Appendix B
Phillips 66/ Alliance Refinery
BART Determination
And Evaluation

CERTIFIED MAIL (7003 2260 0000 5827 0493)
RETURN RECEIPT REQUESTED

PHILLIPS 66 COMPANY
Corporation Service Company
Agent for Service of Process
320 Somerulos Street
Baton Rouge, LA 70802-6129

RE: ADMINISTRATIVE ORDER ON CONSENT
ENFORCEMENT TRACKING NO. AE-AOC-14-00211
AGENCY INTEREST NO. 2418

Dear Sir:

Pursuant to the Louisiana Environmental Quality Act (La. R.S. 30:2001, *et seq.*), the attached **ADMINISTRATIVE ORDER ON CONSENT** is hereby served on **PHILLIPS 66 COMPANY (RESPONDENT).**

Any questions concerning this action should be directed to Tonya Landry at (225) 219-3785.

Sincerely,

Celena J. Cage
Administrator
Enforcement Division

CJC/TBL/tbl
Alt ID No. 2240-00003
Attachment

c: Phillips 66 Alliance Refinery
c/o Laurence R. Poche
P.O. Box 176
Belle Chasse, LA 70037

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF ENVIRONMENTAL COMPLIANCE

IN THE MATTER OF	*	
	*	
PHILLIPS 66 COMPANY	*	**ENFORCEMENT TRACKING NO.**
PLAQUEMINES PARISH	*	
ALT ID NO. 2240-00003	*	**AE-AOC-14-00211**
	*	
	*	**AGENCY INTEREST NO.**
	*	
PROCEEDINGS UNDER THE LOUISIANA	*	**2418**
ENVIRONMENTAL QUALITY ACT,	*	
La. R.S. 30:2001, ET SEQ.	*	

<u>ADMINISTRATIVE ORDER ON CONSENT</u>

The following **ADMINISTRATIVE ORDER ON CONSENT** is issued this day to **PHILLIPS 66 COMPANY (RESPONDENT)** by the Louisiana Department of Environmental Quality (the Department), under the authority granted by the Louisiana Environmental Quality Act (the Act), La. R.S. 30:2001, *et seq*., and particularly by La. R.S. 30:2011(D)(6) and (D)(14). The Respondent consents to the requirements set forth below.

FINDINGS OF FACT

I.

The Respondent owns and/or operates the Alliance Refinery (the Facility), a petroleum refinery, located at 15551 Highway 23 in Belle Chasse, Plaquemines Parish, Louisiana. The facility currently operates pursuant to the following Title V permits: 2779-V3, 2513-V7, 2313-V4, 2180-V4, 2593-V3, 2113-V3, 2776-V2, 2775-V4, 2778-V1, 2512-V3, 2774-V3, 1810-V6, 2840-V2, 2511-V4, 3097-V0, and

1870-V1. The facility currently operates pursuant to the following Prevention of Significant Deterioration (PSD) permits: PSD-LA-696(M-1), PSD-LA-75(M-3), PSD-LA-760, and PSD-LA-624.

II.

Under Clean Air Act (CAA) section 110, each state must prepare and submit for the U.S. Environmental Protection Agency (EPA) approval, a State Implementation Plan (SIP) that provides for the implementation, maintenance and enforcement of the National Ambient Air Quality Standards (NAAQS) in each air quality control region within the state.

III.

In addition to the general SIP requirements, in CAA section 169A, 42 U.S.C. §7491, Congress created a program for protecting visibility in the nation's national parks and wilderness areas. This section establishes as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility" in those national parks and wilderness areas identified as "Class I" areas under CAA section 161, 42 U.S.C. §7472(a), 42 U.S.C. §7491.

IV.

Under CAA section 169A and its associated implementing regulations, states must assure the reasonable progress toward the goal of achieving natural visibility conditions in Class I areas by preparing, and submitting for EPA approval, a Regional Haze SIP. *See generally,* 42 U.S.C. §7491; 40 C.F.R. § 51.308.

V.

To comply with the requirements set forth in CAA section 169A and the implementing regulations, the Department submitted a proposed SIP on behalf of the State of Louisiana to EPA Region VI on June 13, 2008. The SIP included a Best Available Retrofit Technology (BART) analysis for the Facility at the time owned and operated by ConocoPhillips Company.[1] The BART analysis was based on a submittal made by ConocoPhillips Company to the Department in June 2007.

VI.

On February 28, 2012, the EPA promulgated a proposed partial limited approval and partial disapproval of Louisiana's SIP revision to address regional haze. *See,* 77 Fed. Reg. 11,839.

VII.

On July 3, 2012, the EPA promulgated a final rule, entitled "Approval and Promulgation of Implementation Plans; Louisiana; Regional Haze State Implementation Plan" pursuant to its statutory authority under the CAA, 42 U.S.C. §7401 *et seq. See,* 77 Fed. Reg. 39,425 (July 3, 2012). In the final rule, the EPA finalized under CAA section 110(k), 42 U.S.C. §7410(k), a partial limited approval and partial disapproval of the Regional Haze SIP submitted to EPA by the State of Louisiana, through the Department on June 13, 2008. In this final rule, the EPA requested, among other things, that the Department provide additional information to support the Department's conclusion concerning the BART determination for the Facility.

VIII.

The Respondent submitted a document dated January 27, 2014, to the Department entitled, "Clarification to Best Available Retrofit Technology (BART) Demonstration." This document provided supplemental information on the selected control technologies and the federally enforceable limits for each BART affected unit at the Facility.

ADMINISTRATIVE ORDER

Based on the foregoing, the Department **hereby orders**, and the Respondent hereby **agrees** that:

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[1]On April 26, 2012, ConocoPhillips Company transferred ownership and operation of the Facility to Phillips 66 Company. On May 1, 2012 ConocoPhillips Company "spun-off" Phillips 66. The spin-off included Phillips 66 Company. Pursuant to the Separation and Distribution Agreement between the companies, responsibility for compliance with the environmental permits now resides with Phillips 66 Company.

I.

The Respondent shall comply with the emissions limitations set forth below:

Source ID	Source Description	Sulfur Dioxide (SO_2)	
		Limit	Citation
308F-D-1	Low Pressure Flare	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2779-V3
308F-D-2	High Pressure Flare	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2779-V3
301-B-2A*	CO Boiler	SO_2 < =50 ppmv on 7 day rolling average at 0% O_2 SO_2 < =25 ppmdv on 365 day rolling average at 0% O_2	NSPS J; CD; Permit 1810-V5
301-B-2B*	CO Boiler	SO_2 < =50 ppmdv on 7 day rolling average at 0% O_2 SO_2 < =25 ppmdv on 365 day rolling average at 0% O_2	NSPS J; CD; Permit 1810-V5
191-H-1	Crude Charge Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2180-V4
292-H-1	Light Distillate Gulfiner Reactor Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2113-V3
292-H-2	Light Distillate Gulfiner Stabilizer Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2113-V3
1291-H-2/3	FCCU Light/Heavy Feed Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 1810-V5
191-H-2	Vacuum Charge Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2180-V4
891-H-1	Delayed Coker Charge Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2511-V4
491-H-1	Alkylation Isostripper Reboiler	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2512-V3
491-H-2	Alkylation Depropanizer Reboiler	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2512-V3
100-H-1	Coker Charge Storage Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2513-V7
293-H-1	Heavy Distillate Gulfiner Reactor Feed Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2593-V3
293-H-2	Heavy Distillate Gulfiner Stabilizer Reboiler	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2593-V3
1391-H-1	Catalytic Reformer Feed Heater No. 1	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
1391-H-2/3	Catalytic Reformer Feed Heater No. 2&3	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
1391-H-4	Depentanizer Reboiler	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
1391-H-5	Dry Reactivation Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
1791-H-1	Reformate Splitter Reboiler	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
1792-H-1	Hydroealkylation Charge Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
291-H-1	Naphiner Reactor Feed Heater	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
291-H-2	Naphiner Deisohexanizer Reboiler	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2775-V3
303-R-1	Cooling Water Tower No. 1	No SO_2 Emissions from this source	Permit 2778-V1
406-D-15	Product Dock No. 1 MVR Loading	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2313-V4
406-D-16	Product Dock No. 2 MVR Loading	Fuel Gas: Hydrogen sulfide <=0.1 gr/dscf	NSPS J; CD; Permit 2313-V4
891-CP.	Coke Transfer and Storage	No SO_2 Emissions from this source	Permit 2511-V4

*301-B-2A & 301-B-2B vents to Wet Gas Scrubber & is combined with the CO Boiler Stub Vents and FCC Regenerator Vent

Source ID	Source Description	Particulate Matter (PM)	
		Limit	Citation
308F-D-1	Low Pressure Flare	Comply with NSPS A	NSPS A; CD; Permit 2779-V3
308F-D-2	High Pressure Flare	Comply with NSPS A	NSPS A; CD; Permit 2779-V3
301-B-2A*	CO Boiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 1810-V5
301-B-2B*	CO Boiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 1810-V5
191-H-1	Crude Charge Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2180-V4
292-H-1	Light Distillate Gulfiner Reactor Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2113-V3
292-H-2	Light Distillate Gulfiner Stabilizer Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2113-V3
1291-H-2/3	FCCU Light/Heavy Feed Heater	0.00745 lb/mm BTU AP-42	Permit app 1810-V4
191-H-2	Vacuum Charge Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2180-V4
891-H-1	Delayed Coker Charge Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2511-V4
491-H-1	Alkylation Isostripper Reboiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2512-V3
491-H-2	Alkylation Depropanizer Reboiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2512-V3
100-H-1	Coker Charge Storage Heater	0.0075 lb/mmBTU AP-42	Permit app 2513-V7
293-H-1	Heavy Distillate Gulfiner Reactor Feed Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2593-V3
293-H-2	Heavy Distillate Gulfiner Stabilizer Reboiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III.1313.C Permit 2593-V3
1391-H-1	Catalytic Reformer Feed Heater No. 1	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
1391-H-2/3	Catalytic Reformer Feed Heater No. 2&3	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
1391-H-4	Depentanizer Reboiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
1391-H-5	Dry Reactivation Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
1791-H-1	Reformate Splitter Reboiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
1792-H-1	Hydroealkylation Charge Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
291-H-1	Naphiner Reactor Feed Heater	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
291-H-2	Naphiner Deisohexanizer Reboiler	Total suspended particulate matter <=0.6lb/MMBTU of heat input	LAC 33:III 1313C Permit 2775-V3
303-R-1	Cooling Water Tower No. 1	Minimal PM emissions 1.56 tpy	Permit 2778-V1
406-D-15	Product Dock No. 1 MVR Loading	0.00745 lb/mmBTU AP-42	Permit app 2313-V4
406-D-16	Product Dock No. 2 MVR Loading	0.00745 lb/mmBTU AP-42	Permit app 2313-V4
891-CP	Coke Transfer and Storage	Opacity<=20%	LAC 33:III.1311.C Permit 2511-V4

*301-B-2A & 301-B-2B vents to Wet Gas Scrubber & is combined with the CO Boiler Stub Vents and FCC Regenerator Vent

Source ID	Source Description	Nitrogen Oxide (NO_X)	
		Limit	Citation
308F-D-1	Low Pressure Flare	Comply with NSPS A	NSPS A; CD; Permit 2779-V3
308F-D-2	High Pressure Flare	Comply with NSPS A	NSPS A; CD; Permit 2779-V3
301-B-2A*	CO Boiler	NO_X <=40 ppmv on 7 day rolling average at 0% O_2 [Effective January 1, 2015] NO_X < =20 ppmdv on 365 day rolling average at 0% O_2 [Effective January 1, 2015]	NSPS J; CD; Permit 1810-V5
301-B-2B*	CO Boiler	NO_X <=40 ppmv on 7 day rolling average at 0% O_2 [Effective January 1, 2015] NO_X < =20 ppmdv on 365 day rolling average at 0% O_2 [Effective January 1, 2015]	NSPS J; CD; Permit 1810-V5
191-H-1	Crude Charge Heater	0.0185 lb/mmBTU on a 365 day rolling average	CD; Permit 2180-V4
292-H-1	Light Distillate Gulfiner Reactor Heater	0.098 lb/mmBTU AP-42	Permit app 2113-V3
292-H-2	Light Distillate Gulfiner Stabilizer Heater	0.098 lb/mmBTU AP-42	Permit app 2113-V3
1291-H-2/3	FCCU Light/Heavy Feed Heater	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 1810-V5
191-H-2	Vacuum Charge Heater	0.16 lb/mmBTU stack test	Permit app 2180-V4
891-H-1	Delayed Coker Charge Heater	0.169 lb/mmBTU stack test	Permit app 2511-V4
491-H-1	Alkylation Isostripper Reboiler	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 2512-V3
491-H-2	Alkylation Depropanizer Reboiler	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 2512-V3
100-H-1	Coker Charge Storage Heater	0.098 lb/mmBTU AP-42	Permit app 2513-V7
293-H-1	Heavy Distillate Gulfiner Reactor Feed Heater	0.098 lb/mmBTU AP-42	Permit app 2593-V3
293-H-2	Heavy Distillate Gulfiner Stabilizer Reboiler	0.098 lb/mmBTU AP-42	Permit app 2593-V3
1391-H-1	Catalytic Reformer Feed Heater No. 1	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 2775-V3
1391-H-2/3	Catalytic Reformer Feed Heater No. 2&3	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 2775-V3
1391-H-4	Depentanizer Reboiler	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 2775-V3
1391-H-5	Dry Reactivation Heater	0.098 lb/mmBTU AP-42	Permit app 2775-V3
1791-H-1	Reformate Splitter Reboiler	0.187 lb/mmBTU stack test	Permit app 2775-V3
1792-H-1	Hydroealkylation Charge Heater	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 2775-V3
291-H-1	Naphiner Reactor Feed Heater	0.098 lb/mmBTU AP-42	Permit app 2775-V3
291-H-2	Naphiner Deisohexanizer Reboiler	0.04 lb/mmBTU on a 365 day rolling average	CD; Permit 2775-V3
303-R-1	Cooling Water Tower No. 1	no NO_X emissions	Permit 2778-V1
406-D-15	Product Dock No. 1 MVR Loading	0.098 lb/mmBTU AP-42	Permit app 2313-V4
406-D-16	Product Dock No. 2 MVR Loading	0.098 lb/mmBTU AP-42	Permit app 2313-V4
891-CP	Coke Transfer and Storage	no NO_X emissions	Permit 2511-V4

*301-B-2A & 301-B-2B vent to a Wet Gas Scrubber & after January 1, 2015 a Selective Catalytic Reduction (SCR) NOx control device remaining combined with the CO Boiler Stub Vents & FCC Regenerator Vent

II.

The Respondent shall continue to comply with all reporting and record keeping requirements contained within all applicable permits.

III.

To the extent required by law, further proceedings relating to this **ADMINSTRATIVE ORDER** will be governed by the Administrative Procedure Act, La. R.S. 49.950, *et seq*.

IV.

Under CAA section 504(a), permits issued under this section shall include enforceable emission limitations and standards. In accordance with CAA section 504(a), the Department has issued to the Respondent the following Title V Permits, which contain the federally enforceable limitations listed herein: 2779-V3, 2513-V7, 2313-V4, 2180-V4, 2593-V3, 2113-V3, 2776-V2, 2775-V4, 2778-V1, 2512-V3, 2774-V3, 1810-V6, 2840-V2, 2511-V4, 3097-V0, and 1870-V1.

V.

This **ADMINISTRATIVE ORDER ON CONSENT** may be executed in counterparts, each of which may be executed by one (1) or more of the signatory parties hereto. Signature pages may be detached from the counterparts and attached to one or more copies of this Agreement to form multiple legally effective documents. Facsimile signatures shall be sufficient in lieu of original signatures.

VI.

For each action or event described herein, the Department reserves the right to seek compliance with its rules and regulations in any manner allowed by law, and nothing herein shall be construed to preclude the right to seek such compliance.

VII.

This **ADMINISTRATIVE ORDER ON CONSENT** may be amended by mutual consent of the Department and Respondent. Such amendments shall be in writing, shall follow proper SIP procedures and be submitted to EPA as a SIP revision, and shall be final and effective upon signature by an authorized representative of the Department and signature by the authorized representative of the Respondent.

VIII.

This **ADMINISTRATIVE ORDER ON CONSENT** shall be final and effective upon signature by an authorized representative of the Department and signature by the authorized representative of the Respondent.

Baton Rouge, Louisiana, this _____ day of ______________________________, 2014.

____
Cheryl Sonnier Nolan
Assistant Secretary
Office of Environmental Compliance

PHILLIPS 66 COMPANY

By:________________________________ Date:___________________

Name:______________________________

Title:______________________________

Laurence Poche'
Environmental Superintendent
Health, Safety & Environmental Department

PHILLIPS 66
Alliance Refinery
15551 Highway 23 S
P.O. Box 176
Belle Chasse, LA 70037
Phone 504-656-3212

DEQ - OES
2014 JAN 31 AM 8:18

PHILLIPS 66

CERTIFIED MAIL, RETURN RECEIPT REQUESTED
7012 3460 0002 4202 8650

Ms. Vivian Aucoin
Louisiana Department of Environmental Quality
Air Permits Division
P.O. Box 4313
Baton Rouge, LA 70821-4313

January 27, 2014

RE: Clarification to Best Available Retrofit Technology (BART) Demonstration
Phillips 66 Company – Alliance Refinery
Belle Chasse, Louisiana
Agency Interest No. 2418

Dear Ms. Aucoin:

This letter is submitted by the Phillips 66 Company Alliance Refinery and concerns the Regional Haze State Implementation Plan (RH SIP) that is being prepared by the Louisiana Department of Environmental Quality (LDEQ) for the state of Louisiana.

As you are aware, on July 3, 2012, the U.S. Environmental Protection Agency (EPA), issued a final rule entitled "Approval and Promulgation of Implementation Plans; Louisiana; Regional Haze State Implementation Plan" pursuant to its statutory authority in Section 169A of the Clean Air Act. (77 Fed. Reg. 39,425). In this final rule, the EPA requested, among other things, that the LDEQ provide additional information to support the Department's conclusion concerning the BART determination for the Alliance Refinery. *See,* 77 Fed. Reg. at 39,431-32.

The attached document provides additional information on the BART demonstration for the Alliance Refinery. Per our earlier discussions, it is our understanding that Phillips 66 and the LDEQ will enter an Administrative Order on Consent (AOC) that will specify the federally-enforceable limits for each BART-affected unit at the refinery.

We appreciate the assistance by the LDEQ and the EPA on this SIP process. If you have further questions about this matter, please do not hesitate to contact me at (504)656-3212.

Sincerely yours,

Laurence R. Poché

Laurence R. Poché

Attachment

cc: Ellen Belkin, U.S. EPA Region 6

A10-14
HSE460 E+10Y/LRP

Phillips 66 Company

Clarification to Best Available Retrofit Technology (BART) Demonstration

Alliance Refinery
Belle Chasse, Louisiana

January 2014

TABLE OF CONTENTS

LIST OF TABLES

SECTION 1
BACKGROUND AND PURPOSE

This document is prepared to clarify certain information provided by ConocoPhillips Company in June 2007 as a part of the Best Available Retrofit Technology (BART) demonstration for the Alliance Refinery. Phillips 66 Company now owns and operates the Alliance Refinery. In a final rule published in the Federal Register on July 3, 2012 (*See,* 77 Fed. Reg. 39425), the U.S. Environmental Protection Agency (EPA) issued a partial approval and partial disapproval of the Regional Haze (RH) State Implementation Plan (SIP) for Louisiana.

With respect to the RH SIP elements that concern the Phillips 66 Alliance Refinery (Alliance), the EPA requested additional analysis for certain components of the Alliance BART demonstration submitted in June of 2007. While Alliance agrees with the comments submitted by the LDEQ in response to the proposal published by the EPA on February 28, 2012 (77 Fed. Reg. 11839), this document is nevertheless submitted to respond to EPA's final rule and specifically to Comments 9 and 10 set forth therein. Specifically, this document provides additional information on the following elements of the BART demonstration:

- Additional information on the baseline emissions used in the Alliance BART demonstration submitted in June 2007;
- Updates to emission control technologies applied to or planned for certain emissions units (which were in the preliminary stages of design at the time of Alliance's June 2007 BART submittal).
- Where applicable, verification that the control technologies and emission limits for SO_2, NO_x, and PM selected for the emissions units are among the most stringent;
- A formal analysis of controls selected for the emission units using the factors specified in 40 CFR 51.308(e)(1)(ii)(A); and
- Confirmation of the enforceability of the emission limits for the BART-affected units operated at the Alliance Refinery.

In the proposed and final rules, EPA referenced five BART-affected units at the Alliance Refinery. However, two of the subject emissions units (carbon monoxide (CO) boilers) were combined into a single stream in 2009 and are now routed through one Wet Gas Scrubber (WGS) control device. Hence, discussion of two subject-to-BART units, the CO boilers, will be addressed together within this document as follows:

- EQT 192 – EIQ 301-V-20: FCCU Regenerator Vent Wet Gas Scrubber (formerly EQT 69 and EQT 70 – EIQ 301-B-2A and 301-B-2B: CO Boilers);
- EQT 147 – EIQ 191-H-1: Crude Charge Heater;
- EQT 151 – EIQ 308F-D-1: Low Pressure Flare; and
- EQT 152 – EIQ 308F-D-2: High Pressure Flare.

SECTION 2
SUMMARY OF THE ORIGINAL ALLIANCE BART DEMONSTRATION DATA SUBMITTED IN JUNE 2007

Table 1 shows certain key data and modeling inputs and outputs from the original Alliance BART demonstration. As discussed in Section 1 above, the two CO Boiler emissions units listed in Table 1 will be discussed together in this document. These units are represented in the third row of Table 1 below (the Wet Gas Scrubber – WGS).

Table 1
Key Data and Modeling Inputs and Outputs from the Original Alliance BART Demonstration Submitted in June 2007

Emissions Unit	BART Pollutant	BART CALPUFF Baseline Modeling Input (lb/hr)	CALPUFF Baseline Modeling Visibility Impact (98th Percentile DV Value)	BART CALPUFF Post-Control Modeling Input (lb/hr)	CALPUFF Post-Control Modeling Visibility Impact (98th Percentile DV Value)
FCCU Regenerator Vent - EQT 069 (Was CO Boilers: 301-B-2A)	SO_2	550.24	0.53	275.12	0.34
	PM	48.33		48.33	
	NO_x	151.84		151.84	
FCCU Regenerator Vent - EQT 070 (Was CO Boilers: 301-B-2B)	SO_2	550.24	0.53	275.12	0.34
	PM	48.33		48.33	
	NO_x	151.57		151.57	
FCCU Regenerator Vent - EQT 192 (Now Wet Gas Scrubber: 301-V-20)	SO_2	1,100.47	0.53 & 0.53	550.24	0.34 & 0.34
	PM	96.67		96.67	
	NO_x	303.41		303.41	
Crude Charge Heater - EQT 147 (191-H-1)	SO_2	157.08	0.26	157.08	Not Remodeled
	PM	9.17		9.17	
	NO_x	324.26		324.26	
Low Pressure Flare - EQT 151 (308F-D-1)	SO_2	1,873.93	1.03	44.00	0.032
	PM	0.04		0.04	
	NO_x	26.64		26.64	
High Pressure Flare - EQT 152 (308F-D-2)	SO_2	500.63	0.36	43.92	0.037
	PM	0.04		0.04	
	NO_x	11.02		11.02	

SECTION 3
COMMENTS BY ALLIANCE ON BART REQUIREMENTS AND POLICIES

This section reviews the BART regulatory requirements and policies, and the overall basis for the BART determinations made for the Alliance Refinery. The following sections review the specific determinations for each BART-affected unit.

3.1 Determination of Control Technologies – Addressing EPA's Request for an Analysis of Controls Using the Factors Specified in 40 CFR 51.308(e)(1)(ii)(A)

The factors as required by 40 CFR 51.308(e)(1)(ii)(A) include:

- The control technology available;
- The costs of compliance;
- The energy and non-air quality environmental impacts of compliance,
- Any pollution control equipment in use at the source,
- The remaining useful life of the source, and
- The degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

As the LDEQ stated in its correspondence to EPA, dated March 29, 2012, when facilities use or plan to use the most stringent control technology available, then no further analysis of the BART factors specified in 40 CFR 51.308(e)(1)(ii)(A) is required. This BART procedural exemption is found in 40 CFR 51 Appendix Y(IV)(D)(1)(9):

> "9. If you find that a BART source has controls already in place which are the most stringent controls available (note that this means that all possible improvements to any control devices have been made), then it is not necessary to comprehensively complete each following step of the BART analysis in this section. As long these most stringent controls available are made federally enforceable for the purpose of implementing BART for that source, you may skip the remaining analyses in this section, including the visibility analysis in step 5. Likewise, if a source commits to a BART determination that consists of the most stringent controls available, then there is no need to complete the remaining analyses in this section."

Alliance relied on this BART procedural exemption documented above to streamline the original BART demonstration. Nevertheless, Alliance is providing further information to definitively demonstrate that the emission controls required by the Alliance Refinery Consent Decree (Civil Action No. H-05-0258) do, in fact, represent controls that are among the most stringent available controls. Alliance is also updating emission control efficiencies based on the latest available data.

3.2 BART Emission Controls Enforceability- Addressing EPA's Concerns on Federally Enforceability

Alliance acknowledges the regional haze requirement that having Consent Decree emissions limits requirements incorporated into a federally-enforceable Administrative Order on Consent (AOC) makes the specified BART controls federally-enforceable for BART.

SECTION 4
BART EMISSIONS UNIT: FCCU REGENERATOR VENT

As previously noted, at the time Alliance prepared its original BART demonstration submittal, emissions from the FCCU Regenerator Vent were split and routed through two CO Boilers (CO Boiler 301-B-2A and CO Boiler 301-B-2B). In 2009, these two CO boiler vents were combined and routed through a new Wet Gas Scrubber (WGS) emissions control system (EQT 192 – EIQ 301-V-20). Also, Alliance recently received construction permit authorization for a new Selective Catalytic Reduction (SCR) unit for NO_x control of the FCCU Regenerator vent. The SCR unit will be placed upstream of the WGS. These current and planned emission control systems on the FCCU, which Alliance has implemented as a result of the Consent Decree (Civil Action No. H-05-0258), represent BART and control or will control emissions of the BART pollutants to the following levels:

- **SO_2**: ≤ 25 ppm_{vd} SO_2 on a 365-day rolling average basis @ 0% O_2; also, ≤ 50 ppm_{vd} SO_2 on a 7-day rolling average basis @ 0% O_2;
- **PM**: ≤ 0.5 lb PM/1000 lb of coke burn on a 3-hr average basis; and
- **NO_x**: ≤ 20 ppm_{vd} NO_x on a 365-day rolling average basis @ 0% O_2; also, ≤ 40 ppm_{vd} NO_x on a 7-day rolling average basis @ 0% O_2.

4.1 FCCU Baseline Emissions

In the Alliance data provided to LDEQ in June, 2007, as shown in Table 1, Alliance chose fairly high emission rates for baseline inputs into the CALPUFF model. These inputs were generally based on a scale-up (safety factor) applied to the permitted average hourly emission rates for the BART pollutants. In accordance with EPA and LDEQ guidance, these baseline model emission rate inputs for the FCCU Regenerator Vent reflected Alliance's best estimate of the maximum 24-hr actual emission rate during normal operating conditions in the time period from 2001 to 2003. Note that the post-BART-control modeling exercise only reduced SO_2 emissions by 50%. No credit for PM and NO_x emission reductions were included in the post-BART-control modeling. This approach to post-BART-control modeling was taken because SO_2 was the major contributor to visibility impairment.

Currently, the level of BART control actually achieved for the FCCU Regenerator Vent is substantially higher than what Alliance initially used for post-BART-control modeling. For the purpose of this demonstration of actual expected BART annual emission reductions, 2003 is used as the BART baseline year.

- **SO_2**: In 2003, SO_2 emissions from the FCCU Regenerator Vent were 2,678.6 tons/yr. In 2011, SO_2 emissions from the FCCU Regenerator Vent were 103.0 tons/yr. This represents an actual pre-BART-to-post-BART SO_2 annual emission reduction of 2,575.6 tons/yr. It also reflects a greater than 96% reduction in SO_2 emissions. Please note that this analysis represents two example years of data, and these results may not be indicative of emission reductions based on comparing other years of data;

- **PM**: In 2003, PM emissions from the FCCU Regenerator Vent were 333.4 tons/yr. In 2011, PM emissions from the FCCU Regenerator Vent were 148.6 tons/yr. This represents an actual pre-BART-to-post-BART PM annual emission reduction of 184.8 tons/yr. It also reflects a greater than 55% reduction in PM emissions. Please note that this analysis represents two example years of data, and these results may not be indicative of emission reductions based on comparing other years of data; and
- **NO_x**: The FCCU will not be operated without an SCR system after December 31, 2014. *See,* Paragraph 27 of Consent Decree, Civil Action No. H-05-258. Information provided in the Authorization to Construct (ATC) submittal for the SCR indicates an expected actual NO_x emission control efficiency of 83.6% based on a post-control NO_x flue gas concentration of 40 ppm_{vd} @ 0% O_2. In 2003, NO_x emissions from the FCCU Regenerator Vent were 757.7 tons/yr. Applying the estimated post-BART NO_x control efficiency to the 2003 actual annual NO_x emission rate from the FCCU results in an actual annual NO_x emissions reduction of 633.4 tons/yr, and an estimated annual NO_x emission rate of 124.3 tons/yr

4.2 FCCU Determination of Control Technologies

Alliance reviewed EPA's RACT/BACT/LAER Clearinghouse (RBLC) and other sources with respect to the use of SCR and WGS controls for NO_x, SO_2 and PM. Alliance agrees with the LDEQ that the emission controls documented above are among the most stringent or "top" level of available controls for FCCU Regeneration Vent. As a result, in accordance with 40 CFR 51, Appendix Y(IV)(D)(1)(9), no additional justification for these BART controls is required and no further BART analysis is required.

4.3 FCCU BART Emission Controls Enforceability

Finally, with respect to the requirement that the BART emission controls for FCCU Regenerator Vent at Alliance be federally enforceable, federal enforceability will be reflected in the AOC.

For the FCCU, the following specific requirements are BART:

- **SO_2**: a required SO_2 control level of ≤ 50 ppm_{vd} on a 7-day rolling average basis @ 0% O_2:
- **PM**: a required PM control level of ≤ 0.5 lb PM/1000 lb of coke burn on a 3-hr average basis: and
- **NO_x**: a required NO_x control level of ≤ 40 ppmvd NO_x on a 7-day rolling average basis @ 0% O_2.

SECTION 5
BART EMISSION$_S$ UNIT: CRUDE CHARGE HEATER

The Crude Charge Heater (EQT 147 – EIQ 191-H-1) fires refinery fuel gas and has a maximum firing rate of 1080 MMBtu/hr.

The current emission control systems associated with the Crude Charge Heater, which Alliance has implemented as a result of their Consent Decree, represent BART, and controls emissions of the BART pollutants to the following levels:

- **SO_2**: $\leq$0.1 grains H_2S/dscf (or 162 ppm_{vd} H_2S) in refinery fuel on a 3-hr rolling average basis. This control level is achieved by amine scrubbing of the Alliance refinery fuel gas on a facility-wide basis for all process heaters;
- **PM**: 0.00745 lb PM/MMBtu of refinery fuel gas fired on an annual average basis using good combustion techniques based on AP-42 Table 1.4.2 (1998). Consistent with all other refinery fuel gas heaters in the U.S., there are no add-on controls for PM emissions; and
- **NO_x**: 0.0185 lb NOx/MMBtu of refinery fuel gas fired on a 365 day rolling average basis. This low NO_x emission limit is achieved by using a SCR control system.

5.1 Crude Charge Heater Baseline Emissions

In the Alliance data provided to LDEQ in June, 2007, Alliance chose emission rates for the baseline that were based on a scale-up (safety factor) applied to the permitted maximum hourly emission rates for the BART pollutants. In accordance with EPA and LDEQ guidance, these baseline model emission rate inputs for the Crude Charge Heater reflected Alliance's best estimate of the maximum 24-hr actual emission rate during normal operating conditions in the time period from 2001 to 2003.

5.2 Crude Charge Heater Determination of Control Technologies

In response to EPA's request for Alliance to address each of the factors specified in 40 CFR 51.308(e)(1)(ii)(A) for this emission unit, Alliance reviewed EPA's RBLC and other literature sources with respect to the use of SCR and amine scrubbing controls for NO_x and SO_2. With respect to PM emissions, no refinery heater in the U.S. was found to have add-on PM controls. The most stringent PM control specified is good combustion techniques, which the Crude Charge Heater employs and is BART. With respect to SO_2, the refinery is required by the consent decree to comply with fuel gas H_2S limits mandated by New Source Performance Standards Subpart J for Petroleum Refineries through the use of a fuel gas amine scrubbing system that applies to all heaters in the refinery, and represents among the most stringent available SO_2 control system. The specified NO_x control level is consistent with controls which are among the most stringent found in RBLC, Selective Catalytic Reduction.

Based on these findings, in accordance with 40 CFR 51, Appendix Y(IV)(D)(1)(9), Alliance contends that no additional justification for this emission unit's BART controls is required and no further BART analysis is required.

5.3 Crude Charge Heater BART Emission Controls Enforceability

As noted, federal enforceability will be reflected in the AOC. For the Crude Unit Heater the following specific requirements are BART:

- **SO_2**: a required SO_2 control level of $\leq$ 0.1 grains H_2S/dscf (or 162 ppm_{vd} H_2S) in refinery fuel on a 3-hr rolling average basis, and
- **NO_x:** a required NO_x control level of 0.0185 lb NO_x/MMBtu of refinery fuel gas fired on a 365 day rolling average basis:

SECTION 6
BART EMISSIONS UNIT: LOW PRESSURE AND HIGH PRESSURE FLARES

Because of their similarities, the Low Pressure Flare (EQT 151 – EIQ 308F-D-1) and the High Pressure Flare (EQT 152 – EIQ 308F-D-2) are discussed in parallel and will be referred to as "the flares" going forward.

6.1 Flare Baseline Emissions

The current required emission control systems associated with the flares represent BART and are as follows:

> Fuel gas: Hydrogen sulfide ≤ 0.1 gr/dscf (230 mg/dscm). Alliance Refinery shall comply with 40 CFR 60.104(a) by operating and maintaining, in accordance with good air pollution control practices, a Flare Gas Recovery System (FGRS) to control continuous or routine combustion in the flaring device

As shown in Table 1, Alliance chose fairly high emission rates for baseline inputs into the CALPUFF model. These inputs were generally based on a scale-up (safety factor) applied to the permitted maximum hourly emission rates for the BART pollutants. In accordance with EPA and LDEQ guidance, these baseline model emission rate inputs for the flares reflected Alliance's best estimate of the maximum 24-hr actual emission rate during normal operating conditions in the time period from 2001 to 2003. Note that the post-BART-control modeling exercise only showed reductions in SO_2 emissions. No credit for PM and NO_x emission reductions were included in the post-BART-control modeling. This approach to post-BART-control modeling was taken because SO_2 was the major contributor to visibility impairment.

With respect to actual emissions during the pre-BART years of 2001 – 2003, which were prior to Alliance's implementation of CD-required monitoring systems, the flares were not equipped with instrumentation that would allow accurate estimates of actual emissions from the flares. The FGRS did not commence operation until December 2011. Because Alliance was not sure about how the FGRS would perform, Alliance assumed a conservatively low FGRS capture and control efficiency of 50% in the permitting action which incorporated the FGRS. The best and most recent representation of post-BART-control actual emissions from the flares is estimated by applying a conservatively-low FGRS control efficiency of 50% to 2011 actual flare emissions as follows:

- **SO_2**: SO_2 emissions from the combined flares in 2011 were 696.7 tons/yr. Applying a 50% FGRS control efficiency indicates a future-year expected actual SO_2 emission rate of 349.3 tons/yr. Future actual SO_2 emission from the flares may exceed this estimated value depending on future-year specific operating conditions;
- **PM**: PM emissions from the combined flares in 2011 were 0.012 tons/yr. Applying a 50% FGRS control efficiency indicates a future-year expected actual PM emission rate of 0.006

tons/yr. Future actual PM emission from the flares may exceed this estimated value depending on future-year specific operating conditions; and

- **NO_x**: NO_x emissions from the combined flares in 2011 were 60.6 tons/yr. Applying a 50% FGRS control efficiency indicates a future-year expected actual NO_x emission rate of 30.3 tons/yr. Future actual NO_x emission from the flares may exceed this estimated value depending on future-year specific operating conditions.

6.2 Flare Determination of Control Technology

Presently there is not a technically feasible add-on air emission control systems for candle-type flares, such as those present at Alliance. Current control technology incorporates the following to reduce flare emissions, and represents BART: (1) provide a Flare Gas Recovery System (FGRS) to reduce the amount of flare gas combusted in the flare, and (2) provide amine scrubbing of the recovered flare gas to reduce the concentration of H_2S prior to the gas stream being routed to the refinery fuel gas system. Both Alliance flares are equipped with these systems. Therefore, Alliance employs controls which are among the most stringent available BART emission control systems on both of its flares.

Alliance maintains the position that the emission controls documented above are among the most stringent or "top" level of available controls for Alliance flares. As a result, in accordance with 40 CFR 51, Appendix Y(IV)(D)(1)(9), no additional justification for these BART controls is required and no further BART analysis is required.

6.3 Flares BART Emission Controls Enforceability

As noted, federal enforceability will be reflected in the AOC.

In conclusion, Table 7-1 contains the selected control options based on the 5-Step BART Analysis as requested by EPA for the Alliance emission units using the factors specified in 40 CFR 51.308(e)(1)(ii)(A).

Table 7-1
Conclusions from BART 5-Step Analysis

Source ID	Pollutant	Selected BART Control	Emission Limitations reflected in AOC
Crude Charge Heater (191-H-1)	NO_x	-SCR - Good combustion practices	0.0185 lb/MMBTU on a 365-day rolling average basis [See CD (Civil Action H-05-0258) and AOC]
	SO_2	Amine scrubbing of refinery fuel gas	≤0.1 grains H_2S/dscf (or 162 ppm_{vd} H_2S) in refinery fuel on a 3-hr rolling average basis
	PM	Good combustion practices	0.00745 lb PM/MMBtu of refinery fuel gas fired on an annual average basis using good combustion techniques based on AP-42 Table 1.4.2 (1998)
Wet Gas Scrubber (301-V-20) [Formerly CO Boilers (301-B-2A and 301-B-2B)]	SO_2	WGS	≤ 25 ppm_{vd} SO_2 on a 365-day rolling average basis @ 0% O_2 and; ≤ 50 ppm_{vd} SO_2 on a 7-day rolling average basis @ 0% O_2 [See CD (Civil Action H-05-0258) and AOC]
	PM	WGS	≤ 0.5 lb PM/1000 lb of coke burn on a 3-hr average basis [See CD (Civil Action H-05-0258) and AOC]
	NO_x	SCR	≤ 20 ppm_{vd} NO_x on a 365-day rolling average basis @ 0% O_2 and; ≤ 40 ppm_{vd} NO_x on a 7-day rolling average basis @ 0% O_2 [See Consent Decree (Civil Action H-05-0258) and AOC]
Low Pressure Flare (308F-D-1)	NO_x SO_2	Flare Gas Recovery System	Operate and maintain Flare Gas Recovery System to control continuous or routine combustion in the Flaring Device [See Consent Decree (Civil Action H-05-0258), ¶139(a) and AOC]
High Pressure Flare (308F-D-2)	NO_x SO_2	Flare Gas Recovery System	Operate and maintain Flare Gas Recovery System to control continuous or routine combustion in the Flaring Device Hydrogen sulfide ≤ 0.1 gr/dscf (230 mg/dscm) [See Consent Decree (Civil Action H-05-0258), ¶139(a) & 139(b) and AOC]

Phillips 66 Company

Clarification to Best Available Retrofit Technology (BART) Demonstration

Alliance Refinery
Belle Chasse, Louisiana

April 2013

SECTION 1
BACKGROUND AND PURPOSE

This document is prepared to clarify certain information provided by ConocoPhillips Company in June 2007 as a part of the Best Available Retrofit Technology (BART) demonstration for the Alliance Refinery. Phillips 66 Company now owns and operates the Alliance Refinery. In a final rule published in the Federal Register on July 3, 2012 (*See,* 77 Fed. Reg. 39425), the U.S. Environmental Protection Agency (EPA) issued a partial approval and partial disapproval of the Regional Haze (RH) State Implementation Plan (SIP) for Louisiana.

With respect to the RH SIP elements that concern the Phillips 66 Alliance Refinery (Alliance), the EPA requested additional justification for certain components of the Alliance BART demonstration submitted in June of 2007. While Alliance agrees with the comments submitted by the LDEQ in response to the proposal published by the EPA on February 28, 2012 (77 Fed. Reg. 11839), this document is nevertheless submitted to respond to EPA's final rule and specifically to Comments 9 and 10 set forth therein. Specifically, this document provides additional information on the following elements of the BART demonstration:

- Additional information on the baseline emissions used in the Alliance BART demonstration submitted in June 2007;
- Updates to emission control technologies applied to or planned for certain emissions units (which were in the preliminary stages of design at the time of Alliance's June 2007 BART submittal).
- Verification that the control technologies and emission limits for SO_2, NO_x, and PM selected for the emissions units are among the most stringent;
- A formal analysis of controls selected for the emission units using the factors specified in 40 CFR 51.308(e)(1)(ii)(A); and
- Confirmation of the enforceability of the emission limits for the BART-affected units operated at the Alliance Refinery.

In the proposed and final rules, EPA referenced five BART-affected units at the Alliance Refinery. However, two of the subject emissions units (carbon monoxide (CO) boilers) were combined into a single stream in 2009 and are now routed through one Wet Gas Scrubber (WGS) control device. Hence, there are now four BART emissions units at the Alliance Refinery:

- EQT 192 – EIQ 301-V-20: FCCU Regenerator Vent Wet Gas Scrubber (formerly EQT 69 and EQT 70 – EIQ 301-B-2A and 301-B-2B: CO Boilers);
- EQT 147 – EIQ 191-H-1: Crude Charge Heater;
- EQT 151 – EIQ 308F-D-1: Low Pressure Flare; and
- EQT 152 – EIQ 308F-D-2: High Pressure Flare.

SECTION 3
COMMENTS BY ALLIANCE ON BART REQUIREMENTS AND POLICIES

This section reviews the BART regulatory requirements and policies, and the overall basis for the BART determinations made for the Alliance Refinery. The following sections review the specific determinations for each BART-affected unit.

3.1 Baseline Emissions - Addressing EPA's Request for Basis for Selecting "Baseline Emissions"

The term "baseline emissions" used in the context of a BART analysis is not specifically defined in either 40 CFR 51.308 or 40 CFR 51 Appendix Y. Alliance interprets EPA's referral in the FRN to baseline emissions to be the emissions that were used in the facility's baseline CALPUFF modeling demonstration. The regulations and guidance give conflicting advice on the definition of "baseline emissions" for BART purposes. Consider the following references:

In 40 CFR 51.308, the term "baseline emissions" is not used in the regulation except in the following quotation at 51.308(d)(3)(iii):

> "The State must identify the baseline emissions inventory on which its strategies are based. The baseline emissions inventory year is presumed to be the most recent year of the consolidated periodic emissions inventory."

Alliance interprets this regulatory text to indicate that an inventory based on actual annual emissions from a source (facility) is used as the baseline. This approach of using an actual annual emissions inventory seems to be supported by the following text from 40 CFR 51 Appendix Y, Section IV.D.4.d:

> Appendix Y Section IV.D.4.d:
> "How do I calculate baseline emissions?
>
> 1. The baseline emissions rate should represent a realistic depiction of anticipated annual emissions for the source. In general, for the existing sources subject to BART, you will estimate the anticipated annual emissions based upon actual emissions from a baseline period.
> 2. When you project that future operating parameters (e.g., limited hours of operation or capacity utilization, type of fuel, raw materials or product mix or type) will differ from past practice, and if this projection has a deciding effect in the BART determination, then you must make these parameters or assumptions into enforceable limitations. In the absence of enforceable limitations, you calculate baseline emissions based upon continuation of past practice.

3.2 Determination of Control Technologies – Addressing EPA's Request for an Analysis of Controls Using the Factors Specified in 40 CFR 51.308(e)(1)(ii)(A)

The factors as required by 40 CFR 51.308(e)(1)(ii)(A) include:

- The control technology available;
- The costs of compliance;
- The energy and non-air quality environmental impacts of compliance,
- Any pollution control equipment in use at the source,
- The remaining useful life of the source, and
- The degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

As the LDEQ stated in its correspondence to EPA, dated March 29, 2012, when facilities use or plan to use the most stringent control technology available, then no further analysis of the BART factors specified in 40 CFR 51.308(e)(1)(ii)(A) is required. This BART procedural exemption is found in 40 CFR 51 Appendix Y(IV)(D)(1)(9):

> "9. If you find that a BART source has controls already in place which are the most stringent controls available (note that this means that all possible improvements to any control devices have been made), then it is not necessary to comprehensively complete each following step of the BART analysis in this section. As long these most stringent controls available are made federally enforceable for the purpose of implementing BART for that source, you may skip the remaining analyses in this section, including the visibility analysis in step 5. Likewise, if a source commits to a BART determination that consists of the most stringent controls available, then there is no need to complete the remaining analyses in this section."

Alliance relied on this BART procedural exemption documented above to streamline the original BART demonstration. Nevertheless, Alliance is providing further information to definitively demonstrate that the emission controls required by the Alliance Refinery Consent Decree (Civil Action No. H-05-0258) do, in fact, represent the most stringent available controls. Alliance is also updating emission control efficiencies based on the latest available data.

3.3 BART Emission Controls Enforceability- Addressing EPA's Concerns on Federally Enforceability

Alliance agrees with the LDEQ's position that having Consent Decree requirements incorporated into a federally-enforceable Title V permit also makes the specified BART controls federally-enforceable. Federal enforceability can be reflected in the Emissions Rates Tables and/or the Specific Requirements section of the Title V permit for these units as mandated by the fully-delegated permitting authority (LDEQ).

further discussion of what EPA means by the term "baseline emissions", which, as previously noted, is an undefined term in the BART regulations and guidance. Alliance believes that what EPA may be seeking in their comments in the July 9, 2012, *Federal Register* notice is an estimate of actual annual emission reductions achieved by employing BART controls. Estimates of these BART control emission reductions and control efficiencies for the FCCU Regenerator Vent are provided below. For the purpose of this demonstration of actual expected BART annual emission reductions, 2003 is used as the BART baseline year.

- **SO_2**: In 2003, SO_2 emissions from the FCCU Regenerator Vent were 2,678.6 tons/yr. In 2011, SO_2 emissions from the FCCU Regenerator Vent were 103.0 tons/yr. This represents an actual pre-BART-to-post-BART SO_2 annual emission reduction of 2,575.6 tons/yr. It also reflects a greater than 96% reduction in SO_2 emissions. Please note that this analysis represents two example years of data, and these results may not be indicative of emission reductions based on comparing other years of data;
- **PM**: In 2003, PM emissions from the FCCU Regenerator Vent were 333.4 tons/yr. In 2011, PM emissions from the FCCU Regenerator Vent were 148.6 tons/yr. This represents an actual pre-BART-to-post-BART PM annual emission reduction of 184.8 tons/yr. It also reflects a greater than 55% reduction in PM emissions. Please note that this analysis represents two example years of data, and these results may not be indicative of emission reductions based on comparing other years of data; and
- **NO_x**: The SCR system which controls NO_x emissions from the FCCU has not yet been installed. However, information provided in the ATC submittal for the SCR indicates an expected actual NO_x emission control efficiency of 83.6% based on a post-control NO_x flue gas concentration of 40 ppm_{vd} @ 0% O_2. In 2003, NO_x emissions from the FCCU Regenerator Vent were 757.7 tons/yr. Applying the estimated post-BART NO_x control efficiency to the 2003 actual annual NO_x emission rate from the FCCU results in an actual annual NO_x emissions reduction of 633.4 tons/yr, and an estimated annual NO_x emission rate of 124.3 tons/yr.

4.2 FCCU Determination of Control Technologies

Alliance reviewed EPA's RACT/BACT/LAER Clearinghouse (RBLC) and other sources with respect to the use of SCR and WGS controls for NO_x, SO_2 and PM. Alliance agrees with the LDEQ that the emission controls documented above are equivalent to the most stringent or "top" level of available controls for FCCU Regeneration Vent. As a result, in accordance with 40 CFR 51, Appendix Y(IV)(D)(1)(9), no additional justification for these BART controls is required and no further BART analysis of any kind is required. It is, therefore, unnecessary for Alliance to address each of the factors specified in 40 CFR 51.308(e)(1)(ii)(A). However, in response to the July 9, 2012 final rule, Alliance has provided additional information concerning how the original BART demonstration for the FCCU was performed and an updated effectiveness of the Alliance BART controls based on the latest available information.

4.3 FCCU BART Emission Controls Enforceability

Finally, with respect to whether the BART emission controls for FCCU Regenerator Vent at Alliance are federally enforceable, Alliance agrees with the LDEQ that having Consent Decree

SECTION 5
BART EMISSIONS UNIT: CRUDE CHARGE HEATER

The Crude Charge Heater (EQT 147 – EIQ 191-H-1) fires refinery fuel gas and has a maximum firing rate of 1080 MMBtu/hr. The baseline CALPUFF modeling for the Crude Charge Heater resulted in a modeled visibility impairment of 0.26 DV, which is less than the guideline level of concern of 0.5 DV; therefore, no additional control technology or modeling evaluation for this emissions unit was required. Note that, Alliance's Consent Decree (Civil Action No. H-05-0258) required reductions in pollutant emissions from the Crude Charge Heater that will result in an even lower visibility impairment post control than the reported baseline visibility impairment of 0.26 DV.

The current emission control systems associated with the Crude Charge Heater, which Alliance has implemented as a result of their Consent Decree, control emissions of the BART pollutants to the following levels:

- **SO_2**: $\leq$ 0.1 grains H_2S/dscf (or 162 ppm_{vd} H_2S) in refinery fuel on a 3-hr rolling average basis, as documented in Specific Requirement 1in the current Crude Unit Title V Permit No. 2180-V3. This control level is achieved by amine scrubbing of the Alliance refinery fuel gas on a facility-wide basis for all process heaters;
- **PM**: 0.00745 lb PM/MMBtu of refinery fuel gas fired on an annual average basis using good combustion techniques based on AP-42 Table 1.4.2 (1998), as documented in the annual emission rate limit for the Crude Charge Heater in the current Crude Unit Title V Permit No. 2180-V3. Consistent with all other refinery fuel gas heaters in the U.S., there are no add-on controls for PM emissions; and
- **NO_x**: 0.0185 lb NOx/MMBtu of refinery fuel gas fired on a 365 day rolling average basis as documented in Specific Requirement 7 in the current Crude Unit Title V Permit No. 2180-V3. This low NO_x emission limit is achieved by using a SCR control system.

5.1 Crude Charge Heater Baseline Emissions

To be conservative Alliance chose emission rates for the baseline that were based on a scale-up (safety factor) applied to the permitted maximum hourly emission rates for the BART pollutants. In accordance with EPA and LDEQ guidance, these baseline model emission rate inputs for the Crude Charge Heater reflected Alliance's best estimate of the maximum 24-hr actual emission rate during normal operating conditions in the time period from 2001 to 2003.

SECTION 6
BART EMISSIONS UNIT: LOW PRESSURE AND HIGH PRESSURE FLARES

Because of their similarities, the Low Pressure Flare (EQT 151 – EIQ 308F-D-1) and the High Pressure Flare (EQT 152 – EIQ 308F-D-2) are discussed in parallel and will be referred to as flares going forward.

6.1 Flare Baseline Emissions

The current CD-required emission control systems associated with the flares are specified in Specific Requirements 1 and 56 in the current Flares Unit Title V Permit No. 2779-V3 as follows:

> "…Fuel gas: Hydrogen sulfide ≤ 0.1 gr/dscf (230 mg/dscm). Alliance Refinery shall comply with 40 CFR 60.104(a) by operating and maintaining, in accordance with good air pollution control practices, a Flare Gas Recovery System (FGRS) to control continuous or routine combustion in the flaring device…"

To be conservative, as shown in Table 1, Alliance chose fairly high emission rates for baseline inputs into the CALPUFF model. These inputs were generally based on a scale-up (safety factor) applied to the permitted maximum hourly emission rates for the BART pollutants. In accordance with EPA and LDEQ guidance, these baseline model emission rate inputs for the flares reflected Alliance's best estimate of the maximum 24-hr actual emission rate during normal operating conditions in the time period from 2001 to 2003. Note that the post-BART-control modeling exercise only showed reductions in SO_2 emissions. No credit for PM and NO_x emission reductions were included in the post-BART-control modeling. This conservative approach to post-BART-control modeling was taken because SO_2 was the major contributor to visibility impairment. Also, simply reducing the SO_2 emission input to the CALPUFF model provided generated visibility results well below the acceptable 0.5 DV guideline level. Again, please keep in mind that, in accordance with 40 CFR 51, Appendix Y(IV)(D)(1)(9), no visibility analysis is required for this case because the flares are employing the most stringent available BART controls.

With respect to actual emissions during the pre-BART years of 2001 – 2003, which were prior to Alliance's implementation of CD-required monitoring systems, the flares were not equipped with instrumentation that would allow accurate estimates of actual emissions from the flares. The FGRS did not commence operation until December 2010. Because Alliance was not sure about how the FGRS would perform, Alliance assumed a conservatively low FGRS capture and control efficiency of 50% in the permitting action which incorporated the FGRS. The best and most recent representation of post-BART-control actual emissions from the flares is estimated by applying a conservatively-low FGRS control efficiency of 50% to 2011 actual flare emissions as follows:

Phillips 66 Company

Supplemental Analysis for Best Available Retrofit Technology (BART) Demonstration

Alliance Refinery
Belle Chasse, Louisiana

April 2013

LIST OF TABLES

1.2 Purpose

In the final rule, the EPA referenced the BART evaluation requirements set forth in 40 CFR 51.308(e)(1)(ii)(A) which provides:

> The determination of BART must be based on an analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each BART-eligible source that is subject to BART within the State. In this analysis, the State must take into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

This BART Demonstration follows the guidelines and definitions set forth in 40 CFR 51, Appendix Y.IV.D 23, including the following five-step analysis:

Step 1: Commercially available control options are identified.

Step 2: Technically infeasible options are rejected.

Step 3: Remaining control options are ranked according to control effectiveness.

Step 4: The following items are evaluated: cost effectiveness, environmental effects, energy impacts, and site-specific factors. Generally, the cost effectiveness parameter is stated as either annualized cost (on a total or incremental basis) to control a single ton of pollutant.

Step 5: Selection of appropriate BART option as the most effective control technology that is not rejected based on adverse economic, environmental, and/or energy impacts. To satisfy the above steps, this document will analyze controls for the Alliance Refinery emission units of concern using the following guidelines:

- The control technology available;
- The costs of compliance;
- The energy and non-air quality environmental impacts of compliance,
- Any pollution control equipment in use at the source,
- The remaining useful life of the source, and
- The degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

Water/Steam Injection – *Technically Infeasible*
Water/steam injection involves the introduction of water/steam into the combustion zone of the burner. The water/steam acts as a thermal ballast which causes the peak flame temperature to be reduced, thereby limiting the thermal NO_x formation. Drawbacks of water/steam injection include increased equipment corrosion and reduced thermal and fuel efficiencies; therefore, water/steam injection was not included in cost effectiveness evaluation for the subject process heater.

Selective Non-Catalytic Reduction – *Technically Infeasible*
A potential post-combustion control includes selective non-catalytic reduction (SNCR). SNCR requires a flue gas exit temperature in the range of 1200 to 2000°F, with an optimum operating exit temperature between 1600 and 2000°F. Process heaters typically have exhaust temperatures ranging from 300 to 600°F. Therefore, additional fuel combustion or a similar energy supply would be needed to achieve exhaust temperatures compatible with SNCR operation. Due to this temperature restriction and the lack of information demonstrating that SNCR is an effective control technology for process heaters, SNCR was not included in cost effectiveness evaluation for the subject process heater.

Selective Catalytic Reduction – *Technically Feasible*
Selective catalytic reduction (SCR) is a proven NO_x post combustion control technology that usually offers the greatest potential for NO_x reductions. Vendors will typically guarantee 70% to 90% reduction of inlet NO_x levels, but this is a function of inlet NO_x loading, as shown below:

$$4\,NO + 4\,NH_3 + 3\,O_2 \rightarrow 4\,N_2 + 6\,H_2O$$
$$2\,NO_2 + 4\,NH_3 + O_2 \rightarrow 3\,N_2 + 6\,H_2O$$

Operating temperature is highly important in SCR technology. The reactor must be operated at a temperature between 600 and 800°F. If the operating temperature is below this range, the catalyst activity is reduced allowing unreacted NH_3 to be emitted. If the operating temperature is higher than this range, NH_3 may be oxidized forming additional NO_x and may cause the catalyst to become thermally stressed.

2.3 Step 3 – Ranking Remaining Control Options Based on Effectiveness

The NO_x control technology alternatives that are considered technically feasible for the process heaters in this project are ranked in the order of most stringent to least stringent to form a control technology hierarchy. See Table 2-1 below.

Table 2-1
NO_x Control Hierarchy

Type of NO_x Control	NO_x Emission Factor (lb/MMBtu)	Control Ranking
SCR	0.0185	1
Good Combustion Practices (base case)	Variable Emission Factors (EFs)	2

SECTION 3
BART FOR PARTICULATE MATTER (PM) AND SULFUR DIOXIDE (SO_2) FOR CRUDE CHARGE HEATER (191-H-1)

Based upon a review of EPA's RBLC and other literature sources, Alliance maintains that the emission controls documented for SO_2 and PM from the Crude Charge Heater are equivalent to the most stringent or "top" level of available controls. With respect to PM emissions, no refinery heater in the United States was found to have add-on PM controls. The most stringent PM control specified is good combustion techniques, which the Crude Charge Heater employs.

With respect to SO_2, the refinery is required by the consent decree to comply with fuel gas H_2S limits mandated by New Source Performance Standards Subpart J for Petroleum Refineries through the use of a fuel gas amine scrubbing system that applies to all heaters in the refinery, and represents the most stringent available SO_2 control system.

In conclusion, the current emission control systems for SO_2, which Alliance has implemented as a result of the consent decree, and PM associated with the Crude Charge Heater are the top level of control and a detailed BART analysis is not necessary. The Crude Charge Heater SO_2 and PM pollutants are controlled to the following levels:

- **SO_2**: $\leq$ 0.1 grains H_2S/dscf (or 162 ppm_{vd} H_2S) in refinery fuel on a 3-hr rolling average basis. This control level is achieved by amine scrubbing of the Alliance refinery fuel gas on a facility-wide basis for all process heaters.
- **PM**: 0.00745 lb PM/MMBtu of refinery fuel gas fired on an annual average basis using good combustion techniques based on AP-42 Table 1.4.2 (1998). Consistent with all other refinery fuel gas heaters operated in the U.S., there are no add-on controls for PM emissions.

Table 4-1
PM/SO_2 Control Hierarchy

Available Control Alternatives	Control Efficiency	Control Ranking
Wet gas scrubber	>95%	1
Electrostatic precipitator	70-90%	2

4.4 Step 4 – Evaluate Most Cost Effective Controls

To achieve the needed SO_2 and PM emissions reductions, Alliance employs a WGS, which as demonstrated in Table 4-1, is the most effective control alternative. Therefore, no further cost evaluation is necessary.

Moreover, Alliance's emission limits are consistent with other approved BART limits for the refining industry. Specifically, SO_2 and PM BART control levels for Alliance are compared to Best Available Control Technology (BACT) limits as follows:

SO_2:

- Alliance: $\leq$ 25 ppm_{vd} SO_2 on a 365-day rolling average basis @ 0% $O_2$and $\leq$ 50 ppm_{vd} SO_2 on a 7-day rolling average basis @ 0% O_2,
- Other approved BACT limits: 25 ppm_{vd} (0% O_2, 365-day rolling average) is the typical approved BACT emission limit.

PM

- Alliance: $\leq$ 0.5 lb PM/1000 lb of coke burn on a 3-hr average basis
- Other approved BACT limits: Achieve an emission limit of 0.5 to 1.0 lb/1000 lb coke burn for particulate matter which is consistent with New Source Performance Standards (NSPS) and has been recognized as an approved BACT emission limit.

4.5 Step 5 - Selection of BART for SO_2/PM_{10} Control

The current SO_2 and PM control alternative, the WGS, is deemed the most effective control option. Further, the above emission limitations are stipulated by the Alliance Refinery consent decree; therefore, Alliance asserts that WGS qualifies as BART control.

Selective Non-Catalytic Reduction – *Technically feasible*
A potential post-combustion control includes selective non-catalytic reduction (SNCR). SNCR requires a flue gas exit temperature in the range of 1200 to 2000°F, with an optimum operating exit temperature between 1600 and 2000°F. Engineering control practices generally dictate that this technology is not technically feasible as a standalone control due to the temperature requirements; however, typically, this technology is combined with other control options to achieve desirable NO_x outlet levels.

5.3 Step 3 – Ranking Remaining Control Options Based on Effectiveness

In Table 5-1 below, the technology alternatives that are considered technically feasible and justifications for BART selection are summarized.

Table 5-1
Summary of FCCU NO_x Feasible Control Options

Available Control Alternatives	NO_x ppm_{vd} @ 0% O_2	Control Ranking	BART Option?	Justification of BART Selection
SCR	20 ppm_{vd}	1	Yes	Achieved lowest NO_x limits at the most reasonable cost and reliability
LoTOx™	20 ppm_{vd}	1	No	Rejected as control levels not better than SCR Achieve 20 ppm_{vd} only with significant scrubber modifications, pre-treatment modifications, and significant capital/operating costs.
SNCR + LoTOx™	50 ppm_{vd}	2	No	Option has higher operating and capital costs than SCR although provides higher NO_x outlet levels
SNCR	90 ppm_{vd}	3	No	Typically used in the presence of high nitrogen levels in the CO gas and therefore, not an ideal application for Alliance Refinery

5.4 Step 4 – Evaluate Most Cost Effective Controls

As required by the consent decree, Alliance will install the top control alternative for NO_x control, SCR. As LoTOx™ is an equivalent control to SCR then no further analysis is necessary. NO_x control levels are stipulated in the consent decree as follows:

- $\leq$ 20 ppm_{vd} NO_x on a 365-day rolling average basis @ 0% O_2 and
- $\leq$ 40 ppm_{vd} NO_x on a 7-day rolling average basis @ 0% O_2.

These levels of controls are the highest levels of NO_x controls documented in the RBLC.

5.5 Step 5 - Selection of BART for NO_x Control

Alliance plans to achieve NO_x reductions from the FCCU Regenerator vent by installing SCR technology. In accordance with the consent decree compliance schedule, SCR will be installed before December 31, 2014. In 2012, the LDEQ Air Permits Division granted approval to construct SCR on the FCCU at the Alliance Refinery.

6.3 Step 3 – Ranking Remaining Control Options Based on Effectiveness

The technology alternatives that are considered technically feasible are summarized in Table 6-1 below.

Table 6-1
Summary of Flare Feasible Control Options

Available Control Alternatives	Control Efficiency	Control Ranking
Good Design and Monitoring	Non specified	3
Quality Fuels at Flare Tip	Non specified	2
Amine Scrubbing for Flare Gas	>95%	1
FGRS	>95%	1

6.4 Step 4 – Evaluate Most Cost Effective Controls

Alliance designed flares to meet good engineering design and has installed flame presence monitoring equipment on both flares. Additionally, the pilot gas to the flares is natural gas supplied via pipeline. In accordance with the consent decree, Alliance installed the top control alternative for NO_x control, FGRS, and utilizes amine scrubbing on the refinery fuel gas and on the return streams from the FGRS to the fuel gas system. Since Alliance utilizes FGRS control technologies on the flares, the refinery employs the most stringent emissions control systems on both flares, and thus, a cost effective analysis is not required. Additionally, the 2007 CALPUFF modeling demonstration documents that post-control flare emissions have no adverse impacts to visibility.

Specifically, the post-BART-control modeling exercise only showed reductions in SO_2 emissions. No credit for PM and NO_x emission reductions were included in the post-BART-control modeling. This conservative approach to post-BART-control modeling was taken because SO_2 was the major contributor to visibility impairment. Also, simply reducing the SO_2 emission input to the CALPUFF model provided generated visibility results well below the acceptable 0.5 DV guideline level.

6.5 Step 5 - Selection of BART for Flare Control

The Alliance Refinery certified the Low Pressure Flare pursuant to the requirements of Paragraph 139(a) of the Consent Decree. The facility shall comply with Paragraph 139(a) by operating and maintaining a flare gas recovery system to control continuous or routine combustion in the Flaring Device. The Alliance Refinery certified the High Pressure Flare pursuant to the requirements of Paragraph 139(a) and 139(b) of the Consent Decree. The facility shall comply with Paragraph 139(a) by operating and maintaining a flare gas recovery system to control continuous or routine combustion in the Flaring Device. The facility shall comply with Paragraph 139(b) during those periods when gases from the Hydrofluoric (HF) Acid Alkylation

SECTION 7
CONCLUSION

In conclusion, Table 7-1 contains the selected control options based on the 5-Step BART Analysis as requested by EPA for the Alliance emission units using the factors specified in 40 CFR 51.308(e)(1)(ii)(A).

Table 7-1
Conclusions from BART 5-Step Analysis

Source ID	Pollutant	Selected BART Control	Post CD Emission Limitation
Crude Charge Heater (191-H-1)	NO_x	-SCR - Good combustion practices	0.0185 lb/MMBTU on a 365-day rolling average basis [See CD (Civil Action H-05-0258)]
	SO_2	Amine scrubbing of refinery fuel gas	≤0.1 grains H_2S/dscf (or 162 ppm_{vd} H_2S) in refinery fuel on a 3-hr rolling average basis
	PM	Good combustion practices	0.00745 lb PM/MMBtu of refinery fuel gas fired on an annual average basis using good combustion techniques based on AP-42 Table 1.4.2 (1998)
CO Boilers (301-B-2A and 301-B-2B)	SO_2	WGS	≤ 25 ppm_{vd} SO_2 on a 365-day rolling average basis @ 0% O_2 and; ≤ 50 ppm_{vd} SO_2 on a 7-day rolling average basis @ 0% O_2 [See CD (Civil Action H-05-0258)]
	PM	WGS	≤ 0.5 lb PM/1000 lb of coke burn on a 3-hr average basis [See CD (Civil Action H-05-0258)]
	NO_x	SCR	≤ 20 ppm_{vd} NO_x on a 365-day rolling average basis @ 0% O_2 and; ≤ 40 ppm_{vd} NO_x on a 7-day rolling average basis @ 0% O_2 [See Consent Decree (Civil Action H-05-0258)]
Flares (308F-D-1 and 308F-D-2)	NO_x	-Flare Gas Recovery System - Proper flare design/monitoring - Natural Gas Pilot Fuel -Amine Scrubbing	Comply with 40 CFR 63 Subpart A
	PM		Comply with 40 CFR 63 Subpart A
	SO_2		Hydrogen sulfide ≤ 0.1 gr/dscf (230 mg/dscm)