTU	1	64.73	73.25	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Formaldehyde	A3-v0	1.04E-03	1.06E-03	1.14E-03	9.25E-04	lb/MMBTU	1	10.62	12.02	0.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Toluene	C3-v0	1.63E-04	1.44E-04	2.45E-04	9.97E-05	lb/MMBTU	1	45.82	51.85	1.00
Coke Calcining/I	30601401	SD/FF	None	VOC	Xylene (m,p)	C3-v0	8.90E-05	8.62E-05	1.11E-04	6.99E-05	lb/MMBTU	1	23.14	26.18	0.22
Coke Calcining/I	30601401	SD/FF	None	VOC	Xylene (o)	C3-v0	1.32E-04	1.40E-04	1.58E-04	1.09E-04	lb/MMBTU	1	15.78	17.86	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Acenaphthene	A3-v0	1.36E-09	1.36E-09	1.58E-09	1.13E-09	lb/MMBTU	1	16.72	18.92	0.72
Heater, Natural Gas/I	31000404	None	None	PAH	Acenaphthylene	A3-v1	1.18E-08	2.77E-09	3.16E-08	1.13E-09	lb/MMBTU	1	144.82	163.88	0.97
Heater, Natural Gas/I	31000404	None	None	PAH	Anthracene	A3-v0	1.57E-09	1.79E-09	1.80E-09	1.13E-09	lb/MMBTU	1	24.62	27.86	0.76
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(a)anthracene	A3-v0	1.38E-09	1.16E-09	1.85E-09	1.13E-09	lb/MMBTU	1	29.86	33.79	0.45

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(a)pyrene	A3-v0	1.11E-09	1.13E-09	1.16E-09	1.05E-09	lb/MMBTU	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(b)fluoranthene	A3-v0	1.11E-09	1.13E-09	1.16E-09	1.05E-09	lb/MMBTU	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	1.22E-09	1.16E-09	1.39E-09	1.05E-09	lb/MMBTU	1	11.81	13.36	0.38
Heater, Natural Gas/I	31000404	None	None	PAH	Benzo(k)fluoranthene	A3-v0	1.11E-09	1.13E-09	1.16E-09	1.05E-09	lb/MMBTU	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Chrysene	A3-v0	1.36E-09	1.16E-09	1.79E-09	1.13E-09	lb/MMBTU	1	27.63	31.27	0.44
Heater, Natural Gas/I	31000404	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	1.11E-09	1.13E-09	1.16E-09	1.05E-09	lb/MMBTU	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Fluoranthene	A3-v0	1.16E-08	1.04E-08	1.75E-08	6.98E-09	lb/MMBTU	1	46.07	52.14	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Fluorene	A3-v0	4.49E-09	4.39E-09	5.69E-09	3.38E-09	lb/MMBTU	1	25.79	29.19	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	1.11E-09	1.13E-09	1.16E-09	1.05E-09	lb/MMBTU	1	4.76	5.39	0.00
Heater, Natural Gas/I	31000404	None	None	PAH	Naphthalene	A3-v0	2.31E-07	2.31E-07	2.74E-07	1.89E-07	lb/MMBTU	1	18.28	20.69	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Phenanthrene	A3-v0	3.29E-08	3.24E-08	4.63E-08	2.00E-08	lb/MMBTU	1	39.96	45.22	1.00
Heater, Natural Gas/I	31000404	None	None	PAH	Pyrene	A3-v0	5.47E-09	2.77E-09	1.14E-08	2.25E-09	lb/MMBTU	1	93.70	106.03	1.00
Heater, Natural Gas/I	31000404	None	None	SVOC	Ethylbenzene	A3-v0	2.20E-06	2.20E-06	2.20E-06	2.20E-06	lb/MMBTU	1	0.00	0.00	0.00
Heater, Natural Gas/I	31000404	None	None	VOC	Acetaldehyde	A3-v0	4.50E-06	4.50E-06	4.71E-06	4.30E-06	lb/MMBTU	1	4.47	5.06	0.32
Heater, Natural Gas/I	31000404	None	None	VOC	Acrolein	A3-v0	4.40E-06	4.46E-06	4.53E-06	4.22E-06	lb/MMBTU	1	3.66	4.14	0.00
Heater, Natural Gas/I	31000404	None	None	VOC	Benzene	A3-v0	2.28E-06	1.61E-06	3.62E-06	1.61E-06	lb/MMBTU	1	50.72	57.40	0.53
Heater, Natural Gas/I	31000404	None	None	VOC	Formaldehyde	A3-v0	4.64E-06	4.50E-06	5.19E-06	4.22E-06	lb/MMBTU	1	10.76	12.18	0.37
Heater, Natural Gas/I	31000404	None	None	VOC	Propylene	A3-v0	4.53E-04	4.47E-04	5.98E-04	3.13E-04	lb/MMBTU	1	31.59	35.74	1.00
Heater, Natural Gas/I	31000404	None	None	VOC	Toluene	A3-v0	3.15E-05	1.35E-05	7.29E-05	8.17E-06	lb/MMBTU	1	114.08	129.09	1.00
Heater, Natural Gas/I	31000404	None	None	VOC	Xylene (Total)	A3-v0	1.82E-05	2.01E-05	2.90E-05	5.58E-06	lb/MMBTU	1	64.92	73.46	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Acenaphthene	A3-v0	4.05E-09	1.38E-09	9.73E-09	1.05E-09	lb/MMBTU	1	121.25	137.21	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Acenaphthylene	A3-v1	3.16E-08	1.31E-09	9.23E-08	1.08E-09	lb/MMBTU	1	166.64	188.56	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Anthracene	A3-v0	5.59E-09	4.60E-09	7.69E-09	4.48E-09	lb/MMBTU	1	32.56	36.85	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(a)anthracene	A3-v0	5.18E-09	4.34E-09	8.97E-09	2.23E-09	lb/MMBTU	1	66.60	75.36	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(b)pyrene	A3-v1	3.24E-09	3.78E-09	5.65E-09	2.82E-10	lb/MMBTU	1	84.14	95.21	0.97
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(k)fluoranthene	A3-v0	1.44E-09	1.03E-09	2.38E-09	9.21E-10	lb/MMBTU	1	56.34	63.75	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	2.22E-10	8.16E-11	5.13E-10	7.08E-11	lb/MMBTU	1	113.71	128.67	0.77
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Benzo(k)fluoranthene	A3-v0	7.64E-10	4.49E-10	1.63E-09	2.52E-10	lb/MMBTU	1	99.78	112.91	0.92
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Chrysene	A3-v0	4.27E-10	3.62E-10	6.67E-10	2.10E-10	lb/MMBTU	1	50.33	56.95	0.52
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	7.45E-11	5.73E-11	1.12E-10	5.48E-11	lb/MMBTU	1	43.05	48.72	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Fluoranthene	A3-v0	9.73E-09	5.86E-09	2.05E-08	2.82E-09	lb/MMBTU	1	97.23	110.02	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Fluorene	A3-v1	3.49E-07	8.52E-08	9.09E-07	5.20E-08	lb/MMBTU	1	139.21	157.53	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.45E-10	2.08E-10	3.58E-10	1.68E-10	lb/MMBTU	1	41.08	46.49	0.49
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Naphthalene	A3-v1	1.24E-06	2.08E-07	3.32E-06	1.96E-07	lb/MMBTU	1	145.06	164.15	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Phenanthrene	A3-v0	1.11E-07	6.02E-08	2.31E-07	4.29E-08	lb/MMBTU	1	93.26	105.53	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	PAH	Pyrene	A3-v0	6.74E-09	4.05E-09	1.41E-08	2.08E-09	lb/MMBTU	1	95.66	108.24	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	SVOC	Phenol	A3-v0	9.22E-07	9.35E-07	1.12E-06	7.14E-07	lb/MMBTU	1	21.82	24.69	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Acetaldehyde	C3-v0	7.02E-06	6.94E-06	7.52E-06	6.59E-06	lb/MMBTU	1	6.67	7.55	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Acrolein	C3-v0	1.08E-06	1.10E-06	1.12E-06	1.03E-06	lb/MMBTU	1	4.51	5.11	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Benzene	A3-v0	1.01E-05	1.02E-05	1.06E-05	9.61E-06	lb/MMBTU	1	4.81	5.44	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Formaldehyde	C3-v0	2.19E-05	9.37E-06	4.74E-05	9.10E-06	lb/MMBTU	1	100.34	113.54	1.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Propylene	A3-v0	5.75E-06	5.78E-06	6.01E-06	5.46E-06	lb/MMBTU	1	4.81	5.44	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Toluene	A3-v0	1.26E-05	1.26E-05	1.31E-05	1.19E-05	lb/MMBTU	1	4.81	5.44	0.00
Heater, Natural/Ref. Gas/I	30600199	None	None	VOC	Xylene (Total)	A3-v0	1.45E-05	1.46E-05	1.51E-05	1.38E-05	lb/MMBTU	1	4.81	5.44	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:4D 2378	C3-v0	3.46E-12	4.15E-12	4.17E-12	2.08E-12	lb/MMBTU	1	34.70	39.26	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:5D 12378	C3-v1	1.74E-11	4.15E-12	4.59E-11	2.08E-12	lb/MMBTU	1	142.30	161.02	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:6D 123478	C3-v1	1.53E-11	4.15E-12	3.96E-11	2.08E-12	lb/MMBTU	1	138.10	156.28	0.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:6D 123678	C3-v1	2.08E-11	4.15E-12	5.63E-11	2.08E-12	lb/MMBTU	1	147.43	166.83	0.07
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:6D 123789	C3-v1	3.33E-11	4.15E-12	9.38E-11	2.08E-12	lb/MMBTU	1	157.08	177.75	0.04
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:7D 1234678	C3-v1	9.30E-11	3.11E-11	2.29E-10	1.87E-11	lb/MMBTU	1	127.05	143.76	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Dioxin:8D	C3-v0	3.26E-10	3.94E-10	4.17E-10	1.68E-10	lb/MMBTU	1	42.12	47.67	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:4F 2378	C3-v2	6.23E-10	1.04E-11	1.86E-09	4.15E-12	lb/MMBTU	1	171.19	193.71	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:5F 12378	C3-v1	5.97E-11	4.15E-12	1.73E-10	2.08E-12	lb/MMBTU	1	164.20	185.80	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:5F 23478	C3-v2	1.06E-10	4.15E-12	3.13E-10	2.08E-12	lb/MMBTU	1	168.14	190.26	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 123478	C3-v2	1.34E-10	4.15E-12	3.96E-10	1.04E-12	lb/MMBTU	1	169.85	192.20	0.01
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 123678	C3-v2	4.27E-11	2.07E-12	1.25E-10	1.04E-12	lb/MMBTU	1	166.91	188.87	0.02
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 123789	C3-v0	3.46E-12	4.15E-12	4.17E-12	2.08E-12	lb/MMBTU	1	34.70	39.26	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:6F 234678	C3-v1	6.11E-11	6.22E-12	1.73E-10	4.15E-12	lb/MMBTU	1	158.52	179.38	0.03
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:7F 1234678	C3-v1	1.36E-10	8.29E-12	3.96E-10	4.15E-12	lb/MMBTU	1	165.30	187.05	1.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:7F 1234789	C3-v0	8.33E-12	4.15E-12	1.88E-11	2.08E-12	lb/MMBTU	1	109.22	123.59	0.00
Heater, Oil/I	31000403	None	None	Dioxin/Furan	Furan:8F	C3-v1	7.29E-11	3.32E-11	1.77E-10	8.30E-12	lb/MMBTU	1	125.10	141.57	1.00
Heater, Oil/I	31000403	None	None	Metals	Arsenic	D3-v0	5.82E-06	5.78E-06	6.02E-06	5.67E-06	lb/MMBTU	1	3.01	3.41	0.00
Heater, Oil/I	31000403	None	None	Metals	Beryllium	D3-v0	5.43E-07	5.33E-07	6.04E-07	4.92E-07	lb/MMBTU	1	10.51	11.89	0.00
Heater, Oil/I	31000403	None	None	Metals	Cadmium	D3-v1	5.73E-06	8.28E-06	8.60E-06	2.99E-07	lb/MMBTU	1	82.13	92.94	1.00
Heater, Oil/I	31000403	None	None	Metals	Chromium (Hex)	A3-v0	2.00E-06	2.14E-06	2.18E-06	1.67E-06	lb/MMBTU	1	14.20	16.07	0.00
Heater, Oil/I	31000403	None	None	Metals	Chromium (Total)	A3-v0	1.77E-05	1.85E-05	1.91E-05	1.55E-05	lb/MMBTU	1	11.14	12.60	1.00
Heater, Oil/I	31000403	None	None	Metals	Copper	D3-v0	1.83E-05	1.15E-05	3.20E-05	1.14E-05	lb/MMBTU	1	64.94	73.48	1.00
Heater, Oil/I	31000403	None	None	Metals	Lead	D3-v0	2.07E-06	1.25E-06	3.83E-06	1.13E-06	lb/MMBTU	1	73.61	83.30	0.62
Heater, Oil/I	31000403	None	None	Metals	Manganese	D3-v0	1.32E-05	1.25E-05	1.55E-05	1.17E-05	lb/MMBTU	1	15.12	17.11	0.39
Heater, Oil/I	31000403	None	None	Metals	Mercury	D3-v0	1.20E-07	8.99E-08	1.98E-07	7.28E-08	lb/MMBTU	1	56.41	63.84	0.00
Heater, Oil/I	31000403	None	None	Metals	Nickel	D3-v0	2.41E-03	2.42E-03	2.86E-03	1.96E-03	lb/MMBTU	1	18.57	21.01	1.00
Heater, Oil/I	31000403	None	None	Metals	Selenium	D3-v0	6.23E-05	2.77E-05	4.60E-05	2.33E-05	lb/MMBTU	1	37.32	42.23	0.00
Heater, Oil/I	31000403	None	None	Metals	Zinc	D3-v0	6.23E-05	5.83E-05	8.49E-05	4.38E-05	lb/MMBTU	1	33.43	37.83	1.00
Heater, Oil/I	31000403	None	None	PAH	Acenaphthene	C3-v1	1.22E-08	1.53E-08	2.09E-08	4.76E-10	lb/MMBTU	1	86.27	97.62	1.00
Heater, Oil/I	31000403	None	None	PAH	Acenaphthylene	C3-v0	5.59E-10	3.72E-10	9.55E-10	3.51E-10	lb/MMBTU	1	61.23	69.29	1.00
Heater, Oil/I	31000403	None	None	PAH	Anthracene	C3-v0	4.62E-10	4.75E-10	5.17E-10	3.94E-10	lb/MMBTU	1	13.48	15.25	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(a)anthracene	C3-v1	2.68E-08	1.43E-09	7.79E-08	9.30E-10	lb/MMBTU	1	165.56	187.35	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(a)pyrene	C3-v0	6.84E-10	6.02E-10	1.28E-09	1.67E-10	lb/MMBTU	1	82.16	92.97	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(b)fluoranthene	C3-v0	5.55E-09	4.44E-09	8.02E-09	4.17E-09	lb/MMBTU	1	38.74	43.84	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(e)pyrene	C3-v0	3.87E-09	3.70E-09	5.39E-09	2.51E-09	lb/MMBTU	1	37.44	42.36	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(g,h,i)perylene	C3-v1	1.48E-08	3.84E-09	3.88E-08	1.78E-09	lb/MMBTU	1	140.55	159.04	1.00
Heater, Oil/I	31000403	None	None	PAH	Benzo(k)fluoranthene	C3-v0	2.35E-10	1.45E-10	4.76E-10	8.27E-11	lb/MMBTU	1	90.02	101.86	1.00
Heater, Oil/I	31000403	None	None	PAH	Chrysene	C3-v1	7.81E-08	1.93E-08	2.04E-07	1.07E-08	lb/MMBTU	1	139.73	158.12	1.00
Heater, Oil/I	31000403	None	None	PAH	Dibenz(a,h)anthracene	C3-v1	1.23E-08	8.23E-10	3.55E-08	4.57E-10	lb/MMBTU	1	164.18	185.78	1.00
Heater, Oil/I	31000403	None	None	PAH	Fluoranthene	C3-v0	1.37E-08	1.59E-08	1.73E-08	7.89E-09	lb/MMBTU	1	37.09	41.97	1.00
Heater, Oil/I	31000403	None	None	PAH	Fluorene	C3-v0	5.22E-07	2.66E-07	1.16E-06	1.76E-07	lb/MMBTU	1	106.53	120.55	1.00
Heater, Oil/I	31000403	None	None	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	1.26E-08	1.08E-09	3.58E-08	1.03E-09	lb/MMBTU	1	158.71	179.59	1.00
Heater, Oil/I	31000403	None	None	PAH	Naphthalene	C3-v0	5.91E-06	7.28E-06	7.73E-06	2.71E-06	lb/MMBTU	1	47.07	53.26	1.00
Heater, Oil/I	31000403	None	None	PAH	Phenanthrene	C3-v1	1.74E-07	8.23E-08	4.20E-07	1.98E-08	lb/MMBTU	1	123.75	140.04	1.00
Heater, Oil/I	31000403	None	None	PAH	Pyrene	C3-v0	9.22E-09	8.32E-09	1.49E-08	4.38E-09	lb/MMBTU	1	57.94	65.56	1.00
Heater, Oil/I	31000403	None	None	SVOC	2-Chloronaphthalene	C3-v2	8.16E-08	7.72E-10	2.44E-07	2.49E-10	lb/MMBTU	1	172.55	195.25	1.00
Heater, Oil/I	31000403	None	None	SVOC	2-Methylnaphthalene	C3-v1	2.51E-07	7.40E-08	6.49E-07	3.17E-08	lb/MMBTU	1	137.05	155.09	1.00
Heater, Oil/I	31000403	None	None	SVOC	Perylene	C3-v0	5.17E-10	2.49E-10	1.16E-09	1.45E-10	lb/MMBTU	1	107.75	121.93	1.00
Heater, Oil/I	31000403	None	None	VOC	1,3-Butadiene	A3-v0	1.36E-04	1.37E-04	1.40E-04	1.32E-04	lb/MMBTU	1	3.14	3.55	0.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Oil/I	31000403	None	None	VOC	Acetaldehyde	C3-v0	3.79E-06	3.80E-06	3.83E-06	3.75E-06	lb/MMBtu	1	0.98	1.11	0.00
Heater, Oil/I	31000403	None	None	VOC	Acrolein	C3-v0	4.17E-06	4.18E-06	4.21E-06	4.13E-06	lb/MMBtu	1	0.95	1.07	0.00
Heater, Oil/I	31000403	None	None	VOC	Benzene	A3-v0	5.91E-05	5.92E-05	5.92E-05	5.72E-05	lb/MMBtu	1	3.22	3.65	0.00
Heater, Oil/I	31000403	None	None	VOC	Chloroform	A3-v0	6.02E-05	6.03E-05	6.20E-05	5.83E-05	lb/MMBtu	1	3.06	3.46	0.00
Heater, Oil/I	31000403	None	None	VOC	Formaldehyde	C3-v0	2.65E-05	2.66E-05	2.68E-05	2.63E-05	lb/MMBtu	1	0.95	1.08	0.00
Heater, Oil/I	31000403	None	None	VOC	Propylene	A3-v0	1.06E-04	1.06E-04	1.09E-04	1.03E-04	lb/MMBtu	1	3.01	3.41	0.00
Heater, Oil/I	31000403	None	None	VOC	Toluene	A3-v0	6.97E-05	6.99E-05	7.18E-05	6.75E-05	lb/MMBtu	1	3.06	3.46	0.00
Heater, Oil/I	31000403	None	None	VOC	Xylene (Total)	A3-v0	1.34E-04	1.34E-04	1.38E-04	1.29E-04	lb/MMBtu	1	3.21	3.63	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Antimony	C3-v0	5.17E-07	5.84E-07	7.58E-07	2.10E-07	lb/MMBtu	1	54.13	61.25	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Arsenic	C3-v0	8.50E-07	9.90E-07	1.28E-06	2.84E-07	lb/MMBtu	1	60.10	68.00	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Barium	C3-v0	5.78E-06	5.78E-06	5.92E-06	5.63E-06	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Beryllium	C3-v0	2.57E-07	2.57E-07	2.63E-07	2.50E-07	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Cadmium	C3-v0	9.88E-07	9.65E-07	1.18E-06	8.15E-07	lb/MMBtu	1	18.76	21.23	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Chromium (Hex)	C3-v0	2.17E-06	2.21E-06	2.24E-06	2.05E-06	lb/MMBtu	1	4.62	5.23	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Chromium (Total)	C3-v0	1.07E-06	6.57E-07	1.93E-06	6.26E-07	lb/MMBtu	1	69.39	78.52	0.60
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Copper	C3-v0	4.21E-06	1.93E-06	9.39E-06	1.31E-06	lb/MMBtu	1	106.76	120.81	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Lead	C3-v0	4.89E-06	3.94E-06	7.51E-06	3.21E-06	lb/MMBtu	1	47.03	53.22	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Manganese	C3-v0	6.81E-06	6.26E-06	1.22E-05	1.97E-06	lb/MMBtu	1	75.45	85.38	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Mercury	C3-v0	1.80E-07	1.75E-07	1.93E-07	1.71E-07	lb/MMBtu	1	6.49	7.34	0.36
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Nickel	C3-v1	9.42E-06	1.31E-06	2.57E-05	1.29E-06	lb/MMBtu	1	149.30	168.95	0.95
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Phosphorus	C3-v0	6.42E-07	6.43E-07	6.57E-07	6.26E-07	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Selenium	C3-v0	1.96E-08	2.03E-08	2.54E-08	1.32E-08	lb/MMBtu	1	31.23	35.34	0.78
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Silver	C3-v1	1.61E-06	1.31E-06	3.21E-06	3.14E-07	lb/MMBtu	1	91.23	103.24	0.94
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Thallium	C3-v0	5.78E-06	5.78E-06	5.92E-06	5.63E-06	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	Metals	Zinc	C3-v0	2.08E-05	2.58E-05	2.83E-05	8.48E-06	lb/MMBtu	1	51.72	58.53	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Acenaphthene	A2-v0	2.36E-09	1.55E-09	5.61E-09	1.20E-09	lb/MMBtu	4	69.14	40.86	0.95
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Acenaphthylene	A2-v0	1.55E-09	1.25E-09	2.74E-09	1.02E-09	lb/MMBtu	4	41.70	24.64	0.51
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Anthracene	A2-v0	2.87E-09	2.30E-09	6.45E-09	1.09E-09	lb/MMBtu	4	61.24	36.19	0.92
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(a)anthracene	A1-v2	3.21E-08	5.40E-09	3.39E-07	1.05E-09	lb/MMBtu	9	265.30	101.97	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(a)pyrene	A1-v3	8.96E-08	1.73E-09	1.38E-06	1.02E-09	lb/MMBtu	9	352.36	135.44	0.98
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(b)fluoranthene	A1-v2	4.04E-08	3.31E-09	4.87E-07	1.02E-09	lb/MMBtu	9	314.58	120.92	0.99
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(g,h,i)perylene	A2-v0	1.17E-09	1.10E-09	1.40E-09	1.02E-09	lb/MMBtu	4	11.55	6.82	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Benzo(k)fluoranthene	A1-v2	2.41E-08	2.18E-09	2.96E-07	1.02E-09	lb/MMBtu	9	310.01	119.16	0.96
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Chrysene	A2-v0	1.63E-09	1.23E-09	4.79E-09	1.02E-09	lb/MMBtu	4	66.84	39.50	0.63
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Dibenz(a,h)anthracene	A1-v2	1.02E-08	1.60E-09	1.37E-07	5.93E-10	lb/MMBtu	9	279.09	107.28	0.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Fluoranthene	A2-v0	3.06E-09	3.14E-09	5.04E-09	1.85E-09	lb/MMBtu	4	33.80	19.97	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Fluorene	A2-v0	1.08E-08	8.77E-09	2.74E-08	2.96E-09	lb/MMBtu	4	70.62	41.74	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Indeno(1,2,3-cd)pyrene	A1-v3	1.03E-07	1.75E-09	1.42E-06	1.02E-09	lb/MMBtu	9	343.01	131.85	0.99
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Naphthalene	A2-v0	3.13E-07	2.61E-07	7.58E-07	1.19E-07	lb/MMBtu	4	66.90	39.53	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Phenanthrene	A2-v0	1.46E-08	1.50E-08	2.25E-08	6.91E-09	lb/MMBtu	4	32.60	19.27	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	PAH	Pyrene	A2-v0	2.84E-09	2.72E-09	4.53E-09	1.87E-09	lb/MMBtu	4	28.87	17.06	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	SVOC	Ethylbenzene	A2-v1	3.02E-05	1.79E-05	1.03E-04	2.72E-06	lb/MMBtu	4	104.65	59.21	0.51
Heater, Ref. Gas/I	30600106	DeNOx	None	SVOC	Phenol	C1-v1	5.63E-06	3.14E-06	2.54E-05	2.84E-07	lb/MMBtu	7	114.62	49.02	0.97
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Acetaldehyde	B1-v3	1.53E-05	8.12E-06	8.55E-05	8.41E-08	lb/MMBtu	8	126.30	50.53	0.88
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Benzene	B1-v1	6.47E-05	5.49E-05	1.85E-04	2.54E-06	lb/MMBtu	11	87.67	29.91	0.02
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Formaldehyde	B1-v3	1.11E-04	1.90E-05	1.34E-03	7.67E-07	lb/MMBtu	7	262.94	112.46	1.00
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Hydrogen Sulfide	A1-v1	2.92E-04	2.46E-04	8.04E-04	1.76E-05	lb/MMBtu	7	75.53	32.30	0.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Propylene	A2-v0	2.17E-06	2.22E-06	2.98E-06	1.08E-06	lb/MMBtu	3	23.69	15.47	0.05
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Toluene	D1-v2	1.07E-04	7.00E-05	9.19E-04	4.04E-06	lb/MMBtu	11	148.57	50.69	0.55
Heater, Ref. Gas/I	30600106	DeNOx	None	VOC	Xylene (Total)	A2-v1	3.73E-05	3.16E-05	1.08E-04	4.66E-06	lb/MMBtu	4	99.32	56.19	0.60
Heater, Ref. Gas/I	30600106	None	None	Metals	Antimony	C3-v0	5.17E-07	5.84E-07	7.58E-07	2.10E-07	lb/MMBtu	1	54.13	61.25	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Arsenic	C3-v0	8.50E-07	9.90E-07	1.28E-06	2.84E-07	lb/MMBtu	1	60.10	68.00	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Barium	C3-v0	5.78E-06	5.78E-06	5.92E-06	5.63E-06	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Beryllium	C3-v0	2.57E-07	2.57E-07	2.63E-07	2.50E-07	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Cadmium	C3-v0	9.88E-07	9.65E-07	1.18E-06	8.15E-07	lb/MMBtu	1	18.76	21.23	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Chromium (Hex)	C3-v0	2.17E-06	2.21E-06	2.24E-06	2.05E-06	lb/MMBtu	1	4.62	5.23	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Chromium (Total)	C3-v0	1.07E-06	6.57E-07	1.93E-06	6.26E-07	lb/MMBtu	1	69.39	78.52	0.60
Heater, Ref. Gas/I	30600106	None	None	Metals	Copper	C3-v0	4.21E-06	1.93E-06	9.39E-06	1.31E-06	lb/MMBtu	1	106.76	120.81	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Lead	C3-v0	4.89E-06	3.94E-06	7.51E-06	3.21E-06	lb/MMBtu	1	47.03	53.22	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Manganese	C3-v0	6.81E-06	6.26E-06	1.22E-05	1.97E-06	lb/MMBtu	1	75.45	85.38	1.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Mercury	C3-v0	1.80E-07	1.75E-07	1.93E-07	1.71E-07	lb/MMBtu	1	6.49	7.34	0.36
Heater, Ref. Gas/I	30600106	None	None	Metals	Nickel	C3-v1	9.42E-06	1.31E-06	2.57E-05	1.29E-06	lb/MMBtu	1	149.30	168.95	0.95
Heater, Ref. Gas/I	30600106	None	None	Metals	Phosphorus	C3-v0	6.42E-07	6.43E-07	6.57E-07	6.26E-07	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Selenium	C3-v0	1.96E-08	2.03E-08	2.54E-08	1.32E-08	lb/MMBtu	1	31.23	35.34	0.78
Heater, Ref. Gas/I	30600106	None	None	Metals	Silver	C3-v1	1.61E-06	1.31E-06	3.21E-06	3.14E-07	lb/MMBtu	1	91.23	103.24	0.94
Heater, Ref. Gas/I	30600106	None	None	Metals	Thallium	C3-v0	5.78E-06	5.78E-06	5.92E-06	5.63E-06	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	None	None	Metals	Zinc	C3-v0	2.08E-05	2.58E-05	2.83E-05	2.83E-05	lb/MMBtu	1	51.72	58.53	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Acenaphthene	A2-v0	2.36E-09	1.55E-09	5.61E-09	1.20E-09	lb/MMBtu	4	69.14	40.86	0.95
Heater, Ref. Gas/I	30600106	None	None	PAH	Acenaphthylene	A2-v0	1.55E-09	1.25E-09	2.74E-09	1.02E-09	lb/MMBtu	4	41.70	24.64	0.51
Heater, Ref. Gas/I	30600106	None	None	PAH	Anthracene	A2-v0	2.87E-09	2.30E-09	6.45E-09	1.09E-09	lb/MMBtu	4	61.24	36.19	0.92
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(a)anthracene	A1-v2	3.21E-08	5.40E-09	3.39E-07	1.05E-09	lb/MMBtu	9	265.30	101.97	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(a)pyrene	A1-v3	8.96E-08	1.73E-09	1.37E-07	1.37E-07	lb/MMBtu	9	352.36	135.44	0.98
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(b)fluoranthene	A1-v2	4.04E-08	3.31E-09	4.87E-07	1.02E-09	lb/MMBtu	9	314.58	120.92	0.99
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(g,h,i)perylene	A2-v0	1.17E-09	1.10E-09	1.40E-09	1.02E-09	lb/MMBtu	4	11.55	6.82	0.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Benzo(k)fluoranthene	A1-v2	2.41E-08	2.18E-09	2.96E-07	1.02E-09	lb/MMBtu	9	310.01	119.16	0.96
Heater, Ref. Gas/I	30600106	None	None	PAH	Chrysene	A2-v0	1.63E-09	1.23E-09	4.79E-09	1.02E-09	lb/MMBtu	4	66.84	39.50	0.63
Heater, Ref. Gas/I	30600106	None	None	PAH	Dibenz(a,h)anthracene	A1-v2	1.02E-08	1.60E-09	1.37E-07	5.93E-10	lb/MMBtu	9	279.09	107.28	0.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Fluoranthene	A2-v0	3.06E-09	3.14E-09	5.04E-09	1.85E-09	lb/MMBtu	4	33.80	19.97	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Fluorene	A2-v0	1.08E-08	8.77E-09	2.74E-08	2.96E-09	lb/MMBtu	4	70.62	41.74	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Indeno(1,2,3-cd)pyrene	A1-v3	1.03E-07	1.75E-09	1.42E-06	1.02E-09	lb/MMBtu	9	343.01	131.85	0.99
Heater, Ref. Gas/I	30600106	None	None	PAH	Naphthalene	A2-v0	3.13E-07	2.61E-07	7.58E-07	1.19E-07	lb/MMBtu	4	66.90	39.53	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Phenanthrene	A2-v0	1.46E-08	1.50E-08	2.25E-08	6.91E-09	lb/MMBtu	4	32.60	19.27	1.00
Heater, Ref. Gas/I	30600106	None	None	PAH	Pyrene	A2-v0	2.84E-09	2.72E-09	4.53E-09	1.87E-09	lb/MMBtu	4	28.87	17.06	1.00
Heater, Ref. Gas/I	30600106	None	None	SVOC	Ethylbenzene	A2-v1	3.02E-05	1.79E-05	1.03E-04	2.72E-06	lb/MMBtu	4	104.65	59.21	0.51
Heater, Ref. Gas/I	30600106	None	None	SVOC	Phenol	C1-v1	5.63E-06	3.14E-06	2.54E-05	2.84E-07	lb/MMBtu	7	114.62	49.02	0.97
Heater, Ref. Gas/I	30600106	None	None	VOC	Acetaldehyde	B1-v3	1.53E-05	8.12E-06	8.55E-05	8.41E-08	lb/MMBtu	8	126.30	50.53	0.88
Heater, Ref. Gas/I	30600106	None	None	VOC	Benzene	B1-v1	6.47E-05	5.49E-05	1.85E-04	2.54E-06	lb/MMBtu	11	87.67	29.91	0.02
Heater, Ref. Gas/I	30600106	None	None	VOC	Formaldehyde	B1-v3	1.11E-04	1.90E-05	1.34E-03	7.67E-07	lb/MMBtu	7	262.94	112.46	1.00
Heater, Ref. Gas/I	30600106	None	None	VOC	Hydrogen Sulfide	A1-v1	2.92E-04	2.46E-04	8.04E-04	1.76E-05	lb/MMBtu	7	75.53	32.30	0.00
Heater, Ref. Gas/I	30600106	None	None	VOC	Propylene	A2-v0	2.17E-06	2.22E-06	2.98E-06	1.08E-06	lb/MMBtu	3	23.69	15.47	0.05
Heater, Ref. Gas/I	30600106	None	None	VOC	Toluene	D1-v2	1.07E-04	7.00E-05	9.19E-04	4.04E-06	lb/MMBtu	11	148.57	50.69	0.55
Heater, Ref. Gas/I	30600106	None	None	VOC	Xylene (Total)	A2-v1	3.73E-05	3.16E-05	1.08E-04	4.66E-06	lb/MMBtu	4	99.32	56.19	0.60
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Antimony	C3-v0	5.17E-07	5.84E-07	7.58E-07	2.10E-07	lb/MMBtu	1	54.13	61.25	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Arsenic	C3-v0	8.50E-07	9.90E-07	1.28E-06	2.84E-07	lb/MMBtu	1	60.10	68.00	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Barium	C3-v0	5.78E-06	5.78E-06	5.92E-06	5.63E-06	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Beryllium	C3-v0	2.57E-07	2.57E-07	2.63E-07	2.50E-07	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Cadmium	C3-v0	9.88E-07	9.65E-07	1.18E-06	8.15E-07	lb/MMBtu	1	18.76	21.23	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Chromium (Hex)	C3-v0	2.17E-06	2.21E-06	2.24E-06	2.05E-06	lb/MMBtu	1	4.62	5.23	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Chromium (Total)	C3-v0	1.07E-06	6.57E-07	1.93E-06	6.26E-07	lb/MMBtu	1	69.39	78.52	0.60
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Copper	C3-v0	4.21E-06	1.93E-06	9.39E-06	1.31E-06	lb/MMBtu	1	106.76	120.81	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Lead	C3-v0	4.89E-06	3.94E-06	7.51E-06	3.21E-06	lb/MMBtu	1	47.03	53.22	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Manganese	C3-v0	6.81E-06	6.26E-06	1.22E-05	1.97E-06	lb/MMBtu	1	75.45	85.38	1.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Mercury	C3-v0	1.80E-07	1.75E-07	1.93E-07	1.71E-07	lb/MMBtu	1	6.49	7.34	0.36
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Nickel	C3-v1	9.42E-06	1.31E-06	2.57E-05	1.29E-06	lb/MMBtu	1	149.30	168.95	0.95
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Phosphorus	C3-v0	6.42E-07	6.43E-07	6.57E-07	6.26E-07	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Selenium	C3-v0	1.96E-08	2.03E-08	2.54E-08	1.32E-08	lb/MMBtu	1	31.23	35.34	0.78
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Silver	C3-v1	1.61E-06	1.31E-06	3.21E-06	3.14E-07	lb/MMBtu	1	91.23	103.24	0.94
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Thallium	C3-v0	5.78E-06	5.78E-06	5.92E-06	5.63E-06	lb/MMBtu	1	2.45	2.78	0.00
Heater, Ref. Gas/I	30600106	SCR	None	Metals	Zinc	C3-v0	2.08E-05	2.58E-05	2.83E-05	8.48E-06	lb/MMBtu	1	51.72	58.53	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Acenaphthene	A2-v0	2.36E-09	1.55E-09	5.61E-09	1.20E-09	lb/MMBtu	4	69.14	40.86	0.95
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Acenaphthylene	A2-v0	1.55E-09	1.25E-09	2.74E-09	1.02E-09	lb/MMBtu	4	41.70	24.64	0.51
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Anthracene	A1-v2	2.87E-09	2.30E-09	6.45E-09	1.09E-09	lb/MMBtu	4	61.24	36.19	0.92
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(a)anthracene	A1-v2	3.21E-08	5.40E-09	3.39E-07	1.05E-09	lb/MMBtu	9	265.30	101.97	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(a)pyrene	A1-v3	8.96E-08	1.73E-09	1.38E-06	1.02E-09	lb/MMBtu	9	352.36	135.44	0.98
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(b)fluoranthene	A1-v2	4.04E-08	3.31E-09	4.87E-07	1.02E-09	lb/MMBtu	9	314.58	120.92	0.99
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(g,h,i)perylene	A2-v0	1.17E-09	1.10E-09	1.40E-09	1.02E-09	lb/MMBtu	4	11.55	6.82	0.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Benzo(k)fluoranthene	A1-v2	2.41E-08	2.18E-09	2.96E-07	1.02E-09	lb/MMBtu	9	310.01	119.16	0.96
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Chrysene	A2-v0	1.63E-09	1.23E-09	4.79E-09	1.02E-09	lb/MMBtu	4	66.84	39.50	0.63
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Dibenz(a,h)anthracene	A1-v2	1.02E-08	1.60E-09	1.77E-07	5.93E-10	lb/MMBtu	9	279.09	107.28	0.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Fluoranthene	A2-v0	3.06E-09	3.14E-09	5.04E-09	1.85E-09	lb/MMBtu	4	33.80	19.97	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Fluorene	A2-v0	1.08E-08	8.77E-09	2.74E-08	2.96E-09	lb/MMBtu	4	70.62	41.74	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Indeno(1,2,3-cd)pyrene	A1-v3	1.03E-07	1.75E-09	1.42E-06	1.02E-09	lb/MMBtu	9	343.01	131.85	0.99
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Naphthalene	A2-v0	3.13E-07	2.61E-07	7.58E-07	1.19E-07	lb/MMBtu	4	66.90	39.53	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Phenanthrene	A2-v0	1.46E-08	1.50E-08	2.25E-08	6.91E-09	lb/MMBtu	4	32.60	19.27	1.00
Heater, Ref. Gas/I	30600106	SCR	None	PAH	Pyrene	A2-v0	2.84E-09	2.72E-09	4.53E-09	1.87E-09	lb/MMBtu	4	28.87	17.06	1.00
Heater, Ref. Gas/I	30600106	SCR	None	SVOC	Ethylbenzene	A2-v1	3.02E-05	1.79E-05	1.03E-04	2.72E-06	lb/MMBtu	4	104.65	59.21	0.51
Heater, Ref. Gas/I	30600106	SCR	None	SVOC	Phenol	C1-v1	5.63E-06	3.14E-06	2.54E-05	2.84E-07	lb/MMBtu	7	114.62	49.02	0.97
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Acetaldehyde	B1-v3	1.53E-05	8.12E-06	8.55E-05	8.41E-08	lb/MMBtu	8	126.30	50.53	0.88
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Benzene	B1-v1	6.47E-05	5.49E-05	1.85E-04	2.54E-06	lb/MMBtu	11	87.67	29.91	0.02
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Formaldehyde	B1-v3	1.11E-04	1.90E-05	1.34E-03	7.67E-07	lb/MMBtu	7	262.94	112.46	1.00
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Hydrogen Sulfide	A1-v1	2.92E-04	2.46E-04	8.04E-04	1.76E-05	lb/MMBtu	7	75.53	32.30	0.00
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Propylene	A2-v0	2.17E-06	2.22E-06	2.98E-06	1.08E-06	lb/MMBtu	3	23.69	15.47	0.05
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Toluene	D1-v2	1.07E-04	7.00E-05	9.19E-04	4.04E-06	lb/MMBtu	11	148.57	50.69	0.55
Heater, Ref. Gas/I	30600106	SCR	None	VOC	Xylene (Total)	A2-v1	3.73E-05	3.16E-05	1.08E-04	4.66E-06	lb/MMBtu	4	99.32	56.19	0.60
ICE, Diesel/I	20200102	None	O2<13%	PAH	Acenaphthene	C3-v0	4.54E-06	4.85E-06	6.12E-06	2.67E-06	lb/MMBtu	1	38.39	43.44	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Acenaphthylene	C3-v0	8.97E-06	9.23E-06	9.34E-06	8.34E-06	lb/MMBtu	1	6.10	6.91	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Anthracene	C3-v0	1.20E-06	9.43E-07	2.04E-06	6.07E-07	lb/MMBtu	1	62.56	70.79	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(a)anthracene	C3-v0	6.14E-07	5.85E-07	6.83E-07	5.75E-07	lb/MMBtu	1	9.72	11.00	1.00
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(a)pyrene	C3-v0	2.49E-07	2.71E-07	3.36E-07	1.41E-07	lb/MMBtu	1	39.85	45.09	0.45
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(b)fluoranthene	C3-v0	1.08E-06	9.98E-07	1.36E-06	8.89E-07	lb/MMBtu	1	22.58	25.55	0.27
ICE, Diesel/I	20200102	None	O2<13%	PAH	Benzo(g,h,i)perylene	C3-v0	5.42E-07	5.53E-07	5.85E-07	4.88E-07	lb/MMBtu	1	9.17	10.37	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
ICE, Diesel/1	20200102	None	O2<13%	PAH	Benzo(k)fluoranthene	C3-v0	2.13E-07	8.67E-08	4.88E-07	6.51E-08	lb/MMBtu	1	111.67	126.37	0.76
ICE, Diesel/1	20200102	None	O2<13%	PAH	Chrysene	C3-v0	1.49E-06	1.56E-06	1.60E-06	1.30E-06	lb/MMBtu	1	11.03	12.48	1.00
ICE, Diesel/1	20200102	None	O2<13%	PAH	Dibenz(a,h)anthracene	C3-v0	3.36E-07	3.25E-07	3.58E-07	3.25E-07	lb/MMBtu	1	5.59	6.32	0.00
ICE, Diesel/1	20200102	None	O2<13%	PAH	Fluoranthene	C3-v0	3.92E-06	3.86E-06	4.12E-06	3.78E-06	lb/MMBtu	1	4.50	5.09	1.00
ICE, Diesel/1	20200102	None	O2<13%	PAH	Fluorene	C3-v0	1.25E-05	1.24E-05	1.28E-05	1.21E-05	lb/MMBtu	1	2.62	2.96	1.00
ICE, Diesel/1	20200102	None	O2<13%	PAH	Indeno(1,2,3-cd)pyrene	C3-v0	4.01E-07	4.12E-07	4.66E-07	3.25E-07	lb/MMBtu	1	17.72	20.05	0.34
ICE, Diesel/1	20200102	None	O2<13%	PAH	Naphthalene	C3-v0	1.27E-04	1.28E-04	1.31E-04	1.21E-04	lb/MMBtu	1	3.74	4.24	1.00
ICE, Diesel/1	20200102	None	O2<13%	PAH	Phenanthrene	C3-v0	3.97E-05	3.98E-05	4.06E-05	3.86E-05	lb/MMBtu	1	2.58	2.92	1.00
ICE, Diesel/1	20200102	None	O2<13%	PAH	Pyrene	C3-v0	3.61E-06	3.45E-06	3.95E-06	3.43E-06	lb/MMBtu	1	8.16	9.24	1.00
ICE, Diesel/1	20200102	None	O2<13%	VOC	Acetaldehyde	A3-v0	2.44E-05	1.59E-05	4.56E-05	1.19E-05	lb/MMBtu	1	75.34	85.25	1.00
ICE, Diesel/1	20200102	None	O2<13%	VOC	Acrolein	A3-v0	7.57E-06	5.04E-06	1.26E-05	5.04E-06	lb/MMBtu	1	57.74	65.33	0.56
ICE, Diesel/1	20200102	None	O2<13%	VOC	Benzene	A3-v0	7.11E-04	7.00E-04	7.33E-04	7.00E-04	lb/MMBtu	1	2.71	3.06	1.00
ICE, Diesel/1	20200102	None	O2<13%	VOC	Formaldehyde	A3-v1	7.68E-05	3.27E-05	1.85E-04	1.23E-05	lb/MMBtu	1	123.19	139.41	1.00
ICE, Diesel/1	20200102	None	O2<13%	VOC	Propylene	A3-v0	2.71E-03	2.84E-03	2.84E-03	2.46E-03	lb/MMBtu	1	8.06	9.12	1.00
ICE, Diesel/1	20200102	None	O2<13%	VOC	Toluene	A3-v0	2.63E-04	2.61E-04	2.73E-04	2.57E-04	lb/MMBtu	1	3.27	3.70	1.00
ICE, Diesel/1	20200102	None	O2<13%	VOC	Xylene (Total)	A3-v0	1.89E-04	1.91E-04	1.95E-04	1.81E-04	lb/MMBtu	1	3.85	4.36	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Acenaphthene	C3-v2	1.43E-06	8.34E-07	4.97E-06	1.00E-08	lb/MMBtu	2	136.02	108.84	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Acenaphthylene	C3-v3	5.08E-06	2.27E-06	1.35E-05	1.00E-08	lb/MMBtu	2	125.21	100.19	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Anthracene	C3-v1	1.86E-06	2.10E-06	2.65E-06	2.25E-07	lb/MMBtu	2	45.07	36.07	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(a)anthracene	C3-v1	1.67E-06	1.47E-06	4.81E-06	1.12E-07	lb/MMBtu	2	103.79	83.05	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(a)pyrene	C3-v1	1.88E-07	1.32E-07	4.21E-07	1.00E-08	lb/MMBtu	2	108.63	86.92	0.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(b)fluoranthene	C3-v0	1.87E-07	1.97E-07	2.81E-07	8.43E-08	lb/MMBtu	1	52.68	59.61	0.50
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(b-k)fluoranthene	C3-v0	1.03E-08	1.03E-08	1.04E-08	1.00E-08	lb/MMBtu	1	1.90	2.14	0.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(g,h,i)perylene	C3-v1	4.87E-07	4.24E-07	1.12E-06	8.43E-08	lb/MMBtu	2	72.27	57.82	0.43
ICE, Diesel/2	20200102	None	O2>13%	PAH	Benzo(k)fluoranthene	C3-v0	3.00E-07	3.09E-07	4.49E-07	1.40E-07	lb/MMBtu	1	51.63	58.43	0.50
ICE, Diesel/2	20200102	None	O2>13%	PAH	Chrysene	C3-v0	3.52E-07	3.76E-07	4.81E-07	1.97E-07	lb/MMBtu	2	33.43	26.75	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Dibenz(a,h)anthracene	C3-v0	5.84E-07	4.57E-07	1.04E-06	3.16E-07	lb/MMBtu	2	51.34	41.08	0.35
ICE, Diesel/2	20200102	None	O2>13%	PAH	Fluoranthene	C3-v1	7.59E-06	5.94E-06	1.93E-05	5.06E-07	lb/MMBtu	2	90.02	72.03	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Fluorene	C3-v1	2.90E-05	2.83E-05	5.40E-05	1.52E-08	lb/MMBtu	2	87.31	69.86	0.99
ICE, Diesel/2	20200102	None	O2>13%	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	4.63E-07	2.91E-07	9.55E-07	5.62E-08	lb/MMBtu	2	84.39	67.52	0.30
ICE, Diesel/2	20200102	None	O2>13%	PAH	Naphthalene	C3-v0	8.48E-05	5.59E-05	2.20E-04	4.28E-05	lb/MMBtu	2	80.69	64.56	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Phenanthrene	C3-v1	2.93E-05	3.03E-05	5.38E-05	2.25E-06	lb/MMBtu	2	65.09	52.08	1.00
ICE, Diesel/2	20200102	None	O2>13%	PAH	Pyrene	C3-v0	4.78E-06	4.38E-06	7.62E-06	8.43E-07	lb/MMBtu	2	52.00	41.61	1.00
ICE, Diesel/2	20200102	None	O2>13%	SVOC	Benzaldehyde	A3-v0	9.01E-05	8.84E-05	9.64E-05	8.54E-05	lb/MMBtu	1	6.29	7.12	0.68
ICE, Diesel/2	20200102	None	O2>13%	VOC	1,3-Butadiene	C3-v0	3.86E-05	3.86E-05	3.86E-05	3.86E-05	lb/MMBtu	1	0.00	0.00	0.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Acetaldehyde	A3-v0	7.64E-04	7.65E-04	1.08E-03	4.21E-04	lb/MMBtu	2	42.48	33.99	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Acrolein	A3-v0	9.37E-05	6.05E-05	2.29E-04	4.72E-05	lb/MMBtu	2	74.63	59.71	0.82
ICE, Diesel/2	20200102	None	O2>13%	VOC	Benzene	B3-v0	8.81E-04	8.17E-04	1.38E-03	6.18E-04	lb/MMBtu	2	48.96	39.17	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Formaldehyde	A3-v0	1.19E-03	1.04E-03	2.39E-03	6.18E-04	lb/MMBtu	2	55.30	44.25	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Propylene	B3-v0	2.58E-03	2.44E-03	4.22E-03	1.04E-03	lb/MMBtu	2	57.16	45.74	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Toluene	B3-v0	3.96E-04	3.95E-04	5.47E-04	2.46E-04	lb/MMBtu	2	38.72	30.98	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Xylene (Total)	A3-v0	2.59E-04	3.21E-04	3.21E-04	1.36E-04	lb/MMBtu	1	41.24	46.67	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Xylene (m,p)	A3-v0	1.54E-04	1.49E-04	1.71E-04	1.42E-04	lb/MMBtu	1	10.07	11.40	1.00
ICE, Diesel/2	20200102	None	O2>13%	VOC	Xylene (o)	C3-v0	1.49E-04	1.49E-04	1.49E-04	1.49E-04	lb/MMBtu	1	0.00	0.00	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Acenaphthene	A3-v0	7.06E-07	7.06E-07	1.03E-06	3.81E-07	lb/MMBtu	1	65.08	90.19	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Acenaphthylene	A3-v0	1.05E-05	1.05E-05	1.49E-05	6.14E-06	lb/MMBtu	1	59.06	81.86	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Anthracene	A3-v0	4.29E-06	4.29E-06	6.35E-06	2.23E-06	lb/MMBtu	1	67.84	94.02	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(a)anthracene	A3-v0	8.54E-07	8.54E-07	8.68E-07	8.41E-07	lb/MMBtu	1	2.17	3.01	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(a)pyrene	A3-v0	8.33E-07	8.33E-07	1.46E-06	2.06E-07	lb/MMBtu	1	106.44	147.52	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(b)fluoranthene	A3-v0	1.41E-07	1.41E-07	1.63E-07	1.18E-07	lb/MMBtu	1	22.41	31.05	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(g,h,i)perylene	A3-v0	8.95E-08	8.95E-08	9.44E-08	8.46E-08	lb/MMBtu	1	7.74	10.72	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Benzo(k)fluoranthene	A3-v0	4.35E-06	4.35E-06	4.46E-06	4.23E-06	lb/MMBtu	1	3.78	5.23	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Chrysene	A3-v0	1.61E-06	1.61E-06	1.72E-06	1.50E-06	lb/MMBtu	1	9.43	13.07	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Dibenz(a,h)anthracene	A3-v0	7.33E-08	7.33E-08	7.90E-08	6.77E-08	lb/MMBtu	1	10.86	15.06	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Fluoranthene	A3-v0	1.58E-07	1.58E-07	2.06E-07	1.10E-07	lb/MMBtu	1	42.96	59.53	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Fluorene	A3-v0	2.32E-06	2.32E-06	3.43E-06	1.21E-06	lb/MMBtu	1	67.90	94.10	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	1.31E-07	1.31E-07	1.39E-07	1.23E-07	lb/MMBtu	1	8.83	12.24	0.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Naphthalene	A3-v0	2.09E-04	2.09E-04	2.12E-04	2.06E-04	lb/MMBtu	1	1.88	2.61	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Phenanthrene	A3-v0	4.68E-06	4.68E-06	6.18E-06	3.17E-06	lb/MMBtu	1	45.46	63.00	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	PAH	Pyrene	A3-v0	2.27E-07	2.27E-07	2.92E-07	1.63E-07	lb/MMBtu	1	40.10	55.57	0.64
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Acetaldehyde	A3-v0	8.36E-03	8.98E-03	1.08E-02	5.27E-03	lb/MMBtu	1	33.90	38.37	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Acrolein	A3-v1	1.90E-03	1.37E-03	4.15E-03	1.90E-04	lb/MMBtu	1	106.79	120.84	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Benzene	A3-v1	7.48E-03	4.38E-03	1.30E-02	4.03E-03	lb/MMBtu	2	60.68	53.19	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Formaldehyde	A3-v1	4.85E-02	6.46E-02	8.13E-02	4.01E-03	lb/MMBtu	2	69.80	55.85	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Propylene	A3-v0	2.37E-02	1.69E-02	3.82E-02	1.09E-02	lb/MMBtu	2	56.74	49.73	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Toluene	A3-v1	2.72E-03	2.25E-03	5.47E-03	2.12E-04	lb/MMBtu	2	72.83	63.84	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Xylene (m,p)	A3-v0	5.75E-04	3.02E-04	1.19E-03	1.80E-04	lb/MMBtu	2	80.76	70.79	1.00
ICE, Field Gas/1	20200252	None	2S/Lean	VOC	Xylene (o)	A3-v0	2.74E-04	1.30E-04	5.63E-04	6.48E-05	lb/MMBtu	2	88.41	77.49	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Benzene	A2-v0	1.64E-03	1.97E-03	2.14E-03	8.81E-04	lb/MMBtu	3	35.58	28.47	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Formaldehyde	A2-v1	3.95E-02	2.99E-02	9.32E-02	4.40E-03	lb/MMBtu	3	76.73	50.13	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Propylene	A2-v0	1.52E-02	1.75E-02	1.92E-02	9.03E-03	lb/MMBtu	3	30.49	24.40	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Toluene	A2-v0	7.31E-04	8.94E-04	1.11E-03	2.56E-04	lb/MMBtu	3	51.12	40.90	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Xylene (m,p)	A2-v1	2.87E-04	1.81E-04	8.60E-04	7.37E-05	lb/MMBtu	3	99.71	79.78	1.00
ICE, Field Gas/2	20200202	None	4S/Lean	VOC	Xylene (o)	A2-v0	8.55E-05	9.11E-05	1.16E-04	5.84E-05	lb/MMBtu	3	25.60	20.49	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Benzene	A3-v0	1.05E-02	1.05E-02	1.06E-02	1.04E-02	lb/MMBtu	1	1.15	1.59	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Formaldehyde	A3-v0	4.81E-03	4.43E-03	5.69E-03	4.31E-03	lb/MMBtu	1	15.91	18.00	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Propylene	A3-v0	2.90E-03	2.90E-03	2.90E-03	2.90E-03	lb/MMBtu	1	0.00	0.00	0.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Toluene	A3-v0	3.28E-03	3.28E-03	3.38E-03	3.17E-03	lb/MMBtu	1	4.56	6.32	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Xylene (m,p)	A3-v0	5.11E-04	5.11E-04	5.36E-04	4.87E-04	lb/MMBtu	1	6.73	9.33	1.00
ICE, Field Gas/3	20200254	None	4S/Rich	VOC	Xylene (o)	A3-v0	2.56E-04	2.56E-04	2.68E-04	2.43E-04	lb/MMBtu	1	6.73	9.33	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Acenaphthene	A3-v0	6.83E-07	6.06E-07	9.14E-07	5.30E-07	lb/MMBtu	1	29.79	33.71	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Acenaphthylene	A3-v0	7.23E-06	7.29E-06	1.02E-05	4.19E-06	lb/MMBtu	1	41.56	47.03	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Anthracene	A3-v0	2.44E-07	2.28E-07	3.52E-07	1.52E-07	lb/MMBtu	1	41.20	46.62	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(a)anthracene	A3-v0	7.41E-08	7.45E-08	9.14E-08	5.63E-08	lb/MMBtu	1	23.70	26.82	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(b)fluoranthene	A3-v2	3.38E-08	2.79E-08	4.92E-08	2.42E-08	lb/MMBtu	1	39.97	45.23	0.76
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(g,h,i)perylene	A3-v1	9.80E-08	2.79E-08	8.85E-07	5.96E-09	lb/MMBtu	1	159.90	180.94	0.95
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Benzo(k)fluoranthene	A3-v1	5.04E-07	4.64E-07	2.46E-07	1.99E-08	lb/MMBtu	1	131.00	148.24	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Chrysene	A3-v0	9.19E-08	1.05E-07	1.02E-06	2.93E-08	lb/MMBtu	1	98.44	111.40	0.98
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Dibenz(a,h)anthracene	A3-v0	1.04E-08	1.05E-08	1.07E-07	6.29E-08	lb/MMBtu	1	27.27	30.86	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Fluoranthene	A3-v0	2.38E-07	2.52E-07	3.16E-07	6.63E-09	lb/MMBtu	1	35.41	40.07	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Fluorene	A3-v0	4.38E-07	3.96E-07	5.98E-07	1.46E-07	lb/MMBtu	1	36.21	40.98	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Indeno(1,2,3-cd)pyrene	A3-v1	1.14E-07	3.73E-08	2.81E-07	3.21E-07	lb/MMBtu	1	32.63	36.92	0.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Naphthalene	A3-v0	1.16E-04	1.52E-04	1.77E-04	2.32E-08	lb/MMBtu	1	127.40	144.16	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH		A3-v0	1.16E-04	1.52E-04	1.77E-04	1.90E-05	lb/MMBtu	1	73.21	82.85	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Phenanthrene	A3-v0	8.50E-07	7.92E-07	1.20E-06	5.63E-07	lb/MMBtu	1	37.66	42.62	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	PAH	Pyrene	A3-v0	1.18E-07	1.35E-07	1.55E-07	6.29E-08	lb/MMBtu	1	41.10	46.51	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Acetaldehyde	A1-v0	3.80E-03	2.82E-03	9.47E-03	1.45E-03	lb/MMBtu	5	64.91	32.85	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Acrolein	A1-v1	1.56E-03	1.05E-03	5.22E-03	1.92E-04	lb/MMBtu	5	92.02	48.20	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Benzene	A1-v1	1.15E-03	1.17E-03	2.35E-03	2.35E-04	lb/MMBtu	7	47.28	24.77	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Formaldehyde	A1-v0	2.73E-02	2.64E-02	4.56E-02	9.22E-03	lb/MMBtu	7	38.56	16.49	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Propylene	A1-v1	1.78E-02	8.39E-03	5.57E-02	3.92E-03	lb/MMBtu	7	109.05	57.12	0.97
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Toluene	A1-v0	3.92E-04	3.77E-04	5.43E-04	1.57E-04	lb/MMBtu	7	33.98	17.80	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Xylene (m,p)	A1-v0	8.22E-05	7.74E-05	1.51E-04	3.36E-05	lb/MMBtu	7	46.27	24.24	1.00
ICE, Natural Gas/1	20200202	None	4S/Lean	VOC	Xylene (o)	A1-v0	4.71E-05	4.71E-05	8.70E-05	1.01E-05	lb/MMBtu	7	39.52	20.70	0.95
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Acetaldehyde	A3-v0	1.63E-03	1.62E-03	1.74E-03	1.53E-03	lb/MMBtu	1	6.46	7.31	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Acrolein	A3-v2	5.15E-04	3.97E-04	1.31E-03	2.50E-06	lb/MMBtu	2	105.65	84.54	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Benzene	A3-v0	9.40E-03	9.40E-03	9.73E-03	9.06E-03	lb/MMBtu	1	5.05	7.00	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Formaldehyde	A3-v1	5.07E-03	4.27E-03	1.09E-02	4.08E-04	lb/MMBtu	2	100.52	80.43	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Propylene	A3-v0	3.76E-02	3.76E-02	4.00E-02	3.52E-02	lb/MMBtu	1	8.95	12.40	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Toluene	A3-v0	2.40E-03	2.40E-03	2.50E-03	2.29E-03	lb/MMBtu	1	6.15	8.52	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Xylene (m,p)	A3-v0	4.20E-04	4.20E-04	4.32E-04	4.08E-04	lb/MMBtu	1	4.04	5.60	1.00
ICE, Natural Gas/2	20200254	None	4S/Rich	VOC	Xylene (o)	A3-v0	2.06E-04	2.06E-04	2.11E-04	2.02E-04	lb/MMBtu	1	3.29	4.56	1.00
SG, Crude Oil/1	31000413	None	None	Halogens	HCl	C3-v0	1.25E-06	1.21E-06	1.38E-06	1.17E-06	lb/MMBtu	1	8.92	10.09	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Arsenic	D2-v0	6.67E-06	4.20E-06	1.92E-05	2.37E-06	lb/MMBtu	3	84.20	55.01	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Beryllium	D3-v0	1.92E-06	2.01E-06	2.15E-06	1.58E-06	lb/MMBtu	2	13.70	10.96	0.51
SG, Crude Oil/1	31000413	None	None	Metals	Cadmium	D2-v1	1.09E-06	9.86E-07	3.61E-06	1.58E-07	lb/MMBtu	3	100.01	65.34	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Chromium (Hex)	B2-v0	1.09E-06	1.01E-06	2.22E-06	3.86E-07	lb/MMBtu	3	55.29	36.12	0.47
SG, Crude Oil/1	31000413	None	None	Metals	Chromium (Total)	B2-v1	5.75E-06	3.81E-06	1.46E-05	1.01E-06	lb/MMBtu	3	85.04	55.56	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Copper	D2-v0	6.63E-06	6.16E-06	1.24E-05	3.16E-06	lb/MMBtu	3	48.02	31.37	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Lead	D2-v0	1.88E-06	1.75E-06	3.24E-06	1.19E-06	lb/MMBtu	3	33.08	21.61	0.52
SG, Crude Oil/1	31000413	None	None	Metals	Manganese	D2-v1	2.02E-05	1.89E-05	3.79E-05	1.62E-06	lb/MMBtu	3	63.82	47.28	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Mercury	D2-v2	1.48E-05	3.43E-07	3.48E-05	5.71E-08	lb/MMBtu	3	122.84	91.00	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Nickel	D2-v0	2.40E-03	2.37E-03	2.65E-03	2.19E-03	lb/MMBtu	3	5.44	3.55	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Phosphorus	D3-v1	1.78E-04	9.57E-05	4.57E-04	1.84E-05	lb/MMBtu	2	102.06	81.66	1.00
SG, Crude Oil/1	31000413	None	None	Metals	Selenium	D2-v1	7.95E-06	2.93E-06	2.08E-05	1.19E-06	lb/MMBtu	3	108.30	70.75	0.96
SG, Crude Oil/1	31000413	None	None	Metals	Zinc	D2-v2	5.44E-04	1.90E-04	1.75E-03	1.58E-05	lb/MMBtu	3	127.81	83.50	0.94
SG, Crude Oil/1	31000413	None	None	PAH	Acenaphthylene	C3-v1	2.55E-07	1.38E-07	6.21E-07	7.06E-09	lb/MMBtu	2	111.36	89.10	1.00
SG, Crude Oil/1	31000413	None	None	PAH	Anthracene	C2-v1	5.00E-08	4.33E-08	1.18E-07	1.41E-09	lb/MMBtu	3	83.39	54.48	0.47
SG, Crude Oil/1	31000413	None	None	PAH	Benzo(a)anthracene	C2-v1	5.10E-08	2.12E-08	1.66E-07	2.12E-09	lb/MMBtu	3	133.46	92.48	1.00
SG, Crude Oil/1	31000413	None	None	PAH	Benzo(a)pyrene	C2-v1	5.18E-08	5.51E-08	9.89E-08	3.53E-09	lb/MMBtu	3	72.24	50.06	0.42
SG, Crude Oil/1	31000413	None	None	PAH	Benzo(b)fluoranthene	C3-v1	5.38E-08	6.35E-08	8.41E-08	3.53E-09	lb/MMBtu	2	60.91	48.74	0.24
SG, Crude Oil/1	31000413	None	None	PAH	Benzo(b+k)fluoranthene	C3-v1	4.71E-08	2.82E-08	1.06E-07	7.06E-09	lb/MMBtu	1	110.57	125.12	0.00
SG, Crude Oil/1	31000413	None	None	PAH	Benzo(g,h,i)perylene	C3-v0	8.06E-08	8.01E-08	8.41E-08	7.77E-09	lb/MMBtu	1	4.07	4.61	0.00
SG, Crude Oil/1	31000413	None	None	PAH	Benzo(k)fluoranthene	C3-v0	5.21E-08	6.00E-08	8.41E-08	7.06E-09	lb/MMBtu	2	63.92	51.15	0.21
SG, Crude Oil/1	31000413	None	None	PAH	Chrysene	C2-v1	4.00E-09	3.53E-09	7.06E-09	1.41E-09	lb/MMBtu	1	71.32	80.70	0.00
SG, Crude Oil/1	31000413	None	None	PAH	Dibenz(a,h)anthracene	C2-v1	7.43E-08	7.77E-08	2.28E-07	7.06E-09	lb/MMBtu	3	92.90	60.70	0.64
SG, Crude Oil/1	31000413	None	None	PAH	Fluorene	C3-v1	5.33E-08	6.35E-08	8.41E-08	7.06E-09	lb/MMBtu	2	61.97	49.58	0.00
SG, Crude Oil/1	31000413	None	None	PAH	Fluoranthene	C2-v1	8.72E-08	7.77E-08	3.46E-07	7.06E-09	lb/MMBtu	3	115.48	75.45	0.70
SG, Crude Oil/1	31000413	None	None	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	9.41E-08	4.80E-08	3.04E-07	7.06E-09	lb/MMBtu	3	116.41	76.06	1.00
SG, Crude Oil/1	31000413	None	None	PAH	Naphthalene	C2-v0	5.33E-08	6.71E-08	8.41E-08	7.06E-09	lb/MMBtu	2	64.74	51.80	0.22
SG, Crude Oil/1	31000413	None	None	PAH		C2-v0	5.28E-06	3.01E-06	1.07E-05	1.43E-06	lb/MMBtu	3	80.94	56.09	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
SG, Crude Oil/I	31000413	None	None	PAH	Phenanthrene	C2-v1	1.65E-07	4.71E-08	1.07E-06	1.45E-08	lb/MMBtu	3	208.06	135.93	1.00
SG, Crude Oil/I	31000413	None	None	PAH	Pyrene	C2-v1	1.50E-07	8.41E-08	4.77E-07	7.06E-09	lb/MMBtu	3	95.35	62.29	0.82
SG, Crude Oil/I	31000413	None	None	SVOC	Acetaldehyde	A3-v0	4.74E-05	4.90E-05	4.95E-05	4.37E-05	lb/MMBtu	1	6.71	7.60	0.00
SG, Crude Oil/I	31000413	None	None	VOC	Acetaldehyde	A3-v0	1.78E-05	1.43E-05	3.37E-05	7.79E-06	lb/MMBtu	2	52.94	34.59	0.54
SG, Crude Oil/I	31000413	None	None	VOC	Acrolein	A3-v0	1.20E-05	3.30E-06	3.06E-05	3.06E-05	lb/MMBtu	2	108.95	71.18	0.00
SG, Crude Oil/I	31000413	None	None	VOC	Benzene	B3-v0	4.07E-06	4.37E-06	6.55E-06	2.02E-06	lb/MMBtu	2	43.66	28.53	0.36
SG, Crude Oil/I	31000413	None	None	VOC	Formaldehyde	A3-v0	6.31E-06	5.36E-06	1.11E-05	2.68E-06	lb/MMBtu	2	53.55	34.98	0.44
SG, Crude Oil/I	31000413	None	None	VOC	Propylene	B3-v1	3.91E-04	1.24E-05	1.15E-03	1.24E-05	lb/MMBtu	2	145.24	94.89	0.00
SG, Crude Oil/I	31000413	None	None	VOC	Toluene	B3-v0	2.38E-05	1.36E-05	7.80E-05	1.36E-05	lb/MMBtu	2	89.52	58.48	0.74
SG, Crude Oil/I	31000413	None	None	VOC	Xylene (Total)	B3-v1	2.18E-05	3.12E-05	3.12E-05	2.89E-06	lb/MMBtu	2	65.05	42.50	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Halogens	HCl	C3-v0	1.25E-06	1.21E-06	1.38E-06	1.17E-06	lb/MMBtu	1	8.92	10.09	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Arsenic	D2-v0	6.67E-06	4.20E-06	1.92E-05	2.37E-06	lb/MMBtu	3	84.20	55.01	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Beryllium	D3-v0	1.92E-06	2.01E-06	2.15E-06	1.58E-06	lb/MMBtu	2	13.70	10.96	0.51
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Cadmium	D2-v1	1.09E-06	9.86E-07	3.61E-06	1.38E-07	lb/MMBtu	3	100.01	65.34	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Chromium (Hex)	B2-v0	1.09E-06	1.01E-06	2.22E-06	3.86E-07	lb/MMBtu	3	55.29	36.12	0.47
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Chromium (Total)	B2-v1	5.75E-06	3.81E-06	1.46E-05	1.01E-06	lb/MMBtu	3	85.04	55.56	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Copper	D2-v0	6.63E-06	1.66E-06	1.24E-05	3.16E-06	lb/MMBtu	3	48.02	31.37	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Lead	D2-v0	1.88E-06	1.75E-06	3.24E-06	1.19E-06	lb/MMBtu	3	33.08	21.61	0.52
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Manganese	D2-v1	2.02E-05	1.89E-05	3.79E-05	1.62E-06	lb/MMBtu	3	63.82	47.28	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Mercury	D2-v2	1.48E-05	3.43E-07	3.48E-05	5.71E-08	lb/MMBtu	3	122.84	91.00	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Nickel	D2-v0	2.40E-03	2.38E-03	2.65E-03	2.19E-03	lb/MMBtu	3	5.44	3.55	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Phosphorus	D3-v1	1.78E-04	9.57E-05	4.57E-04	1.84E-05	lb/MMBtu	2	102.06	81.66	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Selenium	D2-v1	7.95E-06	2.93E-06	2.08E-05	1.19E-06	lb/MMBtu	3	108.30	70.75	0.96
SG, Crude Oil/I	31000413	SO2 Scrub	None	Metals	Zinc	D2-v2	5.44E-04	1.90E-04	1.75E-03	1.58E-05	lb/MMBtu	3	127.81	83.50	0.94
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Acenaphthene	C3-v1	2.55E-07	1.38E-07	6.21E-07	7.06E-09	lb/MMBtu	2	111.36	89.10	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Acenaphthylene	C2-v1	5.00E-08	4.33E-08	1.18E-07	1.41E-09	lb/MMBtu	3	83.39	54.48	0.47
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Anthracene	C2-v1	5.10E-08	2.12E-08	1.66E-07	2.12E-09	lb/MMBtu	3	133.46	92.48	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(a)anthracene	C2-v1	5.18E-08	5.51E-08	9.89E-08	3.53E-09	lb/MMBtu	3	72.24	50.06	0.42
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(a)pyrene	C3-v1	5.38E-08	6.35E-08	8.41E-08	3.53E-09	lb/MMBtu	2	60.91	48.74	0.24
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(b)fluoranthene	C3-v1	4.71E-08	2.82E-08	1.06E-07	7.06E-09	lb/MMBtu	1	110.57	125.12	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(k)fluoranthene	C3-v0	8.06E-08	8.01E-08	8.41E-08	7.77E-08	lb/MMBtu	1	4.07	4.61	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(g,h,i)perylene	C3-v1	5.21E-08	6.00E-08	8.41E-08	7.06E-09	lb/MMBtu	2	63.92	51.15	0.21
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Benzo(k)fluoranthene	C3-v0	4.00E-09	3.53E-09	7.06E-09	1.41E-09	lb/MMBtu	1	71.32	80.70	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Chrysene	C2-v1	7.43E-08	7.77E-08	2.28E-07	7.06E-09	lb/MMBtu	3	92.90	60.70	0.64
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Dibenz(a,h)anthracene	C3-v1	5.33E-08	6.35E-08	8.41E-08	7.06E-09	lb/MMBtu	2	61.97	49.58	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Fluoranthene	C2-v1	8.72E-08	7.77E-08	3.46E-07	7.06E-09	lb/MMBtu	3	115.48	75.45	0.70
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Fluorene	C2-v1	9.41E-08	4.80E-08	3.04E-07	7.06E-09	lb/MMBtu	3	116.41	76.06	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	5.33E-08	6.71E-08	8.41E-08	7.06E-09	lb/MMBtu	2	64.74	51.80	0.22
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Naphthalene	C2-v0	5.28E-06	3.01E-06	1.07E-05	1.43E-05	lb/MMBtu	3	80.94	56.09	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Phenanthrene	C2-v1	1.65E-07	4.71E-08	1.07E-06	1.45E-08	lb/MMBtu	3	208.06	135.93	1.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	PAH	Pyrene	C2-v1	1.50E-07	8.41E-08	4.77E-07	7.06E-09	lb/MMBtu	3	95.35	62.29	0.82
SG, Crude Oil/I	31000413	SO2 Scrub	None	SVOC	Acetaldehyde	A3-v0	4.74E-05	4.90E-05	4.95E-05	4.37E-05	lb/MMBtu	1	6.71	7.60	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Acetaldehyde	A3-v0	1.78E-05	1.43E-05	3.37E-05	7.79E-06	lb/MMBtu	2	52.94	34.59	0.54
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Acrolein	A3-v0	1.20E-05	3.30E-06	3.06E-05	3.06E-05	lb/MMBtu	2	108.95	71.18	0.00
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Benzene	B3-v0	4.07E-06	4.37E-06	6.55E-06	2.02E-06	lb/MMBtu	2	43.66	28.53	0.36
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Formaldehyde	A3-v0	6.31E-06	5.36E-06	1.11E-05	2.68E-06	lb/MMBtu	2	53.55	34.98	0.44
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Propylene	B3-v1	3.91E-04	1.24E-05	1.15E-03	1.24E-05	lb/MMBtu	2	145.24	94.89	0.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Toluene	B3-v0	2.38E-05	1.36E-05	7.80E-05	1.36E-05	lb/MMBtu	2	89.52	58.48	0.74
SG, Crude Oil/I	31000413	SO2 Scrub	None	VOC	Xylene (Total)	B3-v1	2.18E-05	3.12E-05	3.12E-05	2.89E-06	lb/MMBtu	2	65.05	42.50	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Acetaldehyde	A3-v0	1.66E-05	1.68E-05	1.77E-05	1.53E-05	lb/MMBtu	1	7.27	8.22	1.00
SG, Natural Gas/I	31000414	None	None	VOC	Acrolein	A3-v0	1.96E-05	1.86E-05	2.37E-05	1.65E-05	lb/MMBtu	1	18.73	21.19	1.00
SG, Natural Gas/I	31000414	None	None	VOC	Benzene	B3-v0	3.94E-06	3.93E-06	4.10E-06	3.78E-06	lb/MMBtu	2	4.28	3.42	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Formaldehyde	A3-v1	3.11E-05	1.87E-05	9.75E-05	3.87E-06	lb/MMBtu	2	113.45	90.78	1.00
SG, Natural Gas/I	31000414	None	None	VOC	Propylene	C3-v0	1.16E-04	1.16E-04	1.17E-04	1.16E-04	lb/MMBtu	1	0.36	0.41	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Toluene	B3-v0	1.22E-05	1.22E-05	1.27E-05	1.17E-05	lb/MMBtu	2	4.28	3.42	0.00
SG, Natural Gas/I	31000414	None	None	VOC	Xylene (Total)	B3-v0	2.81E-05	2.81E-05	2.94E-05	2.70E-05	lb/MMBtu	2	4.28	3.42	0.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Acenaphthene	A3-v0	1.06E-09	7.84E-10	2.34E-09	4.06E-10	lb/MMBtu	2	65.71	52.57	0.72
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Acenaphthylene	A3-v1	2.69E-09	7.14E-10	1.01E-08	4.06E-10	lb/MMBtu	2	142.14	113.73	0.85
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Anthracene	A3-v1	2.18E-09	2.33E-09	4.26E-09	4.06E-10	lb/MMBtu	2	64.55	51.65	0.97
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(a)anthracene	A3-v0	1.28E-09	1.12E-09	2.42E-09	7.12E-10	lb/MMBtu	2	45.67	36.54	0.45
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(a)pyrene	A3-v0	7.08E-10	7.11E-10	1.31E-09	3.92E-10	lb/MMBtu	2	47.05	37.64	0.32
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(b)fluoranthene	A3-v0	2.01E-09	9.26E-10	4.71E-09	7.10E-10	lb/MMBtu	2	92.63	74.12	0.84
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(g,h,i)perylene	A3-v0	9.98E-10	7.14E-10	1.73E-09	4.06E-10	lb/MMBtu	2	57.41	45.93	0.59
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Benzo(k)fluoranthene	A3-v0	8.41E-10	7.14E-10	1.37E-09	4.06E-10	lb/MMBtu	2	41.36	33.09	0.52
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Chrysene	A3-v0	1.60E-09	1.80E-09	2.42E-09	7.12E-10	lb/MMBtu	2	39.17	31.35	0.33
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Dibenz(a,h)anthracene	A3-v0	5.54E-10	5.58E-10	7.15E-10	3.90E-10	lb/MMBtu	2	31.29	25.04	0.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Fluoranthene	A3-v0	3.67E-09	1.78E-09	8.90E-09	1.07E-09	lb/MMBtu	2	95.56	76.46	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Fluorene	A3-v0	5.66E-09	2.64E-09	1.28E-08	1.85E-09	lb/MMBtu	2	92.16	73.74	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	1.18E-09	7.14E-10	2.34E-09	4.06E-10	lb/MMBtu	2	72.24	57.80	0.66
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Naphthalene	A3-v0	2.93E-07	2.33E-07	5.46E-07	1.57E-07	lb/MMBtu	2	52.01	41.62	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Phenanthrene	A3-v0	1.68E-08	1.34E-08	3.12E-08	6.50E-09	lb/MMBtu	2	60.61	48.50	1.00
SG, Natural/CVR Gas/I	31000499	None	None	PAH	Pyrene	A3-v1	6.02E-09	2.93E-09	1.72E-08	8.55E-10	lb/MMBtu	2	106.75	85.42	1.00
SG, Natural/CVR Gas/I	31000499	None	None	SVOC	Ethylbenzene	A3-v0	9.63E-06	7.23E-06	2.02E-05	4.02E-06	lb/MMBtu	2	59.81	47.86	0.54
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Acetaldehyde	A2-v0	1.85E-05	1.68E-05	4.88E-05	5.47E-06	lb/MMBtu	4	66.12	37.41	0.84
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Acrolein	A2-v0	1.69E-05	1.92E-05	2.62E-05	5.47E-06	lb/MMBtu	4	41.86	23.68	0.88
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Benzene	B1-v0	4.45E-06	4.40E-06	6.12E-06	2.75E-06	lb/MMBtu	5	23.61	11.95	0.00
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Formaldehyde	A2-v1	2.53E-05	1.56E-05	1.01E-04	5.47E-06	lb/MMBtu	4	111.34	63.00	0.70
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Hydrogen Sulfide	C3-v0	1.59E-04	1.60E-04	2.38E-04	8.02E-05	lb/MMBtu	1	49.59	56.11	1.00
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Propylene	C2-v1	2.29E-04	1.27E-04	6.83E-04	1.23E-05	lb/MMBtu	4	94.36	53.39	0.72
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Toluene	B1-v0	1.73E-05	1.43E-05	3.04E-05	1.34E-05	lb/MMBtu	5	33.16	16.78	0.64
SG, Natural/CVR Gas/I	31000499	None	None	VOC	Xylene (Total)	B1-v0	2.66E-05	1.11E-05	4.36E-05	1.21E-05	lb/MMBtu	5	36.70	18.57	0.23
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Acenaphthene	A3-v0	3.25E-09	2.03E-09	8.46E-09	1.23E-09	lb/MMBtu	2	87.69	70.16	0.67
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Acenaphthylene	A3-v0	2.90E-09	2.74E-09	5.67E-09	1.23E-09	lb/MMBtu	2	57.20	45.77	0.54
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Anthracene	A3-v1	3.43E-08	7.19E-09	1.50E-07	3.70E-09	lb/MMBtu	2	168.94	135.17	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(a)anthracene	A3-v0	2.78E-09	2.31E-09	5.62E-09	1.80E-09	lb/MMBtu	2	52.46	41.98	0.34
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(a)pyrene	A3-v0	2.05E-09	2.01E-09	3.07E-09	1.23E-09	lb/MMBtu	2	41.94	33.56	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(b)fluoranthene	A3-v0	3.30E-09	2.74E-09	8.77E-09	1.23E-09	lb/MMBtu	2	84.51	67.62	0.44
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(g,h,i)perylene	A3-v0	2.38E-09	2.74E-09	3.25E-09	1.23E-09	lb/MMBtu	2	37.17	29.74	0.22
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Benzo(k)fluoranthene	A3-v0	2.58E-09	2.74E-09	4.46E-09	1.23E-09	lb/MMBtu	2	46.68	37.35	0.28
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Chrysene	A3-v0	4.93E-09	5.88E-09	6.05E-09	2.76E-09	lb/MMBtu	2	32.43	25.95	0.31
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Dibenz(a,h)anthracene	A3-v0	2.05E-09	2.01E-09	3.02E-09	1.23E-09	lb/MMBtu	2	41.94	33.56	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Fluoranthene	A3-v0	1.16E-08	1.16E-08	1.71E-08	5.51E-09	lb/MMBtu	2	36.82	29.47	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Fluorene	A3-v0	1.49E-08	1.40E-08	3.02E-08	7.90E-09	lb/MMBtu	2	53.86	43.09	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	2.29E-09	2.73E-09	3.02E-09	1.23E-09	lb/MMBtu	2	35.08	28.07	0.20

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Naphthalene	A3-v0	7.29E-07	7.77E-07	9.33E-07	4.35E-07	lb/MMBtu	2	30.01	24.02	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Phenanthrene	A3-v0	6.46E-08	4.86E-08	1.39E-07	2.57E-08	lb/MMBtu	2	62.98	50.39	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	PAH	Pyrene	A3-v0	2.25E-08	2.03E-08	4.15E-08	5.51E-09	lb/MMBtu	2	64.16	51.34	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	SVOC	Ethylbenzene	A3-v0	1.49E-05	1.48E-05	2.16E-05	9.05E-06	lb/MMBtu	2	42.21	33.78	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Acetaldehyde	A3-v0	3.78E-05	4.55E-05	5.14E-05	1.65E-05	lb/MMBtu	1	49.40	55.90	0.85
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Acrolein	A3-v0	1.72E-05	1.73E-05	1.73E-05	1.71E-05	lb/MMBtu	1	0.68	0.77	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Benzene	A3-v0	1.99E-05	1.19E-05	1.82E-05	6.64E-06	lb/MMBtu	2	48.32	38.66	0.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Formaldehyde	A3-v0	1.63E-03	1.65E-03	2.68E-03	1.65E-03	lb/MMBtu	1	29.80	33.72	0.45
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Propylene	A3-v0	7.01E-05	5.75E-05	1.65E-04	1.39E-03	lb/MMBtu	1	15.66	17.72	1.00
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Toluene	A3-v1	3.52E-05	5.75E-05	1.65E-04	7.85E-06	lb/MMBtu	2	89.58	71.67	0.98
Turbine, Natural Gas/I	20200203	None	No Duct Burners	VOC	Xylene (Total)	A3-v0	3.52E-05	4.04E-05	5.97E-05	9.25E-06	lb/MMBtu	2	51.95	41.57	0.38
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Acenaphthene	A3-v0	3.25E-09	2.03E-09	8.46E-09	1.23E-09	lb/MMBtu	2	87.69	70.16	0.67
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Acenaphthylene	A3-v0	2.90E-09	2.74E-09	5.67E-09	1.23E-09	lb/MMBtu	2	57.20	45.77	0.54
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Anthracene	A3-v1	3.43E-08	7.19E-09	1.50E-07	3.70E-09	lb/MMBtu	2	168.94	135.17	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(a)anthracene	A3-v0	2.78E-09	2.31E-09	5.62E-09	1.80E-09	lb/MMBtu	2	52.46	41.98	0.34
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(a)pyrene	A3-v0	2.05E-09	2.01E-09	3.02E-09	1.23E-09	lb/MMBtu	2	41.94	33.56	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(b)fluoranthene	A3-v0	3.30E-09	2.74E-09	8.77E-09	1.23E-09	lb/MMBtu	2	84.51	67.62	0.44
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(g,h,i)perylene	A3-v0	2.38E-09	2.74E-09	3.25E-09	1.23E-09	lb/MMBtu	2	37.17	29.74	0.22
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Benzo(k)fluoranthene	A3-v0	2.58E-09	2.74E-09	4.46E-09	1.23E-09	lb/MMBtu	2	46.68	37.35	0.28
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Chrysene	A3-v0	4.93E-09	5.88E-09	6.05E-09	2.76E-09	lb/MMBtu	2	32.43	25.95	0.31
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Dibenz(a,h)anthracene	A3-v0	2.05E-09	2.01E-09	3.02E-09	1.23E-09	lb/MMBtu	2	41.94	33.56	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Fluorene	A3-v0	1.16E-08	1.40E-08	1.71E-08	5.51E-09	lb/MMBtu	2	36.82	29.47	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Indeno(1,2,3-cd)pyrene	A3-v0	1.49E-08	1.40E-08	3.02E-08	7.90E-09	lb/MMBtu	2	53.86	43.09	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Naphthalene	A3-v0	2.29E-09	2.73E-09	3.02E-09	1.23E-09	lb/MMBtu	2	35.08	28.07	0.20
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Phenanthrene	A3-v0	7.29E-07	7.77E-07	9.33E-07	4.35E-07	lb/MMBtu	2	30.01	24.02	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	PAH	Pyrene	A3-v0	6.46E-08	4.86E-08	1.39E-07	2.57E-08	lb/MMBtu	2	62.98	50.39	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	SVOC	Ethylbenzene	A3-v0	2.25E-08	2.03E-08	4.15E-08	5.51E-09	lb/MMBtu	2	64.16	51.34	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Acetaldehyde	A3-v0	3.78E-05	4.55E-05	5.14E-05	1.65E-05	lb/MMBtu	2	42.21	33.78	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Acrolein	A3-v0	1.72E-05	1.73E-05	1.73E-05	1.71E-05	lb/MMBtu	1	0.68	0.77	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Benzene	A3-v0	1.99E-05	1.19E-05	1.82E-05	6.64E-06	lb/MMBtu	2	48.32	38.66	0.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Formaldehyde	A3-v0	1.63E-03	1.65E-03	2.68E-03	1.65E-03	lb/MMBtu	1	29.80	33.72	0.45
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Propylene	A3-v0	7.01E-05	5.75E-05	1.65E-04	1.39E-03	lb/MMBtu	1	15.66	17.72	1.00
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Toluene	A3-v1	3.52E-05	5.75E-05	1.65E-04	7.85E-06	lb/MMBtu	2	89.58	71.67	0.98
Turbine, Natural Gas/I	20200203	SCR/COC	No Duct Burners	VOC	Xylene (Total)	A3-v0	3.52E-05	4.04E-05	5.97E-05	9.25E-06	lb/MMBtu	2	51.95	41.57	0.38
Turbine, Natural Gas/2	20200203	SCR	Duct Burners	VOC	Formaldehyde	C3-v0	6.02E-03	5.89E-03	6.65E-03	5.52E-03	lb/MMBtu	1	9.57	10.83	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Cadmium	C3-v0	1.94E-06	9.84E-07	3.37E-06	9.55E-07	lb/MMBtu	1	86.47	97.85	0.67
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Chromium (Hex)	C3-v0	6.95E-06	6.60E-06	1.39E-05	1.45E-06	lb/MMBtu	2	83.59	66.88	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Chromium (Total)	C3-v1	4.99E-05	3.15E-05	1.71E-04	1.43E-05	lb/MMBtu	2	120.88	96.72	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Copper	A3-v0	1.75E-06	1.84E-06	2.46E-06	9.65E-07	lb/MMBtu	1	42.72	48.34	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Manganese	A3-v0	3.25E-06	2.19E-06	6.32E-06	1.23E-06	lb/MMBtu	1	83.26	94.21	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Mercury	A3-v0	4.35E-06	3.73E-06	7.82E-06	2.37E-06	lb/MMBtu	2	51.85	41.49	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Nickel	C3-v0	7.60E-06	6.32E-06	3.16E-05	3.16E-06	lb/MMBtu	1	68.51	77.52	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Zinc	A3-v0	1.53E-05	1.45E-05	1.80E-05	1.35E-05	lb/MMBtu	1	15.37	17.39	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Acenaphthene	C3-v0	2.21E-08	2.00E-08	3.55E-08	1.07E-08	lb/MMBtu	1	56.84	64.32	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Acenaphthylene	C3-v0	1.07E-08	1.20E-08	1.23E-08	7.93E-09	lb/MMBtu	1	22.70	25.68	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Anthracene	C3-v0	2.48E-08	2.26E-08	3.41E-08	1.76E-08	lb/MMBtu	1	34.03	38.51	1.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Benzo(a)anthracene	C3-v1	1.49E-08	3.23E-09	3.86E-08	2.81E-09	lb/MMBTU	1	138.05	156.22	0.86
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Benzo(a)pyrene	C3-v0	9.53E-09	9.78E-09	1.26E-08	6.17E-09	lb/MMBTU	1	34.09	38.57	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Benzo(b)fluoranthene	C3-v0	2.50E-08	2.96E-08	3.20E-08	1.35E-08	lb/MMBTU	1	40.14	45.42	0.82
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Benzo(g,h,i)perylene	C3-v0	1.91E-08	1.86E-08	2.52E-08	1.35E-08	lb/MMBTU	1	30.62	34.65	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Benzo(k)fluoranthene	C3-v0	1.25E-08	1.13E-08	1.86E-08	7.49E-09	lb/MMBTU	1	45.53	51.52	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Chrysene	C3-v0	1.07E-07	6.37E-08	2.26E-07	3.23E-08	lb/MMBTU	1	96.95	109.70	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Dibenz(a,h)anthracene	C3-v0	6.60E-09	7.55E-09	7.99E-09	4.26E-09	lb/MMBTU	1	30.92	34.99	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Fluorene	C3-v0	9.90E-08	9.46E-08	1.46E-07	5.14E-08	lb/MMBTU	1	48.01	54.33	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Indeno(1,2,3-cd)pyrene	C3-v1	1.76E-07	7.26E-08	4.15E-07	3.96E-08	lb/MMBTU	1	117.53	132.99	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Naphthalene	C3-v0	9.14E-09	9.85E-09	1.10E-08	6.61E-09	lb/MMBTU	1	24.76	28.02	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Phenanthrene	C3-v0	3.74E-05	3.70E-05	3.99E-05	3.52E-05	lb/MMBTU	1	6.36	7.20	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Pyrene	C3-v0	6.37E-07	5.14E-07	9.03E-07	4.93E-07	lb/MMBTU	1	36.34	41.12	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	PAH	Phenol	C3-v0	1.19E-07	9.63E-08	2.13E-07	4.84E-08	lb/MMBTU	1	71.00	80.34	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	VOC	Acetaldehyde	A3-v0	1.43E-05	1.47E-05	1.48E-05	1.33E-05	lb/MMBTU	1	5.81	6.57	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	VOC	Benzene	A3-v0	4.11E-06	3.09E-06	6.18E-06	3.06E-06	lb/MMBTU	1	43.68	49.43	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	VOC	Formaldehyde	C3-v0	1.52E-04	1.54E-04	1.69E-04	1.32E-04	lb/MMBTU	2	11.10	8.88	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	VOC	Hydrogen Sulfide	A3-v0	1.54E-04	8.36E-05	3.09E-04	7.03E-05	lb/MMBTU	1	86.98	98.42	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	VOC	Toluene	A3-v0	1.50E-04	1.49E-04	1.69E-04	1.44E-04	lb/MMBTU	1	4.30	4.86	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	VOC	Xylene (Total)	E3-v0	1.62E-04	1.61E-04	1.69E-04	1.55E-04	lb/MMBTU	1	4.30	4.87	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	VOC	Arsenic	E3-v0	3.74E-04	3.76E-04	3.76E-04	3.72E-04	lb/MMBTU	1	0.55	0.63	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Beryllium	B3-v0	8.95E-06	9.00E-06	9.40E-06	8.46E-06	lb/MMBTU	1	5.25	5.94	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Cadmium	B3-v0	1.79E-06	1.80E-06	1.88E-06	1.69E-06	lb/MMBTU	1	5.26	5.95	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Copper	B3-v0	3.89E-06	3.60E-06	4.70E-06	3.39E-06	lb/MMBTU	1	18.07	20.45	0.40
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Lead	B3-v0	2.14E-05	9.89E-06	4.59E-05	8.46E-06	lb/MMBTU	1	99.09	112.13	0.87
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Manganese	B3-v0	3.58E-05	3.60E-05	3.76E-05	3.39E-05	lb/MMBTU	1	5.23	5.92	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Nickel	B3-v0	9.21E-05	5.20E-05	1.95E-04	2.93E-05	lb/MMBTU	1	97.60	110.45	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Selenium	B3-v0	1.46E-04	5.09E-05	3.47E-04	4.09E-05	lb/MMBTU	1	118.88	134.52	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	Metals	Zinc	B3-v0	8.95E-06	9.00E-06	9.40E-06	8.46E-06	lb/MMBTU	1	5.25	5.94	0.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	SVOC	Phenol	C3-v1	2.16E-04	2.14E-04	3.58E-04	7.75E-05	lb/MMBTU	1	64.70	73.22	1.00
Turbine, Natural/Ref. Gas/I	20200299	SCR/COC	Duct Burners	SVOC	Arsenic	C3-v1	3.05E-05	1.21E-05	7.65E-05	2.91E-06	lb/MMBTU	1	131.46	148.76	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Beryllium	B3-v0	2.92E-06	2.96E-06	2.98E-06	2.81E-06	lb/MMBTU	1	3.09	3.49	0.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Cadmium	B3-v0	1.46E-06	1.48E-06	1.49E-06	1.41E-06	lb/MMBTU	1	2.78	3.14	0.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Chromium (Hex)	B3-v0	5.28E-06	3.71E-06	9.18E-06	2.96E-06	lb/MMBTU	1	64.24	72.70	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Chromium (Total)	C3-v0	1.45E-06	1.45E-06	1.46E-06	1.44E-06	lb/MMBTU	1	0.70	0.79	0.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Copper	C3-v0	1.31E-05	7.19E-06	2.80E-05	4.23E-06	lb/MMBTU	1	98.65	111.63	0.82
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Lead	B3-v0	4.12E-05	3.91E-05	6.93E-05	1.51E-05	lb/MMBTU	1	65.90	74.57	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Manganese	B3-v0	2.84E-05	2.96E-05	2.98E-05	2.59E-05	lb/MMBTU	1	7.62	8.62	0.30
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Mercury	A3-v0	1.29E-04	1.03E-04	2.43E-04	3.96E-05	lb/MMBTU	1	80.76	91.39	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Nickel	B3-v0	1.53E-05	1.11E-05	2.59E-05	9.05E-06	lb/MMBTU	1	59.94	67.83	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Selenium	B3-v0	1.66E-04	1.88E-04	2.04E-04	1.05E-04	lb/MMBTU	1	31.93	36.13	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	Metals	Zinc	B3-v0	3.86E-06	2.98E-06	5.65E-06	2.96E-06	lb/MMBTU	1	40.11	45.39	0.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	SVOC	Phenol	B3-v0	4.98E-03	5.87E-03	6.54E-03	2.54E-03	lb/MMBTU	1	42.95	48.60	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	VOC	Acetaldehyde	C3-v0	6.71E-06	4.27E-06	1.22E-05	3.62E-06	lb/MMBTU	1	71.54	80.95	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	VOC	Benzene	C3-v0	1.56E-05	1.89E-05	1.89E-05	1.19E-05	lb/MMBTU	1	22.53	25.49	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	VOC	Formaldehyde	C3-v0	1.06E-04	1.07E-04	1.09E-04	1.02E-04	lb/MMBTU	1	3.34	3.78	0.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	VOC	Hydrogen Sulfide	C3-v0	5.99E-04	5.96E-04	6.34E-04	5.68E-04	lb/MMBTU	1	5.57	6.31	1.00
Turbine, Ref. Gas/I	20200701	COC	No Duct Burners	VOC		A3-v0	1.16E-04	1.17E-04	1.19E-04	1.12E-04	lb/MMBTU	1	3.06	3.46	0.00

TABLE 21. EMISSION FACTORS LB/MMBTU.

Major/Sub Group	SCC	APC System	Other Description	Substance Category	Substance	ARB Rating	Mean	Median	Maximum	Minimum	Emission Factor Unit	Tests	RSD, %	Uncertainty, %	Detect Ratio
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Toluene	E3-v1	7.77E-04	3.10E-04	1.84E-03	1.83E-04	lb/MMBtu	1	118.63	134.23	1.00
Turbine, Ref. Gas/1	20200701	COC	No Duct Burners	VOC	Xylene (Total)	E3-v1	2.24E-03	2.42E-04	6.31E-03	1.66E-04	lb/MMBtu	1	157.44	178.16	1.00

Det Ratio: Ratio of detected values to the sum of detected and nondetected values.

RSD: 100 times the standard deviation divided by the arithmetic average.

Uncertainty: 100 times the 95% confidence interval divided by the arithmetic average.