AQ/Fac/Case/25-000-00029

2700-FM-BAQ0023 2/2015
pennsylvania DEPARTMENT OF ENVIRONMENTAL PROTECTION

INSPECTION REPORT

Commonwealth of Pennsylvania
Department of Environmental Protection
Air Quality Program

Date(s) of Inspection: 25 Sept 2018	TV [X] SM [ ] NM [ ]	PA [ ] GP [ ] MEGA [ ]	Permit #(s): 25-00029	Expiration Date: 28 Feb 2018 - Permit Shield	Case #: 25-000-00029	PF ID #: 507751
Company Name: Erie Coke			Municipality: Erie City		County: Erie	
Plant Name: Erie Coke			Physical Location: 92 E Bay Drive		Federal ID — Plant Code #: 25-1547051-7	

Responsible Official: Tony Nearhoof	Mailing Address: PO Box 6180
Title: Plant Superintend	Erie PA 16512-6180
Phone #(s): 814-454-0177	

Mark (X) All Inspection Types That Apply To This Inspection:

[X] Full Compliance Evaluation (FCE)	[ ] Plan Approval Inspection	[ ] File Review (FR)
[ ] Operating Permit Inspection (PI)	[ ] Initial Permit Inspection (IPI)	[ ] Complaint Inspection (CI)
[ ] Routine/Partial (RTPT)	[ ] Follow-Up Inspection (Ref. Date:__________)	[ ] Sample Collection (SC)
[ ] Minor Source(s) Inspection (RFD)	[ ] Stack Test Observation	[ ] Multi-Media Inspection (MM)
[ ] Other:	[ ] Announced	

Annual Compliance Certification Received: [X] YES [ ] NO [ ] N/A	Date Received:
AIMS Report Received: [X] YES [ ] NO [ ] N/A	Date Received:

Mark (X) All Activities That Apply:

[X] File Review	[X] Pre-Inspection Briefing	[X] Exit Interview/Briefing
[X] Pre-Inspection Observations	[X] Check For New/Unreported Sources	[ ] Sample(s) Collected
[ ] Visible Emissions Observations	[ ] Verify Operation of CEMS	[ ] Other

Comments/Recommendations: Enforcement since last FCE [X] Yes [ ] No (If yes, attach summary)
- 303 violations; fugitive emissions; Opacity
- See attachment V for summary

I met with Tony Nearhoof, Kevin Kelley and Bill Schnider from Erie Coke to conduct their Full Compliance Evaluation of their Air Quality Permit. Attached are records for examples of their record keeping requirements. Pictures of each sources are attached as well. During the FCE, violations were found and Erie Coke will be receiving from the Department Notice of Violations stating those issues found. The violations are indicated on the attached records. A Checklist to show compliance of permit conditions is attached.

Compliance Status: [ ] In [X] Out [ ] Pending [ ] Awaiting Co. Report — **Needs a Follow-Up Inspection?** [ ] Yes [X] No

Company Representative:	Title:	Signature:	Date:
Anthony Nearhoof	Plant Superintendent	[signature]	9/25/18
DEP Representative: Dan Prophy	Title: Air Quality Specialist	Signature: [signature]	Date/Time: 25 Sept 2018

This document is official notification that a representative of the Department of Environmental Protection, Air Quality Program, inspected the identified site. The findings of this inspection are shown above and on any attached pages, and may include violations uncovered during the inspection. Violations may also be discovered upon review of sample results or from any additional review of Department records. Notification will be forthcoming, if such violations are noted.

Page 1 of 1 + Attachments — eFacts Inspection ID#: 2781164 — Date: 1 Oct 2018 — Reviewed By: Kimberly [illegible] 10/2

[X] White – Regional Office [ ] Yellow – Site [ ] Pink – District Office

ERIE COKE

PF ID: 50751 Title V Permit: 25-00029

Background: The Erie Coke Corporation plant is situated on approximately 60 acres along the shores of Lake Erie, in Erie, Pennsylvania and produces foundry coke. The facility operates 24 hours per day, 365 days a year.

How many employees? 125 How many days a week/shifts? 24/7 3 Shifts 12-8 8-4 4-12

Asbestos/demo projects since last FCE inspection dated 9/13/17 ? Y /(N)

Any change to or unlisted sources? Y /(N)

Plans of change? Y /(N) ☒ Discussed RFD Process

Sample taken? Y /(N) Sample#_____ Seal # _____ Location:_____ ☐ MSDS Acquired

Recent stack test? Y /(N) Date: 2017 Last Method 9 Done? Y /(N) (Attach results) COMS Data

Section B. General Site Requirements:

☒ #002 AQ Operating permit due to expire 28Feb2018; (renewal app. Due 6 -18 mos. prior)
☒ #006 Inspection and entry; including access to records, ability to sample or monitor
☒ #018-020 Reporting; sampling, testing, & monitoring; recordkeeping: reports sent to Regional office w/truth & accuracy certification; records of monitored information and supporting documentation available & kept for 5 yrs.

#002 Submitted renewal app. currently under permit shield

Section C. Site Level Requirements:

☒ #001, 007, 014 Reasonable actions shall be taken to prevent particulate matter to become airborne from demolition & construction activities, the grading & maintenance of roads, land clearing, stockpiles, etc.
☒ #002 No fugitives from sources should be visible outside the property.
☒ #003 No malodors detected outside the property
☒ #004 No emissions w/opacity equal to or greater than 20% for a period of more than 3 min in one hr or equal to or greater than 60% at any time are not permitted into the outdoor atmosphere.
☒ #008 (a) The permittee shall conduct daily monitoring of the facility property while the facility is operating, to observe for the presence of fugitive emissions and visible emissions, in excess of conditions # 001 and # 002 above, being emitted into the outdoor atmosphere.
(b) All detected fugitive emissions and visible emissions shall be reported to the Supervisor, Manager, or Engineer. > see attachment A
☒ #009 (a) The permittee shall maintain a record of the daily monitoring conducted to determine the presence of fugitive emissions and visible emissions
(b) This recordkeeping shall contain a listing or notation of any and all sources of fugitive emissions or visible emissions; the cause of the fugitive or visible emissions; duration of the emission; and the corrective action taken to abate the deviation and prevent future occurrences.
☒ #010 Source owners or operators shall maintain and make available upon request by the Department records including computerized records that may be necessary to comply with §§ 135.3 and 135.21 (relating to reporting; and emission statements).

**In compliance if condition is checked. Out of compliance if Circled.

Section C. Site Level Requirements (continued)

☒ #011(c), 012 Annual emission statements and source report (AIMS) are due by March 1 for the preceding calendar year. Received 27Feb2018

☒ #015 No person may permit air pollution as that term is defined in the APCA.

☒ #016 No person may permit the open burning of material in an air basin. See permit page 21 #016(c) for exceptions to this condition.

☒ **Compliance Certification**: The permittee shall submit within thirty days of 09/30/2006 a certificate of compliance with all permit terms and conditions set forth in this Title V permit as required under condition #24 of section B of this permit, and annually thereafter. 24 Oct 2017 Received

☒ **Compliance Schedule:**
#017 The pressure drop range for the Coke Shed baghouse (control device C802A) was established between 1" and 7" w.g.
- water truck on site - waters as needed to control PM on travelways

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SECTION D: SOURCE LEVEL REQUIREMENTS

SOURCE 031: Erie City BOILER #1 60.000 mmBTU/Hr
FML 03/05→CU 031→STAC S031
SOURCE 032: Erie City BOILER #2 77.200 mmBTU/Hr
FML 03/05→CU 032→STAC S032
) See attachment P1

SEE SECTION E.:
GROUP 1 – BOILERS (See below)
GROUP 10 - H2S TESTING OF COG (See checklist page 8)
GROUP 2 - NESHAP FOR BOILERS, SUBPART DDDDD (See checklist page 5)

SECTION E. GROUP 1: BOILERS

☒ #001 Combustion Units: shall not emit particulate matter in excess of 0.4 ppm BTU heat input, when the heat input to the unit in millions of BUTs/Hr is >2.5 but <50 **Use 55,000 lb/hr steam load for the boiler size.** (The Dept. believes the facility is in compliance with this condition because there were no emissions visible)
At maximum heat input of 60 MMBTU/hr., the particulate matter limitation is 0.36 lbs./MMBTU for Source 031, Erie City Boiler #1.
At maximum heat input of 77.2 MMBTU/hr., the particulate matter limitation is 0.32 lbs./MMBTU for Source 032, Erie City Boiler #2.

☒ #002 shall not emit SO2 in excess of 4 ppm Btu of heat input over a 1-hour period
(The Dept. believes the facility is in compliance with this condition because there were no emissions visible)

☒ #003 Byproduct Coke Oven Gas
(a) no person shall permit the emission of byproduct coke oven gas (COG) unless the gas is first burned.
(b) shall not permit the flaring or combustion of COG which contains sulfur compounds in concentrations > 50 grains/100dscf.

☒ #004 (a) when both boilers are operating, the NOx emissions from each boiler shall not exceed;
(1) 0.39 lbs/mmbtu
(2) 11.4 lbs/hr
(3) 49.82 tons/year
(b) the NOx emissions shall not exceed 22.8 lbs/hr. when one boiler is operating,
(c) the quarterly NOx emissions shall not exceed 24.9 tons for both boilers based on a 3-month consecutive period.

**In compliance if condition is checked. Out of compliance if Circled.

☒ #005 Only Natural gas or COG shall be burned as boiler fuel.

☒ #006 Completed Stack test oct/Dec 2017 - See Stacktest Information on file
(a) shall perform an annual stack test for NOx emissions (once per calendar year).
(b) submit the pretest protocol at least 30 days prior to the stack test.
(c) notify the Department of the date and time of the stack test at least 2 weeks prior to the test
(d) also test for CO at the time of the stack tests for NOx

☒ #006(e) if after 3 consecutive annual tests, emission data shows compliance with the NOx limits the **testing frequency maybe be altered as determined by the department.** This alteration in testing frequency would not be applicable for any calendar year in which Erie Coke operates both boilers simultaneously.

(D) #007 the permittee shall record each annual adjustment or tune-up on the combustion process in a permanently bound log book. This log shall contain, at a minimum, the following: See attachment B

1. The date of the tuning procedure
2. The name of the service company and technicians
3. The final operating rate or load
4. The final CO and NOx emission rates
5. The final excess oxygen rate

(D) #008 maintain on site the total nitrogen oxide (NOx) emissions of each boiler on a monthly basis and the corresponding quarterly (3-month) rolling totals and 12-month rolling totals. NOx Report on file 19July2018

☒ #009 calculate the SOx emissions whenever the sulfur content of the coke oven gas exceeds 3% by weight to show compliance with Condition #002, above. AIMS Reports on file

☒ #010 (a) submit quarterly NOx emission reports to the Department. See Nox Report on file 19July2018
(b) The permittee shall submit, within 60 days after completion of the stack test, two copies of the complete test reports, including all operational parameters, to the Department for approval.
- See stack test on file

☒ #011 compile and submit a semi-annual compliance certification report to the Department within thirty (30) days of the end of each semi-annual period for the coke oven gas testing during the preceding six (6) months.
- Received 1May2018

☑ #012 (a) perform an annual adjustment or tune-up on the combustion process. This adjustment shall include, at a minimum, the following:

1. Inspection, adjustment, cleaning or replacement of fuel-burning equipment, including the burners and moving parts necessary for proper operation as specified by the manufacturer.
2. Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions of NOx, and to the extent practicable minimize emissions of CO.
3. Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation as specified by the manufacturer.

(b) the source shall be operated and maintained in accordance with the manufacturer's specifications and in accordance with good air pollution control practices.

See attachment B
See recent Boiler Stack Test results on file
#007 tune up information needed
#008 Nox report sent quarterly to the Dept does not have 12-month rolling totals.

**In compliance if condition is checked. Out of compliance if Circled.

SECTION E: GROUP 2 – NESHAP FOR BOILERS
40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63 Subpart DDDDD
National Emission Standards for ICI Boilers and Process Heaters: Sources are 2 Existing Boilers.
Must be in compliance with this Subpart no later than January 31, 2016.

#001For the following pollutants, the emissions must not exceed the following emission limits, except during periods of startup and shutdown . . . . And the emissions must not exceed the following output- based limits (lb per MMBtu of steam output) . . . . Using the specified sampling volume or test run duration . . .
(a) Particulate Matter:
Emission Limit of 0.043 lb per MMBtu of heat input (30-day rolling average for units 250 MMBtu/hr or greater, 3-run average for units less than 250 MMBtu/hr)
Output-based limit of 0.026 lb per MMBtu of steam output; (30-day rolling average for units 250 MMBtu/hr or greater, 3-run average for units less than 250 MMBtu/hr)
Collect a minimum of 1 dscm per run
(b) Hydrogen Chloride:
Emission Limit of 0.0017 lb per MMBtu of heat input
Output-based limit of 0.001 lb per MMBtu of steam output
For M26A, collect a minimum of 1 dscm per run; for M26, collect a minimum of 60 liters per run
(c) Mercury:
Emission Limit of 1.3E–05 lb per MMBtu of heat input
Output-based limit of 7.8E–06 lb per MMBtu of steam output
For M29, collect a minimum of 1 dscm per run; for M30A or M30B, collect a minimum sample as specified in the method; for ASTM D6784 (Incorporated by reference, see § 63.14.) collect a minimum of 2 dscm
(d) Carbon Monoxide:
Emission Limit of 9 ppm by volume on a dry basis corrected to 3 percent oxygen
Output-based limit of 0.005 lb per MMBtu of steam output
1 hr minimum sampling time, use a span value of 20 ppmv
(e) Dioxins/Furans:
Emission Limit of 0.08 ng/dscm (TEQ) corrected to 7 percent oxygen
Output-based limit of 3.9E–11 (TEQ) lb per MMBtu of steam output
Collect a minimum of 4 dscm per run

#002 Performance Testing Requirements:
Refer to regulation [76 FR 15664] for Table 5 to 40 CFR Part 63 Subpart DDDDD
For Item 5 of Table 5, refer to regulation [76 FR 15664] for Table 11 to 40 CFR Part 63 Subpart DDDDD -- Toxic Equivalency Factors for Dioxins/Furans

#003 Establishing Operating Limits
Refer to regulation [Federal Register Vol. 76, No. 54, pages 15695 - 15697] for Table 7 to 40 CFR Part 63 Subpart DDDDD

#004 Demonstrate Initial Compliance: The compliance date for these 2 boilers is specified in §63.7595 to be March 21, 2014. **Initial compliance has been demonstrated**

#005, 006, 007 Performance Tests and Procedures / Fuel Analyses and Frequency
(a) You must conduct all applicable performance tests according to §63.7520 on an annual basis, except those for dioxin/furan emissions, unless you follow the requirements listed in paragraphs (b) through (e) of this section. Annual performance tests must be completed no more than 13 months after the previous performance test, unless you follow the requirements listed in paragraphs (b) through (e) of this section. Annual performance testing for dioxin/furan emissions is not required after the initial compliance demonstration.
See Permit pages 71- 73 for Conditions.

#009, 010 demonstrate initial and continuous compliance with emission limits and work practice standards; see Permit page 75 – 77 for requirements.

**In compliance if condition is checked. Out of compliance if Circled.

#011 (a) install, operate, and maintain a continuous oxygen monitor. The oxygen level shall be monitored at the outlet of the boiler or process heater.
(d) Continuous Emission Monitor:
CEMS for oxygen (O2CEMS) must be installed, operated, and maintained. See page 78 of the Permit for specific requirements.

#012 (a) You must monitor and collect data according to this section. (See page 79 of the Permit.)
(b) You must operate the monitoring system and collect data at all required intervals at all times that the affected source is operating, except for periods of monitoring system malfunctions or out of control periods.
(c) You must use all the data collected during normal operations in assessing the operation of the control device and associated control system. (No malfunctions, calibration checks, out of control periods.)
(d) Failure to collect required data during normal operating periods is a **deviation** of the requirements.

#013 demonstrate continuous compliance with each emission limit, operating limit, and work practice standard in Tables 1 through 3 to this subpart that applies to you according to the methods specified in Table 8
(1) Operating limits must be confirmed or reestablished during performance tests.
(2) Keep records of the type and amount of all fuels burned in each boiler or process heater during the reporting period to demonstrate that all fuel types and mixtures of fuels burned would either result in lower emissions of hydrogen chloride and mercury than the applicable emission limit for each pollutant or result in lower fuel input of chlorine and mercury.

#014 (a) (1) Keep a copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report
(2) Keep records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations
(b) (1) Keep records for the CMS including records of all monitoring data and calculated averages for applicable operating limits, such as opacity, pressure drop, pH, and operating load, to show continuous compliance with each emission limit and operating limit that apply to you.

#014 (d) (1) Keep records of monthly fuel use by each boiler or process heater, including the type(s) of fuel and amount(s) used.
(3) Keep records of monthly hours of operation by each boiler or process heater that meets the definition of limited-use boiler or process heater.
(4) Calculate chlorine fuel input, or hydrogen chloride emission rate, for each boiler and process heater.
(5) Keep a copy of all calculations and supporting documentation of maximum mercury fuel input,
(6) If you stack test less frequently than annually, keep annual records that document that your emissions in the previous stack test(s) were less than 75 percent of the applicable emission limit, and document that there was no change in source operations including fuel composition and operation of air pollution control equipment that would cause emissions of the relevant pollutant to increase within the past year.
(7) Keep records of the occurrence and duration of each malfunction of the boiler or of the associated air pollution control and monitoring equipment.
(8) Keep records of actions taken during periods of malfunction to minimize emissions
(9) Keep records of the total hours per calendar year of either natural gas or COG fuel burned.

#015 Keep records suitable for review; keep for 5 years; keep records **on site** for at least 2 years.

#016 Submit a Compliance report semiannually. Received
(b) If no deviations occurred during the reporting period, a statement of such on the report.

**In compliance if condition is checked. Out of compliance if Circled.

☐ #017 Performance tests or fuel analyses: (g) Report the results of performance tests and the associated initial fuel analyses within 90 days after the completion of the performance tests.

☐ #020 Submit the Notification of Compliance Status; including all performance test results and fuel analyses, before the close of business on the 60th day following the completion of all performance test and/or other initial compliance demonstrations

(1) A description of the affected units,
(2) A summary of the results of performance tests and fuel analyses,
(3) A summary of the maximum carbon monoxide emission levels recorded during the performance test,
(4) Plans to demonstrate compliance with each applicable emission limit through performance testing or fuel analysis,
(5) Plans to demonstrate compliance by emissions averaging and demonstrate compliance by using emission credits through energy conservation,
(6) A signed certification that you have met all applicable emission limits and work practice standards.
(7) Description of any deviations, the duration of the deviation, and the corrective action taken in the Notification of Compliance Status report.
(8) Notification of compliance must include:
"This facility has had an energy assessment performed according to §63.7530(e)."
"No secondary materials that are solid waste were combusted in any affected unit."

☐ #021 (b) (3) Submit the compliance reports for the semiannual reporting period from January 1 through June 30 or from July 1 through December 31.
(4)Each subsequent compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

☐ #027 (b) If you have an existing boiler or process heater, you must comply with this subpart no later than 31Jan2016

☐ #028 (3) At all times, you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.

See boiler records see photo P1 for a picture of reference of the boilers.

SECTION E: GROUP 10 - H2S TESTING OF COG
(Hydrogen Sulfide testing of Coke Oven Gas)

☒ #001 Perform monthly tests of the COG for H2S content and maintain records of the testing

FC several tests per month tests H2S content in COG
See attachment C

**In compliance if condition is checked. Out of compliance if Circled. [6]

SOURCE 101 PARTS CLEANER **PROC 101 →STAC Z101**

☒ #001 shall not use any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride or chloroform, or combination of these halogenated HAPS solvents, in a total concentration greater than 5% by weight, as a cleaning and/or drying agent.

☒ #002 applies to cold cleaning machines that use 2 gallons or more containing > 5% VOC by weight

(a) (2) (i) shall have a label summarizing: (1) cleaned parts should drain for at least 15 sec or until dripping ceases. Parts shall be tipped and rotated. During draining parts shall be located over the cold cleaning machine. (2) with a pump-agitated bath, the agitator shall produce a rolling motion of solvent with no splashing of solvent against walls or parts. (3) fans shall not blow across openings of the degreaser unit

(a) (2) (ii) shall be equipped with a cover that is closed at all times degreaser is not in use. Degreasers with a remote reservoir shall be equipped with a perforated drain no larger than 6" in diameter

(3) (i) waste solvent shall be stored in closed containers with pressure reliefs

(iii) absorbent materials may not be cleaned in degreaser

(5) Seller must provide to buyer the name of solvent supplier, type of solvent, vapor pressure of solvent measured in mmHg at 20C

(6) Maintain records of MSDS, bill of sale, invoice to comply with this section for at least 5 years

See attachment D for the Safety Data Sheet of the Solvent used and purchase records of latest solvent purchased
See attachment P3

SOURCE 801: COKE OVEN BATTERY CHARGING OPERATIONS See attachment P2 and P4
PROC 801→ STAC Z801

SEE SECTION E. GROUP 10 - H2S TESTING OF COG
SEE SECTION E. GROUP 3 - NESHAP FOR COKE OVEN BATTERIES
SEE SECTION E. GROUP 4 - NESHAP VE WORK PLAN
SEE SECTION E. GROUP 5 - METHOD 303 TESTING

☒ #001 Coke Oven Gas (COG)

(a) no person shall permit the emission of byproduct coke oven gas unless the gas is first burned.

(b) shall not permit the flaring or combustion of COG which contains sulfur compounds in concentrations > 50 grains/100dscf.

(a) & (b) do not apply to COG from (1) dampened oven, prior and during pushing, because of some malfunction of the oven, (2) unavoidable oven leakage during the coking cycle.

☒ #002 open charging emissions of 4 consecutive charges shall be ≤ 75 seconds

☒ #003 shall not emit coke oven emissions that exceed the emission limitation of 12 seconds of visible emissions per charge for the 30 day logarithmic rolling avg. See attachment Ø

☒ #004 refers to observations of open and closed charging emissions from the topside of the battery

See the daily 303 reports on file
See attachment N for example
See attachment V for past 303 violations

**In compliance if condition is checked. Out of compliance if Circled.

SECTION E. GROUP 3 - NESHAP FOR COKE OVEN BATTERIES
NESHAP for Coke Oven Batteries, 40 CFR Part 63 Subpart L

☒ #001 Emission limitations as stated in Sources 801, 806, and 807.

☐ #002 (f) Recordkeeping – Maintain files of all required information in a permanent form suitable for inspection at an onsite location for at least 1 year.

☐ #004 (d) Semi-annual compliance certification Received 16 July 2018

☐ #007 (a) Inspect the collecting main for leaks at least once daily.
(b) Record the time and date a leak is first observed, the time and date the leak is temporarily sealed, and the time and date of repair.
(c) Temporarily seal any leak in the collecting main as soon as possible after detection, but no later than 4 hours after detection of the leak.
(d) The owner or operator shall initiate a collecting main repair as expeditiously as possible, but no later than 5 calendar days after initial detection of the leak. The repair shall be completed within 15 calendar days after initial detection.

Collecting Main inspected for leaks everyday during 303

☒ #011 Requirements for Startups, Shutdowns, and Malfunctions (SSM):
If there is a malfunction, the company must:
(c) Malfunctions shall be corrected as soon as practicable after their occurrence.
(d) In order for the provisions of paragraph (i) of this section to apply with respect to the observation (or set of observations) for a particular day, notification of a startup, shutdown, or a malfunction shall be made by the owner or operator:
(1) If practicable, to the certified observer if the observer is at the facility during the occurrence;
(2) Or to the enforcement agency, in writing, within 24 hours of the occurrence first being documented by a company employee, and if the notification under paragraph (d)(1) of this section was not made, an explanation of why no such notification was made.
(e) Within 14 days of the notification made under paragraph (d) of this section, or after a startup or shutdown, the owner or operator shall submit a written report to the applicable permitting authority that:
(1) Describes the time and circumstances of the startup, shutdown, or malfunction; and
(2) Describes actions taken that might be considered inconsistent with the startup, shutdown, or malfunction plan.

See attachment E

**In compliance if condition is checked. Out of compliance if Circled.

SECTION E. GROUP 4 – NESHAP VE WORK PLAN

☒ #002 Work Practice Plan – The facility has one and can be found in Lynn Khalife's supporting documentation in the AQ Fac Op File #25-00025. Also Attached a copy to this FCE see attachment F

SECTION E. GROUP 5 – METHOD 303 TESTING

See attachment Ø

SOURCE 802: COKE OVEN BATTERY PUSHING OPERATIONS
PROC 802→CNTL C802A→STAC S802A
SEE SECTION E. GROUP 7 - NESHAP FOR COKE OVENS
SEE SECTION E. GROUP 9 - COKE SHED REQUIREMENTS

☐ #001 (a) No person may permit the pushing of coke from a coke oven unless the pushing operation is enclosed during the removal of coke from a coke oven and pushing emissions are contained, except for such fugitive pushing emissions that are allowed by subsections (c) and (e).
(c) Visible fugitive air contaminants in excess of 20% opacity from an air cleaning device installed for the control of pushing emissions under a plan approval from the Department shall be prohibited unless the Department finds that:
(1) The emissions are of minor significance with respect to causing air pollution.
(2) The emissions will not prevent or interfere with the attainment or maintenance of any ambient air quality standard.
(e) No person may transport hot coke in the open atmosphere during the pushing operation, unless the visible fugitive air contaminants from the coke do not exceed 10% opacity.

During the FCE the Dept observed a push on 9/11/18 oven #1 and on oven #3 on 9/13/18. At both times the emissions from the pushing operations were greater than 20% opacity. Video was taken of both pushes. See attachment G

SECTION E. GROUP 7 - NESHAP FOR COKE OVENS
SUBPART CCCCC - National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks (Includes Sources 802, 803, and 805)

☒ #001(a)(1) Cannot exceed 0.01 grain per dry standard cubic foot (gr/dscf) if a cokeside shed is used to capture emissions.

☒ #002(1) (i) Quenching hot coke: cannot exceed 1,100 mg/L; See attachment H
(2) Use acceptable makeup water for quenching.

☒ #003 No opacity greater than:
(b) Daily average of 20 percent opacity for a battery on batterywide extended coking.
-The opacity is verified through the COMS report.

☒ #004 Conduct performance tests:
The Coke Shed was put into operation on May 25, 2012. This condition was met when the performance testing was performed on the coke shed baghouse on ~~December 19, 2012~~ PB 11/21/12

☒ #005 Conduct performance tests for PM in accordance with the annual testing requirement of Plan Approval 25-029C Section E Group 9 Condition 001(n)

☒ #006 Test Methods for PM emission limit testing: Permit Pages 116 & 117

**In compliance if condition is checked. Out of compliance if Circled.

☒ #007 Demonstrate initial compliance with the opacity limits:

(a) You must conduct each performance test that applies to your affected source according to the requirements in paragraph (b) of this section.

(b) To determine compliance with the daily average opacity limit for stacks of 20 percent for a by-product coke oven battery on batterywide extended coking, follow the test methods and procedures in paragraphs (b) (1) through (3) of this section.

(b) (1) Using the continuous opacity monitoring system (COMS) required in §63.7330(e), measure and record the opacity of emissions from each battery stack for a 24-hour period.

(2) Reduce the monitoring data to hourly averages as specified in §63.8(g)(2).

(3) Compute and record the 24-hour (daily) average of the COMS data.

☒ #008 TDS limit for quench water See attachment H

☒ #010 (f) (1) Maintain the TDS content of the quench water at 1,100 mg/L or less

(2) Determine the TDS content of the quench water at least weekly

☒ #011 Monitoring for fugitive pushing emissions: See permit pages 119 – 121 for all conditions.

(a) (1) Observe and record the opacity of fugitive pushing emissions from each oven at least once every 90 days. (Erie Coke must do this and keep records) – See attachment S

(2) If two or more batteries are served by the same pushing equipment and total no more than 90 ovens, the batteries as a unit can be considered a single battery.

(3) Observe and record the opacity of fugitive pushing emissions for at least four consecutive pushes per battery each day

(4) Do not alter the pushing schedule to change the sequence of consecutive pushes to be observed on any day. Keep records indicating the legitimate operational reason for any change in your pushing schedule which results in a change in the sequence of consecutive pushes observed on any day.

(5) If the average opacity for any individual push exceeds 30 percent opacity for any short battery, you must take corrective action and/or increase coking time for that oven. See attachments 6, Q, S

Attachment Q is Erie Coke's certifications of Employees Method 9

☒ #012 Monitoring

(a) Use a bag leak detection system for the coke oven battery baghouse

(1) Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in the manual;

(2) Confirm that dust is being removed from hoppers through weekly visual inspections or equivalent means of ensuring the proper functioning of removal mechanisms;

(3) Check the compressed air supply for pulse-jet baghouses each day;

(4) Monitor cleaning cycles to ensure proper operation using an appropriate methodology;

(5) Check bag cleaning mechanisms for proper functioning through monthly visual inspection or equivalent means;

(6) Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (kneed or bent) or laying on their sides. You do not have to make this check for shaker-type baghouses using selftensioning (spring-loaded) devices;

(7) Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks; and

(8) Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means.

(d) For each capture system applied to pushing emissions, you must at all times monitor the volumetric flow rate, the fan motor amperes, OR the static pressure or the fan RPM.

(e) For each by-product coke oven battery, you must monitor at all times the opacity of emissions exiting each stack using a COMS.

See attachment I and J

**In compliance if condition is checked. Out of compliance if Circled.

SECTION E. GROUP 7 - NESHAP FOR COKE OVENS (continued)

☒ #013 Must maintain a bag leak detection system: 2 alarms Baghouse Control Room, Supervisor office
(a)(1) The system must be certified by the manufacturer to be capable of detecting emissions of particulate matter at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less;
(2) The system must provide output of relative changes in particulate matter loadings;
(3) The system must be equipped with an alarm that will sound when an increase in relative particulate loadings is detected over a preset level. The alarm must be located such that it can be heard by the appropriate plant personnel;
(4) Each system that works based on the triboelectric effect must be installed, operated, and maintained in a manner consistent with the guidance document, "Fabric Filter Bag Leak Detection Guidance" (EPA–454/R–98–015, September 1997). You may install, operate, and maintain other types of bag leak detection systems in a manner consistent with the manufacturer's written specifications and recommendations;
(b) Install a CPMS sampling probe. See permit page 123 for the conditions.
(j) Continuous Opacity Monitoring System (COMS)

(☐) #015 Demonstrate continuous compliance by meeting requirements listed on permit page 124 for one of the following:
(d) (1) Volumetric Flow Rate; OR
(2) Fan Motor Amperes; OR
(3) Static Pressure or Fan RPM
See attachments I and K
(e) Demonstrate continuous compliance with the opacity limit by
(1) Maintaining the daily average opacity at or below 20 percent for a battery on batterywide extended coking; and
(2) Operating and maintaining COMS and collecting and reducing the COMS data.
See permit for conditions #016, #017 for Subpart CCCCC.
Daily Avg of Fan RPM Not Being kept, only a one time read
Daily Avg of Fan RPM Not Being kept, daily a one time read Violation Section E Group 7 #15 (d)(3)(i) and (ii)

(☐) #018, 019 Recordkeeping
See permit for conditions #020, #021, #022, #023, #024, #025 for Subpart CCCCC.

☒ #026 Reporting requirements:
(a) (1) Quarterly compliance reports received 23July2018 on file
(2) Semi-annual compliance report received 1May2018 on file
(3) Quarterly reports due no later than 1 month following the end of the quarter
(c) Semi-annual compliance report contents (Deviation Report): company name; certification of truth & accuracy, reporting period dates, any malfunctions, any deviations and statement of such, COMS down time, total operating time of each source, see permit page 131 and 132 for all report requirements.

☒ #030 Work Practice Plan for soaking: see permit page 135. See attachment F

(☐) #031(b)(2) Do maintenance on the Quench Tower Baffles. See attachments H and K

See permit for Condition #032, #033, #034, #035, #036, #037, #038, #039.
See attachments for compliance with CCCC
#031 - See attachment R for violation, need to be washed daily when above 30°F and record. Gaps in recording.

**In compliance if condition is checked. Out of compliance if Circled.

SECTION E. GROUP 9 - COKE SHED REQUIREMENTS
Plan Approval 25-029C

☒ #001(a) Conduct a stack test at the outlet of the Coke Side Shed Baghouse (C802A) for PM
see initial stack test of Baghouse on file

See permit pages 151 – 152 for all testing requirements of (b) through (m).
(n) A stack test shall be performed on an annual basis, in accordance with the provisions of Chapter 139. The stack test shall be performed while the aforementioned source is operating at the maximum or normal rated capacity as stated on the application. The stack test shall be conducted for PM, PM10 and PM2.5, including condensable particulate matter, at the outlet of the Coke Side Shed Baghouse (C802A). The testing shall be conducted in accordance with parts (a)-(m), see permit pages 151 – 152. Last tested 12/14/2014

☒ #002 Establish a pressure drop operating range for the Coke Side Shed Baghouse.
Minimum Fan RPM 1035 see attachment K

SOURCE 803: COKE QUENCHING OPERATIONS
PROC 803→ STAC Z803

☒ #001The source shall be maintained and operated in accordance with the manufacturer's specifications and in accordance with good air pollution control practices.
see attachment P7

SOURCE 804: COAL UNLOADING
PROC 804→ STAC Z804

☒ #001The source shall be maintained and operated in accordance with the manufacturer's specifications and in accordance with good air pollution control practices.
see attachment P8 and P9

SOURCE 805: COKE OVEN BATTERY UNDERFIRING SYSTEM
FML03→PROC 805→CNTL C805A→STAC S805A

☒ #001 (a) applies to coke oven battery waste heat stacks:
(1) Particulate matter emissions exceed .04 grain per dry standard cubic feet (gdscf) when the effluent gas volume is less than 150,000 dry standard cubic feet (dscf) per minute.

☒ #002 (a) No person may permit the emission of byproduct coke oven gas into the outdoor atmosphere unless the gas is first burned. - NOV issued prior to FCE for bypassing scrubber during maintenance
(b) No person may permit the flaring or combustion of a coke oven byproduct gas which contains sulfur compounds, expressed as equivalent hydrogen sulfide, in concentrations greater than 50 grains per 100 dry standard cubic feet.
(c) Subsections (a) and (b) do not apply to emissions of coke oven gas from:
(1) An oven which is dampered off (i) Prior to and during the pushing operation of the oven.
(ii) Because of some malfunction associated with the oven.
(2) Unavoidable oven leakage occurring during the coking cycle.

see attachment P10 and P11

**In compliance if condition is checked. Out of compliance if Circled.

#003, 004 NOx emissions from the Battery Underfire Operation System shall not exceed the following:
(1) 19.9 lbs/hr
(2) 87.16 tpy based on a 12-month consecutive period
(3) 21.8 tons/quarter

See current NOx report and latest AIMS report

#005 Compliance Assurance Monitoring (CAM) requirements:
(a) The permittee shall maintain a manometer or similar device to measure the pressure drop across the control device. The manometer or similar device shall be mounted in an accessible area and maintained in good operating conditions at all times.
(b) The permittee shall maintain a rotometer or similar device to monitor the liquid flow rate of the scrubber. The flow gauge or similar device shall be mounted in an accessible area and maintained in good operating conditions at all times.
(c) The permittee shall conduct daily observations of the pressure drop and of the liquid flow rate of the scrubber.

#006 more (CAM) requirements:
(a) The permittee shall record the following operational data from the control device (these records may be done with strip charts recorders, data acquisition systems, or manual log entries):
(i) Pressure drop of the scrubber at least once daily; and
(ii) Liquid flow rate of the scrubber at least once daily.
(b) The permittee shall record all excursions and corrective actions taken in response to an excursion and the time elapsed until the corrective actions have been taken.
(c) The permittee shall maintain records of all monitoring downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable). The permittee shall also record the dates, times and durations, probable causes and corrective actions taken for the incidents.
(d) The permittee shall record all inspections, repairs, and maintenance performed on the monitoring equipment.
(e) All required records shall be kept for a period of 5 years and shall be made available to the Department upon request.

#007 (a) Maintain monthly records of the NOx emissions. The emissions shall be determined by emission results from the most recent stack test performed and operating hours.
(b) Maintain onsite a record of the NOx emissions of the Coke Oven Battery underfire based on 12-month rolling totals.
(c) Maintain a record of the daily pressure drop and liquid flow rate readings of the scrubber.
(d) Maintain a record of all preventive maintenance inspections of the control device. The records of the maintenance inspections shall include, at a minimum, the dates of the inspections, any problems or defects identified, any actions taken to correct the problems or defects, and any routine maintenance performed.
(e) Maintain a record of the results of the testing that is required by this permit.

#008 (a) Submit quarterly NOx emission reports to the Department.
(b) Submit, within 60 days after completion of the stack test, two copies of the complete test reports, including all operational parameters, to the Department for approval.

see latest NO_x report on file

**In compliance if condition is checked. Out of compliance if Circled.

#009 More CAM requirements:

(a) The permittee shall report all excursions and corrective actions taken, the dates, times, durations and probable causes, every 6 months.

(b) The permittee shall report all monitoring downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable), their dates, times and durations, probable causes and corrective actions taken, every 6 months.

(c) The permittee shall report the following information to the Department every 6 months:

1. Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;
2. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable)
3. A description of the actions taken to implement a quality improvement plan (QIP) during the semi-annual reporting period. Upon completion of a QIP, the owner or operator shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

#010 The source shall be operated and maintained in accordance with:

1. Good heating practices
2. The manufacturer's specifications
3. Good air pollution control practices

#011 More CAM requirements:

(a) The permittee shall develop and implement a Quality Improvement Plan (QIP) as expeditiously as practicable if any of the following occur:

1. Six (6) excursions occur in a 6-month reporting period.
2. The Department determines after review of all reported information that the permittee has not responded acceptably to an excursion.

(SEE PERMIT PAGE 40 & 41 FOR QIP REQUIREMENTS)

#012 More CAM requirements:

(a) Pressure drop was determined to be at an optimum operating setting between 1" to 7" w.g.

(b) Scrubber inlet liquid flow rate should be SOR.

(c) QA/QC practices that are adequate to ensure continuing validity of data and proper performance of the control devices.

1. Install detectors or sensors at a Department approved location for obtaining data that is representative of the monitored indicator.
2. Develop verification procedures to confirm that the operational status of the monitoring devices is within the expected range.
3. **Annually calibrate** and check the accuracy of the monitoring equipment according to the manufacturer's recommended procedures.

(d) Maintain all monitoring equipment and stock spare parts as necessary for routine onsite repairs.

(e) Ensure that at least 90% of the approved monitoring data has been properly and accurately collected.

(f) Submit an implementation plan and schedule if the approved monitoring requires the installation, testing or other necessary activities. The schedule for completing installation and beginning operation of the monitoring may not exceed 180 days after startup of source.

#013Scrubber Operational Requirements for Control Device C805A:

(a) The permittee shall operate the control device at all times that the source is in operation.

(b) The permittee shall conduct a weekly preventive maintenance inspection of the control device.

SOR attachment L for Maintance Log example of by Inlets Area

**In compliance if condition is checked. Out of compliance if Circled.

☒ #014 Stack (S805A) Emission Observation Work Practices:

(a) Upon observing visible emissions from the Coke Oven Battery Stack (S805A), the permittee shall perform the following actions:

(1) Record the date and time of the visible emission observation and the results of all subsequent investigations and corrective actions on the Stack Emission Observation form.

(2) Investigate the cause of the visible emission and identify the coke oven believed to be the source of any observed visible emission from the Coke Oven Battery Stack. This investigation must include a visible observation and determination of the operational condition of the coke oven believed to be the source of the visible emissions prior to the next charge of that oven.

(3) Identify any needed repairs and/or maintenance activities needed to a coke oven identified under paragraph (a)(2), above, prior to the next charge of the coke oven. These repairs shall include, but not be limited to: spray patching, Gunite patching, ceramic welding, dusting, and/or jamb repairs.

(b) The permittee shall prioritize, promptly schedule and perform all coke oven repairs and/or maintenance activities recommended under paragraph (a)(3), above. *If any of the repairs identified in paragraph (a)(3) cannot be completed within five (5) days of the initial determination that a repair is needed, the permittee will immediately notify the Department of the delayed repair, the reason for the delayed repair, and the planned date by which the repair will be completed.*

See attachment U for example of stack monitoring

SOURCE 806: COKE OVEN BATTERY OVEN / DOOR LEAKS ~ see attachment P5 and P6

PROC 806→CNTL C802A→STAC S802A

SECTION E. GROUP 3 - NESHAP FOR COKE OVEN BATTERIES

SECTION E. GROUP 4 - NESHAP VE WORK PLAN

SECTION E. GROUP 5 - METHOD 303 TESTING

SECTION E. GROUP 6 - COKE SHED ALT STD

SECTION E. GROUP 9 - COKE SHED REQUIREMENTS

☒ #001 Byproduct coke oven gas (COG) Prior NOV for bypassing H2S absorber during May 2018

(a) No person shall permit the emission of byproduct coke oven gas unless the gas is first burned.

(c) (a) does not apply to COG from:

(1) An oven which is dampered off:

(i) Prior to and during pushing of an oven,

(ii) Because of some malfunction of the oven,

(2) Unavoidable oven leakage during the coking cycle.

☒ #002 Visible fugitive air contaminants

(a) No person may permit the operation of a coke oven battery in such a manner that visible fugitive air contaminants are emitted in excess of the emissions allowed by the following limitations:

(2) At no time may door area emissions from any coke oven exceed 40% opacity 15 minutes or longer after the last charge to that oven.

(3) At no time shall there be any visible door area emissions from more than 10% of the door area of operating coke ovens, excluding the two-door area representing the last oven charged on any battery and any door areas obstructed from view.

☒ #003(a)(3)(i) Cannot allow coke oven emissions to be discharged to the atmosphere from each affected existing byproduct coke oven battery that exceed 4.0 percent leaking coke oven doors for each by-product coke oven battery owned or operated by a foundry coke producer. see daily 303 reports on file

☒ #004 Limitations of visible fugitive air contaminants from operation of any coke oven battery The measuring and recording techniques based on 25 Pa Code §123.44 are on permit pages 46 & 47.

**In compliance if condition is checked. Out of compliance if Circled.

#005 Coke Shed Inspection techniques: When batteries have sheds to control emissions, conduct the inspection from outside the shed unless the doors cannot be adequately viewed. In this case, conduct the inspection from the bench. Be aware of special safety considerations.
WORK PRACTICE REQUIREMENTS.

#006 The source shall be operated and maintained in accordance with good air pollution control practices.

#007 Door maintenance, adjustment and replacement practices:
(1) Implement the following work practices in the event of a coke oven battery failure:
(ii) Luted doors. Work practices for luted doors shall conform to the following:
(A) Luted doors leaking 15 minutes after the charge shall be immediately reluted.
(B) Doors which fail to seal after the first reluting shall be recorded.
(C) Leaks appearing after the first reluting shall be immediately reluted.

(iii) Chuck doors. Work practices for chuck doors shall conform to the following:
(A) Within 1 hour after the charge of each oven, the chuck door shall be inspected, and any door found leaking shall be recorded.
(B) Chuck doors leaking 1 hour after the charge shall be gasketed prior to the next charge to that oven.
(C) If a freshly gasketed door is leaking 1 hour after the charge, it or the oven door shall be replaced prior to the next charge to that oven.
(iv) Cleaning. Doors and jambs shall be completely cleaned prior to each charge.
(2) Keep and maintain records of the inspections required by paragraph (1), including the names of inspectors, the date and time of each door inspection and ovens observed leaking.
(3) Within 90 days following a determination by the Department or the battery operator that this section is applicable, the person responsible for the operation of a coke oven battery shall submit to the Department for approval a **work practice and maintenance manual** which shall include, but not be limited to, the job titles of persons having responsibility for the various tasks required by paragraph (1), specify procedures to be followed to assure implementation of the requirements of paragraph (1), and state the numbers of replacement doors and jambs to be kept on site for each battery.

see 303 reports on file, see attachment A, G, N
See attachment P5 and P6
Attachment N Dept 303 report

SECTION E. GROUP 6: COKE SHED ALT STD
The company has to apply and receive approval for an alternate standard for coke oven doors that equipped with coke sheds. Therefore, this NESHAP, 40 CFR Part 63 Subpart L §63.305 is being eliminated from this checklist.

SOURCE 807: COKE OVEN BATTERY TOPSIDE LEAKS see attachment P2 and P4
PROC 807→ STAC Z807

SEE GROUP 3 - NESHAP FOR COKE OVEN BATTERIES (See cklst. pg. 9)
SEE GROUP 4 - NESHAP VE WORK PLAN (See checklist page 10)
SEE GROUP 5 - METHOD 303 TESTING (See checklist page 10)

#001 (a) No person may permit the emission of byproduct coke oven gas into the outdoor atmosphere unless the gas is first burned. NOV sent prior to the FCE about May 2018 bypass
(c) Subsection (a) does not apply to emissions of coke oven gas from:
(1) An oven which is dampered off:
(i) Prior to and during the pushing operation of the oven.
(ii) Because of some malfunction associated with the oven.
(2) Unavoidable oven leakage occurring during the coking cycle.

**In compliance if condition is checked. Out of compliance if Circled.

#002 (a) No person may permit the operation of a coke oven battery in such a manner that visible fugitive air contaminants are emitted in excess of the emissions allowed by the following limitations:

(4) At no time may there be visible topside emissions from more than 2.0% of the charging port seals on operating coke ovens in any battery, excluding visible emissions from no more than three ovens which may be dampered off.

(5) At no time may there be topside emissions from more than 5.0% of the offtake piping on operating coke ovens in any battery, excluding visible emissions from open standpipe caps on no more than three ovens which may be dampered off.

(6) At no time shall there be topside emissions from any point on the topside other than allowed emissions from charging port seals and offtake piping under paragraphs (4) and (5).

(7) At no time may there be any visible emissions from the coke oven gas collector main.

#003 Subpart L--National Emission Standards for Coke Oven Batteries

(a) No owner or operator shall cause to be discharged or allow to be discharged to the atmosphere, coke oven emissions from each affected existing byproduct coke oven battery that exceed any of the following emission limitations or requirements:

(iii) 0.4 percent leaking topside port lids;

(iv) 2.5 percent leaking offtake system(s)

#004 Limitations of visible fugitive air contaminants from operation of any coke oven battery:

(b) (4) Observations of visible emissions from a coke oven topside - See permit page 50 & 51 for the formula used to calculate these emissions.

#005 The source shall be operated and maintained in accordance with the manufacturer's specifications and in accordance with good air pollution control practices.

see 303 reports on file see attachment N

SOURCE 808: COKE DUMPING, SCREENING, & LOADING INTO TRUCKS

PROC 808→CNTL C808→STAC Z808

#001 Maintain a record of all preventative maintenance inspections of the Foam Dust Suppression System. These records shall, at a minimum, contain the dates of the inspections, the name of the inspector, any problems or defects, the actions taken to correct the problem or defects, and any routine maintenance performed.

#002 Maintain a set of sprays at the screening stations and shall operate the sprays as necessary to achieve compliance with 25 Pa. Code 123.1.

#003 (a) The permittee shall perform a weekly preventative maintenance inspection of the foam dust suppression system.

(b) The permittee shall maintain and operate the source and control device in accordance with the manufacturer's specifications and in accordance with good air pollution control practices.

see attachment M and attachment P12

SOURCE 809: COKE OVEN BATTERY EMERGENCY FLARES see attachment P13 and P14

FML03→PROC 809→STAC Z809

SEE SECTION E. GROUP 3 - NESHAP FOR COKE OVEN BATTERIES (See checklist page 9)

#001 Byproduct coke oven gas (COG)

(a) No person may permit the emission of byproduct coke oven gas into the outdoor atmosphere unless the gas is first burned.

(b) No person may permit the flaring or combustion of a coke oven byproduct gas which contains sulfur compounds, expressed as equivalent hydrogen sulfide, in concentrations greater than 50 grains per 100 dry standard cubic feet. The sulfur compounds, expressed as equivalent hydrogen sulfide, emitted into the outdoor atmosphere from any tail gas sulfur recovery equipment utilized in a coke oven gas desulfurization system approved by the Department shall be included in the determination of these concentrations.

(c) Subsections (a) and (b) do not apply to emissions of coke oven gas from:

(1) An oven which is dampered off:

(i) Prior to and during the pushing operation of the oven.

(ii) Because of some malfunction associated with the oven.

(2) Unavoidable oven leakage occurring during the coking cycle.

#002 Subpart L Standards for bypass/bleeder stacks:

(c) Each flare installed to meet the requirements of this section shall be operated with no visible emissions, as determined by the methods specified in 63.309(h)(1), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

#003 Subpart L Performance tests and procedures

(h) For a flare installed to meet the requirements of §63.307(b):

(1) Compliance with the provisions in §63.307(c) (visible emissions from flares) shall be determined using Method 22 in appendix A to part 60 of this chapter, with an observation period of 2 hours; and

(2) Compliance with the provisions in §63.307(b)(4) (flare pilot light) shall be determined using a thermocouple or any other equivalent device.

(i) No observations obtained during any program for training or for certifying observers under this subpart shall be used to determine compliance with the requirements of this subpart or any other federally enforceable standard.

#004 The permittee shall operate this source at all times that the coke oven battery is operational.

See attachments A, C, L

SOURCE 809: COKE OVEN BATTERY EMERGENCY FLARES (continued)

#005 Subpart L Standards for bypass/bleeder stacks:

(a) (1) Install a bypass/bleeder stack flare system that is capable of controlling 120 percent of the normal gas flow generated by the battery, which shall thereafter be operated and maintained.
(2) Coke oven emissions shall not be vented to the atmosphere through bypass/bleeder stacks, except through the flare system or the alternative control device as described in paragraph (d) of this section.

(b) Each flare installed pursuant to this section shall meet the following requirements:
(1) Each flare shall be designed for a net heating value of 8.9 MJ/scm (240 Btu/scf) if a flare is steam-assisted or air assisted, or a net value of 7.45 MJ/scm (200 Btu/scf) if the flare is non-assisted.
(2) Each flare shall have either a continuously operable pilot flame or an electronic igniter that meets the requirements of paragraphs (b)(3) and (b)(4) of this section.
(3) Each electronic igniter shall meet the following requirements:
(i) - (iv) Erie Coke does not have electronic igniters.
(4) Each flare installed shall be operated with a pilot flame present at all times

(d) As an alternative to the installation, operation, and maintenance of a flare system as required in paragraph (a) of this section, the owner or operator may petition the Administrator for approval of an alternative control device or system that achieves at least 98 percent destruction or control of coke oven emissions vented to the alternative control device or system.

(f) Any emissions resulting from the installation of flares (or other pollution control devices or systems approved pursuant to paragraph (d) of this section) shall not be used in making new source review determinations under part C and part D of title I of the Act.

see attachments A, C, L, P13, P14

SOURCE 901: TAR DECANTERS (2): BY-PRODUCT RECOVERY see attachment P15
PROC 901→CNTL C805A→STAC S805A
→CNTL C805B→STAC Z901

SOURCE 902: TAR DEHYDRATORS (2): BY-PRODUCT RECOVERY see attachment P16
PROC 902→CNTL C805A→STAC S805A
→CNTL C805B→STAC Z902

SOURCE 903: TAR STORAGE TANK: BY-PRODUCT RECOVERY see attachment P17
PROC 903→CNTL C805A→STAC S805A
→CNTL C805B→STAC Z903

SOURCE 904: WEAK LIQUOR CIRCULATION TANK: BY-PROD RCVRY
PROC 904→ CNTL C805A→STAC S805A see attachment P18
→CNTL C805B→STAC Z904

SOURCE 905 : EXHAUSTERS BY-PRODUCT RECOVERY (3)
PROC 905→CNTL C805A→STAC S805A see attachment P19, P20, P21
→CNTL C805B→STAC Z905

SOURCE 908: HOT DRAIN TANK
PROC 908→STAC Z908

There are no Source Level Requirements for Sources 902, 903, 904, 905, and 908 other than Group 8 Restrictions for By-Product Recovery in Section E.

SECTION E. GROUP 8 - BY-PRODUCT RECOVERY
Includes sources 901, 902, 903, 904, 905, & 908

#001 (b) To determine whether or not a piece of equipment is in benzene service, the methods in 61.245(d) shall be used, except that, for exhausters, the percent benzene shall be 1 percent by weight, rather than the 10 percent by weight

#002 Subpart V Equipment Leaks (fugitive emissions) Test methods & procedures:

(b) (1) Monitoring shall comply with Method 21

(3) The instrument shall be calibrated before use on each day of its use

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air); and

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible

(c) When equipment is tested for compliance with or monitored for no detectable emissions, the owner or operator shall comply with the following requirements: follow Method 21

(4) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

#003 Equipment Leaks:

(c) Each piece of equipment in benzene service to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment in benzene service.

(d) Each exhauster shall be monitored quarterly to detect leaks

(1) **If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.**

(2) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after it is detected A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(g) Any exhauster that is designated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (d) of this section if the exhauster:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background

(2) Is tested for compliance with paragraph (g)(1) of this section initially upon designation, annually, and at other times requested by the Administrator.

#004 Alternative means of emission limitation.

(d) (2) When the Administrator evaluates requests for permission to use alternative means of emission limitation for sources subject to §§ 61.132 and 61.133 (except tar decanters) the Administrator shall compare test data for the means of emission limitation to a benzene control efficiency of 98 percent. For tar decanters, the Administrator shall compare test data for the means of emission limitation to a benzene control efficiency of 95 percent.

SECTION E. GROUP 8 - BY-PRODUCT RECOVERY (continued)

#005 Alternative standards for valves in VHAP service - **allowable percentage of valves leaking**

(a) An owner or operator may elect to have all valves within a process unit to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.

(b) The following requirements shall be met if an owner or operator decides to comply with an allowable percentage of valves leaking:

(1) An owner or operator must notify the Administrator that the owner or operator has elected to have all valves within a process unit to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in § 61.247(d).

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with § 61.242-7(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves in VHAP service within the process unit shall be monitored within 1 week by the methods specified in § 61.245(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves in VHAP service for which leaks are detected by the number of valves in VHAP service within the process unit.

(d) Owner or operators who elect to have all valves comply with this alternative standard shall not have a process unit with a leak percentage greater than 2.0 percent.

#006 Alternative standards for valves in VHAP service--**skip period leak detection and repair**.

(b) (2) After 2 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves in VHAP service.

(3) After five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves in VHAP service.

#007 Recordkeeping and reporting:

(a) Design of control equipment shall be recorded and kept in a readily accessible location:

(1) Detailed schematics, design specifications, and piping and instrumentation diagrams.

(2) The dates and descriptions of any changes in the design specifications.

(b) Record and maintain the following information for 5 years following each semiannual (and other) inspection and each annual maintenance inspection:

(1) The date of the inspection and the name of the inspector.

(2) A brief description of each visible defect in the source or control equipment and the method and date of repair of the defect.

(3) The presence of a leak, as measured using the method described in 61.245(c). The record shall include the date of attempted and actual repair and method of repair of the leak.

(4) A brief description of any system abnormalities found during the annual maintenance inspection, the repairs made, the date of attempted repair, and the date of actual repair.

(d) For foundry coke by-product recovery plants, the annual coke production of both furnace and foundry coke shall be recorded and maintained for 5 years following each determination.

#008 Recordkeeping for equipment leaks (fugitive emissions)

(b) When each leak is detected:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.

(2) The identification on a valve may be removed after it has been monitored for 2 successive months and no leak has been detected during those 2 months.

(3) The identification on equipment, except on a valve, may be removed after it has been repaired.

(c) Each leak shall be recorded in a log and kept for 5 years

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date the leak was detected and the dates of each attempt to repair the leak.

(3) Repair methods applied in each attempt to repair the leak.

(4) "Above 10,000" if the maximum instrument reading measured by the methods specified in 61.245(a) after each repair attempt is equal to or greater than 10,000 ppm.

(5) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

(7) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days unrepaired.

(8) Dates of process unit shutdowns that occur while the equipment is unrepaired.

(9) The date of successful repair of the leak.

(e) The following information pertaining to all equipment to which a standard applies shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this subpart.

(2) (i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions as indicated by an instrument reading of less than 500 ppm above background.

(ii) The designation of this equipment for no detectable emissions shall be signed by the owner or operator.

(4) (i) The dates of each compliance test required (ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(f) Valves & pumps information shall be recorded in a log:

(1) A list of identification numbers for valves and pumps that are designated as unsafe to monitor, an explanation for each valve or pump stating why the valve or pump is unsafe to monitor, and the plan for monitoring each valve or pump.

(2) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

(g) Record the following for valves

(1) A schedule of monitoring,

(2) The percent of valves found leaking during each monitoring period.

(i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in the applicability section of this subpart and other specific subparts:

(1) An analysis demonstrating the design capacity of the process unit, and

(2) An analysis demonstrating that equipment is not in VHAP service.

SECTION E. GROUP 8 - BY-PRODUCT RECOVERY (continued)

#008 (j) Information and data used to demonstrate that a piece of equipment is not in VHAP service shall be recorded in a log that is kept in a readily accessible location.

#009 Subpart L Recordkeeping & Reporting requirements - See permit pages 145 & 146

(e) (3) In the case of a new source the statement shall be submitted with the plan application

(4) The statement is to contain the following information for each source:

(i) Type of source (e.g., a light-oil sump or pump).

(ii) For equipment in benzene service, equipment identification number and process unit identification: percent by weight benzene in the fluid at the equipment; and process fluid state in the equipment (gas/vapor or liquid).

(iii) Method of compliance with the standard (e.g., "gas blanketing," "monthly leak detection and repair," or "equipped with dual mechanical seals").

(f) Submit a semiannual report including:

(1) (i) A brief description of any visible defect in the source or ductwork,

(ii) The number of leaks detected and repaired, and

(iii) A brief description of any system abnormalities found during each annual maintenance inspection that occurred in the reporting period and the repairs made.

(3) For exhausters during the semiannual reporting period

(i) The number of exhausters for which leaks were detected

(ii) The number of exhausters for which leaks were repaired

(iii) The results of performance tests conducted within the semiannual reporting period.

(4) A statement signed by the owner or operator stating whether all provisions of 40 CFR part 61, subpart L, have been fulfilled during the semiannual reporting period.

(5) For foundry coke by-product recovery plants, the annual coke production of both furnace and foundry coke, if determined during the reporting period.

(g) In the first report submitted, the report shall include a reporting schedule stating the months that semiannual reports shall be submitted. Subsequent reports shall be submitted according to that schedule unless a revised schedule has been submitted in a previous semiannual report.

#010 Process vessels, storage tanks, and tar-intercepting sumps

(a) (1) Enclose and seal all openings on each process vessel, tar storage tank, and tar-intercepting sump.

(2) The owner or operator shall duct gases from each process vessel, tar storage tank, and tar-intercepting sump to the gas collection system, gas distribution system, or other enclosed point in the by-product recovery process where the benzene in the gas will be recovered or destroyed to less than 500 ppm above background and visual inspections. See permit page 147 for exceptions to (2).

(b) Monitoring and inspection shall be conducted on a semiannual basis and at any other time after the control system is repressurized with blanketing gas following removal of the cover or opening of the access hatch.

(1) If an instrument reading indicates an organic chemical concentration more than 500 ppm above a background concentration, a leak is detected.

(2) If visible defects such as gaps in sealing materials are observed during a visual inspection, a leak is detected.

(3) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected.

(4) A first attempt at repair of any leak or visible defect shall be made no later than 5 calendar days after each leak is detected.

(c) Following the installation of any control system used to meet the requirements of paragraph (a) of this section, the owner or operator shall conduct a maintenance inspection of the control system on an annual basis for evidence of system abnormalities, such as blocked or plugged lines, sticking valves, plugged condensate traps, and other maintenance defects that could result in abnormal system operation. The owner or operator shall make a first attempt at repair within 5 days, with repair within 15 days of detection.

P #011 Delay of repairs:

(a) Delay of repair of equipment for which leaks have been detected will be allowed if repair within 15 days is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

(b) Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the process and that does not remain in VHAP service.

See attachment X LDAR Report

SOURCE 907: BET WASTEWATER TREATMENT PLANT

PROC 907→STAC Z907

There are no AQ Conditions listed for this source.

Erie Coke Corporation							
Daily Monitoring - Fugitive Emissions and Malodors							
Results are from daily walk-arounds and visual observations							
Date	Fugitive Emissions		Malodor		Cause of Emissions	Cause of Malodor	Duration
2018	Yes	No	Yes	No			
1/1/2018		X		X			
1/2/2018		X		X			
1/3/2018		X		X			
1/4/2018		X		X			
1/5/2018		X		X			
1/6/2018		X		X			
1/7/2018		X		X			
1/8/2018		X		X			
1/9/2018		X		X			
1/10/2018		X		X			
1/11/2018		X		X			
1/12/2018		X		X			
1/13/2018		X		X			
1/14/2018		X		X			
1/15/2018		X		X			
1/16/2018		X		X			
1/17/2018		X		X			
1/18/2018		X		X			
1/19/2018		X		X			
1/20/2018		X		X			
1/21/2018		X		X			
1/22/2018		X		X			
1/23/2018		X		X			
1/24/2018		X		X			
1/25/2018		X		X			
1/26/2018		X		X			
1/27/2018		X		X			
1/28/2018		X		X			

Attachment A

A1

1/29/2018		X		X			
1/30/2018		X		X			
1/31/2018		X		X			
2/1/2018		X		X			
2/2/2018		X		X			
2/3/2018		X		X			
2/4/2018		X		X			
2/5/2018		X		X			
2/6/2018		X		X			
2/7/2018		X		X			
2/8/2018		X		X			
2/9/2018		X		X			
2/10/2018		X		X			
2/11/2018		X		X			
2/12/2018		X		X			
2/13/2018		X		X			
2/14/2018		X		X			
2/15/2018		X		X			
2/16/2018		X		X			
2/17/2018		X		X			
2/18/2018		X		X			
2/19/2018		X		X			
2/20/2018		X		X			
2/21/2018		X		X			
2/22/2018		X		X			
2/23/2018		X		X			
2/24/2018		X		X			
2/25/2018		X		X			
2/26/2018		X		X			
2/27/2018		X		X			
2/28/2018		X		X			
3/1/2018		X		X			
3/2/2018		X		X			
3/3/2018		X		X			

3/4/2018		X		X			
3/5/2018		X		X			
3/6/2018		X		X			
3/7/2018		X		X			
3/8/2018		X		X			
3/9/2018		X		X			
3/10/2018		X		X			
3/11/2018		X		X			
3/12/2018		X		X			
3/13/2018		X		X			
3/14/2018		X		X			
3/15/2018		X		X			
3/16/2018		X		X			
3/17/2018		X		X			
3/18/2018		X		X			
3/19/2018		X		X			
3/20/2018		X		X			
3/21/2018		X		X			
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3/27/2018		X		X			
3/28/2018		X		X			
3/29/2018		X		X			
3/30/2018		X		X			
3/31/2018		X		X			
4/1/2018		X		X			
4/2/2018		X		X			
4/3/2018		X		X			
4/4/2018		X		X			
4/5/2018		X		X			
4/6/2018		X		X			

A2

4/7/2018		X		X			
4/8/2018		X		X			
4/9/2018		X		X			
4/10/2018		X		X			
4/11/2018		X		X			
4/12/2018		X		X			
4/13/2018		X		X			
4/14/2018		X		X			
4/15/2018		X		X			
4/16/2018		X		X			
4/17/2018		X		X			
4/18/2018		X		X			
4/19/2018		X		X			
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4/26/2018		X		X			
4/27/2018		X		X			
4/28/2018		X		X			
4/29/2018		X		X			
4/30/2018		X		X			
5/1/2018		X		X			
5/2/2018		X		X			
5/3/2018		X		X			
5/4/2018		X		X			
5/5/2018		X		X			
5/6/2018		X		X			
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5/8/2018		X		X			
5/9/2018		X		X			
5/10/2018		X		X			

5/11/2018		X		X			
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5/13/2018		X		X			
5/14/2018		X		X			
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5/17/2018		X		X			
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6/9/2018		X		X			
6/10/2018		X		X			
6/11/2018		X		X			
6/12/2018		X		X			
6/13/2018		X		X			

6/14/2018		X		X			
6/15/2018		X		X			
6/16/2018		X		X			
6/17/2018		X		X			
6/18/2018		X		X			
6/19/2018		X		X			
6/20/2018		X		X			
6/21/2018		X		X			
6/22/2018		X		X			
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6/25/2018		X		X			
6/26/2018		X		X			
6/27/2018		X		X			
6/28/2018		X		X			
6/29/2018		X		X			
6/30/2018		X		X			
7/1/2018		X		X			
7/2/2018		X		X			
7/3/2018		X		X			
7/4/2018		X		X			
7/5/2018		X		X			
7/6/2018		X		X			
7/7/2018		X		X			
7/8/2018		X		X			
7/9/2018		X		X			
7/10/2018		X		X			
7/11/2018		X		X			
7/12/2018		X		X			
7/13/2018		X		X			
7/14/2018		X		X			
7/15/2018		X		X			
7/16/2018		X		X			
7/17/2018		X		X			

7/18/2018		X		X			
7/19/2018		X		X			
7/20/2018		X		X			
7/21/2018		X		X			
7/22/2018		X		X			
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7/24/2018		X		X			
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7/29/2018		X		X			
7/30/2018		X		X			
7/31/2018		X		X			
8/1/2018		X		X			
8/2/2018		X		X			
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8/16/2018		X		X			
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8/27/2018		X		X			
8/28/2018		X		X			
8/29/2018		X		X			
8/30/2018		X		X			
8/31/2018		X		X			
9/1/2018		X		X			
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9/3/2018		X		X			
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9/5/2018		X		X			
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9/14/2018		X		X			
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9/16/2018		X		X			
9/17/2018		X		X			
9/18/2018		X		X			
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9/20/2018		X		X			
9/21/2018		X		X			
9/22/2018		X		X			
9/23/2018		X		X			

9/24/2018		X		X			
9/25/2018		X		X			
9/26/2018		X		X			
9/27/2018							
9/28/2018							

45

Attachment B

2018

1-6-18 - #1 & #2 Softeners Down Due to Plant Emerg. Found #2 outlet valve unable to close. Resin went into system. Running on Bypass. 1465 Advantage online 1-10-18

1-10-18 to 1-22-18 Softener Repair has started. Replace valve. Changed out gravel and resin in both. Change inter parts due to damage. Brine tank Repaired. Softeners on line at 1482 -1-22-18

2-14-18 COPES Leaking. Repaired leak on COPES

2-15-18 2300 Pump Down due to Bad Bearings. Pump Being Repaired

2-18-18 Pump Repaired

3-8-18 Back drive adjusted on #1 Boiler (COG) #1 Boiler online

3-8-18 #2 Boiler Safety valve Test complete all valves Reseated properly #2 Boiler offline Preping for Inspection

3-21-18 Grease coupling on generator Change Brushes

4-4-18 VAC. Adjusted on Plant water check when Big Blue is on.

4-9-18 #2 Boiler Maint. Fire Box Repair, patch and
4-12-18 seal

4-13-18 Readjusted Exhaust Steam Regulator. Trip on Main Regulator - Should be Rebuilt.

4-16-18 Replace vent valve on #2 Boiler

4-16-18 - Cleaned out line to Copes from superheater
4-16-18 - 2300 Plant water pump Shaft collars tighten up Shaft was moving left & right.

4-23-18 Changed out #2 Boiler Bypass Feed water valve.
Tested Trip @ 565 ID Fan #2

4-26-18 Repaired Union on Copes valve coming of Superheater #1 Boiler

5-8-18 Rebuilt #1 Boiler water column. New Floats, Rods and went to a single switch unit. tested and is ok

5-11-18 #2 Boiler Inspection

5-14- 5-16 Repair #8 Tube, Hydro Found #12 & #15 Sealing tube leaks try welding. Not successful. Tubes are Plugged. Hydro Test on 5-17-18 - Test Pass 20 min. test

5-30-18 Tested safety valves on #1 Boiler All Passed

5-31-18 #1 Steam Turbine Feed water pump work Begins

6-1-18 #2 Boiler Digital Drum level off line due to leak. Repaired and Back in service

6-16-18 Exhaust Steam Regulator Rebuilt (Replace Brushes and Air Filters)

6-27-18 Gen offline out of service. Replaced condenser water control valve. Replace cond. gauge glass. New Meter installed. Generator Back in service @ 1347.

7-10-18 #1 Steam Feed water pump Repair complete Trip Test 3506 RPM @ 255 PSI at pump @ 270 on Control Board. Pump Ready for In service use.

Boiler House Maint. Log

B1

7-25-18	Changed out Pilot valve on Regulator
7-30-18	Changed out Flash Tank Safety valve Tested valve - Test passed
8-1-18	Replaced Siphon at Think Tank Replaced 3/4 Ball Valve (Steam valve for Siphon)
8-23-18	#1 ID Fan Trip Test @ 572 RPM
08-28-18	#1 Boiler Maint. Begins: Fire Box cleaning and Repair

Attachment C

H2S Measured in Grains per 100 dscf

Date	H2S In	H2S Out	Test Time		
5/16/2018	300	10	9:00 AM	61º F	85%
5/17/2018	180	20	11:00 AM	72º F	46%
5/18/2018	260	10	8:30AM	57º F	60%
5/21/2018	340	20	8:30 AM	64º F	80%
5/24/2018	420	N/A	1:00 PM	65º F	64%
5/25/2018	400	20	9:00 AM	73º F	45%
5/29/2018	390	10	11:00 AM	81º F	54%
5/30/2018	320	15	10:00 AM	84º F	70%

C1

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/16/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	11.2	18.80	74.39	6.81	1.027	3.7	10.6	89.4	182	492	50.4	
SMC Mix	N/A										0.0	
B-1 Jerry F./ Robin	9.9	29.40	63.87	6.73	0.810							
B-2 LCT/Ramaco	12.5	20.12	72.88	7.00	1.001				145	485		
B-3 LCT	13.7	19.23	74.60	6.17	1.086							
B-4 Lady Jane/Island	8.5	30.92	62.46	6.62	1.010							
B-5 Ramaco	10.8	20.33	71.83	7.84	0.741							
B-6 Breeze	15.0	3.30	85.01	11.69	0.844							
Stock Breeze	11.2	1.78	86.54	11.68	0.870							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test + 4"	Shatter Test + 3"	Shatter Test + 2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	0.1	0.36	90.50	9.14	0.866	91.2	94.7	95.5		
Industrial Coke	7.1	0.21	90.08	9.71	0.799				65.0	68.0
1 x 2 Coke	N/A									
2 x 4 Coke	1.1	0.34	90.51	9.15	0.828					

Industrial Coke Screen					
+ 4"	+ 3"	+ 2"	+ 1 3/8"	+ 1"	- 1"
0.0	29.6	69.6	91.9	95.8	4.2

Crushed Breeze Screen	
Mesh Size	%
+ 20 Mesh	12.6
+ 60 Mesh	51.3
+ 100 Mesh	71.5
+ 200 Mesh	87.7
- 200 Mesh	12.3

Foundry Coke Screen						
Size	+ 6"	+ 5"	+ 4"	+ 3"	+ 2"	+ 1"
6 x 9	87.5	90.4	98.6	100.0	100.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

Tar Analysis						
Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	Yes
Specifications OK	No	No
Sample Date	5/16/18	
Samplers Initials	RL & DB	

Coke Oven Gas		
H_2S	10	gr./100 ft.^{3}

R. Laws — Approval Signature

5/17/2018 — Date

* *Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/17/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	9.1	21.34	71.20	7.46	0.975	2.8	9.5	90.5	176	468	49.1	
SMC Mix	8.7	25.13	67.30	7.57	0.896	6.2	16.5	83.5	1542	448	49.8	
B-1 Jerry F./ Robin	10.2	25.35	68.17	6.48	0.902							
B-2 LCT/Ramaco	10.0	19.82	74.35	5.83	1.093							
B-3 LCT	12.8	19.68	73.87	6.45	1.136				7884	442		
B-4 Lady Jane/Island	8.4	31.28	62.13	6.59	1.000							
B-5 Ramaco	9.8	20.57	71.42	8.01	0.728							
B-6 Breeze	12.9	3.00	86.52	10.48	0.858							
Stock Breeze	11.5	1.59	87.41	11.00	0.869							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test + 4"	Shatter Test + 3"	Shatter Test + 2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	1.0	0.59	90.44	8.97	0.815	91.6	94.5	96.4		
Industrial Coke	4.6	0.48	89.76	9.76	0.813				64.3	66.8
1 x 2 Coke	N/A									
2 x 4 Coke	1.2	0.28	90.59	9.33	0.860					

Industrial Coke Screen + 4"	+ 3"	+ 2"	+ 1 3/8"	+ 1"	- 1"
0.0	15.3	68.4	85.5	94.2	5.8

Crushed Breeze Screen Mesh Size	%
+ 20 Mesh	17.1
+ 60 Mesh	52.0
+ 100 Mesh	71.2
+ 200 Mesh	87.5
- 200 Mesh	12.5

Foundry Coke Screen Size	+ 6"	+ 5"	+ 4"	+ 3"	+ 2"	+ 1"
6 x 9	85.0	93.5	96.8	100.0	0.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

Tar Analysis Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash
1519-75119		5/17/18	0.3	1.166		
1679-75109		5/17/18	0.4	1.165		

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	No
Specifications OK	No	No
Sample Date	5/17/18	
Samplers Initials	RL & DB	

Coke Oven Gas		
H_2S	20	gr./100 ft.^{3}

R. Laws — Approval Signature

5/18/2018 — Date

* *Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/18/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	7.8	21.10	71.98	6.92	1.079	6.0	16.1	83.9	334	459	49.6	
SMC Mix	9.8	26.47	66.71	6.82	0.889	3.6	12.1	87.9	1922	449	49.1	
B-1 Jerry F./ Robin	8.1	31.85	61.27	6.88	0.737							
B-2 LCT/Ramaco	8.0	19.33	75.10	5.57	1.127							
B-3 LCT	10.0	19.46	74.57	5.97	1.068							
B-4 Lady Jane/Island	6.2	31.57	62.35	6.08	1.072				562	492		
B-5 Ramaco	8.5	20.54	71.75	7.71	0.726							
B-6 Breeze	13.5	2.55	86.19	11.26	0.878							
Stock Breeze	10.3	1.80	86.64	11.56	0.879							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test + 4"	Shatter Test + 3"	Shatter Test + 2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	0.5	0.44	91.19	8.37	0.814	91.2	96.1	98.0		
Industrial Coke	2.4	0.36	90.34	9.30	0.895				68.3	70.0
1 x 2 Coke	N/A									
2 x 4 Coke	0.4	0.37	91.07	8.56	0.895					

Industrial Coke Screen + 4"	+ 3"	+ 2"	+ 1 3/8"	+ 1"	- 1"
0.0	23.7	71.0	94.5	98.6	1.4

Crushed Breeze Screen Mesh Size	%
+ 20 Mesh	19.2
+ 60 Mesh	55.3
+ 100 Mesh	73.9
+ 200 Mesh	89.3
- 200 Mesh	10.7

Foundry Coke Screen Size	+ 6"	+ 5"	+ 4"	+ 3"	+ 2"	+ 1"
6 x 9	82.0	88.3	96.3	100.0	100.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

Tar Analysis Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	Yes
Specifications OK	No	No
Sample Date	5/18/18	
Samplers Initials	RL & DB	

Coke Oven Gas		
H_2S	10	gr./100 ft.^{3}

R. Laws — Approval Signature

5/19/2018 — Date

* *Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

C4

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/21/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	9.4	21.60	71.31	7.09	0.931	3.1	11.2	88.8	448	465	50.3	
SMC Mix	9.3	25.64	66.75	7.61	1.040	4.1	13.9	86.1	1128	453	49.7	
B-1 Jerry F./ Robin	8.6	31.27	61.48	7.25	0.819				5317	444		
B-2 LCT/Ramaco/Red	8.5	19.08	74.39	6.53	1.136							
B-3 LCT	12.6	20.34	73.59	6.07	1.104							
B-4 Lady Jane/Island	10.6	29.79	63.72	6.49	0.997							
B-5 Ramaco	9.7	20.88	71.14	7.98	0.769							
B-6 Breeze	12.7	2.03	88.18	9.79	0.820							
Stock Breeze	10.1	1.30	88.50	10.20	0.889							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test +4"	Shatter Test +3"	Shatter Test +2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	0.1	0.37	90.14	9.49	0.826	90.9	95.0	97.0		
Industrial Coke	2.7	0.33	90.22	9.45	0.802				68.4	70.5
~~1 x 2 Coke~~	N/A									
2 x 4 Coke	0.3	0.28	90.41	9.31	0.862					

Industrial Coke Screen					
+4"	+3"	+2"	+1 3/8"	+1"	-1"
0.0	16.6	66.1	89.3	95.6	4.4

Crushed Breeze Screen	
Mesh Size	%
+20 Mesh	15.5
+60 Mesh	54.2
+100 Mesh	72.2
+200 Mesh	88.2
-200 Mesh	11.8

Foundry Coke Screen						
Size	+6"	+5"	+4"	+3"	+2"	+1"
6 x 9	86.3	95.6	99.0	100.0	100.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	Yes
Specifications OK	No	No
Sample Date	5/21/18	
Samplers Initials	RL & DB	

Tar Analysis						
Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash

Coke Oven Gas		
H_2S	20	gr./100 ft.^{3}

R. Laws — Approval Signature

5/22/2018 — Date

* *Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/22/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	8.4	21.49	71.43	7.08	0.938	2.7	11.5	88.5	282	467	49.7	
SMC Mix	8.6	26.86	66.22	6.92	0.990	5.1	14.0	86.0	12547	454	49.1	
B-1 Jerry F./ Robin	6.8	31.37	61.64	6.99	0.811							
B-2 LCT/Ram./Red	7.7	20.41	72.90	6.69	0.911				249	484		
B-3 LCT	12.9	20.26	72.57	7.17	1.055							
B-4 Lady Jane/Island	8.1	31.67	60.86	7.47	1.117							
B-5 Ramaco	10.6	20.67	71.41	7.92	0.746							
B-6 Breeze	12.1	2.09	87.19	10.72	0.818							
Stock Breeze	10.1	1.82	87.38	10.80	0.745							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test + 4"	Shatter Test + 3"	Shatter Test + 2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	0.1	0.32	90.17	9.51	0.815	91.3	94.8	96.4		
Industrial Coke	5.5	0.46	90.32	9.22	0.807				66.4	68.4
~~1 x 2 Coke~~	~~N/A~~									
2 x 4 Coke	0.2	0.49	90.13	9.38	0.809					

Industrial Coke Screen					
+ 4"	+ 3"	+ 2"	+ 1 3/8"	+ 1"	- 1"
0.0	21.5	56.4	85.2	94.6	5.4

Crushed Breeze Screen	
Mesh Size	%
+ 20 Mesh	15.3
+ 60 Mesh	52.2
+ 100 Mesh	72.8
+ 200 Mesh	88.5
- 200 Mesh	11.5

Foundry Coke Screen						
Size	+ 6"	+ 5"	+ 4"	+ 3"	+ 2"	+ 1"
6 x 9	88.9	97.3	98.7	100.0	100.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	No
Specifications OK	No	No
Sample Date	5/22/18	
Samplers Initials	RL & DB	

Tar Analysis						
Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash
1519-75119	T-33	5/21/18	0.3	1.16		
1261-7594	T-33	5/21/18	0.2	1.153		

Coke Oven Gas		
H_2S	10	gr./100 ft.^{3}

R. Laws — 5/23/2018

Approval Signature — Date

** Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

C6

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/23/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	9.7	18.98	74.01	7.01	0.927	7.8	14.3	85.7	164	480	50.8	
SMC Mix	9.9	26.73	65.50	7.77	0.991	5.2	15.3	84.7	2868	458	50.1	
B-1 Jerry F./ Robin	9.8	33.00	60.51	6.49	0.976							
B-2 LCT/Ram./Red	8.3	20.16	72.83	7.01	0.851				299	482		
B-3 LCT	8.2	20.02	72.61	7.37	0.908							
B-4 Lady Jane/Island	7.7	33.33	59.67	7.00	1.019							
B-5 Ramaco	7.4	20.77	70.82	8.41	0.697							
B-6 Breeze	12.9	1.95	87.56	10.49	0.782							
Stock Breeze	12.0	1.50	88.30	10.20	0.776							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test + 4"	Shatter Test + 3"	Shatter Test + 2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	1.5	0.42	90.27	9.31	0.809	90.2	94.4	95.8		
Industrial Coke	0.6	0.41	90.31	9.28	0.839				63.6	65.4
~~1 x 2 Coke~~	~~N/A~~									
2 x 4 Coke	1.6	0.24	90.27	9.49	0.862					

Industrial Coke Screen					
~~+ 4"~~	~~+ 3"~~	~~+ 2"~~	~~+ 1 3/8"~~	~~+ 1"~~	~~- 1"~~
0.0	18.7	78.9	95.6	98.3	1.7

Crushed Breeze Screen	
Mesh Size	%
+ 20 Mesh	8.9
+ 60 Mesh	52.1
+ 100 Mesh	75.6
+ 200 Mesh	90.4
- 200 Mesh	9.6

Foundry Coke Screen						
Size	+ 6"	+ 5"	+ 4"	+ 3"	+ 2"	+ 1"
6 x 9	85.8	91.6	95.4	99.2	100.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	Yes
Specifications OK	No	No
Sample Date	5/23/18	
Samplers Initials	RL & DB	

Tar Analysis						
Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash

Coke Oven Gas		
H_2S	10	gr./100 ft.^{3}

R. Laws — Approval Signature

5/24/2018 — Date

* *Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

C7

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/24/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	8.2	18.66	72.53	8.81	0.925	2.6	8.8	91.2	465	189	50.2	
SMC Mix	8.6	28.96	61.78	9.26	0.978	5.4	16.5	83.5	7408	438	51.1	
B-1 Jerry F./ Robin	8.7	31.95	59.10	8.95	0.791							
B-2 LCT/Ram./Red	8.4	19.52	74.53	5.95	1.077							
B-3 LCT	9.5	20.15	72.24	7.61	1.118							
B-4 Lady Jane/Island	8.3	32.71	58.46	8.83	1.021				22117	442		
B-5 Ramaco	7.6	20.32	71.03	8.65	0.739							
B-6 Breeze	13.1	2.28	86.46	11.26	0.750							
Stock Breeze	10.5	2.46	86.73	10.81	0.728							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test + 4"	Shatter Test + 3"	Shatter Test + 2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	1.8	0.30	90.54	9.16	0.784	91.7	93.9	95.5		
Industrial Coke	3.6	0.30	90.36	9.34	0.811				70.6	72.4
~~1 x 2 Coke~~	~~N/A~~									
2 x 4 Coke	0.8	0.30	90.46	9.24	0.763					

Industrial Coke Screen					
+ 4"	+ 3"	+ 2"	+ 1 3/8"	+ 1"	- 1"
0.0	9.0	69.7	93.1	98.8	1.2

Crushed Breeze Screen	
Mesh Size	%
+ 20 Mesh	16.1
+ 60 Mesh	56.5
+ 100 Mesh	75.0
+ 200 Mesh	89.1
- 200 Mesh	10.9

Foundry Coke Screen						
Size	+ 6"	+ 5"	+ 4"	+ 3"	+ 2"	+ 1"
6 x 9	85.3	92.5	97.2	99.5	100.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

Tar Analysis						
Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash
1656-75113	T-33	5/24/18	0.3	1.160		
A1717-75107	T-33	5/24/18	0.5	1.155		

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	Yes
Specifications OK	No	No
Sample Date	5/24/18	
Samplers Initials	RL & DB	

Coke Oven Gas		
H_2S	10	gr./100 ft.^{3}

R. Laws — 5/25/2018

Approval Signature — Date

** Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

C8

Erie Coke Corporation

Daily Laboratory Report

Sample Date: 5/25/2018

Bin # & Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Pulverization + 1/4"	Pulverization + 1/8"	Pulverization - 1/8"	Gieseler DDPM	Gieseler @ °C	Bulk Density	% Trans.
Foundry Mix	N/A											
SMC Mix	13.3	28.24	64.58	7.18	0.961	3.3	10.5	89.5	7408	438	47.9	
B-1 Jerry F./ Robin	7.8	29.49	64.51	6.00	0.894							
B-2 LCT/Ram./Red	6.7	24.69	69.07	6.24	0.885							
B-3 LCT	6.4	19.19	74.64	6.17	1.075							
B-4 Lady Jane/Island	6.5	31.69	59.59	8.72	1.009							
B-5 Ramaco	6.7	20.34	70.60	9.06	0.964				499	469		
B-6 Breeze	11.1	2.16	87.05	10.79	0.719							
Stock Breeze	11.4	1.05	88.60	10.35	0.823							

Sample	Moisture	V.M.	F.C.	Ash	Sulfur	Shatter Test + 4"	Shatter Test + 3"	Shatter Test + 2"	Tumbler Test Stab.	Tumbler Test Hard.
Foundry Coke	0.0	0.37	90.60	9.03	0.727	92.2	96.7	97.8		
Industrial Coke	8.4	0.39	90.34	9.27	0.779				66.2	68.1
1 x 2 Coke	N/A									
2 x 4 Coke	1.2	0.26	90.98	8.76	0.780					

Industrial Coke Screen					
+ 4"	+ 3"	+ 2"	+ 1 3/8"	+ 1"	- 1"
0.0	24.3	62.2	86.4	98.6	1.4

Crushed Breeze Screen	
Mesh Size	%
+ 20 Mesh	9.2
+ 60 Mesh	59.9
+ 100 Mesh	80.3
+ 200 Mesh	92.0
- 200 Mesh	8.0

Foundry Coke Screen						
Size	+ 6"	+ 5"	+ 4"	+ 3"	+ 2"	+ 1"
6 x 9	85.0	90.6	98.0	100.0	100.0	***
2 x 4	***	***	***	***	***	***
1 x 2	***	***	***	***	***	***

	FDY.	IND.
Appearance OK	Yes	Yes
Size OK	Yes	Yes
Specifications OK	No	No
Sample Date	5/25/18	
Samplers Initials	RL & DB	

Tar Analysis						
Car / Truck #	Tank	Date	Moist.	Sp. Gr.	Q.I.	Ash

Coke Oven Gas		
H_2S	20	gr./100 ft.^{3}

R. Laws — Approval Signature

5/26/2018 — Date

** Note: Any result that does not meet required specifications will be shaded in yellow or gray*

Distribution: Server, TCC, Coal Handling Supervisor and By-Products Supervisor

LR8.0
Revision Date: 2/11/09

C9

Attachment D

safety-kleen

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED) **SDS ID: 82658**

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

459 4724

Material Name
SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

Synonyms
Safety-Kleen Premium Gold Solvent; Safety-Kleen Continued Use Product Solvent (CUP); High Flash Degreasing Solvent; Parts Washer Solvent; Petroleum Distillates; Petroleum Naphtha; Naphtha, Solvent; Mineral Spirits

Product Use
Cleaning and degreasing metal parts. If this product is used in combination with other products, refer to the Safety Data Sheets for those products.

Restrictions on Use
None known.

MANUFACTURER/SUPPLIER
Safety-Kleen Systems, Inc.
2600 North Central Expressway
Suite 200
Richardson, TX 75080
www.safety-kleen.com
Phone: 1-800-669-5740
Emergency Phone #: 1-800-468-1760

IMPORTER/DISTRIBUTOR
Safety-Kleen Canada, Inc.
25 Regan Road
Brampton, Ontario, Canada L1A 1B2

Phone: 1-800-669-5740
Emergency # 1-800-468-1760

Issue Date
September 30, 2016

Supersedes Issue Date
June 28, 2016

Original Issue Date
January 26, 1995

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.
Flammable Liquids - Category 4
Aspiration Hazard - Category 1
Specific Target Organ Toxicity - Single Exposure - Category 3 (central nervous system)

GHS Label Elements
Symbol(s)

Signal Word
Danger

D1

Hazard Statement(s)

Combustible liquid.
May be fatal if swallowed and enters airways.
May cause drowsiness or dizziness.

Precautionary Statement(s)

Prevention

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Use only outdoors or in a well-ventilated area. Wear protective gloves and eye protection/face protection. Avoid breathing vapor or mist.

Response

In case of fire: Use Class B/C or Class A/B/C fire extinguisher, carbon dioxide, regular foam, dry chemical, water spray, or water fog for extinction. IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.

Storage

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

None known.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
64742-47-8	Petroleum distillates, hydrotreated light	100

Section 4 - FIRST AID MEASURES

Inhalation

IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin

IF ON SKIN: Wash with plenty of soap and water. Remove contaminated clothing and wash it before reuse. Get medical attention if irritation develops or persists.

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.

Ingestion

Aspiration hazard. IF SWALLOWED: Do NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms/Effects

Acute

May be fatal if swallowed and enters airways. May cause drowsiness or dizziness.

Delayed

May cause damage to central nervous system.

Indication of any immediate medical attention and special treatment needed

IF exposed: Immediately call a POISON CENTER or doctor/physician. Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Media to use includes Class B/C or Class A/B/C fire extinguisher, carbon dioxide, regular dry chemical, foam, water spray, and water fog.

Unsuitable Extinguishing Media

Do not use high-pressure water streams.

Special Hazards Arising from the Chemical

Combustible liquid and vapor. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Do not allow run-off from fire-fighting to enter drains or water courses. Closed containers may rupture violently when heated. Empty containers may retain product residue including flammable/explosive vapors. Take precautionary measures against static discharge: May cause fire or explosion.

Hazardous Combustion Products

Decomposition and combustion materials may be toxic. Burning may produce carbon monoxide and other organic compounds.

Advice for firefighters

Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures

Keep away from ignition sources - No smoking. Keep unnecessary people away, isolate hazard area and deny entry. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Stay away from the ends of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Stay upwind and keep out of low areas. Dike for later disposal.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Remove all sources of ignition. Do not touch or walk through spilled material. Stop leak if safe to do so. Wear personal protective clothing and equipment. Appropriate engineering controls: Keep unnecessary people away, isolate hazard area and deny entry. Ventilate the area. Avoid breathing vapor or mist. Use foam on spills to minimize vapors. Keep out of water supplies and sewers. Absorb with earth, sand or other non-combustible material and transfer to container. Use non-sparking tools. Large spills: Reduce vapors with water spray. Dike for later disposal.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from heat, sparks and flame. Use personal protective equipment as required. When transferring product, trucks and tank cars should be grounded and bonded. Do not breathe vapor or mist. Use only outdoors or in a well-ventilated area. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke when using this product.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up. Keep away from heat and ignition sources. Do not cut, puncture, or weld on or near this container. Empty containers may contain product residue.

Incompatible Materials

Avoid acids, alkalies, oxidizing agents, reducing agents, halogens.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Petroleum distillates, hydrotreated light	64742-47-8
ACGIH:	100 ppm TWA (related to Stoddard solvent)
NIOSH:	350 mg/m^3 TWA (related to Stoddard solvent)
	1800 mg/m^3 Ceiling (15 minutes)
OSHA (US):	500 ppm TWA ; 2900 mg/m^3 TWA (Related to Stoddard solvent)
	100 ppm TWA (Related to Stoddard solvent); 525 mg/m^3 TWA (OSHA (Vacated))

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Provide general ventilation needed to maintain concentration of vapor or mist below applicable exposure limits. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Safety glasses with side shields should be worn at a minimum. Additional protection like goggles, face shields, or respirators may be needed dependent upon anticipated use and concentrations of mists or vapors. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. Contact lens use is not recommended.

Respiratory Protection

Use NIOSH-certified P- or R- series particulate filter and organic vapor cartridges when concentration of vapor or mist exceeds applicable exposure limits. Protection provided by air purifying respirators is limited. Do not use N-rated respirators. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

Glove Recommendations

Wear appropriate chemical resistant gloves. In case of skin contact: neoprene, nitrile, as well as similar materials in protection gloves; do not use natural rubber.

Protective Materials

Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to regulatory requirements. The following PPE should be considered the minimum required: Safety glasses, Gloves, and/or Lab coat or apron.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear liquid	**Physical State**	Liquid
Odor	Mild ,hydrocarbon odor	**Color**	Colorless to pale yellow
Odor Threshold	30 ppm (based on Stoddard Solvent)	**pH**	Not applicable
Melting Point	-45 F (-43 C)	**Boiling Point**	350 F (177 C)
Boiling Point Range	Not available	**Freezing point**	Not available
Evaporation Rate	<0.1 (butyl acetate = 1)	**Flammability (solid, gas)**	Not available
Autoignition Temperature	480 F (249 C)(minimum)	**Flash Point**	148 F (64 C)
Lower Explosive Limit	0.7 VOL%	**Decomposition temperature**	Not available
Upper Explosive Limit	5 VOL%	**Vapor Pressure**	0.2 mm Hg (at 68 F)
Vapor Density (air=1)	5 (air = 1) (approximately)	**Specific Gravity (water=1)**	0.77 - 0.82 (at 60 F)
Water Solubility	Insoluble	**Partition coefficient: n-octanol/water**	Not available
Viscosity	Not available	**Solubility (Other)**	Not available
Density	6.4 - 6.7 lb/US gal	**VOC**	100 WT%; 6.4 to 6.7 LB/US gal; 770 to 800 g/l; As per 40 CFR Part 51.100(s); VOC Vapor Pressure: <1.0 mmHg @ 20°C; Product may or may not be considered photochemically reactive (100% by weight); Consult your state or local air district regulations for location specific information.
Molecular Weight	Not available		

Other Information

No additional information is available.

Section 10 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize under normal temperature and pressure conditions.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

Incompatible Materials
Avoid acids, alkalies, oxidizing agents, reducing agents, halogens.

Hazardous decomposition products
Not applicable under normal conditions of use and storage. Reference to other sections: Section 5.

Thermal decomposition products
Burning may produce carbon monoxide and other organic compounds.

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation
May cause respiratory irritation, nausea, loss of appetite, headache, drowsiness, dizziness, disorientation, tremors, lung damage, convulsions, coma.

Skin Contact
May cause skin irritation.

Eye Contact
No information on significant adverse effects.

Ingestion
May cause drowsiness or dizziness, headache, loss of coordination, aspiration hazard.

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:

Petroleum distillates, hydrotreated light (64742-47-8)
Oral LD50 Rat >5000 mg/kg
Dermal LD50 Rabbit >2000 mg/kg
Inhalation LC50 Rat >5.2 mg/L 4 h

Immediate Effects
May cause central nervous system depression. Aspiration may result in lung damage, respiratory tract irritation, May cause skin irritation.

Delayed Effects
May cause damage to central nervous system.

Irritation/Corrosivity Data
May cause respiratory tract irritation and skin irritation.

Respiratory Sensitization
No information available for the product.

Dermal Sensitization
No information available for the product.

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Germ Cell Mutagenicity
No information available for the product.

Tumorigenic Data
No data available

Reproductive Toxicity
No information available for the product.

Specific Target Organ Toxicity - Single Exposure
May cause central nervous system depression.

Specific Target Organ Toxicity - Repeated Exposure
May cause damage to central nervous system.

Aspiration hazard
May be fatal if swallowed and enters airways. May cause lung damage.

Medical Conditions Aggravated by Exposure
Individuals with pre-existing respiratory tract (nose, throat, and lungs), central nervous system, kidneys, and eye and/or skin disorders may have increased susceptibility to the effects of exposure.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity
According to the California Code of Regulations, a toxicity to aquatic life, specifically fish, is determined using an acute 96 hour bioassay. A material is non-hazardous if the LC50 is >500 mg/L. This product passed the bioassay and is considered non-hazardous.

Persistence and Degradability
No information available for the product.

Bioaccumulative Potential
This material is believed not to bioaccumulate.

Mobility
Expected to have high mobility in soil.

Other Toxicity
No additional information is available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose of in accordance with all applicable federal, state and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal. This product, if discarded, is not expected to be a characteristic or listed hazardous waste. Processing, use, or contamination by the user may change the waste code(s) applicable to the disposal of this product.

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components

Section 14 - TRANSPORT INFORMATION

US DOT Information:
Non-Bulk Packages (less than or equal to 119 gallons): Not regulated. Shipping Name: Cleaning compounds (Petroleum naphtha) (Not US DOT regulated)

Bulk Packages
Shipping Name: COMBUSTIBLE LIQUID, N.O.S., (Petroleum naphtha)
Hazard Class: 3 **UN/NA #:** NA1993 **Packing Group:** III **Required Label(s):** 3

IATA Information:
UN#: Not regulated as a dangerous good

TDG Information:
UN#: Not regulated as a dangerous good
Additional information
Emergency Response Guide Number: 128: Reference: North American Emergency Response Guide Book.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: yes **Chronic Health:** yes **Fire:** yes **Pressure:** no **Reactivity:** no

U.S. State Regulations

None of this product's components are listed on the state lists from MA, MN, NJ or PA

WARNING! This product can expose you to chemicals including benzene, dichlorobenzene, ethylbenzene, and naphthalene which are known to the State of California to cause cancer and benzene and toluene which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.gov.

Canada Regulations

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by the CPR.

Canadian WHMIS Ingredient Disclosure List (IDL)

The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

WHMIS Classification

B3; D2B

Component Analysis - Inventory

Petroleum distillates, hydrotreated light (64742-47-8)

US	CA
Yes	DSL

U.S. Inventory (TSCA)

TSCA: All the components of this substance are listed on or are exempt from the inventory.

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 1 Fire: 2 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Revision to meet Canadian WHMIS 2015.

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CFR - Code of Federal Regulations (US); CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CPR - Controlled Products Regulations; DOT - Department of Transportation; DSL - Domestic Substances List; EPA - Environmental Protection Agency; F - Fahrenheit; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NDSL – Non-Domestic Substance List (Canada); NFPA -

D8

National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; RCRA - Resource Conservation and Recovery Act; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:

Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.

safety-kleen.
MAKE GREEN WORK

SAFETY-KLEEN SYSTEMS, INC
2600 North Central Expressway Ste 400
Richardson, TX 75080

DUNS NO: 05-397-6551
FED ID NO: 39-6090019

INVOICE

Billing Account #	Service Account #	Invoice #	Invoice Date
ER12149	ER12493	77628886	08/15/18

Billing Address
ERIE COKE CORPORATION
PO BOX 6180
ERIE PA 16512

Service Address
ERIE COKE CORP
FOOT OF EAST AVE
ERIE PA 16512

Branch Location
BR LACKAWANNA,NY (BUFFALO)

Terms
Net 30 Days

For Questions Call:
716-826-8931

Service Date
08/14/18

PO Number	Department #	Department	Manifest #	Tax Status/#

QUANTITY	PART#	TERM	SERIAL/PROFILE #	UNIT PRICE	UOM	SALES TAX	TOTAL	
1	100030	24		$63.0100	EA	$0.00	$63.01	
	RECOVERY FEE							
1	44150	12	10005825	$260.2000	EA	$0.00	$260.20	
	VAT PARTS WASHER (LG) - SOLVENT							
1	52150	12	1489658	$143.4200	EA	$0.00	$143.42	**
	20G PARTS WASHER SERVICE - SOLVENT							
1	52835	12	71099	$248.2900	EA	$0.00	$248.29	
	20G PARTS WASHER SERVICE - AQUEOUS							
1	52835	12	71098	$248.2900	EA	$0.00	$248.29	
	20G PARTS WASHER SERVICE - AQUEOUS							

SUBTOTAL	$963.21
TOTAL TAX	$0.00
TOTAL AMOUNT DUE	**$963.21 USD**

Comments:
Pay your invoice on line! Simply go to www.safety-kleen.com and click on the Customer Portal link at the top of the page.
Please note a delivery document was provided at the time of service for this transaction. If the delivery ticket was paid, this invoice may be for your records only.
Please be advised all payments must reference the invoice number or your account number.

Interest will be charged at a rate of 1.5% per month for all past due amounts.

safety-kleen.

SAFETY-KLEEN SYSTEMS, INC
2600 North Central Expressway Ste 400
Richardson, TX 75080

safety-kleen.

Billing Account #	Service Account #	Invoice #	Invoice Date
ER12149	ER12493	77628886	08/15/18

PLEASE RETURN THIS PORTION WITH PAYMENT.
MAKE ANY ADDRESS CORRECTIONS BELOW.

Date Due	Amount Due
09/14/18	$963.21

00077628886000ER12149100000963215

000000 1
ERIE COKE CORPORATION
PO BOX 6180
ERIE PA 16512

SAFETY-KLEEN SYSTEMS, INC.
PO BOX 382066
PITTSBURGH, PA 15250-8066

001672 000000 0001 0001

DIC

Erie Coke Corporation

Attachment E

OPERATIONS & MAINTENANCE PLAN

STARTUP, SHUTDOWN & MALFUNCTION PLAN

Foundry Coke Production

Document: OMP/SSMP

Location: Erie, PA

E1

Revision: 2

Date: December 9, 2011

TABLE OF CONTENTS

E2

LIST OF TABLES and APPENDICES

E3

1. INTRODUCTION

The purpose of this Startup, Shutdown and Malfunction Plan (SSMP) is to comply with the NESHAP provision in 63.6(e)(3) and 63.310. The SSM Plan gives a description of the procedures for complying with these requirements. Coke oven batteries are unique to other industrial processes in that once the ovens are started during the initial heat-up sequence; they are never shut-down. Shutting down the ovens would cause the bricks to contract to their unheated size which would induce structural failure. Shutting down ovens to minimize emissions is not a feasible option due to serious structural damage. Based on this, the SSM plan will address those processes that have a typical startup and shutdown mode.

Erie Coke Corporation (ECC) operates two batteries of foundry coke ovens at its facility in Erie, Pennsylvania. Coke is the non-volatile carbonaceous residue of coal. Foundry coke is produced by baking coal in ovens at temperatures up to 2100°F in an oxygen free environment. The ~~Facility receives raw material coal via an internal rail system or via truck. The coal stock is~~ processed through a breaker and hammer mill and is stored in coal blending bins. The raw material coal is then fed to an oven charging coal bin where it can be directed via a device called a Larry Car to one (1) of the 58 ovens located in one (1) of two (2) coke oven batteries, designated as Battery A and Battery B.

The Larry Car begins the coal charging process by transporting the coal to an empty oven that is ready for charging. As the coal is dropped from the Larry Car into the empty oven, piles are formed. In order to level the piles for optimum coking, a bar, called a leveling bar, is inserted into the charged oven through a leveling door. The leveling bar is used to push over the charged coal piles in the oven to ensure a consistent space above the charge for the proper collection of the gases generated during the coking process. The coking operation begins following the closure of the leveling door. The coal charge is typically baked for up to 28 hours in the coke ovens to ensure that optimum foundry coke quality is achieved. The vapors volatilized during this process are condensed to ambient temperature for recovery. Low boiling vapors are returned to the coke ovens where they are combusted to provide heat to the oven flues. Combustion gases ultimately exhaust through the facility' main stack.

When the coking process is complete, oven doors on both sides of the battery are opened and a device known as the pusher is moved into place. A ram extends from the pusher and discharges

the hot coke from the pusher side of the oven into a quench car on the coke side of the battery. A coke-side shed (CSS) collects dust emissions during this process. The quench car then travels on rails to the quenching station where the hot coke is deluged with approximately 10,000 gallons of water to quench (cool) the material.

Once quenched, the coke is bottom discharged from the quench car to a coke wharf. The coke is mechanically moved from the coke wharf to the coke screening operation where it is processed through screens in preparation for delivery to the customer via rail or roadway.

One of the requirements of the MACT Standard is that a Startup, Shutdown and Malfunction Plan (SSMP) be created, followed and maintained.

2. OBJECTIVES

The objective of the Startup, Shutdown and Malfunction Plan (SSMP) is to ensure that all non-steady-state operations of the operation (startup, shutdown or any period following an equipment malfunction) are compliant with the MACT Standard including the following key elements:

1. Operation is compliant with all relevant air emission standards.
2. Equipment is operated and maintained according to industry best practices.
3. Malfunctions are corrected as soon as practical.

The co-mingled Operations and Maintenance Plan is intended to address various requirements of the facility (and State) Plan Approval No. 25-29C.

E4

3. SYSTEM OPERATION and MAINTENANCE

The following combines a technical description of the system, with a discussion of key operating requirements and methods. The initial overview is followed by descriptions of specific unit operations and functional systems. The most likely malfunction modes for each will also be noted.

3.1 Overview

The process was described in the Section 1. Introduction. Specific areas of the plant covered by the MACT standard and state Plan Approval are:

- The coke ovens and specifically sealing methods
- The coke side shed (CSS)
- Quenching operations

Balance of the system is discussed herein in less detail.

3.2 Instrumentation and Controls

The process is controlled by operations personnel and a network of instruments and computing hardware. Each individual fuel burner is controlled by a Burner Management System (BMS). Key

data points report to a control panel in the centralized heater room, where operators convene to plan activities and break between pushing and other operations.

3.3 Continuous Monitoring Systems

The facility is equipped with both several continuous parameters and one continuous opacity monitoring system as described below.

3.3.1 Continuous Parameter Monitoring

Various measurements are necessary for optimization and control of the coking process. These include weights, temperatures, pressures, and flows. A subset of these parameters is identified as relevant to pollution control aspects of various equipment. These instruments will be tabulated in later sections, and data are generally recorded as a means of supporting compliance records for the site.

3.3.2 Continuous Opacity Monitoring

A Continuous Opacity Monitoring System (COMS) is installed on the plant chimney, which exhausts oven combustion gases to atmosphere. The instrumentation, Model 560 Opacity Monitor and software record the opacity, and exceedance of opacity violations stipulated by the Pennsylvania Department of Environmental Protection (PADEP). Quarterly calibration audits are completed by Teledyne Monitor Labs. A maintenance agreement is in effect with Teledyne Monitor Labs in the event of an emergency, to maintain operation. Technical support is also provided by Teledyne Monitor Labs.

3.4 Coke Ovens

EJ

Coal is blended to optimal oven feed mixture and delivered to the ovens in the "Larry" car, from which it gravity flows into an oven that has been "pushed" empty. The resulting coal piles are leveled and the oven closed completely. The non-condensable vapors leaving by-product recovery are combusted in burners beneath the coke ovens, and the hot combustion gases pass though an array of flues around and amongst the ovens. These exhaust gases end up exiting the system though the main stack. When the batch of coal an oven is deemed to have been "coked" thoroughly, the doors on the oven are opened and the hot coke is "pushed" out into a rail car stationed on the "coke side" of the batteries. Dust emitted during this procedure is the focus of the CSS and baghouse system. Scheduling of the pushing (and refill) cycle on the 58 ovens is a crucial operations focus on a continuous basis. An outside contractor conducts a 303 Inspection on a daily basis, recording the visual emission from 5 charges, number of leaks from doors, number of lids leaking, offtakes leaks, and collector main pressure. These parameters are recorded on a daily basis and 30-day rolling average. The equipment that is needed to operate the coke oven battery can breakdown and require repairs to continue operations. Where spare equipment is not available i.e. Pusher, Larrycar, Backdoor Machine, Reversing System Components, operations are suspended until appropriate repairs are performed. This does not result in any abnormal emissions. When the repair is completed, normal operations are resumed without additional emissions.

3.5 Coke Side Shed

The coke-side shed (CSS) consists of two free-standing structures, with siding, lighting and guttering, designed to cover the track and coke discharge-side doors of each oven in batteries A and B totaling 58 coke ovens. Ductwork the length of each shed collects air emissions from this area.

Each shed exit duct is then equipped with a butterfly damper that can be used to isolate the shed. The combined exit duct is equipped with temperature indication as a means to detect fire or some other excursion. The duct tees off to enter each of two baghouses. Each inlet duct is equipped with a flange fitting that can be blinded to isolate the baghouse to which it is connected. Downstream of that flange a 4" nozzle is installed, and blinded, as a point at which

water can be sprayed in as a contingency, and precoat material can be added to the bags. A spray nozzle and funnel-type fitting are maintained for both of these uses.

Each baghouse is equipped with 1,005 cages and Nomex bags above two solids compartments. The pressure drop (DP) is measured across each baghouse and this measurement is used to control bag cleaning, which is effected by pulsing compressed air inside each row of bags sequentially to blow off collected solids and drop them into the compartment below. Air locks and conveyors deliver these solids into containers for recycling where possible, and disposal if necessary.

The exit of each baghouse is equipped with a temperature indication, which can be compared to the inlet temperature as further indication of fire or other problem. A leak detector is also installed in each exit to monitor for bag leakage. Motive force for flow through each baghouse is provided by a 300 HP induced draft fan, which exhausts into the single steel stack. An ammeter on each of these fans provides a relative measure of air flow pulled by the fan. Ordinarily one fan is on and the other is an installed spare. Both fans can be run in unusual circumstances and/or to maximize air removal from the sheds. If an alarm sounds for a bag leak, the operator will start the stand-by baghouse and shut down the baghouse that is in operation. A visual check will be conducted to determine if a bag has ruptured. If a bag has ruptured it will be replace with on-site replacement bags.

The system is inspected each shift and the data and other observations from this inspection are recorded on the daily form included in Appendix A. Maintenance and other activities will be tracked on this form as well. The baghouses will be "switched" at least once per quarter to allow internal inspection. Monthly inspections of each baghouse consist of:

- Solenoid valves
- Air supply
- Hopper screws
- Rotary valves
- Visual checks of bags and cages and bag tension

E6

Daily Readings, every 8-hour shift of:

- Motor amps
- Percent of motor current
- Pressure drop reading every 24 hrs.

3.6 Quench

Hot coke is pushed onto a specially designed rail car. That car is moved with a locomotive into a quench tower, where the coke is flooded with recirculated water to cool it for safe handling. The car is then moved adjacent to the coke wharf, where it is dumped out. The car is then moved into position for the next oven push. The coke is conveyed to a screening system. On a weekly basis a quench water sample is collected and analyzed by an accredited lab, documenting the total dissolved solids (TDS) for each sample collected. The PADEP requirement is too maintain equal or less than 1100 mg/L. On a daily basis the baffles in the quench tower are rinsed and the time is recorded. In the event that the temperature is less than 30 degrees f the rinse cycle is not required and the temperature will be recorded until it exceeds 30 degree f threshold. In the event of a water or mechanical failure to the rinse system, repairs can be made within 24-hours and back on line.

3.7 By-Product Recovery

Gases volatilized out of the coal are initially cooled in the "collector" main gas header at the batteries. The organic liquid and gases then flow to the by-product recovery system, which removes high boiling point organics for sale as a by-product. The low boiling organics are directed back to the ovens, where they provide the fuel needed to heat the coke through the external flue system. High boilers are removed to a liquid stream with a combination of absorption and water cooling.

Motive force for exhausting the volatiles from the ovens, and routing them back to the burners, is provided by gas "exhausters" that pull suction on the ovens and provide pressure to the burners. An electrically driven exhauster is the main source of this "prime mover" function for the system. Two older steam piston driven exhausters provide backup to this unit. Switching exhausters might require five minutes effort, and the gases can be routed to a flare stack during such episodes, which minimizes emissions while providing operational continuity. A spare motor for the electrically driven exhauster is on hand in the event of a motor failure. The gas recovery system is set up with a jumper pipe connecting the "A" Battery and "B" Battery collector main. This set up provides continuous gas flow to by-products even in the event that a line would become plugged. The plugged line would be cleaned with the use of steam, and the gas flow would continue in the direction opposite of the plugged line.

3.8 Coke Storage & Handling

Newly produced coke is conveyed from the wharf through a screening system, which separates the product into various size ranges. Oversized coke can be crushed, and the different ranges are stored in rail cars, trailers, bins and even piles for ultimate shipping to customers.

3.9 Utilities

Steam is generated in two boilers that can fire oven gas, natural gas, exclusively or in concert. The steam generated provides heating and process needs, can operate steam-driven equipment in the plant, and drives a turbine-generator sized to provide the bulk of the facility's power requirements if needed. Steam failure does not jeopardize plant operations immediately though power must immediately be available from off-site.

Electricity is provided by Penelec and in the event of a power outage, electricity can be generated on-site utilizing the turbine-generator driven by the two boilers.

Water is used in steam generation, non-contact process cooling, and by-product recovery. Non-contact cooling water is taken out of Lake Erie with an on-site pumping and discharge system.

E7

City water supplies boiler makeup and process uses, with wastewater treated on-site before discharge to city sewer. The two supplies provide some mutual backup capability.

4. SSMP IMPLEMENTATION

There are several units located at the Erie Coke facility covered by Plan Approval and MACT regulations. The SSMP applies only to the systems described in Section 3.

~~Planned startups and shutdowns of the entire system occur infrequently, driven by the~~ maintenance needs of the equipment and to a lesser extent by inventory of product. The system is configured with interlocks that are installed for safety or equipment protection. These are not always compliance related, but action by any such interlock is essentially a response to a malfunction.

The equipment that is needed to operate the coke oven battery can break down and require repair to continue operations. Where spare equipment is not available (i.e. Pusher, Larry Car, and other components) operations are suspended until appropriate repairs are performed. This does not result in any abnormal emissions. When the repair is completed, normal operations are resumed without additional emissions.

This plan is in force at all times. Any departure from this plan must be reported as discussed in sections 8 and 9.

5. STARTUP PROCEDURES

Prepare the equipment for startup by making sure that all manual valves are in their proper position and all utility sources are energized. Blinds must be removed from fuel supply and other piping and plenums. Key steps in this procedure ensure that:

1. Lockout devices are removed to allow safe restart.
2. Safety instrumentation and systems are activated.
3. All tools and maintenance materials are removed.
4. Air, natural gas and other pipelines are reconnected.
5. Burner guns are installed.
6. Safe work permits are removed and forwarded for filing.
7. Burner pilot systems are ready to light.

Completion of these steps restores control of the system to the operations crew. If start-up is for a single oven or sub-set of the entire system, recovered gas will be the fuel. Natural gas is available as a back-up when the situation warrants it.

6. SHUTDOWN PROCEDURES

Shutdown procedures for the following scenarios are provided below.

1. Section 6.1 – Partial shutdown.

E8

2. Section 6.2 – Emergency shutdown.
3. Section 6.3 – Malfunction

In all cases, the temperature of the refractory systems must be changed slowly to avoid damage caused by excessive thermal stress.

6.1 Partial Shutdown

A partial shutdown is planned but brief may be done for one of the following reasons:

- Individual oven(s) maintenance or clean-out.
- Maintenance that requires vessel entry or other complex safety permitting.

Redundancy throughout the plant will allow for such activities without effecting emissions. Impacted ovens can be controlled "in neutral" to avoid overheating the coke product for brief periods. Vent gases (normally routed to byproduct recovery) can be directed to flare when capacity or piping is impaired by partial shutdown.

The CSS Baghouse system is designed with complete redundancy, and response to a malfunction in the on-line baghouse can include simply turning on the baghouse and fan that had not been running.

6.2 Emergency Shutdown

The operator response to a power failure or other emergency shutdown is immediate and focuses on:

- Ensure equipment and personnel safety
- Minimize environmental emissions
- Facilitate power and system restoration to service
- Return to normal operation promptly and safely
- Maintain communication throughout the incident

Key steps in this procedure are summarized below. Some of these steps may be unnecessary in a less severe emergency situation.

1. Confirm emergency shutdown status and communicate throughout facility.
2. Isolate leaking or otherwise failed equipment.
3. Restore utilities as needed.
4. Maintain communication.
5. Monitor critical parameters and develop system restart plans.

The control room is equipped with a battery-based uninterruptible power supply (UPS) to ensure that critical instruments and monitoring system remain available for use. This system is completely overhauled on an annual basis to ensure reliability. It keeps lighting, DCS, and communication systems energized during a power failure for safety reasons.

Outside operators will secure non-critical equipment as part of their initial emergency response. Once power is restored, and/or other problems are resolved, system restart must be approved by plant supervision.

E9

6.4 Malfunction Shutdown

Significant malfunctions – instrument, mechanical, or other – can ultimately lead to at shutdown. The CMS is a key to minimizing emissions resulting from malfunction. The other key is the trained operating crew that is constantly observing CMS output, other instrument data, and field operating conditions. Where necessary, the operating crew will decide to shutdown the plant or a portion of it preventively, to minimize the scope of repairs that may be needed. Typical areas of malfunction, and the resources available for corrective action, are discussed in the following section.

7. MALFUNCTION RESPONSE

USEPA defines a malfunction as:

> *"any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions."*

By this definition, predicting or expecting malfunctions is not feasible. The onset of malfunctions in the system will be detected by instrumentation and operator judgment, however. This allows early response before the impact of the malfunction increases emissions or causes extensive damage. The combination of human and machine monitoring is a proven means of keeping systems like this running well.

If a leak or equipment problem is detected by the operator at any time, the procedure is to identify the specific problem and shutdown the component immediately for repair. If repairs can

be affected without shutdown, and without excess emissions, such an effort is acceptable. If this procedure is not followed for any reason, the incident will be considered a deviation from this SSM Plan.

Any other malfunction that results in the emission of combustion gases or other air pollutants will be considered a deviation from this SSM Plan. The malfunction of a critical instrument is the most likely cause of such emissions. Routine preventive maintenance of instrumentation, and redundancy in many cases, is intended to ensure that such malfunctions do not occur. The plant maintenance department generally performs malfunction repairs.

If a malfunction occurs, spare parts for each major component are stocked in the plant storeroom so as to minimize downtime. Plant maintenance personnel are available as needed to inspect or adjust equipment to prevent and of course correct malfunctions. The Operations and Maintenance Plan describes facility preventive and predictive maintenance procedures that are intended to minimize the frequency of malfunctions.

The malfunction modes highlighted in Section 3 are listed below, with a general description of the preventative measures and response procedures for each.

Instrumentation –Instrumentation maintenance procedures include preventative and episodic repairs in response to operator observations. Detailed calibration and overhaul is enhanced by more frequent maintenance attention as needed. Operators are constantly observing parameter output, and will create a work order for one-time check when any parameter appears to be problematic. Completion of the work order by a trained technician will ensure that the concern is addressed, repaired, and documented.

E10

Calibration – The COMS is reviewed routinely by a trained maintenance technician for operability. Documentation of this instrument, its output and maintenance history, is a heavily regulated specific task at the plant.

Electrical – Power failure is an event that is planned for as an emergency shutdown, but can easily be an external event not associated with on-site systems. The main electrical switchgear bringing power into the plant is overhauled every few years to ensure its integrity. Substations around the facility distribute power to the individual circuits that power motors etc. These are inspected on a rotating basis, and repair is performed as necessary. Failure of any particular circuit will lead to a brief plant shutdown if necessary. Maintenance personnel in the plant are equipped to repair a variety of minor electrical repairs, and contract assistance is on call for further repair where needed.

Mechanical – Pumps and other rotating equipment are monitored by a plant preventative maintenance program to allow repairs before a major failure occurs. Many such unit operations are installed with spares to allow operations to continue while repairs are made. When this is not the case, brief shutdowns are taken of entire incineration trains, or subsystems where feasible, to effect repairs. A crew of trained maintenance personnel is available at the site to allow for timely and efficient repairs. Additional personnel and contract employees can be called in as needed.

Refractory – Depending upon their location, refractory bricks and components might last well over 10 years. Monitoring of these linings is a key task during each coke "push", as repairs are time-consuming and require precise scheduling. The smaller the repair, the better and therefore routine observation can identify problems at the earliest possible stage.

Water Failure – Process and cooling water is used in the powerhouse and by-product recovery areas. Boiler water is necessary to maintain steam supply throughout the plant, and power production there as well. Redundancy of water supply supports this operation directly, as both city water and a pump taking water out of Lake Erie can supply this need. Process water in by-product recovery is contaminated with organics and is treated on-site prior to discharge. The treatment plant must be operating to allow this, though waste water can be both cycled up and

stored to bridge a short shut down of that process. The same mechanical and electrical reliability programs described previously are in place on this portion of the plant.

8. RECORDKEEPING

Startups, shutdowns and malfunctions are documented in the facility operating record. Any deviations from the procedures referenced in this plan, or the plan itself, will be further documented by an electronic message to the environmental supervisor and operations manager. These individuals will evaluate whether the deviation led to any excess emissions, and will proceed accordingly. Ultimately, a report to TCEQ will be filed if excess emissions occurred. The primary communicator within the facility, in the event of a deviation, will be the shift supervisor. The Environmental Manager will direct external communication of such events.

9. REPORTING

Periodic

Erie Coke will report to PADEP semiannually the status of startups, shutdowns, or malfunctions that occurred during the previous six months (if one of these events occurred).

Immediate

E11

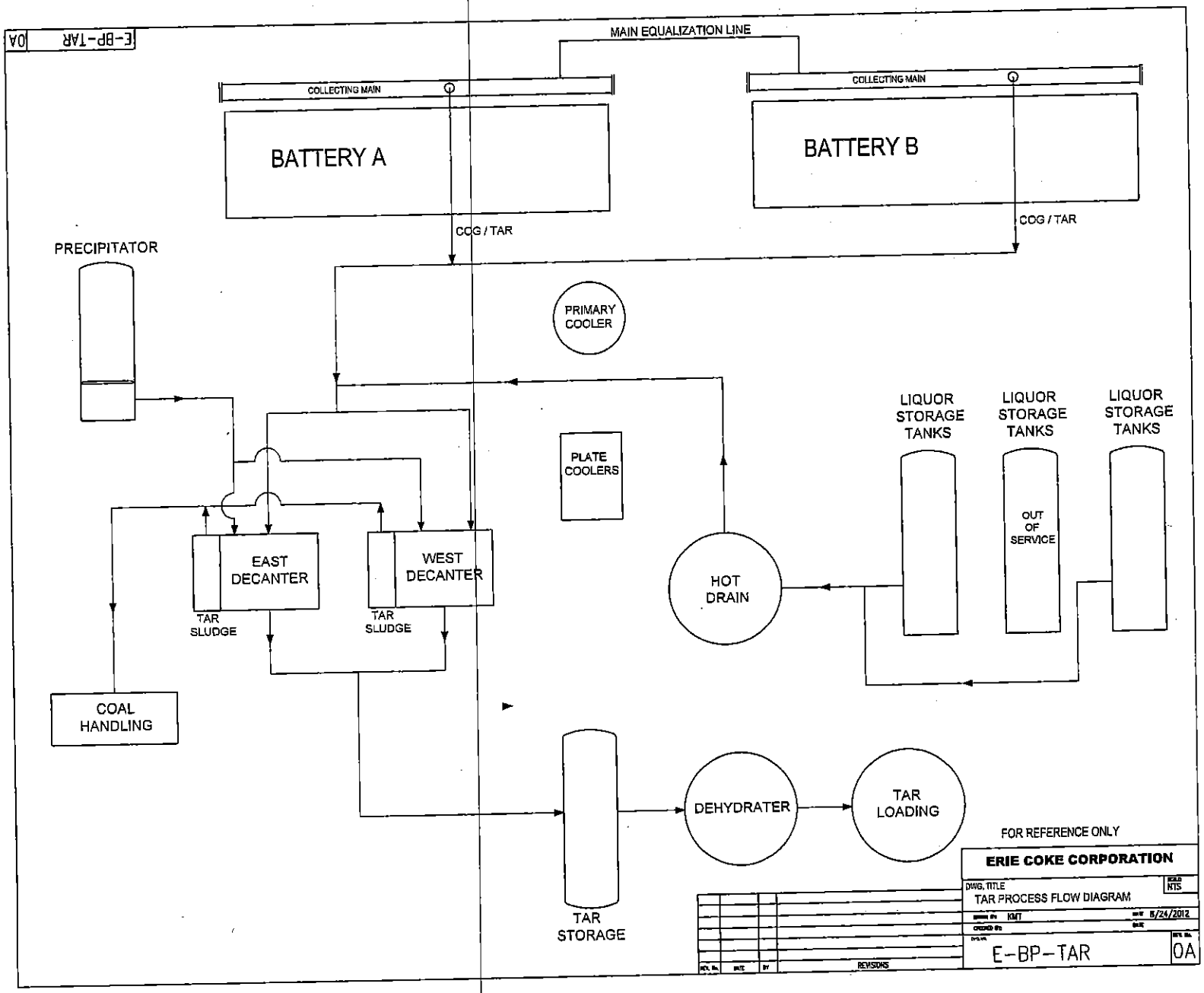
Erie Coke will submit a report to PADEP if events occur during a startup, shutdown, or malfunction that is not consistent with this SSMP. PADEP will be notified verbally within two days of the inconsistency followed by a written report within 7 days after the end of the event. The reasons for not following the SSMP and whether any excess emissions and/or parameter monitoring exceedances are believed to have occurred will be communicated. All such incidents will be reviewed on an annual basis and appropriate modifications made to the plan at that frequency. Those revisions will be communicated to the PADEP as necessary.

Appendix A:

Report and Monitoring Forms

Appendix B:

Process Flow Diagrams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COLLECTING MAIN
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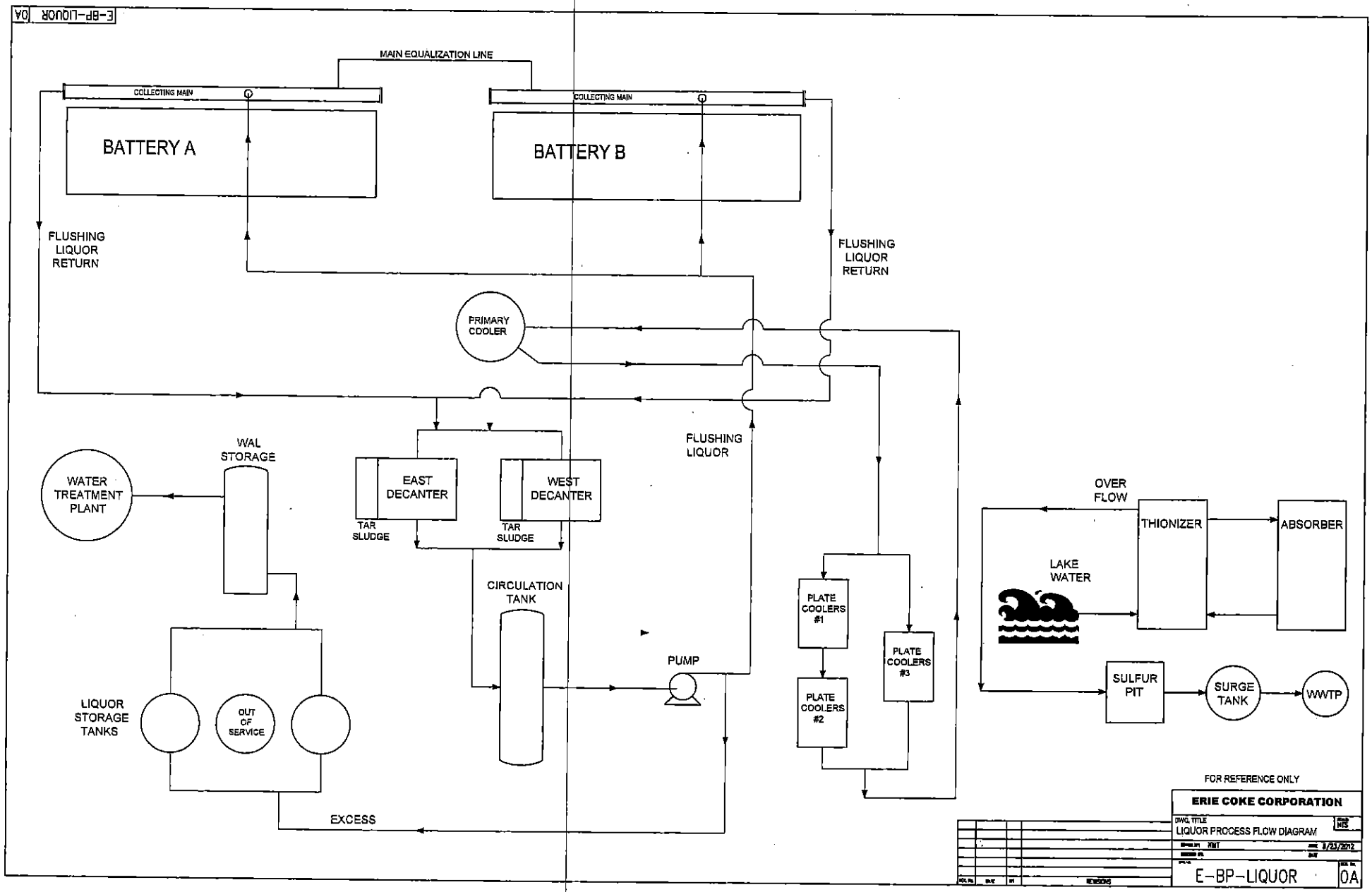
BATTERY B
COG / TAR
COG / TAR
PRECIPITATOR
PRIMARY COOLER
PLATE COOLERS
LIQUOR STORAGE TANKS
LIQUOR STORAGE TANKS
LIQUOR STORAGE TANKS
OUT OF SERVICE
EAST DECANTER
WEST DECANTER
TAR SLUDGE
TAR SLUDGE
HOT DRAIN
COAL HANDLING
TAR STORAGE
DEHYDRATER
TAR LOADING
FOR REFERENCE ONLY
ERIE COKE CORPORATION
DWG. TITLE
TAR PROCESS FLOW DIAGRAM
SCALE NTS
KMT
8/24/2012
E-BP-TAR
0A
REVISIONS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COLLECTING MAIN
COLLECTING MAIN
BATTERY A
BATTERY B
FLUSHING LIQUOR RETURN
FLUSHING LIQUOR RETURN
PRIMARY COOLER
FLUSHING LIQUOR
WAL STORAGE
WATER TREATMENT PLANT
EAST DECANTER
WEST DECANTER
TAR SLUDGE
TAR SLUDGE
CIRCULATION TANK
PUMP
PLATE COOLERS #1
PLATE COOLERS #2
PLATE COOLERS #3
LIQUOR STORAGE TANKS
OUT OF SERVICE
EXCESS
OVER FLOW
THIONIZER
ABSORBER
LAKE WATER
SULFUR PIT
SURGE TANK
WWTP
FOR REFERENCE ONLY
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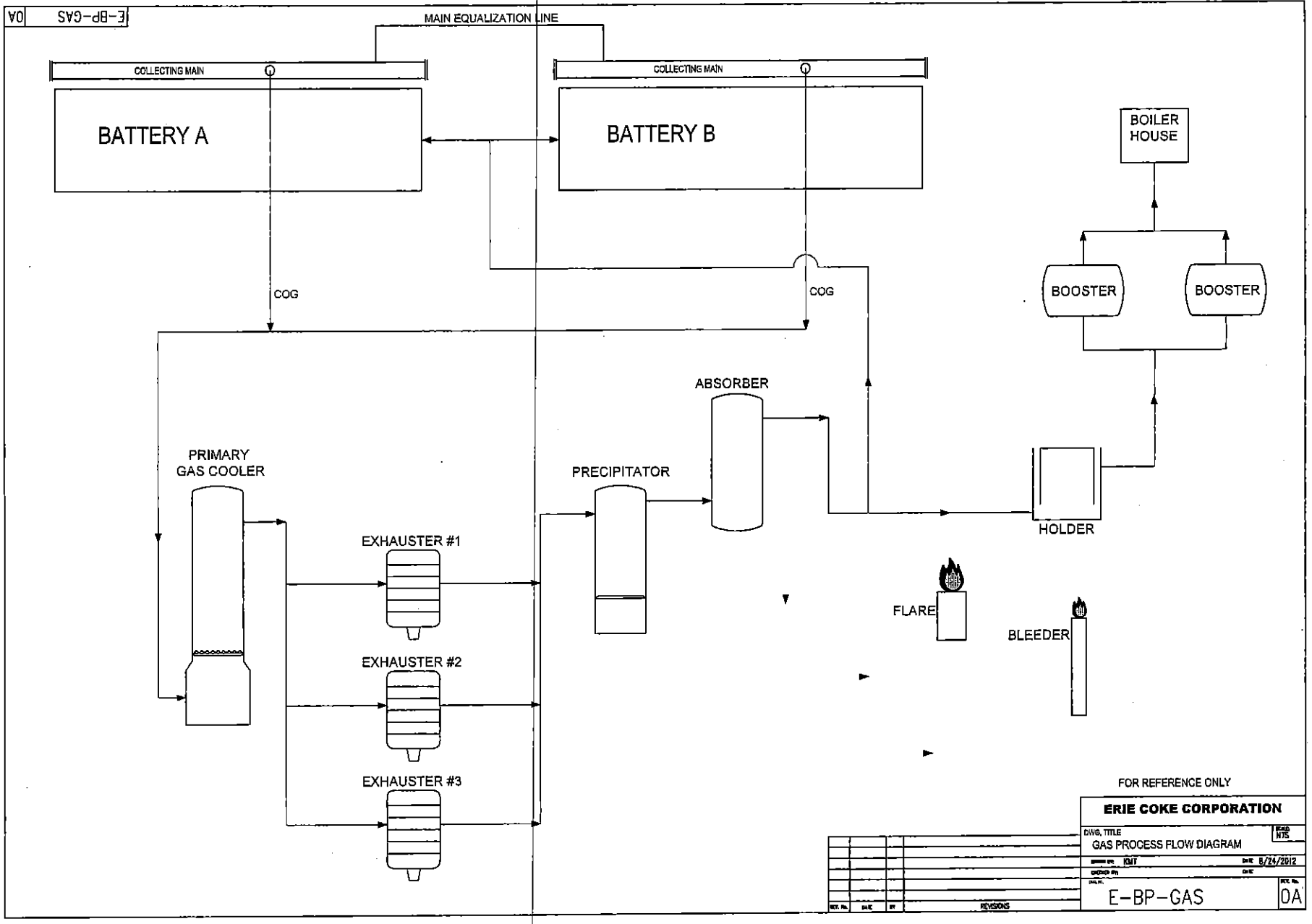
DWG. TITLE
LIQUOR PROCESS FLOW DIAGRAM
XMT
8/23/2012
E-BP-LIQUOR
0A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MAIN EQUALIZATION LINE
COLLECTING MAIN
COLLECTING MAIN
BATTERY A
BATTERY B
BOILER HOUSE
BOOSTER
BOOSTER
COG
COG
ABSORBER
PRIMARY GAS COOLER
PRECIPITATOR
HOLDER
EXHAUSTER #1
EXHAUSTER #2
EXHAUSTER #3
FLARE
BLEEDER
FOR REFERENCE ONLY
ERIE COKE CORPORATION
DWG. TITLE
GAS PROCESS FLOW DIAGRAM
SCALE NTS
DRAWN BY KMT
DATE 8/24/2012
CHECKED BY
DWG. NO.
E-BP-GAS
REV. No. 0A
REVISIONS
REV. No.
DATE
BY

Erie Coke Corporation

Work Practice Plan

Attachment F

Erie Coke Corporation

Work Practices Plan

I. Training

A. Job Title / Emission Points

1. Pusherman
   a. Pusher Side Doors
   b. Charging
2. Larryman
   a. Charging
   b. Offtakes
   c. Lids
3. Backman
   a. Coke Side Doors
4. Quench Car Operator
   a. Coke Side Doors
5. Oven Turn Foreman
   a. Doors
   b. Lids
   c. Offtakes
   d. Charging

*Note: At low production rates Quench Car duties are performed by Coke Operator

B. Subject Areas for Initial / Refresher Training

1. Pusherman
   a. Pusher Side Doors

   Pusher side doors are to be cleaned before each oven is pushed by scraping built up materials from edges to insure proper metal to metal fit. Doors that require extensive cleaning are to be cleaned with the provided

pneumatic tools and/or replaced if quick effective cleaning cannot be accomplished. Chuck doors and mating surfaces are also to be cleaned prior to sealing. Pusher side door jambs are to be scraped and cleaned with the cleaning bars. Luting of doors shall take place before each oven is charged and as necessary during the coking cycle. Chuck doors shall be luted immediately after the oven is charged and reluted as necessary during the coking cycle.

b. Charging

During the charge the Larryman will call for the Pusherman to begin leveling the oven. The Pusherman will open the chuck door and position the smoke boot against the door face and begin to level. After leveling the Pusherman will close and lute the chuck door.

2. Larryman

a. Charging Procedure

Charging car hoppers are to be filled in the following manner: All five hoppers are to be filled to the top of the loading cylinders. The Larryman will mount the charging car top to visually check each loading.

Alignment of the larry car over each charging hole as it is charged shall be checked visually before the drop sleeve is lowered and slide gate opened.

The oven shall be charged in accordance with the following procedure:

When an oven reaches its scheduled time for pushing, it shall be dampered off without removing more than one charging hole lid.

After the oven is pushed and while the doors are sealed (luted), charging holes lids are removed, cleaned and replaced over the hole. Inspections of the standpipe, goosenecks and charging holes is done at this time. Any excessive carbon build-up is removed immediately.

On "A" Battery, with the oven prepared for charging, the front steam is turned on slightly and the dampering valve is opened into collector main. The Corliss is now rodded out. The standpipe cap is closed and luted.

F2

The front steam is now turned on full. On A Battery you are now ready to charge.

On "B Battery, with the oven prepared for charging, the front steam is turned on slightly and the dampering valve is opened into the collector main. The Corliss is now rodded out. The standpipe cap is closed and luted. The front steam is now turned on full. The liquor valve is shut off and the back steam is turned on full.

For BOTH batteries, the liquor is now shut off on jumper oven and steam valve or valves are turned on. The jumper oven is now ready to be utilized.

The normal charging sequence is as follows:

The #1 charging hole lid of the jumper oven is removed. The #5 and #1 charging hole lids are removed (#5 is next to the collector main) and the charging car is spotted over the holes.

The #5 and #1 drop sleeves are lowered. The #5 slide gate is opened and the coal is dropped into the oven from #5 hopper.

With #5 hopper empty the slide gate is closed, the drop sleeve is raised and the lid is replaced on the charging hole.

After the lid is replaced on the #5 charging hole, the #4 charging hole lid is removed, the drop sleeve is lowered. The #4 slide gate is opened and coal is dropped into the oven from #4 hopper.

With #4 hopper empty the slide gate is closed, the drop sleeve raised and the lid is replaced on the charging hole.

The slide gate is now opened on #1 hopper and coal is dropped into the oven. When the #1 hopper is empty, the slide gate on that hopper is closed.

Charging sequence subject to change, but will fundamentally stay the same.

With the jumper pipe mechanism still in place on the oven, the Larryman calls for the leveler bar smoke boot (air seal) to be positioned on the oven being charged.

With the smoke boot in place, the Larryman calls for the leveling to start. The #2 charging lid is removed, #2 hopper drop sleeve is lowered. The #2 slide gate is opened and coal is dropped into the oven from the #2 hopper. When the hopper is empty the drop sleeve is raised and the lid replaced on #2 charging hole.

The #3 charging lid is now removed, the #3 hopper drop sleeve is lowered, and the slide gate is opened.

When the #3 hopper is empty the drop sleeve is raised and lid replaced on the #3 charging hole.

The jumper pipe mechanism is now raised and the two #1 charging hole lids are replaced.

The charging car is removed from the oven charged. After checking with the Pusherman to see that the chuck door is closed and latched, the coal spills are swept into all 5 charging holes, one lid at a time, and luted.

The aspiration steam valves are turned back off, and the liquor valves are turned back on.

The standpipe caps and lids are reluted to seal any gas leaks.

b. Offtakes

Goosenecks, standpipes, standpipe caps are to be inspected when each oven is pushed. Cracks that could cause emissions and other defects should be reported to the oven turn foreman. Goosenecks are to be cleaned and raked out prior to charging. Air tools are available as needed.

c. Lids

Charging hole lids and castings are to be inspected at the time each oven is pushed. Cracks that could cause emissions and other defects should be reported to the oven turn foreman. Lids that sit high should be cleaned along with the charging hole castings. Air tools are available as needed.

3. Backman

a. Coke Side Doors

Coke side doors are to be cleaned before each oven is pushed by scraping built up materials from the edges to insure proper metal to metal fit.

F3

Doors that require extensive cleaning are to be cleaned with the provided pneumatic tools and/or replaced if quick effective cleaning cannot be accomplished. Coke side door jambs are to be scraped and cleaned with cleaning bars. Luting of doors shall take place before each oven is charged and as necessary during the coking cycle.

4. Quench Car Operator

Coke side doors are to be cleaned before each oven is pushed by scraping built up materials from the edges to insure proper metal to metal fit. Doors that require extensive cleaning are to be cleaned with the provided pneumatic tools and/or replaced if quick effective cleaning cannot be accomplished. Coke side door jambs are to be scraped and cleaned with cleaning bars.

5. Oven Turn Foreman

The oven turn foremen know and understand the procedures for the Pusherman, Larryman, Backman and Quench Car Operator. These jobs are monitored each shift to make sure they are being done according to the proper procedures.

C. Training Methods / Duration

Job training encompasses areas other than environmental compliance (e.g., safety issues, compliance). The training duration documented is the time spent on total job training.

1. Lectures
2. Video Tape
3. On-the-job Training
4. Initial and Refresher Training Duration
   a. Initial Training: 80 hours
   b. Refresher Training: 1 hour per month

D. Demonstration of Successful Completion of Training

1. Testing
2. Auditing

3. Employee Signature
4. Foreman Signature
5. Record of Attendance

II. Door Emission Control Work Practices Program

A. Inspection and Cleaning of Doors and Jambs

1. Inspection of Oven Doors and Jambs

a. Each door, door jamb, and jamb refractory on an oven is to be visually inspected by the Pusherman on the pusher side and the Backman on the coke side after the oven is pushed.

b. Each oven wall and lentil is to be inspected by operating personnel on the benches after each push

c. Visible defects are to be brought to the attention of the oven turn Foreman by the operating personnel on the benches.

d. Pusher Machine Operators are to inspect chuck doors and jambs for noticeable defects before the oven is charged. Noticeable defects are to be reported to the oven turn Foreman.

e. Oven Turn Foreman is to either (1) direct any immediate changes or repairs as soon as possible or (2) record the defect for later action in the Battery Foreman's report.

2. Manual Cleaning of Oven Doors and Jambs

a. The doors and jambs on the coke side of the battery are to be cleaned by the Backman and the Quench Car Operator before an oven is pushed.

b. The doors and jambs on the pusher side of the battery are to be cleaned by the Pusherman before an oven is pushed.

c. The doors and jambs and sills are to be cleaned of buildup of carbon or tar that will interfere with the proper sealing of the door and jamb.

F4

d. Cleaning of doors and jambs is to be accomplished by manually operated scraping bars or air tools.

e. The Pusherman is to clean the chuck doors and chuck door jambs before the chuck door is sealed as required to maintain performance.

f. The Pusherman and Backman are to clean the oven sill of spillage so that doors can be replaced and latched securely.

3. Conformance with Specifications

Inspection by operating personnel such as Pusherman and Backman is to be limited to visual inspection of the sealing components for cleanliness or physical damage.

4. Recording and Certification

a. Battery Foreman's Report

B. Door Repair and Replacement

1. Door Repair and Replacement

a. "Off" Battery Inspection and Cleaning

1) The Oven Turn Foreman is to compile a list of door and jamb leaks which cannot be controlled and problem doors on his turn in the Oven Turn Foreman's Report

2) The Battery General Foreman is to assign doors to be taken out of service, cleaned and inspected.

3) Each door assigned to be taken out of service is to be temporarily taken off the oven and replaced with a substitute door. The door is then taken to the cleaning rack and given a thorough cleaning and inspection. Based on this inspection by the Battery General Foreman, a special Door Inspection Report is to be written describing the corrective action needed on the door. Special Door Inspection Reports are to be submitted to the Maintenance

Foreman. Pending action on Special Door Inspection Report, a door may be placed back in service.

b. Door Repair

1) Based on the information in the Special Door Inspection Report the Maintenance Foreman is to provide a schedule of doors to be removed from service for repairs.

2) Each oven door to be replaced is to be thoroughly inspected by the Maintenance Foreman or his designee, who is to direct the Repairmen in the correct method of repairing the defective door.

3) The Maintenance Foreman is to keep records of when door repairs were received, what repairs were done, and when the work was completed. Refractory repairs are performed by the patchers under direction of the Battery General Foreman.

2. Recording and Certification Procedures for Door Leak Identification

The following reports are to be generated and signed/certified to their accuracy:

a. Special Door Inspection Reports

b. Door Repair Reports

C. Identifying Leaks and Reporting Chain of Command

1. Identifying Door Leaks

a. Recently Charged Ovens

After a door has been replaced and the oven has been charged and leveled, the Pusherman and Backman are to inspect the door for leaks. The operator is to report to the Oven Turn Foreman leaks which will not reseal after repeated reluting efforts.

b. Other Ovens

The following personnel have responsibility for identifying door leaks:

F5

Personnel	Report Leaks To
Backman	Oven Turn Foreman
Pusherman	Oven Turn Foreman

2. Chain of Command for Reporting Door Leaks

The Oven Turn Foreman is to maintain a daily list of leaks and problem doors. This list is to be included in the Battery Foreman's Report. The Battery Foreman's Report is to be submitted to the Battery General Foreman.

3. Corrective Action

   a. If door leakage is observed by the Backman or Pusherman, they will inspect the leaks to determine the cause of the leaks and take corrective action. Minor leaks should be reluted. If the leak requires major correction/repair, the leak is to be reported to the Oven Turn Foreman.

   b. The information on the Battery Foreman's reports is to be used to prepare a list of doors that need to be taken out of service for a special cleaning and inspection and for subsequent repairs (as required).

4. Recording and Certification

   The following reports and records are to be generated:

   a. Battery Foreman Report

   b. Special Door Inspection Report

   c. Door Repair Reports

D. Hand Luted Doors

1. Luting and Reluting Procedures

   a. Before an oven has been pushed and before the next charge to that oven, the doors and jambs on the coke side are to be cleaned in accordance with the procedures specified (II) (A) (2) (a)

2. Recording and Certification

   Recording and certification for this section is to be accomplished as explained under Section II. A. – Inspection and Cleaning of Doors.

E. Inventory Procedures for Spare Doors and Jambs

The Battery General Foreman or his designee is to observe, on a weekly basis, the spare door and jamb storage sites and record the number of spare coke side doors, spare pusher side doors, spare chuck doors that are in inventory, and record this on the Door Inventory Report. His Door Inventory Report is to be given to the Plant Superintendent.

F. Monitoring and Controlling Collection Main Back Pressure

1. Monitoring of Back Pressure (Equipment and Procedures)
   a. The pressure of the coke oven gas in the collecting main at the battery (back pressure) is continuously recorded.
   b. The back pressure is to be observed a minimum of 4 times per 8-hour shift by the Heaterman.
2. Inspection and Calibration
   a. The back pressure controller is to be visually inspected daily for proper set-point and control. The Recording Charts are changed daily by the Heaterman.
   b. Back pressure instrumentation is to be checked for calibration on a monthly basis.
   c. Collector mains are to be inspected monthly for tar buildup.
   d. Impulse lines are to be inspected monthly.
3. Corrective Action Procedures
   a. If the back pressure control valve does not maintain the desired pressure, determine whether the problem is because of inadequate position of the "trim" valve, a malfunction of the pressure measurement/control instrument, or some other problem.
   b. Position of the trim valve in the by-products suction main is to be adjusted if it is identified as the problem.

F6

c. If the regulator itself is malfunctioning, it is to be repaired as soon as possible. Pressure should be manually controlled, if appropriate, until the automatic controller is functioning properly.

4. Recording and Certification

a. The Recording Charts are kept in the Plant Superintendent's office. They are available to the Oven Turn Foreman, Oven General Foreman, and Instrument Repairman.

b. Problems with the back pressure monitoring and control system are to be noted in the Battery Foreman's Report.

c. A record of corrective action taken in response to a problem in back pressure control is to be kept until the problem is corrected.

d. The Instrument Repairman will keep a log of maintenance performed.

e. In addition to charts, a log of back pressure measurements is kept by the Heaterman.

G. Audits of Effectiveness of Inspection and Repair Program

After the Work Practices Plan for Door Emissions becomes effective, the Plant Superintendent is to initiate the following audit program:

1. Audit of Door and Jamb Inspection Procedures / Equipment

a. The Plant Superintendent is to designate an experienced door inspector to conduct an audit of the procedures used by one or more of the following personnel responsible for inspection of doors and door cleaning equipment:

1) Backman

2) Pusherman

3) Quench Car Operator

b. The auditor is to use a check list and audit the appropriate personnel in the previous Section for at least one door inspection.

c. The auditor is to report his findings to the Plant Superintendent. If the auditor reports significant deviation from the prescribed inspection procedures, the Plant Superintendent is to direct the

Oven Turn Foreman to provide supplemental refresher training to the appropriate personnel. The supplemental refresher training is to include a review of the written job procedures for inspection, on-the-job training or other training deemed to be required by the Plant Superintendent.

d. The Oven Turn Foreman is to submit a report to the Plant Superintendent when the supplemental training has been completed.

e. Recording and Certification of Door Inspection Audits. The following reports are to be kept as part of the audit records:

1) Auditor's Report

2) Plant Superintendent Corrective Action Report directing that the supplemental training be conducted.

3) The Oven Turn Foreman Report certifying that the supplemental training required has been completed.

2. Audit of the Door Repair Program

a. The Plant Superintendent is to designate an individual experienced in door repair to conduct an audit of at least one door that has been repaired to confirm that the repaired door meets the specifications for repaired door. The Auditor will use a check list. The audit is to be conducted every three months.

b. The auditor is to report his findings to the Plant Superintendent. If the auditor reports a significant deviation from the prescribed specifications, the Plant Superintendent is to direct the Maintenance Foreman or Battery General Foreman to provide the supplemental refresher training to the appropriate personnel.

c. The Maintenance Foreman or Battery General Foreman is to report to the Plant Superintendent when supplemental training has been completed.

d. Recording and Certification of Door Repair Audit. The following reports are to be kept as part of the audit records:

F7

1) Auditor's Report.

2) Plant Superintendent Corrective Action Report directing that the supplemental training be conducted.

3) The Maintenance Foreman or Battery General Foreman Report certifying that the supplemental training required has been completed.

III. Charging Emission Control Work Practices Program

A. Equipment Inspection and Repair

1. Larry Car

a. The following equipment on the larry car is to be visibly inspected prior to the start of each shift:

1) Jumper pipe and smoke sleeves

2) Gasket seal material

b. Any abnormalities are to be immediately reported to the Oven Turn Foreman.

c. Maintenance is to perform a weekly mechanical inspection. Any abnormalities found are to be scheduled for repair. The Maintenance Foreman is to determine a schedule for repairs. The Maintenance Foreman is to assure that repairs are made.

2. Pusher Machine

a. The following equipment on the pusher machine is to be visibly inspected prior to the start of each shift:

1) Smoke Boot

2) Leveler Bar Cable

b. Any abnormalities are to be immediately reported to the Oven Turn Foreman.

c. Maintenance is to perform a weekly mechanical inspection. Any abnormalities found are to be scheduled for repair. Maintenance is

to determine a schedule for the repairs. The Maintenance Foreman is to assure necessary repairs are made.

B. Audits of Effectiveness of Inspection and Repair Program

After the Work Practices Plan for Charging Emissions becomes effective, the Plant Superintendent is to initiate the following audit program:

1. Audit of Charging Inspection Procedures

   a. The Plant Superintendent is to designate an individual to conduct an audit of the procedures used by one or more of the following personnel responsible for inspection of charging:

      1) Larry Car Operator

      2) Pusher Machine Operator

   b. The auditor is to use a check list and audit the appropriate personnel in the previous Section for at least one charging inspection.

   c. The auditor is to report his findings to the Plant Superintendent. If the auditor reports significant deviation from the prescribed inspection procedures, the Plant Superintendent is to direct the Oven Turn Foreman to provide supplemental refresher training to the appropriate personnel. The supplemental refresher training is to include a review of the written job procedures for inspection, on-the-job training or other training deemed to be required by the Plant Superintendent.

   d. The Oven Turn Foreman is to submit a report to the Plant Superintendent when the supplemental training has been completed.

   e. Recording and Certification of Charging Inspection Audits. The following reports are to be kept as part of the audit records:

      1) Auditor's Report

      2) Plant Superintendent Corrective Action Report directing that the supplemental training be conducted.

F8

3) The Oven Turn Foreman's Report certifying that the supplemental training required has been completed.

2. Audit of Charging Equipment Repair Program

a. The Plant Superintendent is to designate an individual experienced in charging equipment repair to conduct a repair audit of at least one of the following that has been repaired to confirm that the repair meets the specifications required:

1) Larry Car
2) Standpipes
3) Goosenecks
4) Charging Ring and Lid
5) Steam Supply System
6) Liquor Sprays

b. The auditor is to report his findings to the Plant Superintendent. If the auditor reports significant deviation from the prescribed specifications, the Plant Superintendent is to direct the Maintenance Foreman to provide supplemental refresher training to the appropriate personnel. The supplemental refresher training is to include a review of the written job procedures for inspection, on-the-job training or other training deemed to be required by the Plant Superintendent.

c. The Maintenance Foreman is to submit a report to the Plant Superintendent when the supplemental training has been completed.

d. Recording and Certification of Charging Equipment Repair Audits. The following reports are to be kept as part of the audit records:

1) Auditor's Report
2) Plant Superintendent Corrective Action Report directing that the supplemental training be conducted.
3) The Maintenance Foreman's Report certifying that the supplemental training required has been completed.

C. Procedures for Ensuring That Larry Car Hoppers Are Properly Filled

1. Move Larry Car to Loading Station.
2. Activate Necessary Equipment to Deposit Coal into Larry Car Hoppers.
3. Utilize Visual Inspection to Determine Car is Loaded Correctly

D. Procedure for Alignment of Larry Car over Oven

1. Move Larry Car Over Oven.
2. Visually Align Larry Car.

E. Procedure for Charging and Leveling

1. When an oven reaches its scheduled time for pushing, it shall be dampered off without removing more than one charging hole lid.
2. After the oven is pushed and when the doors are sealed (luted), charging hole lids are removed, cleaned and replaced over the hole. Inspection of the standpipe, goosenecks and charging holes is done at this time. Any excessive carbon build-up is removed immediately.
3. On "A" Battery with the oven prepared for charging, the front steam is turned on slightly and the dampering valve is opened into the collector main. The Corliss is now rodded out. The standpipe cap is closed and luted. The front steam is now turned on full. 4. The #1 charging hole lid of the jumper oven is removed. The #5 and #1 charging hole lids are removed (#5 is next to the collector main) and the charging car is spotted over the holes.
4. On "B" Battery, with the oven prepared for charging, the front steam is turned on slightly and the dampering valve is opened into the collector main. The Corliss is now rodded out. The standpipe cap is closed and luted. The front steam is turned on full. The liquor valve is shut off and the back steam is turned on full.
5. For BOTH batteries the liquor is now shut off on the jumper oven and steam valve or valves are turned on. The jumper oven is now ready to be utilized.

F9

The normal charging sequence is as follows:

6. The charging hole lid of the jumper oven is removed. The #5 and #1 charging hole lids are removed (#5 is next to the collector main) and the charging car is spotted over the holes.
7. The #5 and #1 drop sleeves are lowered. The #5 slide gate is opened and the coal is dropped into the oven from #5 hopper.
8. With #5 hopper empty the slide gate is closed, the drop sleeve is raised and the lid is replaced on the charging hole.
9. After the lid is replaced on the #5 charging hole, the #4 charging hole lid is removed, the drop sleeve is lowered. The #4 slide gate is opened and coal is dropped into the oven from hopper #4.
10. With #4 hopper empty the slide gate is closed, the drop sleeve is raised and the lid is replaced on the charging hole.
11. The slide gate is now opened on #1 hopper and the coal is dropped into the oven. When the #1 hopper is empty, the slide gate on that hopper is closed.

Charging sequence subject to change, but will fundamentally stay the same.

12. With the jumper pipe mechanism still in place on the oven, the Larryman calls for the leveler bar smoke boot (air seal) to be positioned on the oven being charged.
13. With the smoke boot in place, the Larryman calls for the leveling to start.
14. The #2 charging lid is removed, the #2 hopper drop sleeve is lowered. The #2 slide gate is opened and coal is dropped into the oven from the #2 hopper. When the hopper is empty the drop sleeve is raised and the lid is replaced on the #2 charging hole.
15. The #3 charging lid is now removed, the #3 hopper drop sleeve is lowered, and the slide gate is opened. When the #3 hopper is empty the drop sleeve is raised and the lid replaced on the #3 charging hole.

16. The jumper pipe mechanism is now raised and the two #1 charging hole lids are replaced

17. The charging car is removed from the oven charged. After checking with the Pusherman to see that the chuck door is closed and latched, the coal spills are swept into all 5 charging holes, one lid at a time, and luted.

18. The aspiration steam valves are turned back off, and the liquor valves are turned back on.

19. The standpipe caps and lids are re-luted to seal any gas leaks.

F. Procedures and Schedules for Inspection and Cleaning of Offtake System and Other Equipment

1. Standpipes – The Backman is to inspect the standpipe each time the oven is pushed to insure that it is not obstructed.

2. Standpipe Caps – The Larryman is to inspect the standpipe cap each time the oven is dampered off prior to pushing. Clean the standpipe cap with hand bar or air gun as necessary to assure optimum emissions control performance.

3. Goosenecks – The Larryman is to inspect the gooseneck each time the oven is dampered off prior to charging. Clean gooseneck manually with hand bar or air gun to assure optimum emissions control performance.

4. Dampers and Mains – The Larryman is to inspect the damper for proper operation and inspect the main (e.g. the damper box and the part of the main in the vicinity of the oven being pushed) for leakage each time the oven is pushed, Report any leakage to the Ovens Turn Foreman.

5. Oven Roofs - The Larryman is to inspect oven roofs for damage and excessive carbon buildup each time the oven is pushed. If roof carbon or damage is found, contact the Ovens Turn Foreman.

6. Charging Holes – The Larryman is to inspect the charging holes each time the oven is dampered off prior to pushing. Clean charging holes manually with hand bar or air gun as required.

7. Charging Lids – The Larryman is to inspect the charging hole lids each time the oven is dampered off. Clean lids manually with hand or air gun as required.

8. Steam System – The Larryman is to inspect the steam system visually before each charge to insure they are in good working order. Report any defects to the Ovens Turn Foreman.

9. Liquor System – The Larryman is to visually inspect the liquor spray in gooseneck before each charge to insure adequate liquor. Sprays are also checked daily by heaters to note liquor flow by checking oven temperature of spray pipes. Report any defects to Oven Turn Foreman.

IV. Topside Lid Emission Control Work Practices Program

A. Inspection, Cleaning, Repair and Replacement of Topside Lids

1. Topside lid castings and lids are to be inspected and cleaned as needed after the oven is pushed.
2. Defects are to be brought to the attention of the oven Turn Foreman.
3. Oven Turn Foreman is to either direct immediate change or record the defect on the Battery Foreman Report.
4. Battery General Foreman or his designee is to review the Turn Foreman Report daily. Repair or replacement is to be scheduled and performed.

B. Sealing / Resealing of Topside Lids

1. Larryman is to seal all topside lids on each oven charged.
2. Larryman is to visually inspect newly sealed lids and immediately reseal as necessary.
3. Any lid emission that cannot be sealed is to be reported to the Oven Turn Foreman and logged on the Battery Foreman Report. Report is to be submitted to Battery General Foreman for the scheduling of repairs.

C. Audits of Effectiveness of Inspection and Repair Program

After the Work Practices Plan for Lid Emissions becomes effective, the Plan Superintendent is to initiate the following audit program:

1. Audit of Lid Inspection Procedures

   a. The Plant Superintendent is to designate individual to conduct an audit of the procedures used by the Larryman for inspection of holes.

   b. The auditor is to use a check list and audit the Larryman for at least one lid inspection.

   c. The auditor is to report his findings to the Plant Superintendent. If the auditor reports significant deviation from the prescribed inspection procedures, the Plant Superintendent is to direct the Oven Turn Foreman to provide supplemental refresher training to the Larryman. The supplemental refresher training is to include a review of the written job procedures for inspection, on-the-job training or other training deemed to be required by the Plant Superintendent.

   d. The Oven Turn Foreman is to submit a report to the Plant Superintendent when the supplemental training has been completed.

   e. Recording and Certification of Lid Inspection Audits. The following reports are to be kept as part of the audit records:

      1) Auditor's Report

      2) Plant Superintendent Corrective Action Report directing that the supplemental training be conducted.

      3) The Oven Turn Foreman Report certifying that the supplemental training required has been completed.

2. Audit of Lid Replacement Program

   a. The Plant Superintendent is to designate an experienced individual of at least one of the following that has been repaired to confirm that the repair meets the specifications required.

      1) Lid

F11

2) Lid Casting

b. The auditor is to report his findings to the Plant Superintendent. If the auditor reports a significant deviation from the prescribed specifications, the Plant Superintendent is to direct the Battery General Foreman to provide supplemental refresher training to the appropriate personnel.

c. The Battery General Foreman is to submit a report to the Plant Superintendent when the supplemental training has been completed.

d. Recording and Certification of Lid Repair / Replacement Audit. The following reports are to be kept as part of the audit records:

1) Auditor's Report

2) Plant Superintendent Corrective Action Report directing that supplemental training be conducted.

3) The Battery General Foreman Report certifying that the supplemental training required has been completed.

V. Offtake System Emission Control Work Practices Program

A. Inspection, Repair, and Replacement of Offtake System Components

1. Larryman is to perform a daily visual inspection of offtake system components on each oven to be charged, prior to charging.

2. Larryman is to perform a daily visual inspection of the standpipe cap and mating surface on each oven charged, prior to charging, and clean as required.

3. Defects are to be brought to the attention of the Oven Turn Foreman.

4. Oven Turn Foreman is to either direct immediate change or record the defect on the Battery Foreman's Report and submit report to the Battery General Foreman.

5. Oven Turn Foreman is to perform a daily visual inspection of offtake system performance. Results are to be logged on the Battery Foreman's Report.

6. Battery General Foreman or his designee is to review the Battery Foreman's Report daily and compile a list of defective offtake system apparatus. Repair or replacement is to be scheduled and performed.

B. Identifying / Sealing of Leaking Offtake System Components

1. Larryman is to visually inspect offtake system of each oven charged after removal of aspiration steam.
2. Visible leakage is to be sealed immediately by the Larryman.
3. Any offtake system emission that cannot be stopped by sealing is to be reported to the Oven Turn Foreman and logged on the Battery Foreman's Report. The Report is to be submitted to the Battery General Foreman for the scheduling of repair.

C. Dampering Off of Ovens Prior to a Push

1. Larryman is to damper off oven to be pushed.
2. Larryman is to open standpipe cap.

D. Audits of Effectiveness of Inspection and Repair System

After the Work Practices Plan for Offtake Emissions becomes effective, the Plant Manager is to initiate the following audit program:

1. Audit of Offtake System Inspection Procedures
   a. The Plant Superintendent is to designate an individual to conduct an audit of the procedures used by the Larryman who is responsible for the inspection of offtake systems.
   b. The auditor is to use a check list and audit for at least one offtake system inspection.
   c. The auditor is to report his findings to the Plant Superintendent. If the auditor reports significant deviation from the prescribed

F12

inspection procedures, the plant Superintendent is to direct the Oven Turn Foreman to provide supplemental refresher training to the appropriate personnel. The supplemental refresher training is to include a review of the written job procedures for inspection, on-the-job training, or other training deemed to be required by the Plant Superintendent.

d. The Oven Turn Foreman is to submit a report to the Plant Superintendent when the supplemental training has been completed.

e. Recording and Certification of Offtake System Inspection Audits The following reports are to be kept as part of the audit records.

1) Auditor's Report

2) Plant Superintendent's Corrective Action Report directing that the supplemental training be conducted.

3) The Oven Turn Foreman's Report certifying that the supplemental training required has been completed.

2. Audit of Offtake Repair System Program

a. The Plant Superintendent is to designate an individual experienced in offtake system repair to conduct a repair audit of at least one of the following that has been repaired to confirm that the repair meets the specifications required:

1) Standpipes

2) Standpipe Caps

3) Goosenecks

4) Dampers and Mains

5) Oven Roofs

6) Charging Holes

7) Charging Lids

8) Steam System

9) Liquor System

b. The auditor is to report his finds to the Plant Superintendent. If the auditor reports a significant deviation from the prescribed specifications, the Plant Superintendent is to direct the Battery General Foreman or Maintenance Foreman to provide supplemental refresher training to the appropriate personnel.

c. The Battery General Foreman is to submit a report to the Plant Superintendent when the supplemental training has been completed

d. Recording and Certification of Offtake System Repair / Replacement Audit

The following reports are to be kept as part of the audit records:

1) Auditor's Report
2) Plant Superintendent's Corrective Action Report directing that supplemental training be conducted.
3) The Battery General Foreman's or Maintenance Foreman's Report certifying that the supplemental training has been completed.

VI. Coke Side Shed Baghouse Emission Control

A. Daily Inspection/Recording Criteria

1) Fan Motor Amperage and Percent Motor Current are recorded 3 times per day.
2) Pressure drop is recorded once per day.
3) Dust Hopper Level is recorded once per day.

B. Monthly Inspection/Recording Criteria

1) Bag cleaning mechanisms
2) Solenoid
3) Screws
4) Rotary Valves
5) Visual check on bag tension

C. Quarterly Inspection/Recording Criteria

F13

1) Inspect the physical integrity of the baghouse through visual inspection.
2) Inspect fans for wear, material buildup, and corrosion through visual inspection.

VII. Daily Washing of Baffles

A. Schedule for Washing the Baffles.

1) Baffles are washed on a daily basis unless the ambient temperature remains less than 30 degrees Fahrenheit throughout the day.

B. Recordkeeping

1) Recordkeeping is required on a daily basis. If the temperature is less than 30 degrees Fahrenheit the temperature must be recorded.

VIII. Underfiring Gas Parameters

A. Frequency and Method of Recording

1) The underfiring parameters are recorded every two hours in the Heater Room Log Book.

IX. Battery Operating Temperatures

A. Frequency and Methods of Recording

1). Battery temperature and cross-wall temperature are recorded once per shift using an optical pyrometer and recorded.

X. Inspection of Flues, Burners, and Nozzles

A. A visual inspection is completed during the cross-wall temperature readings, once per shift.

XI. Procedures to prevent pushing an oven before it's fully coked.

A. Minimum coking times are established and maintained.

Attachment G

Erie Coke
Video Still of Oven #1 Push from 9/11/18 2:13pm
Complete video taken by Dan Brophy PADEP
Also present while video was taken was
Tony Nearhoof from Erie Coke.
Video Still printed for reference purposes

Erie Coke

Video still of oven #3 Push from 9/13/18 at 2:04pm. Complete video taken by Dan Brophy PA DEP Also present while video was taken was Tony Nearhoot and Dave Stablein from Erie Coke. This video still printed for reference purposes.

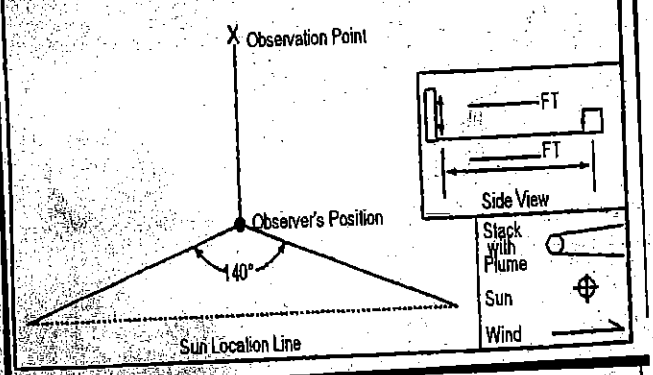
EPA METHOD 9 (40 CFR 60 - Appendix A)
VISIBLE EMISSION OBSERVATION FORM

COMPANY NAME: Erie Coke Corp
LOCATION: 925 East Bay Dr
LOCATION:
CITY: Erie | STATE: PA | ZIP: 16507
PROCESS EQUIPMENT: Catch Car | OPERATING MODE:
CONTROL EQUIPMENT: Shed | OPERATING MODE:
DESCRIBE EMISSION POINT: Above Shed

HEIGHT OF EMISSION POINT: 40'
HEIGHT OF EMISSION POINT RELATIVE TO OBSERVER: START 10' END 10'
DISTANCE TO EMISSION POINT: START 35' END 35'
DIRECTION TO EMISSION PT. (DEGREES (0-360)): START END
VERTICAL ANGLE TO OBSERVATION POINT: START END
DIRECTION TO OBSERVATION POINT (DEGREES (0-360)): START END
DISTANCE & DIRECTION TO OBSERVATION POINT FROM EMISSION POINT: START 35' S END 90' S
DESCRIBE EMISSIONS: START END
EMISSION COLOR: START END
WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐ NONE ☐
DESCRIBE PLUME BACKGROUND: START Sky END Sky
BACKGROUND COLOR: START White END Blue/White
SKY CONDITIONS: START Partly Cloudy END Cloudy
WIND SPEED: START 5-10 END 5-10
WIND DIRECTION: START N-NW END North
AMBIENT TEMP: START END
WET BULB TEMP: RH percent

Source Layout Sketch

Draw North Arrow ☑TN ☐MN



ADDITIONAL INFORMATION:

OBSERVATION DATE: 9/13/18 | START TIME: 2:00 | END TIME: 4:20

MIN \ SEC	0	15	30	45	COMMENTS
1	0	25	35	20	Oven 3
2	15	10	5	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0			
6					
7	0	0	15	10	Oven 13
8	5	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0				
12					
13	0	0	15	10	Oven 23
14	5	0	0	0	
15	0	0	0	0	
16					
17	0	15	40	20	Oven 6
18	10	10	5	0	
19	0	0	0	0	
20	0	0			
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

OBSERVER'S NAME (PRINT): Justin Kobar
OBSERVER'S SIGNATURE: [signature] | DATE: 9/13/18
ORGANIZATION: Erie Coke Corp
CERTIFIED BY: | DATE:

Attachment H

Erie Coke Corporation
Quench Water Analysis & Baffle Inspection
DEP Limit is 1100 mg/L TDS
2018

Water Analysis			Baffle Inspection
Date	**Results mg/L**	**Ave/Month**	
1/3/2018	194	221.4	
1/10/2018	234		
1/17/2018	236		
1/24/2018	226		1/25-No damaged or missing baffles.
1/30/2018	217		
2/7/2018	210	213.75	
2/14/2018	221		2/14-No damaged or missing baffles.
2/21/2018	188		
2/28/2018	236		
3/7/2018	227	220.0	3/7-No damaged or missing baffles.
3/14/2018	224		
3/21/2018	222		
3/28/2018	207		
4/4/2018	222	222.8	
4/11/2018	221		
4/18/2018	204		4/16-No damaged or missing baffles.
4/25/2018	244		
5/2/2018	232		
5/9/2018	258		5/11-No damaged or missing baffles.
5/16/2018	250		
5/23/2018	228		
5/30/2018	218		
6/6/2018	205		
6/13/2018	218		6/12-No damage or missing baffles
6/20/2018	260		
6/27/2018	220		
7/5/2018	241		7/6 - No Damage or missing baffles
7/11/2018	229		
7/19/2018	236		
7/26/2018	209		
8/1/2018	233		
8/7/2018	222		8/8 - No damage or missing baffles

↑ see attached Lab results for example

H

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Microbac Laboratories, Inc. - Erie

CERTIFICATE OF ANALYSIS

18H0624

Erie Coke Corporation

William Schneider
P.O. Box 6180
Erie, PA 16512-6180

Project Name: Quench Water Sample

Project / PO Number: N/A
Received: 08/08/2018
Reported: 08/18/2018

Analytical Testing Parameters

Client Sample ID: Quench Water
Sample Matrix: Aqueous
Lab Sample ID: 18H0624-01

Collected By: Hallie Strohmeyer
Collection Date: 08/07/2018 13:40

Analyses Subcontracted to: Microbac Laboratories, Inc. - Ohio Valley

	Result	RL	Units	Note	Prepared	Analyzed	Analyst
TOTAL DISSOLVED SOLIDS							
Method: A2540C							
Total Dissolved Solids	**222**	20.0	mg/L		08/07/18 1340	08/13/18 1630	ADG

Definitions

MDL: Minimum Detection Limit
RL: Reporting Limit

Project Requested Certification(s)

Microbac Laboratories, Inc. - Erie
PA DEP# 25-00067
PA Department of Environmental Protection

Microbac Laboratories, Inc. - Ohio Valley
NY DOH# 10861
NY Department of Health
PA DEP# 68-01670
PA Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:

Tina Sharer
Project Manager
Reported: 08/18/2018 17:36

QC473

MICROBAC®

CHAIN OF CUSTODY

18H0624 Erie Coke Corporation

Microbac Erie Division
1962 Wager Road
Erie, PA 16509
814.825.8533
eriemm@microbac.com

Client /Company Name: Erie Coke Corporation
Address: P.O. Box 6180
City/State/Zip: Erie, PA 16512
Phone: 814-454-0177 x161
Email/Fax: wschneider ~~rwilar~~@eriecoke.com
Project Name/ID: Weekly Quench Water Sample
Sampled By: Hallie Strohmeyer
Shipped By:
Due Date:
Tracking #:
Type Code: G-Grab C-Composite
Comp. Start:
Comp. Stop:
Matrix Code: DW-Potable water WW-Nonpotable water SS-Soil/Sludge F-Food S-Swab O-Other

Contact Name: ~~Randy Wilar~~ William Schneider
Bill To/PO#:
Potential Hazards: Non-Hazard [X] Hazard [ ] Radioactive [ ]
Disposal: Dispose of [X] Return [ ] Retain [ ]
Compliance Sample: Yes [ ] No [ ]
State:
PWSID#:
Monitoring Period:

	Sample Identification	Date Taken	Time Taken	Type G	Type C	Matrix	Tot. # Cont.	Preservatives: None	HNO3	H2SO4	NaOH	HCl	Thio	Other	Analyses: Solids, Total Dissolved (TDS)
1	Quench Water	8/7/18	1340	X		WW	1	1							X

Instructions/Comments:

Relinquished By:	Date/Time: 8/8/18	Received By:	Date/Time: 8-8-18 1235	Temp 8.3 °C
Relinquished By:	Date/Time: 8-8-18 1315	Received By:	Date/Time: 8/8/18 1315	Iced: (Y) N
Relinquished By:	Date/Time:	Received By:	Date/Time:	Intact: (Y) N
Relinquished By:	Date/Time:	Received By:	Date/Time:	

QC270 V6

Microbac

Laboratory Report Number: L18080978

Carolyn Vollentine
Microbac Laboratories
1962 Wager Road
Erie, PA 16509

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
–
(740) 373-4071
Alicia.walker@microbac.com

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on August 15 2018

Leslie Bucina – Managing Director

State of Origin: PA
Accrediting Authority: Department of Environmental Protection ID:68-01670
QAPP: Microbac OVD

ACCREDITED IN ACCORDANCE WITH

Microbac

Lab Report #: L18080978
Lab Project #: 2941.011
Project Name: Erie
Lab Contact:

Record of Sample Receipt and Inspection

Comments/Discrepancies:

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers:

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00115208	H	2.0		1002826031360004575000710812456503	X
00115080	H	4.0		1001891731360004575000710812456499	X
182325	H	2.0		1001891731360004575000450673112541	X
00115039	H	3.0		1001891731360004575000450673112600	X
00115109	H	0.0		1001891731360004575000450673112596	X
00115084	H	2.0		1001891731360004575000450673112552	X
00115209	H	1.0		1001891731360004575000450673112633	X
00115032	H	2.0		450673112611	X

Inspection Checklist:

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	NA
12	Were VOA samples free of headspace (less than 6mm)?	

Microbac

Lab Report #: L18080978
Lab Project #: 2941.011
Project Name: Erie
Lab Contact:

Samples Received:

Client ID	Laboratory ID	Date Collected	Date Received
18H0624-01	L18080978-01	08/07/2018 13:40	08/10/2018 10:59

Microbac Laboratories • Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 • T: (740)373-4071 F: (740)373-4835
www.microbac.com

Microbac

Lab Report #: L18080978
Lab Project #: 2941.011
Project Name: Erie
Lab Contact:

Certificate of Analysis

Sample #: L18080978-01
Client ID: 18-I0624-01
Matrix: Water 2
Workgroup #: WG671589
Collect Date: 08/07/2018 13:40
Sample Tag:

PreRep Method: N/A
Prep Method: 160.1/SM2540C
Analytical Method: SM2540-C-1997
Analyst: ADG
Dilution: 1
Units: mg/L

Instrument: OVEN
Prep Date: N/A
Cal Date:
Run Date: 08/13/2018 16:30
File ID: EN-1808131630-23

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		222		20.0	20.0

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
August 15, 2018

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
ADW - ALICIA D. WALKER
AEO - ASHLEY E. OLSZEWSKI
ALM - AMANDA L. MUGRAGE
ALS - ADRIANE L. STEED
APH - ANDREW P. HOUT
AT - Asa R. Timmons
ATK - ALEX T. KLINTWORTH
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BDW - Bryon D. Westfall
BJO - BRIAN J. OGDEN
BLG - BRENDA L. GREENWALT
BLR - BRANDON L. RICHARDS
BMP - Brett M. Price
BRG - BRENDA R. GREGORY
CAS - Craig A. Smith
CEB - CHAD E. BARNES
CLC - CHRYS L. CRAWFORD
COR - Corporate IT
CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DSM - DAVID S. MOSSOR
DTG - DOMINIC T. GEHRET
ECL - ERIC C. LAWSON
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
HRF - HEATHER R. FAIRCHILD
JAH - Jacque A. Hannum
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JKP - JACQUELINE K. PARSONS
JLD - JESSICA L. DELONG
JRS - JORDAN R. SMREK
JST - JOSHUA S. TAYLOR
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JYH - JI Y. HU
KAK - KATHY A. KIRBY
KEB - KATIE E. BARNES
KEH - Katelyn E. Hoover
KFR - KARISSA F. REYNOLDS
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KMC - KAYLA M. CHEVALIER
KMG - KALEN M. GANDOR
KRA - KATHY R. ALBERTSON
KRP - KATHY R. PARSONS
LJH - Lacey J. Hendershot
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
LSJ - LAURA S. JONES
MAP - MARLA A. PORTER
MES - MARY E. SCHILLING
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
RLB - BOB BUCHANAN
RNP - RICK N. PETTY
SAV - SARAH A. VANDENBERG
SCA - SUEELLEN C. ADAMS
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
TB - TODD BOYLE
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT
ZTB - ZACH T. BARNES

Microbac Laboratories Inc.
List of Valid Qualifiers
August 15, 2018

Qualkey: STD_ND=U

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidance.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated. The cooler temperature at receipt exceeded the regulatory guidance.
J,H1	The analyte was positively identified, but the quantitation was below the RL. Sample analysis performed past holding time
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Not detected at or above adjusted sample detection limit
U,CT1	Not detected. The cooler temperature at receipt exceeded regulatory guidance.
U,H1	Not detected; sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Y	This analyte is not on the laboratory's current scope of accreditation.
Z	Cannot be resolved from isomer - see below

Microbac Laboratories, Inc. - Erie

MICROBAC®

SUBCONTRACT ORDER

18H0624

SENDING LABORATORY:	RECEIVING LABORATORY:
Microbac Laboratories, Inc. - Erie 1962 Wager Road Erie, PA 16509 Phone: 814.825.8533 Project Manager: Tina Sharer	Microbac - OVD 158 Starlite Drive Marietta, OH 45750 Phone: (740) 373-4071

Project Info:

Project Name: Quench Water
Project No: Quench Water Sample

Client: Erie Coke Corporation
Project Type: ENV-WasteWater
Project Location: Pennsylvania

Report TAT: 9
Due: **08/21/2018 15:00**

Sample ID: 18H0624-01 **Matrix: Aqueous** **Sampled: 08/07/2018 13:40**

Analysis	Method	Analysis Due	Expires
Solids, Total Dissolved (TDS) Total Dissolved Solids - TDS	**SM 2540 C-97,-11** 10 mg/L	**08/20/2018 12:00**	**08/14/2018 13:40**

sub 8/9/18

Microbac OVD
Received: 08/10/2018 10:59
By: BRENDA GREENWALT 221000121036

Brenda Greenwalt

Released By — Date — Received By — Date

Released By — Date — Received By — Date

MICROBAC®

COOLER TEMP >6° C LOG

Cooler ID 1036

SAMPLE ID	Bottle 1 °C	Bottle 2 °C	Bottle 3 °C	Bottle 4 °C	Bottle 5 °C	Bottle 6 °C

8/10/18 BG

pH Exceptions

pH Lot # HC849161

SAMPLE ID	Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6

8/10/18 BG

PRESERVATIVE EXCEPTIONS

NONE

AS NOTED

BG 8/10/18

Document Control # 1957
Last 10-07-2016

Issued to: Document Master File

NELAP Addendum - June 13, 2018

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS
Nitrogen, Ammonia by Method 350.1
Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
Phenolics, Total by Method 420.1
ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVD MSS0I/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVD MSV0I/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

SHED BAGHOUSE LOG
Erie Coke Corporation

DATE	7-30-18

Circle Operating Baghouse: WEST (EAST)

Attachment I

Fan Motor Amperage (max 350 amps)

2 am	221	Amps	67	Percent
10 am	217	Amps	65	Percent
6 pm	223	Amps	67	Percent
Motor RPM	1057.1			

Pressure Drop	Operating Range
3.4 " wc	1 to 8" wc

Dust Hopper Level for Operating Baghouse

3/4 full	About ¼, About ½, About ¾ - empty hopper when ¾ full

Compressed Air Pressure and Supply Check

100 psi	Flow Strong and Dry: (Y) N

Date and Time Cleaning Cycle Last Conducted (look back)

7-30-18	1 AM PM

MONTHLY BAGHOUSE INSPECTION

Conducted During First Week of Each Month
1. Bag Cleaning Mechanisms: Selenoids, Screws, Rotary Valves
2. Visual Check of Bag Tension

Monthly Check Conducted Date:
Notes:

Inspector:

Comments: EMPTIED EAST Hopper

cvl 6-26-12

Attachment J

Opacity Filter Audit Report

Stack 1

From: 07/12/2018 20:00 **To:** 07/12/2018 21:56 **Facility Name:** Erie Coke Corporation
Generated: 07/13/2018 13:00 **Location:** Erie, PA

Red = Sample Invalid

Date/Time	Stack 1 Opac, Pct 1 Minute(s)
07/12/2018 20:00	6.07
07/12/2018 20:01	6.10
07/12/2018 20:02	6.30
07/12/2018 20:03	5.83
07/12/2018 20:04	5.94
07/12/2018 20:05	6.25
07/12/2018 20:06	6.31
07/12/2018 20:07	6.57
07/12/2018 20:08	6.66
07/12/2018 20:09	6.90
07/12/2018 20:10	7.17
07/12/2018 20:11	7.24
07/12/2018 20:12	7.55
07/12/2018 20:13	7.87
07/12/2018 20:14	4.12
07/12/2018 20:15	2.81
07/12/2018 20:16	1.67
07/12/2018 20:17	1.43
07/12/2018 20:18	1.35
07/12/2018 20:19	1.35
07/12/2018 20:20	2.28
07/12/2018 20:21	4.51
07/12/2018 20:22	4.92
07/12/2018 20:23	5.19
07/12/2018 20:24	5.12
07/12/2018 20:25	4.33
07/12/2018 20:26	2.69
07/12/2018 20:27	2.46
07/12/2018 20:28	2.81
07/12/2018 20:29	2.99

Stack1_1MinuteData

J1

Opacity Filter Audit Report

Stack 1

From: 07/12/2018 20:00 **To:** 07/12/2018 21:56 **Facility Name:** Erie Coke Corporation
Generated: 07/13/2018 13:00 **Location:** Erie, PA

Red = Sample Invalid

Date/Time	Stack 1 Opac, Pct 1 Minute(s)
07/12/2018 20:30	2.56
07/12/2018 20:31	2.67
07/12/2018 20:32	2.78
07/12/2018 20:33	3.22
07/12/2018 20:34	3.19
07/12/2018 20:35	6.02
07/12/2018 20:36	5.17
07/12/2018 20:37	5.26
07/12/2018 20:38	5.45
07/12/2018 20:39	5.80
07/12/2018 20:40	6.31
07/12/2018 20:41	6.01
07/12/2018 20:42	6.15
07/12/2018 20:43	6.04
07/12/2018 20:44	6.24
07/12/2018 20:45	6.87
07/12/2018 20:46	6.94
07/12/2018 20:47	7.51
07/12/2018 20:48	7.29
07/12/2018 20:49	6.66
07/12/2018 20:50	6.01
07/12/2018 20:51	5.99
07/12/2018 20:52	6.25
07/12/2018 20:53	6.50
07/12/2018 20:54	3.63
07/12/2018 20:55	2.44
07/12/2018 20:56	2.03
07/12/2018 20:57	1.85
07/12/2018 20:58	1.56
07/12/2018 20:59	2.11

Stack1_1MinuteData

Opacity Filter Audit Report

Stack 1

From: 07/12/2018 20:00 **To:** 07/12/2018 21:56 **Facility Name:** Erie Coke Corporation
Generated: 07/13/2018 13:00 **Location:** Erie, PA

Bad = Sample Invalid.

Date/Time	Stack 1 Opac, Pct 1 Minute(s)
07/12/2018 21:00	2.50
07/12/2018 21:01	2.28
07/12/2018 21:02	2.34
07/12/2018 21:03	2.45
07/12/2018 21:04	2.50
07/12/2018 21:05	2.68
07/12/2018 21:06	2.80
07/12/2018 21:07	2.90
07/12/2018 21:08	2.75
07/12/2018 21:09	2.92
07/12/2018 21:10	2.88
07/12/2018 21:11	2.52
07/12/2018 21:12	2.68
07/12/2018 21:13	1.94
07/12/2018 21:14	2.03
07/12/2018 21:15	2.79
07/12/2018 21:16	3.17
07/12/2018 21:17	4.00
07/12/2018 21:18	8.25
07/12/2018 21:19	14.90
07/12/2018 21:20	17.04
07/12/2018 21:21	17.56
07/12/2018 21:22	17.92
07/12/2018 21:23	17.36
07/12/2018 21:24	11.35
07/12/2018 21:25	8.85
07/12/2018 21:26	8.76
07/12/2018 21:27	8.27
07/12/2018 21:28	7.87
07/12/2018 21:29	8.01

J2

Opacity Filter Audit Report

Stack 1

From: 07/12/2018 20:00 To: 07/12/2018 21:56 Facility Name: Erie Coke Corporation
Generated: 07/13/2018 13:00 Location: Erie, PA

Red = Sample Invalid

Date/Time	Stack 1 Opac, Pct 1 Minute(s)
07/12/2018 21:30	8.35
07/12/2018 21:31	8.50
07/12/2018 21:32	8.60
07/12/2018 21:33	8.51
07/12/2018 21:34	5.90
07/12/2018 21:35	7.23
07/12/2018 21:36	5.24
07/12/2018 21:37	5.10
07/12/2018 21:38	4.90
07/12/2018 21:39	4.51
07/12/2018 21:40	1.86
07/12/2018 21:41	1.79
07/12/2018 21:42	2.21
07/12/2018 21:43	2.41
07/12/2018 21:44	2.37
07/12/2018 21:45	2.73
07/12/2018 21:46	2.73
07/12/2018 21:47	2.83
07/12/2018 21:48	2.51
07/12/2018 21:49	3.03
07/12/2018 21:50	4.75
07/12/2018 21:51	5.38
07/12/2018 21:52	5.84
07/12/2018 21:53	5.78
07/12/2018 21:54	3.93
07/12/2018 21:55	11.65
07/12/2018 21:56	8.61

Valid Data Points 117

Stack1_1MinuteData

Daily Recordkeeping	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	
Operating Baghouse	East	east	east	west	WEST	WEST	WEST	WEST	WEST	WEST	WEST	WEST	WEST	WEST	WEST	WEST	west	east	EAST	EAST	EAST	EAST	EAST	EAST	EAST	EAST	EAST	EAST	EAST	EAST	east	
Fan Motor Amperage																																
2:00 AM	221	221	221	226	226	230	226	226	224	221	224	221	221	214	219	221	215	229	221	219	225	220	220	224	221	227	222	228	220	221	221	
10:00 AM	220	227	224	221	224	227	216	214	216	214	219	218	211	214	214	219	214	226	216	221	222	221	215	222	220	224	214	224	219	217	216	
6:00 PM	216	217	225	223	227	225	222	225	220	226	214	220	218	216	220	216	229	223	217	217	214	220	225	217	223	225	228	225	215	223	218	20533
Lowest Value	211																															
Higest Value	230																															
Average Value	221																															
Percent Motor Current																																
2:00 AM	66	66	66	68	68	69	68	68	67	67	67	66	67	66	65	66	65	68	67	65	68	66	66	67	68	68	67	67	67	67	67	
10:00 AM	65	67	65	67	68	67	216	65	65	64	65	65	64	66	64	66	65	67	64	67	66	66	65	67	65	68	66	67	66	65	66	
6:00 PM	66	66	68	67	68	68	222	67	67	67	64	65	66	64	66	66	69	67	65	66	65	69	68	66	67	68	68	67	65	67	65	6482
Lowest Value	64																															
Higest Value	222																															
Average Value	0																															
[redacted]	1052.3	1051	1052	1046	1045	1046	1045	1045	1046	1045	1044	1044	1043	1044	1044	1044	1045	1051	1051	1052	1051	1052	1051	1051	1051	1051	1051	1051	1051	1051	1051	
Lowest Value	1043																															
Higest Value	1052.3																															
Average Value	1048																															
Pressure Drop (1-7)	6.4	6.7	6.9	4.2	4.9	5.2	6.4	3.1	5.9	6.8	6.5	3.5	5.1	6.0	6.0	5.1	6.3	5.9	6.4	2.7	5.7	6.5	6.9	6.4	6.7	5.9	6.5	5.9	6.2	3.4	6.4	175.9
Lowest Value	2.7																															
Higest Value	6.9																															
Average Value	6.1																															
Dust Hopper Level	0	0.25	0.5	0.25	0.25	0.25	0.25	0.5	0.5	0.75	0.75	0.75	0.25	0.25	0.33	0.5	0.5	0.25	0.25	0.75	0.75	0.75	0.5	0.5	0.5	0.75	0.75	0.75	0.75	0.75	0.25	

Attachment K

K-1

1-6-18 Exhauster failed - Replaced
Exauster [illegible] unit
1-9-18 Change ~~capacitor~~ coupler on exhauster
1-10-18 Electric motor for Exhauster
making noise, Replaced motor, Also
Replaced fans + capacitors in VFD cabinet
1-26-18 Checked coupling on Electric Exhauster
1-26-18 Started Removal process of #2 Steamer
1-31-18 oil + filter change Electric Exhauster
at Hours 27867
2-1-18 Bradford Strainer Gear box Bad
2-6-18 Circulation Tank out of service for
Repairs
2-19-18 Small Booster Down Bad Clutch
2-20-18 Small Booster back on line new Clutch,
oil + filter change, Cleaned out Check valve
Circulation Tank Back in Service
~~3-13-18~~
3-29-18 W.D. off line for Repairs

4-12-18 - Absorber off line for Leak Repair
- on thinizer and Transfer pump change
930-1330

05-17-18 West Decanter online

5-21-18 1030AM Absorber off line for Hot
flush and internal inspection and Cleaning

5-25-18 Absorber Back online

6-5-18 East Decanter off line for TAR Valve
Replacement
6-8-18 East Decanter online

7-25-18 Absorber off line for Hot flush

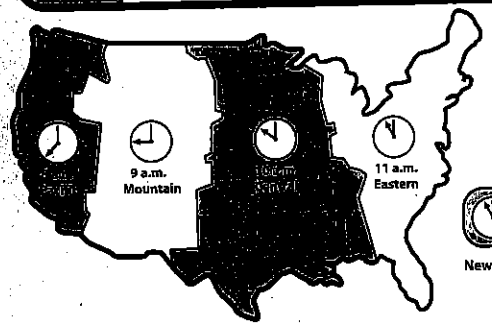
7-26-18 Absorber Back online

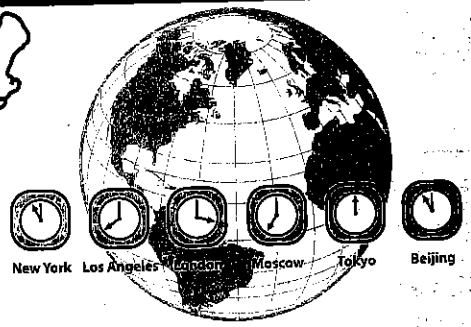
Attachment C

By-Products Maint. Log

L1

TIME	Monday	Tuesday	Wednesday	Thursday	Friday





5-14-18 WATER FILTERS & SPRAYER NOZZLES INSTALLED AND OPERATING N.H.

5-21-18 INSPECTED N.H.

5-28-18 INSPECTED N.H.

6-4-18 Inspected A.P.

6-11-18 Inspected A.P.

6-[illegible]

6-18-18 Inspected A.P.

6-25-18 Inspected A.P.

7-2-18 Inspected, Filters cleaned. A.P.

7-9-18 Inspected A.P.

7-16-18 Inspected A.P.

7-23-18 Inspected A.P.

7-30-18 Inspected A.P.

Attachment 14

TRUCK STATION - COKE LOADING DUST SUPPRESSION MAINT. LOG.

8-6-18	Inspected	A.P.
8-13-18	Inspected	A.P.
8-20-18	Inspected	A.P.
8-27-18	Inspected	A.P.
9/4/18	INSPECTED	[signature]
9-11-18	Inspected	A.P.
9-17-18	Inspected	A.P.

Attachment N ✓

Date 9/13/18

Erie Coke -Method 303 Charging Report

Representative J. Donovan

DES,LLC Inspector Ed Kiter

Notes

Battery A/B

Clock Time

Charge #	Oven #	Start	Stop	V.E.	BI	DI	AI	Lid Total
1	27	9:02	9:12	15.5	14.38		15.60	J12345
2	37	9:49	10:12	7.5	6.97		7.48	J125
3	57	10:46	10:52	34.0	DC		34.21	J1246
4	26	12:09	12:16	4.5	3.03		4.37	J12346
5	10	12:31	12:39	8.5	5.89		8.53	J1235

Sum of 4 Charges 61.5

Doors Leaking

	PS	CS
A	1	1
B	1	5

Lids Leaking
A 0
B 0

Offtakes Leaking
A 0
B 0

Doors Not Observed
A 0
B 0

Lids Not Observed
A 12
B 34

Offtakes Not Observed
A 2
B 6

Out of Service Ovens A Battery 0 B Battery 0

% Doors Leaking
A 2.17 %
B 5.57 %

% Lids Leaking
A 0
B 0

% Offtakes Leaking
A 0
B 0

~~CS A 1-1.38 = 0~~

Time in 8:20

Time Out 1:20

$\frac{1+[1-(23 \times 0.06)]}{46}$ ✓

$\frac{1+[5-(35 \times 0.06)]}{70}$ ✓

#B of $\frac{(5-2.1+1)100}{70} = 5.57$

CS A = 1-1.38 = 0

PS A = $\frac{1 \times 100}{46} = 2.17$

NI

Erie Coke - Top Side Report Battery A

Date 9/13/18

Representative J. Donovan

DES,LLC Inspector Ed Kitchen

Collecting Main Pressure 8:41

Collecting Main Inspection Time 12:19 Ok

Notes

B -Base F-Flange
TC-Top Cap C-Corliss
G- Gooseneck O-Other

Start 9:17 Stop 9:18
Time 33 Sec Valid Yes

Start 9:12 Stop 9:13
Time 39 Sec Valid Yes

Oven	J	1	2	3	4	5	B	TC	G	Fl	C	O	
1													
2													
3													
4													
5													
6													
7													
8													
9													
~~10~~													DO
11													
12													
13													
14													
15													2/12
16													
17													
18													
19													
~~20~~													DO
21													
22													
23													

Count ∅ Lids ∅ Offtakes

% Lids Leaking = Lids Leaking x 100 / Lids Observed ∅

% Offtakes Leaking = Offtakes Leaking x 100 / Offtakes Observed ∅

Erie Coke -Top Side Report   Battery B   Date 9/13/18

Representative J. Donovan

DES,LLC Inspector E. Kiter

Collecting Main Pressure 9:24

Collecting Main Inspection Time 12:21 OK

Notes

B-Base F-Flange
TC-Top Cap C-Corliss
G-Gooseneck O-Other

Start 11:36 Stop 11:37
Time 49 Sec Valid Yes

Start ~~12:59~~ 11:32 Stop ~~11:4?~~ 11:33
Time ~~53~~ Sec 83 Sec Valid Yes

Oven	J	1	2	3	4	5	B	TC	G	Fl	C	O	
24													
25													
26													
27													
28													
29													DO
~~30~~													DO
31													DO
~~32~~													DO
~~33~~													
~~34~~													
35													
36													
37													DO
~~38~~													DO
~~39~~													
~~40~~													
41													
42													
~~43~~													
44													
~~45~~													
46													
~~47~~													
48													
49													
50													
51													
52													
53													
54													
55													
~~56~~													
57													
58													

(Ovens 39–55 bracketed: DO Obs)

Count Ø Lids   Ø Offtakes

% Lids Leaking = Lids Leaking x 100 / Lids Observed   Ø

% Offtakes Leaking = Offtakes Leaking x 100 / Offtakes Observed   Ø

N2

Erie Coke - Door Report

Date 9/13/18

Representative J. Donovan

Notes

DES,LLC Inspector Ed Kitten

Battery A

PS Start Time 11:01 34 Sec — Stop Valid 11:03

CS Start Time 10:14 48 Sec — Stop Valid 10:15 yes

Oven	PS	CS (FB)
1		
2		
3		
4		
5		
6		
7	Chuck	
8		Frame
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
	1	1

Doors = # of doors leaking / # of doors observed x 100 = %

A-Batt. CS door correction Factor 1.38

B Batt. CS door correction factor 2.10

Last Oven Charged 17

Count 2

Battery B

PS Start Time 10:59 59 Sec — Stop Valid 11:00 yes

CS Start Time 10:54 — Stop Valid 10:55

Oven	PS	CS (FB)
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		Frame
42		
43		
44		
45		
46		
47		
48		
49		
50		Frame
51	Door	Frame
52		
53		
54		Frame
55		Frame
56		
57		
58		
	1	5

Last Oven Charged 57

Count 6

D-Door C-Chuck B-Both J-Jamb M-Masonery F-Frame FB- From Bench

USEPA Method 303

Offtake and Lid Certification Form

Name: Dain Brophy Date: 13 Sept 2018 Plant Name: Erie Coke
Company/Affiliation: PA DEP Plant Location: Erie, PA
Battery No.: 1 Total No. of Ovens: 58 Total No. of Inoperable Ovens: 0

Start Time: 2:38pm End Time: 4:30pm

No offtakes on Push side

PUSH SIDE (crossed out)

Oven	Location						
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O

COKE SIDE

Oven	Location						
32	(D)	C	F	S	B	P	O
33	(D)	C	F	S	B	P	O
34	(D)	C	F	S	B	P	O
38	(D)	C	F	S	B	P	O
39	(D)	C	F	S	B	P	O
40	(D)	C	F	S	B	P	O
43	(D)	C	F	S	B	P	O
45	(D)	C	F	S	B	P	O
47	(D)	C	F	S	B	P	O
50	(D)	C	F	S	B	P	O
52	(D)	C	F	S	B	P	O
56	(D)	C	F	S	B	P	O
23	(D)	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O
	D	C	F	S	B	P	O

LIDS

Oven	Location					
4	D	(1)	2	3	4	5
32	(D)	1	2	3	4	5
33	(D)	1	2	3	4	5
34	(D)	1	2	3	4	5
38	(D)	1	2	3	4	5
39	(D)	1	2	3	4	5
40	(D)	1	2	3	4	5
43	(D)	1	2	3	4	5
45	(D)	1	2	3	4	5
47	(D)	1	2	3	4	5
50	(D)	1	2	3	4	5
52	(D)	1	2	3	4	5
56	(D)	1	2	3	4	5
23	(D)	1	2	3	4	5
	D	1	2	3	4	5
	D	1	2	3	4	5
	D	1	2	3	4	5
	D	1	2	3	4	5
	D	1	2	3	4	5
	D	1	2	3	4	5
	D	1	2	3	4	5
	D	1	2	3	4	5

D = decarbonizing
C = cap
F = flange
S = slip joint
B = base
P = piping
O = other

One Pass:

$$T = (4\frac{sec}{oven} \times \underline{58}\ ovens) + (10\frac{sec}{leak} \times \underline{1}\ leaks) = \underline{242}\ sec$$

(232) (10)

Two Pass:

$$T = (4\frac{sec}{oven} \times \_\_\_\ ovens) + (10\frac{sec}{leak} \times \_\_\_\ leaks) = \_\_\_\ sec$$

Three Pass:

$$T = (4\frac{sec}{oven} \times \_\_\_\ ovens) + (10\frac{sec}{leak} \times \_\_\_\ leaks) = \_\_\_\ sec$$

Total Traverse Time: 137 sec

Valid Run? (Yes) No

$$PLO = \frac{\text{No. leaking offtakes}}{\text{No. offtakes observed}} \times 100 = 0\%$$

0 / 58-13(D) = 45

$$PLL = \frac{\text{No. leaking lids}}{\text{No. lids observed}} \times 100 = 0.37\%$$

1 / 58-13(D) = 270 lids, 45 ovens

Form L: CEA, Inc.

N3

USEPA Method 303

Charging Certification Form

Name Dan Brophy Date 13 Sept 2018 Plant Name Erie Coke
Company/Affiliation PA DEP Battery No. 1 Plant Location Erie, PA

Charge Number	Oven Number	Start Time	Stop Time	Visible Emissions (sec)	Comments
1	30	1:30 pm	1:42 pm	16.49	
2	3	2:25 pm	2:32 pm	2.31	
3	13	3:02 pm	3:11 pm	6.42	
4	23	3:47 pm	4:03 pm	2.90	
5	6	4:33 pm	4:40 pm	1.03	

Notes:
29.15 total VE (seconds)

USEPA Method 303

Door Certification Form

Name Dan Brophy Date 13 Sept 2018 Plant Name Erie Coke
Company/Affiliation PA DEP Plant Location Erie, PA
Battery No. 1 Total No. of Ovens 58 Total No. of Inoperable Ovens 0

Push Side Start Time 2:45 pm
Push Side Stop Time 4:09 pm

Coke Side Start Time 4:54 pm
Coke Side Stop Time 4:57 pm

PUSH SIDE				
Oven	Location			Comments
41	(D)	C	M	
51	(D)	C	M	
56	(D)	C	M	
7	(D)	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	
	D	C	M	

COKE SIDE			
Oven	Location		Comments
14	(D)	M	
23	(D)	M	
38	(D)	M	
41	(D)	M	
51	(D)	M	
56	(D)	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	
	D	M	

Push Side Traverse Time 86 sec

Coke Side Traverse Time 127 sec

D = door
C = chuck door
M = masonry

Push Side:

$$T = (4\frac{\text{sec}}{\text{door}} \times 58 \text{ doors}) + (10\frac{\text{sec}}{\text{leak}} \times 4 \text{ leaks}) = 272 \text{ sec}$$

(232 sec/door; 40 sec/leak)

Coke Side:

$$T = (4\frac{\text{sec}}{\text{door}} \times 58 \text{ doors}) + (10\frac{\text{sec}}{\text{leak}} \times 6 \text{ leaks}) = 292 \text{ sec}$$

(232 sec/door; 60 sec/leak)

Valid Run? (Yes) No

Bench Correction Factor:
6 - (58 x .06)
6 - 3.48 = 2.52

$$PLD = \frac{\text{No. leaking doors}}{\text{No. doors observed}} \times 100 = \frac{6.52}{116} = 5.62\%$$

Form D: CEA, Inc.

N4

USEPA Method 303

Collecting Main Certification Form

Name Dan Brophy Date 13 Sept 2018 Plant Name Erie Coke
Company/Affiliation PA DEP Battery No. 1 Plant Location Erie, PA

Start Time 4:42 pm End Time 4:52 pm

PUSH SIDE		
Oven	Time	Comments

COKE SIDE		
Oven	Time	Comments

Push Side Main Pressure ——

Coke Side Main Pressure ——

Notes:

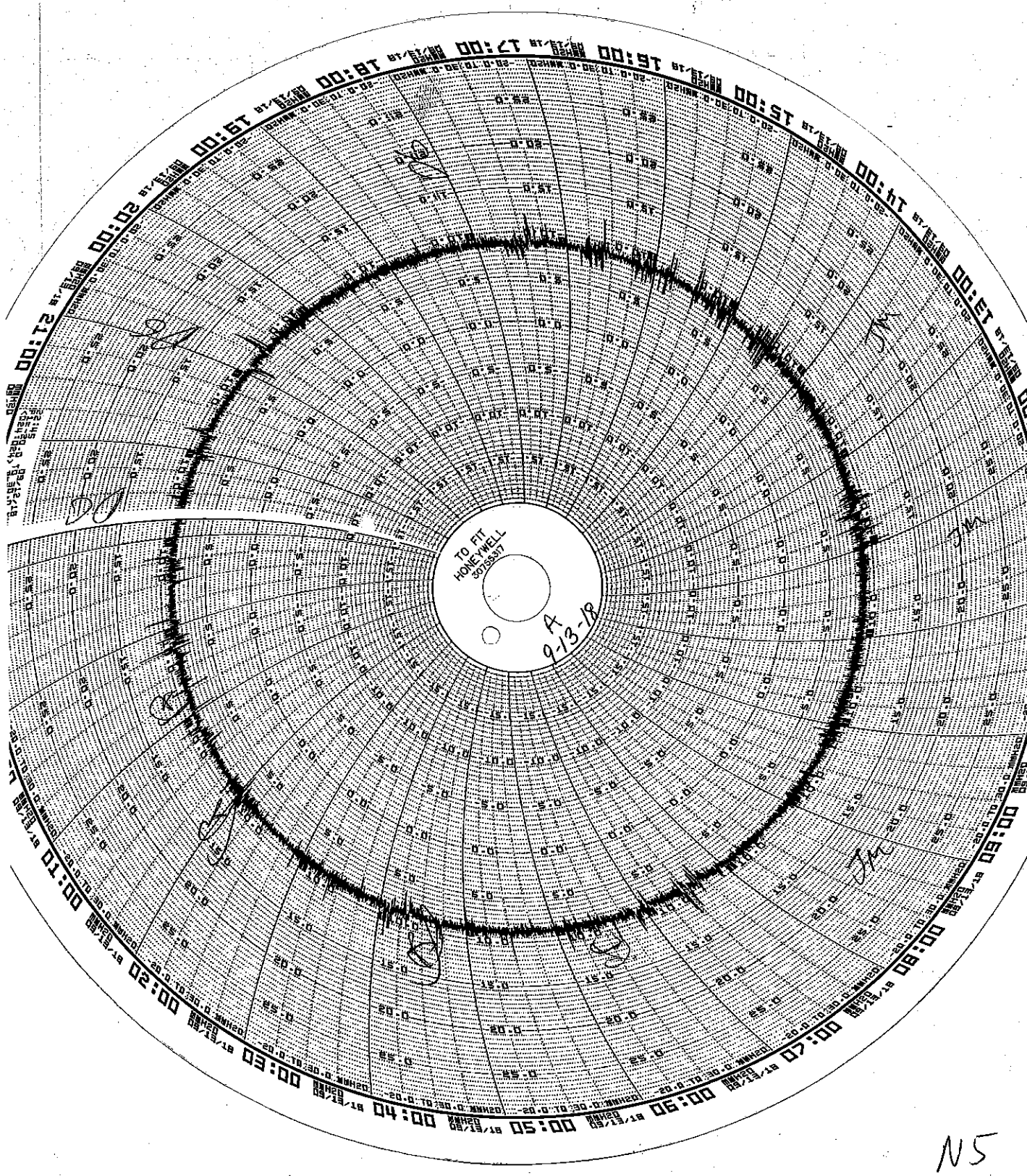
A side 8.41
B side 8.80

No leaks

Back Pressure Charts included

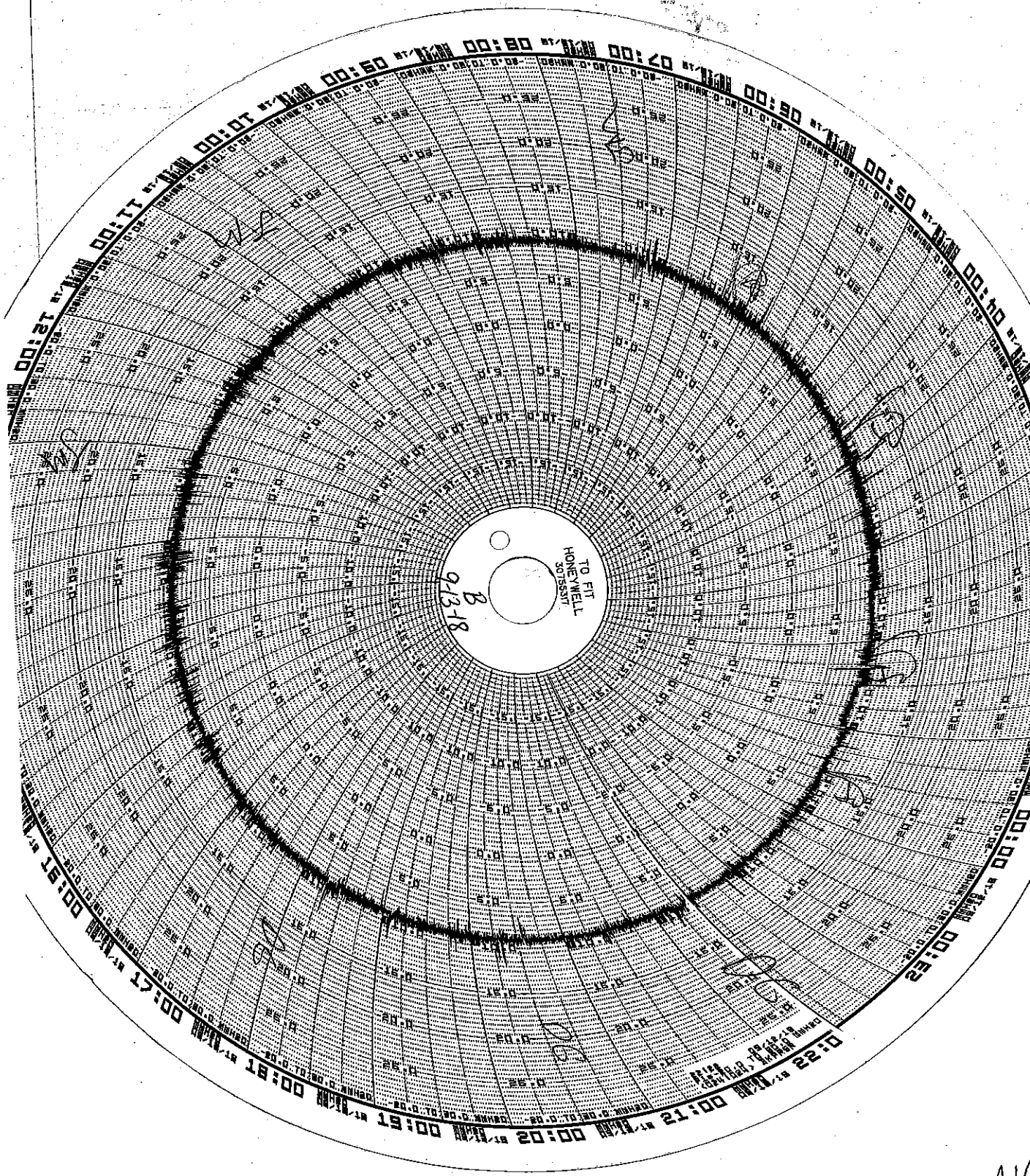
Form M: CEA, Inc.

"A" Battery Back Pressure Chart.



N5

"B" Battery Back Pressure Chart.



Battery A

Attachment Ø

DATE Month	Sum of 1st 4 charges	No. of charges	Log avg. charges (s)	Percent leaking Doors	Percent leaking Lids	Percent leaking Offtakes	No. of charges	Log avg. charges (s)	30-run rolling average Doors (%)	30-run rolling average Lids (%)	30-run rolling average Offtakes (%)
8/1/18	13.5	5	3.26	2.17	0.00	0.00	150	4.54	1.00	0.16	0.77
8/2/18	24.5	5	5.70	0.00	0.00	0.00	150	4.56	0.93	0.16	0.77
8/3/18	24	5	6.91	2.17	0.00	0.00	150	4.57	1.00	0.16	0.77
8/4/18	40	5	10.86	4.35	0.00	0.00	150	4.66	1.15	0.16	0.77
8/5/18	19.5	5	5.51	0.00	0.00	0.00	150	4.63	1.15	0.10	0.77
8/6/18	15	5	2.80	0.00	0.00	0.00	150	4.62	1.15	0.10	0.77
8/7/18	12.5	5	2.60	3.52	0.00	0.00	150	4.52	1.19	0.08	0.77
8/8/18	27	5	5.30	16.57	0.00	0.00	150	4.56	1.75	0.08	0.77
8/9/18	11	5	2.63	0.00	0.00	0.00	150	4.44	1.75	0.08	0.77
8/10/18	10.5	5	2.83	0.00	0.00	0.00	150	4.48	1.75	0.08	0.77
8/11/18	14	5	3.32	1.52	0.00	0.00	150	4.49	1.80	0.08	0.62
8/12/18	21.5	5	4.14	0.00	0.00	0.00	150	4.49	1.80	0.08	0.62
8/13/18	12	5	3.32	0.00	0.00	0.00	150	4.49	1.80	0.08	0.62
8/14/18	28	5	7.24	0.00	0.00	0.00	150	4.58	1.80	0.05	0.46
8/15/18	20.5	5	4.64	3.52	0.00	0.00	150	4.53	1.65	0.05	0.46
8/16/18	23	5	4.86	0.00	0.00	0.00	150	4.53	1.65	0.02	0.46
8/17/18	26	5	6.34	2.17	0.00	0.00	150	4.47	1.72	0.02	0.46
8/18/18	37	5	7.61	0.00	0.00	0.00	150	4.51	1.72	0.02	0.46
8/19/18	41.5	5	8.39	4.35	0.00	0.00	150	4.59	1.87	0.02	0.46
8/20/18	14	5	3.72	2.17	0.00	0.00	150	4.51	1.87	0.02	0.46
8/21/18	13	5	3.41	0.00	0.00	0.00	150	4.47	1.80	0.02	0.46
8/22/18	14	5	3.44	0.00	0.00	0.00	150	4.45	1.80	0.02	0.46
8/23/18	13	5	3.21	0.00	0.00	0.00	150	4.42	1.80	0.02	0.46
8/24/18	21	5	6.07	0.00	0.00	0.00	150	4.49	1.61	0.02	0.46
8/25/18	18	5	4.28	0.00	0.00	0.00	150	4.56	1.61	0.02	0.29
8/26/18	12.5	5	3.15	0.00	0.00	0.00	150	4.57	1.61	0.02	0.29
8/27/18	29	5	6.44	3.52	0.00	0.00	150	4.65	1.53	0.00	0.00
8/28/18	56.5	5	9.97	0.00	0.00	0.00	150	4.80	1.53	0.00	0.00
8/29/18	34.5	5	8.57	3.52	0.00	0.00	150	4.91	1.65	0.00	0.00
8/30/18	23	5	5.51	0.00	0.00	0.00	150	4.84	1.65	0.00	0.00
8/31/18	22	5	6.20	0.00	0.00	0.00	150	4.95	1.58	0.00	0.00

Ø1 175 ✓ 12.0 ✓ 4.0 ✓ 0.4 ✓ 2.5 ✓

Battery 2

DATE	Sum of 1st	No. of	Log avg.	Percent leaking			No. of	Log avg.	30-run rolling average		
Month	4 charges	charges	charges (s)	Doors	Lids	Offtakes	charges	charges (s)	Doors (%)	Lids (%)	Offtakes (%)
8/1/18	13.5	5	3.26	2.86	0.00	0.00	150	4.54	1.54	0.02	1.38
8/2/18	24.5	5	5.70	1.43	0.00	0.00	150	4.56	1.50	0.02	1.38
8/3/18	24.0	5	6.91	0.00	0.00	0.00	150	4.57	1.41	0.02	1.38
8/4/18	40.0	5	10.86	2.71	0.00	0.00	150	4.66	1.41	0.02	1.38
8/5/18	19.5	5	5.51	0.00	0.00	0.00	150	4.63	1.31	0.02	1.38
8/6/18	15.0	5	2.80	0.00	0.00	3.45	150	4.62	1.27	0.02	1.49
8/7/18	12.5	5	2.60	4.29	0.00	10.34	150	4.52	1.37	0.02	1.84
8/8/18	27.0	5	5.30	4.29	0.00	10.34	150	4.56	1.51	0.02	2.07
8/9/18	11.0	5	2.63	0.00	0.00	0.00	150	4.44	1.51	0.02	2.07
8/10/18	10.5	5	2.83	0.00	0.00	0.00	150	4.48	1.51	0.02	2.07
8/11/18	14.0	5	3.32	0.00	0.00	0.00	150	4.49	1.46	0.02	2.07
8/12/18	21.5	5	4.14	0.00	0.00	0.00	150	4.49	1.46	0.02	2.07
8/13/18	12.0	5	3.32	0.00	0.00	0.00	150	4.49	1.46	0.02	1.95
8/14/18	28.0	5	7.24	0.00	0.00	0.00	150	4.58	1.46	0.00	1.95
8/15/18	20.5	5	4.64	2.86	0.57	0.00	150	4.53	1.46	0.02	1.95
8/16/18	23.0	5	4.86	1.43	0.00	0.00	150	4.53	1.42	0.02	1.95
8/17/18	26.0	5	6.34	4.29	0.00	0.00	150	4.47	1.47	0.02	1.95
8/18/18	37.0	5	7.61	1.43	0.00	0.00	150	4.51	1.47	0.02	1.95
8/19/18	41.5	5	8.39	1.29	0.00	0.00	150	4.59	1.51	0.02	1.95
8/20/18	14.0	5	3.72	1.43	0.00	0.00	150	4.51	1.42	0.02	1.95
8/21/18	13.0	5	3.41	0.00	0.00	0.00	150	4.47	1.37	0.02	1.95
8/22/18	14.0	5	3.44	0.00	0.00	0.00	150	4.45	1.37	0.02	1.95
8/23/18	13.0	5	3.21	0.00	0.00	0.00	150	4.42	1.37	0.02	1.95
8/24/18	21.0	5	6.07	1.43	0.00	0.00	150	4.49	1.37	0.02	1.72
8/25/18	18.0	5	4.28	0.00	0.00	0.00	150	4.56	1.37	0.02	1.38
8/26/18	12.5	5	3.15	0.00	0.00	0.00	150	4.57	1.28	0.02	1.26
8/27/18	29.0	5	6.44	1.29	0.00	0.00	150	4.65	1.27	0.02	0.80
8/28/18	56.5	5	9.97	4.14	0.00	0.00	150	4.80	1.17	0.02	0.80
8/29/18	34.5	5	8.57	4.14	0.00	0.00	150	4.91	1.31	0.02	0.80
8/30/18	23.0	5	5.51	0.00	0.00	0.00	150	4.84	1.31	0.02	0.80
8/31/18	22.0	5	6.20	2.86	0.00	0.00	150	4.95	1.31	0.02	0.80

12.0 4.0 0.4 2.5

✓ ✓ ✓ ✓

Erie Coke
Sources 031/032 Erie City Boiler 1/2
Picture taken for reference by Dan Brophy
11 Sept 2018

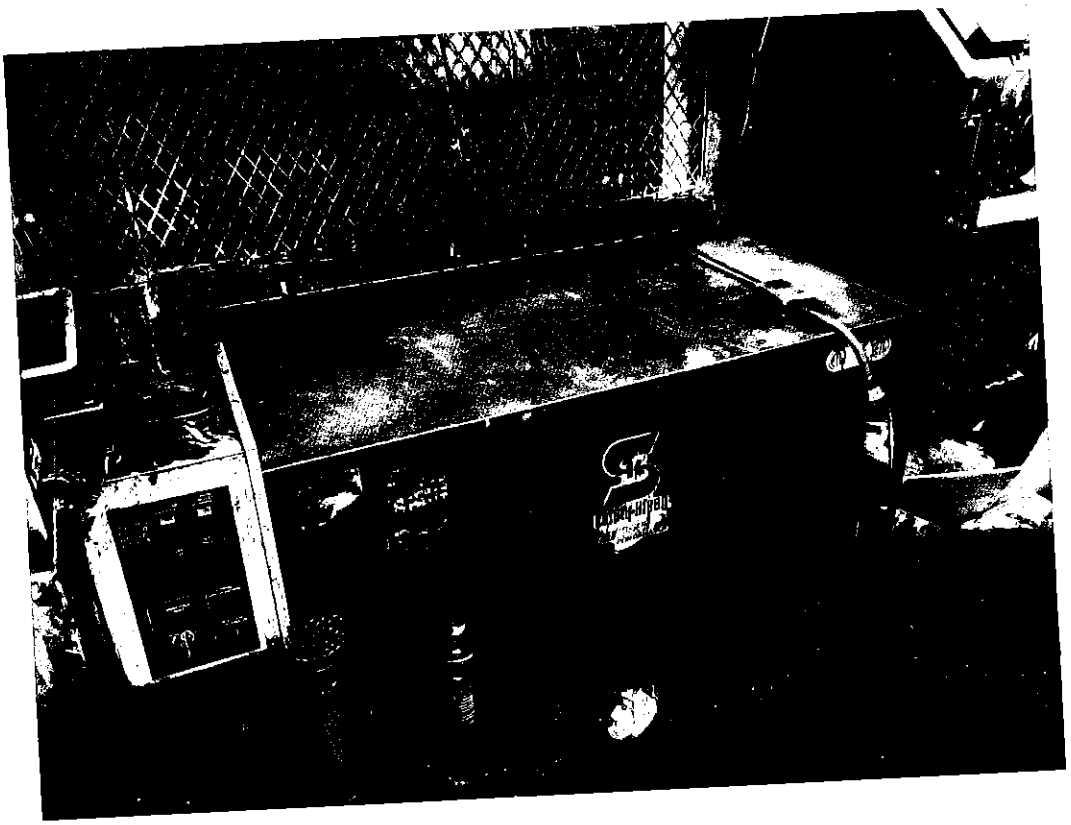
Pictures of Sources
at Erie Coke

Erie Coke - Top of B Battery

Sources 801 Coke Oven Battery Charging operations
807 Coke Oven Battery Topside Leaks
803 Coke Quenching Operations (In the distance)

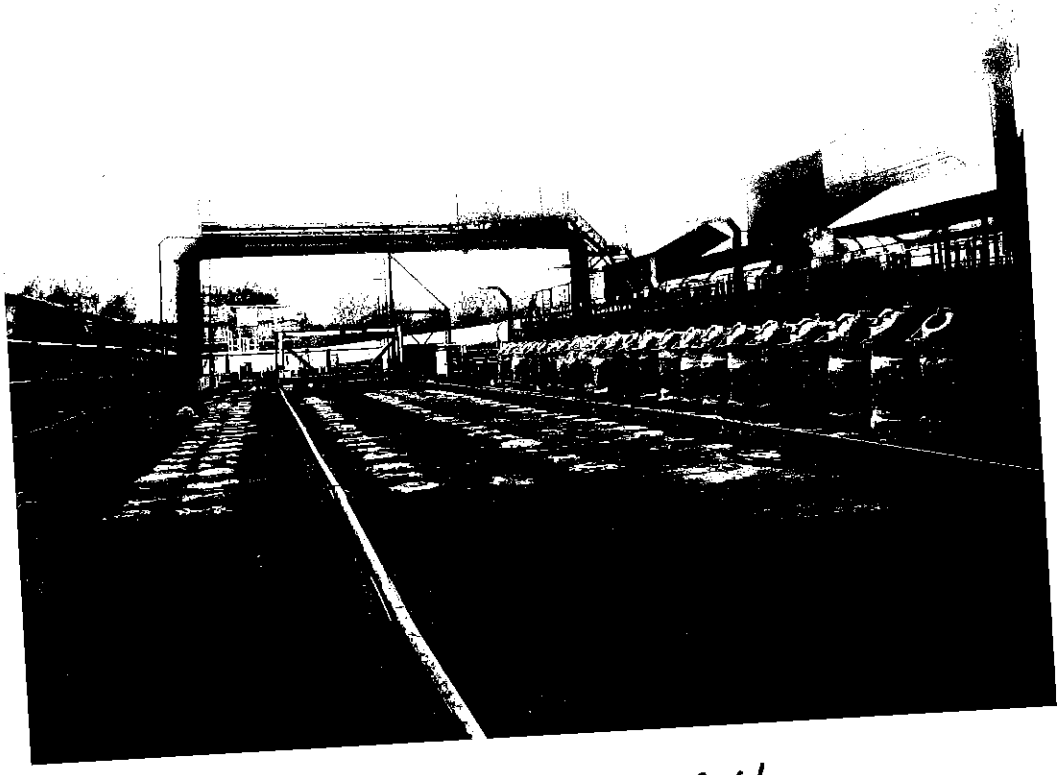
Picture Taken for reference by Dan Brophy

13 Sept 2018



Erie Coke
Source 101 Parts Washer
Picture taken for reference by Dan Brophy
11 Sept 2018

P3



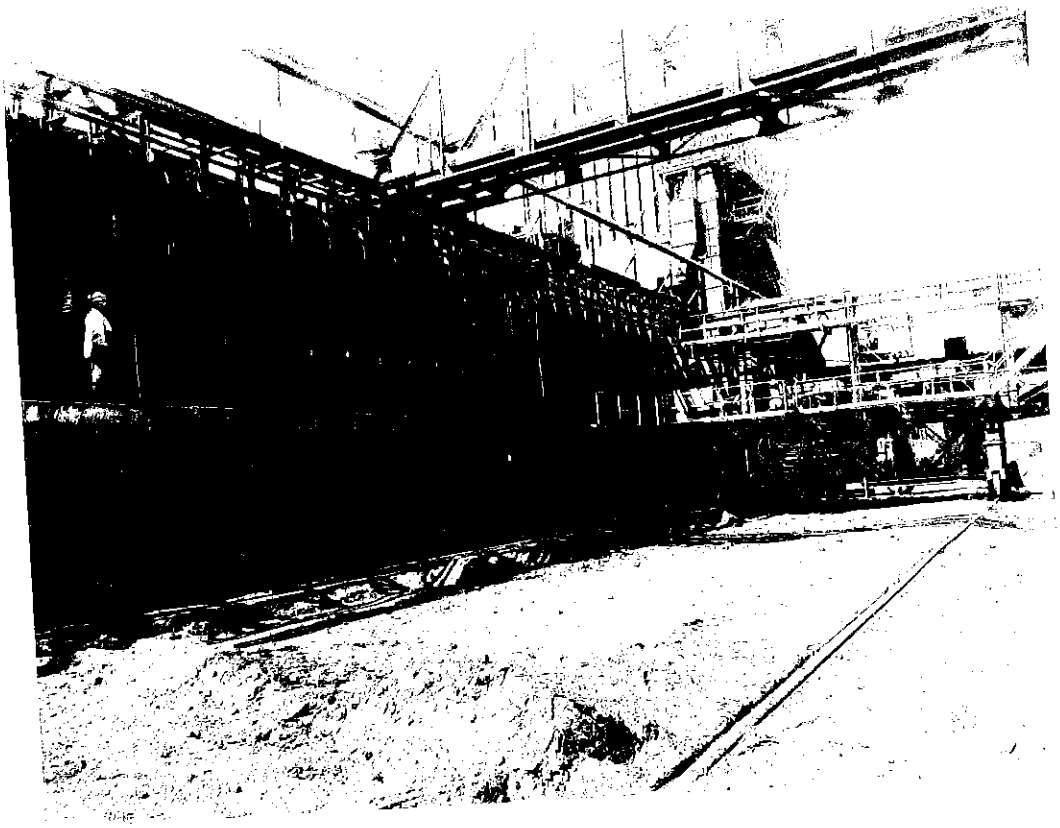
Erie Coke - Top of A Battery

Sources 801 Coke Oven battery Charging Operations
807 Coke Oven Battery - Topside Leaks

Picture Taken for reference by Dan Brophy

13 Sept 2018

P



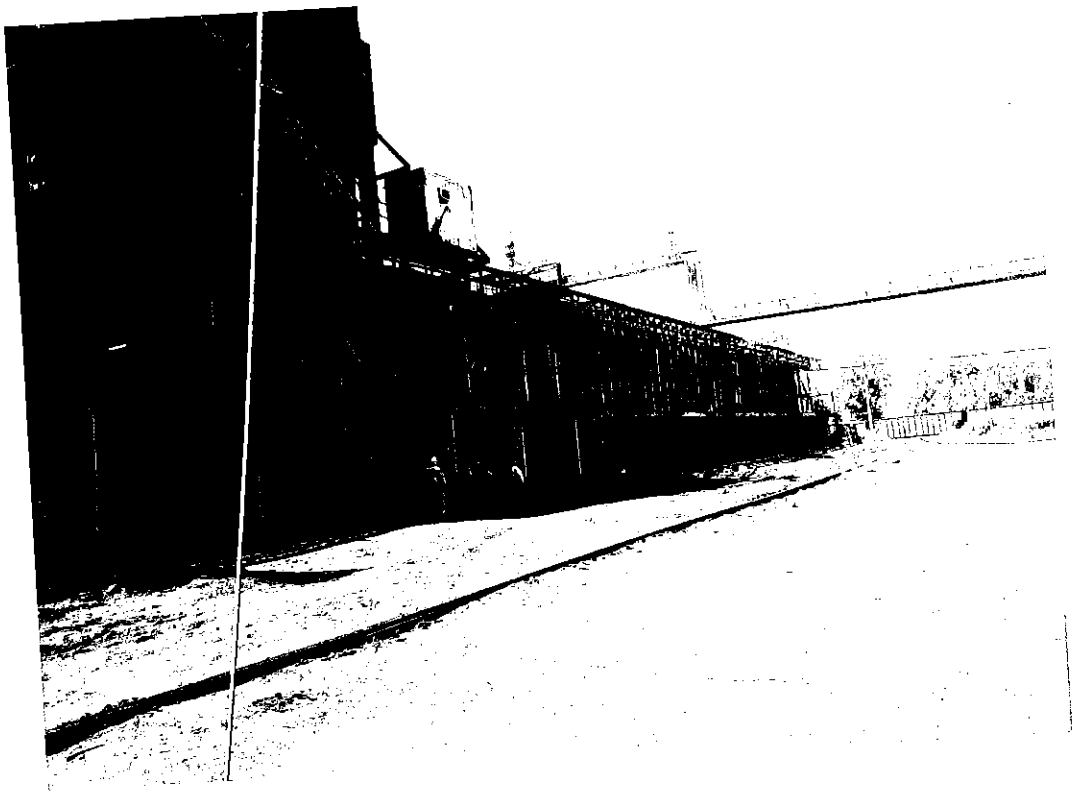
Erie Coke

Sources 802 Coke Oven Battery Pushing Operations A Batter
806 Coke Oven Battery Oven/Door Leaks A Batter

Picture Taken for reference by Dan Brophy

23 Aug 2018

P



Erie Coke

Sources 802 Coke oven battery Pushing operations B Battery
806 Coke oven Battery Oven/Door Leaks B Battery

Picture Taken for reference by Dan Brophy

23 Aug 2018

P

Erie Coke
Source 803 Coke Quenching Operations
Picture taken for reference by Dan Brophy
11 Sept 2018

P

Erie Coke
Source 804 Coal Unloading
Picture taken for reference by Dan Brophy
11 Sept 2018

P

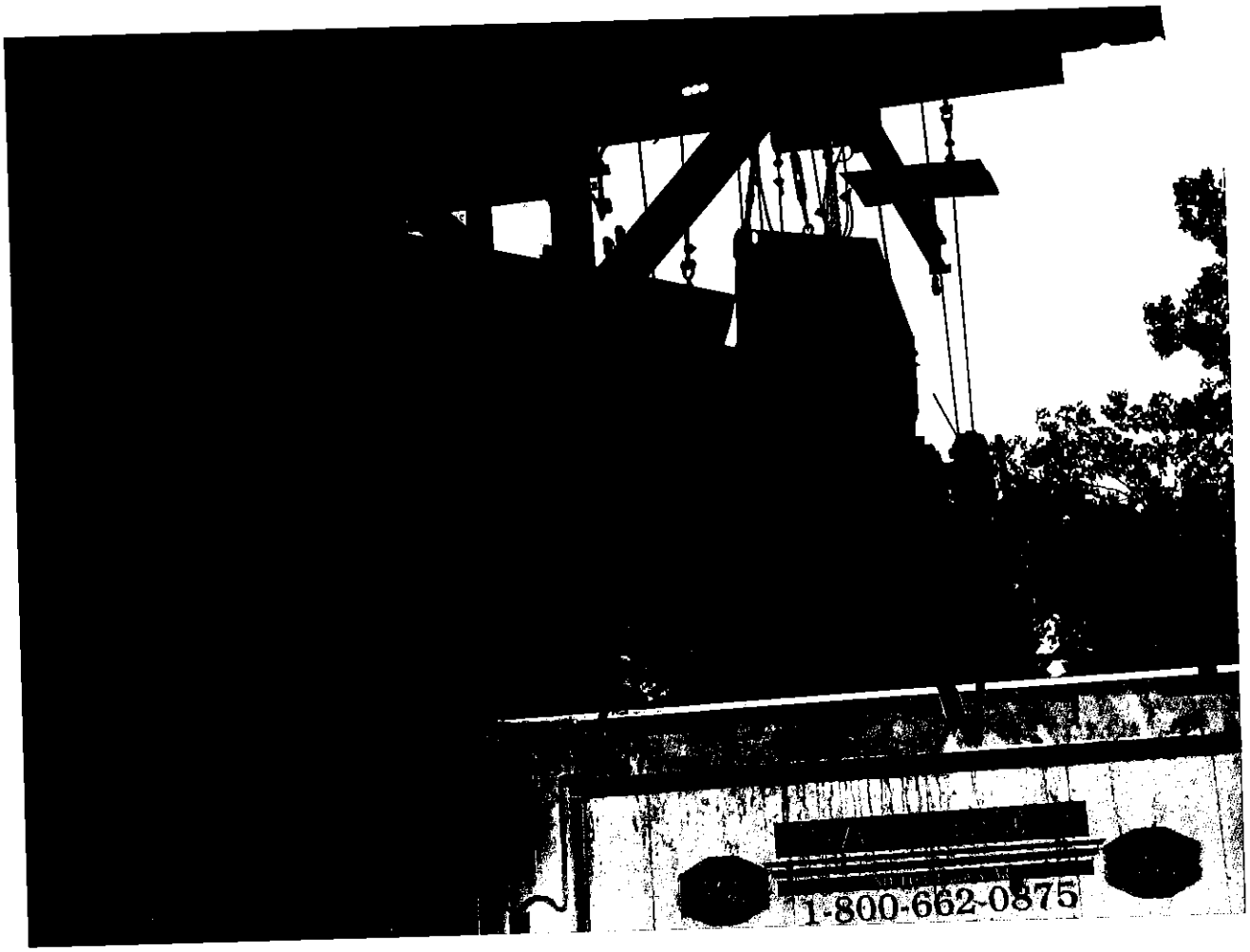
Erie Coke
Coal Yard near Coal Unloading Source 804
Picture taken for reference by Dan Brophy
11 Sept 2018

Eric Cole
Source 805 underfire system A Battery
Picture taken ~~by~~ reference by Dan Brophy
11 Sept 2018

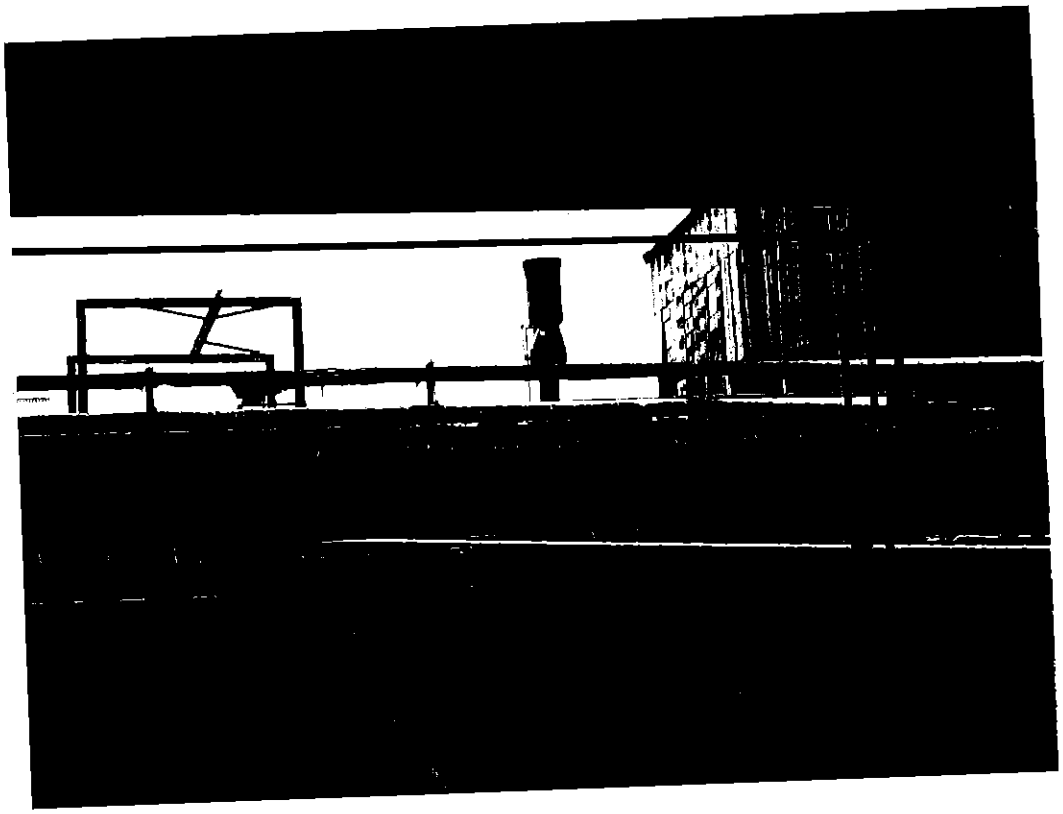
PIC

Erie Coke
Source 805 Underfire System B Battery
Picture taken for reference for Dan Brophy
11 Sept 2018

P

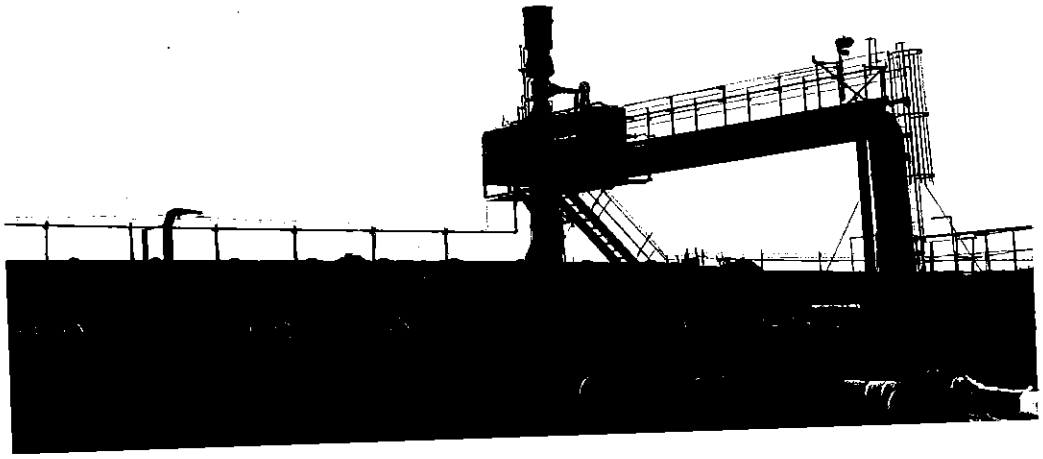


Erie Coke
Source 808 Coke Loading
Picture taken for reference by Dan Brophy
11 Sept 2018

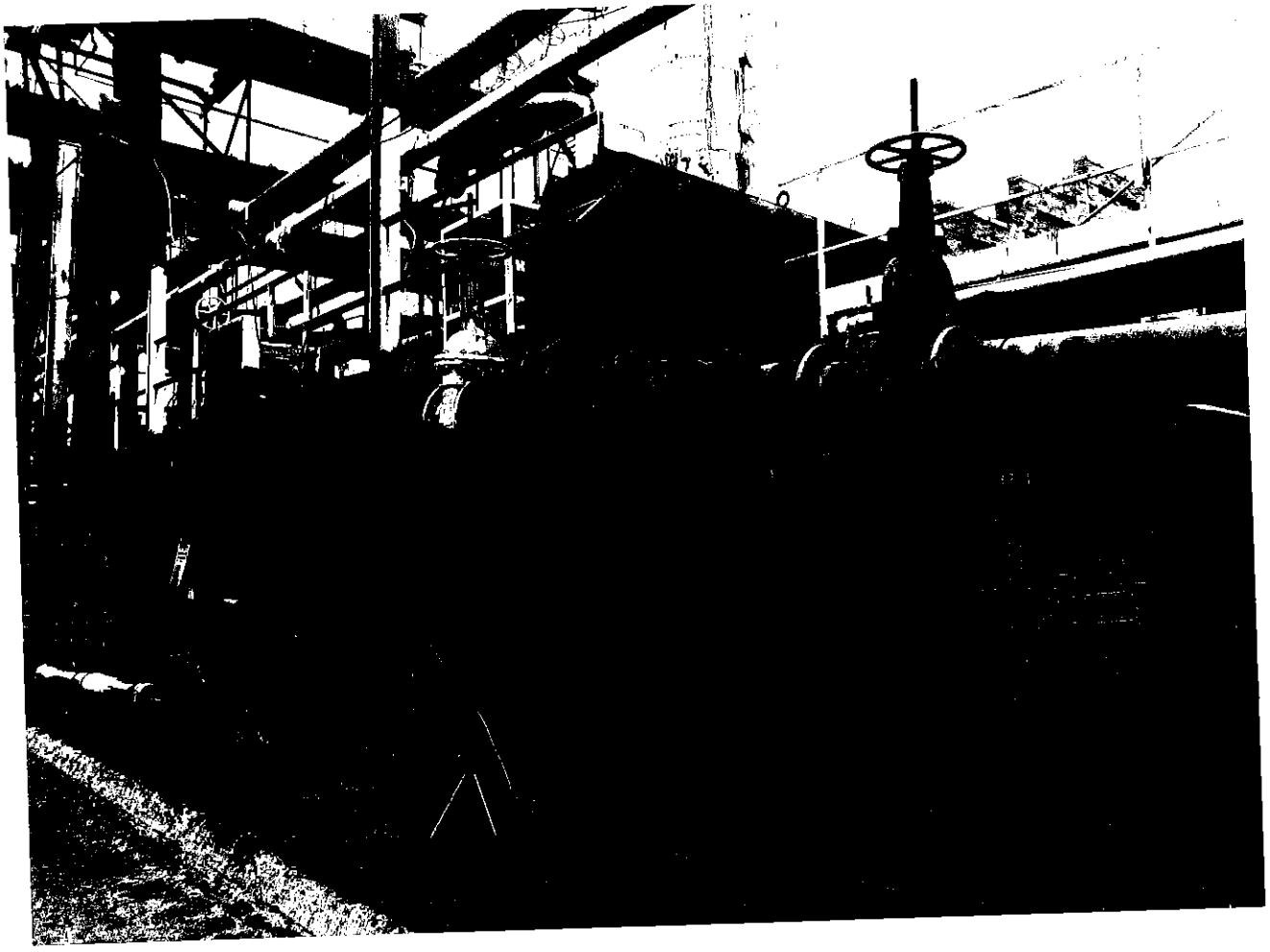


Erie Coke
Source 809 Coke Oven Battery Emergency Flare A Battery
Picture taken for reference by Dan Brophy
11 Sept 2018

P13



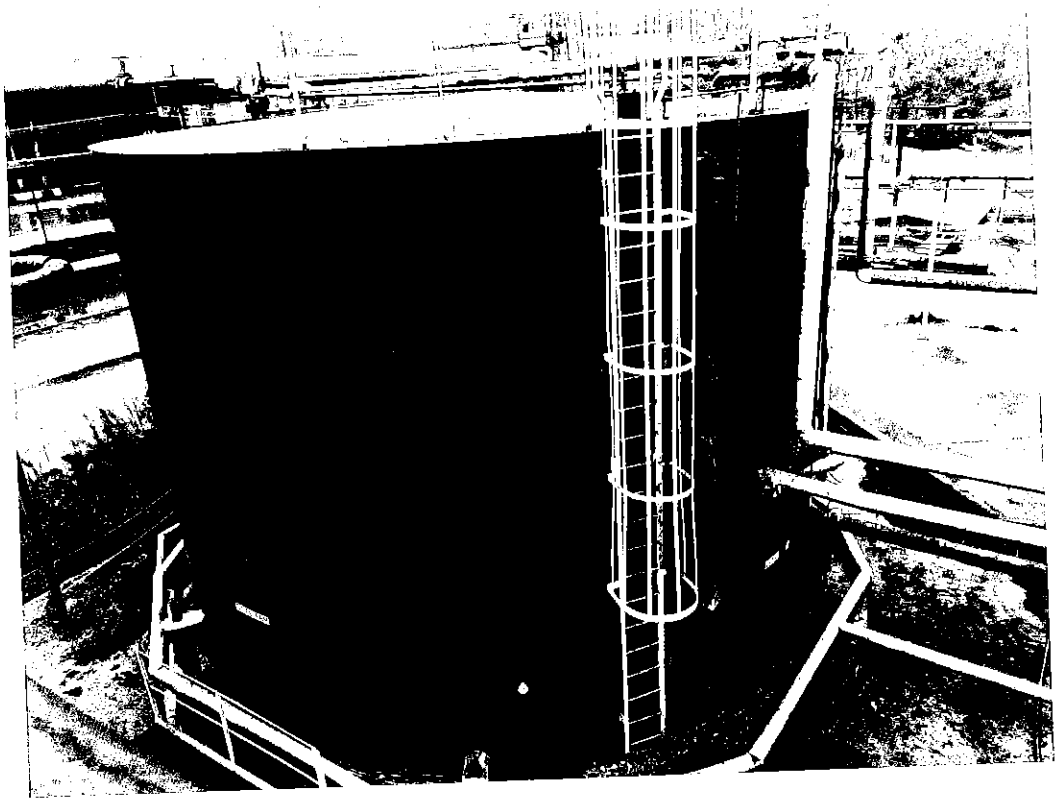
Erie Coke
Source 809 Coke Oven Battery Emergency Flare B Batte
Picture taken for reference by Dan Brophy
11 Sept 2018



Erie Cokc
Source 901 Tar Decanters
Picture taken for reference by Dan Brophy
11 Sept 2018

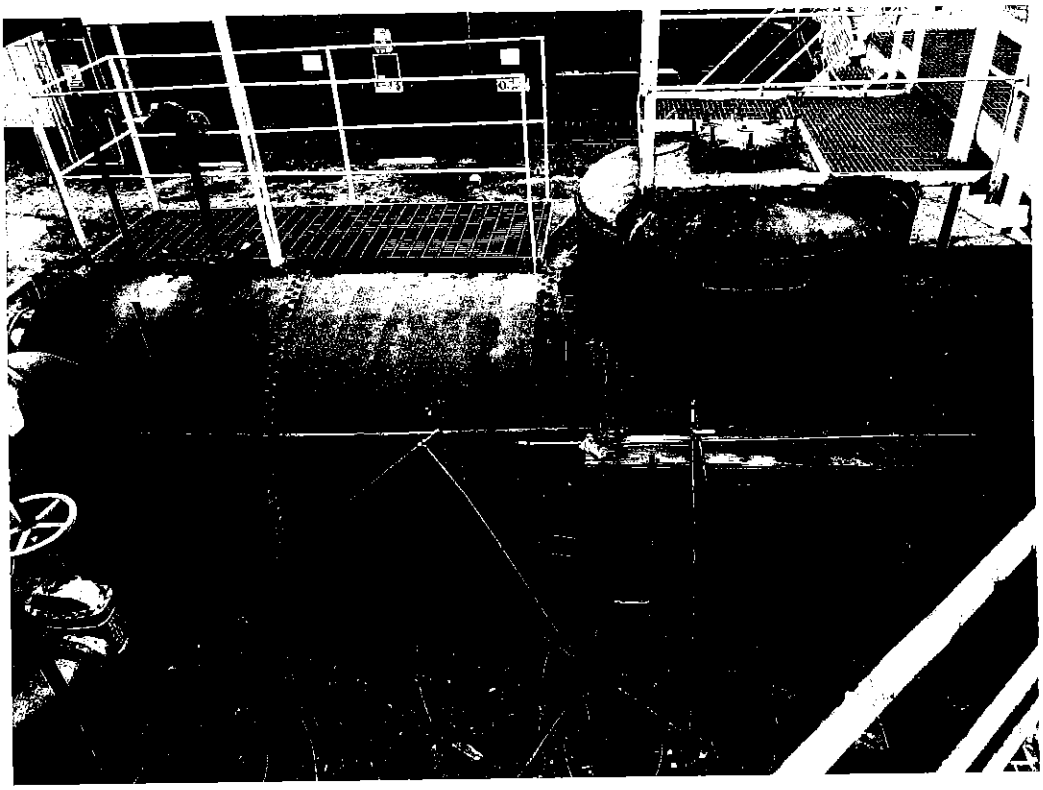
Erie Coke
Source 902 Tar Dehydrators
Picture taken for reference by Dan Brophy
11 Sept 2018

P16

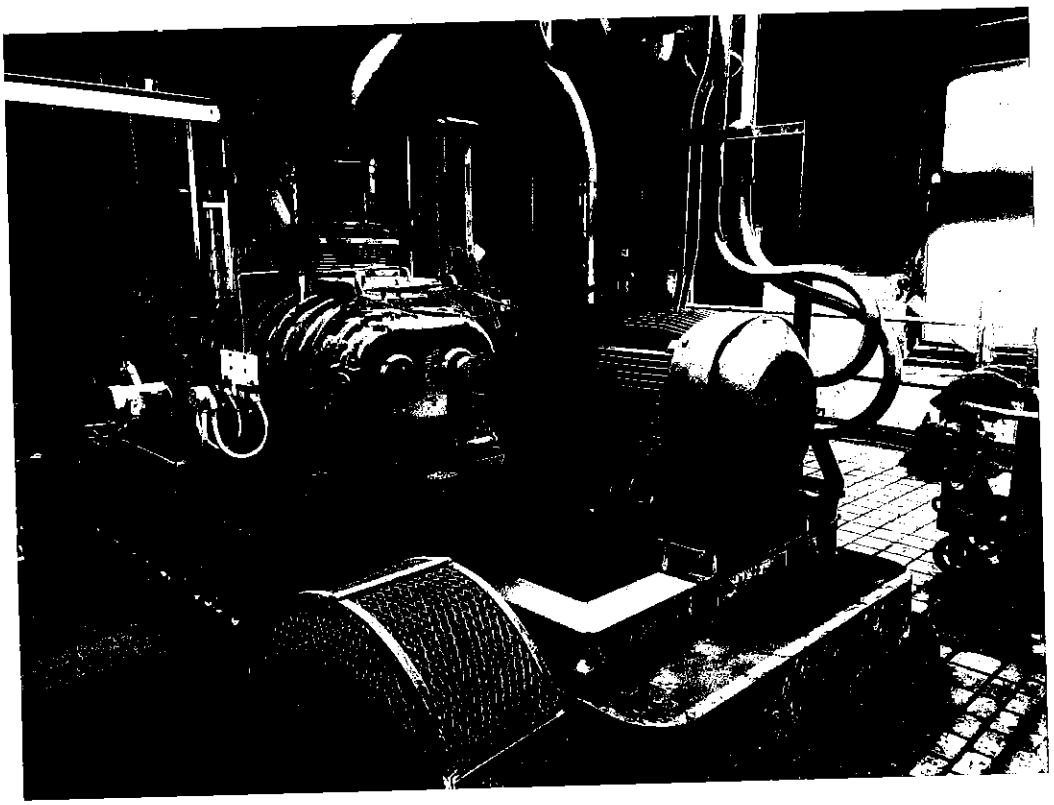


Erie Coke
Source 905 Tar Storage Tank
Picture Taken for reference by Dan Brophy
11 Sept 2018

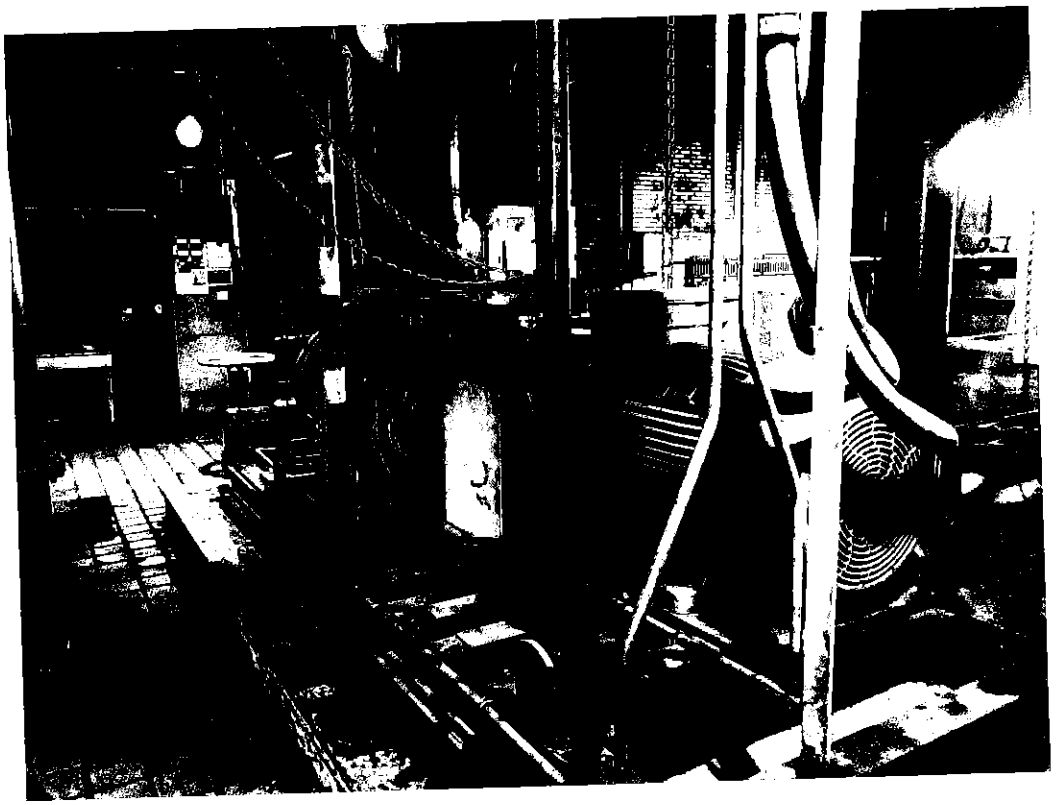
PI



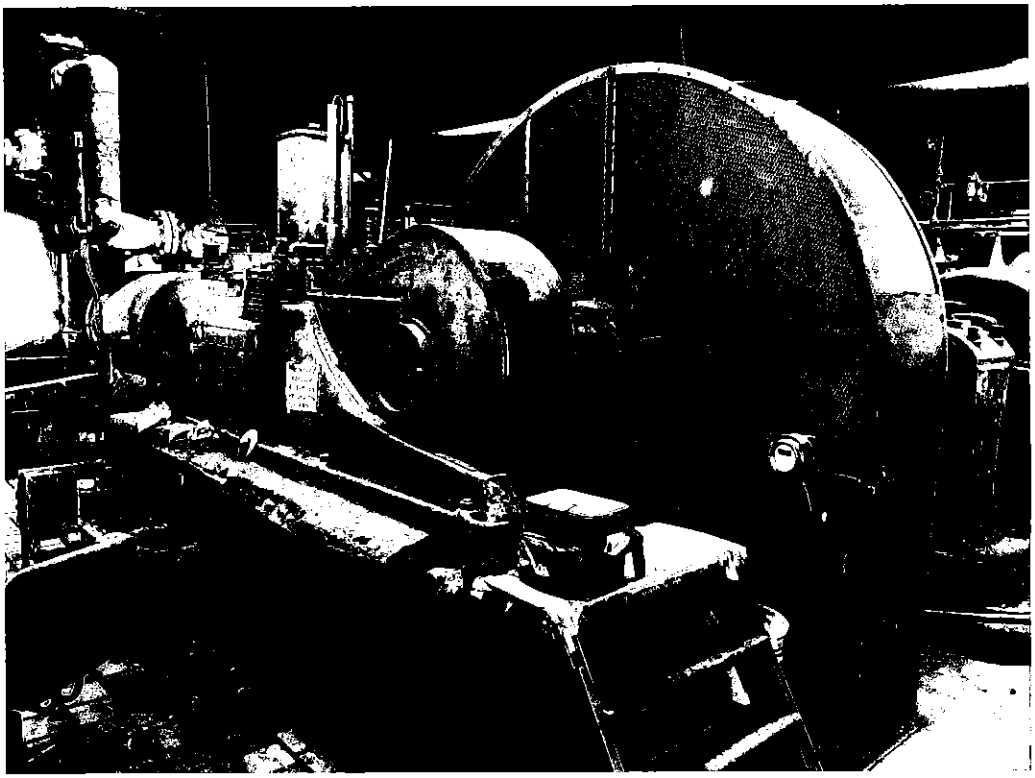
Erie Coke
Source 904 Weak Liquor Circulation Tank
Picture taken for reference by Dan Brophy
11 Sept 2018



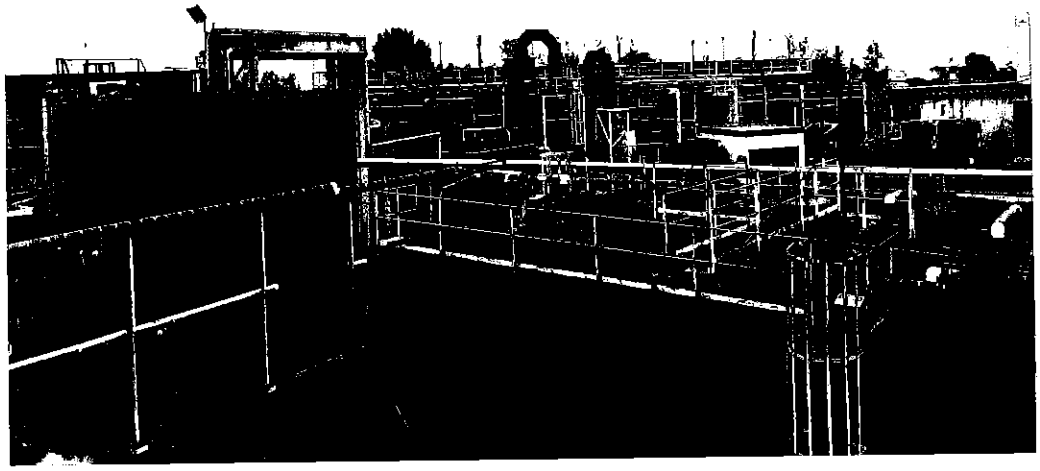
Erie Coke
Source 905 Exhausters (1) Electric
Picture taken for reference by Dan Brophy
11 Sept 2018



Erie Coke
Source 905 Exhausters (2) Electric
Picture taken for reference by Dan Bagley
11 Sept 2018



Erie coke
Source 905 Exhausters (3) steam
Picture taken for reference by Dan Brophy
11 Sept 2018



Erie Coke
Source 907 BET Wastewater Treatment Plant (in the distance)
Picture taken for reference by Dan Bagley
11 Sept 2018

PennState
College of Engineering

FACILITIES
ENGINEERING
INSTITUTE

This certifies that

Justin Kebort

has successfully completed the

Visible Emissions Evaluation

in the methods of measurement of visible emissions from stationary sources as specified by Federal Reference Methods 9, 22, and 203 A, B, and C*

**Provided individual attended a classroom training session at any date prior to this certification.*

Certification valid

From: ***April 24, 2018*** **To:** ***October 24, 2018***

Penn State Behrend, Erie, PA

Michael Fisher
Visual Opacity Instructor

William D. Lash, P.E.
Education Program Manager

Attachment Q

Q-1

PennState
College of Engineering

FACILITIES
ENGINEERING
INSTITUTE

This certifies that

Dave Stablein

has successfully completed the

Visible Emissions Evaluation

in the methods of measurement of visible emissions from stationary sources as specified by Federal Reference Methods 9, 22, and 203 A, B, and C*

**Provided individual attended a classroom training session at any date prior to this certification.*

Certification valid

From: ***April 24, 2018*** **To:** ***October 24, 2018***

Penn State Behrend, Erie, PA

Michael Fisher
Visual Opacity Instructor

William D. Lash, P.E.
Education Program Manager

22

PennState
College of Engineering

FACILITIES
ENGINEERING
INSTITUTE

This certifies that

John Nelson

has successfully completed the

Visible Emissions Evaluation

in the methods of measurement of visible emissions from stationary sources as specified by Federal Reference Methods 9, 22, and 203 A, B, and C*

**Provided individual attended a classroom training session at any date prior to this certification.*

Certification valid

From: ***April 24, 2018*** **To:** ***October 24, 2018***

Penn State Behrend, Erie, PA

Michael Fisher
Visual Opacity Instructor

William D. Lash, P.E.
Education Program Manager

53

PennState
College of Engineering

FACILITIES
ENGINEERING
INSTITUTE

This certifies that

Joshua Granger

has successfully completed the

Visible Emissions Evaluation

in the methods of measurement of visible emissions from stationary sources as specified by Federal Reference Methods 9, 22, and 203 A, B, and C*

*Provided individual attended a classroom training session at any date prior to this certification.

Certification valid

From: 4/24/2018 **To: 10/24/2018**

Erie, PA

Michael Fisher
Visual Opacity Instructor

William D. Lash, P.E.
Education Program Manager

Q4

Attachment R

Erie Coke Corporation
Quench Tower Rinse Cycle

NOTE: We are not required to rinse the baffles if the ambient temperature is below 30 degrees fahrenheit during the 24-hour period. If the temperature rises above 30 degrees fahrenheit during the period the rinse cycle must be completed.

Date 2016 January	Time	Provide signature If rinse cycle is completed	Initial and record temperature If it is below 30 degrees		
			12:00 am - 8:00 am	8:00 am - 4:00 pm	4:00 pm - 12:00 am
1				JN 13°	
2				JN 18°	
3				JN 20°	
4				JN 21°	
5				JN 10°	
6					
7					
8	10:30	John Nelson			
9	11:00	John Nelson			
10	9:30	John Nelson			
11	11 am	John Nelson			
12	9:00	John Nelson			
13					
14					
15				JN 28°	
16				JN 25°	
17				JN 18°	
18				JN 27°	
19	10:00	John Nelson			
20					
21					
22	9:30	John Nelson			
23	9:00	John Nelson			
24				JN 28°	
25				JN 28°	
26	9:30	John Nelson			
27					
28					
29	9:00	John Nelson			
30				JN 24°	
31	9:45	John Nelson			

R1

Erie Coke Corporation
Quench Tower Rinse Cycle

NOTE: We are not required to rinse the baffles if the ambient temperature is below 30 degrees fahrenheit during the 24-hour period. If the temperature rises above 30 degrees fahrenheit during the period the rinse cycle must be completed.

Date 2018 February	Time	Provide Signature If rinse cycle is completed	Initial and record temperature If it is below 30 degrees		
			12:00 am - 8:00 am	8:00 am - 4:00 pm	4:00 pm - 12:00 am
1					
2				JN 20°	
3					
4					
5				JN 22°	
6				JN 25°	
7				JN 20°	
8				JN 20°	
9	930	John Nelson			
10					
11					
12				JN 26°	
13					
14	900	John Nelson			
15	830	John Nelson			
16	930	John Nelson			
17					
18					
19	930	John Nelson			
20	920	John Nelson			
21	900	John Nelson			
22	930	John Nelson			
23	900	John Nelson			
24					
25					
26	900	John Nelson			
27	830	John Nelson			
28	900	John Nelson			
29					
30					
31					

R2

Erie Coke Corporation
Quench Tower Rinse Cycle

NOTE: We are not required to rinse the baffles if the ambient temperature is below 30 degrees fahrenheit during the 24-hour period. If the temperature rises above 30 degrees fahrenheit during the period the rinse cycle must be completed.

Date March 2019	Time	Provide signature If rinse cycle is completed	Initial and record temperature If it is below 30 degrees		
			12:00 am - 8:00 am	8:00 am - 4:00 pm	4:00 pm - 12:00 am
1	900	Josh Nelson			
2	930	Josh Nelson			
3					
4					
5	10 00	Josh Nel			
6	930	Josh Nel			
7	750	Josh Nelson			
8	5 [illegible]	Josh Nelson			
9	1030	Josh Nelson			
10					
11					
12	1030	Josh Nelson			
13	[illegible]	Josh Nelson			
14	11 [illegible]	Josh Nelson			
15	11 [illegible]	Josh Nelson			
16				27° JN	
17					
18					
19	11 [illegible]	Josh Nelson			
20	1030	Josh Nelson			
21	1030	Josh Nelson			
22	11 [illegible]	Josh Nelson			
23	11 [illegible]	Josh Nelson			
24					
25					
26	1000	Josh Nelson			
27	920	Josh Nel			
28	1000	Josh Nelson			
29	1100	Josh Nelson			
30	1030	Josh Nelson			
31					

R3

Erie Coke Corporation
Quench Tower Rinse Cycle

NOTE: We are not required to rinse the baffles if the ambient temperature is below 30 degrees fahrenheit during the 24-hour period. If the temperature rises above 30 degrees fahrenheit during the period the rinse cycle must be completed.

Date April	Time	Provide signature If rinse cycle is completed	Initial and record temperature If it is below 30 degrees		
			12:00 am - 8:00 am	8:00 am - 4:00 pm	4:00 pm - 12:00 am
1					
2	930	Josh Nelson			
3	600	Josh Nelson			
4	1030	Josh Nelson			
5	730	Josh Nelson			
6	200	Josh Nelson			
7					
8					
9	800	Josh Nelson			
10	730	Josh Nelson			
11	830	Josh Nelson			
12	730	Josh Nelson			
13	1000	Josh Nelson			
14					
15					
16	800	Josh Nelson			
17	745	Josh Nelson			
18	730	Josh Nelson			
19	800	Josh Nelson			
20	915	Josh Nelson			
21					
22					
23	730	Josh Nelson			
24	730	Josh Nelson			
25	745	Josh Nelson			
26	830	Josh Nelson			
27	900	Josh Nelson			
28					
29					
30					
31					

R4

Erie Coke Corporation
Quench Tower Rinse Cycle

NOTE: We are not required to rinse the baffles if the ambient temperature is below 30 degrees fahrenheit during the 24 hour period. If the temperature rises above 30 degrees fahrenheit during the period the rinse cycle must be completed.

Date 2018 MAY	Time	Provide signature if rinse cycle is completed	Initial and record temperature if it is below 30 degrees		
			12:00 am - 8:00 am	8:00 am - 4:00 pm	4:00 pm - 12:00 am
1	0745	J. Nelson			
2	0740	J. Nelson			
3	0730	J. Nelson			
4	0730	J. Nelson			
5					
6					
7	0730	J. Nelson			
8	0750	J. Nelson			
9	0745	J. Nelson			
10	0730	J. Nelson			
11	0800	J. Nelson			
12					
13					
14	0730	J. Nelson			
15	0745	J. Nelson			
16	0800	J. Nelson			
17	0730	J. Nelson			
18	0745	J. Nelson			
19					
20					
21	0800	J. Nelson			
22	0800	J. Nelson			
23	0730	J. Nelson			
24	0730	J. Nelson			
25	0745	J. Nelson			
26					
27 F					
28	0730	J. Nelson			
29	0745	J. Nelson			
30 M	0745	J. Nelson			
31	0800	J. Nelson			

R5

Erie Coke Corporation
Quench Tower Rinse Cycle

NOTE: We are not required to rinse the baffles if the ambient temperature is below 30 degrees fahrenheit during the 24-hour period. If the temperature rises above 30 degrees fahrenheit during the period the rinse cycle must be completed.

2018 JUNE	Time	Provide signature If rinse cycle is completed	Initial and record temperature If it is below 30 degrees		
			12:00 am - 8:00 am	8:00 am - 4:00 pm	4:00 pm - 12:00 am
1	0920	J. Nelson			
2					
3					
4	0715	J. Nelson			
5	0720	J. Nelson			
6	0800	J. Nelson			
7	0745	J. Nelson			
8	0720	J. Nelson			
9					
10					
11	0810	J. Nelson			
12	0750	J. Nelson			
13	0730	J. Nelson			
14	0720	J. Nelson			
15	0745	J. Nelson			
16					
17					
18	0740	J. Nel			
19	0800	J. Nelson			
20	0750	J. Nelson			
21	0720	J. Nelson			
22	0720	J. Nelson			
23					
24					
25	0746	J. Nel			
26	0800	J. Nelson			
27	0750	J. Nelson			
28	0720	J. Nel			
29	830	J. Nelson			
30					
31					

R6

Erie Coke Corporation
Quench Tower Rinse Cycle

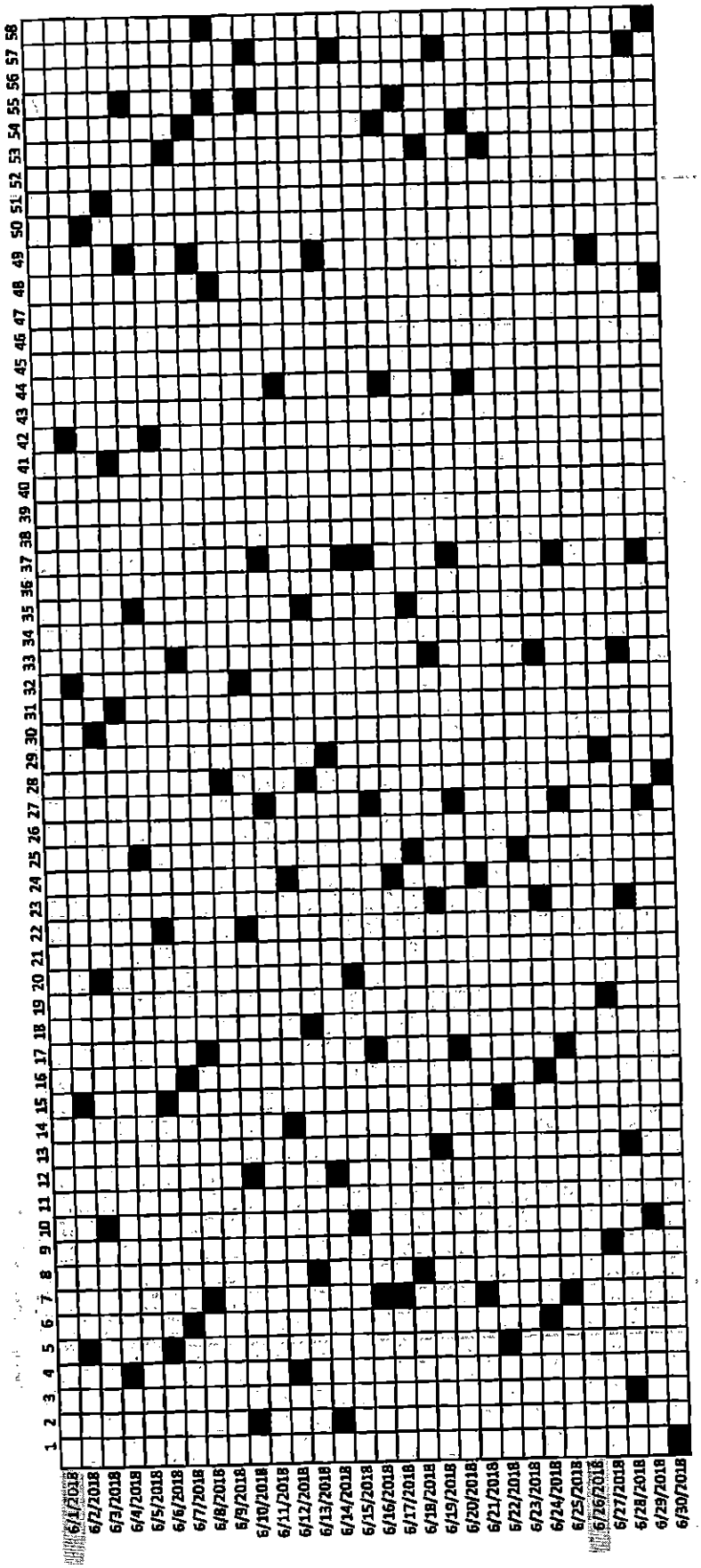
NOTE: We are not required to rinse the baffles if the ambient temperature is below 30 degrees fahrenheit during the 24-hour period. If the temperature rises above 30 degrees fahrenheit during the period the rinse cycle must be completed.

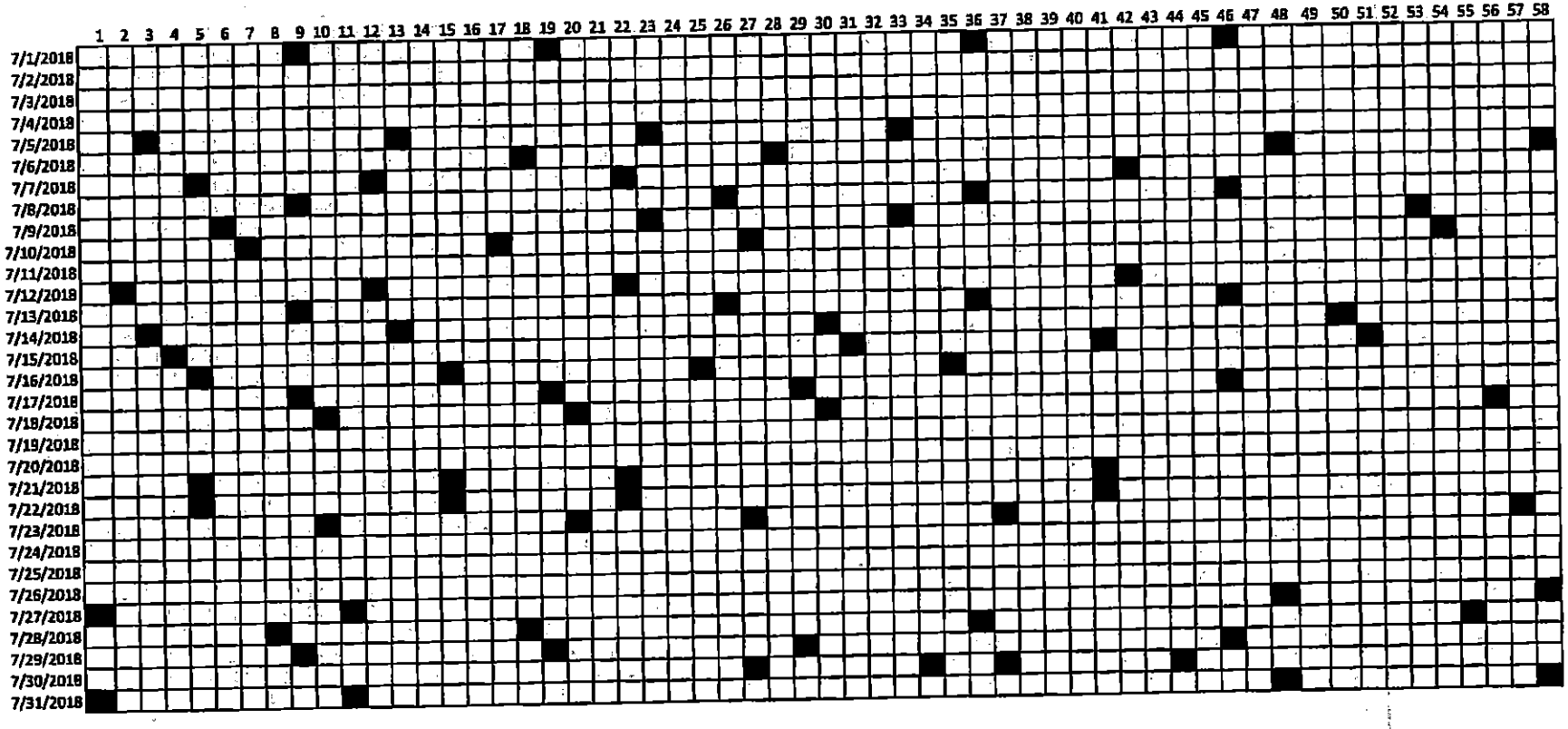
Date 2018 July	Time	Provide Signature if rinse cycle is completed	Initial and record temperature if it is below 30 degrees		
			12:00 am - 8:00 am	8:00 am - 4:00 pm	4:00 pm - 12:00 am
1					
2	0745	J Nelson			
3	0800	J Nelson			
4					
5					
6					
7					
8					
9	0730	J. Nelson			
10	0710	J Nelson			
11	0820	J Nelson			
12	0745	J. Nelson			
13	0730	J Nelson			
14					
15					
16	0745	J. Nelson			
17	0730	J. Nelson			
18	0740	J. Nelson			
19	0745	J. Nelson			
20	0730	J. Nelson			
21					
22					
23	0725	J Nelson			
24	0730	J Nelson			
25	0745	J Nelson			
26	0730	J Nelson			
27	0720	J Nelson			
28					
29					
30	0730	J Nelson			
31	0750	J. Nelson			

R7

Method 9 completed these days

Attachment 5




1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58
7/1/2018
7/2/2018
7/3/2018
7/4/2018
7/5/2018
7/6/2018
7/7/2018
7/8/2018
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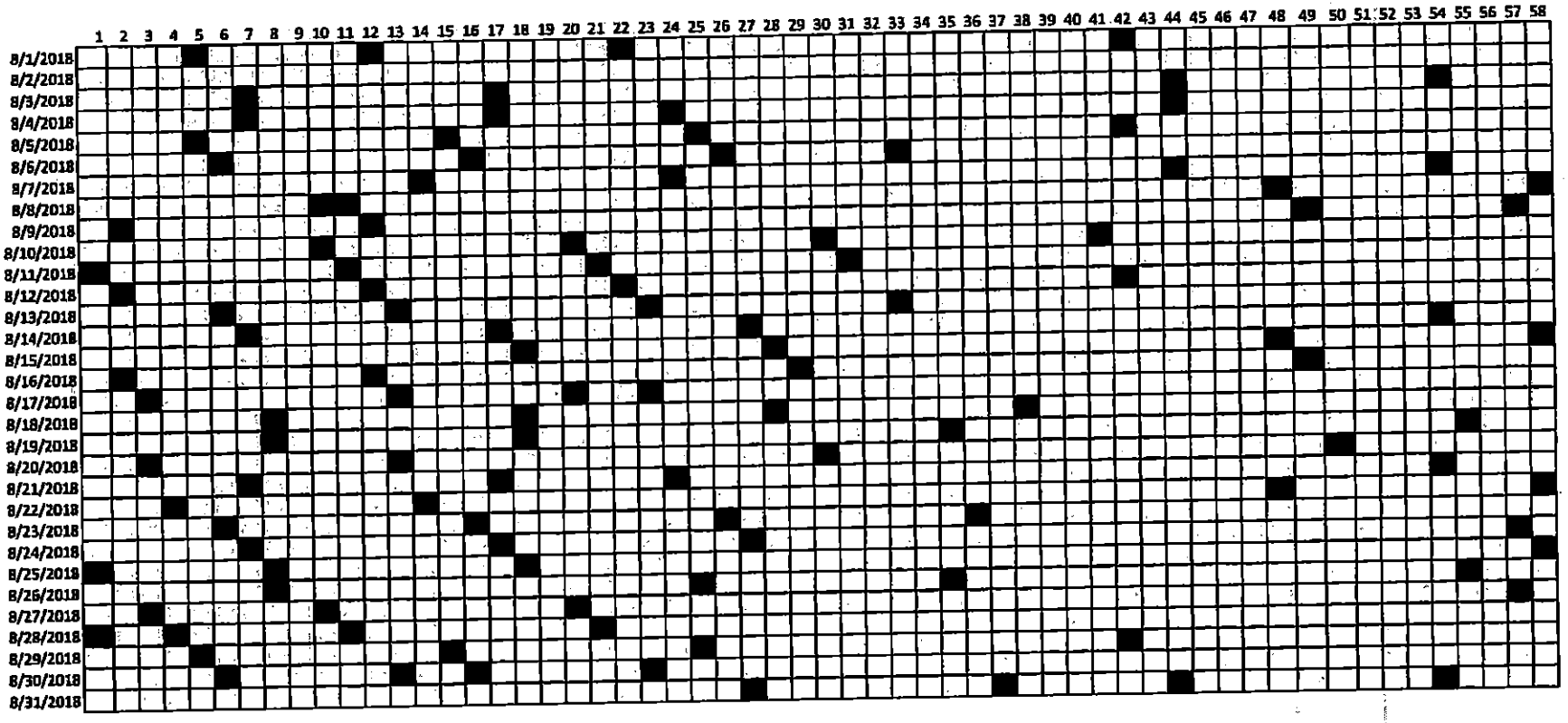
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58
8/1/2018
8/2/2018
8/3/2018
8/4/2018
8/5/2018
8/6/2018
8/7/2018
8/8/2018
8/9/2018
8/10/2018
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8/12/2018
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8/27/2018
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8/29/2018
8/30/2018
8/31/2018

ERIE COKE CORPORATION
BOX 6180
ERIE, PENNSYLVANIA 16512-6180

Erie Coke Corporation
P.O. Box 6180
East Bay Drive
Erie, PA 16512-6180

Attachment X

August 29, 2018

To: Mr. William Schneider

From: E. Musara

Re: Monthly LDAR Monitoring Report – August 2018

The following report represents the results for the August 2018 LDAR Monthly Report monitoring period, which was performed on August 27, 2018.

Monthly Control System Monitoring – AUGUST 2018

Citation	*Affected Components*	*Leak Definition (ppm-v)*	*Number of Components Screened*	*Number of Leaking Components*	*Leaking Component Identification Number(s)*
61.132(b)	Valves	500	**80**	**0**	**0**
61.132(b)	Control System Connections and Seals	500	**425**	**1**	**395**
61.135(d)	Exhausters	500	**3**	**0**	**0**
		Total Components	**508**	**0**	**0**

RESULTS

The total component count takes into account the number of components added, removed, or re-instated from each category. Any component point additions, removals, re-instatement of points, or corrections (redundant) points appear in the above table and listed the Program Changes Table. The documented drawings (Appendix C, D) and the survey data list (Appendix A) categorizing the components also reflect any changes. This is to ensure that the protocol in improving component categorization and equipment clarity is followed.

X

Mr. Musara has been trained to operate the monitoring equipment (Toxic Vapor Analyzer-1000, TVA
Mr. Musara performed the physical monitoring on August 27th, 2018.

PROGRAM CHANGES TABLE
Component Points Added, Removed or Revised

Drawing ID	***Dwg. Rev.***	***Component Points(s) Comments, Revisions***
Figure 1	L	No changes made to Component Points
Figure 2	O	Added 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837 Removed 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746
Figure 3	R	No changes
Figure 4	M	No changes made to Component Points
Figure 5	S	Added Component Points 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823 Removed 117, 114, 518
Figure 6	-	Eliminated
Figure 7	C	No changes made to Component Points
Figure 8	C	Out of Service (on stand-by)

X

Attached are the following tables and appendices:

TABLE 1 -	Summary of Surveyed Data with component identifications & monitored results (attached as pdf & hardcopy attached to report)
TABLE 2 -	Calibration Summary
APPENDIX A -	USEPA Method 21 Calibration Data Sheet(s) for TVA unit (Attached as pdf & hardcopy attached to report)
APPENDIX B -	Certificate of Analysis for Span & Zero Gas (Attached as pdf & hardcopy attached to report)
APPENDIX C -	LDAR Monitoring Drawings List
APPENDIX D -	LDAR Drawings (Identified as Figures) (Attached as pdf & hardcopy attached to report)
APPENDIX E -	TVA-1000 Data Logger Information (Attached as pdf & hardcopy attached to report)

Note: Appendix A, B, D, & E are both a pdf and hardcopy attachments

Enc. (Monitoring Data, Drawings, Method 21 Calibration, Gas Analysis, Data Logger)

Cc: Engineering File

ERIE COKE CORPORATION
2018 MONTHLY LDAR AUGUST REPORT

TABLE 1
SUMMARY OF SURVEY DATA

Refer to attached hardcopy spreadsheet

Table 1 Monthly - August 2018.xlsx

TABLE 2
CALIBRATION SUMMARY

		Pretest Calibration		Post Test Drift Check				
Engineer or Technician	Instrument Serial Number	Certified Span Gas Concentration	Average Zero	Average Span Gas Concentration	Average % Difference	Zero	Span	Drift
8/27/2018	101934312	502	0.30	501	0.00	0.37	1500	-199.40

Average Percent Difference:
The average percent difference between each individual measured span values and the certified reference gas valve is as follows.
% Difference = [(measured value – reference value) ÷ reference value] x 100
Data to be recorded.

Drift Formula:
At the conclusion of each day the drift shall be determined and recorded.
Drift = [(initial calibration valve – post-test span value) ÷ initial calibration value] x 100

ERIE COKE CORPORATION
2018 MONTHLY LDAR – AUGUST REPORT

APPENDIX A
USEPA METHOD 21 CALIBRATION DATA SHEETS

Also refer to attached .pdf file or attached hardcopy

August 2018
ECC.pdf

APPENDIX B
CERTIFICATE OF ANALYSIS FOR SPAN GAS

Refer to attached file via email or attached hardcopy

Gas-Span, Certif
32-400841801-1.pdf

Span Gas – Certificate of Analysis

Gas-Zero, Certif
32-400659795-1.pdf

Zero Gas – Certificate of Analysis

APPENDIX C
LDAR MONITORING DRAWINGS LIST

No.	Drawing. No.	Description
1	Figure 1, Rev L	Tar Storage Tank LDAR Component Point Locations
2	Figure 2, Rev O	Flushing Liquor Tank LDAR Component Point Locations
3	Figure 3, Rev Q	Hot Drip Tank Connections LDAR Component Point Locations
4	Figure 4, Rev M	Vessel T33 Tar Dehydrator LDAR Component Point Locations
5	Figure 5, Rev S	East & West Tar Decanter LDAR Component Point Locations
7	Figure 7, Rev C	Exhausters 1, 2, 3 LDAR Component Point Locations
8	Figure 8, Rev C	Vessel T3 - Tar Dehydrator LDAR Component Points

Note: Figure 6 has been merged with Figure 5; therefore Figure 6 has been eliminated.

Note: The Tar Storage Tank (Figure 1) was brought back into service. Vessel T3-Figure 8 has been removed from service and is presently decommissioned until it is needed again.

APPENDIX D
LDAR DRAWINGS

Refer to attached .pdf file or attached hardcopies


Figure 1, Rev L.pdf


Figure 2, Rev O.pdf


Figure 3, Rev Q.pdf


Figure 4, Rev M.pdf


Figure 5, Rev S.pdf


Figure 7, Rev C.pdf

APPENDIX E
TVA-1000 DATA LOGGER INFORMATION

Refer to attached .pdf file or attached hardcopies


logged data.txt

ERIE COKE CORPORATION
BOX 6180
ERIE, PENNSYLVANIA 16512-6180

LDAR Component Leak Notification

This section of the form is to notify department personnel of a Leaking Component Point and the data surrounding the point.

Submitted To	William Schreiber
Submitted By (Inspectors)	Edmond musaka
Date Submitted	08-27-2018

Description of Component Point on DOR List					
Date of Leak	**Plant Location/Dept.**	**Component Point #**	**Description**	**Reading/Bkgd**	**Dwg. No.**
08-27-18	W/Decanter	395	Cable Pulley	526/5	5

LDAR Leak Repair Notification

This section of the form represents the method used to repair the Component Point Leak identified.

Submitted By (Inspectors)		**Component Point**	
Verification of Repair		**Date of Leak**	

Initial Monitoring Leak Reading (Reading/Background/Date)	
First Attempt at Repair	08-27-2018
Monitoring Leak Reading – within 5 day repair period (Reading/Background/Date/Time)	412/10 08-27-2018
Monitoring Leak Reading – Follow up Within 30 days of repair (Reading/Background/Date/Time)	
Monitoring Leak Reading – Follow up Within 60 days of repair (Reading/Background/Date/Time)	

Description of Repair to Eliminate the Leak

8/27 - BP OPERATOR USED RUBBER and Calking to Repair

Created:	1/2017	Revisions:	

ERIE COKE CORPORATION
BOX 6180
ERIE, PENNSYLVANIA 16512-6180

USEPA Method 21 Calibration Data

Test Location: Tonawanda Coke
Analyzer Make & Model: TVA-1000
Date: 8/27/2018
Analyzer S/N: 1019343120

	Zero Air	Span Gas (Methane in Air)
Manufacturer/Source	AIRGAS	AIR GAS
Cylinder ID	AI CZ90 A	X02 AI99C 80 1428
Expiration Date	N/A	01-17-2025
Concentration (ppm-v)	<10	502

- **Pre-test Inspection**

Hydrogen Fuel Tank Pressure (psig)	1500
Hydrogen Supply Pressure (psig)	12
Battery OK? (Y/N)	7.8 (Y)

- **Pre-test Calibration**

Run	1	2	3	Average
Zero Gas Reading (ppm-v)	0.33	0.21	0.37	0.3
Span Gas Reading (ppm-v)/Response Time in sec. (Hand Probe)	503	503	497	501
% Diff. from cylinder ppm-v	0.4	0.4	-0.8	0
Span Gas Reading (ppm-v)/Response Time in sec. (Short Lance)	4	4	4	4
Span Gas Reading (ppm-v)/Response Time in sec. (Long Lance)	7	8	8	8.67

Average span gas reading (calibration precision) must be ≤ 10% of the certified value. (I.e. 10% of 500 ppm = 450 ppm)
Response time is the time lapse from connecting the span gas, to the reading reaches 90% of the span concentration.
Upscale Response Time must be ≤ 30 seconds

[redacted]

Performed by: EDMOND MUSARA Date and Time: 8/27/2018 0807

- **Post-test Calibration Check**

Zero gas reading (ppm-v)	0.37
Span gas reading (ppm-v)	1500
Drift (%)	-199.4

Average Percent Difference: % Difference = [(measured value – reference value) ÷ reference value] x 100
Drift Formula: Drift = [(initial calibration valve – post-test span value) ÷ initial calibration value] x 100

Performed by: E. Musara Date and Time: 8/27/2018 11:49

Comments/Notes: LDAR Monthly Report

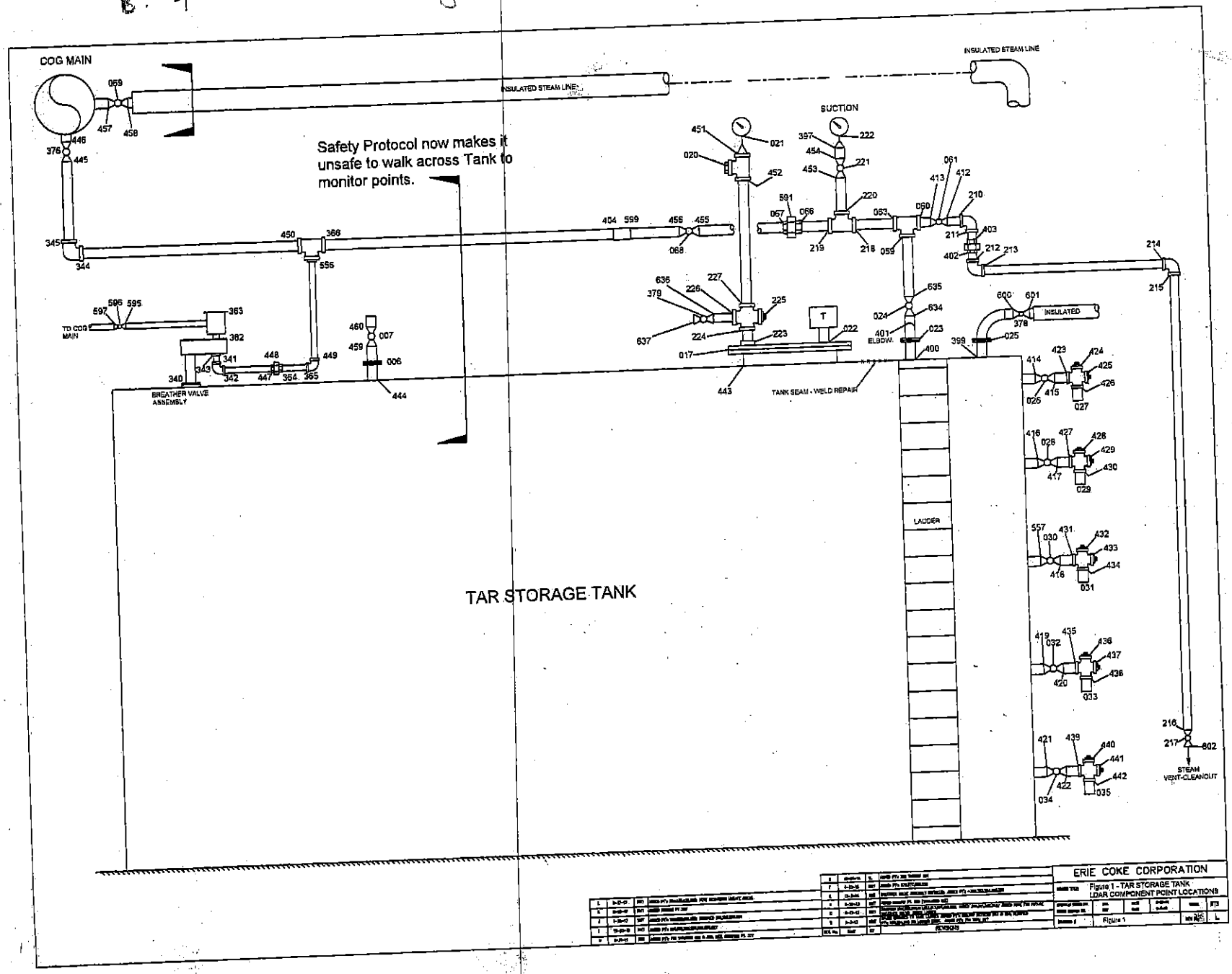
On 8/27/2018, I reviewed the monitoring data that I collected today and to the best of my knowledge and belief, the data accurately represent the monitoring that I performed today.

Signed _____

Revised 022117; 080817; 121517

X

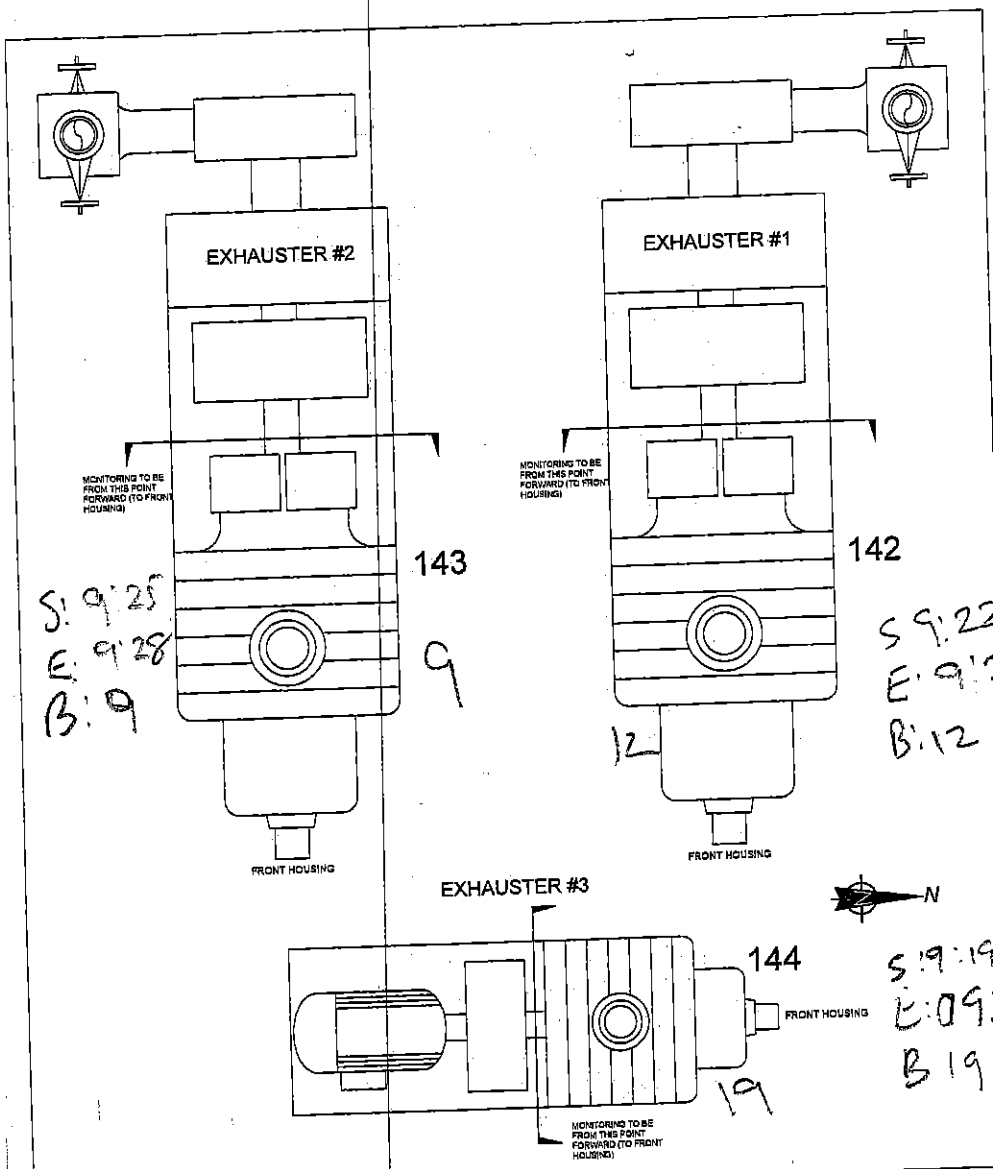
8/27/2018 S: 9:20 E: B: 7 S: 11:04 E: 11:17 B:



S 9:17 : 9/27/2018
E:
B: 19

S: 10:35
E: 10:38

S 10:41



S: 9:25
E: 9:28
B: 9

9

S 9:22
E 9:25
B: 12

12

S: 9:19
E: 09:22
B 19

19

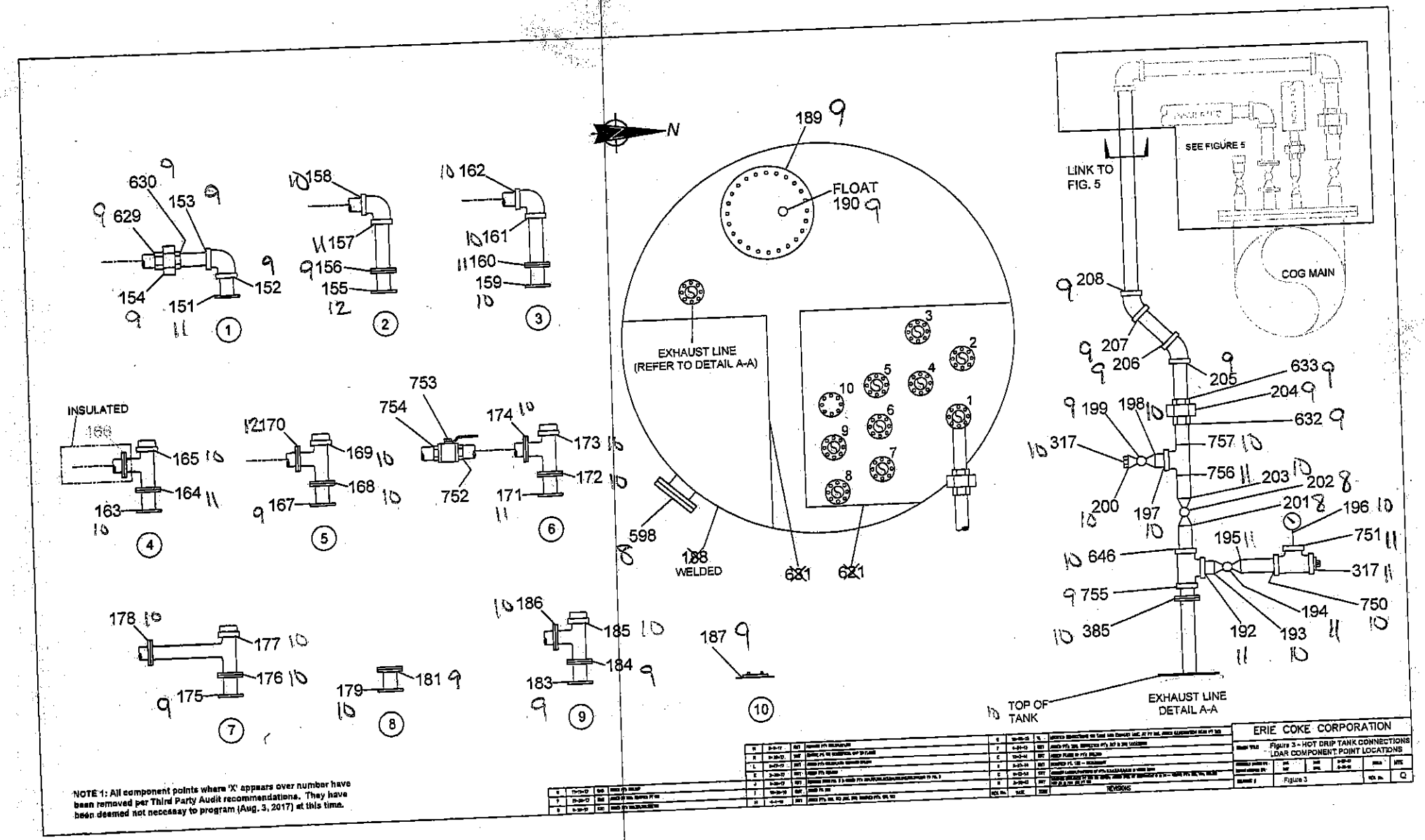
REV. No.	DATE	BY	REVISIONS
C	8-8-17	KMT	ADDED NOTE & SPECIFIED AREA FOR MONITORING
B	9-12-13	KMT	IMPROVED IMAGE OF EXHAUSTER 1,2; ADDED PT #'s 142,143,144

ERIE COKE CORPORATION

DRAWN TITLE:	EXHAUSTERS				
DRAWN MODIFIED BY:	KMT	DATE:	3-15-13	SCALE:	NTS
DRAWING #:	Figure 7			REV. No.	C

X

8/27/2018 S: 10:11
E: 10:32
B: 8



NOTE 1: All component points where 'X' appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessay to program (Aug. 3, 2017) at this time.

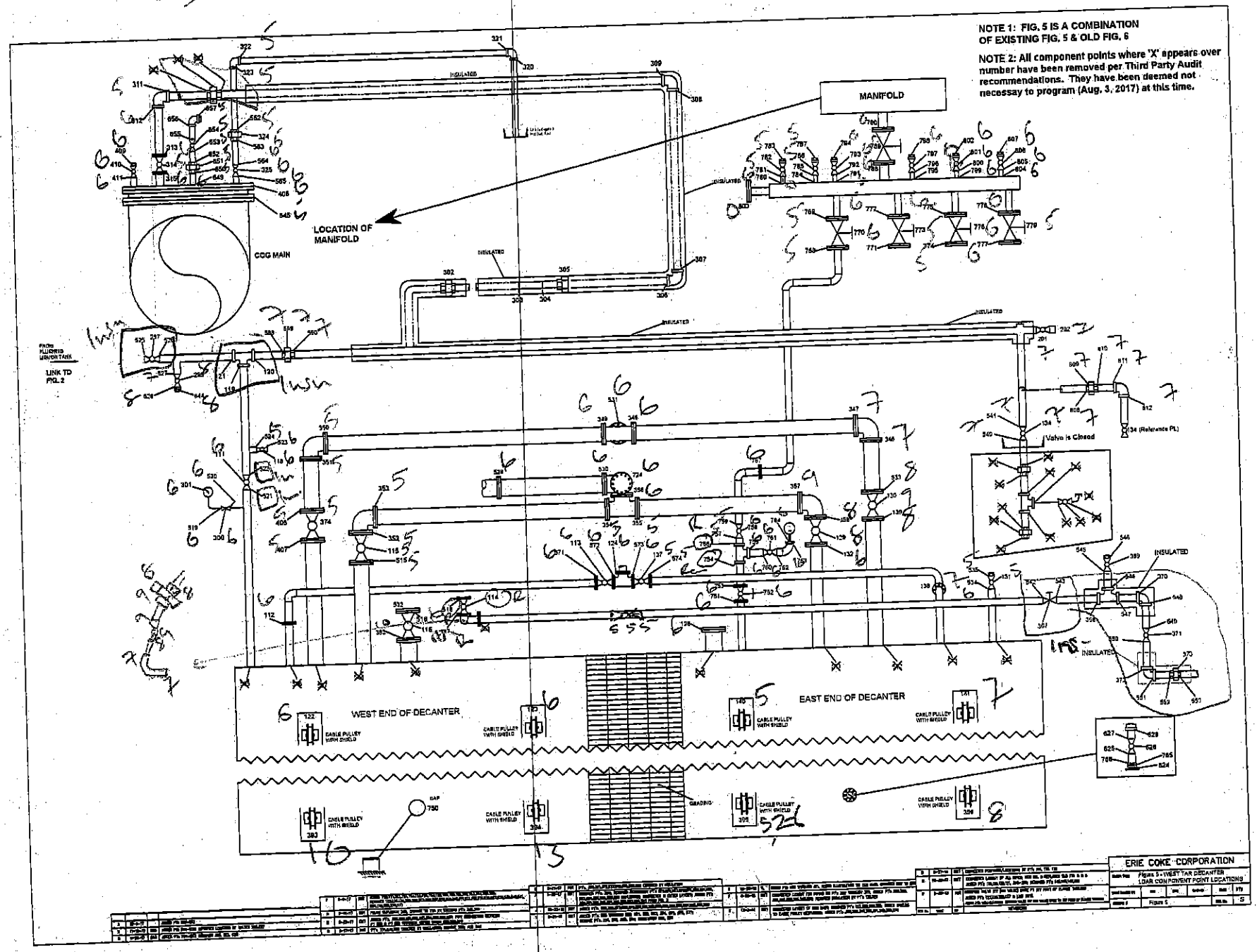
REVISIONS

ERIE COKE CORPORATION

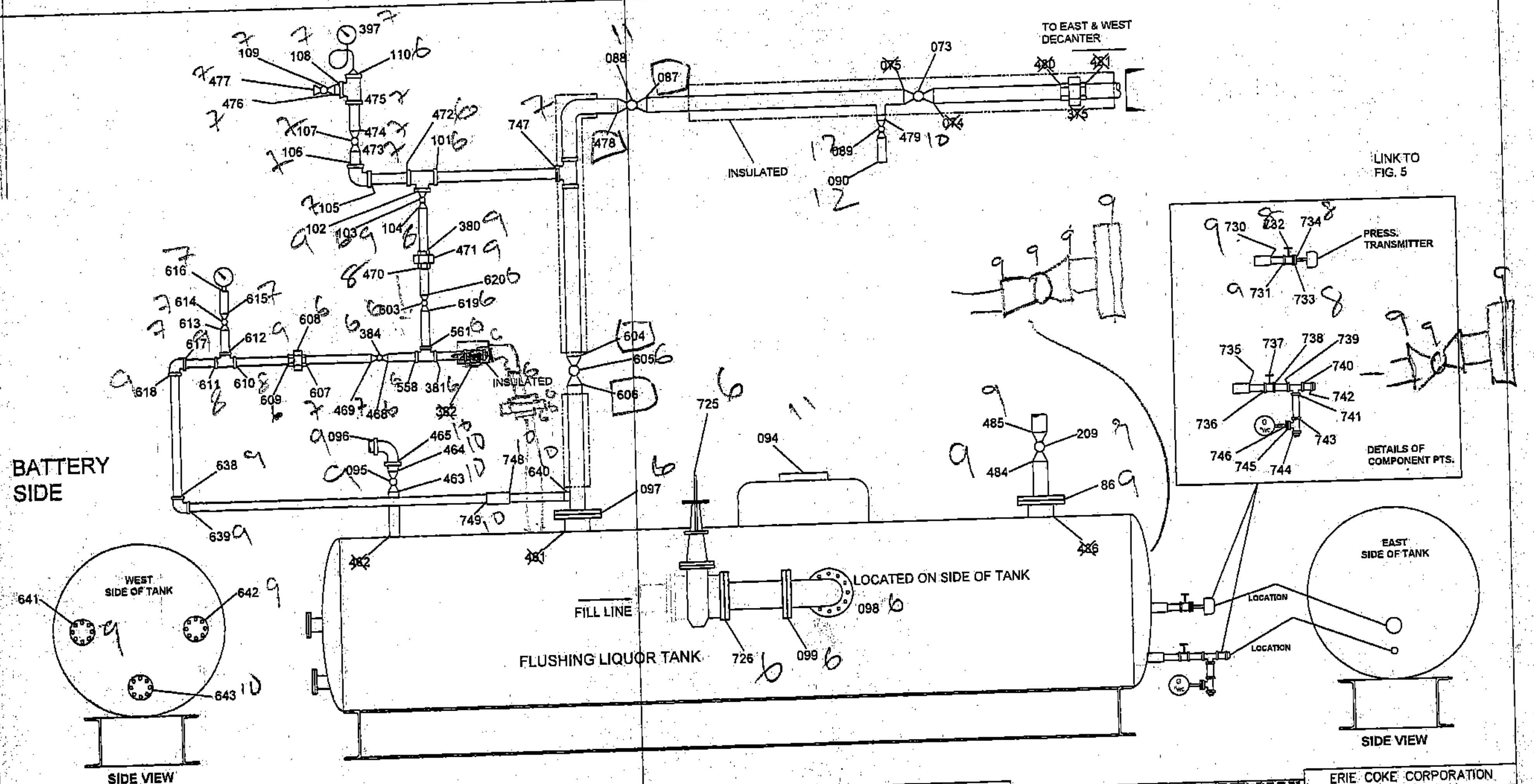
Figure 3 - HOT DRIP TANK CONNECTIONS
LIDAR COMPONENT POINT LOCATIONS

Figure 3

8/27/2018 S 8:12 PM
E: 8:50 AM
B: 5



8/27/2018 E 9:15 B 6



NOTE 1: All component points where 'X' appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessasy to program (Aug. 3, 2017) at this time.

REVISIONS

ERIE COKE CORPORATION

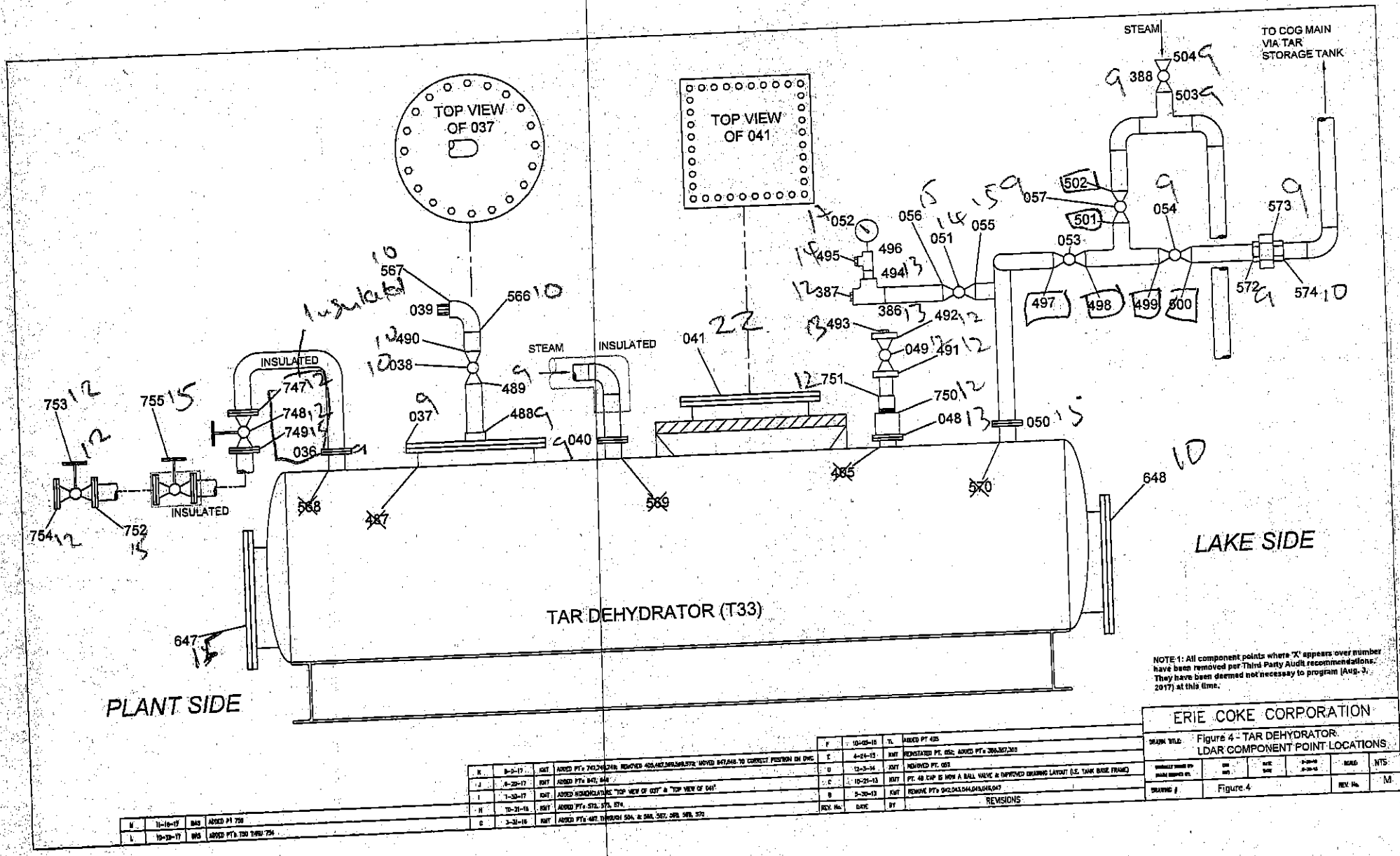
Figure 2 - FLUSHING LIQUOR TANK LDAR COMPONENT POINT LOCATIONS

Figure 2

NTS

O

8/27/2018 S: 9:45
E: 10:07
B 14



NOTE 1: All component points where 'X' appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessary to program (Aug. 3, 2017) at this time.

ERIE COKE CORPORATION			
DRAWN TITLE:	Figure 4 - TAR DEHYDRATOR LDAR COMPONENT POINT LOCATIONS		
DRAWING #	Figure 4	SCALE:	NTS
		REV. No.	M

REV. No.	DATE	BY	REVISIONS
F	10-05-16	TL	ADDED PT 625
E	6-24-15	KMT	REINSTATED PT. 652; ADDED PT's 356,357,358
D	12-3-14	KMT	REMOVED PT. 057
C	10-23-13	KMT	PT. 48 CAP IS NOW A BALL VALVE & IMPROVED DRAWING LAYOUT (I.E. TANK BASE FRAME)
B	5-30-13	KMT	REMOVE PT's 042,043,044,045,046,047

N	8-3-17	KMT	ADDED PT's 747,748,749; REMOVED 485,487,569,568,570; MOVED 647,648 TO CORRECT POSITION ON DWG.
M	6-29-17	KMT	ADDED PT's 647, 648
L	1-30-17	KMT	ADDED NOMENCLATURE "TOP VIEW OF 037" & "TOP VIEW OF 041"
K	10-31-16	KMT	ADDED PT's 572, 573, 574,
J	3-31-16	KMT	ADDED PT's 487, THROUGH 504, & 568, 567, 569, 570
M	11-16-17	BAS	ADDED PT 750
L	10-23-17	BAS	ADDED PT's 750 THRU 754

X

ERIE COKE CORPORATION
BOX 8180
ERIE, PENNSYLVANIA 16512 - 8180

USEPA Method 21 Calibration Data

Test Location: Tonawanda Coke Date: 8/27/2018
Analyzer Make & Model: TVA-1000 Analyzer S/N: 1019343120

	Zero Air	Span Gas (Methane in Air)
Manufacturer/Source	AIRGAS	AIRGAS
Cylinder ID	AICZ80A	X02AJ99C801428
Expiration Date	N/A	01-17-2025
Concentration (ppm-v)	<10	502

- **Pre-test Inspection**

Hydrogen Fuel Tank Pressure (psig)	1500
Hydrogen Supply Pressure (psig)	12
Battery OK? (Y/N)	7.8 (Y)

- **Pre-test Calibration**

Run	1	2	3	Average
Zero Gas Reading (ppm-v)	0.33	0.21	0.37	0.3
Span Gas Reading (ppm-v)/Response Time in sec. (Hand Probe)	503	503	497	501
% Diff. from cylinder ppm-v	+0.4	0.4	-0.8	0
Span Gas Reading (ppm-v)/Response Time in sec. (Short Lance)	4	4	4	4
Span Gas Reading (ppm-v)/Response Time in sec. (Long Lance)	7	8	8	8.67

Average span gas reading (calibration precision) must be ≤ 10% of the certified value. (I.e. 10% of 500 ppm = 450 ppm)
Response time is the time lapse from connecting the span gas, to the reading reaches 90% of the span concentration. Upscale Response Time must be ≤ 30 seconds

Performed by: EDMOND MUSARA Date and Time: 8/27/2018 0807

- **Post-test Calibration Check**

Zero gas reading (ppm-v)	0.37
Span gas reading (ppm-v)	1500
Drift (%)	-199.4

Average Percent Difference: % Difference = [(measured value – reference value) ÷ reference value] x 100
Drift Formula: Drift = [(initial calibration valve – post-test span value) ÷ initial calibration value] x 100

Performed by: E. Musara Date and Time: 8/27/2018 11:49

Comments/Notes: LDAR Monthly Report

On 8/27/2018, I reviewed the monitoring data that I collected today and to the best of my knowledge and belief, the data accurately represent the monitoring that I performed today.

Signed _____

Revised 022117; 080817; 121517

SPAN
1-25-17

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	OAKWOOD		
Part Number:	X02AI99C801428	Reference Number:	32-400841801-1
Cylinder Number:	109520X	Cylinder Volume:	75.9 CF
Laboratory:	112 - Royal Oak-32 (SAP) - MI	Cylinder Pressure:	2014 PSIG
Analysis Date:	Jan 17, 2017	Valve Outlet:	590
Lot Number:	32-400841801-1		

Expiration Date: Jan 17, 2025

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
METHANE	500.0 PPM	502.0 PPM	+/- 2%
AIR	Balance		

Approved for Release

Airgas

Airgas USA, LLC
2009 BELLAIRE AVE
ROYAL OAK, MI 48067
248-399-8020
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CEM-CAL ZERO

Customer:	ERIE COKE CORP		
Part Number:	AI CZ80A	Reference Number:	32-400659795-1
Cylinder Number:	LL11144	Cylinder Volume:	81.0 CF
Laboratory:	MIC - Royal Oak-32 (SAP) - MI	Cylinder Pressure:	2000 PSIG
Analysis Date:	Jan 22, 2016	Valve Outlet:	590
Lot Number:	32-400659795-1		

Expiration Date: Jan 22, 2024

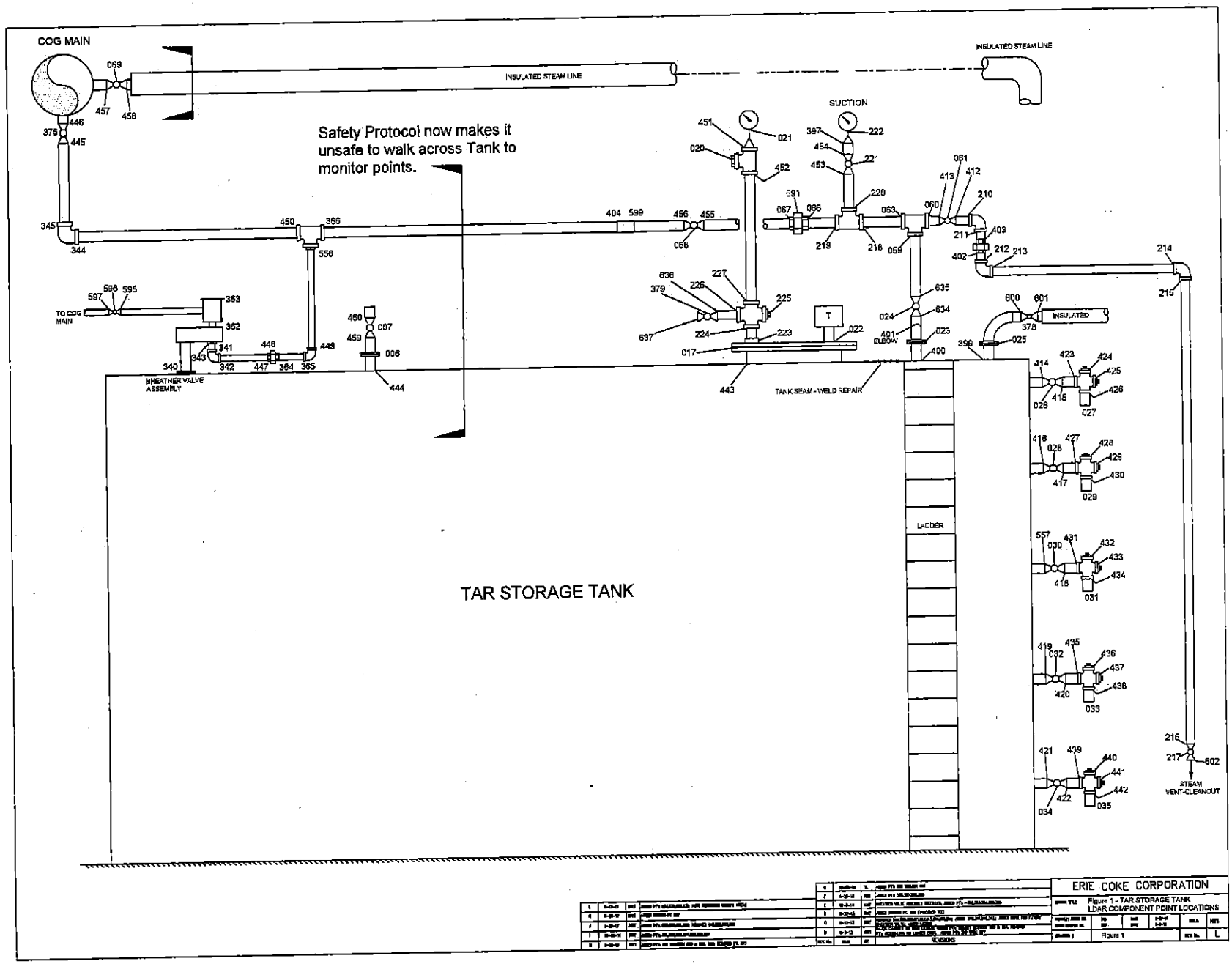
ANALYTICAL RESULTS

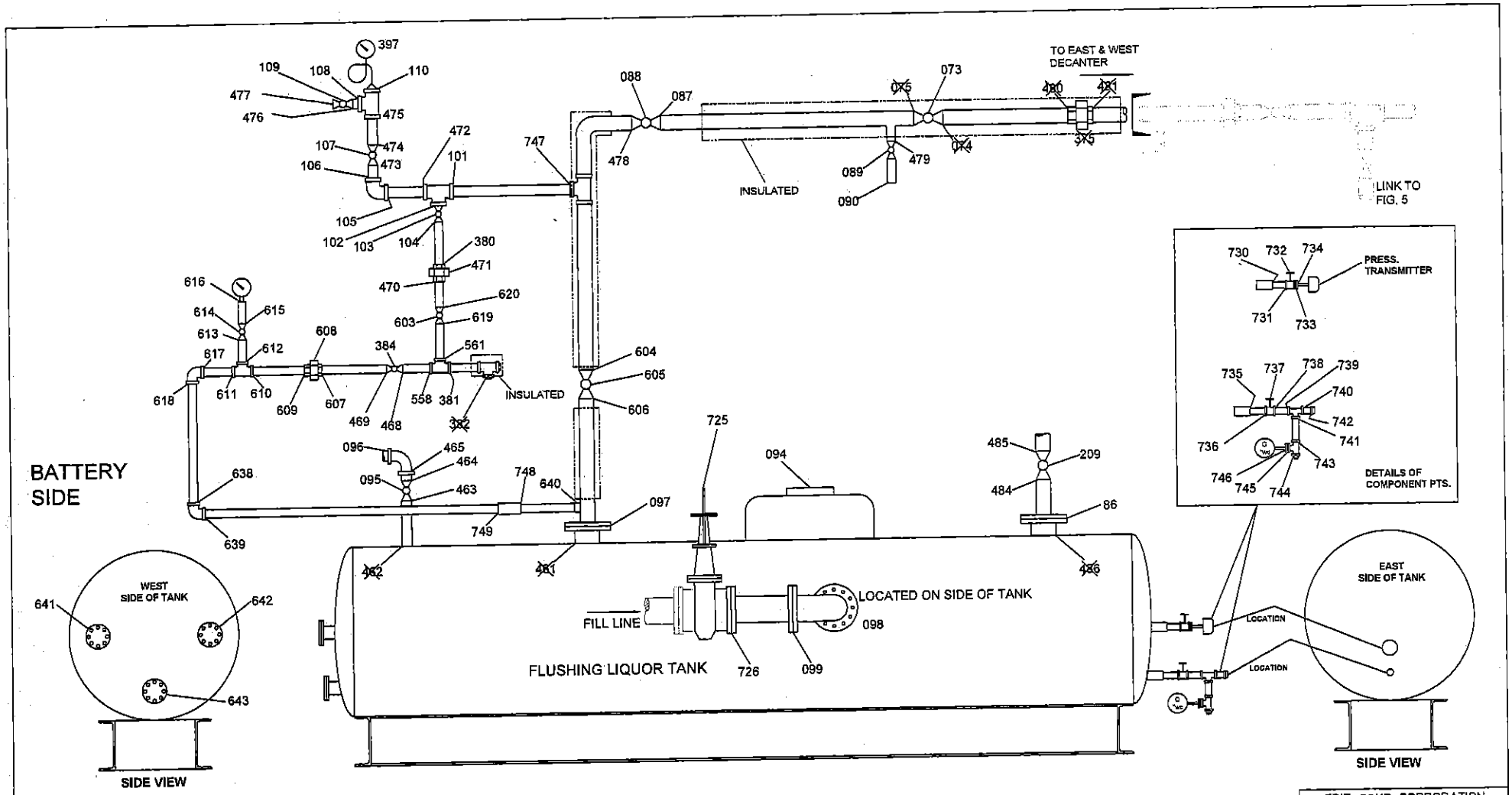
Component	Requested Purity	Certified Concentration
AIR		
Carbon Dioxide	< 1.0 PPM	< 1.00 PPM
NOx	< 0.1 PPM	< .100 PPM
Sulfur Dioxide	< 0.1 PPM	< .100 PPM
THC	< 0.1 PPM	< .100 PPM
Percent Oxygen	20-21 %	20.60 %
Carbon Monoxide	< 0.5 PPM	< .500 PPM

Permanent Notes: Airgas certifies that the contents of this cylinder meet the requirements of 40 CFR 72.2

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Approved for Release


COG MAIN
INSULATED STEAM LINE
INSULATED STEAM LINE
SUCTION
Safety Protocol now makes it unsafe to walk across Tank to monitor points.
TO COG MAIN
BREATHER VALVE ASSEMBLY
TANK SEAM - WELD REPAIR
ELBOW
INSULATED
LADDER
TAR STORAGE TANK
STEAM VENT-CLEANOUT
ERIE COKE CORPORATION
Figure 1 - TAR STORAGE TANK LDAR COMPONENT POINT LOCATIONS
REVISIONS

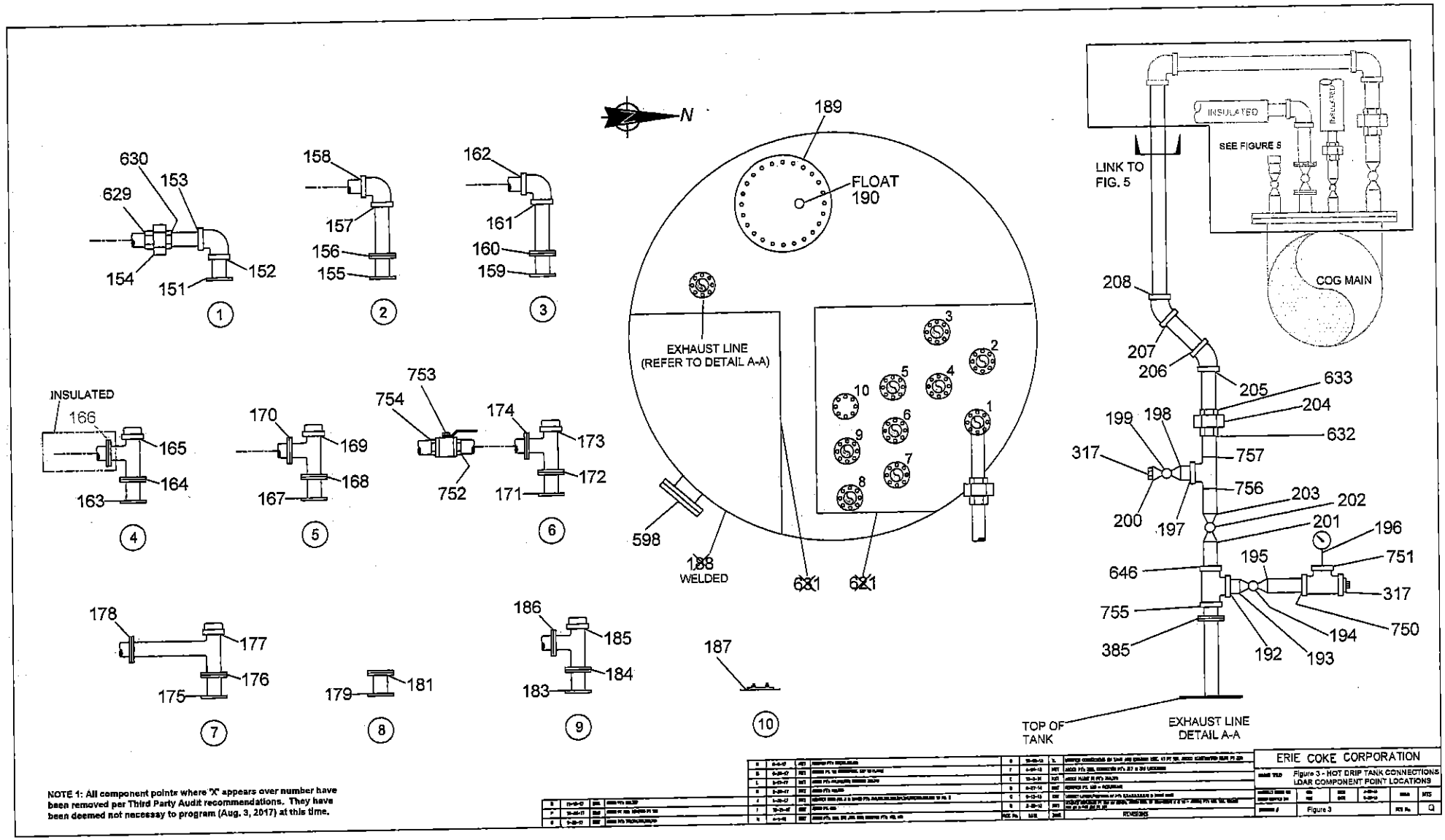


NOTE 1: All component points where 'X' appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessay to program (Aug. 3, 2017) at this time.

ERIE COKE CORPORATION

Figure 2 - FLUSHING LIQUOR TANK LDAR COMPONENT POINT LOCATIONS

Figure 2



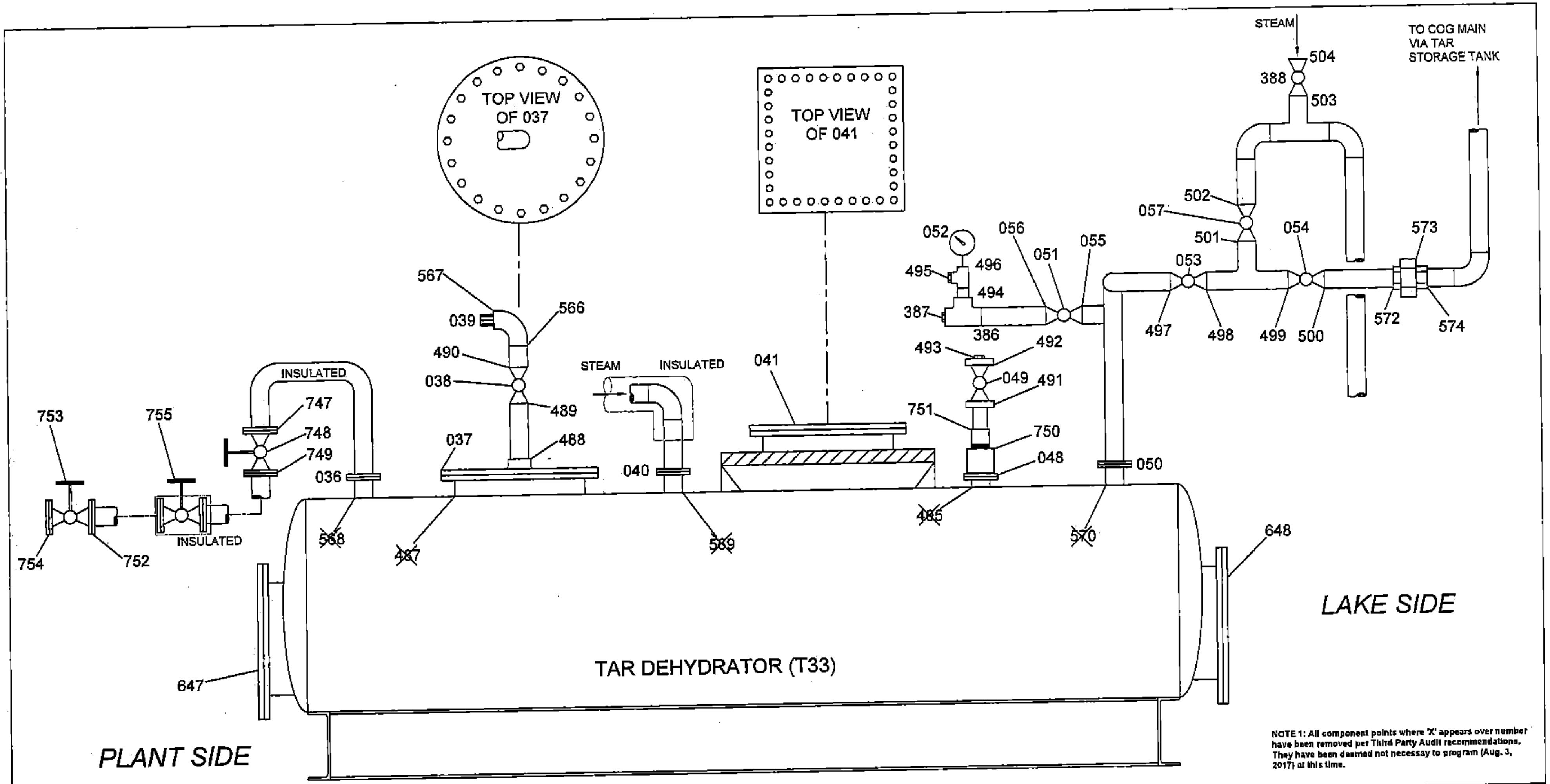
NOTE 1: All component points where "X" appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessay to program (Aug. 3, 2017) at this time.

ERIE COKE CORPORATION

Figure 3 - HOT DRIP TANK CONNECTIONS
LOAR COMPONENT POINT LOCATIONS

Figure 3

REVISIONS



NOTE 1: All component points where 'X' appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessay to program (Aug. 3, 2017) at this time.

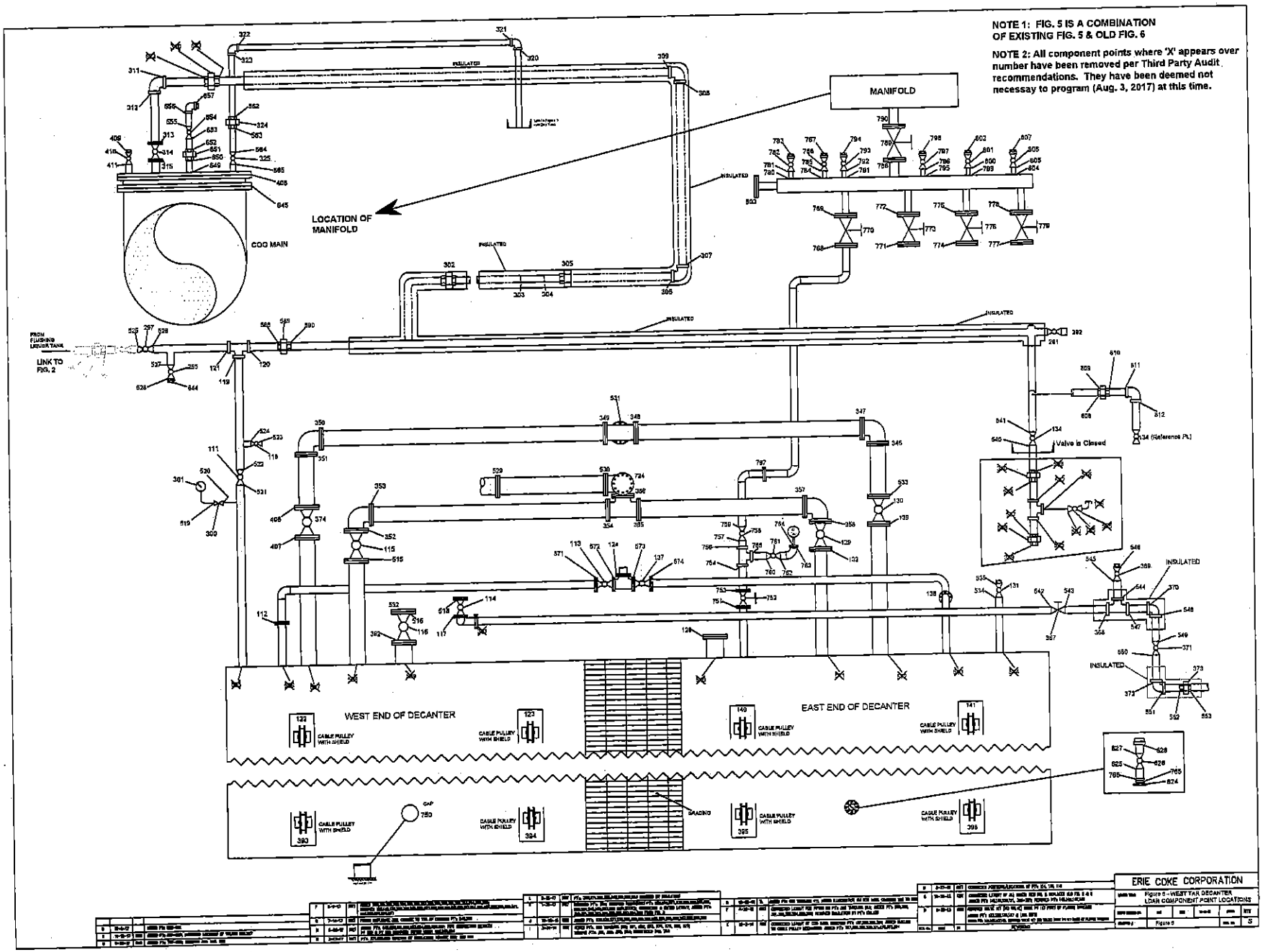
REV. No.	DATE	BY	REVISIONS
M	11-16-17	SAS	ADDED PT 755
L	10-26-17	SAS	ADDED PT's 750 THRU 754
K	8-9-17	KMT	ADDED PT's 747,748,749; REMOVED 485,487,568,569,570; MOVED 647,648 TO CORRECT POSITION ON DWG.
J	6-26-17	KMT	ADDED PT's 647, 648
I	1-30-17	KMT	ADDED NOMENCLATURE "TOP VIEW OF 037" & "TOP VIEW OF 041"
H	10-21-16	KMT	ADDED PT's 572, 573, 574
G	3-31-16	KMT	ADDED PT's 487 THROUGH 504, & 566, 567, 568, 569, 570
F	10-05-15	TL	ADDED PT 405
E	4-24-15	KMT	REINSTATED PT. 052; ADDED PTs 386,387,388
D	12-3-14	KMT	REMOVED PT. 052
C	10-21-13	KMT	PT. 49 CAP IS NOW A BALL VALVE & IMPROVED DRAWING LAYOUT (I.E. TANK BASE FRAME)
B	5-30-13	KMT	REMOVE PTs 042,043,044,045,046,047

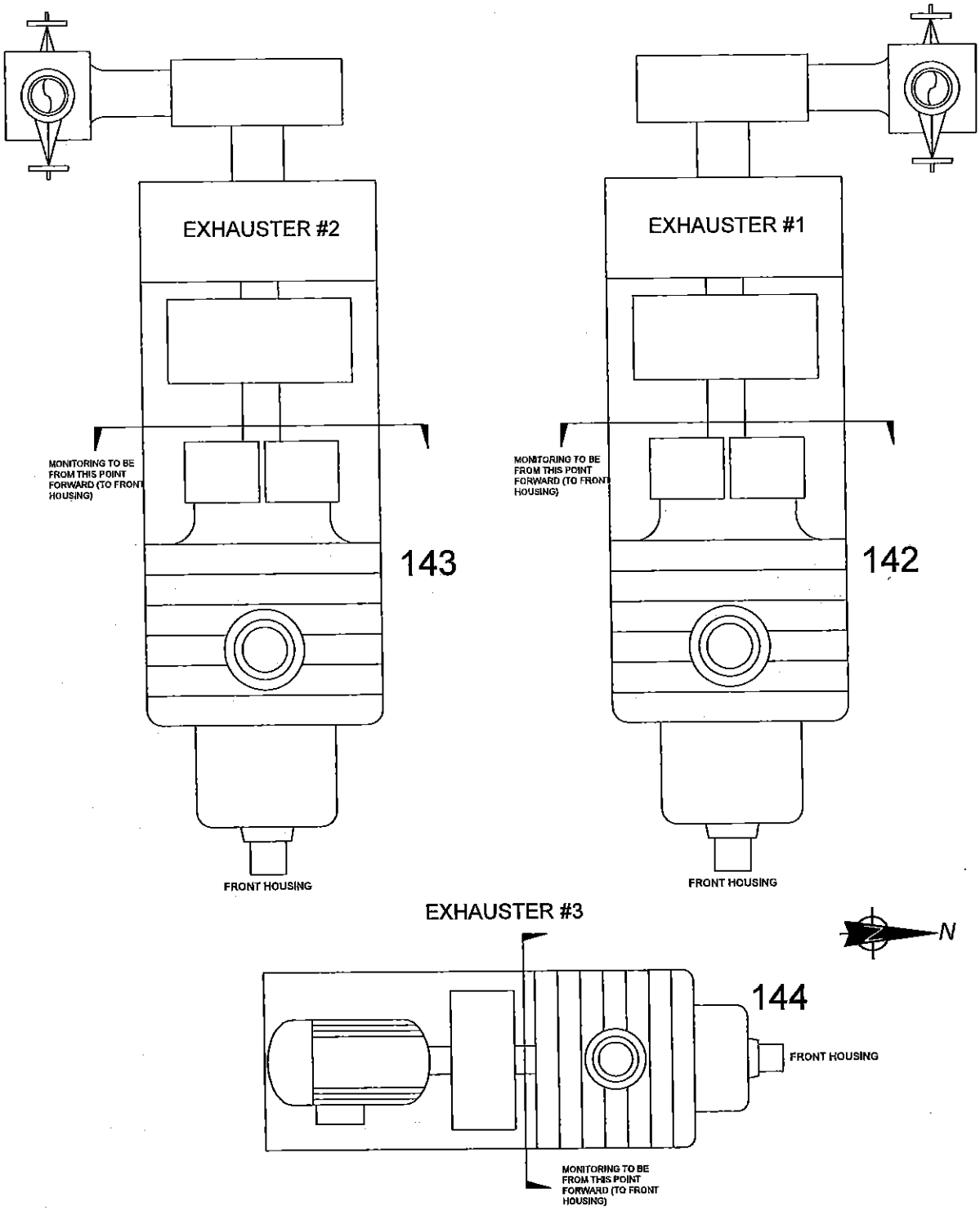
ERIE COKE CORPORATION

DRAWN TITLE: Figure 4 - TAR DEHYDRATOR LDAR COMPONENT POINT LOCATIONS

SCALE: NTS

DRAWING #: Figure 4 | REV. No.: M


NOTE 1: FIG. 5 IS A COMBINATION OF EXISTING FIG. 5 & OLD FIG. 6
NOTE 2: All component points where 'X' appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessay to program (Aug. 3, 2017) at this time.
MANIFOLD
LOCATION OF MANIFOLD
COG MAIN
INSULATED
FROM FLUSHING LIQUOR TANK
LINK TO FIG. 2
Valve is Closed
WEST END OF DECANTER
EAST END OF DECANTER
CABLE PULLEY WITH SHIELD
GRADING
ERIE COKE CORPORATION
Figure 5 - WEST TAR DECANTER LOAN COMPONENT POINT LOCATIONS



REV. No.	DATE	BY	REVISIONS
C	8-9-17	KMT	ADDED NOTE & SPECIFIED AREA FOR MONITORING
B	9-12-13	KMT	IMPROVED IMAGE OF EXHAUSTER 1,2; ADDED PT #'s 142,143,144

ERIE COKE CORPORATION

DRAWN TITLE:	EXHAUSTERS				
DRAWN MODIFIED BY:	KMT	DATE	3-15-13	SCALE:	NTS
DRAWING #	Figure 7			REV. No.	C

ERIE COKE CORPORATION
BOX 6180
ERIE, PENNSYLVANIA 16512-6180

Management of Change Form

The below information is to provide record of the changes made to the Coke Oven Gas system as indicated below. Its intention is to reduce the risk to personnel and compromising the LDAR or any Plant Safety programs.

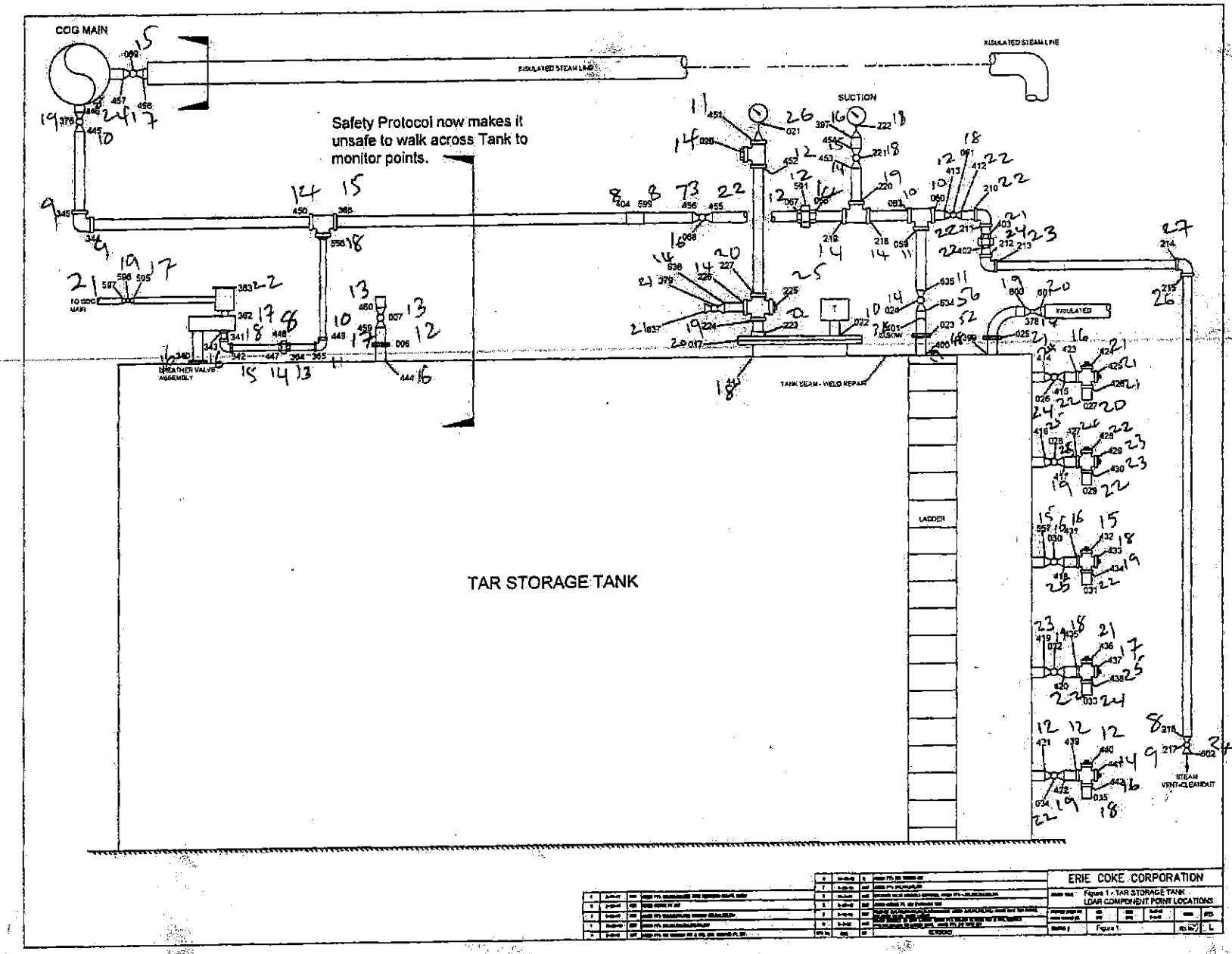
Date: August 27, 2018

Table 1.0: ***Components Added or Removed***

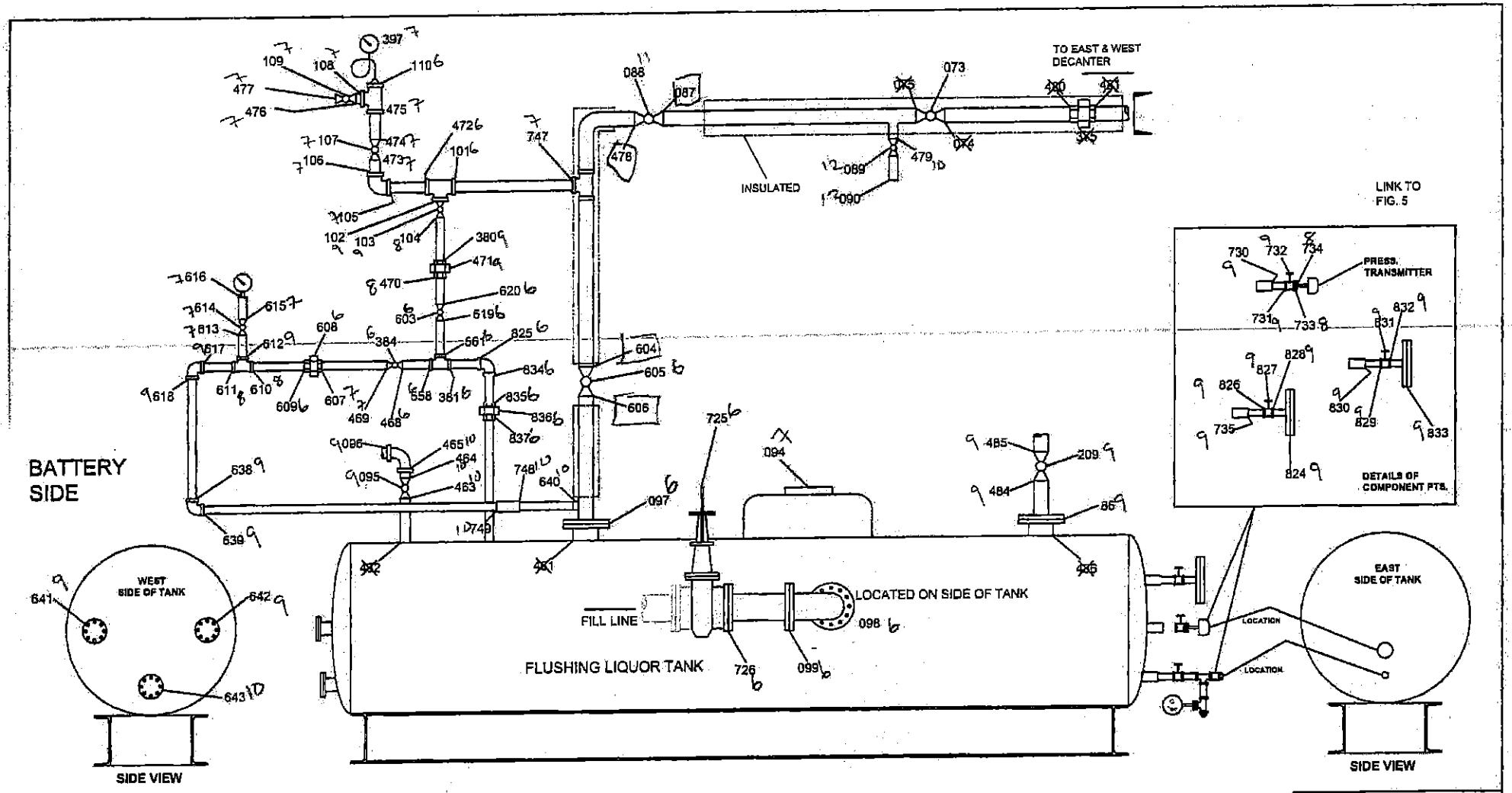
Drawing ID	Points(s)#	Comment
Fig 5, East & West Decanter	117, 114, 518	Removed
	813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823	Added
Fig 2 Flushing Liquor Tank	736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746	Removed
	824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837	Added

8/27/2018 S: 9:28 E: 9:43 B: 7

S: 11:07 E: 11:17 B: 11



8/27/2018 S: 8:50 AM
E: 9:15 AM
B: 6



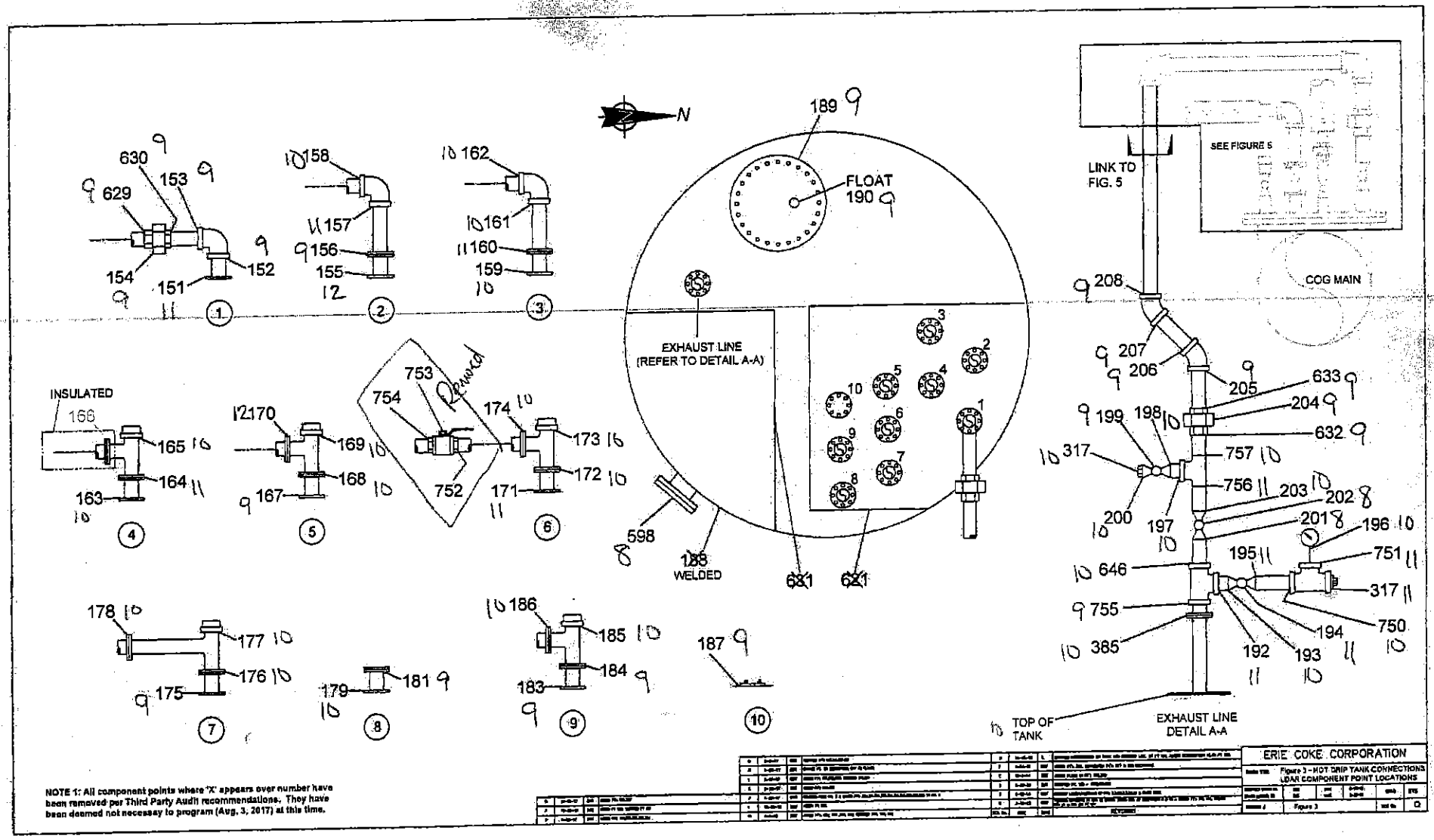
NOTE 1: All component points where 'X' appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessay to program (Aug. 3, 2017) at this time.

ERIE COKE CORPORATION

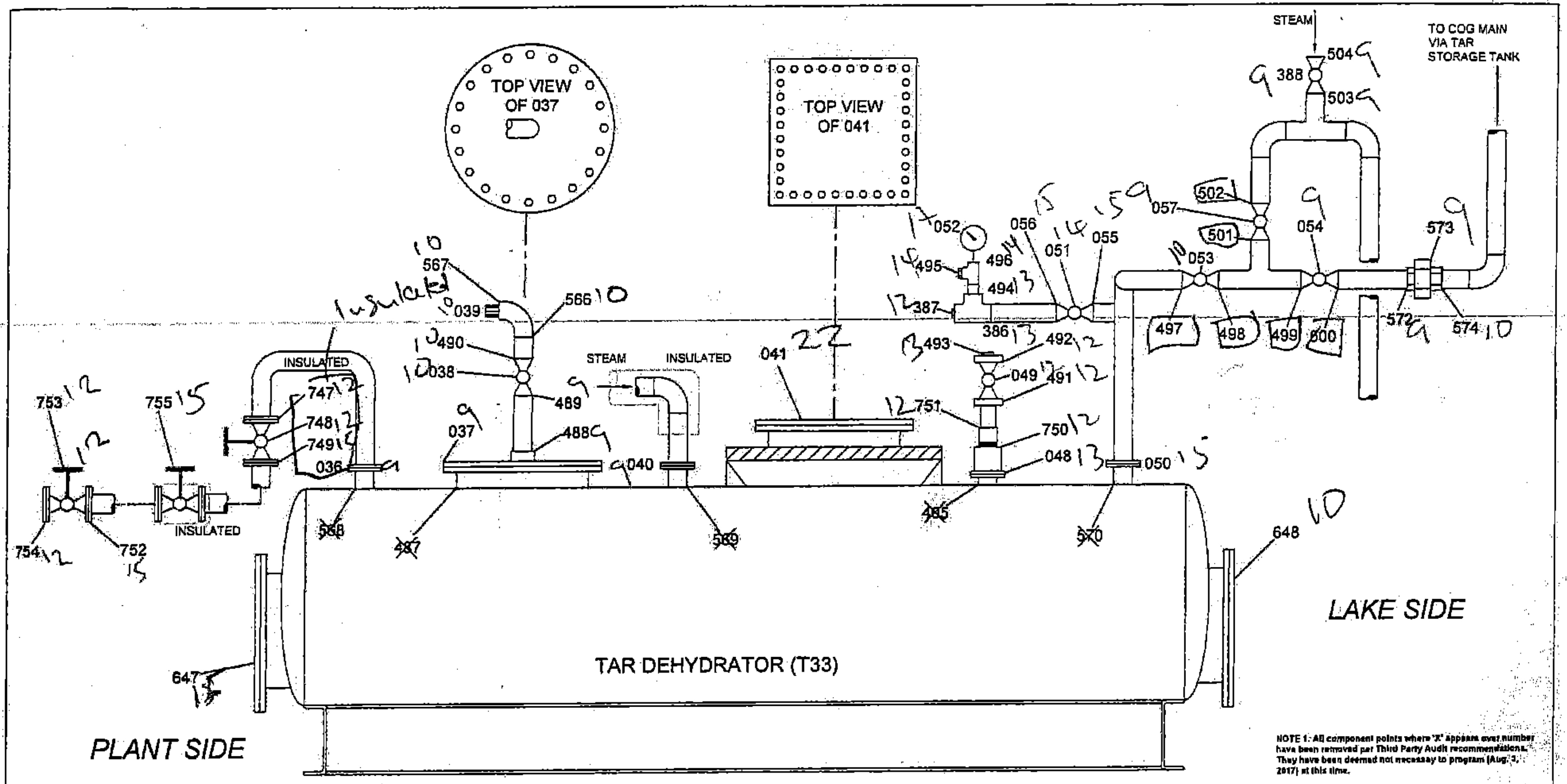
Figure 2 - FLUSHING LIQUOR TANK LOAR COMPONENT POINT LOCATIONS

Figure 2

8/27/2018 S: 10:17 E: 10:32 B: 8



8/27/2018 S: 9:45
E: 10:07
B: 14



NOTE 1: All component points where "X" appears over number have been removed per Third Party Audit recommendations. They have been deemed not necessary to program (Aug. 3, 2017) at this time.

				F	[illegible]	[illegible]	ADDED PT 485
K	[illegible]-17	[illegible]	ADDED PTs 747,748,749; REMOVE [illegible]; MOVED 647,648 TO CORRECT POSITION ON DWG.	E	4-24-15	[illegible]	REINSTATED PT. 052; ADDED PTs 386,387,388
J	[illegible]-17	[illegible]	ADDED PTs 647, 648	D	[illegible]	[illegible]	REMOVED PT. 052
I	[illegible]-17	[illegible]	ADDED NOMENCLATURE "TOP VIEW OF 037" & "TOP VIEW OF 041"	C	[illegible]	[illegible]	[illegible]
H	10-[illegible]-16	[illegible]	ADDED PTs 572, 573, 574	B	[illegible]	[illegible]	REMOVE PTs [illegible]
G	[illegible]-16	[illegible]	ADDED PTs 487 THROUGH 504, & 566, 567, 568, 569, 570	REV. No.	DATE	BY	REVISIONS
K	11-16-17	[illegible]	ADDED PT 755				
L	[illegible]-17	[illegible]	ADDED PTs 752 THRU 754				

ERIE COKE CORPORATION

DRAWING TITLE: Figure 4 - TAR DEHYDRATOR LDAR COMPONENT POINT LOCATIONS

SCALE: NTS

DRAWING #: Figure 4

REV. No.: M

X

ERIE COKE CORPORATION LDAR PROGRAM
USEPA METHOD 21 SCREENING DATA
August 2018 MONTHLY DATA

Performed: 8/27/2018

No. #	Process	Type	Tag #	Description	Component Reading (ppmv)	Background Reading (ppmv)	Drawing No. #	Time	Staff
1	TS	[redacted]	006	Flange, at top of vessel, conservation vent	12	11	Fig. 1	11:07AM	EM/HS
2	TS	[redacted]	007	Valve above 006	13	11	Fig. 1	11:07AM	EM/HS
3	TS	[redacted]	008	Flange, conservation vent	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
4	TS	[redacted]	009	Conservation vent	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
5	TS	[redacted]	010	Valve and open end after conservation vent	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
6	TS	[redacted]	011	Flange, trap mount	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
7	TS	[redacted]	012	Valve, upper, sightglass	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
8	TS	[redacted]	013	Valve, lower, sight glass	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
9	TS	[redacted]	014	Sight glass	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
10	TS	[redacted]	015	Valve, trap outlet	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
11	TS	[redacted]	016	Open end of 015	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
12	TS	[redacted]	017	Manway, on top of Tank	20	7	Fig. 1	9:28AM	EM/HS
13	TS	[redacted]	018	Flange	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
14	TS	[redacted]	019A	Cap, temporary	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
15	TS	[redacted]	019	Valve	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
16	TS	T	020	Threads, tee	14	7	Fig. 1	9:28AM	EM/HS
17	TS	[redacted]	021	Vacuum gage	26	7	Fig. 1	9:28AM	EM/HS
18	TS	T	022	Threads, transducer mount	10	7	Fig. 1	9:28AM	EM/HS
19	TS	[redacted]	023	Flange, steam line	52	7	Fig. 1	9:28AM	EM/HS
20	TS	[redacted]	024	Valve above 023	14	7	Fig. 1	9:28AM	EM/HS
21	TS	[redacted]	025	Flange, fill line	21	7	Fig. 1	9:28AM	EM/HS
22	TS	[redacted]	026	Valve, upper 1 of 5, on side of tank, top of ladder	24	7	Fig. 1	9:28AM	EM/HS
23	TS	[redacted]	027	Open end of valve	20	7	Fig. 1	9:28AM	EM/HS
24	TS	[redacted]	028	Next valve down	25	7	Fig. 1	9:28AM	EM/HS
25	TS	[redacted]	029	Open end of valve	22	7	Fig. 1	9:28AM	EM/HS
26	TS	[redacted]	030	Next valve down	16	7	Fig. 1	9:28AM	EM/HS
27	TS	[redacted]	031	Open end of valve	22	7	Fig. 1	9:28AM	EM/HS
28	TS	[redacted]	032	Next valve down	18	7	Fig. 1	9:28AM	EM/HS
29	TS	[redacted]	033	Open end of valve	24	7	Fig. 1	9:28AM	EM/HS
30	TS	[redacted]	034	Next valve down	22	7	Fig. 1	9:28AM	EM/HS
31	TS	[redacted]	035	Open end of valve	18	7	Fig. 1	9:28AM	EM/HS
32	TS	T	059	Threads on tee, exhauster line	11	7	Fig. 1	9:28AM	EM/HS
33	TS	T	060	Threads on tee, exhauster line from T33	10	7	Fig. 1	9:28AM	EM/HS
34	TS	[redacted]	061	Valve before tee, exhauster line from T33	18	7	Fig. 1	9:28AM	EM/HS
35	TS	T	062	Threads on plug at tee, exhauster line	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
36	TS	T	063	Threads on tee, exhauster line	10	7	Fig. 1	9:28AM	EM/HS
37	TS	T	064	Threads before steam venturi	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
38	TS	T	065	Threads after steam venturi	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
39	TS	T	066	Threads, pipe coupling	14	7	Fig. 1	9:28AM	EM/HS
40	TS	T	067	Threads, pipe coupling	12	7	Fig. 1	9:28AM	EM/HS
41	TS	[redacted]	068	Valve	15	7	Fig. 1	9:28AM	EM/HS
42	TS	[redacted]	069	Valve at COG main	15	11	Fig. 1	11:07AM	EM/HS
43	TS	T	210	Threads, elbow, steam line	22	7	Fig. 1	9:28AM	EM/HS
44	TS	T	211	Threads, elbow, steam line	22	7	Fig. 1	9:28AM	EM/HS
45	TS	T	212	Threads, elbow, steam line	24	7	Fig. 1	9:28AM	EM/HS
46	TS	T	213	Threads, elbow, steam line	23	7	Fig. 1	9:28AM	EM/HS
47	TS	T	214	Threads, elbow, steam line	27	7	Fig. 1	9:28AM	EM/HS
48	TS	T	215	Threads, elbow, steam line	26	7	Fig. 1	9:28AM	EM/HS
49	TS	T	216	Threaded connection	8	7	Fig. 1	9:28AM	EM/HS
50	TS	[redacted]	217	Valve, steam line	9	7	Fig. 1	9:28AM	EM/HS

No. #	Pumps P	Valves V	Flange F	Gauge G	Hatch H	Seals S	Third fittings T	Exh E	Open O	Line Seam L	Sum	NC	Pumps P	Valves V	Flange F	Gauge G	Hatch H	Seals S	Third fittings T	Exh E	Oel O	seam L	Sum
1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
4	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	1
5	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
6	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
7	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
8	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
9	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
10	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	1
12	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
14	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
15	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
16	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
20	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
22	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
24	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
26	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
28	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
30	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
34	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
36	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
38	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
39	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
41	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
42	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
50	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

106	TS	T	435	Cross Thread	18	7	Fig. 1	9:28AM	EM/HS
107	TS	T	436	Cross Plug	21	7	Fig. 1	9:28AM	EM/HS
108	TS	T	437	Cross Plug	17	7	Fig. 1	9:28AM	EM/HS
109	TS	T	438	Cross Thread	25	7	Fig. 1	9:28AM	EM/HS
110	TS	T	439	Cross Thread	12	7	Fig. 1	9:28AM	EM/HS
111	TS	T	440	Cross Plug	12	7	Fig. 1	9:28AM	EM/HS
112	TS	T	441	Cross Plug	14	7	Fig. 1	9:28AM	EM/HS
113	TS	T	442	Cross Thread	16	7	Fig. 1	9:28AM	EM/HS
114	TS	T	443	Tank Pipe Connection	18	7	Fig. 1	9:28AM	EM/HS
115	TS	T	444	Tank Pipe Connection	16	11	Fig. 1	11:07AM	EM/HS
116	TS	T	445	Threads, pipe in Valve	10	10	Fig. 1	11:07AM	EM/HS
117	TS	T	446	Threads, pipe in Valve	8	8	Fig. 1	11:07AM	EM/HS
118	TS	T	447	Coupling	14	11	Fig. 1	11:07AM	EM/HS
119	TS	T	448	Coupling	8	8	Fig. 1	11:07AM	EM/HS
120	TS	T	449	Threads, Elbow	10	10	Fig. 1	11:07AM	EM/HS
121	TS	T	450	Threads, pipe in Tee	14	11	Fig. 1	11:07AM	EM/HS
122	TS	T	451	Threads, pipe in Tee	11	7	Fig. 1	9:28AM	EM/HS
123	TS	T	452	Threads, pipe in Tee	12	7	Fig. 1	9:28AM	EM/HS
124	TS	T	453	Threads, pipe in Valve	14	7	Fig. 1	9:28AM	EM/HS
125	TS	T	454	Threads, pipe in Valve	15	7	Fig. 1	9:28AM	EM/HS
126	TS	T	455	Threads, pipe in Valve	22	7	Fig. 1	9:28AM	EM/HS
127	TS	T	456	Threads, pipe in Valve	73	7	Fig. 1	9:28AM	EM/HS
128	TS	T	457	Threads, pipe in Valve	24	11	Fig. 1	11:07AM	EM/HS
129	TS	T	458	Threads, pipe in Valve	17	11	Fig. 1	11:07AM	EM/HS
130	TS	T	459	Threads, pipe in Valve	17	11	Fig. 1	11:07AM	EM/HS
131	TS	T	460	Threads, pipe in Valve	17	11	Fig. 1	11:07AM	EM/HS
132	TS	T	536	Threads, pipe in Tee	18	11	Fig. 1	11:07AM	EM/HS
133	TS	T	537	Threads, pipe in Valve 030	15	7	Fig. 1	9:28AM	EM/HS
134	TS	T	591	Coupling (by 066, 067)	12	7	Fig. 1	9:28AM	EM/HS
135	TS	T	592	Coupling	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
136	TS	T	593	Coupling	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
137	TS	T	594	Coupling	[redacted]	[redacted]	Fig. 1	10:25AM	EM/HS
138	TS	T	595	Threads, pipe in Valve	17	11	Fig. 1	11:07AM	EM/HS
139	TS	[redacted]	596	Valve	19	11	Fig. 1	11:07AM	EM/HS
140	TS	T	597	Threads, pipe in Valve	21	11	Fig. 1	11:07AM	EM/HS
141	TS	T	598	Connector between 066 and 068	8	7	Fig. 1	9:28AM	EM/HS
142	TS	T	600	Threads, pipe in Valve	19	7	Fig. 1	9:28AM	EM/HS
143	TS	T	601	Threads, pipe in Valve	20	7	Fig. 1	9:28AM	EM/HS
144	TS	[redacted]	602	Open End on Valve	24	7	Fig. 1	9:28AM	EM/HS
145	TS	T	634	Threads, pipe in Valve (024)	56	7	Fig. 1	9:28AM	EM/HS
146	TS	T	635	Threads, pipe in Valve (024)	11	7	Fig. 1	9:28AM	EM/HS
147	TS	T	636	Threads, pipe in Valve (379)	14	7	Fig. 1	9:28AM	EM/HS
148	TS	[redacted]	637	Open End on Valve	21	7	Fig. 1	9:28AM	EM/HS

251	FL	T	733	Threads, pipe in Valve		8	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
252	FL	T	734	Threads, Reducer in Valve		8	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
253	FL	T	735	Threadolet connection		9	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
254	FL	T	736	Threads, pipe in Valve	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
255	FL	[redacted]	737	Valve	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	1	0	0	0	0	0	0	0	0	1	1
256	FL	T	738	Threads, pipe in Valve	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
257	FL	T	739	Threads, pipe in Tee	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
258	FL	T	740	Threads, pipe in Tee	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
259	FL	T	741	Threads, pipe in Tee	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
260	FL	T	742	Threads, Cap	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
261	FL	T	743	Threads, pipe in Tee	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
262	FL	T	744	Threads, plug in Tee	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
263	FL	T	745	Threads, pipe in Tee	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
264	FL	T	746	Threads, Reducer in Tee	*Removed*	[redacted]	[redacted]	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1
265	FL	T	747	Threads, pipe in Tee		7	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
266	FL	T	748	Coupling		10	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
267	FL	T	749	Coupling		10	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
268	FL	[redacted]	824	Flange		9	6	Fig. 2	8:50am	EM/HS	0	0	1	0	0	0	0	0	0	0	1	0
269	FL	T	825	Threads Elbow		6	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
270	FL	T	826	Threads, Vavle		9	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
271	FL	[redacted]	827	Valve		9	6	Fig. 2	8:50am	EM/HS	0	1	0	0	0	0	0	0	0	0	1	0
272	FL	T	828	Threads, Valve		9	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
273	FL	T	829	Threads, Valve		9	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
274	FL	T	830	Threads, Tank		9	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
275	FL	[redacted]	831	Valve		9	6	Fig. 2	8:50am	EM/HS	0	1	0	0	0	0	0	0	0	0	1	0
276	FL	T	832	Threads, Valve		9	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
277	FL	[redacted]	833	Flange		9	6	Fig. 2	8:50am	EM/HS	0	0	1	0	0	0	0	0	0	0	1	0
278	FL	T	834	Threads, Elbow		6	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
279	FL	T	835	Coupling		6	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
280	FL	T	836	Coupling		6	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0
281	FL	T	837	Coupling		6	6	Fig. 2	8:50am	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0

0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	0	1
0	1	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

X

334	FL	[redacted]	202	Shutoff valve stem, exhauster line		8	8	Fig. 3	10:17AM	EM/HS	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
335	FL	T	203	Shutoff valve effluent, exhauster line		10	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
336	FL	T	204	Pipe coupling above valve 202, exhauster line		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
337	FL	T	205	45 degree union influent, exhauster line		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
338	FL	T	206	45 degree union effluent, exhauster line		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
339	FL	T	207	45 degree union influent, exhauster line		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
340	FL	T	208	45 degree union effluent, exhauster line		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
341	FL	T	317	Plug		11	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
342	FL	[redacted]	318	Tee with Plug		[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
343	FL	T	319	Threads, pipe in Valve		[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
344	FL	T	320	Threads, elbow	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
345	FL	T	321	Threads, elbow	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
346	FL	T	322	Threads, elbow	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
347	FL	T	323	Threads, elbow	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
348	FL	T	324	Union	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
349	FL	[redacted]	325	Valve at COG main	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
350	FL	[redacted]	385	Flange		10	8	Fig. 3	10:17AM	EM/HS	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
351	FL	T	562	Threads, coupling	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
352	FL	T	563	Threads, coupling	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
353	FL	T	564	Threads, Pipe to Valve	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
354	FL	T	565	Threads, Pipe to Valve	*Moved to Figure 5*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
355	FL	[redacted]	598	Flanged connection off of Tank		8	8	Fig. 3	10:17AM	EM/HS	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
356	FL	[redacted]	621	Welded Hatch on Tank	*Removed*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1
357	FL	T	629	Threads on Union		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
358	FL	T	630	Threads on Union		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
359	FL	[redacted]	631	Welded Hatch on Tank	*Removed*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1
360	FL	T	632	Coupling		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
361	FL	T	633	Coupling		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
362	FL	T	646	Threads, Pipe to Tee		10	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
363	FL	T	750	Threads, Pipe to Tee		10	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
364	FL	T	751	Threads, Pipe to Tee		11	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
365	FL	T	752	Threads, pipe to Valve	*Removed*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
366	FL	T	753	Valve	*Removed*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
367	FL	T	754	Threads, pipe to Valve	*Removed*	[redacted]	[redacted]	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1
368	FL	T	755	Threads, Pipe to Tee		9	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
369	FL	T	756	Threads, Pipe to Tee		11	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
370	FL	T	757	Threads, Pipe to Tee		10	8	Fig. 3	10:17AM	EM/HS	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

434	FL	SW	111	Valve, west tar decanter exhauster line		6	5	Fig. 5	8:12am	EM/HS
435	FL		112	Flange, line in front of exhauster line		6	5	Fig. 5	8:12am	EM/HS
436	FL	SW	113	Valve, effluent to 112		6	5	Fig. 5	8:12am	EM/HS
437	FL	SW	114	Valve, very large, east pipe line in	Insulated	5	5	Fig. 5	8:12am	EM/HS
438	FL	SW	115	Valve, very large, east pipe line in		5	5	Fig. 5	8:12am	EM/HS
439	FL	SW	116	Valve, large, east pipe line in		10	5	Fig. 5	8:12am	EM/HS
440	FL		117	Flange below 116	Insulated	6	5	Fig. 5	8:12am	EM/HS
441	FL	SW	118	Valve, vent		6	5	Fig. 5	8:12am	EM/HS
442	FL	T	119	Threads, tee	Removed	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
443	FL	T	120	Threads, tee	Removed	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
444	FL	T	121	Threads, tee	Removed	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
445	FL		122	Cable cover seal, west side		6	5	Fig. 5	8:12am	EM/HS
446	FL		123	Cable cover seal, west side		6	5	Fig. 5	8:12am	EM/HS
447	FL	SW	124	Valve, west tar decanter, adjacent to 113		6	5	Fig. 5	8:12am	EM/HS
448	FL	SW	125	Valve, vacuum gage on exhauster line	Removed	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
449	FL	T	126	Plug	Removed	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
450	FL	SW	127	Valve, large, west side, in front of flared		[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
451	FL		128	Flange above 510		6	5	Fig. 5	8:12am	EM/HS
452	FL	SW	129	Valve, very large, east of 127		8	5	Fig. 5	8:12am	EM/HS
453	FL	SW	130	Valve, very large, east of 129		9	5	Fig. 5	8:12am	EM/HS
454	FL	SW	131	Valve		5	5	Fig. 5	8:12am	EM/HS
455	FL		132	Flange below valve 129		6	5	Fig. 5	8:12am	EM/HS
456	FL	SW	134	Valve, exhauster line, east side of vessel		7	5	Fig. 5	8:12am	EM/HS
457	FL	SW	137	Valve		5	5	Fig. 5	8:12am	EM/HS
458	FL		138	Flange		7	5	Fig. 5	8:12am	EM/HS
459	FL		139	Flange below valve 130		9	5	Fig. 5	8:12am	EM/HS
460	FL		140	Cable pully frame, east side		5	5	Fig. 5	8:12am	EM/HS
461	FL		141	Cable pully frame, east side		7	5	Fig. 5	8:12am	EM/HS
462	FL	SW	291	Valve		7	5	Fig. 5	8:12am	EM/HS
463	FL		292	Open end		7	5	Fig. 5	8:12am	EM/HS
464	FL	SW	293	Valve		[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
465	FL		294	Open end		[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
466	FL	SW	295	Valve	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
467	FL		296	Open end		8	[illegible]	Fig. 5	8:12am	EM/HS
468	FL	SW	297	Valve	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
469	FL	SW	300	Valve, vacuum gage		6	5	Fig. 5	8:12am	EM/HS
470	FL		301	Vacuum gage		6	5	Fig. 5	8:12am	EM/HS
471	FL	T	302	Pipe union	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
472	FL	T	303	Threads, steam venturi	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
473	FL	T	304	Threads, steam venturi	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
474	FL	T	305	Pipe union	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
475	FL	T	306	Threads, elbow	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
476	FL	T	307	Threads, elbow	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
477	FL	T	308	Threads, elbow	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
478	FL	T	309	Threads, elbow	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
479	FL	T	310	Pipe union	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
480	FL	T	311	Elbow, Threads		6	5	Fig. 5	8:12am	EM/HS
481	FL	T	312	Elbow, Threads		6	5	Fig. 5	8:12am	EM/HS
482	FL		313	Flange, Valve mount		6	5	Fig. 5	8:12am	EM/HS
483	FL	SW	314	Valve at COG main		5	5	Fig. 5	8:12am	EM/HS
484	FL		315	Flange, Valve mount		6	5	Fig. 5	8:12am	EM/HS
485	FL	T	320	Elbow	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
486	FL	T	321	Elbow	Insulated	[illegible]	[illegible]	Fig. 5	8:12am	EM/HS
487	FL	T	322	Elbow		5	5	Fig. 5	8:12am	EM/HS
488	FL	T	323	Elbow		5	5	Fig. 5	8:12am	EM/HS
489	FL	T	324	Coupling		5	5	Fig. 5	8:12am	EM/HS
490	FL	SW	325	Valve		6	5	Fig. 5	8:12am	EM/HS
491	FL		346	Flange, elbow		7	5	Fig. 5	8:12am	EM/HS
492	FL		347	Flange, elbow		7	5	Fig. 5	8:12am	EM/HS
493	FL		348	Flange, tee		6	5	Fig. 5	8:12am	EM/HS
494	FL		349	Flange, tee		6	5	Fig. 5	8:12am	EM/HS
495	FL		350	Flange, elbow		5	5	Fig. 5	8:12am	EM/HS
496	FL		351	Flange, elbow		5	5	Fig. 5	8:12am	EM/HS
497	FL		352	Flange, elbow		5	5	Fig. 5	8:12am	EM/HS
498	FL		353	Flange, elbow		5	5	Fig. 5	8:12am	EM/HS
499	FL		354	Flange, elbow		5	5	Fig. 5	8:12am	EM/HS
500	FL		355	Flange, tee		5	5	Fig. 5	8:12am	EM/HS
501	FL		356	Flange, tee		6	5	Fig. 5	8:12am	EM/HS

567	FL	T	543	Threads, Pipe to Valve	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
568	FL	T	544	Threads, pipe in Tee	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
569	FL	T	545	Threads, Pipe to Valve (360)	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
570	FL	T	546	Plug	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
571	FL	T	547	Threads, pipe in Tee	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
572	FL	T	548	Elbow, Threads	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
573	FL	T	549	Threads, Pipe to Valve	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
574	FL	T	550	Threads, pipe in Valve	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
575	FL	T	551	Elbow, Threads	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
576	FL	T	552	Coupling	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
577	FL	T	553	Coupling	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
578	FL	T	554	Threads, pipe in Valve	Removed	[redacted]			Fig. 5	8:12am	EM/HS
579	FL	T	555	Threads, pipe in Valve	Removed	[redacted]			Fig. 5	8:12am	EM/HS
580	FL	T	562	Coupling		5	5		Fig. 5	8:12am	EM/HS
581	FL	T	563	Coupling		5	5		Fig. 5	8:12am	EM/HS
582	FL	T	564	Threads, pipe to Valve		6	5		Fig. 5	8:12am	EM/HS
583	FL	T	565	Threads, pipe to Valve		6	5		Fig. 5	8:12am	EM/HS
584	FL	[redacted]	571	Flange on Valve		6	5		Fig. 5	8:12am	EM/HS
585	FL	[redacted]	572	Flange on Valve		6	5		Fig. 5	8:12am	EM/HS
586	FL	[redacted]	573	Flange on Valve		6	5		Fig. 5	8:12am	EM/HS
587	FL	[redacted]	574	Flange on Valve		5	5		Fig. 5	8:12am	EM/HS
588	FL	T	575	Threads, Pipe to Tee	Removed	[redacted]			Fig. 5	8:12am	EM/HS
589	FL	T	576	Threads, Pipe to Tee	Removed	[redacted]			Fig. 5	8:12am	EM/HS
590	FL	T	577	Threads, Pipe to Tee	Removed	[redacted]			Fig. 5	8:12am	EM/HS
591	FL	T	578	Coupling	Removed	[redacted]			Fig. 5	8:12am	EM/HS
592	FL	T	579	Coupling	Removed	[redacted]			Fig. 5	8:12am	EM/HS
593	FL	T	580	Coupling	Removed	[redacted]			Fig. 5	8:12am	EM/HS
594	FL	T	581	Threads, Pipe to Valve	Removed	[redacted]			Fig. 5	8:12am	EM/HS
595	FL	[redacted]	582	Valve	Removed	[redacted]			Fig. 5	8:12am	EM/HS
596	FL	T	583	Threads, Pipe to Valve	Removed	[redacted]			Fig. 5	8:12am	EM/HS
597	FL	T	584	Coupling	Removed	[redacted]			Fig. 5	8:12am	EM/HS
598	FL	T	585	Coupling	Removed	[redacted]			Fig. 5	8:12am	EM/HS
599	FL	T	586	Coupling	Removed	[redacted]			Fig. 5	8:12am	EM/HS
600	FL	T	587	Elbow		7	5		Fig. 5	8:12am	EM/HS
601	FL	T	588	Coupling		7	5		Fig. 5	8:12am	EM/HS
602	FL	T	589	Coupling		7	5		Fig. 5	8:12am	EM/HS
603	FL	T	590	Coupling	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
604	FL	T	622	Coupling	Insulated	[redacted]			Fig. 5	8:12am	EM/HS
605	FL	T	623	Coupling		5	5		Fig. 5	8:12am	EM/HS
606	FL	[redacted]	624	Flange plate on tank		6	5		Fig. 5	8:12am	EM/HS
607	FL	T	625	Threads, pipe to Valve		6	5		Fig. 5	8:12am	EM/HS
608	FL	[redacted]	626	Valve		6	5		Fig. 5	8:12am	EM/HS
609	FL	T	627	Threads, pipe to Valve		7	5		Fig. 5	8:12am	EM/HS
610	FL	T	628	Cap, threads		8	5		Fig. 5	8:12am	EM/HS
611	FL	T	644	Plug		6	5		Fig. 5	8:12am	EM/HS
612	FL	T	645	Flange on COG Main		5	5		Fig. 5	8:12am	EM/HS
613	FL	T	649	Pipe to Tank		5	5		Fig. 5	8:12am	EM/HS
614	FL	T	650	Union		5	5		Fig. 5	8:12am	EM/HS
615	FL	T	651	Union		5	5		Fig. 5	8:12am	EM/HS
616	FL	T	652	Union		5	5		Fig. 5	8:12am	EM/HS
617	FL	T	653	Threads, pipe to Valve		5	5		Fig. 5	8:12am	EM/HS
618	FL	[redacted]	654	Valve		6	5		Fig. 5	8:12am	EM/HS
619	FL	T	655	Threads, pipe to Valve		5	5		Fig. 5	8:12am	EM/HS
620	FL	T	656	Threads, pipe to Elbow		5	5		Fig. 5	8:12am	EM/HS
621	FL	T	657	Plug		6	5		Fig. 5	8:12am	EM/HS
622	FL	[redacted]	724	Flange		17	5		Fig. 5	8:12am	EM/HS
623	FL	T	750	Cap		5	5		Fig. 5	8:12am	EM/HS
624	FL	T	751	Threads, pipe to Valve		6	5		Fig. 5	8:12am	EM/HS
625	FL	[redacted]	752	Valve		6	5		Fig. 5	8:12am	EM/HS
626	FL	T	753	Threads, pipe to Valve		5	5		Fig. 5	8:12am	EM/HS
627	FL	T	754	Threads, pipe to Elbow		6	5		Fig. 5	8:12am	EM/HS
628	FL	T	755	Threads, pipe to Elbow		5	5		Fig. 5	8:12am	EM/HS
629	FL	T	756	Threads, pipe to Elbow		6	5		Fig. 5	8:12am	EM/HS
630	FL	T	757	Threads, pipe to Valve		6	5		Fig. 5	8:12am	EM/HS
631	FL	[redacted]	758	Valve		6	5		Fig. 5	8:12am	EM/HS
632	FL	T	759	Threads, pipe to Valve		6	5		Fig. 5	8:12am	EM/HS
633	FL	T	760	Threads, pipe to Valve							

697	FL	[redacted]	142	Exhauster #1		12	12	Fig. 7	9:22AM	EM/HS	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
698	FL	[redacted]	143	Exhauster #2		9	9	Fig. 7	9:25AM	EM/HS	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
699	FL	[redacted]	144	Exhauster #3		19	19	Fig. 7	9:19AM	EM/HS	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
700	FL	T	658	Pipe to Tank	Removed	[illegible]	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
701	FL	[redacted]	659	Flange		[illegible]		Fig. 8	Not used	Out of Service	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
702	FL	T	660	Pipe to Tank	Removed	[illegible]	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
703	FL	[redacted]	661	Flange		[illegible]		Fig. 8	Not used	Out of Service	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
704	FL	T	662	Plug		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
705	FL	[redacted]	663	Flanged Port A		[illegible]		Fig. 8	Not used	Out of Service	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
706	FL	[redacted]	664	Flanged Port B		[illegible]		Fig. 8	Not used	Out of Service	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
707	FL	[redacted]	665	Hatch		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1
708	FL	T	666	Flange		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
709	FL	T	667	Seal	Removed	[illegible]	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
710	FL	T	668	Pipe to Tank	Removed	[illegible]	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
711	FL	T	669	Threads, pipe to Elbow		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
712	FL	T	670	Threads, pipe to Elbow		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
713	FL	T	671	Threads, pipe to Elbow		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
714	FL	T	672	Threads, pipe to Elbow		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
715	FL	T	673	Threads, pipe to Valve		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
716	FL	[redacted]	674	Valve		[illegible]		Fig. 8	Not used	Out of Service	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
717	FL	T	675	Threads, pipe to Valve		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
718	FL	T	676	Threads, pipe to Elbow		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
719	FL	[redacted]	677	Open end of Elbow		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	1
720	FL	T	678	Pipe to Tank	Removed	[illegible]	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
721	FL	[redacted]	679	Flange		[illegible]		Fig. 8	Not used	Out of Service	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
722	FL	T	680	Threads, pipe to Valve		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
723	FL	[redacted]	681	Valve		[illegible]		Fig. 8	Not used	Out of Service	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
724	FL	T	682	Threads, pipe to Valve		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
725	FL	T	683	Pipe to Tank	Removed	[illegible]	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
726	FL	[redacted]	684	Flange	Removed	[illegible]	NC	Fig. 8	Not used	Out of Service	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1
727	FL	T	685	Threads, pipe to Valve		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
728	FL	[redacted]	686	Valve		[illegible]		Fig. 8	Not used	Out of Service	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
729	FL	T	687	Threads, pipe to Valve		[illegible]		Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
730	FL	T	688	Union	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
731	FL	T	689	Union	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
732	FL	T	690	Union	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
733	FL	T	691	Threads, Pipe to Tee	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
734	FL	T	692	Threads, Pipe to Tee	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
735	FL	T	693	Threads, pipe to Valve	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
736	FL	[redacted]	694	Valve	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
737	FL	T	695	Threads, pipe to Valve	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
738	FL	T	696	Threads, Pipe to Tee	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
739	FL	T	697	Threads, pipe to Elbow	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
740	FL	T	698	Threads, pipe to Elbow	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
741	FL	T	699	Threads, pipe to Valve	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
742	FL	[redacted]	700	Valve	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1
743	FL	T	701	Threads, pipe to Valve	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
744	FL	T	702	Union	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
745	FL	T	703	Union	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
746	FL	T	704	Union	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
747	FL	T	705	Threads, pipe to Elbow	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
748	FL	T	706	Threads, pipe to Elbow	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
749	FL	T	707	Threads, pipe to Elbow	Removed	NC	NC	Fig. 8	Not used	Out of Service	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1

X

LOGGED DATA
VER= 1.00

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION
27 AUG 18	08:11:49	0.00 PPM OK	7.42 PPM OK
27 AUG 18	08:11:54	0.00 PPM OK	12.03 PPM OK
27 AUG 18	08:11:59	0.00 PPM OK	9.75 PPM OK
27 AUG 18	08:12:04	0.00 PPM OK	9.79 PPM OK
27 AUG 18	08:12:09	0.00 PPM OK	10.16 PPM OK
27 AUG 18	08:12:14	0.00 PPM OK	12.86 PPM OK
27 AUG 18	08:12:19	0.00 PPM OK	14.27 PPM OK
27 AUG 18	08:12:24	0.00 PPM OK	13.07 PPM OK
27 AUG 18	08:12:29	0.00 PPM OK	11.55 PPM OK
27 AUG 18	08:12:34	0.00 PPM OK	11.59 PPM OK
27 AUG 18	08:12:39	0.00 PPM OK	9.92 PPM OK
27 AUG 18	08:12:44	0.00 PPM OK	10.33 PPM OK
27 AUG 18	08:12:49	0.00 PPM OK	8.26 PPM OK
27 AUG 18	08:12:54	0.00 PPM OK	8.98 PPM OK
27 AUG 18	08:12:59	0.00 PPM OK	9.33 PPM OK
27 AUG 18	08:13:04	0.00 PPM OK	7.53 PPM OK
27 AUG 18	08:13:09	0.00 PPM OK	6.52 PPM OK
27 AUG 18	08:13:14	0.00 PPM OK	5.78 PPM OK
27 AUG 18	08:13:19	0.00 PPM OK	5.26 PPM OK
27 AUG 18	08:13:24	0.00 PPM OK	5.02 PPM OK
27 AUG 18	08:13:29	0.00 PPM OK	5.05 PPM OK
27 AUG 18	08:13:34	0.00 PPM OK	4.91 PPM OK
27 AUG 18	08:13:39	0.00 PPM OK	4.79 PPM OK
27 AUG 18	08:13:44	0.00 PPM OK	4.79 PPM OK
27 AUG 18	08:13:49	0.00 PPM OK	4.85 PPM OK
27 AUG 18	08:13:54	0.00 PPM OK	4.79 PPM OK
27 AUG 18	08:13:59	0.00 PPM OK	4.85 PPM OK
27 AUG 18	08:14:04	0.00 PPM OK	4.85 PPM OK
27 AUG 18	08:14:09	0.00 PPM OK	4.91 PPM OK
27 AUG 18	08:14:14	0.00 PPM OK	4.92 PPM OK
27 AUG 18	08:14:19	0.00 PPM OK	4.89 PPM OK
27 AUG 18	08:14:24	0.00 PPM OK	5.16 PPM OK
27 AUG 18	08:14:29	0.00 PPM OK	5.98 PPM OK
27 AUG 18	08:14:34	0.00 PPM OK	5.31 PPM OK
27 AUG 18	08:14:39	0.00 PPM OK	5.76 PPM OK
27 AUG 18	08:14:44	0.00 PPM OK	6.03 PPM OK
27 AUG 18	08:14:49	0.00 PPM OK	5.39 PPM OK
27 AUG 18	08:14:54	0.00 PPM OK	5.16 PPM OK
27 AUG 18	08:14:59	0.00 PPM OK	5.78 PPM OK
27 AUG 18	08:15:04	0.00 PPM OK	5.72 PPM OK
27 AUG 18	08:15:09	0.00 PPM OK	4.98 PPM OK
27 AUG 18	08:15:14	0.00 PPM OK	5.07 PPM OK

27 AUG 18	08:15:19	0.00 PPM OK	7.05 PPM OK
27 AUG 18	08:15:24	0.00 PPM OK	6.33 PPM OK
27 AUG 18	08:15:29	0.00 PPM OK	6.94 PPM OK
27 AUG 18	08:15:34	0.00 PPM OK	6.70 PPM OK
27 AUG 18	08:15:39	0.00 PPM OK	6.26 PPM OK
27 AUG 18	08:15:44	0.00 PPM OK	6.33 PPM OK
27 AUG 18	08:15:49	0.00 PPM OK	8.03 PPM OK
27 AUG 18	08:15:54	0.00 PPM OK	7.48 PPM OK
27 AUG 18	08:15:59	0.00 PPM OK	7.83 PPM OK
27 AUG 18	08:16:04	0.00 PPM OK	7.74 PPM OK
27 AUG 18	08:16:09	0.00 PPM OK	6.70 PPM OK
27 AUG 18	08:16:14	0.00 PPM OK	5.72 PPM OK
27 AUG 18	08:16:19	0.00 PPM OK	5.85 PPM OK
27 AUG 18	08:16:24	0.00 PPM OK	5.83 PPM OK
27 AUG 18	08:16:29	0.00 PPM OK	5.92 PPM OK
27 AUG 18	08:16:34	0.00 PPM OK	6.15 PPM OK
27 AUG 18	08:16:39	0.00 PPM OK	6.48 PPM OK
27 AUG 18	08:16:44	0.00 PPM OK	11.22 PPM OK
27 AUG 18	08:16:49	0.00 PPM OK	9.63 PPM OK
27 AUG 18	08:16:54	0.00 PPM OK	8.51 PPM OK
27 AUG 18	08:16:59	0.00 PPM OK	7.85 PPM OK
27 AUG 18	08:17:04	0.00 PPM OK	7.48 PPM OK
27 AUG 18	08:17:09	0.00 PPM OK	7.87 PPM OK
27 AUG 18	08:17:14	0.00 PPM OK	6.83 PPM OK
27 AUG 18	08:17:19	0.00 PPM OK	6.33 PPM OK
27 AUG 18	08:17:24	0.00 PPM OK	5.96 PPM OK
27 AUG 18	08:17:29	0.00 PPM OK	5.83 PPM OK
27 AUG 18	08:17:34	0.00 PPM OK	6.02 PPM OK
27 AUG 18	08:17:39	0.00 PPM OK	7.68 PPM OK
27 AUG 18	08:17:44	0.00 PPM OK	6.96 PPM OK
27 AUG 18	08:17:49	0.00 PPM OK	6.07 PPM OK
27 AUG 18	08:17:54	0.00 PPM OK	5.68 PPM OK
27 AUG 18	08:17:59	0.00 PPM OK	5.35 PPM OK
27 AUG 18	08:18:04	0.00 PPM OK	5.39 PPM OK
27 AUG 18	08:18:09	0.00 PPM OK	5.48 PPM OK
27 AUG 18	08:18:14	0.00 PPM OK	5.72 PPM OK
27 AUG 18	08:18:19	0.00 PPM OK	5.65 PPM OK
27 AUG 18	08:18:24	0.00 PPM OK	5.48 PPM OK
27 AUG 18	08:18:29	0.00 PPM OK	5.70 PPM OK
27 AUG 18	08:18:34	0.00 PPM OK	5.31 PPM OK
27 AUG 18	08:18:39	0.00 PPM OK	5.09 PPM OK
27 AUG 18	08:18:44	0.00 PPM OK	4.91 PPM OK
27 AUG 18	08:18:49	0.00 PPM OK	4.85 PPM OK
27 AUG 18	08:18:54	0.00 PPM OK	4.85 PPM OK
27 AUG 18	08:18:59	0.00 PPM OK	4.68 PPM OK
27 AUG 18	08:19:04	0.00 PPM OK	4.63 PPM OK
27 AUG 18	08:19:09	0.00 PPM OK	4.81 PPM OK
27 AUG 18	08:19:14	0.00 PPM OK	5.15 PPM OK

27 AUG 18	08:19:19	0.00 PPM OK	5.53 PPM OK
27 AUG 18	08:19:24	0.00 PPM OK	6.11 PPM OK
27 AUG 18	08:19:29	0.00 PPM OK	5.72 PPM OK
27 AUG 18	08:19:34	0.00 PPM OK	5.22 PPM OK
27 AUG 18	08:19:39	0.00 PPM OK	5.18 PPM OK
27 AUG 18	08:19:44	0.00 PPM OK	5.07 PPM OK
27 AUG 18	08:19:49	0.00 PPM OK	4.78 PPM OK
27 AUG 18	08:19:54	0.00 PPM OK	5.29 PPM OK
27 AUG 18	08:19:59	0.00 PPM OK	5.90 PPM OK
27 AUG 18	08:20:04	0.00 PPM OK	5.63 PPM OK
27 AUG 18	08:20:09	0.00 PPM OK	5.28 PPM OK
27 AUG 18	08:20:14	0.00 PPM OK	5.28 PPM OK
27 AUG 18	08:20:19	0.00 PPM OK	5.68 PPM OK
27 AUG 18	08:20:24	0.00 PPM OK	6.35 PPM OK
27 AUG 18	08:20:29	0.00 PPM OK	5.40 PPM OK
27 AUG 18	08:20:34	0.00 PPM OK	5.61 PPM OK
27 AUG 18	08:20:39	0.00 PPM OK	5.40 PPM OK
27 AUG 18	08:20:44	0.00 PPM OK	5.46 PPM OK
27 AUG 18	08:20:49	0.00 PPM OK	5.15 PPM OK
27 AUG 18	08:20:54	0.00 PPM OK	5.22 PPM OK
27 AUG 18	08:20:59	0.00 PPM OK	5.11 PPM OK
27 AUG 18	08:21:04	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:21:09	0.00 PPM OK	5.94 PPM OK
27 AUG 18	08:21:14	0.00 PPM OK	6.16 PPM OK
27 AUG 18	08:21:19	0.00 PPM OK	6.35 PPM OK
27 AUG 18	08:21:24	0.00 PPM OK	7.55 PPM OK
27 AUG 18	08:21:29	0.00 PPM OK	4.94 PPM OK
27 AUG 18	08:21:34	0.00 PPM OK	4.79 PPM OK
27 AUG 18	08:21:39	0.00 PPM OK	5.50 PPM OK
27 AUG 18	08:21:44	0.00 PPM OK	6.18 PPM OK
27 AUG 18	08:21:49	0.00 PPM OK	6.42 PPM OK
27 AUG 18	08:21:54	0.00 PPM OK	5.76 PPM OK
27 AUG 18	08:21:59	0.00 PPM OK	5.57 PPM OK
27 AUG 18	08:22:04	0.00 PPM OK	5.09 PPM OK
27 AUG 18	08:22:09	0.00 PPM OK	5.24 PPM OK
27 AUG 18	08:22:14	0.00 PPM OK	4.81 PPM OK
27 AUG 18	08:22:19	0.00 PPM OK	4.89 PPM OK
27 AUG 18	08:22:24	0.00 PPM OK	4.83 PPM OK
27 AUG 18	08:22:29	0.00 PPM OK	4.15 PPM OK
27 AUG 18	08:22:34	0.00 PPM OK	4.15 PPM OK
27 AUG 18	08:22:39	0.00 PPM OK	4.92 PPM OK
27 AUG 18	08:22:44	0.00 PPM OK	5.48 PPM OK
27 AUG 18	08:22:49	0.00 PPM OK	5.42 PPM OK
27 AUG 18	08:22:54	0.00 PPM OK	5.44 PPM OK
27 AUG 18	08:22:59	0.00 PPM OK	5.39 PPM OK
27 AUG 18	08:23:04	0.00 PPM OK	4.66 PPM OK
27 AUG 18	08:23:09	0.00 PPM OK	5.57 PPM OK
27 AUG 18	08:23:14	0.00 PPM OK	5.55 PPM OK

27 AUG 18	08:23:19	0.00 PPM OK	5.70 PPM OK
27 AUG 18	08:23:24	0.00 PPM OK	5.42 PPM OK
27 AUG 18	08:23:29	0.00 PPM OK	5.53 PPM OK
27 AUG 18	08:23:34	0.00 PPM OK	4.72 PPM OK
27 AUG 18	08:23:39	0.00 PPM OK	5.53 PPM OK
27 AUG 18	08:23:44	0.00 PPM OK	5.65 PPM OK
27 AUG 18	08:23:49	0.00 PPM OK	5.78 PPM OK
27 AUG 18	08:23:54	0.00 PPM OK	5.63 PPM OK
27 AUG 18	08:23:59	0.00 PPM OK	5.20 PPM OK
27 AUG 18	08:24:04	0.00 PPM OK	5.72 PPM OK
27 AUG 18	08:24:09	0.00 PPM OK	6.35 PPM OK
27 AUG 18	08:24:14	0.00 PPM OK	5.85 PPM OK
27 AUG 18	08:24:19	0.00 PPM OK	5.33 PPM OK
27 AUG 18	08:24:24	0.00 PPM OK	5.72 PPM OK
27 AUG 18	08:24:29	0.00 PPM OK	5.42 PPM OK
27 AUG 18	08:24:34	0.00 PPM OK	5.74 PPM OK
27 AUG 18	08:24:39	0.00 PPM OK	5.92 PPM OK
27 AUG 18	08:24:44	0.00 PPM OK	5.70 PPM OK
27 AUG 18	08:24:49	0.00 PPM OK	5.42 PPM OK
27 AUG 18	08:24:54	0.00 PPM OK	5.35 PPM OK
27 AUG 18	08:24:59	0.00 PPM OK	5.31 PPM OK
27 AUG 18	08:25:04	0.00 PPM OK	5.78 PPM OK
27 AUG 18	08:25:09	0.00 PPM OK	5.76 PPM OK
27 AUG 18	08:25:14	0.00 PPM OK	5.85 PPM OK
27 AUG 18	08:25:19	0.00 PPM OK	5.76 PPM OK
27 AUG 18	08:25:24	0.00 PPM OK	6.07 PPM OK
27 AUG 18	08:25:29	0.00 PPM OK	6.07 PPM OK
27 AUG 18	08:25:34	0.00 PPM OK	6.11 PPM OK
27 AUG 18	08:25:39	0.00 PPM OK	5.78 PPM OK
27 AUG 18	08:25:44	0.00 PPM OK	5.94 PPM OK
27 AUG 18	08:25:49	0.00 PPM OK	5.92 PPM OK
27 AUG 18	08:25:54	0.00 PPM OK	5.74 PPM OK
27 AUG 18	08:25:59	0.00 PPM OK	5.66 PPM OK
27 AUG 18	08:26:04	0.00 PPM OK	5.55 PPM OK
27 AUG 18	08:26:09	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:26:14	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:26:19	0.00 PPM OK	5.44 PPM OK
27 AUG 18	08:26:24	0.00 PPM OK	5.63 PPM OK
27 AUG 18	08:26:29	0.00 PPM OK	5.66 PPM OK
27 AUG 18	08:26:34	0.00 PPM OK	5.61 PPM OK
27 AUG 18	08:26:39	0.00 PPM OK	6.81 PPM OK
27 AUG 18	08:26:44	0.00 PPM OK	6.40 PPM OK
27 AUG 18	08:26:49	0.00 PPM OK	6.09 PPM OK
27 AUG 18	08:26:54	0.00 PPM OK	6.89 PPM OK
27 AUG 18	08:26:59	0.00 PPM OK	7.57 PPM OK
27 AUG 18	08:27:04	0.00 PPM OK	6.37 PPM OK
27 AUG 18	08:27:09	0.00 PPM OK	5.44 PPM OK
27 AUG 18	08:27:14	0.00 PPM OK	5.05 PPM OK

27 AUG 18	08:27:19	0.00 PPM OK	6.39 PPM OK
27 AUG 18	08:27:24	0.00 PPM OK	6.24 PPM OK
27 AUG 18	08:27:29	0.00 PPM OK	6.24 PPM OK
27 AUG 18	08:27:34	0.00 PPM OK	5.52 PPM OK
27 AUG 18	08:27:39	0.00 PPM OK	5.42 PPM OK
27 AUG 18	08:27:44	0.00 PPM OK	5.26 PPM OK
27 AUG 18	08:27:49	0.00 PPM OK	5.33 PPM OK
27 AUG 18	08:27:54	0.00 PPM OK	5.33 PPM OK
27 AUG 18	08:27:59	0.00 PPM OK	5.31 PPM OK
27 AUG 18	08:28:04	0.00 PPM OK	5.28 PPM OK
27 AUG 18	08:28:09	0.00 PPM OK	5.63 PPM OK
27 AUG 18	08:28:14	0.00 PPM OK	5.89 PPM OK
27 AUG 18	08:28:19	0.00 PPM OK	5.81 PPM OK
27 AUG 18	08:28:24	0.00 PPM OK	6.09 PPM OK
27 AUG 18	08:28:29	0.00 PPM OK	5.98 PPM OK
27 AUG 18	08:28:34	0.00 PPM OK	5.76 PPM OK
27 AUG 18	08:28:39	0.00 PPM OK	5.74 PPM OK
27 AUG 18	08:28:44	0.00 PPM OK	5.83 PPM OK
27 AUG 18	08:28:49	0.00 PPM OK	5.74 PPM OK
27 AUG 18	08:28:54	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:28:59	0.00 PPM OK	5.55 PPM OK
27 AUG 18	08:29:04	0.00 PPM OK	4.94 PPM OK
27 AUG 18	08:29:09	0.00 PPM OK	6.22 PPM OK
27 AUG 18	08:29:14	0.00 PPM OK	6.42 PPM OK
27 AUG 18	08:29:19	0.00 PPM OK	7.18 PPM OK
27 AUG 18	08:29:24	0.00 PPM OK	8.83 PPM OK
27 AUG 18	08:29:29	0.00 PPM OK	7.79 PPM OK
27 AUG 18	08:29:34	0.00 PPM OK	8.27 PPM OK
27 AUG 18	08:29:39	0.00 PPM OK	6.77 PPM OK
27 AUG 18	08:29:44	0.00 PPM OK	9.01 PPM OK
27 AUG 18	08:29:49	0.00 PPM OK	7.22 PPM OK
27 AUG 18	08:29:54	0.00 PPM OK	7.79 PPM OK
27 AUG 18	08:29:59	0.00 PPM OK	7.64 PPM OK
27 AUG 18	08:30:04	0.00 PPM OK	7.31 PPM OK
27 AUG 18	08:30:09	0.00 PPM OK	7.07 PPM OK
27 AUG 18	08:30:14	0.00 PPM OK	7.90 PPM OK
27 AUG 18	08:30:19	0.00 PPM OK	9.22 PPM OK
27 AUG 18	08:30:24	0.00 PPM OK	7.26 PPM OK
27 AUG 18	08:30:29	0.00 PPM OK	7.40 PPM OK
27 AUG 18	08:30:34	0.00 PPM OK	7.11 PPM OK
27 AUG 18	08:30:39	0.00 PPM OK	6.83 PPM OK
27 AUG 18	08:30:44	0.00 PPM OK	6.81 PPM OK
27 AUG 18	08:30:49	0.00 PPM OK	7.05 PPM OK
27 AUG 18	08:30:54	0.00 PPM OK	7.33 PPM OK
27 AUG 18	08:30:59	0.00 PPM OK	7.07 PPM OK
27 AUG 18	08:31:04	0.00 PPM OK	7.02 PPM OK
27 AUG 18	08:31:09	0.00 PPM OK	7.18 PPM OK
27 AUG 18	08:31:14	0.00 PPM OK	7.40 PPM OK

27 AUG 18	08:31:19	0.00 PPM OK	6.98 PPM OK
27 AUG 18	08:31:24	0.00 PPM OK	7.07 PPM OK
27 AUG 18	08:31:29	0.00 PPM OK	6.59 PPM OK
27 AUG 18	08:31:34	0.00 PPM OK	6.81 PPM OK
27 AUG 18	08:31:39	0.00 PPM OK	7.42 PPM OK
27 AUG 18	08:31:44	0.00 PPM OK	7.26 PPM OK
27 AUG 18	08:31:49	0.00 PPM OK	6.77 PPM OK
27 AUG 18	08:31:54	0.00 PPM OK	6.48 PPM OK
27 AUG 18	08:31:59	0.00 PPM OK	6.74 PPM OK
27 AUG 18	08:32:04	0.00 PPM OK	6.48 PPM OK
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27 AUG 18	08:32:14	0.00 PPM OK	6.90 PPM OK
27 AUG 18	08:32:19	0.00 PPM OK	6.53 PPM OK
27 AUG 18	08:32:24	0.00 PPM OK	6.57 PPM OK
27 AUG 18	08:32:29	0.00 PPM OK	6.77 PPM OK
27 AUG 18	08:32:34	0.00 PPM OK	6.33 PPM OK
27 AUG 18	08:32:39	0.00 PPM OK	6.85 PPM OK
27 AUG 18	08:32:44	0.00 PPM OK	7.81 PPM OK
27 AUG 18	08:32:49	0.00 PPM OK	7.51 PPM OK
27 AUG 18	08:32:54	0.00 PPM OK	7.81 PPM OK
27 AUG 18	08:32:59	0.00 PPM OK	6.77 PPM OK
27 AUG 18	08:33:04	0.00 PPM OK	6.64 PPM OK
27 AUG 18	08:33:09	0.00 PPM OK	6.92 PPM OK
27 AUG 18	08:33:14	0.00 PPM OK	7.05 PPM OK
27 AUG 18	08:33:19	0.00 PPM OK	7.77 PPM OK
27 AUG 18	08:33:24	0.00 PPM OK	6.70 PPM OK
27 AUG 18	08:33:29	0.00 PPM OK	6.55 PPM OK
27 AUG 18	08:33:34	0.00 PPM OK	6.96 PPM OK
27 AUG 18	08:33:39	0.00 PPM OK	6.72 PPM OK
27 AUG 18	08:33:44	0.00 PPM OK	6.13 PPM OK
27 AUG 18	08:33:49	0.00 PPM OK	5.83 PPM OK
27 AUG 18	08:33:54	0.00 PPM OK	6.05 PPM OK
27 AUG 18	08:33:59	0.00 PPM OK	5.96 PPM OK
27 AUG 18	08:34:04	0.00 PPM OK	5.85 PPM OK
27 AUG 18	08:34:09	0.00 PPM OK	5.90 PPM OK
27 AUG 18	08:34:14	0.00 PPM OK	9.16 PPM OK
27 AUG 18	08:34:19	0.00 PPM OK	8.53 PPM OK
27 AUG 18	08:34:24	0.00 PPM OK	7.51 PPM OK
27 AUG 18	08:34:29	0.00 PPM OK	6.13 PPM OK
27 AUG 18	08:34:34	0.00 PPM OK	5.98 PPM OK
27 AUG 18	08:34:39	0.00 PPM OK	5.65 PPM OK
27 AUG 18	08:34:44	0.00 PPM OK	5.61 PPM OK
27 AUG 18	08:34:49	0.00 PPM OK	5.55 PPM OK
27 AUG 18	08:34:54	0.00 PPM OK	5.65 PPM OK
27 AUG 18	08:34:59	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:35:04	0.00 PPM OK	5.40 PPM OK
27 AUG 18	08:35:09	0.00 PPM OK	5.66 PPM OK
27 AUG 18	08:35:14	0.00 PPM OK	5.55 PPM OK

27 AUG 18	08:35:19	0.00 PPM OK	5.57 PPM OK
27 AUG 18	08:35:24	0.00 PPM OK	5.55 PPM OK
27 AUG 18	08:35:29	0.00 PPM OK	5.29 PPM OK
27 AUG 18	08:35:34	0.00 PPM OK	5.44 PPM OK
27 AUG 18	08:35:39	0.00 PPM OK	5.39 PPM OK
27 AUG 18	08:35:44	0.00 PPM OK	5.33 PPM OK
27 AUG 18	08:35:49	0.00 PPM OK	5.31 PPM OK
27 AUG 18	08:35:54	0.00 PPM OK	5.35 PPM OK
27 AUG 18	08:35:59	0.00 PPM OK	5.68 PPM OK
27 AUG 18	08:36:04	0.00 PPM OK	5.48 PPM OK
27 AUG 18	08:36:09	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:36:14	0.00 PPM OK	5.53 PPM OK
27 AUG 18	08:36:19	0.00 PPM OK	6.37 PPM OK
27 AUG 18	08:36:24	0.00 PPM OK	5.55 PPM OK
27 AUG 18	08:36:29	0.00 PPM OK	5.46 PPM OK
27 AUG 18	08:36:34	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:36:39	0.00 PPM OK	5.44 PPM OK
27 AUG 18	08:36:44	0.00 PPM OK	5.55 PPM OK
27 AUG 18	08:36:49	0.00 PPM OK	5.61 PPM OK
27 AUG 18	08:36:54	0.00 PPM OK	5.59 PPM OK
27 AUG 18	08:36:59	0.00 PPM OK	5.63 PPM OK
27 AUG 18	08:37:04	0.00 PPM OK	5.31 PPM OK
27 AUG 18	08:37:09	0.00 PPM OK	5.48 PPM OK
27 AUG 18	08:37:14	0.00 PPM OK	5.68 PPM OK
27 AUG 18	08:37:19	0.00 PPM OK	5.68 PPM OK
27 AUG 18	08:37:24	0.00 PPM OK	5.50 PPM OK
27 AUG 18	08:37:29	0.00 PPM OK	4.91 PPM OK
27 AUG 18	08:37:34	0.00 PPM OK	5.92 PPM OK
27 AUG 18	08:37:39	0.00 PPM OK	6.61 PPM OK
27 AUG 18	08:37:44	0.00 PPM OK	6.09 PPM OK
27 AUG 18	08:37:49	0.00 PPM OK	6.50 PPM OK
27 AUG 18	08:37:54	0.00 PPM OK	6.26 PPM OK
27 AUG 18	08:37:59	0.00 PPM OK	6.52 PPM OK
27 AUG 18	08:38:04	0.00 PPM OK	6.63 PPM OK
27 AUG 18	08:38:09	0.00 PPM OK	7.76 PPM OK
27 AUG 18	08:38:14	0.00 PPM OK	7.81 PPM OK
27 AUG 18	08:38:19	0.00 PPM OK	9.33 PPM OK
27 AUG 18	08:38:24	0.00 PPM OK	8.27 PPM OK
27 AUG 18	08:38:29	0.00 PPM OK	7.66 PPM OK
27 AUG 18	08:38:34	0.00 PPM OK	7.77 PPM OK
27 AUG 18	08:38:39	0.00 PPM OK	7.90 PPM OK
27 AUG 18	08:38:44	0.00 PPM OK	7.48 PPM OK
27 AUG 18	08:38:49	0.00 PPM OK	7.46 PPM OK
27 AUG 18	08:38:54	0.00 PPM OK	7.26 PPM OK
27 AUG 18	08:38:59	0.00 PPM OK	7.87 PPM OK
27 AUG 18	08:39:04	0.00 PPM OK	11.59 PPM OK
27 AUG 18	08:39:09	0.00 PPM OK	16.05 PPM OK
27 AUG 18	08:39:14	0.00 PPM OK	97.19 PPM OK

27 AUG 18	08:39:19	0.00 PPM OK	316 PPM OK
27 AUG 18	08:39:24	0.00 PPM OK	359 PPM OK
27 AUG 18	08:39:29	0.00 PPM OK	431 PPM OK
27 AUG 18	08:39:34	0.00 PPM OK	424 PPM OK
27 AUG 18	08:39:39	0.00 PPM OK	304 PPM OK
27 AUG 18	08:39:44	0.00 PPM OK	241 PPM OK
27 AUG 18	08:39:49	0.00 PPM OK	121 PPM OK
27 AUG 18	08:39:54	0.00 PPM OK	86.16 PPM OK
27 AUG 18	08:39:59	0.00 PPM OK	67.15 PPM OK
27 AUG 18	08:40:04	0.00 PPM OK	60.12 PPM OK
27 AUG 18	08:40:09	0.00 PPM OK	48.88 PPM OK
27 AUG 18	08:40:14	0.00 PPM OK	41.48 PPM OK
27 AUG 18	08:40:19	0.00 PPM OK	36.00 PPM OK
27 AUG 18	08:40:24	0.00 PPM OK	31.98 PPM OK
27 AUG 18	08:40:29	0.00 PPM OK	29.17 PPM OK
27 AUG 18	08:40:34	0.00 PPM OK	26.82 PPM OK
27 AUG 18	08:40:39	0.00 PPM OK	24.43 PPM OK
27 AUG 18	08:40:44	0.00 PPM OK	22.84 PPM OK
27 AUG 18	08:40:49	0.00 PPM OK	21.38 PPM OK
27 AUG 18	08:40:54	0.00 PPM OK	20.38 PPM OK
27 AUG 18	08:40:59	0.00 PPM OK	19.27 PPM OK
27 AUG 18	08:41:04	0.00 PPM OK	17.86 PPM OK
27 AUG 18	08:41:09	0.00 PPM OK	18.23 PPM OK
27 AUG 18	08:41:14	0.00 PPM OK	19.69 PPM OK
27 AUG 18	08:41:19	0.00 PPM OK	26.99 PPM OK
27 AUG 18	08:41:24	0.00 PPM OK	24.10 PPM OK
27 AUG 18	08:41:29	0.00 PPM OK	21.56 PPM OK
27 AUG 18	08:41:34	0.00 PPM OK	21.03 PPM OK
27 AUG 18	08:41:39	0.00 PPM OK	19.05 PPM OK
27 AUG 18	08:41:44	0.00 PPM OK	17.51 PPM OK
27 AUG 18	08:41:49	0.00 PPM OK	16.05 PPM OK
27 AUG 18	08:41:54	0.00 PPM OK	15.18 PPM OK

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION
27 AUG 18	08:50:39	0.00 PPM OK	6.22 PPM OK
27 AUG 18	08:50:44	0.00 PPM OK	5.50 PPM OK
27 AUG 18	08:50:49	0.00 PPM OK	5.48 PPM OK
27 AUG 18	08:50:54	0.00 PPM OK	5.39 PPM OK
27 AUG 18	08:50:59	0.00 PPM OK	9.11 PPM OK
27 AUG 18	08:51:04	0.00 PPM OK	11.79 PPM OK
27 AUG 18	08:51:09	0.00 PPM OK	10.96 PPM OK
27 AUG 18	08:51:14	0.00 PPM OK	10.53 PPM OK
27 AUG 18	08:51:19	0.00 PPM OK	10.16 PPM OK
27 AUG 18	08:51:24	0.00 PPM OK	9.87 PPM OK
27 AUG 18	08:51:29	0.00 PPM OK	9.50 PPM OK
27 AUG 18	08:51:34	0.00 PPM OK	8.77 PPM OK

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27 AUG 18	08:51:39	0.00 PPM OK	8.72 PPM OK
27 AUG 18	08:51:44	0.00 PPM OK	8.98 PPM OK
27 AUG 18	08:51:49	0.00 PPM OK	8.94 PPM OK
27 AUG 18	08:51:54	0.00 PPM OK	9.03 PPM OK
27 AUG 18	08:51:59	0.00 PPM OK	9.14 PPM OK
27 AUG 18	08:52:04	0.00 PPM OK	9.01 PPM OK
27 AUG 18	08:52:09	0.00 PPM OK	8.83 PPM OK
27 AUG 18	08:52:14	0.00 PPM OK	8.61 PPM OK
27 AUG 18	08:52:19	0.00 PPM OK	8.44 PPM OK
27 AUG 18	08:52:24	0.00 PPM OK	8.38 PPM OK
27 AUG 18	08:52:29	0.00 PPM OK	8.70 PPM OK
27 AUG 18	08:52:34	0.00 PPM OK	8.57 PPM OK
27 AUG 18	08:52:39	0.00 PPM OK	8.16 PPM OK
27 AUG 18	08:52:44	0.00 PPM OK	7.76 PPM OK
27 AUG 18	08:52:49	0.00 PPM OK	7.09 PPM OK
27 AUG 18	08:52:54	0.00 PPM OK	6.55 PPM OK
27 AUG 18	08:52:59	0.00 PPM OK	6.31 PPM OK
27 AUG 18	08:53:04	0.00 PPM OK	6.24 PPM OK
27 AUG 18	08:53:09	0.00 PPM OK	6.20 PPM OK
27 AUG 18	08:53:14	0.00 PPM OK	6.05 PPM OK
27 AUG 18	08:53:19	0.00 PPM OK	5.79 PPM OK
27 AUG 18	08:53:24	0.00 PPM OK	6.03 PPM OK
27 AUG 18	08:53:29	0.00 PPM OK	6.22 PPM OK
27 AUG 18	08:53:34	0.00 PPM OK	5.89 PPM OK
27 AUG 18	08:53:39	0.00 PPM OK	6.52 PPM OK
27 AUG 18	08:53:44	0.00 PPM OK	6.76 PPM OK
27 AUG 18	08:53:49	0.00 PPM OK	7.29 PPM OK
27 AUG 18	08:53:54	0.00 PPM OK	6.11 PPM OK
27 AUG 18	08:53:59	0.00 PPM OK	6.24 PPM OK
27 AUG 18	08:54:04	0.00 PPM OK	6.42 PPM OK
27 AUG 18	08:54:09	0.00 PPM OK	6.20 PPM OK
27 AUG 18	08:54:14	0.00 PPM OK	6.27 PPM OK
27 AUG 18	08:54:19	0.00 PPM OK	6.50 PPM OK
27 AUG 18	08:54:24	0.00 PPM OK	6.42 PPM OK
27 AUG 18	08:54:29	0.00 PPM OK	6.13 PPM OK
27 AUG 18	08:54:34	0.00 PPM OK	6.52 PPM OK
27 AUG 18	08:54:39	0.00 PPM OK	6.16 PPM OK
27 AUG 18	08:54:44	0.00 PPM OK	6.26 PPM OK
27 AUG 18	08:54:49	0.00 PPM OK	7.16 PPM OK
27 AUG 18	08:54:54	0.00 PPM OK	6.52 PPM OK
27 AUG 18	08:54:59	0.00 PPM OK	6.70 PPM OK
27 AUG 18	08:55:04	0.00 PPM OK	5.78 PPM OK
27 AUG 18	08:55:09	0.00 PPM OK	6.05 PPM OK
27 AUG 18	08:55:14	0.00 PPM OK	5.85 PPM OK
27 AUG 18	08:55:19	0.00 PPM OK	5.81 PPM OK
27 AUG 18	08:55:24	0.00 PPM OK	5.65 PPM OK
27 AUG 18	08:55:29	0.00 PPM OK	5.66 PPM OK
27 AUG 18	08:55:34	0.00 PPM OK	5.74 PPM OK

27 AUG 18	08:55:39	0.00 PPM OK	5.85 PPM OK
27 AUG 18	08:55:44	0.00 PPM OK	5.66 PPM OK
27 AUG 18	08:55:49	0.00 PPM OK	4.96 PPM OK
27 AUG 18	08:55:54	0.00 PPM OK	4.94 PPM OK
27 AUG 18	08:55:59	0.00 PPM OK	4.87 PPM OK
27 AUG 18	08:56:04	0.00 PPM OK	4.91 PPM OK
27 AUG 18	08:56:09	0.00 PPM OK	5.52 PPM OK
27 AUG 18	08:56:14	0.00 PPM OK	5.57 PPM OK
27 AUG 18	08:56:19	0.00 PPM OK	6.18 PPM OK
27 AUG 18	08:56:24	0.00 PPM OK	8.44 PPM OK
27 AUG 18	08:56:29	0.00 PPM OK	8.79 PPM OK
27 AUG 18	08:56:34	0.00 PPM OK	8.50 PPM OK
27 AUG 18	08:56:39	0.00 PPM OK	9.14 PPM OK
27 AUG 18	08:56:44	0.00 PPM OK	12.14 PPM OK
27 AUG 18	08:56:49	0.00 PPM OK	12.75 PPM OK
27 AUG 18	08:56:54	0.00 PPM OK	12.64 PPM OK
27 AUG 18	08:56:59	0.00 PPM OK	12.72 PPM OK
27 AUG 18	08:57:04	0.00 PPM OK	8.11 PPM OK
27 AUG 18	08:57:09	0.00 PPM OK	10.57 PPM OK
27 AUG 18	08:57:14	0.00 PPM OK	9.63 PPM OK
27 AUG 18	08:57:19	0.00 PPM OK	8.88 PPM OK
27 AUG 18	08:57:24	0.00 PPM OK	9.68 PPM OK
27 AUG 18	08:57:29	0.00 PPM OK	8.07 PPM OK
27 AUG 18	08:57:34	0.00 PPM OK	9.38 PPM OK
27 AUG 18	08:57:39	0.00 PPM OK	7.85 PPM OK
27 AUG 18	08:57:44	0.00 PPM OK	7.27 PPM OK
27 AUG 18	08:57:49	0.00 PPM OK	9.83 PPM OK
27 AUG 18	08:57:54	0.00 PPM OK	9.05 PPM OK
27 AUG 18	08:57:59	0.00 PPM OK	7.09 PPM OK
27 AUG 18	08:58:04	0.00 PPM OK	6.96 PPM OK
27 AUG 18	08:58:09	0.00 PPM OK	6.09 PPM OK
27 AUG 18	08:58:14	0.00 PPM OK	6.48 PPM OK
27 AUG 18	08:58:19	0.00 PPM OK	5.96 PPM OK
27 AUG 18	08:58:24	0.00 PPM OK	5.87 PPM OK
27 AUG 18	08:58:29	0.00 PPM OK	6.29 PPM OK
27 AUG 18	08:58:34	0.00 PPM OK	5.57 PPM OK
27 AUG 18	08:58:39	0.00 PPM OK	6.68 PPM OK
27 AUG 18	08:58:44	0.00 PPM OK	6.90 PPM OK
27 AUG 18	08:58:49	0.00 PPM OK	6.55 PPM OK
27 AUG 18	08:58:54	0.00 PPM OK	6.39 PPM OK
27 AUG 18	08:58:59	0.00 PPM OK	6.44 PPM OK
27 AUG 18	08:59:04	0.00 PPM OK	6.52 PPM OK
27 AUG 18	08:59:09	0.00 PPM OK	6.50 PPM OK
27 AUG 18	08:59:14	0.00 PPM OK	6.29 PPM OK
27 AUG 18	08:59:19	0.00 PPM OK	6.15 PPM OK
27 AUG 18	08:59:24	0.00 PPM OK	6.37 PPM OK
27 AUG 18	08:59:29	0.00 PPM OK	6.31 PPM OK
27 AUG 18	08:59:34	0.00 PPM OK	6.22 PPM OK

27 AUG 18	08:59:39	0.00 PPM OK	6.46 PPM OK
27 AUG 18	08:59:44	0.00 PPM OK	6.37 PPM OK
27 AUG 18	08:59:49	0.00 PPM OK	6.37 PPM OK
27 AUG 18	08:59:54	0.00 PPM OK	6.03 PPM OK
27 AUG 18	08:59:59	0.00 PPM OK	5.66 PPM OK
27 AUG 18	09:00:04	0.00 PPM OK	5.98 PPM OK
27 AUG 18	09:00:09	0.00 PPM OK	6.16 PPM OK
27 AUG 18	09:00:14	0.00 PPM OK	6.15 PPM OK
27 AUG 18	09:00:19	0.00 PPM OK	6.09 PPM OK
27 AUG 18	09:00:24	0.00 PPM OK	6.64 PPM OK
27 AUG 18	09:00:29	0.00 PPM OK	6.00 PPM OK
27 AUG 18	09:00:34	0.00 PPM OK	6.11 PPM OK
27 AUG 18	09:00:39	0.00 PPM OK	6.11 PPM OK
27 AUG 18	09:00:44	0.00 PPM OK	6.29 PPM OK
27 AUG 18	09:00:49	0.00 PPM OK	6.00 PPM OK
27 AUG 18	09:00:54	0.00 PPM OK	5.90 PPM OK
27 AUG 18	09:00:59	0.00 PPM OK	5.66 PPM OK
27 AUG 18	09:01:04	0.00 PPM OK	5.76 PPM OK
27 AUG 18	09:01:09	0.00 PPM OK	6.44 PPM OK
27 AUG 18	09:01:14	0.00 PPM OK	5.61 PPM OK
27 AUG 18	09:01:19	0.00 PPM OK	5.81 PPM OK
27 AUG 18	09:01:24	0.00 PPM OK	6.13 PPM OK
27 AUG 18	09:01:29	0.00 PPM OK	6.57 PPM OK
27 AUG 18	09:01:34	0.00 PPM OK	6.13 PPM OK
27 AUG 18	09:01:39	0.00 PPM OK	6.15 PPM OK
27 AUG 18	09:01:44	0.00 PPM OK	6.07 PPM OK
27 AUG 18	09:01:49	0.00 PPM OK	6.40 PPM OK
27 AUG 18	09:01:54	0.00 PPM OK	6.27 PPM OK
27 AUG 18	09:01:59	0.00 PPM OK	6.46 PPM OK
27 AUG 18	09:02:04	0.00 PPM OK	5.66 PPM OK
27 AUG 18	09:02:09	0.00 PPM OK	6.07 PPM OK
27 AUG 18	09:02:14	0.00 PPM OK	5.94 PPM OK
27 AUG 18	09:02:19	0.00 PPM OK	5.98 PPM OK
27 AUG 18	09:02:24	0.00 PPM OK	5.72 PPM OK
27 AUG 18	09:02:29	0.00 PPM OK	6.57 PPM OK
27 AUG 18	09:02:34	0.00 PPM OK	5.83 PPM OK
27 AUG 18	09:02:39	0.00 PPM OK	6.09 PPM OK
27 AUG 18	09:02:44	0.00 PPM OK	5.90 PPM OK
27 AUG 18	09:02:49	0.00 PPM OK	6.20 PPM OK
27 AUG 18	09:02:54	0.00 PPM OK	5.98 PPM OK
27 AUG 18	09:02:59	0.00 PPM OK	5.85 PPM OK
27 AUG 18	09:03:04	0.00 PPM OK	5.76 PPM OK
27 AUG 18	09:03:09	0.00 PPM OK	5.31 PPM OK
27 AUG 18	09:03:14	0.00 PPM OK	5.65 PPM OK

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION

27 AUG 18	09:05:53	0.00 PPM OK	9.96 PPM OK
27 AUG 18	09:05:58	0.00 PPM OK	9.57 PPM OK
27 AUG 18	09:06:03	0.00 PPM OK	9.53 PPM OK
27 AUG 18	09:06:08	0.00 PPM OK	16.33 PPM OK
27 AUG 18	09:06:13	0.00 PPM OK	12.14 PPM OK
27 AUG 18	09:06:18	0.00 PPM OK	12.75 PPM OK
27 AUG 18	09:06:23	0.00 PPM OK	10.85 PPM OK
27 AUG 18	09:06:28	0.00 PPM OK	11.79 PPM OK
27 AUG 18	09:06:33	0.00 PPM OK	12.64 PPM OK
27 AUG 18	09:06:38	0.00 PPM OK	18.77 PPM OK
27 AUG 18	09:06:43	0.00 PPM OK	16.18 PPM OK
27 AUG 18	09:06:48	0.00 PPM OK	14.29 PPM OK
27 AUG 18	09:06:53	0.00 PPM OK	23.25 PPM OK
27 AUG 18	09:06:58	0.00 PPM OK	14.92 PPM OK
27 AUG 18	09:07:03	0.00 PPM OK	10.31 PPM OK
27 AUG 18	09:07:08	0.00 PPM OK	9.18 PPM OK
27 AUG 18	09:07:13	0.00 PPM OK	9.01 PPM OK
27 AUG 18	09:07:18	0.00 PPM OK	9.16 PPM OK
27 AUG 18	09:07:23	0.00 PPM OK	12.98 PPM OK
27 AUG 18	09:07:28	0.00 PPM OK	11.74 PPM OK
27 AUG 18	09:07:33	0.00 PPM OK	11.40 PPM OK
27 AUG 18	09:07:38	0.00 PPM OK	11.16 PPM OK
27 AUG 18	09:07:43	0.00 PPM OK	11.12 PPM OK
27 AUG 18	09:07:48	0.00 PPM OK	11.38 PPM OK
27 AUG 18	09:07:53	0.00 PPM OK	10.62 PPM OK
27 AUG 18	09:07:58	0.00 PPM OK	9.63 PPM OK
27 AUG 18	09:08:03	0.00 PPM OK	9.38 PPM OK
27 AUG 18	09:08:08	0.00 PPM OK	9.31 PPM OK
27 AUG 18	09:08:13	0.00 PPM OK	10.05 PPM OK
27 AUG 18	09:08:18	0.00 PPM OK	9.94 PPM OK
27 AUG 18	09:08:23	0.00 PPM OK	9.59 PPM OK
27 AUG 18	09:08:28	0.00 PPM OK	9.79 PPM OK
27 AUG 18	09:08:33	0.00 PPM OK	9.92 PPM OK
27 AUG 18	09:08:38	0.00 PPM OK	9.77 PPM OK
27 AUG 18	09:08:43	0.00 PPM OK	9.51 PPM OK
27 AUG 18	09:08:48	0.00 PPM OK	10.05 PPM OK
27 AUG 18	09:08:53	0.00 PPM OK	9.37 PPM OK
27 AUG 18	09:08:58	0.00 PPM OK	9.29 PPM OK
27 AUG 18	09:09:03	0.00 PPM OK	9.09 PPM OK
27 AUG 18	09:09:08	0.00 PPM OK	8.90 PPM OK
27 AUG 18	09:09:13	0.00 PPM OK	8.96 PPM OK
27 AUG 18	09:09:18	0.00 PPM OK	9.01 PPM OK
27 AUG 18	09:09:23	0.00 PPM OK	9.92 PPM OK
27 AUG 18	09:09:28	0.00 PPM OK	9.01 PPM OK
27 AUG 18	09:09:33	0.00 PPM OK	9.18 PPM OK
27 AUG 18	09:09:38	0.00 PPM OK	9.01 PPM OK
27 AUG 18	09:09:43	0.00 PPM OK	8.98 PPM OK
27 AUG 18	09:09:48	0.00 PPM OK	8.66 PPM OK

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27 AUG 18	09:09:53	0.00 PPM OK	9.05 PPM OK
27 AUG 18	09:09:58	0.00 PPM OK	9.40 PPM OK
27 AUG 18	09:10:03	0.00 PPM OK	8.81 PPM OK
27 AUG 18	09:10:08	0.00 PPM OK	9.46 PPM OK
27 AUG 18	09:10:13	0.00 PPM OK	8.87 PPM OK
27 AUG 18	09:10:18	0.00 PPM OK	10.27 PPM OK
27 AUG 18	09:10:23	0.00 PPM OK	8.64 PPM OK
27 AUG 18	09:10:28	0.00 PPM OK	8.94 PPM OK
27 AUG 18	09:10:33	0.00 PPM OK	8.83 PPM OK
27 AUG 18	09:10:38	0.00 PPM OK	8.81 PPM OK
27 AUG 18	09:10:43	0.00 PPM OK	8.72 PPM OK
27 AUG 18	09:10:48	0.00 PPM OK	8.87 PPM OK
27 AUG 18	09:10:53	0.00 PPM OK	9.03 PPM OK
27 AUG 18	09:10:58	0.00 PPM OK	9.03 PPM OK
27 AUG 18	09:11:03	0.00 PPM OK	8.55 PPM OK
27 AUG 18	09:11:08	0.00 PPM OK	8.44 PPM OK
27 AUG 18	09:11:13	0.00 PPM OK	8.26 PPM OK
27 AUG 18	09:11:18	0.00 PPM OK	8.13 PPM OK
27 AUG 18	09:11:23	0.00 PPM OK	8.29 PPM OK
27 AUG 18	09:11:28	0.00 PPM OK	8.35 PPM OK
27 AUG 18	09:11:33	0.00 PPM OK	8.48 PPM OK
27 AUG 18	09:11:38	0.00 PPM OK	8.03 PPM OK
27 AUG 18	09:11:43	0.00 PPM OK	8.38 PPM OK
27 AUG 18	09:11:48	0.00 PPM OK	8.26 PPM OK
27 AUG 18	09:11:53	0.00 PPM OK	8.22 PPM OK
27 AUG 18	09:11:58	0.00 PPM OK	8.44 PPM OK
27 AUG 18	09:12:03	0.00 PPM OK	7.87 PPM OK
27 AUG 18	09:12:08	0.00 PPM OK	8.64 PPM OK
27 AUG 18	09:12:13	0.00 PPM OK	8.70 PPM OK
27 AUG 18	09:12:18	0.00 PPM OK	9.09 PPM OK
27 AUG 18	09:12:23	0.00 PPM OK	8.77 PPM OK
27 AUG 18	09:12:28	0.00 PPM OK	8.83 PPM OK
27 AUG 18	09:12:33	0.00 PPM OK	8.92 PPM OK
27 AUG 18	09:12:38	0.00 PPM OK	8.90 PPM OK
27 AUG 18	09:12:43	0.00 PPM OK	8.83 PPM OK
27 AUG 18	09:12:48	0.00 PPM OK	9.20 PPM OK
27 AUG 18	09:12:53	0.00 PPM OK	9.33 PPM OK
27 AUG 18	09:12:58	0.00 PPM OK	8.96 PPM OK
27 AUG 18	09:13:03	0.00 PPM OK	8.98 PPM OK
27 AUG 18	09:13:08	0.00 PPM OK	8.92 PPM OK
27 AUG 18	09:13:13	0.00 PPM OK	8.88 PPM OK
27 AUG 18	09:13:18	0.00 PPM OK	9.37 PPM OK
27 AUG 18	09:13:23	0.00 PPM OK	9.38 PPM OK
27 AUG 18	09:13:28	0.00 PPM OK	9.18 PPM OK
27 AUG 18	09:13:33	0.00 PPM OK	9.37 PPM OK
27 AUG 18	09:13:38	0.00 PPM OK	9.53 PPM OK
27 AUG 18	09:13:43	0.00 PPM OK	9.31 PPM OK
27 AUG 18	09:13:48	0.00 PPM OK	9.29 PPM OK

27 AUG 18	09:13:53	0.00 PPM OK	8.59 PPM OK
27 AUG 18	09:13:58	0.00 PPM OK	8.77 PPM OK
27 AUG 18	09:14:03	0.00 PPM OK	9.05 PPM OK
27 AUG 18	09:14:08	0.00 PPM OK	9.13 PPM OK
27 AUG 18	09:14:13	0.00 PPM OK	9.18 PPM OK
27 AUG 18	09:14:18	0.00 PPM OK	9.09 PPM OK
27 AUG 18	09:14:23	0.00 PPM OK	9.20 PPM OK
27 AUG 18	09:14:28	0.00 PPM OK	9.24 PPM OK
27 AUG 18	09:14:33	0.00 PPM OK	9.13 PPM OK
27 AUG 18	09:14:38	0.00 PPM OK	8.98 PPM OK
27 AUG 18	09:14:43	0.00 PPM OK	9.20 PPM OK
27 AUG 18	09:14:48	0.00 PPM OK	9.05 PPM OK
27 AUG 18	09:14:53	0.00 PPM OK	9.16 PPM OK
27 AUG 18	09:14:58	0.00 PPM OK	9.18 PPM OK
27 AUG 18	09:15:03	0.00 PPM OK	9.29 PPM OK
27 AUG 18	09:15:08	0.00 PPM OK	9.31 PPM OK
27 AUG 18	09:15:13	0.00 PPM OK	9.14 PPM OK
27 AUG 18	09;15:18	0.00 PPM OK	8.96 PPM OK
27 AUG 18	09:15:23	0.00 PPM OK	8.94 PPM OK
27 AUG 18	09:15:28	0.00 PPM OK	8.20 PPM OK
27 AUG 18	09:15:33	0.00 PPM OK	8.29 PPM OK
27 AUG 18	09:15:38	0.00 PPM OK	8.79 PPM OK
27 AUG 18	09:15:43	0.00 PPM OK	8.53 PPM OK

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION
27 AUG 18	09:19:13	0.00 PPM OK	21.56 PPM OK
27 AUG 18	09:19:18	0.00 PPM OK	20.93 PPM OK
27 AUG 18	09:19:23	0.00 PPM OK	20.19 PPM OK
27 AUG 18	09:19:28	0.00 PPM OK	19.73 PPM OK
27 AUG 18	09:19:33	0.00 PPM OK	19.08 PPM OK
27 AUG 18	09:19:38	0.00 PPM OK	18.58 PPM OK
27 AUG 18	09:19:43	0.00 PPM OK	18.05 PPM OK
27 AUG 18	09:19:48	0.00 PPM OK	17.71 PPM OK
27 AUG 18	09:19:53	0.00 PPM OK	17.60 PPM OK
27 AUG 18	09:19:58	0.00 PPM OK	17.16 PPM OK
27 AUG 18	09:20:03	0.00 PPM OK	16.70 PPM OK
27 AUG 18	09:20:08	0.00 PPM OK	16.62 PPM OK
27 AUG 18	09:20:13	0.00 PPM OK	16.33 PPM OK
27 AUG 18	09:20:18	0.00 PPM OK	16.60 PPM OK
27 AUG 18	09:20:23	0.00 PPM OK	16.57 PPM OK
27 AUG 18	09:20:28	0.00 PPM OK	16.90 PPM OK
27 AUG 18	09:20:33	0.00 PPM OK	15.97 PPM OK
27 AUG 18	09:20:38	0.00 PPM OK	14.94 PPM OK
27 AUG 18	09:20:43	0.00 PPM OK	15.46 PPM OK
27 AUG 18	09:20:48	0.00 PPM OK	15.29 PPM OK
27 AUG 18	09:20:53	0.00 PPM OK	15.03 PPM OK

27 AUG 18	09:20:58	0.00 PPM OK	14.92 PPM OK
27 AUG 18	09:21:03	0.00 PPM OK	14.55 PPM OK
27 AUG 18	09:21:08	0.00 PPM OK	14.42 PPM OK
27 AUG 18	09:21:13	0.00 PPM OK	14.22 PPM OK
27 AUG 18	09:21:18	0.00 PPM OK	14.09 PPM OK
27 AUG 18	09:21:23	0.00 PPM OK	13.83 PPM OK
27 AUG 18	09:21:28	0.00 PPM OK	13.92 PPM OK
27 AUG 18	09:21:33	0.00 PPM OK	13.85 PPM OK
27 AUG 18	09:21:38	0.00 PPM OK	13.42 PPM OK
27 AUG 18	09:21:43	0.00 PPM OK	13.03 PPM OK
27 AUG 18	09:21:48	0.00 PPM OK	13.23 PPM OK
27 AUG 18	09:21:53	0.00 PPM OK	12.99 PPM OK
27 AUG 18	09:21:58	0.00 PPM OK	12.64 PPM OK
27 AUG 18	09:22:03	0.00 PPM OK	12.48 PPM OK
27 AUG 18	09:22:08	0.00 PPM OK	12.49 PPM OK
27 AUG 18	09:22:13	0.00 PPM OK	12.36 PPM OK
27 AUG 18	09:22:18	0.00 PPM OK	12.53 PPM OK

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION
27 AUG 18	09:25:55	0.00 PPM OK	9.83 PPM OK
27 AUG 18	09:26:00	0.00 PPM OK	9.18 PPM OK
27 AUG 18	09:26:05	0.00 PPM OK	8.92 PPM OK
27 AUG 18	09:26:10	0.00 PPM OK	9.09 PPM OK
27 AUG 18	09:26:15	0.00 PPM OK	9.37 PPM OK
27 AUG 18	09:26:20	0.00 PPM OK	9.72 PPM OK
27 AUG 18	09:26:25	0.00 PPM OK	9.48 PPM OK
27 AUG 18	09:26:30	0.00 PPM OK	9.42 PPM OK
27 AUG 18	09:26:35	0.00 PPM OK	9.27 PPM OK
27 AUG 18	09:26:40	0.00 PPM OK	9.75 PPM OK
27 AUG 18	09:26:45	0.00 PPM OK	9.64 PPM OK
27 AUG 18	09:26:50	0.00 PPM OK	9.24 PPM OK
27 AUG 18	09:26:55	0.00 PPM OK	9.20 PPM OK
27 AUG 18	09:27:00	0.00 PPM OK	9.29 PPM OK
27 AUG 18	09:27:05	0.00 PPM OK	8.98 PPM OK
27 AUG 18	09:27:10	0.00 PPM OK	8.94 PPM OK
27 AUG 18	09:27:15	0.00 PPM OK	9.11 PPM OK
27 AUG 18	09:27:20	0.00 PPM OK	8.87 PPM OK
27 AUG 18	09:27:25	0.00 PPM OK	8.83 PPM OK
27 AUG 18	09:27:30	0.00 PPM OK	8.79 PPM OK
27 AUG 18	09:27:35	0.00 PPM OK	8.74 PPM OK
27 AUG 18	09:27:40	0.00 PPM OK	7.90 PPM OK
27 AUG 18	09:27:45	0.00 PPM OK	7.94 PPM OK
27 AUG 18	09:27:50	0.00 PPM OK	7.92 PPM OK
27 AUG 18	09:27:55	0.00 PPM OK	8.16 PPM OK
27 AUG 18	09:28:00	0.00 PPM OK	7.66 PPM OK
27 AUG 18	09:28:05	0.00 PPM OK	7.92 PPM OK

X

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION
27 AUG 18	09:28:39	0.00 PPM OK	7.85 PPM OK
27 AUG 18	09:28:44	0.00 PPM OK	8.05 PPM OK
27 AUG 18	09:28:49	0.00 PPM OK	8.01 PPM OK
27 AUG 18	09:28:54	0.00 PPM OK	7.76 PPM OK
27 AUG 18	09:28:59	0.00 PPM OK	7.14 PPM OK
27 AUG 18	09:29:04	0.00 PPM OK	8.05 PPM OK
27 AUG 18	09:29:09	0.00 PPM OK	8.27 PPM OK
27 AUG 18	09:29:14	0.00 PPM OK	8.94 PPM OK
27 AUG 18	09:29:19	0.00 PPM OK	8.55 PPM OK
27 AUG 18	09:29:24	0.00 PPM OK	10.37 PPM OK
27 AUG 18	09:29:29	0.00 PPM OK	18.90 PPM OK
27 AUG 18	09:29:34	0.00 PPM OK	24.90 PPM OK
27 AUG 18	09:29:39	0.00 PPM OK	9.05 PPM OK
27 AUG 18	09:29:44	0.00 PPM OK	8.05 PPM OK
27 AUG 18	09:29:49	0.00 PPM OK	8.44 PPM OK
27 AUG 18	09:29:54	0.00 PPM OK	8.61 PPM OK
27 AUG 18	09:29:59	0.00 PPM OK	9.35 PPM OK
27 AUG 18	09:30:04	0.00 PPM OK	9.14 PPM OK
27 AUG 18	09:30:09	0.00 PPM OK	9.20 PPM OK
27 AUG 18	09:30:14	0.00 PPM OK	8.85 PPM OK
27 AUG 18	09:30:19	0.00 PPM OK	8.29 PPM OK
27 AUG 18	09:30:24	0.00 PPM OK	8.22 PPM OK
27 AUG 18	09:30:29	0.00 PPM OK	7.92 PPM OK
27 AUG 18	09:30:34	0.00 PPM OK	8.38 PPM OK
27 AUG 18	09:30:39	0.00 PPM OK	8.24 PPM OK
27 AUG 18	09:30:44	0.00 PPM OK	8.79 PPM OK
27 AUG 18	09:30:49	0.00 PPM OK	8.63 PPM OK
27 AUG 18	09:30:54	0.00 PPM OK	8.57 PPM OK
27 AUG 18	09:30:59	0.00 PPM OK	8.14 PPM OK
27 AUG 18	09:31:04	0.00 PPM OK	8.33 PPM OK
27 AUG 18	09:31:09	0.00 PPM OK	8.29 PPM OK
27 AUG 18	09:31:14	0.00 PPM OK	8.63 PPM OK
27 AUG 18	09:31:19	0.00 PPM OK	8.44 PPM OK
27 AUG 18	09:31:24	0.00 PPM OK	8.79 PPM OK
27 AUG 18	09:31:29	0.00 PPM OK	9.55 PPM OK
27 AUG 18	09:31:34	0.00 PPM OK	9.11 PPM OK
27 AUG 18	09:31:39	0.00 PPM OK	8.87 PPM OK
27 AUG 18	09:31:44	0.00 PPM OK	73.83 PPM OK
27 AUG 18	09:31:49	0.00 PPM OK	26.78 PPM OK
27 AUG 18	09:31:54	0.00 PPM OK	36.46 PPM OK
27 AUG 18	09:31:59	0.00 PPM OK	16.08 PPM OK
27 AUG 18	09:32:04	0.00 PPM OK	19.23 PPM OK
27 AUG 18	09:32:09	0.00 PPM OK	22.71 PPM OK
27 AUG 18	09:32:14	0.00 PPM OK	27.62 PPM OK

27 AUG 18	09:32:19	0.00 PPM OK	19.81 PPM OK
27 AUG 18	09:32:24	0.00 PPM OK	23.03 PPM OK
27 AUG 18	09:32:29	0.00 PPM OK	27.12 PPM OK
27 AUG 18	09:32:34	0.00 PPM OK	16.88 PPM OK
27 AUG 18	09:32:39	0.00 PPM OK	10.98 PPM OK
27 AUG 18	09:32:44	0.00 PPM OK	12.53 PPM OK
27 AUG 18	09:32:49	0.00 PPM OK	10.49 PPM OK
27 AUG 18	09:32:54	0.00 PPM OK	10.83 PPM OK
27 AUG 18	09:32:59	0.00 PPM OK	10.14 PPM OK
27 AUG 18	09:33:04	0.00 PPM OK	9.72 PPM OK
27 AUG 18	09:33:09	0.00 PPM OK	9.70 PPM OK
27 AUG 18	09:33:14	0.00 PPM OK	10.18 PPM OK
27 AUG 18	09:33:19	0.00 PPM OK	12.94 PPM OK
27 AUG 18	09:33:24	0.00 PPM OK	12.51 PPM OK
27 AUG 18	09:33:29	0.00 PPM OK	11.92 PPM OK
27 AUG 18	09:33:34	0.00 PPM OK	11.12 PPM OK
27 AUG 18	09:33:39	0.00 PPM OK	10.62 PPM OK
27 AUG 18	09:33:44	0.00 PPM OK	10.46 PPM OK
27 AUG 18	09:33:49	0.00 PPM OK	10.48 PPM OK
27 AUG 18	09:33:54	0.00 PPM OK	10.29 PPM OK
27 AUG 18	09:33:59	0.00 PPM OK	11.33 PPM OK
27 AUG 18	09:34:04	0.00 PPM OK	16.46 PPM OK
27 AUG 18	09:34:09	0.00 PPM OK	23.67 PPM OK
27 AUG 18	09:34:14	0.00 PPM OK	29.02 PPM OK
27 AUG 18	09:34:19	0.00 PPM OK	26.91 PPM OK
27 AUG 18	09:34:24	0.00 PPM OK	24.30 PPM OK
27 AUG 18	09:34:29	0.00 PPM OK	28.17 PPM OK
27 AUG 18	09:34:34	0.00 PPM OK	11.12 PPM OK
27 AUG 18	09:34:39	0.00 PPM OK	10.37 PPM OK
27 AUG 18	09:34:44	0.00 PPM OK	10.66 PPM OK
27 AUG 18	09:34:49	0.00 PPM OK	13.94 PPM OK
27 AUG 18	09:34:54	0.00 PPM OK	13.35 PPM OK
27 AUG 18	09:34:59	0.00 PPM OK	13.81 PPM OK
27 AUG 18	09:35:04	0.00 PPM OK	12.59 PPM OK
27 AUG 18	09:35:09	0.00 PPM OK	13.88 PPM OK
27 AUG 18	09:35:14	0.00 PPM OK	12.62 PPM OK
27 AUG 18	09:35:19	0.00 PPM OK	12.72 PPM OK
27 AUG 18	09:35:24	0.00 PPM OK	14.42 PPM OK
27 AUG 18	09:35:29	0.00 PPM OK	14.57 PPM OK
27 AUG 18	09:35:34	0.00 PPM OK	15.33 PPM OK
27 AUG 18	09:35:39	0.00 PPM OK	14.34 PPM OK
27 AUG 18	09:35:44	0.00 PPM OK	10.46 PPM OK
27 AUG 18	09:35:49	0.00 PPM OK	13.33 PPM OK
27 AUG 18	09:35:54	0.00 PPM OK	14.92 PPM OK
27 AUG 18	09:35:59	0.00 PPM OK	16.05 PPM OK
27 AUG 18	09:36:04	0.00 PPM OK	16.92 PPM OK
27 AUG 18	09:36:09	0.00 PPM OK	12.73 PPM OK
27 AUG 18	09:36:14	0.00 PPM OK	12.92 PPM OK

27 AUG 18	09:36:19	0.00 PPM OK	23.82 PPM OK
27 AUG 18	09:36:24	0.00 PPM OK	18.34 PPM OK
27 AUG 18	09:36:29	0.00 PPM OK	16.31 PPM OK
27 AUG 18	09:36:34	0.00 PPM OK	26.49 PPM OK
27 AUG 18	09:36:39	0.00 PPM OK	23.14 PPM OK
27 AUG 18	09:36:44	0.00 PPM OK	30.86 PPM OK
27 AUG 18	09:36:49	0.00 PPM OK	25.32 PPM OK
27 AUG 18	09:36:54	0.00 PPM OK	11.99 PPM OK
27 AUG 18	09:36:59	0.00 PPM OK	13.81 PPM OK
27 AUG 18	09:37:04	0.00 PPM OK	15.49 PPM OK
27 AUG 18	09:37:09	0.00 PPM OK	21.45 PPM OK
27 AUG 18	09:37:14	0.00 PPM OK	10.81 PPM OK
27 AUG 18	09:37:19	0.00 PPM OK	14.25 PPM OK
27 AUG 18	09:37:24	0.00 PPM OK	17.44 PPM OK
27 AUG 18	09:37:29	0.00 PPM OK	11.74 PPM OK
27 AUG 18	09:37:34	0.00 PPM OK	14.99 PPM OK
27 AUG 18	09:37:39	0.00 PPM OK	14.66 PPM OK
27 AUG 18	09:37:44	0.00 PPM OK	9.70 PPM OK
27 AUG 18	09:37:49	0.00 PPM OK	9.64 PPM OK
27 AUG 18	09:37:54	0.00 PPM OK	9.24 PPM OK
27 AUG 18	09:37:59	0.00 PPM OK	11.72 PPM OK
27 AUG 18	09:38:04	0.00 PPM OK	9.38 PPM OK
27 AUG 18	09:38:09	0.00 PPM OK	9.72 PPM OK
27 AUG 18	09:38:14	0.00 PPM OK	8.90 PPM OK
27 AUG 18	09:38:19	0.00 PPM OK	10.00 PPM OK
27 AUG 18	09:38:24	0.00 PPM OK	10.09 PPM OK
27 AUG 18	09:38:29	0.00 PPM OK	10.77 PPM OK
27 AUG 18	09:38:34	0.00 PPM OK	11.77 PPM OK
27 AUG 18	09:38:39	0.00 PPM OK	15.90 PPM OK
27 AUG 18	09:38:44	0.00 PPM OK	12.01 PPM OK
27 AUG 18	09:38:49	0.00 PPM OK	14.22 PPM OK
27 AUG 18	09:38:54	0.00 PPM OK	14.88 PPM OK
27 AUG 18	09:38:59	0.00 PPM OK	14.12 PPM OK
27 AUG 18	09:39:04	0.00 PPM OK	11.99 PPM OK
27 AUG 18	09:39:09	0.00 PPM OK	11.74 PPM OK
27 AUG 18	09:39:14	0.00 PPM OK	14.33 PPM OK
27 AUG 18	09:39:19	0.00 PPM OK	18.77 PPM OK
27 AUG 18	09:39:24	0.00 PPM OK	27.17 PPM OK
27 AUG 18	09:39:29	0.00 PPM OK	35.85 PPM OK
27 AUG 18	09:39:34	0.00 PPM OK	36.98 PPM OK
27 AUG 18	09:39:39	0.00 PPM OK	32.17 PPM OK
27 AUG 18	09:39:44	0.00 PPM OK	35.43 PPM OK
27 AUG 18	09:39:49	0.00 PPM OK	46.11 PPM OK
27 AUG 18	09:39:54	0.00 PPM OK	57.44 PPM OK
27 AUG 18	09:39:59	0.00 PPM OK	51.33 PPM OK
27 AUG 18	09:40:04	0.00 PPM OK	40.67 PPM OK
27 AUG 18	09:40:09	0.00 PPM OK	32.13 PPM OK
27 AUG 18	09:40:14	0.00 PPM OK	31.06 PPM OK

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27 AUG 18	09:40:19	0.00 PPM OK	25.12 PPM OK
27 AUG 18	09:40:24	0.00 PPM OK	19.03 PPM OK
27 AUG 18	09:40:29	0.00 PPM OK	16.57 PPM OK
27 AUG 18	09:40:34	0.00 PPM OK	16.47 PPM OK
27 AUG 18	09:40:39	0.00 PPM OK	16.08 PPM OK
27 AUG 18	09:40:44	0.00 PPM OK	15.10 PPM OK
27 AUG 18	09:40:49	0.00 PPM OK	13.85 PPM OK
27 AUG 18	09:40:54	0.00 PPM OK	12.70 PPM OK
27 AUG 18	09:40:59	0.00 PPM OK	12.25 PPM OK
27 AUG 18	09:41:04	0.00 PPM OK	12.68 PPM OK
27 AUG 18	09:41:09	0.00 PPM OK	12.33 PPM OK
27 AUG 18	09:41:14	0.00 PPM OK	14.18 PPM OK
27 AUG 18	09:41:19	0.00 PPM OK	18.55 PPM OK
27 AUG 18	09:41:24	0.00 PPM OK	22.36 PPM OK
27 AUG 18	09:41:29	0.00 PPM OK	21.08 PPM OK
27 AUG 18	09:41:34	0.00 PPM OK	22.36 PPM OK
27 AUG 18	09:41:39	0.00 PPM OK	18.40 PPM OK
27 AUG 18	09:41:44	0.00 PPM OK	14.34 PPM OK
27 AUG 18	09:41:49	0.00 PPM OK	12.90 PPM OK
27 AUG 18	09:41:54	0.00 PPM OK	13.01 PPM OK
27 AUG 18	09:41:59	0.00 PPM OK	13.60 PPM OK
27 AUG 18	09:42:04	0.00 PPM OK	12.75 PPM OK
27 AUG 18	09:42:09	0.00 PPM OK	12.72 PPM OK
27 AUG 18	09:42:14	0.00 PPM OK	12.25 PPM OK
27 AUG 18	09:42:19	0.00 PPM OK	11.86 PPM OK
27 AUG 18	09:42:24	0.00 PPM OK	11.94 PPM OK
27 AUG 18	09:42:29	0.00 PPM OK	13.77 PPM OK
27 AUG 18	09:42:34	0.00 PPM OK	12.90 PPM OK
27 AUG 18	09:42:39	0.00 PPM OK	13.79 PPM OK
27 AUG 18	09:42:44	0.00 PPM OK	13.66 PPM OK
27 AUG 18	09:42:49	0.00 PPM OK	17.92 PPM OK
27 AUG 18	09:42:54	0.00 PPM OK	19.62 PPM OK
27 AUG 18	09:42:59	0.00 PPM OK	21.45 PPM OK
27 AUG 18	09:43:04	0.00 PPM OK	21.36 PPM OK
27 AUG 18	09:43:09	0.00 PPM OK	24.99 PPM OK
27 AUG 18	09:43:14	0.00 PPM OK	24.53 PPM OK
27 AUG 18	09:43:19	0.00 PPM OK	19.36 PPM OK
27 AUG 18	09:43:24	0.00 PPM OK	15.68 PPM OK
27 AUG 18	09:43:29	0.00 PPM OK	15.96 PPM OK
27 AUG 18	09:43:34	0.00 PPM OK	15.57 PPM OK
27 AUG 18	09:43:39	0.00 PPM OK	19.64 PPM OK
27 AUG 18	09:43:44	0.00 PPM OK	21.86 PPM OK
27 AUG 18	09:43:49	0.00 PPM OK	19.31 PPM OK
27 AUG 18	09:43:54	0.00 PPM OK	17.71 PPM OK
27 AUG 18	09:43:59	0.00 PPM OK	17.40 PPM OK

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION

X

27 AUG 18	09:45:34	0.00 PPM OK	15.09 PPM OK
27 AUG 18	09:45:39	0.00 PPM OK	15.31 PPM OK
27 AUG 18	09:45:44	0.00 PPM OK	14.38 PPM OK
27 AUG 18	09:45:49	0.00 PPM OK	14.14 PPM OK
27 AUG 18	09:45:54	0.00 PPM OK	12.81 PPM OK
27 AUG 18	09:45:59	0.00 PPM OK	11.66 PPM OK
27 AUG 18	09:46:04	0.00 PPM OK	12.92 PPM OK
27 AUG 18	09:46:09	0.00 PPM OK	13.20 PPM OK
27 AUG 18	09:46:14	0.00 PPM OK	13.42 PPM OK
27 AUG 18	09:46:19	0.00 PPM OK	11.90 PPM OK
27 AUG 18	09:46:24	0.00 PPM OK	12.59 PPM OK
27 AUG 18	09:46:29	0.00 PPM OK	16.27 PPM OK
27 AUG 18	09:46:34	0.00 PPM OK	15.68 PPM OK
27 AUG 18	09:46:39	0.00 PPM OK	12.70 PPM OK
27 AUG 18	09:46:44	0.00 PPM OK	12.62 PPM OK
27 AUG 18	09:46:49	0.00 PPM OK	11.88 PPM OK
27 AUG 18	09:46:54	0.00 PPM OK	13.29 PPM OK
27 AUG 18	09:46:59	0.00 PPM OK	12.98 PPM OK
27 AUG 18	09:47:04	0.00 PPM OK	11.27 PPM OK
27 AUG 18	09:47:09	0.00 PPM OK	12.01 PPM OK
27 AUG 18	09:47:14	0.00 PPM OK	10.62 PPM OK
27 AUG 18	09:47:19	0.00 PPM OK	11.11 PPM OK
27 AUG 18	09:47:24	0.00 PPM OK	11.12 PPM OK
27 AUG 18	09:47:29	0.00 PPM OK	10.46 PPM OK
27 AUG 18	09:47:34	0.00 PPM OK	12.27 PPM OK
27 AUG 18	09:47:39	0.00 PPM OK	11.24 PPM OK
27 AUG 18	09:47:44	0.00 PPM OK	11.48 PPM OK
27 AUG 18	09:47:49	0.00 PPM OK	10.64 PPM OK
27 AUG 18	09:47:54	0.00 PPM OK	11.83 PPM OK
27 AUG 18	09:47:59	0.00 PPM OK	13.12 PPM OK
27 AUG 18	09:48:04	0.00 PPM OK	15.79 PPM OK
27 AUG 18	09:48:09	0.00 PPM OK	13.27 PPM OK
27 AUG 18	09:48:14	0.00 PPM OK	13.20 PPM OK
27 AUG 18	09:48:19	0.00 PPM OK	12.46 PPM OK
27 AUG 18	09:48:24	0.00 PPM OK	11.75 PPM OK
27 AUG 18	09:48:29	0.00 PPM OK	11.86 PPM OK
27 AUG 18	09:48:34	0.00 PPM OK	11.98 PPM OK
27 AUG 18	09:48:39	0.00 PPM OK	11.57 PPM OK
27 AUG 18	09:48:44	0.00 PPM OK	11.20 PPM OK
27 AUG 18	09:48:49	0.00 PPM OK	11.20 PPM OK
27 AUG 18	09:48:54	0.00 PPM OK	10.62 PPM OK
27 AUG 18	09:48:59	0.00 PPM OK	12.66 PPM OK
27 AUG 18	09:49:04	0.00 PPM OK	12.86 PPM OK
27 AUG 18	09:49:09	0.00 PPM OK	13.51 PPM OK
27 AUG 18	09:49:14	0.00 PPM OK	13.42 PPM OK
27 AUG 18	09:49:19	0.00 PPM OK	15.99 PPM OK
27 AUG 18	09:49:24	0.00 PPM OK	17.60 PPM OK

27 AUG 18	09:49:29	0.00 PPM OK	16.73 PPM OK
27 AUG 18	09:49:34	0.00 PPM OK	10.61 PPM OK
27 AUG 18	09:49:39	0.00 PPM OK	11.99 PPM OK
27 AUG 18	09:49:44	0.00 PPM OK	9.35 PPM OK
27 AUG 18	09:49:49	0.00 PPM OK	8.61 PPM OK
27 AUG 18	09:49:54	0.00 PPM OK	9.59 PPM OK
27 AUG 18	09:49:59	0.00 PPM OK	10.37 PPM OK
27 AUG 18	09:50:04	0.00 PPM OK	10.46 PPM OK
27 AUG 18	09:50:09	0.00 PPM OK	10.24 PPM OK
27 AUG 18	09:50:14	0.00 PPM OK	9.46 PPM OK
27 AUG 18	09:50:19	0.00 PPM OK	11.03 PPM OK
27 AUG 18	09:50:24	0.00 PPM OK	11.11 PPM OK
27 AUG 18	09:50:29	0.00 PPM OK	9.75 PPM OK
27 AUG 18	09:50:34	0.00 PPM OK	10.29 PPM OK
27 AUG 18	09:50:39	0.00 PPM OK	10.20 PPM OK
27 AUG 18	09:50:44	0.00 PPM OK	10.98 PPM OK
27 AUG 18	09:50:49	0.00 PPM OK	9.77 PPM OK
27 AUG 18	09:50:54	0.00 PPM OK	9.35 PPM OK
27 AUG 18	09:50:59	0.00 PPM OK	10.87 PPM OK
27 AUG 18	09:51:04	0.00 PPM OK	14.47 PPM OK
27 AUG 18	09:51:09	0.00 PPM OK	13.66 PPM OK
27 AUG 18	09:51:14	0.00 PPM OK	12.49 PPM OK
27 AUG 18	09:51:19	0.00 PPM OK	10.44 PPM OK
27 AUG 18	09:51:24	0.00 PPM OK	10.38 PPM OK
27 AUG 18	09:51:29	0.00 PPM OK	11.49 PPM OK
27 AUG 18	09:51:34	0.00 PPM OK	11.68 PPM OK
27 AUG 18	09:51:39	0.00 PPM OK	10.42 PPM OK
27 AUG 18	09:51:44	0.00 PPM OK	9.94 PPM OK
27 AUG 18	09:51:49	0.00 PPM OK	8.83 PPM OK
27 AUG 18	09:51:54	0.00 PPM OK	10.66 PPM OK
27 AUG 18	09:51:59	0.00 PPM OK	10.00 PPM OK
27 AUG 18	09:52:04	0.00 PPM OK	9.63 PPM OK
27 AUG 18	09:52:09	0.00 PPM OK	8.85 PPM OK
27 AUG 18	09:52:14	0.00 PPM OK	8.74 PPM OK
27 AUG 18	09:52:19	0.00 PPM OK	9.98 PPM OK
27 AUG 18	09:52:24	0.00 PPM OK	9.87 PPM OK
27 AUG 18	09:52:29	0.00 PPM OK	9.83 PPM OK
27 AUG 18	09:52:34	0.00 PPM OK	9.48 PPM OK
27 AUG 18	09:52:39	0.00 PPM OK	9.83 PPM OK
27 AUG 18	09:52:44	0.00 PPM OK	9.85 PPM OK
27 AUG 18	09:52:49	0.00 PPM OK	10.25 PPM OK
27 AUG 18	09:52:54	0.00 PPM OK	20.03 PPM OK
27 AUG 18	09:52:59	0.00 PPM OK	15.23 PPM OK
27 AUG 18	09:53:04	0.00 PPM OK	12.59 PPM OK
27 AUG 18	09:53:09	0.00 PPM OK	11.59 PPM OK
27 AUG 18	09:53:14	0.00 PPM OK	14.53 PPM OK
27 AUG 18	09:53:19	0.00 PPM OK	22.21 PPM OK
27 AUG 18	09:53:24	0.00 PPM OK	18.75 PPM OK

X

27 AUG 18	09:53:29	0.00 PPM OK	18.42 PPM OK
27 AUG 18	09:53:34	0.00 PPM OK	16.86 PPM OK
27 AUG 18	09:53:39	0.00 PPM OK	13.31 PPM OK
27 AUG 18	09:53:44	0.00 PPM OK	13.35 PPM OK
27 AUG 18	09:53:49	0.00 PPM OK	11.81 PPM OK
27 AUG 18	09:53:54	0.00 PPM OK	11.62 PPM OK
27 AUG 18	09:53:59	0.00 PPM OK	11.66 PPM OK
27 AUG 18	09:54:04	0.00 PPM OK	11.92 PPM OK
27 AUG 18	09:54:09	0.00 PPM OK	11.49 PPM OK
27 AUG 18	09:54:14	0.00 PPM OK	11.53 PPM OK
27 AUG 18	09:54:19	0.00 PPM OK	12.53 PPM OK
27 AUG 18	09:54:24	0.00 PPM OK	12.33 PPM OK
27 AUG 18	09:54:29	0.00 PPM OK	12.09 PPM OK
27 AUG 18	09:54:34	0.00 PPM OK	11.85 PPM OK
27 AUG 18	09:54:39	0.00 PPM OK	11.27 PPM OK
27 AUG 18	09:54:44	0.00 PPM OK	10.33 PPM OK
27 AUG 18	09:54:49	0.00 PPM OK	11.18 PPM OK
27 AUG 18	09:54:54	0.00 PPM OK	15.86 PPM OK
27 AUG 18	09:54:59	0.00 PPM OK	14.31 PPM OK
27 AUG 18	09:55:04	0.00 PPM OK	13.16 PPM OK
27 AUG 18	09:55:09	0.00 PPM OK	12.90 PPM OK
27 AUG 18	09:55:14	0.00 PPM OK	14.40 PPM OK
27 AUG 18	09:55:19	0.00 PPM OK	13.94 PPM OK
27 AUG 18	09:55:24	0.00 PPM OK	16.29 PPM OK
27 AUG 18	09:55:29	0.00 PPM OK	16.73 PPM OK
27 AUG 18	09:55:34	0.00 PPM OK	21.36 PPM OK
27 AUG 18	09:55:39	0.00 PPM OK	22.73 PPM OK
27 AUG 18	09:55:44	0.00 PPM OK	23.45 PPM OK
27 AUG 18	09:55:49	0.00 PPM OK	23.03 PPM OK
27 AUG 18	09:55:54	0.00 PPM OK	18.58 PPM OK
27 AUG 18	09:55:59	0.00 PPM OK	15.51 PPM OK
27 AUG 18	09:56:04	0.00 PPM OK	14.92 PPM OK
27 AUG 18	09:56:09	0.00 PPM OK	14.96 PPM OK
27 AUG 18	09:56:14	0.00 PPM OK	14.66 PPM OK
27 AUG 18	09:56:19	0.00 PPM OK	14.29 PPM OK
27 AUG 18	09:56:24	0.00 PPM OK	14.05 PPM OK
27 AUG 18	09:56:29	0.00 PPM OK	13.49 PPM OK
27 AUG 18	09:56:34	0.00 PPM OK	12.72 PPM OK
27 AUG 18	09:56:39	0.00 PPM OK	12.62 PPM OK
27 AUG 18	09:56:44	0.00 PPM OK	12.29 PPM OK
27 AUG 18	09:56:49	0.00 PPM OK	11.57 PPM OK
27 AUG 18	09:56:54	0.00 PPM OK	11.94 PPM OK

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION
27 AUG 18	10:17:00	0.00 PPM OK	8.26 PPM OK
27 AUG 18	10:17:05	0.00 PPM OK	8.48 PPM OK

X

27 AUG 18	10:17:10	0.00 PPM OK	8.01 PPM OK
27 AUG 18	10:17:15	0.00 PPM OK	8.83 PPM OK
27 AUG 18	10:17:20	0.00 PPM OK	8.92 PPM OK
27 AUG 18	10:17:25	0.00 PPM OK	8.53 PPM OK
27 AUG 18	10:17:30	0.00 PPM OK	8.44 PPM OK
27 AUG 18	10:17:35	0.00 PPM OK	8.22 PPM OK
27 AUG 18	10:17:40	0.00 PPM OK	7.70 PPM OK
27 AUG 18	10:17:45	0.00 PPM OK	7.83 PPM OK
27 AUG 18	10:17:50	0.00 PPM OK	8.79 PPM OK
27 AUG 18	10:17:55	0.00 PPM OK	8.74 PPM OK
27 AUG 18	10:18:00	0.00 PPM OK	9.03 PPM OK
27 AUG 18	10:18:05	0.00 PPM OK	8.44 PPM OK
27 AUG 18	10:18:10	0.00 PPM OK	8.26 PPM OK
27 AUG 18	10:18:15	0.00 PPM OK	8.38 PPM OK
27 AUG 18	10:18:20	0.00 PPM OK	8.63 PPM OK
27 AUG 18	10:18:25	0.00 PPM OK	8.48 PPM OK
27 AUG 18	10:18:30	0.00 PPM OK	8.33 PPM OK
27 AUG 18	10:18:35	0.00 PPM OK	8.74 PPM OK
27 AUG 18	10:18:40	0.00 PPM OK	8.26 PPM OK
27 AUG 18	10:18:45	0.00 PPM OK	7.90 PPM OK
27 AUG 18	10:18:50	0.00 PPM OK	9.16 PPM OK
27 AUG 18	10:18:55	0.00 PPM OK	11.25 PPM OK
27 AUG 18	10:19:00	0.00 PPM OK	12.73 PPM OK
27 AUG 18	10:19:05	0.00 PPM OK	10.46 PPM OK
27 AUG 18	10:19:10	0.00 PPM OK	10.61 PPM OK
27 AUG 18	10:19:15	0.00 PPM OK	9.83 PPM OK
27 AUG 18	10:19:20	0.00 PPM OK	9.88 PPM OK
27 AUG 18	10:19:25	0.00 PPM OK	10.14 PPM OK
27 AUG 18	10:19:30	0.00 PPM OK	9.92 PPM OK
27 AUG 18	10:19:35	0.00 PPM OK	10.62 PPM OK
27 AUG 18	10:19:40	0.00 PPM OK	11.01 PPM OK
27 AUG 18	10:19:45	0.00 PPM OK	10.44 PPM OK
27 AUG 18	10:19:50	0.00 PPM OK	10.25 PPM OK
27 AUG 18	10:19:55	0.00 PPM OK	10.22 PPM OK
27 AUG 18	10:20:00	0.00 PPM OK	10.66 PPM OK
27 AUG 18	10:20:05	0.00 PPM OK	10.37 PPM OK
27 AUG 18	10:20:10	0.00 PPM OK	10.14 PPM OK
27 AUG 18	10:20:15	0.00 PPM OK	9.72 PPM OK
27 AUG 18	10:20:20	0.00 PPM OK	10.01 PPM OK
27 AUG 18	10:20:25	0.00 PPM OK	9.61 PPM OK
27 AUG 18	10:20:30	0.00 PPM OK	9.61 PPM OK
27 AUG 18	10:20:35	0.00 PPM OK	9.09 PPM OK
27 AUG 18	10:20:40	0.00 PPM OK	9.59 PPM OK
27 AUG 18	10:20:45	0.00 PPM OK	11.27 PPM OK
27 AUG 18	10:20:50	0.00 PPM OK	9.59 PPM OK
27 AUG 18	10:20:55	0.00 PPM OK	9.72 PPM OK
27 AUG 18	10:21:00	0.00 PPM OK	10.42 PPM OK
27 AUG 18	10:21:05	0.00 PPM OK	9.96 PPM OK

X

27 AUG 18	10:21:10	0.00 PPM OK	10.27 PPM OK
27 AUG 18	10:21:15	0.00 PPM OK	9.74 PPM OK
27 AUG 18	10:21:20	0.00 PPM OK	9.74 PPM OK
27 AUG 18	10:21:25	0.00 PPM OK	9.59 PPM OK
27 AUG 18	10:21:30	0.00 PPM OK	10.37 PPM OK
27 AUG 18	10:21:35	0.00 PPM OK	12.20 PPM OK
27 AUG 18	10:21:40	0.00 PPM OK	11.94 PPM OK
27 AUG 18	10:21:45	0.00 PPM OK	11.18 PPM OK
27 AUG 18	10:21:50	0.00 PPM OK	11.27 PPM OK
27 AUG 18	10:21:55	0.00 PPM OK	11.22 PPM OK
27 AUG 18	10:22:00	0.00 PPM OK	11.27 PPM OK
27 AUG 18	10:22:05	0.00 PPM OK	9.87 PPM OK
27 AUG 18	10:22:10	0.00 PPM OK	9.37 PPM OK
27 AUG 18	10:22:15	0.00 PPM OK	9.72 PPM OK
27 AUG 18	10:22:20	0.00 PPM OK	9.24 PPM OK
27 AUG 18	10:22:25	0.00 PPM OK	9.92 PPM OK
27 AUG 18	10:22:30	0.00 PPM OK	9.85 PPM OK
27 AUG 18	10:22:35	0.00 PPM OK	9.50 PPM OK
27 AUG 18	10:22:40	0.00 PPM OK	9.51 PPM OK
27 AUG 18	10:22:45	0.00 PPM OK	9.57 PPM OK
27 AUG 18	10:22:50	0.00 PPM OK	9.25 PPM OK
27 AUG 18	10:22:55	0.00 PPM OK	9.98 PPM OK
27 AUG 18	10:23:00	0.00 PPM OK	9.22 PPM OK
27 AUG 18	10:23:05	0.00 PPM OK	9.79 PPM OK
27 AUG 18	10:23:10	0.00 PPM OK	9.64 PPM OK
27 AUG 18	10:23:15	0.00 PPM OK	10.29 PPM OK
27 AUG 18	10:23:20	0.00 PPM OK	9.55 PPM OK
27 AUG 18	10:23:25	0.00 PPM OK	9.51 PPM OK
27 AUG 18	10:23:30	0.00 PPM OK	9.94 PPM OK
27 AUG 18	10:23:35	0.00 PPM OK	9.51 PPM OK
27 AUG 18	10:23:40	0.00 PPM OK	9.38 PPM OK
27 AUG 18	10:23:45	0.00 PPM OK	10.55 PPM OK
27 AUG 18	10:23:50	0.00 PPM OK	10.20 PPM OK
27 AUG 18	10:23:55	0.00 PPM OK	10.12 PPM OK
27 AUG 18	10:24:00	0.00 PPM OK	9.44 PPM OK
27 AUG 18	10:24:05	0.00 PPM OK	9.83 PPM OK
27 AUG 18	10:24:10	0.00 PPM OK	9.38 PPM OK
27 AUG 18	10:24:15	0.00 PPM OK	9.74 PPM OK
27 AUG 18	10:24:20	0.00 PPM OK	9.63 PPM OK
27 AUG 18	10:24:25	0.00 PPM OK	9.61 PPM OK
27 AUG 18	10:24:30	0.00 PPM OK	9.35 PPM OK
27 AUG 18	10:24:35	0.00 PPM OK	10.62 PPM OK
27 AUG 18	10:24:40	0.00 PPM OK	10.48 PPM OK
27 AUG 18	10:24:45	0.00 PPM OK	9.94 PPM OK
27 AUG 18	10:24:50	0.00 PPM OK	9.53 PPM OK
27 AUG 18	10:24:55	0.00 PPM OK	9.63 PPM OK
27 AUG 18	10:25:00	0.00 PPM OK	9.37 PPM OK
27 AUG 18	10:25:05	0.00 PPM OK	9.31 PPM OK

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27 AUG 18	10:25:10	0.00 PPM OK	10.44 PPM OK
27 AUG 18	10:25:15	0.00 PPM OK	9.59 PPM OK
27 AUG 18	10:25:20	0.00 PPM OK	9.11 PPM OK
27 AUG 18	10:25:25	0.00 PPM OK	8.76 PPM OK
27 AUG 18	10:25:30	0.00 PPM OK	8.48 PPM OK
27 AUG 18	10:25:35	0.00 PPM OK	8.55 PPM OK
27 AUG 18	10:25:40	0.00 PPM OK	9.64 PPM OK
27 AUG 18	10:25:45	0.00 PPM OK	9.37 PPM OK
27 AUG 18	10:25:50	0.00 PPM OK	9.18 PPM OK
27 AUG 18	10:25:55	0.00 PPM OK	9.29 PPM OK
27 AUG 18	10:26:00	0.00 PPM OK	9.11 PPM OK
27 AUG 18	10:26:05	0.00 PPM OK	9.00 PPM OK
27 AUG 18	10:26:10	0.00 PPM OK	8.66 PPM OK
27 AUG 18	10:26:15	0.00 PPM OK	8.77 PPM OK
27 AUG 18	10:26:20	0.00 PPM OK	8.87 PPM OK
27 AUG 18	10:26:25	0.00 PPM OK	8.77 PPM OK
27 AUG 18	10:26:30	0.00 PPM OK	8.48 PPM OK
27 AUG 18	10:26:35	0.00 PPM OK	46.16 PPM OK
27 AUG 18	10:26:40	0.00 PPM OK	11.29 PPM OK
27 AUG 18	10:26:45	0.00 PPM OK	10.35 PPM OK
27 AUG 18	10:26:50	0.00 PPM OK	9.33 PPM OK
27 AUG 18	10:26:55	0.00 PPM OK	9.07 PPM OK
27 AUG 18	10:27:00	0.00 PPM OK	7.96 PPM OK
27 AUG 18	10:27:05	0.00 PPM OK	8.03 PPM OK
27 AUG 18	10:27:10	0.00 PPM OK	8.20 PPM OK
27 AUG 18	10:27:15	0.00 PPM OK	8.09 PPM OK
27 AUG 18	10:27:20	0.00 PPM OK	10.99 PPM OK
27 AUG 18	10:27:25	0.00 PPM OK	9.35 PPM OK
27 AUG 18	10:27:30	0.00 PPM OK	9.20 PPM OK
27 AUG 18	10:27:35	0.00 PPM OK	9.85 PPM OK
27 AUG 18	10:27:40	0.00 PPM OK	9.53 PPM OK
27 AUG 18	10:27:45	0.00 PPM OK	9.11 PPM OK
27 AUG 18	10:27:50	0.00 PPM OK	10.09 PPM OK
27 AUG 18	10:27:55	0.00 PPM OK	9.03 PPM OK
27 AUG 18	10:28:00	0.00 PPM OK	9.25 PPM OK
27 AUG 18	10:28:05	0.00 PPM OK	9.59 PPM OK
27 AUG 18	10:28:10	0.00 PPM OK	9.66 PPM OK
27 AUG 18	10:28:15	0.00 PPM OK	10.81 PPM OK
27 AUG 18	10:28:20	0.00 PPM OK	10.61 PPM OK
27 AUG 18	10:28:25	0.00 PPM OK	9.83 PPM OK
27 AUG 18	10:28:30	0.00 PPM OK	10.29 PPM OK
27 AUG 18	10:28:35	0.00 PPM OK	10.18 PPM OK
27 AUG 18	10:28:40	0.00 PPM OK	10.51 PPM OK
27 AUG 18	10:28:45	0.00 PPM OK	10.44 PPM OK
27 AUG 18	10:28:50	0.00 PPM OK	11.07 PPM OK
27 AUG 18	10:28:55	0.00 PPM OK	10.11 PPM OK
27 AUG 18	10:29:00	0.00 PPM OK	10.94 PPM OK
27 AUG 18	10:29:05	0.00 PPM OK	10.38 PPM OK

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27 AUG 18	10:29:10	0.00 PPM OK	9.98 PPM OK
27 AUG 18	10:29:15	0.00 PPM OK	9.38 PPM OK
27 AUG 18	10:29:20	0.00 PPM OK	8.13 PPM OK
27 AUG 18	10:29:25	0.00 PPM OK	8.03 PPM OK
27 AUG 18	10:29:30	0.00 PPM OK	9.31 PPM OK
27 AUG 18	10:29:35	0.00 PPM OK	9.68 PPM OK
27 AUG 18	10:29:40	0.00 PPM OK	9.63 PPM OK
27 AUG 18	10:29:45	0.00 PPM OK	8.98 PPM OK
27 AUG 18	10:29:50	0.00 PPM OK	10.85 PPM OK
27 AUG 18	10:29:55	0.00 PPM OK	9.87 PPM OK
27 AUG 18	10:30:00	0.00 PPM OK	10.01 PPM OK
27 AUG 18	10:30:05	0.00 PPM OK	9.50 PPM OK
27 AUG 18	10:30:10	0.00 PPM OK	9.51 PPM OK
27 AUG 18	10:30:15	0.00 PPM OK	9.85 PPM OK
27 AUG 18	10:30:20	0.00 PPM OK	9.31 PPM OK
27 AUG 18	10:30:25	0.00 PPM OK	9.94 PPM OK
27 AUG 18	10:30:30	0.00 PPM OK	10.03 PPM OK
27 AUG 18	10:30:35	0.00 PPM OK	9.46 PPM OK
27 AUG 18	10:30:40	0.00 PPM OK	9.27 PPM OK
27 AUG 18	10:30:45	0.00 PPM OK	9.22 PPM OK
27 AUG 18	10:30:50	0.00 PPM OK	9.16 PPM OK
27 AUG 18	10:30:55	0.00 PPM OK	9.14 PPM OK
27 AUG 18	10:31:00	0.00 PPM OK	9.29 PPM OK
27 AUG 18	10:31:05	0.00 PPM OK	9.18 PPM OK
27 AUG 18	10:31:10	0.00 PPM OK	9.27 PPM OK
27 AUG 18	10:31:15	0.00 PPM OK	9.27 PPM OK
27 AUG 18	10:31:20	0.00 PPM OK	9.22 PPM OK
27 AUG 18	10:31:25	0.00 PPM OK	9.16 PPM OK
27 AUG 18	10:31:30	0.00 PPM OK	9.16 PPM OK
27 AUG 18	10:31:35	0.00 PPM OK	9.13 PPM OK
27 AUG 18	10:31:40	0.00 PPM OK	9.01 PPM OK
27 AUG 18	10:31:45	0.00 PPM OK	8.87 PPM OK
27 AUG 18	10:31:50	0.00 PPM OK	8.90 PPM OK

AUTO DATA

DATE	TIME	FID BACKGROUND	FID CONCENTRATION
27 AUG 18	11:07:36	0.00 PPM OK	15.10 PPM OK
27 AUG 18	11:07:41	0.00 PPM OK	14.84 PPM OK
27 AUG 18	11:07:46	0.00 PPM OK	19.34 PPM OK
27 AUG 18	11:07:51	0.00 PPM OK	11.05 PPM OK
27 AUG 18	11:07:56	0.00 PPM OK	12.36 PPM OK
27 AUG 18	11:08:01	0.00 PPM OK	15.34 PPM OK
27 AUG 18	11:08:06	0.00 PPM OK	12.20 PPM OK
27 AUG 18	11:08:11	0.00 PPM OK	10.81 PPM OK
27 AUG 18	11:08:16	0.00 PPM OK	10.70 PPM OK
27 AUG 18	11:08:21	0.00 PPM OK	11.55 PPM OK
27 AUG 18	11:08:26	0.00 PPM OK	10.03 PPM OK

27 AUG 18	11:08:31	0.00 PPM OK	10.83 PPM OK
27 AUG 18	11:08:36	0.00 PPM OK	12.40 PPM OK
27 AUG 18	11:08:41	0.00 PPM OK	13.70 PPM OK
27 AUG 18	11:08:46	0.00 PPM OK	22.64 PPM OK
27 AUG 18	11:08:51	0.00 PPM OK	13.44 PPM OK
27 AUG 18	11:08:56	0.00 PPM OK	14.20 PPM OK
27 AUG 18	11:09:01	0.00 PPM OK	20.19 PPM OK
27 AUG 18	11:09:06	0.00 PPM OK	14.81 PPM OK
27 AUG 18	11:09:11	0.00 PPM OK	10.35 PPM OK
27 AUG 18	11:09:16	0.00 PPM OK	10.92 PPM OK
27 AUG 18	11:09:21	0.00 PPM OK	12.81 PPM OK
27 AUG 18	11:09:26	0.00 PPM OK	12.27 PPM OK
27 AUG 18	11:09:31	0.00 PPM OK	12.05 PPM OK
27 AUG 18	11:09:36	0.00 PPM OK	11.51 PPM OK
27 AUG 18	11:09:41	0.00 PPM OK	13.68 PPM OK
27 AUG 18	11:09:46	0.00 PPM OK	11.53 PPM OK
27 AUG 18	11:09:51	0.00 PPM OK	9.55 PPM OK
27 AUG 18	11:09:56	0.00 PPM OK	10.05 PPM OK
27 AUG 18	11:10:01	0.00 PPM OK	11.92 PPM OK
27 AUG 18	11:10:06	0.00 PPM OK	10.64 PPM OK
27 AUG 18	11:10:11	0.00 PPM OK	10.66 PPM OK
27 AUG 18	11:10:16	0.00 PPM OK	11.22 PPM OK
27 AUG 18	11:10:21	0.00 PPM OK	11.75 PPM OK
27 AUG 18	11:10:26	0.00 PPM OK	12.55 PPM OK
27 AUG 18	11:10:31	0.00 PPM OK	13.83 PPM OK
27 AUG 18	11:10:36	0.00 PPM OK	11.29 PPM OK
27 AUG 18	11:10:41	0.00 PPM OK	21.64 PPM OK
27 AUG 18	11:10:46	0.00 PPM OK	14.84 PPM OK
27 AUG 18	11:10:51	0.00 PPM OK	13.44 PPM OK
27 AUG 18	11:10:56	0.00 PPM OK	11.31 PPM OK
27 AUG 18	11:11:01	0.00 PPM OK	13.05 PPM OK
27 AUG 18	11:11:06	0.00 PPM OK	11.14 PPM OK
27 AUG 18	11:11:11	0.00 PPM OK	9.24 PPM OK
27 AUG 18	11:11:16	0.00 PPM OK	11.98 PPM OK
27 AUG 18	11:11:21	0.00 PPM OK	11.99 PPM OK
27 AUG 18	11:11:26	0.00 PPM OK	13.72 PPM OK
27 AUG 18	11:11:31	0.00 PPM OK	17.64 PPM OK
27 AUG 18	11:11:36	0.00 PPM OK	20.18 PPM OK
27 AUG 18	11:11:41	0.00 PPM OK	15.83 PPM OK
27 AUG 18	11:11:46	0.00 PPM OK	14.94 PPM OK
27 AUG 18	11:11:51	0.00 PPM OK	10.85 PPM OK
27 AUG 18	11:11:56	0.00 PPM OK	11.51 PPM OK
27 AUG 18	11:12:01	0.00 PPM OK	11.36 PPM OK
27 AUG 18	11:12:06	0.00 PPM OK	11.27 PPM OK
27 AUG 18	11:12:11	0.00 PPM OK	10.83 PPM OK
27 AUG 18	11:12:16	0.00 PPM OK	11.11 PPM OK
27 AUG 18	11:12:21	0.00 PPM OK	8.79 PPM OK
27 AUG 18	11:12:26	0.00 PPM OK	9.16 PPM OK

27 AUG 18	11:12:31	0.00 PPM OK	10.25 PPM OK
27 AUG 18	11:12:36	0.00 PPM OK	9.68 PPM OK
27 AUG 18	11:12:41	0.00 PPM OK	10.01 PPM OK
27 AUG 18	11:12:46	0.00 PPM OK	8.64 PPM OK
27 AUG 18	11:12:51	0.00 PPM OK	7.90 PPM OK
27 AUG 18	11:12:56	0.00 PPM OK	9.85 PPM OK
27 AUG 18	11:13:01	0.00 PPM OK	10.77 PPM OK
27 AUG 18	11:13:06	0.00 PPM OK	17.92 PPM OK
27 AUG 18	11:13:11	0.00 PPM OK	9.40 PPM OK
27 AUG 18	11:13:16	0.00 PPM OK	8.51 PPM OK
27 AUG 18	11:13:21	0.00 PPM OK	8.64 PPM OK
27 AUG 18	11:13:26	0.00 PPM OK	9.64 PPM OK
27 AUG 18	11:13:31	0.00 PPM OK	10.05 PPM OK
27 AUG 18	11:13:36	0.00 PPM OK	10.05 PPM OK
27 AUG 18	11:13:41	0.00 PPM OK	8.68 PPM OK
27 AUG 18	11:13:46	0.00 PPM OK	9.22 PPM OK
27 AUG 18	11:13:51	0.00 PPM OK	9.55 PPM OK
27 AUG 18	11:13:56	0.00 PPM OK	11.14 PPM OK
27 AUG 18	11:14:01	0.00 PPM OK	12.98 PPM OK
27 AUG 18	11:14:06	0.00 PPM OK	16.34 PPM OK
27 AUG 18	11:14:11	0.00 PPM OK	14.10 PPM OK
27 AUG 18	11:14:16	0.00 PPM OK	14.75 PPM OK
27 AUG 18	11:14:21	0.00 PPM OK	16.47 PPM OK
27 AUG 18	11:14:26	0.00 PPM OK	13.94 PPM OK
27 AUG 18	11:14:31	0.00 PPM OK	9.72 PPM OK
27 AUG 18	11:14:36	0.00 PPM OK	9.18 PPM OK
27 AUG 18	11:14:41	0.00 PPM OK	9.75 PPM OK
27 AUG 18	11:14:46	0.00 PPM OK	9.59 PPM OK
27 AUG 18	11:14:51	0.00 PPM OK	10.66 PPM OK
27 AUG 18	11:14:56	0.00 PPM OK	18.32 PPM OK
27 AUG 18	11:15:01	0.00 PPM OK	15.07 PPM OK
27 AUG 18	11:15:06	0.00 PPM OK	17.99 PPM OK
27 AUG 18	11:15:11	0.00 PPM OK	18.01 PPM OK
27 AUG 18	11:15:16	0.00 PPM OK	18.75 PPM OK
27 AUG 18	11:15:21	0.00 PPM OK	18.18 PPM OK
27 AUG 18	11:15:26	0.00 PPM OK	15.64 PPM OK
27 AUG 18	11:15:31	0.00 PPM OK	12.59 PPM OK
27 AUG 18	11:15:36	0.00 PPM OK	11.98 PPM OK
27 AUG 18	11:15:41	0.00 PPM OK	10.68 PPM OK
27 AUG 18	11:15:46	0.00 PPM OK	9.37 PPM OK
27 AUG 18	11:15:51	0.00 PPM OK	9.50 PPM OK
27 AUG 18	11:15:56	0.00 PPM OK	10.03 PPM OK
27 AUG 18	11:16:01	0.00 PPM OK	10.40 PPM OK
27 AUG 18	11:16:06	0.00 PPM OK	10.29 PPM OK
27 AUG 18	11:16:11	0.00 PPM OK	11.86 PPM OK
27 AUG 18	11:16:16	0.00 PPM OK	16.40 PPM OK
27 AUG 18	11:16:21	0.00 PPM OK	16.77 PPM OK
27 AUG 18	11:16:26	0.00 PPM OK	14.79 PPM OK

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logged data.txt

27 AUG 18	11:16:31	0.00 PPM OK	17.31 PPM OK
27 AUG 18	11:16:36	0.00 PPM OK	9.16 PPM OK
27 AUG 18	11:16:41	0.00 PPM OK	9.00 PPM OK
27 AUG 18	11:16:46	0.00 PPM OK	10.00 PPM OK
27 AUG 18	11:16:51	0.00 PPM OK	9.81 PPM OK
27 AUG 18	11:16:56	0.00 PPM OK	10.46 PPM OK
27 AUG 18	11:17:01	0.00 PPM OK	9.46 PPM OK
27 AUG 18	11:17:06	0.00 PPM OK	9.61 PPM OK
27 AUG 18	11:17:11	0.00 PPM OK	11.74 PPM OK
27 AUG 18	11:17:16	0.00 PPM OK	11.07 PPM OK
27 AUG 18	11:17:21	0.00 PPM OK	13.92 PPM OK
27 AUG 18	11:17:26	0.00 PPM OK	14.29 PPM OK
27 AUG 18	11:17:31	0.00 PPM OK	14.09 PPM OK
27 AUG 18	11:17:36	0.00 PPM OK	10.49 PPM OK
27 AUG 18	11:17:41	0.00 PPM OK	9.51 PPM OK

END

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Attachment V

Viol Type	COMMENT	Viol Start Date	Viol ID	NOV ID	NOV Date
123.44		06/03/17	792313	356747	08/01/17
123.44		06/17/17	792311		
123.44		07/24/17	793217	356882	08/04/17
127.444		07/24/17	793218		
123.44		07/26/17	793222		
127.444		07/26/17	793223		
123.44		07/29/17	793225		
127.444		07/29/17	793226		
123.44	offtakes > 5%	08/11/17	794221	357232	08/14/17
123.44	doors > 10%	08/11/17	794223		
123.44		08/07/17	798432	358340	10/05/17
123.44		08/26/17	798433		
123.44		08/27/17	798434		
123.44		09/04/17	798435		
123.44	offtakes > 5%	10/10/17	800469	359101	11/01/17
127.444		10/10/17	800470		
123.44		10/14/17	800477		
127.444		10/14/17	800478		
123.44		10/15/17	800482		
127.444		10/15/17	800483		
123.44		11/26/17	803155	359961	12/04/17
123.44		12/11/17	819579	364830	01/11/18
123.44	>5% offtakes	05/16/18	816766	364068	05/16/18
123.44	>2% lid leaks	05/16/18	816767		
123.44	>5% offtakes	05/16/18	816768		
127.444	Bypassed H2S Absorber	05/24/18	824919	366500	08/10/18
123.2	Pushing FE xing property	06/20/18	823201	366487	08/07/18
123.44	5/29/18 door leaks	07/02/18	821062	365223	07/02/18
123.44	5/17/18 offtakes	07/02/18	821063		
123.44	offtakes >5%	07/01/18	824835	366333	08/06/18
123.44	lids > 2%	07/01/18	824386		
123.44	offtakes >5%	07/26/18	824387		
123.44	offtakes >5%	07/27/18	824388		
123.44	offtakes >5%	07/28/18	824389		
123.44	8/7/18 offtakes	09/01/18	827217	367238	09/07/18
123.44	8/8/18 offtakes	09/01/18	827218		
123.2	Pushing FE xing property	08/02/18	828434	367608	09/20/18
127.444		08/02/18	828435		
129.15	FE >20% from coke shed	08/13/18	828444	367616	
127.444		08/13/18	828446		