

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF LOUISIANA
LAKE CHARLES DIVISION

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UNITED STATES OF AMERICA, and)	
THE LOUISIANA DEPARTMENT OF)	
ENVIRONMENTAL QUALITY,)	
)	
	Plaintiffs,)	
)	
	v.)	
)	Civil No. 21-cv-03464
FIRESTONE POLYMERS, LLC,)	
)	
	GB Defendant.)	
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CONSENT DECREE

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This Consent Decree is made and entered into by and between the United States of America (“United States”), on behalf of the United States Environmental Protection Agency (“EPA”), and the Louisiana Department of Environmental Quality (“LDEQ”) (“Plaintiffs”), and Firestone Polymers, LLC (“Firestone” or “Defendant”).

I. BACKGROUND

A. WHEREAS, contemporaneously with the lodging of this Consent Decree, Plaintiffs have filed a Complaint against Firestone for alleged violations pursuant to the following provisions: Section 113(b) of the Clean Air Act (“CAA”), 42 U.S.C. § 7413(b); Sections 109(c)(1) and 113(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), 42 U.S.C. §§ 9609(c)(1) and 9613(b); Section 325(b)(3) of the Emergency Planning and Community Right-to-Know Act (“EPCRA”), 42 U.S.C. § 11045(b)(3); Section 325(c)(4) of EPCRA, 42 U.S.C. § 11045(c)(4); the Louisiana Environmental Quality Act (“LEQA”), La. R.S. 30:2025 (E) and 30:2057(A)(1) and (2); and the regulations promulgated pursuant to the CAA, CERCLA, EPCRA, and LEQA.

B. WHEREAS, Firestone owns and operates a facility near Lake Charles, Louisiana, in Sulphur, Calcasieu Parish (“Facility”) that produces synthetic rubber. The Complaint alleges that Firestone’s operation of its Facility has resulted in excess emissions of pollutants including nitrogen oxides (“NO_x”), carbon monoxide (“CO”), volatile organic compounds (“VOC”), particulate matter (“PM”), sulfur dioxide (“SO₂”), and hazardous air pollutants including 1,3-butadiene, n-hexane, styrene, formaldehyde, methyl isobutyl ketone, naphthalene, methyl chloride, methylene chloride, methyl ethyl ketone, toluene, carbon disulfide, and methanol. The Complaint further alleges Firestone emitted excess pollutants by, *inter alia*, failing to comply

with requirements related to dryers, cooling towers, and flares; rubber product sampling; heat exchanger, tank, and valve mechanical integrity; heat exchange system leak detection and repair; leaks and spills from other Facility equipment, as well as Firestone's failure to comply with monitoring and reporting requirements.

C. WHEREAS, the Complaint seeks injunctive relief and the assessment of civil penalties for Firestone's violation of the following provisions and regulatory schemes at the Facility:

- a. National Emissions Standards for Hazardous Air Pollutants ("NESHAP") for Group 1 Polymers and Resins promulgated at 40 C.F.R. Part 63, Subpart U, pursuant to Section 112 of the CAA, 42 U.S.C. § 7412;
- b. NESHAP for Organic Liquids Distribution (Non-Gasoline) promulgated at 40 C.F.R. Part 63, Subpart EEEE, pursuant to Section 112 of the CAA, 42 U.S.C. § 7412;
- c. NESHAP for Stationary Reciprocating Internal Combustion Engines promulgated at 40 C.F.R. Part 63, Subpart ZZZZ, pursuant to Section 112 of the CAA, 42 U.S.C. § 7412;
- d. NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters promulgated at 40 C.F.R. Part 63, Subpart DDDDD, pursuant to Section 112 of the CAA, 42 U.S.C. § 7412;
- e. The requirements of 40 C.F.R. Part 63, Subpart A, including as referenced in 40 C.F.R. Subpart U;

- f. Chemical Accident Prevention Provisions promulgated at 40 C.F.R. Part 68, Subparts D and G, pursuant to Section 112(r)(7) of the CAA, 42 U.S.C. § 7412(r)(7);
- g. New Source Performance Standards (“NSPS”) for Industrial, Commercial, Institutional Steam Generating Units promulgated at 40 C.F.R. Part 60, Subpart Db, pursuant to Section 111 of the CAA, 42 U.S.C. § 7411.
- h. Title V of the CAA, 42 U.S.C. §§ 7661-7661f, the regulations promulgated thereunder at 40 C.F.R. Part 70 and 71, and LDEQ’s approved Title V Program under Louisiana Administrative Code (“LAC”) 33, Part III, Chapter 5;
- i. Title V federal operating permits that set, adopt, incorporate, or implement federal and state requirements;
- j. Federally-approved Louisiana State Implementation Plan (“SIP”) provisions under LAC 33:III.501.C.4;
- k. Toxic Chemical Release Form Requirements promulgated at 40 C.F.R. Part 372, pursuant to Section 313 of EPCRA, 42 U.S.C. § 11023;
- l. Emergency Notification and Reporting Requirements of EPCRA promulgated at 40 C.F.R. Part 355, pursuant to Section 304 of EPCRA, 42 U.S.C. § 11004;
- m. Notification and Reporting Requirements promulgated at 40 C.F.R. Part 302, pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603;
- n. LAC, Part I - Office of the Secretary, Chapter 39 - Notification Required (Unauthorized Discharges); LAC, Part III – Air; and

- o. Louisiana Revised Statutes, Title 30 – Minerals, Oil, and Gas and Environmental Quality, Section 2057 – Prohibitions; Exceptions (“La. R.S. 30:2057”).

D. WHEREAS, prior to lodging of this Consent Decree, without any admission of liability or of violation of law, Firestone completed the following activities at the Facility:

- a. Installed, began operating, and performance tested, the Regenerative Thermal Oxidizer (“RTO”) System to demonstrate compliance with applicable requirements under 40 C.F.R. § 63.496 and LAC 33:III.2115. On July 24, 2019, Firestone conducted the performance test on the RTO System with three RTOs operating. On September 13, 2019, Firestone submitted the performance test report to LDEQ.
- b. Reduced n-hexane concentration in solvent to less than 10% through the replacement of commercial n-hexane solvent with iso-hexane (the “iso-hexane project”);
- c. Completed inspections and testing of all Heat Exchangers as identified in APPENDIX 2.1, in accordance with 40 C.F.R. 68.73(d).
- d. Made, on February 27, 2020, an initial Visible Emissions demonstration of each Covered Flare using an observation period of 2 hours using Method 22 at 40 C.F.R. Part 60, Appendix A–7.

E. WHEREAS, the Parties have agreed that settlement of this action will advance the CAA’s goal of better protecting the environment.

F. WHEREAS, Firestone does not admit any liability to the United States or LDEQ arising out of the transactions or occurrences alleged in the Complaint.

G. WHEREAS, the Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation among the Parties and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section II and with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

II. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355; Section 113(b) of the CAA, 42 U.S.C. § 7413(b); Sections 109(c) and 113(b) of CERCLA, 42 U.S.C. §§ 9609(c) and 9613(b); Section 325(b)(3) of EPCRA, 42 U.S.C. § 11045(b)(3); Section 325(c)(4) of EPCRA, 42 U.S.C. § 11045(c)(4), and over the Parties.

2. This Court has supplemental jurisdiction pursuant to 28 U.S.C. § 1367 over the state and local claims asserted by LDEQ. Venue lies in this District pursuant to Section 113(b) of the CAA, 42 U.S.C. § 7413(b), Section 113(b) of CERCLA, 42 U.S.C. § 9613(b), Section 325(b)(3) of EPCRA, 42 U.S.C. § 11045(b)(3), Section 325(c)(4) of EPCRA, 42 U.S.C. § 11045(c)(4), and 28 U.S.C. §§ 1391(b) and (c) and 1395(a), because the violations alleged in the Complaint are alleged to have occurred in, and Firestone resides in and conducts business in, this District.

3. At least 30 Days prior to the Date of Lodging of this Consent Decree, EPA notified the State of Louisiana and Firestone of the violations alleged in the Complaint, as required by Section 113(a)(1) of the Act, 42 U.S.C. § 7413(a)(1).

4. For purposes of this Consent Decree, or any action to enforce this Consent Decree, Firestone consents to the Court's jurisdiction over this Consent Decree and any such action and over Firestone and consents to venue in this judicial district.

5. For purposes of this Consent Decree, Firestone agrees that the Complaint states claims upon which relief may be granted pursuant to Section 113 of the CAA, 42 U.S.C. § 7413, Sections 109 and 113 of CERCLA, 42 U.S.C. §§ 9609 and 9613, Section 325(b) of EPCRA, 42 U.S.C. §§ 11045(c), Section 325(c) of EPCRA, 42 U.S.C. §§ 11045(c), and the LEQA.

III. APPLICABILITY

6. The obligations of this Consent Decree apply to and are binding upon the United States, LDEQ, and upon Firestone and any successors, assigns, or other entities or persons otherwise bound by law.

7. No transfer of ownership or operation of the Facility, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Firestone of its obligation to ensure that the terms of the Consent Decree are implemented. At least 30 Days prior to such transfer, Firestone shall provide a copy of this Consent Decree to the proposed transferee and shall simultaneously provide written notice of the prospective transfer, together with a copy of the proposed written agreement, to EPA Region 6, the United States Attorney for the Western District of Louisiana, and the United States Department of Justice, in accordance with Section XIX (Notices). Any attempt to transfer ownership or operation of the Facility without complying with this Paragraph constitutes a violation of this Consent Decree.

8. Firestone shall provide a copy of this Consent Decree to all officers, employees, and agents whose duties might reasonably include compliance with any provision of this Consent Decree, as well as to any contractor retained to perform work required under this Consent

Decree. Firestone shall condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

9. In any action to enforce this Consent Decree, Firestone shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

IV. DEFINITIONS

10. Terms used in this Consent decree that are defined in the Act or in regulations promulgated pursuant to the Act shall have the meanings assigned to them in the Act or such regulations, unless otherwise provided in this Consent Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

- a. “Ambient Air” shall mean that portion of the atmosphere, external to buildings, to which persons have access.
- b. “Assist Steam” shall mean steam that intentionally is introduced prior to or at the flare tip through nozzles or other hardware conveyance for the purposes of, including, but not limited to, protecting the design of the flare tip and promoting turbulence for mixing or inducing air into the flame. Assist Steam includes, but is not necessarily limited to, Center Steam, Lower Steam, and Upper Steam.
- c. “BTU/scf” shall mean British Thermal Unit per standard cubic foot.
- d. “Calendar Quarter” shall mean a three-month period ending on March 31, June 30, September 30, or December 31.
- e. “Center Steam” shall mean the portion of Assist Steam introduced into the stack of a Covered Flare to reduce burnback.

- f. “Chill Water System” means the refrigerated cooling water system comprised of refrigeration equipment to cool the recirculating water, holding tanks for the water, and associated heat exchangers used in the system.
- g. “Combustion Efficiency” or “CE” means a Covered Flare’s efficiency in converting the organic carbon compounds found in Combustion Zone Gas to carbon dioxide.
- h. “Combustion Zone Gas” shall mean all gases and vapors found after the flare tip. This gas includes all Vent Gas, Pilot Gas, and Total Steam.
- i. “Complaint” shall mean the complaint filed by the United States and LDEQ in this action.
- j. “Consent Decree” shall mean this Decree, including any and all tables and attached appendices, but in the event of any conflict between the text of this Decree and any table or Appendix, the text of this Decree shall control.
- k. “Covered Flare” or “Covered Flares” shall mean 96-03a Primary Flare (EQT 0011) (“Primary Flare”) and 96-03b Auxiliary Flare (EQT 0012) (“Auxiliary Flare”). Each Covered Flare is a Steam-Assisted Flare.
- l. “Day” shall mean a calendar day unless expressly stated to be a business day. In computing any period of time for a compliance deadline under this Consent Decree (*e.g.*, a deadline for replacing a Leaking heat exchanger, submitting an application to modify a permit, or paying a penalty), where the last day would fall on a Saturday, Sunday, or federal or State holiday,

the period shall run until the close of business of the next business day.

- m. “Defendant” shall mean Firestone Polymers, LLC.
- n. “Dryers” shall mean Facility and Laboratory Dryers.
- o. “EPA” shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.
- p. “Effective Date” shall have the definition provided in Section XX.
- q. “Facility” shall mean the facility located in Sulphur, Calcasieu Parish, Louisiana, that is owned and operated by Firestone and produces synthetic rubber.
- r. “Facility Dryers” shall mean: Drying Line 18 (EQT001); Drying Line 20 (EQT002); Drying Line 21 (EQT003); Drying Line 22 (EQT004); and Drying Line 23 (EQT005).
- s. “Failure Type” shall mean the cause of a Leak in a heat exchanger as determined by testing and/or inspections of a heat exchanger or an RCFA.

There are three Failure Types:

- (1) Chemical Induced Failure Type – The primary cause of the heat exchanger Leak is metallurgical deterioration of the exchanger components including but not limited to general corrosion, pitting corrosion, stress corrosion, galvanic corrosion and crevice corrosion.
- (2) Gasket Related Failure Type – The primary cause of the heat exchanger Leak is the failure of a gasket to seal properly due to a chemical and/or mechanical wear of exchanger components and/or installation errors.
- (3) Mechanically Induced Failure Type – The primary cause of the heat exchanger Leak is physical or mechanical wear that does not qualify as a Chemical Induced Failure Type or a Gasket Related Failure Type and includes but is not limited to metal erosion, steam or water hammer, vibration, thermal fatigue, thermal expansion

and/or loss of cooling water.

- t. “Firestone” shall mean Firestone Polymers, LLC.
- u. “Flare” shall mean a combustion device lacking an enclosed combustion chamber that uses an uncontrolled volume of Ambient Air to burn gases.
- v. “Heat Exchange System” means any cooling tower system or once-through cooling water system. A Heat Exchange System can include more than one heat exchanger and can include an entire recirculating or once-through cooling system.
- w. “In Operation” with respect to:
 - (1) A Covered Flare, shall mean all times that Sweep, Supplemental, and/or Waste Gas is or may be vented to a Covered Flare. A Covered Flare that is In Operation is capable of Receiving Sweep, Supplemental, or Waste Gas unless all Sweep, Supplemental, and Waste Gas flow is prevented by means of an isolation device such as closed valves and/or blinds, and
 - (2) The RTO System, shall mean all times the RTO System receives Waste Gas from a Dryer.
- x. “Laboratory Dryers” shall mean the drum dryers associated with the Facility’s laboratory.
- y. “LDEQ” shall mean the Louisiana Department of Environmental Quality and any of its successor departments or agencies.
- z. “Leak”, “Leaking”, or “Leaked” shall mean either the detection of Hazardous Air Pollutants (“HAPs”) pursuant to 40 C.F.R. § 63.104(b)(6) or the detection of hydrocarbons when analyzing Heat Exchange System

or Chill Water System samples using the procedure in APPENDIX 4.1.

- aa. “Lower Heating Value” or “LHV” shall mean the theoretical total quantity of heat liberated by the complete combustion of a unit volume or weight of a fuel initially at 25 degrees Centigrade and 760 mmHg, assuming that the produced water is vaporized and all combustion products remain at, or are returned to, 25 degrees Centigrade; however, the standard for determining the volume corresponding to one mole is 20 degrees Centigrade.
- bb. “Lower Steam” shall mean the portion of Assist Steam piped to an exterior annular ring near the lower part of the flare tip, which then flows through tubes to the flare tip, and ultimately exits the tubes at the flare tip.
- cc. “Malfunction” shall mean, as specified in 40 C.F.R. § 60.2, 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. In any dispute under this Consent Decree involving this definition, Firestone has the burden of proving:
 - (1) The excess emissions were caused by a sudden, unavoidable breakdown of technology, beyond the control of the owner or operator;
 - (2) The excess emissions: (a) did not stem from any activity or event that could have been foreseen and avoided, or planned for, and (b) could not have been avoided by better operation and maintenance practices;
 - (3) To the maximum extent practicable the air pollution control equipment or processes were maintained and operated in a manner consistent with good practice for minimizing emissions;
 - (4) Repairs were made in a safe and expeditious fashion when the operator

knew or should have known that applicable emission limitations were being exceeded. Off-shift labor and overtime shall have been used, to the extent practicable, to ensure that such repairs were made as expeditiously as practicable;

- (5) The amount and duration of the excess emissions (including any bypass) were minimized to the maximum extent practicable during periods of such emissions;
- (6) All possible steps were taken to minimize the impact of the excess emissions on ambient air quality;
- (7) All emission monitoring systems were kept in operation if at all possible;
- (8) The owner or operator's actions during the period of excess emissions were documented by properly signed, contemporaneous operating logs, or other relevant evidence;
- (9) The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and
- (10) The owner or operator properly and promptly notified the appropriate regulatory authority if required.

dd. "Monitoring System Malfunction" shall mean any sudden, infrequent, and not reasonably preventable failure of instrumentation or a monitoring system to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not Monitoring System Malfunctions. In any dispute under this Consent Decree involving this definition, Firestone has the burden of proving:

- (1) The instrument or monitoring system downtime was caused by a sudden, unavoidable breakdown of technology, beyond the control of the owner or operator;
- (2) The instrument or monitoring system downtime: (a) did not stem from any activity or event that could have been foreseen and avoided, or planned for, and (b) could not have been avoided by better operation and maintenance practices;
- (3) To the maximum extent practicable, the instrument or monitoring

system was maintained and operated in a manner consistent with good practice for minimizing emissions;

- (4) Repairs were made in an expeditious fashion when the operator knew or should have known that applicable emission limitations were being exceeded. Off-shift labor and overtime shall have been used, to the extent practicable, to ensure that such repairs were made as expeditiously as practicable;
 - (5) The amount and duration of the instrument or monitoring system downtime was minimized to the maximum extent practicable;
 - (6) The owner or operator's actions during the period of instrument or monitoring system downtime were documented by properly signed, contemporaneous operating logs, or other relevant evidence; and
 - (7) The instrument or monitoring system downtime was not part of a recurring pattern indicative of inadequate design, operation, or maintenance.
- ee. "Net Heating Value" or "NHV" shall mean the Lower Heating Value.
- ff. "Net Heating Value of Combustion Zone Gas" or "NHV_{cz}" shall mean the Lower Heating Value, in BTU/scf, of the Combustion Zone Gas in a Covered Flare. NHV_{cz} shall be calculated in accordance with Step 3 of APPENDIX 3.2.
- gg. "Net Heating Value of Vent Gas" or "NHV_{vg}" shall mean the Lower Heating Value, in BTU/scf, of the Vent Gas directed to a Covered Flare. NHV_{vg} shall be calculated in accordance with Step 1 of APPENDIX 3.2.
- hh. "Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral.
- ii. "Parties" shall mean the United States, LDEQ, and Firestone.
- jj. "Pilot Gas" shall mean gas introduced into a flare tip that provides a flame to ignite the Vent Gas.
- kk. "Plaintiffs" shall mean the United States and LDEQ.

- ll. “Process Change” as related to the requirement for redetermining the compliance status of the RTO System shall have the same meaning as in 40 C.F.R. § 63.496(d).
- mm. “Purge Gas” shall mean the gas introduced between a flare header’s water seal and the flare tip to prevent oxygen infiltration (backflow) into the flare tip. For a Covered Flare with no water seal, the function of Purge Gas is performed by Sweep Gas, and therefore, by definition, such a flare has no Purge Gas.
- nn. “Regenerative Thermal Oxidizer System” or “RTO System” shall mean Firestone’s control technology system that consists of four RTOs and associated ductwork and operational controls for the reduction of VOCs from the Facility and the Laboratory Dryers.
- oo. “Repair of Heat Exchanger” shall mean the adjustment or alteration of a heat exchanger to eliminate a Leak and the subsequent sampling of the Heat Exchange System or Chill Water System to confirm that the Leak has been eliminated. If a heat exchanger has a Leak, taking it out of service does not constitute a repair.
- pp. “Replace,” “Replaced,” “Replacement” under the Chronic Leaker Program, with respect to the replacement of a heat exchanger or the replacement of a Leaking heat exchanger, shall mean the removal and replacement of those components of the exchanger for which removal and replacement is necessary to rectify the source of the Leak in that exchanger. Components shall include a tube bundle, a gasket, other like

parts and equipment, and/or the entire heat exchanger as indicated by inspection and testing results and/or engineering assessment by Firestone.

- qq. “Root Cause Failure Analysis” or “RCFA” with respect to the heat exchangers shall mean an investigation to evaluate and determine the underlying event(s) and/or condition(s) responsible for a heat exchanger Leak.
- rr. “RCFA Report” shall mean the report that must be prepared as part of an RCFA.
- ss. “SCFD” or “scfd” shall mean standard cubic feet per Day.
- tt. “SCFM” or “scfm” shall mean standard cubic feet per minute.
- uu. “Section” shall mean a portion of this Consent Decree identified by a capitalized Roman numeral.
- vv. “Semi-Annual Report” shall mean the reports required under Section XI (Reporting Requirements) of this Consent Decree.
- ww. “Smoke Emissions” shall have the definition set forth in Section 3.5 of Method 22 of 40 C.F.R. Part 60, Appendix A-7. For purposes of this Consent Decree, Smoke Emissions may be either documented by a video camera or determined by an observer knowledgeable with respect to the general procedures for determining the presence of Smoke Emissions per Method 22.
- xx. “Standard Conditions” shall mean a temperature of 68 degrees Fahrenheit and a pressure of 1 atmosphere. Unless otherwise expressly set forth in this Consent Decree or an Appendix, Standard Conditions apply.

- yy. “State” shall mean the State of Louisiana.
- zz. “Steam-Assisted Flare” shall mean a Covered Flare that uses steam piped to a flare tip to assist in combustion.
- aaa. “Supplemental Gas” shall mean all gas introduced to a Covered Flare in order to improve the combustible characteristics of the Combustion Zone Gas or to comply with the net heating value requirements of 40 C.F.R. § 63.11(b).
- bbb. “Sweep Gas” shall mean the minimum amount of gas introduced into the flare header to (a) prevent oxygen buildup, corrosion, and/or freezing in the flare header; (b) maintain a safe flow of gas through the flare header; including a higher flow during hot taps; and (c) prevent oxygen infiltration (backflow) into the flare tip.
- ccc. “Total Steam” shall mean the total of all steam that is supplied to a Covered Flare and includes, but is not limited to, Lower Steam, Center Steam, and Upper Steam.
- ddd. “United States” shall mean the United States of America, acting on behalf of EPA.
- eee. “Upper Steam” shall mean the portion of Assist Steam introduced via nozzles located on the exterior perimeter of the upper end of the flare tip.
- fff. “Vent Gas” shall mean all gas found just before the flare tip. This gas includes all Waste Gas, that portion of Sweep Gas that is not recovered, Purge Gas, and Supplemental Gas, but does not include Pilot Gas, and Total Steam.

ggg. “Visible Emissions” shall mean five minutes or more of Smoke Emissions during any two consecutive hours.

hhh. “VOC” or “Volatile Organic Compounds” shall have the definition set forth in 40 C.F.R. § 51.100(s).

iii. “Waste Gas” shall mean the mixture of all gases from facility operations that is directed to a control device for the purpose of disposing of the gas.

(1) With respect to a Covered Flare, “Waste Gas” does not include gas introduced to a Covered Flare exclusively to make it operate safely and as intended; therefore, “Waste Gas” does not include Pilot Gas, Total Steam, or the minimum amount of Sweep Gas and Purge Gas that is necessary to perform the functions of Sweep Gas and Purge Gas. “Waste Gas” also does not include the minimum amount of gas introduced to a Covered Flare to comply with regulatory or enforceable permit requirements regarding the combustible characteristics of Combustion Zone Gas; therefore, “Waste Gas” does not include Supplemental Gas. APPENDIX 3.6 to this Consent Decree depicts the meaning of Waste Gas, together with its relation to other gases associated with Flares.

(2) With respect to the RTO System, “Waste Gas” includes all VOCs, HAPs, and TAPs removed from the crumb rubber by the Dryers.

V. CIVIL PENALTY

11. Within 30 Days after the Effective Date of this Consent Decree, Firestone shall pay the sum of \$3,350,000 as a civil penalty, together with interest accruing from the date on

which the Consent Decree is lodged with the Court, at the rate specified in 28 U.S.C. § 1961 as of the Date of Lodging. This sum shall be paid in the following amounts:

- a. \$2,098,678.50 to the United States; and
- b. \$1,251,321.50 to LDEQ.

12. Firestone shall pay the civil penalty due to the United States by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice account, in accordance with instructions provided to Firestone by the Financial Litigation Unit ("FLU") of the United States Attorney's Office for the Western District Louisiana after the Effective Date. The payment instructions provided by the FLU will include a Consolidated Debt Collection System ("CDCS") number, which Firestone shall use to identify all payments required to be made in accordance with this Consent Decree. The FLU will provide the payment instructions to:

Bryan Smith 200 4th Avenue South
Nashville, TN 37201
615-937-1357
smithbryand@bfusa.com

on behalf of Firestone. Firestone may change the individual to receive payment instructions on its behalf by providing written notice of such change to the United States and EPA in accordance with Section XIX (Notices).

13. At the time of payment, Firestone shall send notice that payment has been made: (a) to EPA via email at cinwd_acctsreceivable@epa.gov or via regular mail at EPA Cincinnati Finance Office, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268; (b) to the United States via email or regular mail in accordance with Section XVIII; and (c) to EPA in accordance with Section XVIII. Such notice shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in *United States, et al. v. Defendant Firestone Polymers, LLC*,

and shall reference the civil action number, CDCS Number, and DOJ case number 90-5-2-1-11946.

14. Within 30 Days after the Effective Date of this Consent Decree, Firestone shall pay to LDEQ a civil penalty of \$1,251,321.50. Firestone shall pay the civil penalty due to LDEQ by check made payable to the Louisiana Department of Environmental Quality and sent to: Accountant Administrator, Financial Services Division, LDEQ, P.O. Box 4303, Baton Rouge, Louisiana 70821-4303, or by EFT to LDEQ in accordance with written instructions to be provided to Firestone upon request. Such payment shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in *United States, et al. v. Defendant Firestone Polymers, LLC*, and shall reference the civil action number.

15. If any portion of the civil penalty due to LDEQ is not paid when due, Firestone shall pay interest on the amount past due, accruing from the Effective Date through the date of payment at the rate identified in Paragraph 11 above, according to the payment instructions in Paragraph 14.

16. Firestone shall not deduct any penalties paid under this Consent Decree pursuant to this Section or Section XII (Stipulated Penalties) in calculating its federal, state, or local income tax.

VI. COMPLIANCE REQUIREMENTS

A. Dryers: Pollution Control Technology

17. Emission Limits and Standards: By the Effective Date of this Consent Decree, Firestone shall: (1) limit all residual HAPs from the Facility Dryers to a monthly weighted average of 10 kg total organic HAP per Mg crumb rubber (dry weight); and (2) demonstrate a 98 percent or greater VOC destruction or removal efficiency or reduce VOC emissions from the

Dryers to 20 ppm by volume when the RTO System is In Operation. Firestone shall demonstrate compliance with the limits and standards in this Paragraph by complying with the operating requirements in Paragraph 18 or, subsequent to obtaining EPA and LDEQ approval pursuant to Paragraph 19, by complying with alternative operating requirements pursuant to Paragraph 20.

18. Operating Requirements: By the Effective Date of this Consent Decree, Firestone shall continuously operate the RTO System in accordance with the following requirements when the RTO System is In Operation.

- a. Send all Waste Gas generated from the Dryers to the RTO System.
- b. Maintain the daily average minimum firebox temperature of 1485°F for each individual RTO that is receiving Waste Gas.
- c. Operate a minimum of three individual RTOs.

19. Alternative Operating Requirements: For purposes of this Consent Decree, the operation of the RTO System with fewer than three RTOs when In Operation shall be considered a Process Change. If Firestone elects to operate the RTO System with fewer than three RTOs when In Operation, Firestone shall redetermine compliance in accordance with 40 C.F.R. § 63.496, LAC 33:III.2115, and Sections II and III of APPENDIX 1.1 (Alternative Operating Requirements: Testing Protocols for the RTO System); and obtain approval of alternative operating requirements in accordance with Section IV of APPENDIX 1.1 (Alternative Operating Requirements: Testing Protocols for the RTO System) and Section X (Review and Approval of Submittals) of this Consent Decree.

20. Within thirty Days after approval, conditional approval, or partial approval by EPA pursuant to Section X (Review and Approval of Submittals) of any alternative operating requirements established pursuant to Paragraph 19 of this Consent Decree, Firestone shall

operate the RTO System when In Operation using the approved, conditionally approved, or partially approved alternative operating requirements to demonstrate compliance with the emission limits and standards in Paragraph 17.

21. Maintenance-Unplugging and Startup Emission Events: The following terms apply to: (1) Waste Gas from a Facility Dryer during maintenance-related unplugging operations when that Waste Gas is designated as authorized under LAC 33:III.537.A(XVII) in the Facility's Title V CAA Permit; and (2) Waste Gas from a Laboratory Dryer prior to startup when that Waste Gas is designated as authorized under LAC 33:III.537.A(XVII) in the Facility's Title V CAA Permit.

- a. The Waste Gas is exempt from the requirement of Paragraph 18.a and may be isolated from the RTO System and vented to atmosphere.
- b. Firestone shall operate the Facility and Laboratory Dryers referenced in this Paragraph in a manner consistent with safety and good air pollution control practices for minimizing emissions.
- c. Firestone shall include the Waste Gas from Facility Dryers when complying with the residual HAP monthly weighted average standard discussed in Paragraph 17 unless otherwise stated in NESHAP Subpart U.

B. Heat Exchangers: Inspections

22. By the Effective Date of this Consent Decree, Firestone shall conduct inspections of heat exchangers identified in APPENDIX 2.1 in accordance with 40 C.F.R. § 68.73, including conducting inspections in accordance with API 510 - Pressure Vessel Inspection Code or other recognized and generally accepted good engineering practices.

C. Covered Flares: Instrumentation and Monitoring Systems

23. Flare Information. For each Covered Flare, Firestone shall include the following information in the first Semi-Annual Report:

- a. A detailed description of each instrument and piece of monitoring equipment, including the specific model and manufacturer, Firestone has installed or will install in compliance with Paragraphs 25-28 of this Consent Decree (Paragraphs 1-2 of APPENDIX 3.1); and
- b. A narrative description of the monitoring methods and calculations that Firestone will use to comply with the requirements of Paragraph 36 (Paragraph 3 of APPENDIX 3.1).

24. Installation and Operation of Monitoring and Control Systems on Covered Flares.

By no later than August 15, 2022, Firestone shall install and commence operation of the instrumentation, controls, and monitoring systems set forth below in Paragraphs 25-28 at each Covered Flare.

25. Vent Gas and Assist Steam Monitoring Systems.

- a. For each Covered Flare, Firestone shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of Vent Gas (which includes Waste, Sweep, Purge, and any Supplemental Gas used) in the header or headers feeding that Covered Flare. This system shall also be able to continuously analyze pressure and temperature at each point of Vent Gas flow measurement. Different flow monitoring methods may be used to measure different gaseous streams that make up the Vent Gas

provided that the flow rates of all gas streams that contribute to the Vent Gas are determined. Flow shall be calculated in scfm and pounds per hour.

- b. For each Covered Flare, Firestone shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of Assist Steam used with that Covered Flare. This system shall also be able to continuously analyze the pressure and temperature of Assist Steam at a representative point of steam flow measurement. Flow shall be calculated in scfm and pounds per hour.
- c. Each flow rate monitoring system shall be able to correct for the temperature and pressure of the system and output parameters in Standard Conditions.
- d. In lieu of a monitoring system that directly measures volumetric flow rate, Firestone may choose from the following additional options for monitoring any gas stream:
 - (1) Mass flow monitors may be used for determining the volumetric flow rate of Assist Steam provided that Firestone converts the mass flow rates to volumetric flow rates pursuant to the methodology in Step 2 of APPENDIX 3.2;
 - (2) Mass flow monitors may be used for determining the volumetric flow rate of Vent Gas, provided Firestone determines the molecular weight of such Vent Gas using compositional analysis data collected pursuant to the monitoring method specified in Paragraph 28.a. and provided that Firestone converts the mass flow rates to volumetric flow rates pursuant to the methodology in Step 2 of APPENDIX 3.2; and
 - (3) Continuous pressure/temperature monitoring system(s) and appropriate engineering calculations may be used in lieu of a continuous volumetric flow monitoring system provided the molecular weight of the gas is known and provided Firestone complies with the methodology in Step

2 of APPENDIX 3.2 for calculating volumetric flow rates. For Vent Gas, Firestone shall determine molecular weight using compositional analysis data collected pursuant to the monitoring method specified in Paragraph 28.a.

26. Equipment Controls.

- a. Firestone shall install and commence operation of equipment, including, as necessary, main and trim control valves and piping which enables Firestone to control Assist Steam flow to each Covered Flare in a manner sufficient to ensure compliance with this Consent Decree.
- b. Firestone shall install and operate automated controls of the Supplemental Gas flow rate in relation to the Combustion Zone Gas flow rate to ensure compliance with the NHV_{cz} standard.

27. Video Camera. Firestone shall install and commence operation of a video camera that is capable of monitoring and recording, in digital format, the flame of and any Smoke Emissions from each Covered Flare.

28. Vent Gas Compositional Monitoring or Direct Monitoring of Net Heating Value of Vent Gas. For each Covered Flare, Firestone shall either determine the concentration of individual components in the Vent Gas or directly monitor the Net Heating Value of the Vent Gas (NHV_{vg}) in compliance with one of the methods specified in this Paragraph. Firestone may elect to use different monitoring methods (of the methods provided in this Paragraph) for different gaseous streams that make up the Vent Gas provided the composition or Net Heating Value of all gas streams that contribute to the Vent Gas are determined. Firestone shall:

- a. Install, operate, calibrate, and maintain a monitoring system capable of continuously measuring (*i.e.*, at least once every 15 minutes), calculating, and recording the individual component concentrations present in the Vent

Gas; or

- b. Install, operate, calibrate, and maintain a calorimeter capable of continuously measuring (*i.e.*, at least once every 15 minutes), calculating, and recording the NHV_{vg} at Standard Conditions. If Firestone elects this method, Firestone may install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the hydrogen concentration in the Vent Gas. The sample extraction point of the calorimeter may be located upstream of the introduction of Supplemental Gas or Sweep Gas or Purge Gas if the composition and flow rate of any such Supplemental Gas or Sweep Gas or Purge Gas is known and if this known value then is used in the calculation of the Net Heating Value of Vent Gas.
- c. If Firestone elects the method in Paragraph 28.b. and the net heating value of the Vent Gas exceeds the upper calibrated span of the calorimeter on the Covered Flare, then Firestone shall use the value of the upper calibrated span of that calorimeter for calculating the NHV_{vg} at Standard Conditions until the net heating value of the Vent Gas returns to within the measured calibrated span. Use of this method will not constitute instrument system downtime for the period of time that the net heating value of the Vent Gas exceeds the upper calibrated span of the calorimeter.

29. Instrumentation and Monitoring Systems: Specifications, Calibration, Quality Control, and Maintenance.

- a. The instrumentation and monitoring systems identified in Paragraphs 25

and 28 shall:

- (1) Meet or exceed all applicable minimum accuracy, calibration and quality control requirements specified in APPENDIX 3.3;
 - (2) Have an associated readout (*i.e.*, a visual display or record) or other indication of the monitored operating parameter that is readily accessible onsite for operational control or inspection by Firestone;
 - (3) Be capable of measuring the appropriate parameter over the range of values expected for that measurement location; and
 - (4) Have an associated data recording system with a resolution that is equal to or better than the required instrumentation/system accuracy.
- b. Firestone shall operate, maintain, and calibrate each instrument and monitoring system identified in Paragraphs 25 and 28 according to a Continuous Parametric Monitoring System (CPMS) monitoring plan that contains the information listed in C1 of APPENDIX 3.4 (CPMS Monitoring Plan).
- c. All monitoring systems permitted by Paragraph 28.a. shall also meet the requirements listed in C2 of APPENDIX 3.4 (Additional Requirements for Gas Chromatographs).
- d. For each instrumentation and monitoring system required by Paragraphs 25 and 28, Firestone shall comply with the out-of-control procedures described in C3 of APPENDIX 3.4 (Out of Control Period), and with the data reduction requirements specified in C4 of APPENDIX 3.4 (CPMS Data Reduction).

30. Instrumentation and Monitoring Systems: Recording and Averaging Times. The instrumentation and monitoring systems identified in Paragraphs 25-28 shall be able to produce and record data measurements and calculations for each parameter at the following time intervals:

Instrumentation and Monitoring System	Recording and Averaging Times
Vent Gas and Assist Steam Flow Monitoring Systems	Measure continuously and record 15-minute block averages
Vent Gas Compositional Monitoring (if using the methodology in Paragraph 28.a.)	Measure no less than once every 15 minutes and record that value
Vent Gas Net Heating Value Analyzer (if using the methodology in Paragraph 28.b.)	Measure continuously and record 15-minute block averages
Video Camera	Record at least one frame every 15 seconds

Nothing in this Paragraph prohibits Firestone from setting up process control logic that uses different averaging times from those in this table provided that the recording and averaging times in this table are available and used for determining compliance with this Consent Decree.

31. Instrumentation and Monitoring Systems: Operation. Firestone shall operate each of the instruments and monitoring systems required by Paragraphs 25-28 and collect data on a continuous basis when the Covered Flare that the instrument and/or monitoring system is associated with is In Operation and capable of Receiving Sweep, Supplemental, and/or Waste Gas, except for the periods of instrument downtime specified in sub-Paragraphs 38.(a)-(d).

D. Covered Flares: Combustion Efficiency

32. General Emission Standards Applicable to Covered Flares. By the Effective Date of this Consent Decree, Firestone shall comply with the requirements set forth in this Paragraph at each Covered Flare at all times when that Covered Flare is In Operation.

- a. Operation during Vent Gas Venting. Firestone shall operate each Covered Flare at all times when Vent Gas may be routed to it in accordance with 40 C.F.R. § 63.11(b)(3).
- b. No Visible Emissions. Firestone shall specify the smokeless design capacity of each Covered Flare and operate with no Visible Emissions,

except for periods not to exceed a total of 5 minutes during any 2 consecutive hours, when the Covered Flare is In Operation and the Vent Gas flow is less than the smokeless design capacity of the Covered Flare. For purposes of this Consent Decree, Visible Emissions may be determined by a person trained in accordance with Section 2.3 of Method 22 or documented by a video camera. Firestone shall monitor for Visible Emissions from each Covered Flare while it is In Operation as specified below in sub-Paragraph 32.b.(1) or (2). Visible Emissions observations shall be conducted using either method listed in sub-Paragraphs 32.b.(1) or (2). Firestone shall record and report any instances where Visible Emissions are observed for more than 5 minutes during any 2 consecutive hours as specified in 40 C.F.R. § 63.11(b)(4).

- (1) At least once per Day, Firestone shall conduct Visible Emissions observations using an observation period of 5 minutes using Method 22 at 40 C.F.R. Part 60, Appendix A-7. If at any time Firestone sees Visible Emissions, even if the minimum required daily Visible Emission monitoring has already been performed, Firestone shall immediately begin an observation period of 5 minutes using Method 22 at 40 C.F.R. Part 60, Appendix A-7. If Visible Emissions are observed for more than one continuous minute during any 5-minute observation period, the observation period using Method 22 at 40 C.F.R. Part 60, Appendix A-7 shall be extended to 2 hours or until 5 minutes of Visible Emissions are observed.
- (2) Alternatively, Firestone may use a video surveillance camera to continuously record (at least one frame every 15 seconds with time and date stamps) images of the Covered Flare flame and a reasonable area above the Covered Flare flame at an angle suitable for Visible Emissions observations. Firestone shall provide real-time video surveillance camera output to the control room or other continuously staffed location where the camera images may be viewed at any time.

c. Pilot Flame Presence. Firestone shall operate each Covered Flare with a

pilot flame present at all times. Firestone shall continuously monitor the presence of the pilot flame(s) using a device (including, but not limited to, a thermocouple, ultraviolet beam sensor, or infrared sensor) capable of detecting that the pilot flame is present.

- d. Monitoring According to Applicable Provisions. Firestone shall comply with all applicable Subparts of 40 C.F.R. Parts 60, 61, or 63 that state how a particular Covered Flare shall be monitored.
- e. Good Air Pollution Control Practices. At all times, including during periods of startup, shutdown, and/or Malfunction, Firestone shall implement good air pollution control practices to minimize emissions from each Covered Flare; provided however that Firestone is not in violation of this requirement for any practice that this Consent Decree requires Firestone to implement after the Effective Date for the period between the Effective Date and the compliance requirement, and nothing in this sub-Paragraph 32.e. requires Firestone to install or maintain Covered Flare monitoring equipment in addition to or different from the equipment required by this Consent Decree.

33. Flare Tip Velocity or Vtip. By the Effective Date, when a Covered Flare is In Operation, Firestone shall operate each Covered Flare in compliance with either sub-Paragraph 33.a. or 33.b. below, provided that the appropriate monitoring systems are in place, whenever the Vent Gas flow rate is less than the smokeless design capacity of the Covered Flare.

- a. The actual Flare Tip Velocity (Vtip) must be less than 60 feet per second. Firestone shall calculate Vtip using the procedures specified in

APPENDIX 3.2, or

- b. Vtip must be less than 400 feet per second and also less than the maximum allowed Flare Tip Velocity (V_{max}) as calculated according to Equation 9 in APPENDIX 3.2. Firestone shall monitor Vtip and gas composition, and must determine NHV_{vg} using the procedures specified in APPENDIX 3.2. The Unobstructed Cross Sectional Area of the Flare Tip must be calculated consistent with APPENDIX 3.5.

34. Revisions to 40 C.F.R. §§ 60.18(b)–(f) and/or 63.11(b). To the extent that, from the Date of Lodging until termination of this Consent Decree, revisions are made to 40 C.F.R. §§ 60.18(b)–(f) and/or 63.11(b) that are final and effective, but inconsistent with any of the requirements in Paragraphs 32.a-d, 33, or 36.a, Firestone shall comply with the final, effective regulations and any requirements in Paragraphs 32.a-d, 33, or 36.a, that are not inconsistent with these final, effective regulations. As used in this Paragraph, “inconsistent” means that compliance with both provisions is not possible or EPA determines by regulation or applicable Alternative Means of Emission Limitation that compliance with the 270 NHV_{cz} requirement can be used in lieu of the 300 NHV_{vg} requirement.

35. Operation According to Design. By the Effective Date, Firestone shall operate and maintain each Covered Flare in accordance with its design and the requirements of this Consent Decree.

36. Net Heating Value Standards. Firestone shall comply with the following Net Heating Value standards, except as provided in Paragraph 38 (Standard During Instrument Downtime).

- a. Net Heating Value of Vent Gas (NHV_{vg}) for all Covered Flares. By the

Effective Date of this Consent Decree, at any time a Covered Flare is In Operation, Firestone shall operate that Covered Flare with an NHV_{vg} of greater than or equal to 300 BTU/scf determined on a 15-minute block period basis. Firestone shall monitor and calculate NHV_{vg} at that Covered Flare in accordance with Step 4 of APPENDIX 3.2.

- b. Net Heating Value of Combustion Zone Gas (NHV_{cz}) for all Covered Flares. By no later than August 15, 2022, at any time a Covered Flare is In Operation, Firestone shall operate that Covered Flare so as to maintain the NHV_{cz} at or above 270 BTU/scf determined on a 15-minute block period basis. Firestone shall monitor and calculate NHV_{cz} at that Covered Flare in accordance with Step 5 of APPENDIX 3.2.

37. 98% Combustion Efficiency. By the Effective Date of this Consent Decree, Firestone shall operate each Covered Flare with a minimum of a 98% Combustion Efficiency at all times when Waste Gas is vented to it. To demonstrate continuous compliance with the 98% Combustion Efficiency, Firestone shall operate each Covered Flare in compliance with the applicable requirements in Paragraph 36.a by the Effective Date of this Consent Decree and in compliance with the applicable requirements in Paragraph 36.b by no later than August 15, 2022.

38. Standard During Instrument Downtime. If one or more of the following conditions (collectively referred to as “Instrument Downtime”) is present and renders Firestone incapable of operating a Covered Flare in accordance with the applicable NHV standards in Paragraph 36, Firestone shall operate that Covered Flare in accordance with good air pollution control practices so as to minimize emissions from and ensure good combustion efficiency at that Covered Flare:

- a. Malfunction of an instrument, for an instrument needed to meet the requirement(s);
- b. Repairs following instrument Malfunction, for an instrument needed to meet the requirement(s);
- c. Scheduled maintenance of an instrument in accordance with the manufacturer's recommended schedule, for an instrument needed to meet the requirement(s); and/or
- d. Quality Assurance/Quality Control activities on an instrument needed to meet the requirement(s).

The calculation of Instrument Downtime shall be made in accordance with 40 C.F.R. § 63.8(g). In no event shall Instrument Downtime exceed 110 hours of the time in a Calendar Quarter that the Covered Flare affected by the Instrument Downtime is In Operation. For purposes of calculating the 110 hours of Instrument Downtime allowed pursuant to this Paragraph, the time used for NHV Analyzer (calorimeter) or gas chromatograph calibration and validation activities may be excluded. Nothing in this Paragraph is intended to prevent Firestone from asserting Force Majeure as provided in Section XIII as the cause of any period of Instrument Downtime.

39. Recordkeeping for All Covered Flares: Timing and Substance. Firestone shall comply with the following recordkeeping requirements:

- a. By the Effective Date of this Consent Decree, for each Covered Flare, Firestone shall calculate and record each of the following parameters:
 - (1) Volumetric flow rates of all gas streams that contribute to the Vent Gas volumetric flow rate (in scfm) (in 15-minute block averages and in accordance with any calculation requirements in Step 2 of APPENDIX 3.2); and

- (2) NHV_{vg} (in BTU/scf) (in 15-minute block averages in accordance with Step 1 of APPENDIX 3.2).
- b. By no later than August 15, 2022, for each Covered Flare, Firestone shall calculate and record each of the following parameters:
 - (1) Assist Steam volumetric flow rate (in scfm) (in 15-minute block averages and in accordance with any calculation requirements in Step 2 of APPENDIX 3.2); and
 - (2) NHV_{cz} (in BTU/scf) (in 15-minute block averages in accordance with Step 3 of APPENDIX 3.2).
- c. Instrument Downtime. By the Effective Date of this Consent Decree, for each Covered Flare, Firestone shall record the duration of all periods of Instrument Downtime for each Covered Flare that exceed 110 hours of the time in a Calendar Quarter that the Covered Flare is In Operation. Firestone shall record which instrument(s) experienced the downtime, which Covered Flare was affected by the downtime, an explanation of the cause(s) of the deviation, and a description of the corrective action(s) that Firestone took.
- d. By the Effective Date of this Consent Decree, at any time that Firestone deviates from the emissions standards in Paragraphs 36-38 at any Covered Flare, Firestone shall record the duration of the deviation, an explanation of the cause(s) of the deviation, and a description of the corrective action(s) that Firestone took.

VII. ENVIRONMENTAL MITIGATION PROJECT: HEAT EXCHANGE SYSTEMS AND CHILL WATER SYSTEM

40. For the purpose of mitigating environmental harm allegedly caused by the operations of Firestone, Firestone shall implement the following Environmental Mitigation Project (“Project”) whereby Firestone shall sample, repair, inspect, and Replace Leaking heat exchangers in the Heat Exchange Systems and Chill Water System at its Facility in accordance with the requirements set forth in Paragraphs 42-53 below. The Project is not in lieu of penalties.

41. Firestone certifies that it is not otherwise required by law to perform the Project, that Firestone is unaware of any other person who is required by law to perform the Project, that the Project is not an action that Firestone was planning or intending to construct, perform, or implement other than in settlement of the claims resolved in this Consent Decree. and that Firestone will not use the Project, or portion thereof, to satisfy any obligations that it may have under other applicable requirements of law. In connection with any communication to the public or to shareholders regarding Firestone’s actions or expenditures relating in any way to the Project in this Consent Decree, Firestone shall include prominently in the communication “This project was undertaken in connection with the settlement of an enforcement action, *United States, et al. v. Firestone Polymers, LLC*, taken on behalf of the U.S. Environmental Protection Agency and the Louisiana Department of Environmental Quality under the Clean Air Act.”

A. Heat Exchangers: Sampling and Repair

42. Weekly Sampling: By the Effective Date of this Consent Decree, Firestone shall take weekly samples of each Heat Exchange System and the Chill Water System according to the procedures described in APPENDIX 4.2. If the results of any weekly sample analysis indicates the presence of a Leak, then Firestone shall conduct daily sampling of the Leaking Heat

Exchange System or Chill Water System in accordance with Paragraph 43 beginning on the Day following identification of the Leak.

43. Daily Sampling after Leak Detected: Firestone shall conduct daily sampling of the Heat Exchange System or Chill Water System according to procedures described in APPENDIX 4.2. If Firestone completes a period of four consecutive weeks of daily sampling with no Leak detected in accordance with this Paragraph, then Firestone shall take weekly samples of the Heat Exchange System or Chill Water System in accordance with Paragraph 42.

44. Optional Monthly Sampling: If weekly sampling of a Heat Exchange System or the Chill Water System in accordance with Paragraph 42 is conducted for two consecutive years with no Leak detected, then Firestone may cease weekly sampling under Paragraph 42 and begin conducting monthly sampling of that Heat Exchange System or Chill Water System according to procedures described in APPENDIX 4.2. If a Leak is detected during a monthly Heat Exchange System or Chill Water System sampling event, then Firestone shall conduct daily sampling of that Heat Exchange System or Chill Water System in accordance with Paragraph 43.

45. For each sample discussed in Paragraphs 42-44, if the Heat Exchange System or Chill Water System is not operating on a scheduled sampling date, then Firestone shall take the sample on the next Day following the scheduled sampling date on which the Heat Exchange System or Chill Water System is operating.

46. Firestone will analyze each sample taken pursuant to Paragraphs 42-45 according to the procedures described in APPENDIX 4.1.

47. If Firestone confirms a Leak, as described in APPENDIX 4.2, in a Heat Exchange System or the Chill Water System as a result of sampling conducted pursuant to Paragraphs 42-45, then Firestone shall:

- a. Initiate identification of the Leaking heat exchanger within 24 hours of Leak confirmation; and
- b. Identify the Leaking heat exchanger within 48 hours of Leak confirmation.

48. If Firestone cannot identify the Leaking heat exchanger within 48 hours of Leak confirmation, then Firestone shall identify the Leaking heating exchanger within 72 hours of Leak confirmation and conduct the following activities:

- a. Identify the cause(s) of Firestone's failure to identify the Leaking heat exchanger within 48 hours of Leak confirmation; and
- b. Report in the next Semi-Annual Report the cause(s) of the delayed identification of the Leaking heat exchanger and the steps taken by Firestone to ensure the cause(s) do not occur in the future.

49. Firestone shall conduct the following activities within 48 hours of identification of the Leaking heat exchanger:

- a. Take the Leaking heat exchanger out of service;
- b. Write a work order to repair the Leaking heat exchanger; and
- c. Initiate Repair of the Leaking heat exchanger.

50. Firestone shall complete a RCFA within 150 Days of identification of a Leaking heat exchanger to identify the Failure Type that caused the Leak. The RCFA shall include, at a minimum, the following:

- a. Testing and inspection of the heat exchanger as needed to determine the cause of the Leak;
- b. Review of operating conditions prior to and at the time the Leak is detected for any contributing causes of the Leak;

- c. If the Leak is the third Leak in the heat exchanger in any 48-month rolling period, conduct an internal inspection of the Leaking heat exchanger according to API 510, Pressure Vessel Inspection Code: In-Service Inspection, Rating, Repair, and Alteration, or other recognized and generally accepted good engineering practices unless such an inspection has been conducted within the 12 months immediately preceding the third Leak in which case Firestone may determine that an internal inspection is not warranted as part of the RCFA investigation, and
- d. Completion of a report summarizing the findings of the RCFA, including but not limited to identification of affected components, testing and inspections conducted, collected evidence, operating conditions, process safety information listed in 40 C.F.R. § 68.65(d) as applicable to the RCFA investigation for the Leaking heat exchanger, and conclusion of investigation.

B. Heat Exchangers: Chronic Leaker Program

51. By the Effective Date of this Consent Decree, Firestone shall conduct the following activities if, after sampling according to this Consent Decree or quarterly sampling under 40 C.F.R. § 63.104, (1) Firestone determines that a heat exchanger in a Heat Exchange System or Chill Water System has Leaked three times in a 48-month rolling period and (2) Firestone has completed an RCFA for each Leak and determined that all three Leaks occurred as a result of the same or substantially similar Failure Type:

- a. Create a work order for the Replacement of the Leaking heat exchanger within six months of the third Leak; and

- b. Replace the Leaking heat exchanger within two years of the third Leak.

52. By the Effective Date of this Consent Decree, Firestone shall conduct the following activities if, after sampling according to this Consent Decree or quarterly sampling under 40 C.F.R. § 63.104, (1) Firestone determines that a heat exchanger in a Heat Exchange System or Chill Water System has Leaked a fourth time, (2) the fourth Leak occurred within 24 months of the third Leak as identified pursuant to Paragraph 51, and (3) Firestone has completed an RCFA for each Leak and determined that all four Leaks occurred as a result of the same or substantially similar Failure Type or Firestone chooses to Replace the Leaking heat exchanger as set forth in this Paragraph without conducting an RCFA:

- a. Place an order for the Replacement of the Leaking heat exchanger within 90 days of the fourth Leak; and
- b. Replace the Leaking heat exchanger within 90 days of receipt of all replacement parts.

53. If Paragraph 51.b requires that Firestone Replace the Leaking heat exchanger earlier than the date identified by Paragraph 52.b, then Firestone shall Replace the Leaking heat exchanger pursuant to the timeline in Paragraph 51.b.

VIII. LOUISIANA BENEFICIAL ENVIRONMENTAL PROJECT

54. Firestone shall complete a Louisiana Beneficial Environmental Project (“BEP”), which meets the requirements of LAC 33:I.2501, in accordance with all provisions of this Section.

55. Firestone shall remit \$654,125 dollars to the LDEQ pursuant to 33 La. Admin. Code Pt I, § 2501 within 30 Days after the Effective Date of this Consent Decree. This payment will be deposited into an escrow account that will be administered by the LDEQ and dedicated to

relocating or upgrading the Westlake ambient air monitoring site, upgrading and replacing equipment at multiple ambient air monitoring sites in the Southwest Louisiana Ambient Air Monitoring System, or purchasing field monitoring equipment for LDEQ's Southwest Regional Office.

56. Firestone shall pay the BEP payment due to LDEQ by bank check made payable to the Louisiana Department of Environmental Quality and sent to: Accountant Administrator, Financial Services Division, LDEQ, P.O. Box 4303, Baton Rouge, Louisiana 70821-4303, or by EFT to LDEQ in accordance with written instructions to be provided to Firestone upon request. Such payment shall state that the payment is for the BEP payment owed pursuant to the Consent Decree in *United States, et al. v. Defendant Firestone Polymers, LLC*, and shall reference the civil action number of this action.

57. At the time of payment, Firestone shall send notice that payment has been made: (a) to the United States via email or regular mail in accordance with Section XIX; (b) to EPA in accordance with Section XIX; and (c) to LDEQ in accordance with Section XIX. Such notice shall state that the payment is for the BEP pursuant to the Consent Decree in *United States, et al. v. Defendant Firestone Polymers, LLC*, and shall reference the civil action number, CDCS Number, and DOJ case number 90-5-2-1-11946.

58. Firestone is responsible for the satisfactory completion of the BEP, which in accordance with the requirements of this Consent Decree, means remittance of \$654,125 dollars to the LDEQ pursuant to 33 La. Admin. Code Pt I, § 2501 within 30 Days after the Effective Date of this Consent Decree.

59. Any public statement, oral or written, in print, film, or other media, made by Firestone making reference to the BEP under this Consent Decree shall include the following

language: “This project was undertaken in connection with the settlement of an enforcement action, *United States v. Firestone Polymers, LLC*, taken on behalf of the Louisiana Department of Environmental Quality under the Clean Air Act.”

IX. PERMITS

60. Permits Needed for Compliance Obligations. Firestone shall obtain all required federal, state, and local permits necessary for performing any compliance obligations under this Consent Decree including, without limitation, permits for the construction of pollution control technology and the installation of equipment at the Facility. Firestone may seek relief under the provisions of Section XIII (Force Majeure) for any delay in performing any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, provided that Firestone has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals.

61. Permits to Ensure Survival of Consent Decree Limits and Standards after Termination of Consent Decree. By no later than August 15, 2022, Firestone shall complete and submit to LDEQ, pursuant to LDEQ’s consolidated preconstruction and Title V CAA permitting program, appropriate applications to incorporate the requirements listed in Paragraph 62 into a federally enforceable permit for the Facility, such that the requirements listed in Paragraph 62: (i) become and remain “applicable requirements” as that term is defined in 40 C.F.R. § 70.2; (ii) are incorporated into a federally enforceable Title V permit for the Facility, and (iii) survive the termination of this Consent Decree.

62. Requirements that Survive Termination. The requirements of the following Paragraphs of this Consent Decree will survive termination: Paragraphs 17, 18 (if there has been no approval of alternative operating requirements pursuant to Paragraph 20), approved

alternative operating requirements (if there has been approval of alternative operating requirements pursuant to Paragraph 20), and 21; Paragraphs 23-31 (Covered Flares: Instrumentation and Monitoring Systems); Paragraphs 32-39 (Covered Flares: Combustion Efficiency); and Paragraphs 40-53 (Mitigation Project: Heat Exchange Systems).

63. The permit applications and process of incorporating the requirements of this Consent Decree shall be in accordance with applicable state or local Title V rules, including applicable administrative amendment provisions of such rules. The Parties agree that the incorporation may be “by amendment” under 40 C.F.R. § 70.7(d) and analogous state Title V rules, where allowed by state law.

64. This Consent Decree shall not terminate until Firestone receives a permit for the Facility that has been issued pursuant to LDEQ’s consolidated preconstruction and Title V CAA permitting program which incorporate the requirements set forth in Paragraph 62. Following submission of complete permit applications, Firestone shall cooperate with LDEQ by promptly submitting all relevant available information that LDEQ seeks following the receipt of the permit materials. Requirements incorporated into the consolidated preconstruction and Title V CAA permit pursuant to Paragraph 62 shall survive termination of this Consent Decree.

65. For any permit application required by this Section that is filed after the Effective Date of this Consent Decree, Firestone shall submit to EPA and LDEQ, in the manner set forth in Section XIX (Notices), a copy of each application, as well as a copy of any permit proposed as a result of any such application, to allow for timely participation in any public comment process. If, as of the Effective Date, Firestone has already received any permit necessary to implement the requirements of this Consent Decree, then within 30 Days after the Effective Date, Firestone shall submit copies of any such permit to EPA in the manner set forth in Section XIX (Notices).

EPA and/or LDEQ may excuse in writing all or part of the latter submission if copies of the permit have already been submitted before the Effective Date.

X. REVIEW AND APPROVAL OF SUBMITTALS

66. After review of any plan, report, other document, or alternative operating requirements submitted for approval pursuant to this Consent Decree, EPA, after consultation with LDEQ, shall in writing: (a) approve the submission; (b) approve the submission upon specified conditions; (c) approve part of the submission and disapprove the remainder; or (d) disapprove the submission.

67. If the submission is approved pursuant to Paragraph 66, the Defendant shall take all actions required by the plan, report, other document, or alternative operating requirements in accordance with the schedules and requirements of the plan, report, other document, or alternative operating requirements, as approved. If the submission is conditionally approved or approved only in part, pursuant to Paragraph 66.b or 66.c, the Defendant shall, upon written direction of EPA, after consultation with LDEQ, take all actions required by the approved plan, report, alternative operating requirements, or other item, subject to the Defendant's right to dispute such conditional or partial approval, under Section XIV of this Consent Decree (Dispute Resolution).

68. If a submission is disapproved in whole or in part pursuant to Paragraph 66.c or 66.d, the Defendant may, within forty-five (45) Days or such other time as the Parties agree to in writing, correct all deficiencies noted by Plaintiffs and resubmit the plan, report, alternative operating requirements, or other item, or disapproved portion thereof, for approval, in accordance with the preceding Paragraphs. If the resubmission is approved in whole or in part, the Defendant shall proceed in accordance with the preceding Paragraph. If a submission or

resubmission is disapproved in whole or in part, such disapproval shall be subject to the Defendant's right to dispute under Section XIV of this Consent Decree (Dispute Resolution).

XI. REPORTING REQUIREMENTS

69. Semi-Annual Reports. By no later than February 28th and August 31st of each year after the Effective Date of this Consent Decree, until termination of this Consent Decree pursuant to Section XXIII, Firestone shall submit a "Semi-Annual Report" to EPA and LDEQ containing, for the previous six months (*i.e.*, January through June will be addressed in the report to be submitted by August 31, and July through December will be addressed in the report submitted by February 28), the following information:

- a. A description of the status of work performed and progress made toward implementing all requirements of Section VI. (Compliance Requirements) at the Facility. This topic should describe any major milestones completed and remaining to be completed;
- b. A description of any problems encountered or anticipated in meeting the requirements in Section VI (Compliance Requirements) at the Facility, together with implemented or proposed solutions;
- c. A description of the status of any permit applications, including a summary of all permitting activity, pertaining to compliance with this Consent Decree;
- d. A copy of any reports that were submitted only to LDEQ and that pertain to compliance with this Consent Decree;
- e. For the RTO System compliance requirements:
 - (1) The date of the last performance test, the date Firestone received the performance test report, the minimum firebox temperature established

from that performance test, the number of Dryers venting to the RTO System during that performance test, and the month and year Firestone began operating using the new minimum firebox temperature.

- (2) For each individual RTO, provide the daily average firebox temperature as determined using the procedures specified in 40 C.F.R. § 63.505(g), hours the individual RTO was In Operation, the number of hours of insufficient monitoring data, whether a parameter monitoring excursion as specified in 40 C.F.R. § 63.505(g)(1)(i)-(iii) occurred during the monitoring period, and if a parameter monitoring excursion occurred, an explanation of the cause of the excursion.

f. A summary of the following, per Covered Flare per Calendar Quarter

(hours shall be rounded to the nearest tenth):

- (1) The total number of hours of Instrument Downtime claimed pursuant to Paragraph 38, expressed as both an absolute number and a percentage of time the Covered Flare that the instrument/equipment monitors, is In Operation and capable of Receiving Sweep, Supplemental, and/or Waste Gas;
- (2) If the total number of hours of Instrument Downtime claimed pursuant to Paragraph 38 exceeds 110 hours of the time in a Calendar Quarter while the Covered Flare affected by the downtime is In Operation, an identification of the periods of downtime by date, time, cause (including Malfunction or maintenance), and, if the cause is asserted to be a Malfunction, the corrective action taken;
- (3) The total number of hours, expressed as both an absolute number of hours and a percentage of time that the Covered Flare was In Operation, in which the requirements of Paragraphs 36-37 were not applicable because the only gas or gases being vented were Pilot Gas or Purge Gas;
- (4) Exceedances of Combustion Efficiency Standards.
 - (a) The total number of hours, expressed as both an absolute number of hours and a percentage of time the Covered Flare was In Operation, of exceedances of the emissions standards in Paragraphs 36-37; provided however, that if the exceedance of these standards was less than 110 hours of the time in a Calendar Quarter and was due to one or more of the exceptions set forth in Paragraph 38, the report shall so note; and

- (b) If the exceedance of the emissions standards in Paragraphs 36-37 was not due to one of the exceptions in Paragraph 38 (Instrument Downtime), or if the exceedance was due to one or more of the exceptions in Paragraph 38 and the total number of hours caused by the exceptions exceeds 110 hours of the time in a Calendar Quarter that the Covered Flare affected by the Instrument Downtime was In Operation, an identification of each block period that exceeded the standard, by time and date; the cause of the exceedance (including startup, shutdown, maintenance, or Malfunction), and if the cause is asserted to be a Malfunction, an explanation and any corrective actions taken.
- g. For each Heat Exchange System and the Chill Water System:
 - (1) Identification of the system (*i.e.*, North, South, Chill Water);
 - (2) The sampling frequency of that system (*i.e.*, weekly, daily, monthly); and
 - (3) Start and end dates of the sampling frequency.
- h. For each heat exchanger inspection conducted in accordance with 40 C.F.R. § 68.73 during the semi-annual period:
 - (1) Heat exchanger identification number and description;
 - (2) The associated Heat Exchange System or Chill Water System of each heat exchanger;
 - (3) Type of inspection conducted (API internal, thickness, or external, as applicable);
 - (4) Recommendations from the inspection;
 - (5) Date that the next internal, thickness, or external inspection is due.
- i. For all heat exchanger Leaks and/or Repair of Heat Exchangers during the semi-annual period:
 - (1) Heat exchanger identification number and description;
 - (2) The associated Heat Exchange System or Chill Water System of each

heat exchanger;

- (3) For each Leak:
 - (a) Date and time the Leak is confirmed in a Heat Exchange System or the Chill Water System; and
 - (b) Date and time Leaking heat exchanger is identified.
- (4) Date(s) Leaking, if applicable;
- (5) Failure Type of each Leak per the RCFA;
- (6) Date(s) of prior Leak(s), if applicable;
- (7) Date(s) repaired, if applicable;
- (8) Description of repairs, if applicable;
- (9) Number of tubes in the heat exchanger;
- (10) Number of plugged tubes in the heat exchanger as of the end of the semi-annual period;
- (11) Percent of plugged tubes in the heat exchanger;
- (12) Date of last internal inspection in accordance with API 510 or other recognized and generally accepted good engineering practices;
- (13) Recommendations from any inspections conducted in accordance with API 510 or other recognized and generally accepted good engineering practices performed during the semi-annual period, if applicable;
- (14) Date of any planned inspections to be conducted in accordance with API 510 or other recognized and generally accepted good engineering practices;
- (15) Results of any RCFA including the RCFA Report; and
- (16) Planned date of Replacement of heat exchanger, if applicable.

- j. Any information required by Paragraphs 23, 48, 70, and 71.
- k. Any changes to the designated notice recipient(s) or notice address(es) referenced in Section XIX (Notices).
- l. Any additional matters that Firestone believes should be brought to the attention of EPA or LDEQ for the Facility.

70. Annual Emissions Inventory Data. Firestone shall provide in the Semi-Annual Report submitted no later than August 31st of each year, the actual reported emissions for the prior calendar year from each Covered Flare.

71. Each Semi-Annual Report shall also include a description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Firestone shall so state in the report. In such a case, Firestone shall investigate the cause of the violation and then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 Days of the Day Firestone becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Firestone of its obligation to provide the notice required by Section XIII (Force Majeure).

72. Whenever any violation of this Consent Decree or any other event affecting Firestone's performance under this Consent Decree may pose an immediate threat to the public health or welfare or the environment, Firestone shall notify EPA and LDEQ orally or by electronic or facsimile transmission as soon as possible, but no later than 24 hours after Firestone first knew of the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

73. All reports required under this Section shall be submitted to the persons and in the manner designated in Section XIX (Notices).

74. Each report submitted by Firestone under this Section shall be signed by a responsible official, as defined in 40 C.F.R. § 70.2, of the Facility and include the following certification:

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

75. The above certification requirement does not apply to emergency or similar notifications where compliance would be impractical.

76. The reporting requirements of this Consent Decree do not relieve Firestone of any reporting obligations required by the CAA or implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement.

77. Any information provided pursuant to this Consent Decree may be used by the United States or LDEQ in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

XII. STIPULATED PENALTIES

78. Firestone shall be liable for stipulated penalties to the United States and LDEQ for violations of this Consent Decree as specified below, unless excused under Section XIII (Force Majeure). A violation includes failing to perform any obligation required by the terms of this Consent Decree, including any work plan or schedule approved under this Consent Decree,

according to all applicable requirements of this Consent Decree and within the specified time schedules established by or approved under this Consent Decree.

79. Table of Stipulated Penalties:

	Stipulated Penalty	
<i>Late Payment of Civil Penalty</i>		
79.a. <u>Violations of Paragraph 11.</u> Failure to pay civil penalty when due as specified in Paragraph 11.		<i>(per Day late)</i> \$5,000
<i>Failure to meet Compliance Requirements</i>		
A. Dryers: Pollution Control Technology		
79.b. <u>Violations of Paragraphs 18 and 20.</u> Failure to comply with operating requirements or alternative operating requirements as specified in Paragraphs 18 and 20 or failure to obtain approval of alternative operating requirements pursuant to Section X prior to implementation of alternative operating requirements in Paragraph 20.	<i>Period of Delay or Noncompliance (Days)</i> 1 - 30 31 - 60 more than 60	<i>(per Day per Violation)</i> \$1,000 \$2,000 \$5,000
79.c. <u>Violations of Paragraphs 19.</u> Failure to comply with timelines specified in APPENDIX 1.1, Sections II.1, III, and IV, or failure to submit and obtain approval of Testing Protocol pursuant to Section X prior to conducting an Appendix 1.1 performance test.	<i>Period of Delay or Noncompliance (Days)</i> 1 - 30 31 - 60 more than 60	<i>(per Day per Violation)</i> \$1,000 \$2,000 \$5,000
79.d. <u>Violations of Paragraph 21.b-c.</u> Failure to comply with any requirement in Paragraph 21.b-c.	<i>Period of Delay or Noncompliance (Days)</i> 1 - 30 31 - 60 more than 60	<i>(per Day per Violation)</i> \$1,000 \$2,000 \$5,000
B. Heat Exchangers: Inspections		
79.e. <u>Violations of Paragraph 22.</u> Failure to conduct inspections of heat exchangers pursuant to Paragraph 22.	<i>Period of Delay or Noncompliance (Days)</i> 1 - 30 31 - 60	<i>(per Day per Violation)</i> \$1,000 \$2,000

	Stipulated Penalty	
	more than 60	\$5,000
C. Covered Flare: Instrumentation and Monitoring Systems		
79.f. <u>Violations of Paragraph 23</u> . Failure to submit flare information in the first Semi-Annual Report in compliance with Paragraph 23.	<i>Period of Delay or Noncompliance (Days)</i> 1 - 30 31 - 60 more than 60	<i>(per Day per Violation)</i> \$ 300 \$ 400 \$ 500
79.g. <u>Violations of Paragraph 24-28</u> . Failure to install the equipment and monitoring systems required by Paragraphs 24-28 by the compliance date and maintain them in accordance with the respective, applicable technical specifications in those Paragraphs and Paragraphs 29-30, (except for the QA/QC requirements referenced in sub-Paragraph 29.a(1), which are covered in sub-Paragraph .h. below).	<i>Period of Delay or Noncompliance (Days per Monitoring System/ Control Instrument)</i> 1-30 31-60 61 and later	<i>(per Day per Monitoring System/ Control Instrument)</i> \$ 750 \$ 1,250 \$ 2,000
79.h. <u>Violations of sub-Paragraph 29.a(1) (QA/QC requirements)</u> . Failure to comply with the QA/QC requirements referenced in Paragraph 29.a(1) and APPENDIX 3.3	<i>Type of Requirement</i> Daily Quarterly Annual	<i>(per Violation)</i> \$ 100 \$ 200 per Day late \$ 500 per Day late
79.i. <u>Violations of Paragraph 31</u> . Except for 110 hours per Calendar Quarter, failure to operate each monitoring system required by Paragraphs 25 and 27-28 in accordance with Paragraph 31; provided however, that Firestone will not be liable for a stipulated penalty for violation of Paragraph 29 if, during the period of downtime, the only gas(es) being sent to the Covered Flare in question is/are Purge Gas and/or Sweep Gas.	<i>Per Monitoring System/ Control Instrument, (hours per Calendar Quarter)</i> 0.25 - 50.0 50.25 - 100.0 more than 100.0	<i>(per Hour per Monitoring System/ Control Instrument)</i> \$ 250 \$ 500 \$ 1,000
D. Covered Flares: Combustion Efficiency		
79.j. <u>Violations of Paragraphs 36 and 38</u> . For each Covered Flare, each failure to comply with the Combustion Zone Net Heating Value standard in Paragraph 36	<i>Noncompliance (hours per Calendar Quarter)</i>	<i>(per Hour)</i>

	Stipulated Penalty	
<p>or the Standard During Instrument Downtime in Paragraph 38.</p> <p>For purposes of calculating the number of hours of noncompliance with the NHV_{cz} standard, all 15-minute periods of violation shall be added together to determine the total.</p>	<p>0.25 - 50.0</p> <p>50.25 - 100.0</p> <p>more than 100.0</p>	<p>\$50</p> <p>\$100</p> <p>\$300</p>
<p>79.k. <u>Violations of Paragraph 39.</u> Failure to record any information required to be recorded pursuant to Paragraph 39.</p>		<p><i>(per Day)</i></p> <p>\$100</p>
<i>Failure to conduct Mitigation Project</i>		
A. Heat Exchangers: Sampling and Repair		
<p>79.l. <u>Violations of Paragraph 42-46.</u> Failure to take or analyze samples pursuant to Paragraph 42-46.</p>	<p><i>Period of Noncompliance (Days past required monitoring date per Heat Exchange System/Chill Water System)</i></p> <p>1-30</p> <p>31-60</p> <p>61 and later</p>	<p><i>(per Day per Heat Exchange System/Chill Water System)</i></p> <p>\$ 250</p> <p>\$ 500</p> <p>\$ 1,000</p>
<p>79.m. <u>Violations of Paragraph 48.</u> Failure to identify the Leaking heat exchanger within 72 hours of Leak confirmation, identify cause(s) for failing to identify the Leaking heat exchanger within 48 hours, or report the cause(s) of the delayed identification of the Leaking heat exchanger pursuant to Paragraph 48.</p>	<p><i>Period of Noncompliance (Days per Heat Exchange System/Chill Water System)</i></p> <p>1-30</p> <p>31-60</p> <p>61 and later</p>	<p><i>(per Day per Heat Exchange System/Chill Water System)</i></p> <p>\$ 750</p> <p>\$ 1,250</p> <p>\$ 2,000</p>
<p>79.n. <u>Violations of Paragraph 49.</u> Failure to conduct any activity required by Paragraph 49.</p>	<p><i>Period of Noncompliance (Days per Heat Exchange System/Chill Water System)</i></p> <p>1-30</p> <p>31-60</p> <p>61 and later</p>	<p><i>(per Day per Heat Exchange System/Chill Water System)</i></p> <p>\$ 750</p> <p>\$ 1,250</p> <p>\$ 2,000</p>

	Stipulated Penalty	
79.o. Violation of Paragraph 50. Failure to complete an RCFA pursuant to Paragraph 50.	<i>Period of Noncompliance (Days per Heat Exchange System/Chill Water System)</i>	<i>(per Day per Heat Exchange System/Chill Water System)</i>
	1–30	\$ 750
	31–60	\$ 1,250
	61 and later	\$ 2,000
B. Heat Exchangers: Chronic Leaker Program		
79.p. <u>Violations of Paragraph 51.</u> Failure to create work order or Replace Leaking heat exchanger within two years pursuant to Paragraph 51.	<i>Period of Noncompliance (Days per heat exchanger)</i>	<i>(per Day per heat exchanger)</i>
	1–30	\$ 1,000
	31–60	\$ 2,000
	61 and later	\$ 3,000
79.q. <u>Violations of Paragraph 52.</u> Failure to place an order for Replacement or Replace Leaking heat exchanger pursuant to Paragraph 52.	<i>Period of Noncompliance (Days per heat exchanger)</i>	<i>(per Day per heat exchanger)</i>
	1–30	\$ 1,000
	31–60	\$ 2,000
	61 and later	\$ 3,000
<i>Failure to conduct BEP</i>		
79.r. Violations of Paragraphs 54-59. Failure to make the BEP payment as specified in Paragraphs 54-59.		<i>(per Day per Violation)</i>
		\$5000
<i>Failure to incorporate Consent Decree Requirements into Federally Enforceable Permits</i>		
79.s. <u>Violations of Paragraph 61.</u> For each failure to timely submit a complete permit application to LDEQ for the incorporation of Consent Decree requirements required by Paragraph 61.	<i>Period of Delay or Noncompliance (Days)</i>	<i>(per Day per Violation)</i>
	1-30	\$300
	31-60	\$1,000
	61 and later	\$2,000
<i>Failure to meet Reporting Requirements</i>		
79.t. <u>Violations of Paragraphs 69-77.</u> For each failure to submit a complete Semi-Annual Report that complies with	<i>Period of Delay or Noncompliance per Semi- Annual Report (Days)</i>	<i>(per Day per Semi-Annual Report)</i>

	Stipulated Penalty	
the requirements of Paragraphs 69-77 (Section XI).	1-30	\$300
	31-60	\$1,000
	61 and later	\$2,000

80. Stipulated penalties under this Section shall begin to accrue on the Day after performance is due or on the Day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

81. For stipulated penalties arising from violations of this Consent Decree, other than violations of Section VIII (Louisiana Beneficial Environmental Project), Firestone shall: pay stipulated penalties to the United States and LDEQ within 30 Days of receiving a written demand by either Plaintiff; and pay 50 percent of the total stipulated penalty amount due to the United States and 50 percent to the LDEQ. For stipulated penalties arising from violations of Section VIII (Louisiana Beneficial Environmental Project) of this Consent Decree, Firestone shall pay 100 percent of the stipulated penalty amount due to LDEQ within 30 Days of receiving a written demand by either Plaintiff. The Plaintiff making a demand for payment of a stipulated penalty shall simultaneously send a copy of the demand to the other Plaintiff.

82. The United States or LDEQ may in the unreviewable exercise of its discretion, reduce or waive stipulated penalties otherwise due it under this Consent Decree.

83. Stipulated penalties shall continue to accrue as provided in Paragraphs 79-80, during any Dispute Resolution, but need not be paid until the following:

- a. If the dispute is resolved by agreement of the Parties or by a decision of EPA or LDEQ that is not appealed to the Court, Firestone shall pay:

accrued penalties that are unrelated to Section VIII (Louisiana Beneficial

Environmental Project) of this Consent Decree and determined to be owing, together with interest, to the United States and LDEQ within 30 Days of the Effective Date of the agreement or the receipt of EPA's or LDEQ's decision or order; and accrued penalties that are related to Section VIII (Louisiana Beneficial Environmental Project) of this Consent Decree and determined to be owing, together with interest, to LDEQ within 30 Days of the Effective Date of the agreement or the receipt of EPA's or LDEQ's decision or order.

- b. If the dispute is appealed to the Court and the United States or LDEQ prevails in whole or in part, Firestone shall pay all accrued penalties determined by the Court to be owing, together with interest, within 60 Days of receiving the Court's decision or order, except as provided in subparagraph c, below.
- c. If any Party appeals the District Court's decision, Firestone shall pay all accrued penalties determined to be owing, together with interest, within 15 Days of receiving the final appellate court decision.

84. Firestone shall pay stipulated penalties owing to the United States in the manner set forth and with the confirmation notices required by Paragraph 12-13, except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid. Firestone shall pay stipulated penalties owing to LDEQ by Paragraph 14, except that the transmittal letter shall state for which violation(s) the stipulated penalties are being paid.

85. If Firestone fails to pay stipulated penalties according to the terms of this Consent Decree, Firestone shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States or LDEQ from seeking any remedy otherwise provided by law for Firestone's failure to pay any stipulated penalties.

86. The payment of penalties and interest, if any, shall not alter in any way Firestone's obligation to complete the performance of the requirements of this Consent Decree.

87. Non-Exclusivity of Remedy. Stipulated penalties are not the United States' or LDEQ's exclusive remedy for violations of this Consent Decree. Subject to the provisions of Section XVI (Effect of Settlement/Reservation of Rights), the United States and LDEQ expressly reserve the right to seek any other relief they deem appropriate for Firestone's violation of this Consent Decree or applicable law, including but not limited to an action against Firestone for statutory penalties, additional injunctive relief, mitigation or offset measures, and/or contempt. However, the amount of any statutory penalty assessed for a violation of this Consent Decree shall be reduced by an amount equal to the amount of any stipulated penalty assessed and paid pursuant to this Consent Decree.

XIII. FORCE MAJEURE

88. "Force Majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Firestone, of any entity controlled by Firestone, or of Firestone's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Firestone's best efforts to fulfill the obligation. The requirement that Firestone exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any potential Force

Majeure event (a) as it is occurring and (b) following the potential Force Majeure, such that the delay and any adverse effects of the delay are minimized. "Force Majeure" does not include Firestone's financial inability to perform any obligation under this Consent Decree.

89. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a Force Majeure event, Firestone shall provide notice orally or by electronic or facsimile transmission to EPA and LDEQ, within 72 hours of when Firestone first knew that the event might cause a delay. Within seven Days thereafter, Firestone shall provide in writing to EPA and LDEQ an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Firestone's rationale for attributing such delay to a Force Majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Firestone, such event may cause or contribute to an endangerment to public health, welfare or the environment. Firestone shall include with any notice all available documentation supporting the claim that the delay was attributable to Force Majeure. Failure to comply with the above requirements shall preclude Firestone from asserting any claim of Force Majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Firestone shall be deemed to know of any circumstance of which Firestone, any entity controlled by Firestone, or Firestone's contractors knew or should have known.

90. If EPA, after a reasonable opportunity for review and comment by LDEQ, agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Decree that are affected by the Force Majeure

event will be extended by EPA, after a reasonable opportunity for review and comment by LDEQ, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the Force Majeure event shall not, of itself, extend the time for performance of any other obligation. EPA will notify Firestone in writing of the length of the extension, if any, for performance of the obligations affected by the Force Majeure event.

91. If EPA, after a reasonable opportunity for review and comment by LDEQ, does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, EPA will notify Firestone in writing of its decision.

92. If Firestone elects to invoke the dispute resolution procedures set forth in Section XIV (Dispute Resolution), it shall do so within 15 Days after receipt of EPA's notice. In any such proceeding, Firestone shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Firestone complied with the requirements of Paragraphs 88 and 89. If Firestone carries this burden, the delay at issue shall be deemed not to be a violation by Firestone of the affected obligation of this Consent Decree identified to EPA and the Court.

XIV. DISPUTE RESOLUTION

93. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Firestone's failure to seek resolution of a dispute under this Section shall preclude Firestone from raising any such issue as a defense to an action

by the United States or LDEQ to enforce any obligation of Firestone arising under this Consent Decree.

94. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when Firestone sends the United States and LDEQ a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed 20 Days from the date the dispute arises, unless that period is modified by written agreement. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the United States and/or LDEQ, as applicable, shall be considered binding unless, within seven Days after the conclusion of the informal negotiation period, Firestone invokes formal dispute resolution procedures as set forth below.

95. Formal Dispute Resolution. Firestone shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States and LDEQ a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Firestone's position and any supporting documentation relied upon by Firestone.

96. The United States and/or LDEQ, as applicable, shall serve its Statement of Position within 45 Days of receipt of Firestone's Statement of Position. The United States' or LDEQ's Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. The United States' Statement of Position shall be binding on Firestone, unless Firestone files a motion for judicial review of the dispute in accordance with the following Paragraph.

97. Firestone may seek judicial review of the dispute by filing with the Court and serving on the United States, in accordance with Section XIX (Notices), a motion requesting judicial resolution of the dispute. The motion shall be filed within 10 Days of receipt of the United States' Statement of Position pursuant to the preceding Paragraph. The motion shall contain a written statement of Firestone's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute shall be resolved for orderly implementation of the Consent Decree.

98. The United States and LDEQ shall respond to Firestone's motion within the time period allowed by the Local Rules of this Court. Firestone may file a reply memorandum, to the extent permitted by the Local Rules.

99. Standard of Review

- a. Disputes Concerning Matters Accorded Record Review. Except as otherwise provided in this Consent Decree, in any dispute brought under Paragraph 95 pertaining to the adequacy or appropriateness of plans, procedures to implement plans, schedules or any other items requiring approval by EPA or LDEQ under this Consent Decree; the adequacy of the performance of work undertaken pursuant to this Consent Decree; and all other disputes that are accorded review on the administrative record under applicable principles of administrative law, Firestone shall have the burden of demonstrating, based on the administrative record, that the position of the United States is arbitrary and capricious or otherwise not in accordance with law.

- b. Other Disputes. Except as otherwise provided in this Consent Decree, in any other dispute brought under Paragraph 95, Firestone shall bear the burden of demonstrating that its position complies with this Consent Decree and that it is entitled to relief under applicable principles of law.

100. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Firestone under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 83. If Firestone does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XII (Stipulated Penalties).

XV. INFORMATION COLLECTION AND RETENTION

101. The United States and LDEQ, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any facility covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

- a. monitor the progress of activities required under this Consent Decree;
- b. verify any data or information submitted to the United States or LDEQ in accordance with the terms of this Consent Decree;
- c. obtain samples relevant to compliance with the terms of this Consent Decree and, upon request, splits of any samples taken by Firestone or its representatives, contractors, or consultants pursuant to this Consent Decree;
- d. obtain documentary evidence, including photographs and similar data

relevant to compliance with the terms of this Consent Decree and

e. assess Firestone's compliance with this Consent Decree.

102. Upon request, Firestone shall provide EPA and LDEQ or their authorized representatives splits of any samples taken by Firestone pursuant to this Consent Decree. Upon request, EPA and LDEQ shall provide Firestone splits of any samples taken by EPA or LDEQ.

103. Until five years after the termination of this Consent Decree, Firestone shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to Firestone's performance of its obligations under this Consent Decree. Any such records may be preserved and retained in electronic format if such format preserves a true copy of the original; all such electronically preserved records shall be deemed originals for purposes of their admissibility under the Federal Rules of Evidence. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States or LDEQ, Firestone shall provide copies of any documents, records, or other information required to be maintained under this Paragraph. Firestone shall retain the data recorded by any video camera required pursuant to Paragraph 27 for one year from the date of recording.

104. At the conclusion of the information-retention period provided in the preceding Paragraph, Firestone shall notify the United States and LDEQ at least 90 Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States or LDEQ, Firestone shall deliver any

such documents, records, or other information to EPA or LDEQ. Firestone may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law, including state law privileges recognized by federal law where applicable. If Firestone asserts such a privilege, it shall provide the following: (a) the title of the document, record, or information; (b) the date of the document, record, or information; (c) the name and title of each author of the document, record, or information; (d) the name and title of each addressee and recipient; (e) a description of the subject of the document, record, or information; and (f) the privilege asserted by Firestone. However, no documents, records, or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on grounds of privilege.

105. Firestone may also assert that information required to be provided under this Section is protected as Confidential Business Information (“CBI”) under 40 C.F.R. Part 2. In addition or as an alternative, Firestone may request that information required to be provided under this Section be protected as Confidential Information under Louisiana Administrative Code, Title 33, Part I, Subpart 1, Chapter 5. As to any information that Firestone seeks to protect as CBI, Firestone shall follow the procedures set forth in 40 C.F.R. Part 2. In addition or as an alternative, as to any information that Firestone seeks to protect as Confidential Information, Firestone shall follow the procedures set forth in Louisiana Administrative Code, Title 33, Part I, Subpart 1, Chapter 5.

106. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or LDEQ pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of

Firestone to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XVI. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

107. The entry of this Consent Decree resolves the civil claims of the United States and LDEQ for the violations alleged in the Complaint filed in this action through the Date of Lodging.

108. The United States and the LDEQ reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree. This Consent Decree shall not be construed to limit the rights of the United States or LDEQ to obtain penalties or injunctive relief under the Act or implementing regulations, or under other federal or state laws, regulations, or permit conditions. The United States and LDEQ further reserve all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Firestone's Facility, whether related to the violations addressed in this Consent Decree or otherwise.

109. In any subsequent administrative or judicial proceeding initiated by the United States or LDEQ for injunctive relief, civil penalties, other appropriate relief relating to the Facility or Firestone's violations, Firestone shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or LDEQ in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 107.

110. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Firestone is responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations, and permits; and Firestone's compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States and LDEQ do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Firestone's compliance with any aspect of this Consent Decree will result in compliance with provisions of Sections 110, 111, or 112 of the CAA, 42 U.S.C. §§ 7410, 7411, or 7412, Title V of the CAA, 42 U.S.C. § 7661a(a), Section 103 of CERCLA, 42 U.S.C. § 9603(a), Sections 304 or 313 of EPCRA, 42 U.S.C. §§ 11004 or 11023, the LEQA or with any other provisions of federal, State, or local laws, regulations, or permits.

111. This Consent Decree does not limit or affect the rights of Firestone or of the United States or LDEQ against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Firestone, except as otherwise provided by law.

112. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

XVII. COSTS

113. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States and LDEQ shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by Firestone.

XVIII. 26 U.S.C. § 162(f)(2)(A)(ii) IDENTIFICATION

114. For purposes of the identification requirement of Section 162(f)(2)(A)(ii) of the Internal Revenue Code, 26 U.S.C. §162(f)(2)(A)(ii), performance of Paragraph 8 in Section III (Applicability), Section VI (Compliance Requirements) and related Appendices (Appendices 1.1-3.6), Section VII (Environmental Mitigation Project: Heat Exchange Systems) and related Appendices (Appendices 4.1-4.2), Section IX (Permits), Paragraphs 66-67 in Section X (Review and Approval of Submittals), Section X (Reporting Requirements) except Paragraph 72, and Paragraphs 101-103 in Section XV (Information Collection and Retention) is restitution, remediation, or required to come into compliance with the law.

XIX. NOTICES

115. Unless otherwise specified in this Consent Decree, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and addressed as follows:

As to the United States (EPA and DOJ) by email:

- a. EES Case Management Unit at eescdcopy.enrd@usdoj.gov; Re: DOJ # 90-5-2-1-11946; and
- b. EPA by email through the Consent Decree Reporting System: Register and upload Consent Decree submittals at <https://cdx.epa.gov>.

As to LDEQ by mail:

- a. Administrator
Enforcement Division
Office of Environmental Compliance
Louisiana Department of Environmental Quality
P.O. Box 4312
Baton Rouge, LA 70821-4312
RE: Firestone Polymers, LLC – Lake Charles Facility (AI # 1244)

As to Firestone by email:

- a. Terry LeBlanc
LeBlancTerry@bfusa.com
Chet Chiles
chileschet@bfusa.com
Greg Defrates
DefratesGreg@firestonepolymers.com

With copies to:

Robert Boon
boonrobert@bfusa.com
Anne Crochet/Robin Toups
anne.crochet@taylorporter.com
robin.toups@taylorporter.com

116. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

117. Notices submitted pursuant to this Section shall be deemed submitted upon emailing or mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XX. EFFECTIVE DATE

118. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket. In the event the United States withdraws or withholds consent to this Consent Decree before entry, or the Court declines to enter the Consent Decree, then the preceding requirement to perform duties scheduled to occur before the Effective Date shall terminate.

XXI. RETENTION OF JURISDICTION

119. The Court shall retain jurisdiction over this case until termination, pursuant to Section XXIII of this Consent Decree, for the purpose of resolving disputes arising under this Consent Decree or entering orders modifying this Consent Decree, pursuant to Sections XIV and XXII, or effectuating or enforcing compliance with the terms of this Consent Decree.

XXII. MODIFICATION

120. Except as allowed in Paragraphs 12 and 116 relating to the designated notice recipient or notice address, the terms of this Consent Decree, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Consent Decree, it shall be effective only upon approval by the Court. Non-material changes to the Consent Decree, agreed to by all Parties, shall include, but are not limited to, schedule changes of six months or less, or resulting from force majeure.

121. Any disputes concerning modification of this Consent Decree shall be resolved pursuant to Section XIV (Dispute Resolution), provided, however, that, instead of the burden of proof provided by Paragraph 99, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

XXIII. TERMINATION

122. After Firestone has completed the requirements of Section VI (Compliance Requirements), has thereafter maintained continuous satisfactory compliance with this Consent Decree and Firestone's permit for a period of one year, has complied with all other requirements of this Consent Decree, including those relating to the Mitigation Project required by Section

VII, and the BEP required by Section VIII, applied and obtained the required permits as described by Section IX (Permits), and has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, Firestone may serve upon the United States and LDEQ, pursuant to Section XIX, a Request for Termination stating that Firestone has satisfied those requirements, together with all necessary supporting documentation.

123. Following receipt by the United States and LDEQ of Firestone's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Firestone has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States, after consultation with LDEQ, agrees that the Consent Decree may be terminated, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Consent Decree.

124. If the United States, after consultation with LDEQ, does not agree that the Consent Decree may be terminated, Firestone may invoke Dispute Resolution under Section XIV. However, Firestone shall not seek Dispute Resolution of any dispute regarding termination until 120 Days after service of its Request for Termination.

XXIV. PUBLIC PARTICIPATION

125. This Consent Decree shall be lodged with the Court for a period of not less than 30 Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Firestone consents to entry of this Consent Decree without further notice and agrees not to withdraw from or oppose entry of this Consent Decree by the Court or to

challenge any provision of the Decree, unless the United States has notified Firestone and LDEQ in writing that it no longer supports entry of the Decree.

126. The Parties agree and acknowledge that final approval by LDEQ and entry of this Consent Decree are subject to the requirements of La. R.S. 30:2050.7, which provides for: (a) public notice of this Consent Decree in the newspaper of general circulation and the official journal of the parish in which the Facility is located, (b) an opportunity for public comment for a period of not less than 45 days and consideration of any comments received, and (c) concurrence by the State Attorney General. LDEQ reserves the right to withdraw or withhold consent if the comments regarding this Consent Decree disclose facts or considerations which indicate that this Consent Decree is inappropriate, improper, or inadequate.

XXV. SIGNATORIES/SERVICE

127. Each undersigned representative of Firestone, LDEQ, and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

128. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Firestone agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons. Firestone need not file an answer to the Complaint in this action unless or until the Court expressly declines to enter this Consent Decree.

XXVI. INTEGRATION

129. This Consent Decree constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Consent Decree and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than deliverables that are subsequently submitted and approved pursuant to this Consent Decree, the Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Consent Decree.

XXVII. FINAL JUDGMENT

130. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States, LDEQ, and Firestone.

XXVIII. APPENDICES

131. The Appendices listed in the Table of Contents are attached to and part of this Consent Decree.

Dated and entered this _____ Day of _____, 2021.

UNITED STATES DISTRICT JUDGE

FOR THE UNITED STATES OF AMERICA:

TODD KIM
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice

9-30-2021

Date

s/ Thomas P. Carroll

THOMAS P. CARROLL, D.C. BAR # 388593
Assistant Section Chief
CHERYL M. BARNETT
Trial Attorney by Special Appointment
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
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Washington, D.C. 20044-7611
(202) 532-3364
thomas.carroll@usdoj.gov

ALEXANDER C. VAN HOOK
Acting United States Attorney
Western District of Louisiana

9-30-2021

Date

BY: *s/ Desiree C. Williams*

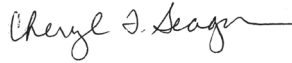
DESIREE C. WILLIAMS (#30978)
Assistant United States Attorney
800 Lafayette Street, Suite 2200
Lafayette, Louisiana 70501
Telephone: (337) 262-6618
Facsimile: (337) 262-6682
Email: desiree.williams@usdoj.gov

Signature Page for Consent Decree in the matter of *United States of America, Louisiana Department of Environmental Quality v. Firestone Polymers, LLC*

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY:

August 5, 2021

Date



Digitally signed by CHERYL SEAGER
DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=CHERYL SEAGER, 0.9.2342.19200300.100.1.1=68001003651793
Date: 2021.08.05 11:36:09 -05'00'

Cheryl T. Seager
Director
Enforcement and Compliance Assurance Division
U.S. Environmental Protection Agency, Region 6
1201 Elm Street – Suite 500
Dallas, Texas 75270

August 4, 2021

Date

**JAMES
MCGUIRE**

Digitally signed by JAMES MCGUIRE
DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=JAMES MCGUIRE, 0.9.2342.19200300.100.1.1=68001003977115
Date: 2021.08.04 14:04:41 -05'00'

James McGuire
Regional Counsel
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U.S. Environmental Protection Agency, Region 6
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Signature Page for Consent Decree in the matter of *United States of America, Louisiana Department of Environmental Quality v. Firestone Polymers, LLC*

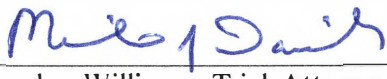
FOR THE LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY:

8-5-2021
Date



Lourdes Iturralde
Assistant Secretary
Office of Environmental Compliance
Louisiana Department of Environmental Quality
P.O. Box 4312
Baton Rouge, Louisiana 70821-4312

8-5-2021
Date



Brandon Williams, Trial Attorney
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Michael Daniels, Trial Attorney
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Louisiana Department of Environmental Quality
P.O. Box 4302
Baton Rouge, Louisiana 70821-4302
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Fax: (225) 219-4068
Mike.Daniels@la.gov

FOR FIRESTONE POLYMERS LLC:

8/6/21

Date

Greg Defrates

Greg Defrates
Director of Operations
Firestone Polymers, LLC
1801 Highway 108 East
Sulphur, LA 70665

Date

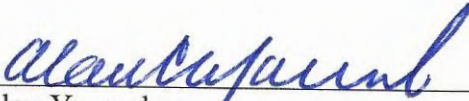
Alan Yarcusko
General Counsel
Firestone Polymers, LLC
10 East Firestone Blvd.
Akron, OH 44301

FOR FIRESTONE POLYMERS LLC:

Date

Greg Defrates
Director of Operations
Firestone Polymers, LLC
1801 Highway 108 East
Sulphur, LA 70665

AUGUST 6, 2021
Date



Alan Yarcusko
General Counsel
10 East Firestone Blvd.
Akron, OH 44301

APPENDIX 1.1

Alternative Operating Requirements: Testing Protocols for the RTO System

- I. Scope and Applicability:** Firestone shall comply with the requirements contained in this Appendix to demonstrate compliance with the emissions limits and standards in Paragraph 17 of this Consent Decree when Firestone elects to operate the RTO System with fewer than three RTOs when In Operation.
- II. RTO System Testing Protocol**
- a. Firestone shall submit to EPA and LDEQ for approval pursuant to Section X (Review and Approval of Submittals) of the Consent Decree a testing protocol (“Testing Protocol”) that describes how the RTO System will be tested and sets forth proposed schedule/date(s) for testing.
 - b. Firestone shall conduct a performance test that complies with 40 C.F.R. § 63.496 and LAC 33:III.2115 for each operating condition under which Firestone intends to operate the RTO System when In Operation. For purposes of this Consent Decree, the term “operating condition” includes, but is not limited to, the number of individual RTOs and Dryers operating at the same time.
 - c. Firestone shall conduct the performance test when the grade of elastomer product with the highest residual organic HAP content leaving the stripper is processed in the back-end operation as set forth in 40 C.F.R. § 63.496(b)(2).
 - d. The Testing Protocol shall describe the physical configurations of the RTOs and associated Dryers to be tested, the operating conditions in item II.b. above that are to be tested, other aspects of Facility operation necessary to comply with the limits and standards in Paragraph 17, and procedures to be used during each performance test, and shall include, at a minimum, the following requirements.
 - i. During each performance test:
 1. Send all Waste Gas generated from operating Dryers to the RTO System.
 2. Record operating conditions including number of RTOs operating, Facility Dryers operating, hourly production rate for each Facility Dryer operating in accordance with 40 C.F.R. § 63.496(b)(4), and grade of elastomer product (including residual organic HAP content in accordance with 40 C.F.R. 63.496(b)(3)).
 3. Record the firebox temperature of each individual RTO operating.
 4. Record common duct pressure and RTO fan speed for each individual RTO operating.

5. Comply with all requirements and conditions set forth in 40 C.F.R. § 63.496 and LAC 33:III.2115.

- e. Data Collection: Data collection during the performance test shall be in compliance with 40 C.F.R. § 63.496 and LAC 33:III.2115.

III. RTO System Testing Period: Testing of the RTO System is expected to involve several test runs that may occur over multiple days (“Testing Period”). Firestone may commence testing on the approved date(s)/schedule after receipt of the final approval of the Testing Protocol and testing date(s)/schedule by EPA and LDEQ.

IV. RTO System Alternative Operating Requirements and Testing Report: Within sixty Days following completion of the Testing Period for the RTO System, Firestone shall submit to EPA and LDEQ for approval pursuant to Section X (Review and Approval of Submittals):

- a. A performance testing report (“Testing Report”) that shall include: (1) the operating conditions of each performance test including the operating conditions discussed in Paragraph II.2 and 3 of this Appendix; (2) the data collected during each performance test including the data collected pursuant to Paragraph II.4 of this Appendix; and (3) the proposed alternative operating requirements; or
- b. A request for an extension of time to submit a Testing Report which shall include a justification for any delay in submittal and a proposed new submittal date; or
- c. A notice that Firestone withdraws its request to operate the RTO System with fewer than three RTOs when In Operation.

If EPA and LDEQ approve a new date to submit a Testing Report pursuant to Section IV of this Appendix and Section X (Review and Approval of Submittals), then by no later than that new date, Firestone shall submit to EPA and LDEQ for approval pursuant to Section X (Review and Approval of Submittals) a Testing Report, a new request for an extension, or a notice of withdrawal as described in Section IV of this Appendix.

APPENDIX 2.1

HEAT EXCHANGER INSPECTION TABLE

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
100 (Tanks)						
E-101A	Butadiene Vaporizer	Saturated Steam	Butadiene ("BD")	2004	3/1/17	1/22/18
E-101B	Butadiene Vaporizer	Saturated Steam	Butadiene	2004	3/1/17	1/22/18
200 (Purification)						
E-201A	Mixed Feed Cooler	Cooling Water	44%BD/Hexane ("HEX")	1997	8/8/16	12/12/17
E-201B	Mixed Feed Cooler	Cooling Water	44%BD/HEX	1997	8/8/16	12/12/17
E-202A	Drying Column Reboiler	Steam	Blend "B"	1997	8/8/16	10/18/17
E-202B	Drying Column Reboiler	Steam	Blend "B"	1998	8/8/16	2/19/18
E-204A	Drying Column Condenser	Cooling Water	44%BD/HEX	2017	3/1/17	11/6/17
E-204B	Drying Column Condenser	Cooling Water	44%BD/HEX	2004	3/1/17	10/17/17
E-204C	Drying Column Condenser	Cooling Water	1,3-BUTADIENE	2005	3/1/17	10/17/17
E-205	Drying Column Vent Condenser	Refrig. Water	C4's and Nitrogen	1988	7/11/18	10/19/17
E-206	Cooler (K-205)	Nitrogen	Water	1999	10/13/20	09/10/20
E-207	Steam Heater (K-205)	Steam	Nitrogen	1982	10/20/20	09/10/20
E-208	Electric Heater (K-205)	Nitrogen	n/a	1996	10/21/20	10/21/20
E-209	Cooler (K-206)	Nitrogen	Cooling Water	1999	10/22/20	09/10/20
E-210	Steam Heater (K-206)	Steam	Nitrogen	1983	10/22/20	09/10/20
E-211	Electric Heater (K-206)	Nitrogen	n/a	1997	10/22/20	10/22/20
E-212A	Stripper Column Feed Preheater	Steam	C6+/STY/HEX	2017	11/6/17	11/6/17

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
E-212B	Stripping Column Feed Preheater	Steam	C6+/Styrene/HE X	2017	11/6/17	11/6/17
E-213A	Stripping Column Reboiler	Steam	C6+/STY/HEX	1967	9/10/18	12/27/17
E-213B	Stripping Column Reboiler	Steam	C6+/STY/HEX	1967	9/13/18	N/A
E-214A	Stripping Column Condenser	Cooling Water	C6+/STY/HEX	2013	12/13/17	12/14/17
E-214B	Stripping Column Condenser	Cooling Water	C6+/STY/HEX	2013	12/14/17	12/18/17
E-214C	D-220 Column Condenser	Cooling Water	Hexane	1989	9/25/18	10/26/19
E-215	Stripping Column Vent Condenser	Cooling Water	Hexane	1988	9/26/18	8/26/19
E-217A1	Separation Column Interchange	Hexane/BD/HEX	Hexane/BD/HE X	1997	4/26/17	10/15/19
E-217A2	Separation Column Interchange	Hexane/BD/HEX	Hexane/BD/HE X	1997	4/26/17	10/15/19
E-217B1	Separation Column Interchange	Hexane & H.C.	Hexane	1989	10/9/18	10/17/19
E-217B2	Separation Column Interchange	Hexane & H.C.	Hexane	1989	10/9/18	10/17/19
E-218A	Separation Column	Cooling Water	Hexane	2017	11/6/17	11/6/17
E-218B	Separation Column	Cooling Water	Hexane	2014	1/4/18	1/4/18
E-219A	Separation Column Reboiler	Steam	Hexane Mix	2007	10/17/18	10/16/19
E-219B	Separation Column Reboiler	Steam	Hexane	1998	10/17/18	10/16/19
E-220A	Separation Column Condenser	Cooling Water	Hydrocarbon w/ BD	2007	4/20/17	10/26/17
E-220B	Separation Column Condenser	Cooling Water	BD/HEX	2011	4/20/17	10/26/17
E-221A	Residual Solvent Condenser	Cooling Water	H.C. and Water	2006	11/28/18	7/3/19
E-221B	Residual Solvent Condenser	Cooling Water	H.C. and Water	1987	11/28/18	12/19/17

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
E-221C	Residual Solvent Condenser	Cooling Water	Organic Vapor	2007	11/28/18	2/26/19
E-222	Vent Compressor Aftercooler	Cooling Water	C6/STY/HEX/BD	1991	4/20/17	5/23/18
E-223	Lean Absorber Oil	Cooling Water	Diesel Oil	2017	11/6/17	11/6/17
E-224	Absorber Oil Interchange	C6/STY/HEAVY	Diesel Oil	2017	11/6/17	11/6/17
E-225A	Absorber Oil Stripper Condenser	Cooling Water	C4's and C6's	2017	11/6/17	11/6/17
E-225B	Absorber Oil Stripper Condenser	Cooling Water	C4's and C6's	2017	11/6/17	11/6/17
E-226	Absorber Oil Stripper Vent Cond.	Refrig. Water	C4's and C6's	1998	12/13/18	8/28/19
E-228	Absorber Oil Stripper Vent Cond.	Steam	C6/BD/H ₂ O/HE X	1999	5/8/17	08/28/19
E-233A	Blend B Economizer	Blend "B"	Blend "B"	1978	5/8/17	10/14/19
E-233B	Blend B Economizer	Blend "B"	Blend "B"	1978	5/8/17	10/14/19
E-237	Separation Column Vent	Refrig. Water	Vent Vapors	2011	12/13/18	10/16/19
E-238	Fin Tube Cooler "B"	Nitrogen	Water	1985	10/27/20	09/12/20
E-239	Electric Heater "B"	Nitrogen	n/a	1985	10/27/20	10/27/20
E-240	Fin Tube Cooler "S"	Nitrogen	Cooling Water	2006	10/27/20	09/11/20
E-241	Electric Heater "S"	Nitrogen	n/a	1985	10/27/20	10/27/20
E-242A	Styrene Bottoms Cooler	Cooling Water	Styr. w/ Hexane	1991	Out of service	Out of service
E-242B	Styrene Bottoms Cooler	Cooling Water	Styr. w/ Hexane	1991	Out of service	Out of service
E-245	Splitter Feed/Stripper	Hexane	Cooling Water	1993	1/10/19	10/26/17
E-246	Solvent Splitter Feed	Steam	Hexane	1997	1/17/19	10/24/17
E-247	Solvent Splitter	Steam	HEX, STY, BD (-)	2003	5/17/17	10/24/17

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
E-248	Solvent Splitter D-220	Hexane	Water	2003	3/18/19	10/24/17
E-250A	Separation Column	Hexane	Hexane	1993	3/28/19	10/15/19
E-250B	Separation Column	Hexane	Hexane	1993	4/2/19	10/15/19
E-251	Splitter Column Vent	Water	Hexane - Nitrogen	1994	4/8/19	12/2/19
E-252	Nitrogen Cooler	Nitrogen	Water	2006	07/14/20	07/14/20
E-253	Nitrogen F-245A/B/C/D	Nitrogen	n/a	2006	11/02/20	11/02/20
E-254	Portable Nitrogen Heater	Nitrogen	Steam	2005	Out of service	Out of service
E-255	Vacuum Pump Cooler	Refrig. Water	C4's and C6's	2017	Exempt	Exempt
E-256	TFE	Steam	Heavy STY, C6+, HEX		5/6/19	5/6/19
E-257	Electric Heater Nitrogen F-245A/B/C/D	Nitrogen	n/a	2007	11/10/20	11/10/20
E-258	Cool Compressed Process Steam	Refrig. Water	Process Organic Fluid	2017	5/14/18	7/11/17
E-259	Cool Compressed Process Steam	Refrig. Water	Process Organic Fluid	2017	5/15/18	4/24/17

400 Area

E-401	Line 5 Reactor Feed Preheater	Steam	BD, STY, HEX	1997	5/23/17	5/30/18
E-403	Blend B	Blend B	Refrig. Water	1997	Out of service	Out of service
E-404	BF3 Complex Chiller	Refrig. Water	BF3 Gas / Hexane	1997	5/23/17	1/22/19
E-411	Line 6 Reactor Feed Preheater	Steam	BD,STY,HEX	1997	5/31/17	2/28/18
E-412	Line 7 Reactor Feed Preheater	Steam	BD, HEX	1997	5/31/17	2/6/18
E-419	Blend B Cooler	Refrig. Water	30% Blend B	1997	6/7/17	10/14/19
E-423	Line 5 Recycle Solvent Cooler	Refrig. Water	Solvent	1998	04/24/19	5/30/18
E-424	Line 6 Recycle Solvent Cooler	Refrig. Water	Solvent	1998	06/25/19	3/5/18

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
E-425	Line 7 Dilution Solv. Cooler	Refrig. Water	Solvent	1989	11/07/19	2/6/18
E-431	Line 6 Reactor Feed Cooler	Refrig. Water	Blend B/S/Solvent	1997	6/13/17	8/6/18
E-432	Line 7 Reactor Feed Cooler	Refrig. Water	Blend B/S/Solvent	1997	6/13/17	2/6/18
E-433	Line 5 Reactor Feed Cooler	Refrig. Water	Blend B/S/Solvent	1997	6/13/17	5/31/18
E-439	Line 8 Dilution Solv. Cooler	Refrig. Water	Solvent	1989	7/30/18	8/1/18
E-442	Line 8 Reactor Feed Cooler	Refrig. Water	Blend B/S/Solvent	1997	7/13/17	7/30/18
E-443	Line 8 Reactor Feed Preheater	Steam	BD, STY, HEX	1989	7/13/17	7/30/18
E-454A	BHT Heater on F4-120	Steam	n/a	1996	Exempt	Exempt
E-454B	BHT Heater on F4-120	Steam	n/a	1996	Exempt	Exempt
E-451	Line 9 Dilution Solv. Cooler	Refrig. Water	Solvent	1993	1/22/19	1/30/19
E-452	Line 9 Reactor Feed Cooler	Refrig. Water	Blend B/S/Solvent	1997	7/24/17	1/30/19
E-453	Line 9 Reactor Feed Preheater	Steam	BD, STY, HEX	1997	7/24/17	1/30/19
E-457	Hexanol	Steam/Condensate	Hexanol	2007	12/19/19	12/19/19
E-458	BHT Heater on F4-120	Molten BHT	Steam	2008 – Replaced 2018	3/11/19	3/11/19

500 Area

E-501	#7 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	2006	8/1/17	11/6/18
E-502	Solvent Compressor KO Tank	Cooling Water	BD, STY, HEX	1967	8/7/17	Out of Service
E-505	#8 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1999	8/7/17	1/10/18
E-514	#9 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1969	9/6/17	7/25/18
E-515	#9/10 Solvent Compressor KO Tank	Cooling Water	BD, STY, HEX	1969	11/28/17	12/18/18

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
E-518	#10 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	2004	11/14/17	2/6/18
E-522	#7 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1977	8/22/17	11/6/18
E-523	#8 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	2007	9/20/17	1/15/18
E-524	#9 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1977	9/6/17	3/13/18
E-525	#10 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1977	9/26/17	2/6/18
E-526	#10 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	2008	9/27/17	2/6/18
E-527	#7 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	2004	8/18/17	11/6/18
E-528	#9 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1989	9/13/17	1/8/18
E-529A	#6 Crumb Solvent Condenser	Cooling Water	Condensing Solvent	2019	4/10/18	2/28/18
E-529B	#6 Crumb Solvent Condenser	Cooling Water	Condensing Solvent	1993	4/16/18	2/28/18
E-529C	#6 Crumb Solvent Condenser	Cooling Water	Condensing Solvent	1993	4/25/18	2/28/18
E-532	EXPANDER FLUID DRIVE COOLER	90 WEIGHT CITCO	WATER	1993	11/13/20	06/10/19
E-533	EXPANDER GEAR BOXLUBE OIL COOLER	90 WEIGHT CITCO	WATER	N/A	Exempt	Exempt
E-534	1ST STAGE DRYER HEATER	H.P. CONDENSATE	STEAM	N/A	04/09/19	No Internals*
E-535	2nd STAGE DRYER HEATER (#18 DRYER)	H.P. CONDENSATE	STEAM	N/A	04/09/19	No Internals
E-536	COOLER HEATER (#18 DRYER)	H.P. CONDENSATE	STEAM	N/A	04/09/19	No Internals
E-537	#8 Crumb Unit Condenser	Cooling Water	BD, STY, HEX	2018	10/9/17	1/23/18
E-538	Solvent Vapor Compressor Cooler	Refrig. Water	Solvent	1997	11/18/19	12/23/19

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
E-541	#7 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1998	8/31/17	11/6/18
E-542	#8 Crumb Tank Condenser	Cooling Water	BD, STY, HEX	1998	10/3/17	8/14/18
E-545	#8 Crumb Solvent Vapor Comp. Cooler	Refrig. Water	Hexane	1998 – Replaced 2019	12/8/20	12/30/19
E-546	Pneumatic Conveying (Process Area)	n/a	STEAM	N/A	Exempt	Exempt
E-547	Solvent Compressor Condenser	Cooling Water	Hexane Vapor	2003	12/19/19	12/19/19
E-548	#9 & #10 Crumb Solvent Vapor Compressor	Refrig. Water	Solvent	2004 – Replaced 2018	3/11/19	3/11/19

1400 Area

E-1401	Reactor Jacket Water Chiller	Jacket Water	Refrig. Water	1989	10/07/20	No Internals
E-1402	Reactor Jacket Water Chiller	Jacket Water	Refrig. Water	1989	10/07/20	No Internals
E-1403	Reactor Jacket Water Chiller	Jacket Water	Refrig. Water	1989	10/07/20	No Internals
E-1404	Reactor Jacket Water Chiller	Jacket Water	Refrig. Water	1989	10/07/20	No Internals
E-1405	Reactor Jacket Water Chiller	Jacket Water	Refrig. Water	2012	10/07/20	No Internals
E-1406	Reactor Jacket Water Chiller	Jacket Water	Refrig. Water	2012	10/07/20	No Internals
E-1411	Reactor Jacket Water Heater	Jacket Water	Steam	1989	10/01/20	07/23/20
E-1412	Reactor Jacket Water Heater	Jacket Water	Steam	1989	11/12/20	07/23/20
E-1413	Reactor Jacket Water Heater	Jacket Water	Steam	1989	11/12/20	07/23/20
E-1414	Reactor Jacket Water Heater	Jacket Water	Steam	1989	11/12/20	07/23/20
E-1421	Reactor Jacket Water Cooler	Jacket Water	Cooling Water	1989	10/12/20	No Internals
E-1422	Reactor Jacket Water Cooler	Jacket Water	Cooling Water	1989	10/12/20	No Internals

Heat Exchanger ID	Description	Shell Side Fluid	Tube Side Fluid	Installed Date	External Visual Insp	Internal Visual Insp
E-1423	Reactor Jacket Water Cooler	Jacket Water	Cooling Water	1989	10/12/20	No Internals
E-1424	Reactor Jacket Water Cooler	Jacket Water	Cooling Water	1989	10/12/20	No Internals
E-1425	Reactor Jacket Water Cooler	Jacket Water	Cooling Water	2012	10/12/20	No Internals
E-1426	Reactor Jacket Water Cooler	Jacket Water	Cooling Water	2012	10/12/20	No Internals
E-1441	Blend "S" Charge Cooler	Refrig. Water	Hexane/Styrene	1989- Replaced 2018	4/3/17	10/1/19
E-1442	Solvent Charge Cooler	Refrig. Water	Hexane	1998	11/19/19	9/26/19
E-1443	Solvent Charge Heater	Steam	Hexane	1998	11/19/19	9/26/19
E-1444	Blend "B" Charge Cooler	Refrig. Water	Blend B	1998	10/11/17	9/26/19
E-1445	Blend "S" Surge Tank	Refrig. Water	Blend "S"	1989- Replaced 2019	4/3/17	10/1/19
E-1446	Solvent Surge Tank Feed Cooler	Refrig. Water	Hexane	1989	11/20/19	9/30/19
E-1447	Blend "B" Surge Tank Feed Cooler	Refrig. Water	Blend "B"	1989	11/13/17	9/30/19
E-1451	Reactor Solvent Vaporizer Heater	Hexane	Steam	1989	12/1/19	2/21/18
E-1460	Vessel Heating Coil	none	Steam	2011	Does not exist in the field	N/A

* Exchangers marked with "No Internals" are either plate & frame or otherwise physically unable to be internally inspected due to size/configuration

APPENDIX 3.1

OUTLINE OF REQUIREMENTS FOR THE COVERED FLARE DATA AND INITIAL MONITORING SYSTEMS REPORT

1. Existing Monitoring Systems
 - a. A detailed narrative description of each instrument and piece of monitoring equipment, including the specific model and manufacturer, and date of installation, of all existing monitoring systems, including but not limited to:
 - i. Waste Gas and/or Vent Gas flow monitoring
 - ii. Waste Gas and/or Vent Gas heat content analyzer
 - iii. Sweep Gas flow monitoring
 - iv. Purge Gas flow monitoring
 - v. Supplemental Gas flow monitoring
 - vi. Steam flow monitoring
 - vii. Waste Gas or Vent Gas molecular weight analyzer
 - viii. Gas Chromatograph or Calorimeter
 - ix. Sulfur analyzer(s)
 - x. Video camera
 - xi. Thermocouple
 - b. Drawing(s) showing locations of all existing monitoring systems.
2. Monitoring Equipment to be Installed to Comply with Consent Decree
 - a. A detailed narrative description of each instrument and piece of monitoring equipment, including the specific model and manufacturer, and planned date of installation, of all equipment to be installed to comply with this Consent Decree, including but not limited to items listed in Paragraph 1.a. of this Appendix.
3. Narrative Description of the Monitoring Methods and Calculations that will be used to comply with the $NH_{V_{cz}}$ Requirements in the Consent Decree.

APPENDIX 3.2

FLARING CALCULATIONS

Calculating Net Heating Value of the Combustion Zone Gas (NHV_{cz})

All abbreviations, constants, and variables are defined in the Key at the end of this Appendix.

Step 1: Determine the Net Heating Value of the Vent Gas (NHV_{vg})

Firestone shall determine the Net Heating Value of the Vent Gas (NHV_{vg}) based on composition monitoring data on a 15-minute block average basis according to the following requirements. If Firestone monitors separate gas streams that combine to comprise the total Vent Gas flow to a Covered Flare, the 15-minute block average Net Heating Value shall be determined separately for each measurement location according to the following requirements and a flow-weighted average of the gas stream Net Heating Values shall be used to determine the 15-minute block average Net Heating Value of the cumulative Vent Gas. The NHV_{vg} 15-minute block averages shall be calculated for set 15-minute time periods starting at 12 midnight to 12:15 AM, 12:15 AM to 12:30 AM and so on, concluding at 11:45 PM to midnight.

Step 1a: Equation or Output to be Used to Determine NHV_{vg} at a Measurement Location

For any gas stream for which Firestone complies with Paragraph 28 by collecting compositional analysis data in accordance with the method set forth in Paragraph 28.a: Equation 1 shall be used to determine the NHV_{vg} of a specific sample by summing the Net Heating Value for each individual component by individual component volume fractions. Individual component Net Heating Values are listed in Table 1 of this Appendix.

$$NHV_{vg} = \sum_{i=1}^n (x_i \cdot NHV_i) \quad \text{Equation 1}$$

For any gas stream for which Firestone complies with Paragraph 28 by collecting direct Net Heating Value monitoring data in accordance with the method set forth in Paragraph 28.b. but for which a Hydrogen Concentration Monitor is not used: Use the direct output (measured value) of the monitoring system(s) (in BTU/scf) to determine the NHV_{vg} for the sample.

For any gas stream for which Firestone complies with Paragraph 28 by collecting direct Net Heating Value monitoring data in accordance with the method set forth in Paragraph 28.b. and for which a Hydrogen Concentration Monitor is also used: Equation 2 shall be used to determine the NHV_{vg} for each sample measured via the Net Heating Value monitoring system. Where hydrogen concentration data is collected, Equation 2 performs a net correction for the measured heating value of hydrogen since the theoretical Net Heating Value for hydrogen is 274 BTU/scf, but for the purposes of this Consent Decree, a Net Heating Value

of 1,212 BTU/scf may be used ($1,212 - 274 = 938$ BTU/scf).

$$NHV_{vg} = NHV_{measured} + 938x_{H2} \quad \text{Equation 2}$$

Step 1b: Calculation Method to be Used in Applying Equation/Output to Determine NHV_{vg}

For any Covered Flare for which Firestone complies with Paragraph 28 by using a continuous monitoring system in accordance with the method set forth in Paragraph 28.a. or 28.b.: Firestone may elect to determine the 15-minute block average NHV_{vg} using either the Feed-Forward Calculation Method or the Direct Calculation Method (both described below). Firestone need not elect to use the same methodology at all Covered Flares with a continuous monitoring system; however, for each such Covered Flare, Firestone shall elect one calculation method that will apply at all times and use that method for all continuously monitored flare vent streams associated with that Covered Flare. If Firestone intends to change the calculation method that applies to a Covered Flare, Firestone shall notify the EPA 30 Days in advance of such a change.

Feed-Forward Calculation Method. When calculating NHV_{vg} for a specific 15-minute block:

1. Use the results from the first sample collected during an event (for periodic Vent Gas flow events) for the first 15-minute block associated with that event.
2. If the results from the first sample collected during an event (for periodic Vent Gas flow events) are not available until after the second 15-minute block starts, use the results from the first sample collected during an event for the second 15- minute block associated with that event.
3. For all other cases, use the results that are available from the most recent sample prior to the 15-minute block period for that 15-minute block period for all Vent Gas streams. For the purpose of this requirement, use the time that the results become available rather than the time the sample was collected. For example, if a sample is collected at 12:25 AM and the analysis is completed at 12:38 AM, the results are available at 12:38 AM and these results would be used to determine compliance during the 15-minute block period from 12:45 AM to 1:00 AM.

Direct Calculation Method. When calculating NHV_{vg} for a specific 15-minute block:

1. If the results from the first sample collected during an event (for periodic Vent Gas flow events) are not available until after the second 15-minute block starts, use the results from the first sample collected during an event for the first 15- minute block associated with that event.

2. For all other cases, use the arithmetic average of all NHV_{vg} measurement data results that become available during a 15-minute block to calculate the 15-minute block average for that period. For the purpose of this requirement, use the time that the results become available rather than the time the sample was collected. For example, if a sample is collected at 12:25 AM and the analysis is completed at 12:38 AM, the results are available at 12:38 AM and these results would be used to determine compliance during the 15-minute block period from 12:30 AM to 12:45 AM.

Step 2: Determine Volumetric Flow Rates of Gas Streams

Firestone shall determine the volumetric flow rate in standard cubic feet (scf) of Vent Gas, along with the volumetric flow rates (in scf) of any Supplemental Gas, and Assist Steam, over a 15-minute block average basis. The 15-minute block average volumetric flow rates shall be calculated for set 15-minute time periods starting at 12 midnight to 12:15 AM, 12:15 AM to 12:30 AM and so on, concluding at 11:45 PM to midnight.

For any gas streams for which Firestone complies with Paragraph 25 by using a monitoring system that directly records volumetric flow rate: Use the direct output (measured value) of the monitoring system(s) (in scf), as corrected for the temperature and pressure of the system to standard conditions (*i.e.*, a temperature of 20 °C (68 °F) and a pressure of 1 atmosphere) to then calculate the average volumetric flow rate of that gas stream for the 15-minute block period.

For Vent Gas or Assist Steam gas streams for which Firestone complies with Paragraph 25 by using a mass flow monitor to determine volumetric flow rate: Equation 3 shall be used to determine the volumetric flow rate of Vent Gas or Assist Steam by converting mass flow rate to volumetric flow at standard conditions (*i.e.*, a temperature of 20 °C (68 °F) and a pressure of 1 atmosphere). Equation 3 uses the molecular weight of the gas stream as an input to the equation; therefore, if Firestone elects to use a mass flow monitor to determine volumetric flow rate of Vent Gas, Firestone shall collect compositional analysis data for such Vent Gas in accordance with the method set forth in Paragraph 28.a. For Assist Steam, use a molecular weight of 18 pounds per pound-mole. The converted volumetric flow rates at standard conditions from Equation 3 shall then be used to calculate the average volumetric flow rate of that gas stream for the 15-minute block period.

$$Q_{vol} = \frac{Q_{mass} * 385.3}{MWt} \quad \text{Equation 3}$$

For gas streams for which the molecular weight of the gas is known and for which Firestone complies with Paragraph 25 by using continuous pressure/temperature monitoring system(s): Use appropriate engineering calculations to determine the average volumetric flow rate of that gas stream for the 15-minute block period. For Assist Steam, use a molecular weight of 18 pounds per pound-mole. For Vent Gas, molecular weight shall be determined by collecting compositional analysis data for such Vent Gas in

accordance with the method set forth in Paragraph 28.a.

Step 3: Calculate the Net Heating Value of the Combustion Zone Gas (NHV_{cz})

For any Covered Flare at which:

- 1) the Feed-Forward Calculation Method is used;
- 2) gas composition or Net Heating Value monitoring is performed in a location representative of the cumulative Vent Gas stream; and
- 3) Supplemental Gas flow additions to the Covered Flare are directly monitored:

Equation 4 shall be used to determine the 15-minute block average NHV_{cz} based on the 15-minute block average Vent Gas, Supplemental Gas, and assist gas flow rates.

$$NHV_{cz} = \frac{(Q_{vg} - Q_{NG2} + Q_{NG1}) * NHV_{vg} + (Q_{NG2} - Q_{NG1}) * NHV_{NG}}{Q_{vg} + Q_s + Q_{a,premix}} \quad \text{Equation 4}$$

For the first 15-minute block period of an event, Q_{NG1} shall use the volumetric flow value for the current 15-minute block period (*i.e.*, Q_{NG1} = Q_{NG2}). NHV_{NG} shall be determined using one of the following methods: 1) direct compositional or Net Heating Value monitoring of the natural gas stream in accordance with Step 1; or 2) for purchased (“pipeline quality”) natural gas streams, Firestone may elect to either: a) use annual or more frequent grab sampling at any one representative location; or b) assume a Net Heating Value of 920 BTU/scf.

For all other Covered Flares: Equation 5 shall be used to determine the 15-minute block average NHV_{cz} based on the 15-minute block average Vent Gas and assist gas flow rates.

For periods when there is no Assist Steam flow, NHV_{cz} = NHV_{vg}.

$$NHV_{cz} = \frac{Q_{vg} * NHV_{vg}}{Q_{vg} + Q_s + Q_{a,premix}} \quad \text{Equation 5}$$

Step 4: Ensure that during Covered Flare operation, NHV_{vg} > 300 BTU/scf

The Covered Flare shall be operated to ensure that NHV_{vg} is equal to or above 300 BTU/scf (Equation 6 shows this relationship), as determined for:

1. Each 15-minute block period during which Waste Gas is routed to a Covered Flare for the entire 15-minute period (a “Complete 15-minute Block Period”), and
2. Any 15-minute block period during which Waste Gas is routed to a Covered Flare for less than the entire 15-minute period (a “Partial 15-Minute Block Period”) and is immediately subsequent and contiguous to a Complete 15-minute Block Period.

Partial 15-Minute Block Periods are not required to achieve a NHV_{vg} equal to or above 300 BTU/scf if they immediately precede a Complete 15-minute Block Period.

$$NHV_{vg} \geq 300 \text{ BTU/scf} \quad \text{Equation 6}$$

Step 5: Ensure that during Covered Flare operation, $NHV_{cz} \geq 270$ BTU/scf

The Covered Flare shall be operated to ensure that NHV_{cz} is equal to or above 270 BTU/scf (Equation 7 shows this relationship), as determined for:

1. Each Complete 15-minute Block Period, and
2. Any Partial 15-Minute Block Period that is immediately subsequent and contiguous to a Complete 15-minute Block Period.

Partial 15-Minute Block Periods are not required to achieve a NHV_{cz} equal to or above 270 BTU/scf if they immediately precede a Complete 15-minute Block Period.

$$NHV_{cz} \geq 270 \text{ BTU/scf} \quad \text{Equation 7}$$

Calculation Method for Determining Compliance with V_{tip} Operating Limits.

The Company shall determine V_{tip} on a 15-minute Block Average basis according to the following requirements:

(a) Defendant shall use design and engineering principles and the guidance in APPENDIX 3.5 to determine the Unobstructed Cross Sectional Area of the Flare Tip. The Unobstructed Cross Sectional Area of the Flare Tip is the total tip area that Vent Gas can pass through. This area does not include any stability tabs, stability rings, and Upper Steam or air tubes because Vent Gas does not exit through them.

(b) Defendant shall determine the cumulative volumetric flow of Vent Gas for each 15-minute Block Average Period using the data from the continuous flow monitoring system required in Paragraph 25 according to the requirements in Step 2 above.

(c) The 15-minute Block Average V_{tip} shall be calculated using Equation 8.

$$V_{tip} = \frac{Q_{cum}}{Area \times 900} \quad \text{Equation 8}$$

(d) If Defendant chooses to comply with Paragraph 33.b, Defendant shall also determine the NHV_{vg} using Step 1 above and calculate V_{max} using Equation 9 in order to compare V_{tip} to V_{max} on a 15-minute Block Average basis.

$$\log_{10}(V_{max}) = \frac{NHV_{vg} + 1,212}{850}$$

Equation 9

Key to the Abbreviations:

385.3 = conversion factor (scf/lb-mol)

850 = Constant

900 = Conversion factor, (seconds / 15-minute block average)

1,212 = Constant

Area = The unobstructed cross sectional area of the flare tip is the total tip area that vent gas can pass through, ft². This area does not include any stability tabs, stability rings, and upper steam or air tubes because flare vent gas does not exit through them. Use design and engineering principles to determine the unobstructed cross sectional area of the flare tip.

Diam = Effective diameter of the unobstructed area of the flare tip for flare vent gas flow, ft.
Determine the diameter as $Diam = 2 * \sqrt{Area \div \pi}$

i = individual component in Vent Gas (unitless)

MWt = molecular weight of the gas at the flow monitoring location (lb/lb-mol)

n = number of components in Vent Gas (unitless)

NHV_{cZ} = Net Heating Value of Combustion Zone Gas (BTU/scf)

NHV_i = Net Heating Value of component *i* according to Table 1 of this Appendix (BTU/scf)

NHV_{measured}

= Net Heating Value of Vent Gas stream as measured by monitoring system (BTU/scf)

NHV_{NG} = Net Heating Value of Supplemental Gas to flare during the 15 –
minute block period (BTU/scf)

NHV_{vg} = Net Heating Value of Vent Gas (BTU/scf)

Q_{a,premix} = cumulative vol flow of premix assist air during the 15 –
minute block period (scf)

Qcum = cumulative volumetric flow over 15-minute block average period (scf)

Q_{mass} = massflow rate (pounds per second)

Q_{NG1} = cumulative vol flow of Supplemental Gas to flare during previous 15 –
minute block period (scf)

Q_{NG2} = cumulative vol flow of Supplemental Gas to flare during the 15 –
minute block period (scf)

Q_s = cumulative vol flow of Total Steam during the 15 – minute block period (scf)

Q_{vg} = cumulative vol flow of Vent Gas during the 15 – minute block period (scf)

Q_{vol} = volumetric flow rate (scf per second)

Vmax = Maximum allowed flare tip velocity (feet per second)

Vtip = Flare tip velocity (feet per second)

x_i = concentration of component *i* in Vent Gas (vol fraction)

x_{H2}

= concentration of H₂ in Vent Gas at time sample was input into NHV monitoring system (vol fraction)

Table 1
Individual Component Properties

Component	Molecular Formula	MW_t (lbs/lb-mole)	CMN_i (mole per mole)	NHV_i (BTU/scf)	LFL_i (volume %)
Acetylene	C ₂ H ₂	26.04	2	1,404	2.5
Benzene	C ₆ H ₆	78.11	6	3,591	1.3
1,2-Butadiene	C ₄ H ₆	54.09	4	2,794	2.0
1,3-Butadiene	C ₄ H ₆	54.09	4	2,690	2.0
iso-Butane	C ₄ H ₁₀	58.12	4	2,957	1.8
n-Butane	C ₄ H ₁₀	58.12	4	2,968	1.8
cis-Butene	C ₄ H ₈	56.11	4	2,830	1.6
iso-Butene	C ₄ H ₈	56.11	4	2,928	1.8
trans-Butene	C ₄ H ₈	56.11	4	2,826	1.7
Carbon Dioxide	CO ₂	44.01	1	0	∞
Carbon Monoxide	CO	28.01	1	316	12.5
Cyclopropane	C ₃ H ₆	42.08	3	2,185	2.4
Ethane	C ₂ H ₆	30.07	2	1,595	3.0
Ethylene	C ₂ H ₄	28.05	2	1,477	2.7
Hydrogen	H ₂	2.02	0	1,212 ^A	4.0
Hydrogen Sulfide	H ₂ S	34.08	0	587	4.0
Methane	CH ₄	16.04	1	896	5.0
Methyl-Acetylene	C ₃ H ₄	40.06	3	2,088	1.7
Nitrogen	N ₂	28.01	0	0	∞
Oxygen	O ₂	32.00	0	0	∞
Pentane+ (C5+)	C ₅ H ₁₂	72.15	5	3,655	1.4
Propadiene	C ₃ H ₄	40.06	3	2,066	2.16
Propane	C ₃ H ₈	44.10	3	2,281	2.1
Propylene	C ₃ H ₆	42.08	3	2,150	2.4
Water	H ₂ O	18.02	0	0	∞

^A The theoretical Net Heating Value for hydrogen is 274 BTU/scf, but for the purposes of this Consent Decree, a Net Heating Value of 1,212 BTU/scf shall be used.

Note: If a component is not specified in this Table 1, the heats of combustion may be determined using any published values where the net enthalpy per mole of offgas is based on combustion at 25 °C and 1 atmosphere (or constant pressure) with offgas water in the gaseous state, but the standard temperature for determining the volume corresponding to one mole of Vent Gas is 20 °C.

APPENDIX 3.3

CALIBRATION AND QUALITY CONTROL REQUIREMENTS FOR CPMS

Parameter	Minimum accuracy requirements	Calibration requirements
Temperature	±1 percent over the normal range of temperature measured, expressed in degrees Celsius (C), or 2.8 degrees C, whichever is greater	<p>Conduct calibration checks at least annually; conduct calibration checks following any period of more than 24 hours throughout which the temperature exceeded the manufacturer's specified maximum rated temperature or install a new temperature sensor.</p> <p>At least quarterly, inspect all components for integrity and all electrical connections for continuity, oxidation, and galvanic corrosion, unless the CPMS has a redundant temperature sensor.</p>
		Record the results of each calibration check and inspection.
		Locate the temperature sensor in a position that provides a representative temperature; shield the temperature sensor system from electromagnetic interference and chemical contaminants.
Flow Rate for All Flows Other Than Covered Flare Vent Gas	±5 percent over the normal range of flow measured or 280 liters per minute (10 cubic feet per minute), whichever is greater, for gas flow	At least quarterly, inspect all components for leakage, unless the CPMS has a redundant flow sensor.
	±5 percent over the normal range measured for mass flow	<p>Record the results of each calibration check and inspection.</p> <p>Locate the flow sensor(s) and other necessary equipment (such as straightening vanes) in a position that provides representative flow; reduce swirling flow or abnormal velocity distributions due to</p>

Parameter	Minimum accuracy requirements	Calibration requirements
		upstream and downstream disturbances.
Covered Flare Vent Gas Flow Rate	<p>±20 percent of flow rate at velocities ranging from 0.03 to 0.3 meters per second (0.1 to 1 feet per second)</p> <p>±5 percent of flow rate at velocities greater than 0.3 meters per second (1 feet per second)</p>	<p>Conduct a flow sensor calibration check at least biennially (every two years); conduct a calibration check following any period of more than 24 hours throughout which the flow rate exceeded the manufacturer's specified maximum rated flow rate or install a new flow sensor.</p> <p>At least quarterly, inspect all components for leakage, unless the CPMS has a redundant flow sensor.</p>
		Record the results of each calibration check and inspection.
		Locate the flow sensor(s) and other necessary equipment (such as straightening vanes) in a position that provides representative flow; reduce swirling flow or abnormal velocity distributions due to upstream and downstream disturbances.
Pressure	±5 percent over the normal operating range or 0.12 kilopascals (0.5 inches of water column), whichever is greater	<p>Review pressure sensor readings at least once a week for straightline (unchanging) pressure and perform corrective action to ensure proper pressure sensor operation if blockage is indicated.</p> <p>Using an instrument recommended by the sensor's manufacturer, check gauge calibration and transducer calibration annually; conduct calibration checks following any period of more than 24 hours throughout which the pressure exceeded the manufacturer's specified maximum rated pressure or install a new pressure sensor.</p>
		At least quarterly, inspect all components for integrity, all electrical connections for continuity, and all mechanical connections for leakage, unless the CPMS has a redundant pressure sensor.

Parameter	Minimum accuracy requirements	Calibration requirements
		Record the results of each calibration check and inspection.
		Locate the pressure sensor(s) in a position that provides a representative measurement of the pressure and minimizes or eliminates pulsating pressure, vibration, and internal and external corrosion.
Net Heating Value by Calorimeter	±2 percent of span	Specify calibration requirements in your site specific CPMS monitoring plan. Calibration requirements should follow manufacturer's recommendations at a minimum. Temperature control (heated and/or cooled as necessary) the sampling system to ensure proper year-round operation.
		Where feasible, select a sampling location at least two equivalent diameters downstream from and 0.5 equivalent diameters upstream from the nearest disturbance. Select the sampling location at least two equivalent duct diameters from the nearest control device, point of pollutant generation, air in-leakages, or other point at which a change in the pollutant concentration or emission rate occurs.
Net Heating Value by Gas Chromatograph	As specified in 40 C.F.R. Part 60, Appendix B, Performance Specification 9	Follow the procedure in 40 C.F.R. Part 60, Appendix B, Performance Specification 9, except that a single daily mid-level calibration check can be used (rather than triplicate analysis), the multi-point calibration can be conducted quarterly (rather than monthly), and the sampling line temperature shall be maintained at a minimum temperature of 60 °C (rather than 120 °C).

Parameter	Minimum accuracy requirements	Calibration requirements
Hydrogen analyzer	±2 percent over the concentration measured or 0.1 volume percent, whichever is greater	Specify calibration requirements in your site specific CPMS monitoring plan. Calibration requirements should follow manufacturer's recommendations at a minimum.
		Select the sampling location at least two equivalent duct diameters from the nearest control device, point of pollutant generation, air in-leakages, or other point at which a change in the pollutant concentration occurs.

APPENDIX 3.4

ADDITIONAL CPMS REQUIREMENTS

- C1. **Continuous Parametric Monitoring System (CPMS) Monitoring Plan.** The owner or operator shall develop and implement a CPMS quality control program documented in a CPMS monitoring plan that covers each Covered Flare and each CPMS installed to comply with the provisions of this settlement. The owner or operator shall have the CPMS monitoring plan readily available on-site at all times and shall submit a copy of the CPMS monitoring plan to the Administrator upon request by the Administrator. The CPMS monitoring plan shall contain the information listed in paragraphs (a) through (e) of this section.
- a. Identification of the specific Covered Flare being monitored and the flare type (air-assisted only, steam-assisted only, air- and steam-assisted, pressure-assisted, or non-assisted).
 - b. Identification of the parameter to be monitored by the CPMS and the expected parameter range, including worst case and normal operation.
 - c. Description of the monitoring equipment, including the information specified in paragraphs (i) through (vii) of this section.
 - i. Manufacturer and model number for all monitoring equipment components installed to comply with applicable provisions of this Consent Decree.
 - ii. Performance specifications, as provided by the manufacturer, and any differences expected for this installation and operation.
 - iii. The location of the CPMS sampling probe or other interface and a justification of how the location meets the requirements of the table in APPENDIX 3.3.
 - iv. Placement of the CPMS readout, or other indication of parameter values, indicating how the location is readily accessible onsite for operational control or inspection.
 - v. Span of the CPMS. The span of the CPMS sensor and analyzer shall encompass the full range of all expected values.
 - vi. How data outside of the span of the CPMS will be handled and the corrective action that will be taken to reduce and eliminate such occurrences in the future.
 - vii. Identification of the parameter detected by the parametric signal analyzer and the algorithm used to convert these values into the operating parameter monitored to demonstrate compliance, if the parameter detected is different from the operating parameter monitored.

- d. Description of the data collection and reduction systems, including the information specified in paragraphs (i) through (iii) of this section.
 - i. A copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard and to calculate the applicable averages.
 - ii. Identification of whether the algorithm excludes data collected during CPMS breakdowns, out-of-control periods, repairs, maintenance periods, instrument adjustments or checks to maintain precision and accuracy, calibration checks, and zero (low-level), mid-level (if applicable) and high-level adjustments.
 - iii. If the data acquisition algorithm does not exclude data collected during CPMS breakdowns, out-of-control periods, repairs, maintenance periods, instrument adjustments or checks to maintain precision and accuracy, calibration checks, and zero (low-level), mid-level (if applicable) and high-level adjustments, a description of the procedure for excluding this data when the averages calculated as specified in paragraph C2 of this section are determined.
- e. Routine quality control and assurance procedures, including descriptions of the procedures listed in paragraphs C1.(e)(i) through (vi) of this section and a schedule for conducting these procedures. The routine procedures shall provide an assessment of CPMS performance.
 - i. Initial and subsequent calibration of the CPMS and acceptance criteria.
 - ii. Determination and adjustment of the calibration drift of the CPMS.
 - iii. Daily checks for indications that the system is responding. If the CPMS system includes an internal system check, the owner or operator may use the results to verify the system is responding, as long as the system provides an alarm to the owner or operator or the owner or operator checks the internal system results daily for proper operation and the results are recorded.
 - iv. Preventive maintenance of the CPMS, including spare parts inventory.
 - v. Data recording, calculations and reporting.
 - vi. Program of corrective action for a CPMS that is not operating properly.

C2. Covered Flare Monitoring System Requirements: Additional Requirements for Gas Chromatographs. For monitors used to determine compositional analysis for net heating value, the gas chromatograph shall also meet the requirements of paragraphs (a) through (c) of this section.

- a. The quality assurance requirements are in APPENDIX 3.3.
- b. The calibration gases shall meet one of the following options:
 - i. The owner or operator shall use a calibration gas or multiple gases that include all of compounds listed in paragraphs (b)(i)(A) through (K) of this section that may be reasonably expected to exist in the Covered Flare gas stream and optionally include any of the compounds listed in paragraphs (b)(i)(L) through (O) of this section. All of the calibration gases may be combined in one cylinder. If multiple calibration gases are necessary to cover all compounds, the owner or operator shall calibrate the instrument on all of the gases.
 - (A) Hydrogen.
 - (B) Methane.
 - (C) Ethane.
 - (D) Ethylene.
 - (E) Propane.
 - (F) Propylene.
 - (G) n-Butane.
 - (H) iso-Butane.
 - (I) Butene (general). It is not necessary to separately speciate butene isomers, but the net heating value of trans-butene shall be used for co-eluting butene isomers.
 - (J) 1,3-Butadiene. It is not necessary to separately speciate butadiene isomers, but you shall use the response factor and net heating value of 1,3-butadiene for co-eluting butadiene isomers.
 - (K) n-Pentane. Use the response factor for n-pentane to quantify all C5+ hydrocarbons.
 - (L) Acetylene (optional).
 - (M) Carbon monoxide (optional).
 - (N) Propadiene (optional).
 - (O) Hydrogen sulfide (optional).
 - ii. The owner or operator shall use a surrogate calibration gas consisting of hydrogen and C1 through C5 normal hydrocarbons. All of the calibration gases may be combined in one cylinder. If multiple calibration gases are necessary to

cover all compounds, the owner or operator shall calibrate the instrument on all of the gases.

- c. If the owner or operator chooses to use a surrogate calibration gas under paragraph (b)(ii) of this section, the owner or operator shall comply with paragraphs (c)(i) and (ii) of this section.
 - i. Use the response factor for the nearest normal hydrocarbon (*i.e.*, n-alkane) in the calibration mixture to quantify unknown components detected in the analysis.
 - ii. Use the response factor for n-pentane to quantify unknown components detected in the analysis that elute after n-pentane.

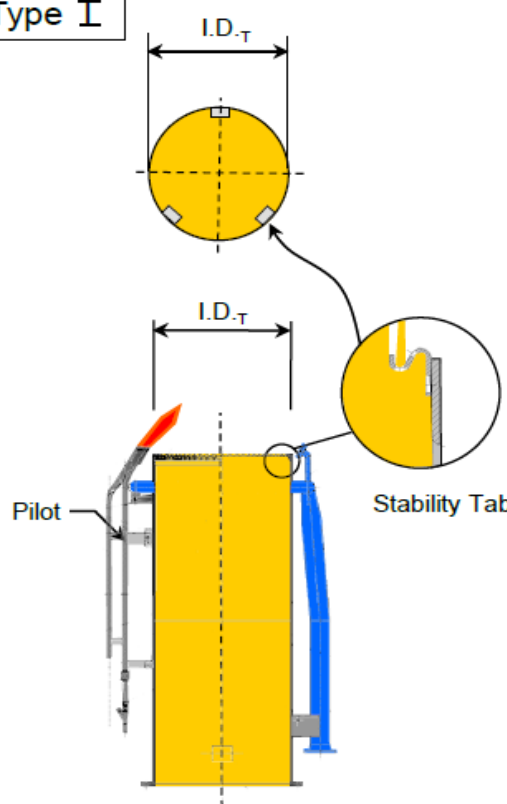
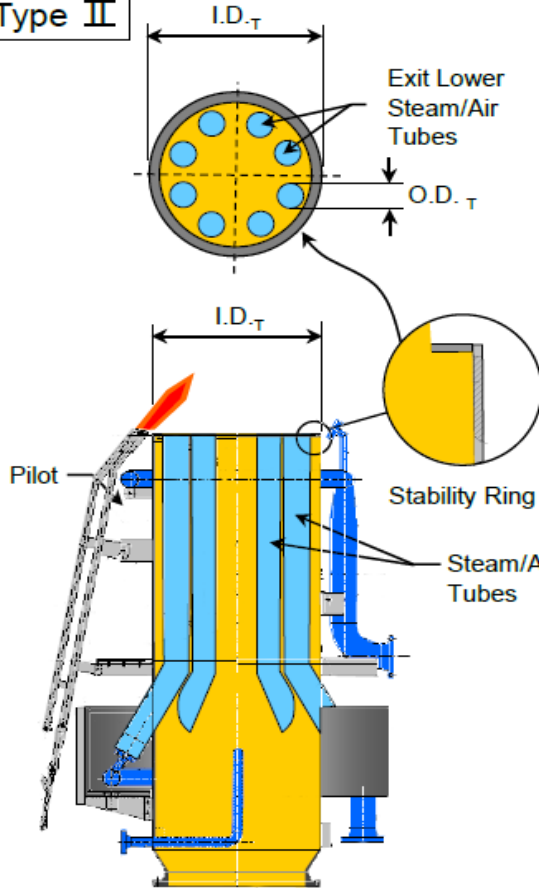
C3. Out-Of-Control Periods. For each CPMS installed to comply with this Consent Decree, except for CPMS installed for pilot flame monitoring, the owner or operator shall comply with the out-of-control procedures described in paragraphs (a) and (b) of this section.

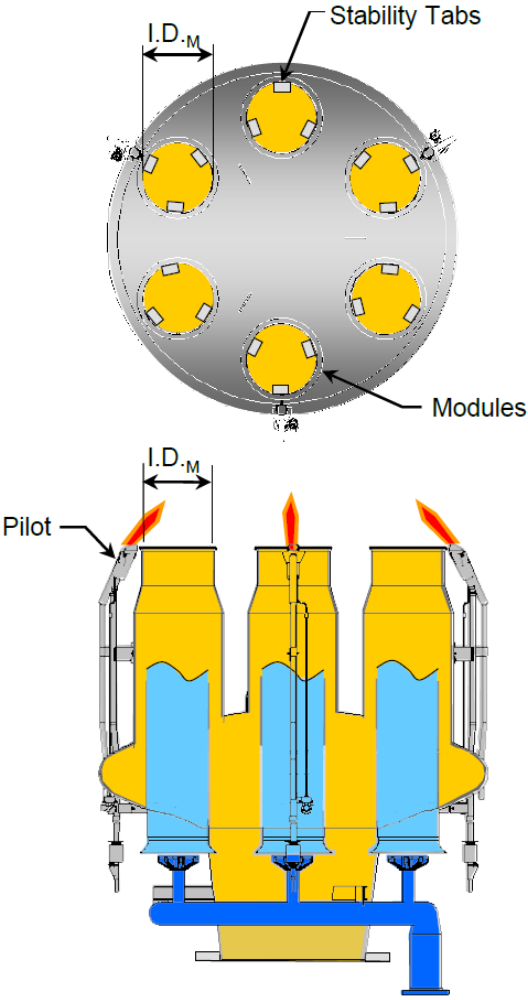
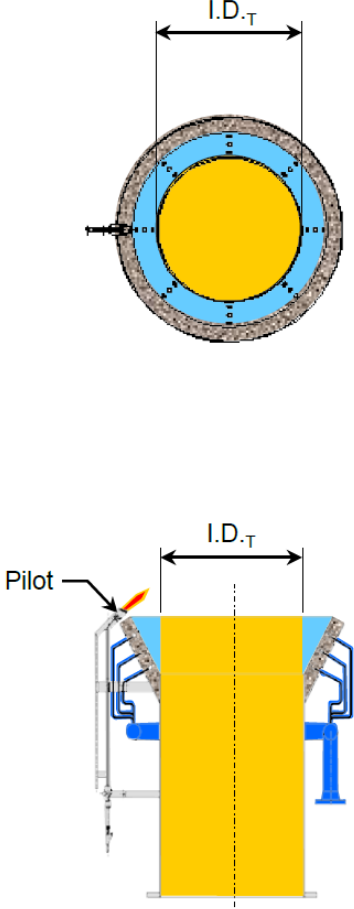
- a. A CPMS is out-of-control if the zero (low-level), mid-level (if applicable) or high-level calibration drift exceeds two times the accuracy requirement of APPENDIX 3.3.
- b. When the CPMS is out of control, the owner or operator shall take the necessary corrective action and repeat all necessary tests that indicate the system is out of control. The owner or operator shall take corrective action and conduct retesting until the performance requirements are below the applicable limits. The beginning of the out-of-control period is the hour a performance check (*e.g.*, calibration drift) that indicates an exceedance of the performance requirements established in this section is conducted. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the system is within the allowable limits. The owner or operator shall not use data recorded during periods the CPMS is out-of-control in data averages and calculations, used to report emissions or operating levels, as specified in paragraph C4(c) of this section.

C4. CPMS Data Reduction. The owner or operator shall reduce data from a CPMS installed to comply with this Consent Decree as specified in paragraphs (a) through (c) of this section.

- a. The owner or operator may round the data to the same number of significant digits used in that operating limit.
- b. Periods of non-operation of the process unit (or portion thereof) resulting in cessation of the emissions to which the monitoring applies shall not be included in the 15-minute block averages.
- c. Periods when the CPMS is out of control shall not be included in the 15-minute block averages.

APPENDIX 3.5

<p>Type I</p>  <p style="text-align: center;">$A_{tip-unob} = \pi(I.D.T)^2/4 - (X_T * A_{ST})$</p>	<p>Type II</p>  <p style="text-align: center;">$A_{tip-unob} = \pi(I.D.T)^2/4 - A_{ST} - N_T * \pi * (O.D.T)^2/4$</p>
<p>Where:</p> <ul style="list-style-type: none"> $A_{tip-unob}$ = Unobstructed Cross Sectional Area of Flare Tip $I.D.T$ = Inside Diameter Flare Tip X_T = Number of Stability Tabs A_{ST} = Area of a Stability Tab 	<p>Where:</p> <ul style="list-style-type: none"> $A_{tip-unob}$ = Unobstructed Cross Sectional Area of Flare Tip $I.D.T$ = Inside Diameter Flare Tip A_{ST} = Area of Stability Ring $O.D.T$ = Outside Diameter of Steam/Air Tubes N_T = Number of Steam/Air Tubes
<p>Example: $I.D.T = 41.5$ inches $X_T = 3$ $A_{ST} = 3$ Sq. inches</p>	<p>Example: $I.D.T = 47.5$ inches $A_{ST} = 100$ Sq. inches $O.D.T = 6.5$ inches $N_T = 8$</p>
<p>$A_{tip-unob} = \pi(41.5)^2/4 - (3 * 3)$ $A_{tip-unob} = 1344$ Sq. inches</p>	<p>$A_{tip-unob} = \pi(47.5)^2/4 - 100 - 8 * \pi * (6.5)^2/4$ $A_{tip-unob} = 1322$ Sq. inches</p>

Type III	Type IV
 $A_{\text{tip-unob}} = N_M * (\pi * (I.D._M)^2 / 4 - X_T * A_{ST})$	 $A_{\text{tip-unob}} = \pi (I.D._T)^2 / 4$
<p>Where: $A_{\text{tip-unob}}$ = Unobstructed Cross Sectional Area of Flare Tip $I.D._M$ = Inside Diameter of One Tip Module N_M = Number of Modules X_T = Number of Stability Tabs per Module A_{ST} = Area of a Stability Tab</p>	<p>Where: $A_{\text{tip-unob}}$ = Unobstructed Cross Sectional Area of Flare Tip $I.D._T$ = Inside Diameter of Flare Tip</p>
<p>Example: $I.D._M = 17$ inches $N_M = 6$ $X_T = 3$ $A_{ST} = 3$ Sq. inches</p>	<p>Example: $I.D._T = 41.5$ inches</p>
$A_{\text{tip-unob}} = 6 * (\pi * (17)^2 / 4 - 3 * 3)$ $A_{\text{tip-unob}} = 1308 \text{ Sq. inches}$	$A_{\text{tip-unob}} = \pi (41.5)^2 / 4$ $A_{\text{tip-unob}} = 1353 \text{ Sq. inches}$

APPENDIX 4.1

QUALITATIVE DETERMINATION OF C4-C6 HYDROCARBONS AND STYRENE IN PROCESS WATER

1.0 Scope

This method outlines the procedure for determining the presence of ppm levels of C4-C6 hydrocarbons in the plant process water.

2.0 Principle of Method

Process water collected pursuant to APPENDIX 4.2 in zero headspace sample vials with a top and septa is received by the lab GC analyst for analysis using a gas chromatograph. An aliquot of sample is added to a GC sample vial containing tetrahydrofuran (THF) as an internal standard (for drift verification). It is then injected into a gas chromatograph column designed to separate the hydrocarbons from all other components in the sample.

3.0 Equipment, Supplies and Reagents

3.1 Perkin-Elmer FID gas chromatograph, or equivalent

Total Chrome Data collection system or equivalent

A chromatograph column capable of separating the components of interest.

Current equipment: 7EK-G002-28 in series with 7EK-G007-22 columns.

(Phenomenex ZB-5: 30 X .32 X 5.0 & ZB-WAX: 60 x .25 x 1.0) or equivalent

GC Conditions:

- Injector Temp: 225°C
- Detector Temp: 275°C
- Split: 20:1
- Split Flow: 86mL/min
- Carrier Set point: 2.0 mL/min
- Detector Range: 1
- Attenuation: -6
- H₂: 45mL/min
- Air: 450mL/min

Program:

	Rate (°C/min)	Temp (°C)	Hold Time (min)
Initial		40	4
Ramp	25	175	5.6

GC conditions and method settings may be adjusted for use of different, but equivalent, gas chromatograph. (Separation between 1,3 Butadiene, the most concentrated C4-C6 hydrocarbon, Hexane, THF, and Styrene are the requirements for a successful method).

THF – T425

DI water

3mL syringes or larger (enough to transfer 2mL of sample)

Gas-tight syringe sized to deliver 50 μ L of THF

Syringe needle

Standard GC vials with a top and septa

4.0 Sample Collection, Preservation

- 4.1 Sample collection is defined in APPENDIX 4.2 and obtained at the collection points by the field analysts.
- 4.2 GC analyst should receive process water sample in zero headspace vials.

5.0 Calibration and Quality Control

- 5.1 A control sample of known compositions of n-hexane, styrene and 1,3- butadiene should be run as needed to determine relative retention times.

6.0 Procedure

- 6.1 GC analyst verifies the process water samples does not contain any bubbles. If bubbles exist, inform field analyst to re-catch samples within 24-hours of collection of original sample.
- 6.2 In two 2mL GC vials with top and septa, add 50 μ L of THF Internal Standard solution into each vial using a gas tight syringe.
- 6.3 With a syringe and a syringe needle, add approximately 2mL of DI water to one of the 2mL GC vials containing the THF Internal Standard solution.
- 6.4 With a syringe and a syringe needle, transfer 2mL of the process water sample to the GC vial containing the THF Internal Standard solution.
- 6.5 Load both GC vials into the autosampler. The vial containing DI water should be analyzed first. Note: This vial will serve as a blank to verify no carry over exist that results in a false positive result. The THF within the blank will serve as a retention time check.
- 6.6 Run the GC chromatograph using the water method that can determine if 1,3-butadiene, C4–C6 hydrocarbons (most concentrated hydrocarbon and hexane), and/or styrene are present in the sample.
- 6.7 GC Analyst must review the chromatograph for the following:

- A. Verify no hydrocarbons are contained within the sample.
Note: If a peak exists at or near the marked peak time of one of the components, the GC analyst must verify using a spiked sample to confirm.
 - B. Verify the THF peak did not drift during the GC analysis. Note: If drifting occurred sample will be spiked with each analyte within the GC method to confirm elution time did not shift; make appropriate adjustments to elution time as needed.
- 6.8 If the chromatograph indicates that hydrocarbons are present in the sample, follow the confirmation steps in APPENDIX 4.2, Section 5.0 to confirm the presence of hydrocarbons. If a positive result is confirmed per APPENDIX 4.2, Section 5.0, it should be recorded in LIMS.
- 6.9 APPENDIX 4.2 should be followed for reporting a positive result.

END OF TASK

APPENDIX 4.2

WATER SAMPLING FOR HYDROCARBONS AT THE NORTH AND SOUTH COOLING TOWERS AND CHILLED WATER SYSTEM

1.0 Purpose

The purpose of this procedure is to describe the steps for collecting water samples to test for the presence of hydrocarbons in the cooling water circulating in the North and South Cooling Towers and Chilled Water Systems and the actions to be taken once the test results are received.

2.0 General

2.1 The samples will be taken at specified intervals and analyzed using the procedure set forth in APPENDIX 4.1. A “Positive” sample result indicates that hydrocarbons have been detected in the cooling water. A “Negative” sample result indicates that hydrocarbons are not present or are below detection limits in the cooling water.

2.2 If a Positive sample result is received, it is likely that the source of the hydrocarbons in the cooling water is a heat exchanger Leak. Based upon process information, the following hydrocarbons may be detected if a heat exchanger Leaks: solvent (n-hexane as indicator of the mixed hexane solvent), styrene, Blend “B” or Blend “S.”

3.0 Sampling Procedure

3.1 Equipment

3.1.1 Use adequately sized VOA vials with top and septa obtained from the laboratory stock. VOA vial sizes may range from 20 ml to 50 ml.

3.2 Sample Location

3.2.1 The Field Analyst will collect the samples in vials with a top and septa obtained from the laboratory. It is the responsibility of the operators to direct lab personnel to the appropriate sample point locations. The samples are to be taken from the following process flows/locations:

- North Cooling Tower water **INLET** from the labeled sample point. The North Cooling Tower sampling location is labeled N.C.T.W.-1.
- South Cooling Tower water **INLET** from the labeled sample point.

The South Cooling Tower sampling location is labeled S.C.T.W.-1

- Chilled Water System return to the Water Pump House, P635 A/B, depending on which pump is running. A laboratory sample point is located above the pump.

3.3 Sample Collection

3.3.1 Adjust the water flow to a steady but slow flow rate.

Note: The samples points are typically left running to ensure a clean flushed sample every time. If the sample flow is not running, **it should be flushed for a minimum 30 seconds with good water flow before sampling.**

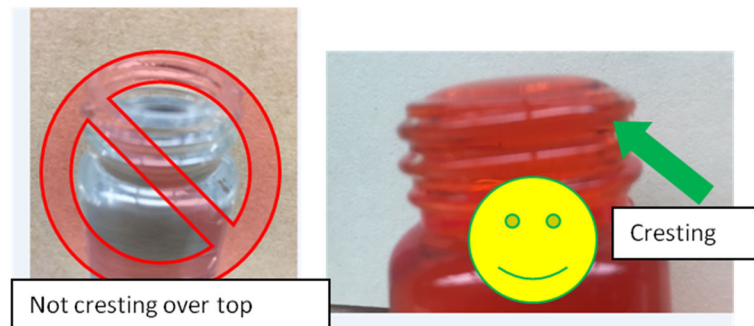
3.3.2 Tilt the vial under the sample stream to avoid bubbles.

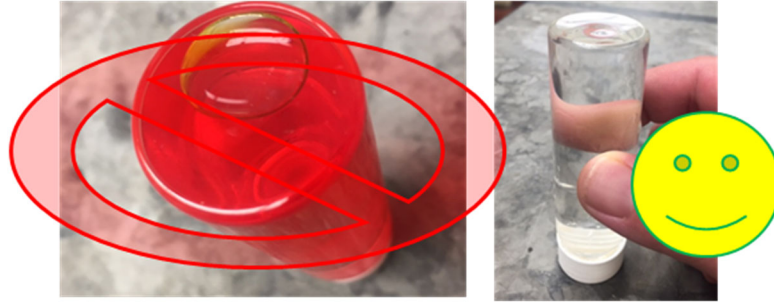
3.3.3 As the vial fills, slowly tilt it upwards and pull it out from under the sample point when it is full.

3.3.4 For the vial to be liquid full and free of bubbles, the liquid/water must be cresting over the top (see photos below).

3.3.5 Hold the vial level and screw on the top as quickly as possible to seal the sample.

3.3.6 Once the lid is tight and secure, invert the vial to ensure no bubbles are present. If bubbles are present, dump the vial and repeat the steps above to collect a new sample. It may take several tries to get a sample free of bubbles.





3.4 Transport and Delivery of the Sample

- 3.4.1 Label the sample vial with the date and time of sample and Sample ID.
- 3.4.2 Deliver the sample vial to the laboratory within one hour of collection for analysis.
- 3.4.3 If the sample cannot be analyzed within one hour of delivery, store the sample in the laboratory refrigerator.

4.0 Analysis of the Sample

Samples are analyzed as described in APPENDIX 4.1.

5.0 Sample Results – Confirmation of Positive

- 5.1 If a sample analysis is Positive for the presence of hydrocarbons, the GC Lab Analyst shall initiate the actions in the charts below to confirm the Leak and identify the Leaking heat exchanger.
 - 5.1.1 Collection of samples will follow the steps in 3.0 above.
 - 5.1.2 Analysis of sample vial will follow 4.0 above.
 - 5.1.3 Each sample result shall be logged into LIMS by the GC Lab Analyst.
 - 5.1.4 All chromatographs shall be scanned and saved in S:/Laboratory/Cooling TW Leak Investigation by the GC Lab Analyst.

NORTH COOLING TOWER and CHILLED WATER SYSTEM

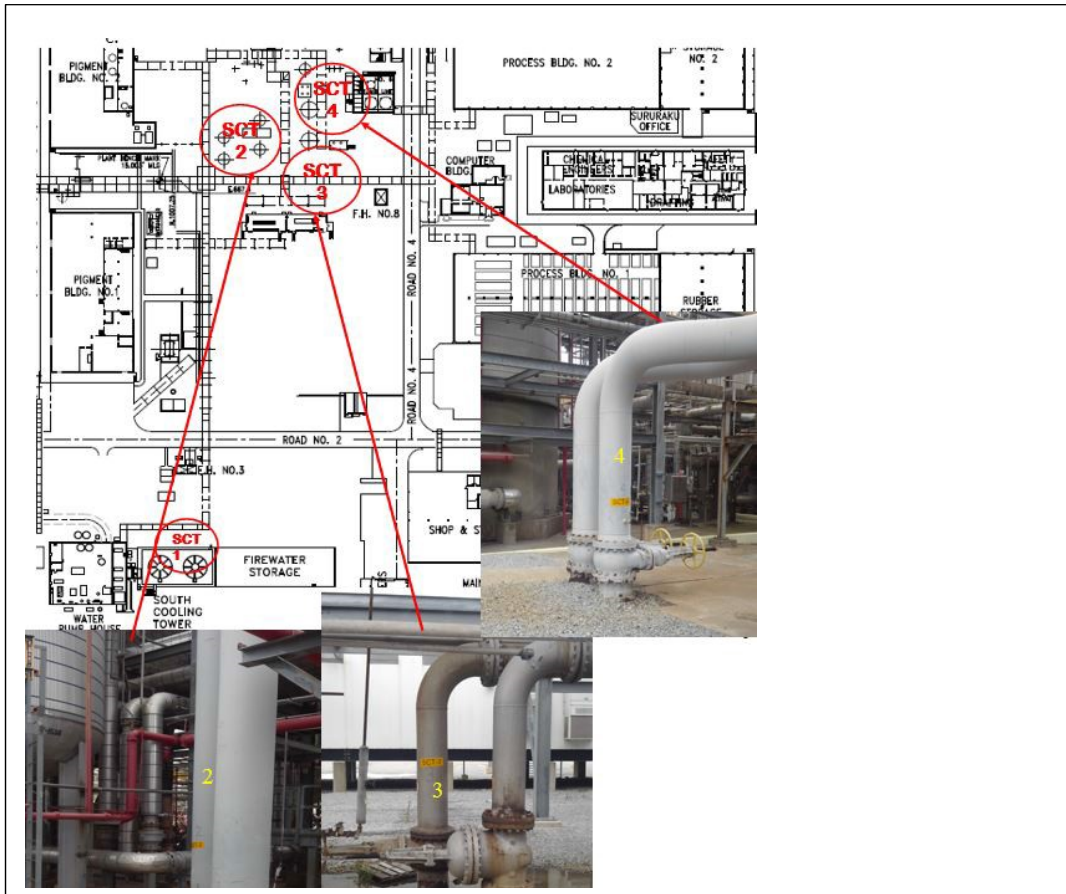
Step	If	Then
1	First sample is Positive for hydrocarbons	Immediately instruct Field Lab Analyst to collect a new “second” sample.
2	Second sample is Positive for hydrocarbons	A Leak is confirmed. Make notification to the Poly Foreman, Chemist, PCC, Area Engineer & Environmental Department of the positive result, followed by an email notification of the sample location and result to same. Collect a set of three samples; store in laboratory refrigerator to send to outside laboratory. Proceed to Step 6.
3	Second sample is Negative for hydrocarbons	Immediately instruct Field Lab Analyst to collect a new “third” sample.
4	Third sample is Negative for hydrocarbons,	A false positive may be assumed for the first sample collected. STOP. Do not proceed to next step in table.
5	Third sample is Positive for hydrocarbons,	Make notification to the Poly Foreman, Chemist, PCC, Area Engineer & Environmental Department of the positive result, followed by an email notification of the sample location and result to same. Collect a set of three samples; store in laboratory refrigerator to send to outside laboratory. Proceed to Step 6.
6		Initiate sampling of all heat exchangers in the North Cooling Tower or Chilled Water System to locate the Leak. Collect and analyze samples per procedures 3.0-4.0.

SOUTH COOLING TOWER

Step	IF	Then
1	First sample is Positive for hydrocarbons	<p>Immediately instruct Field Lab Analyst to collect a new “second” sample from S.C.T.W. 1.</p> <p>Instruct the Field Lab Analyst to also collect samples at SCT 2, 3 & 4 (see Figure A) and store in the lab refrigerator for possible analysis.</p>
2	The second sample from S.C.T.W. 1 is Positive for hydrocarbons	<p>A Leak is confirmed.</p> <p>Analyze SCT 2, 3 & 4 samples from Step 1 per procedure 4.0 to narrow the potential location of the Leaking heat exchanger. If results are negative for hydrocarbons for all, proceed to Line 6 in Table.</p> <p>Collect a set of three samples; store in laboratory refrigerator to send to outside laboratory.</p> <p>Make notification to the Poly Foreman, Chemist, PCC, Area Engineer & Environmental Department of the positive result, followed by an email notification of the sample location and result to same.</p>
3	The second sample from S.C.T.W. 1 is Negative for hydrocarbons.	<p>Immediately instruct Field Lab Analyst to collect a new “third” sample from S.C.T.W. 1 Analyze the sample per procedure 4.4 above.</p> <p>Instruct the Field Lab Analyst to also collect samples at SCT 2, 3 & 4 (see Figure A) and store in the lab refrigerator for possible analysis.</p>

Step	IF	Then
4	The third sample from S.C.T.W. 1 is Positive for hydrocarbons	<p>Analyze SCT 2, 3 & 4 samples from Step 3 per procedure 4.0 to narrow the potential location of the Leaking heat exchanger. If results are negative for hydrocarbons for all, proceed to Line 6 in Table.</p> <p>Collect a set of three samples; store in laboratory refrigerator to send to outside laboratory.</p> <p>Make notification to the Poly Foreman, Chemist, PCC, Area Engineer & Environmental Department of the positive result, followed by an email notification of the sample location and result to same.</p>
5	The third sample from S.C.T.W.1 is Negative for hydrocarbons	<p>A false positive may be assumed for the first sample collected.</p> <p>STOP. Do not proceed to next step in table.</p>
6	The second or third S.C.T.W.-1 sample is Positive for Hydrocarbons, but the results of sampling from SCT -2,3,4 are all negative for hydrocarbons.	Sample all cooling tower water exchangers on the south cooling tower. Collect and analyze samples per procedures 3.0-4.0.

Figure A



North Cooling Tower Heat Exchanger List	
200 AREA	
E-252:	F-245 Regeneration System
E-238:	F-232 Regeneration System
E-240:	F-233 Regeneration System
E-209:	F-208 Regeneration System
E-204 A/B/C:	Drying Column Regeneration System
E-206:	F-207 Regeneration System
E-248:	Solvent Splitter D-220
E-220 A/B:	Separation Column Condenser
E-201 A/B:	Mixed Feed Cooler
E-218 A/B:	Separation Column
E-214 A/B:	Stripping Column Condenser
E-215:	Stripping Column Vent Condenser
E-222:	Vent Compressor Aftercooler
E-225 A/B:	Absorber Oil Stripper Condenser
E-223:	Lean Absorber Oil
C-204 A/B:	Solvent Compressor
E-221 A/B/C:	Residual Solvent Condenser
E-251:	Splitter Column Vent
E-258:	Vent Gas Cooler
400 AREA	
R-401:	R-401 Jacket Water
R-402:	R-402 Jacket Water
R-403:	R-403 Jacket Water
R-404:	R-404 Jacket Water
R-405:	R-405 Jacket Water
R-406:	R-406 Jacket Water
R-407:	R-407 Jacket Water
R-408:	R-408 Jacket Water
500 AREA	
E-514:	#9 Crumb Tank Condenser
E-515:	#9 & #10 Solvent compressor Aftercooler
E-528:	#9 Crumb Tank Condenser
E-524:	#9 Crumb Tank Condenser
E-526:	#10 Crumb Tank Condenser
E-518:	#10 Crumb Tank Condenser

E-525: #10 Crumb Tank Condenser

Chilled Water Exchanger List	
200 AREA	
E-205	Drying Column Vent Condenser
E-226	Absorber Oil Stripper Vent Cond.
E-237	Separation Column Vent
E-251	Splitter Column Vent
E-255	Vacuum Pump Cooler
400 AREA	
E-403	Blend B
E-404	BF3 Complex Chiller
E-419	Blend B Cooler
E-423	Line 5 Recycle Solvent Cooler
E-424	Recycle Solvent Cooler
E-425	Line 7 Dilution Solvent Cooler
E-431	Line 6 Reactor Feed Cooler
E-432	Line 7 Reactor Feed Cooler
E-433	Line 5 Reactor Feed Cooler
E-439	Line 8 Dilution Solvent. Cooler
E-442	Line 8 Reactor Feed Cooler
E-451	Line 9 Dilution Solvent. Cooler
E-452	Line 9 Reactor Feed Cooler
500 AREA	
E-538	Solvent Vapor Compressor Cooler
E-545	#8 Crumb Solvent Vapor Comp. Cooler
E-548	#9 & #10 Crumb Solvent Vapor
1400 AREA	
E-1401	Reactor Jacket Water Chiller
E-1402	Reactor Jacket Water Chiller
E-1403	Reactor Jacket Water Chiller
E-1404	Reactor Jacket Water Chiller
E-1441	Blend "S" Charge Cooler
E-1442	Solvent Charge Cooler
E-1444	Blend "B" Charge Cooler
E-1445	Blend "S" Surge Tank
E-1446	Solvent Surge Tank Feed Cooler
E-1447	Blend "B" Surge Tank Feed Cooler

South Cooling Tower Sampling Locations and Heat Exchange List	
S.C.T.W.-1	South Cooling Tower
	All of the below
SCT-2	7/8 Crumb Leg
	E-501: 7 Crumb North Condenser
	E-527: 7 Crumb Middle North Condenser
	E-522: 7 Crumb Middle South Condenser
	E-541: 7 Crumb South Condenser
	E-542: 8 Crumb West Condenser
	E-537: 8 Crumb Middle West Condenser
	E-523: 8 Crumb Middle East Condenser
	E-505: 8 Crumb East Condenser
	E-547: Solvent Compressor
SCT-3	1400/1500 Leg
	E-1421: R-1401 Jacket Water Cooler
	E-1422: R-1402 Jacket Water Cooler
	E-1423: R-1403 Jacket Water Cooler
	E-1424: R-1404 Jacket Water Cooler
	E-1425: R-1405 Jacket Water Cooler
	E-1426: R-1406 Jacket Water Cooler
SCT-4	6 Crumb and Process 2 Leg
	E-529A: 6 Crumb West Condenser
	E-529B: 6 Crumb Middle Condenser
	E-529C: 6 Crumb East Condenser
	E-532: (Process 2)
	E-533: (Process 2)