San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

JUN 10 2011

Mr. John Ludwick
Berry Petroleum Company
5201 Truxtun Avenue Suite 100
Bakersfield, CA 93309

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-1246
Project # S-1110237

Dear Mr. Ludwick:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The facility proposes to install five new 85 MMBtu/hr steam generators, remove from service one 1,000 bbl fixed roof tank, and add 115 wells to the thermally enhanced oil recovery operation listed in permit S-1246-296.

After addressing any EPA comments made during the 45-day comment period, the Authorities to Construct will be issued to the facility with Certificates of Conformity. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

Enclosures
c: Stanley Tom, Permit Services

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

JUN 10 2011

Gerardo C. Rios, Chief
Permits Office
Air Division
U.S. EPA - Region IX
75 Hawthorne St.
San Francisco, CA 94105

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-1246
Project # S-1110237

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of an application for Authorities to Construct for Berry Petroleum Company in the North Midway Sunset Oilfield, Kern County, which has been issued a Title V permit. Berry Petroleum Company is requesting that Certificates of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. The facility proposes to install five new 85 MMBtu/hr steam generators, remove from service one 1,000 bbl fixed roof tank, and add 115 wells to the thermally enhanced oil recovery operation listed in permit S-1246-296.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authorities to Construct # ATC # S-1246-296-19, '342-0, '343-0, '344-0, '345-0, '346-0 with Certificates of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

Enclosures
c: Stanley Tom, Permit Services

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

JUN 10 2011

Mike Tollstrup, Chief
Project Assessment Branch
Air Resources Board
P O Box 2815
Sacramento, CA 95812-2815

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-1246
Project # S-1110237

Dear Mr. Tollstrup:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The facility proposes to install five new 85 MMBtu/hr steam generators, remove from service one 1,000 bbl fixed roof tank, and add 115 wells to the thermally enhanced oil recovery operation listed in permit S-1246-296.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authorities to Construct # ATC # S-1246-296-19, '342-0, '343-0, '344-0, '345-0, '346-0 with Certificates of Conformity. After demonstrating compliance with the Authorities to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

Enclosures
c: Stanley Tom, Permit Services

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

Bakersfield Californian

NOTICE OF PRELIMINARY DECISION
FOR THE ISSUANCE OF AUTHORITY TO CONSTRUCT AND
THE PROPOSED SIGNIFICANT MODIFICATION OF FEDERALLY
MANDATED OPERATING PERMIT

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed modification of Berry Petroleum Company for its Heavy Oil Western Stationary Source in the North Midway Sunset Oilfield, Kern County, California. The facility proposes to install five new 85 MMBtu/hr steam generators, remove from service one 1,000 bbl fixed roof tank, and add 115 wells to the thermally enhanced oil recovery operation listed in permit S-1246-296.

The District's analysis of the legal and factual basis for this proposed action, project #S-1110237, is available for public inspection at http://www.valleyair.org/notices/public_notices_idx.htm and the District office at the address below. This will be the public's only opportunity to comment on the specific conditions of the modification. If requested by the public, the District will hold a public hearing regarding issuance of this modification. For additional information, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 1990 E. GETTYSBURG AVE, FRESNO, CA 93726-0244.

San Joaquin Valley Air Pollution Control District
Authority to Construct Application Review
Oil and Gas Production

Facility Name:	Berry Petroleum Company	Date:	June 6, 2011
Mailing Address:	5201 Truxtun Avenue Suite 100	Engineer:	Stanley Tom
	Bakersfield, CA 93309	Lead Engineer:	Joven Refuerzo
Contact Person:	John Ludwick		
Telephone:	(661) 616-3807		
Fax:	(661) 616-3891		
E-Mail:	jjl@bry.com		
Application #s:	S-1246-296-19, '342-0, '343-0, '344-0, '345-0, '346-0		
Project #:	S-1110237		
Deemed Complete:	February 3, 2011		

I. Proposal

The primary business of Berry Petroleum Company is oil and gas production. The facility has requested Authority to Construct (ATC's) permits for modifications to equipment in the Western Heavy Oil Stationary Source as described below:

1) Install five new steam generators (permits S-1246-342-0 through '346-0) for operation at various specified locations within the North Midway Sunset Oilfield.
2) Remove from service once 1,000 bbl vertical fixed roof tank listed on PTO S-1246-212-2 (see Appendix A).
3) Add 115 new wells to the thermally enhanced oil recovery operation (TEOR) listed on permit S-1246-296.

Berry Petroleum Company is proposing to cancel permit S-1246-212-2 (see Appendix A) in order to mitigate the increase in emissions with this project. Per Rule 2201, Section 3.38 a Stationary Source Project is a single permitting action involving the modification, addition or shutdown of one or more emissions units. If any increase in emissions from a new or modified emissions unit is permitted based on emission reductions from one or more emissions units included in the stationary source project, the following condition must also be met:

- The modification or shutdown resulting in the necessary emission reductions shall occur not later than the date of initial operation of the new or modified emissions unit. If the new or modified emissions unit is, in whole or in part, a replacement for an existing emissions unit at the same stationary source, the APCO may allow a maximum of 90 days as a start up period for simultaneous operation of the existing emissions unit and the replacement emissions unit.

The following condition will be placed on ATCs in this project:

- Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1246-212-2 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]

The applicant has stated ATC S-1246-296-17 (see Appendix A) will be implemented prior to or concurrently with ATC S-1246-296-19 in this project. Therefore, the following condition will be placed on the permit:

- Authority to Construct (ATC) S-1246-296-17 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201]

Berry Petroleum initially proposed a PM10 emission factor of 0.005 lb/MMBtu for each steam generator but to avoid PM10 source testing the facility revised the proposed PM10 emission factor to 0.0076 lb/MMBtu.

Berry Petroleum Company has received their Title V Permit. This modification can be classified as a Title V significant modification pursuant to Rule 2520, Section 3.29, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Berry Petroleum Company must apply to administratively amend their Title V Operating Permit to include the requirements of the ATCs issued with this project.

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (12/18/08)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4304	Equipment Tuning Procedures for Boilers, Steam Generators, and Process Heaters (10/19/95)
Rule 4305	Boilers, Steam Generators and Process Heaters – Phase II (8/21/03)
Rule 4306	Boilers, Steam Generators and Process Heaters – Phase III (10/16/08)
Rule 4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (10/16/08)
Rule 4351	Boilers, Steam Generators and Process Heaters – Phase 1 (8/21/03)
Rule 4401	Steam-Enhanced Crude Oil Production Wells (12/14/2006)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The equipment will be located at the North Midway Sunset Oilfield in the Heavy Oil Western Stationary Source in Kern County. The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

The steam generators will be operated at the following specified locations within the Heavy Oil Western Stationary Source for facility S-1246.

Steam Generator	Operating Location (UTM Coordinate)
S-1246-342-0, '343-0, '344-0	35°15'34.03" -119°34'54.15"
S-1246-345-0, '346-0	35°15'34.03" -119°34'54.15"

IV. Process Description

Berry Petroleum Company operates a steam enhanced crude oil production facility in the Heavy Oil Western stationary source.

Steam will be generated by five new 85 MMBtu/hr steam generators equipped with ultra low NOx burners and flue gas recirculation. The produced steam is injected into heavy crude oil bearing strata to reduce the viscosity of the crude oil, thereby facilitating thermally enhanced oil production. The proposed steam generators will be fired on natural gas, natural gas containing a significant amount of ethane, gas recovered from TEOR operations, tank vapor recovery (TVR) gas, or a combination of any of the above.

The facility will remove from service one 1,000 bbl vertical fixed roof tank listed on permit S-1246-212-2. The tank is equipped with a PV-vent. Removing the tank from service will result in emission reductions which will be used to mitigate increases in VOC emissions in this project.

The applicant proposes to add 115 new thermally enhanced oil production wells to the TEOR operation listed in permit S-1246-296. The addition of the wells will result in an increase in fugitive VOC emission from additional piping components. All of the steam enhanced wells will comply with Rule 4401 requirements.

V. Equipment Listing

Pre-Project Equipment Description:

S-1246-296-17: THERMALLY ENHANCED OIL RECOVERY (TEOR) OPERATION WELL VENT VAPOR CONTROL SYSTEM SERVING 760 WELLS INCLUDING GAS/LIQUID SEPARATORS, HEAT EXCHANGERS, COMPRESSORS, INLET SEPARATOR VESSELS, CONDENSATE PUMPS, SULFUR SCRUBBER, VAPOR PIPING FROM TANK '337 AND VAPOR PIPING TO STEAM GENERATORS S-1246-3, `-24, `-46, '-119, '-292, AND '-293 AND/OR DOGGR APPROVED GAS DISPOSAL WELLS (NMWSS)

ATC Equipment Description:

S-1246-296-19: MODIFICATION OF THERMALLY ENHANCED OIL RECOVERY (TEOR) OPERATION WELL VENT VAPOR CONTROL SYSTEM SERVING 760 WELLS INCLUDING GAS/LIQUID SEPARATORS, HEAT EXCHANGERS, COMPRESSORS, INLET SEPARATOR VESSELS, CONDENSATE PUMPS, SULFUR SCRUBBER, VAPOR PIPING FROM TANK '337 AND VAPOR PIPING TO STEAM GENERATORS S-1246-3, `-24, `-46, '-119, '-292, AND '-293 AND/OR DOGGR APPROVED GAS DISPOSAL WELLS (NMWSS): INCREASE NUMBER OF TEOR WELLS FROM 760 TO 875 AND ADD STEAM GENERATORS S-1246-342, '343, '344, '345, '346 AS APPROVED INCINERATION DEVICES

Post-Project Equipment Description:

S-1246-296-19: THERMALLY ENHANCED OIL RECOVERY (TEOR) OPERATION WELL VENT VAPOR CONTROL SYSTEM SERVING 875 WELLS INCLUDING GAS/LIQUID SEPARATORS, HEAT EXCHANGERS, COMPRESSORS, INLET SEPARATOR VESSELS, CONDENSATE PUMPS, SULFUR SCRUBBER, VAPOR PIPING FROM TANK '337 AND VAPOR PIPING TO STEAM GENERATORS S-1246-3, `24, `46, '119, '292, '293, '342, '343, '344, '345, '346 AND/OR DOGGR APPROVED GAS DISPOSAL WELLS (NMWSS)

S-1246-342-0: 85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

S-1246-343-0: 85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

S-1246-344-0: 85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

S-1246-345-0: 85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

S-1246-346-0: 85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

VI. Emission Control Technology Evaluation

S-1246-296-19 (TEOR)

If the wells are operated with closed casing vents, where casing vents are connected to production flow lines, then the oil production will be routed to front line production tanks with vapor recovery systems. Otherwise, the casing vents will be connected to a dedicated well vent vapor recovery system, and production may be processing in tanks equipped with or without vapor recovery systems.

Fugitive Emissions

The wells associated with the new TEOR operation will operate with closed casing vents but the casing annuluses will not terminate before reaching the surface, therefore casing vent components (seals, valves, flanges, etc) will be a source of fugitive emissions. In general the pressure of the gas handled by these components exceeds atmospheric pressure. Applicant will be required to maintain accurate component counts for fugitive emissions, and routine inspection and repair of any leaking components.

S-1246-342-0 through '346-0 (85 MMBtu/hr Steam Generators)

Emissions from natural gas, TEOR gas, or TVR gas-fired steam generator will include NO_X, CO, VOC, PM_{10}, and SO_X emissions.

Ultra low-NO_X burners reduce NO_X formation by producing lower flame temperatures (and longer flames) than conventional burners. The Magna-Flame LE burner uses patented premix technology to establish a lean premix and then combusts the mixture in a controlled reaction zone without the use of complex staging devices or moving parts. The fuel and air are introduced separately into the burner where they are intimately mixed within anti-flashback mixers. This mixture is then directed into the reaction region where lean combustion takes place.

The use of flue gas re-circulation (FGR) can reduce nitrogen oxides (NO_X) emissions by 60% to 70%. In an FGR system, a portion of the flue gas is re-circulated back to the inlet air. As flue gas is composed mainly of nitrogen and the products of combustion, it is much lower in oxygen than the inlet air and contains virtually no combustible hydrocarbons to burn. Thus, flue gas is practically inert. The addition of an inert mass of gas to the combustion reaction serves to absorb heat without producing heat, thereby lowering the flame temperature. Since thermal NO_X is formed by high flame temperatures, the lower flame temperatures produced by FGR serve to reduce thermal NO_X.

VII. General Calculations

A. Assumptions

Storage Tank (S-1246-212-2)

- The tanks emit only volatile organic compounds (VOCs)
- The tank paint condition is good, the color is medium
- TVP of oil = 0.5 psia (current PTO)
- Tank temperature = 180° F (per applicant)
- Tank throughput = 2,000 bbl/day (District default two turnovers per day)
- VOCs molecular weight = 100 lb/lbmol

Fugitive VOC Emissions (S-1246-296-19)

- VOC destruction efficiency of the vapor control system is 99% (per applicant).
- The fugitive emissions for all tanks are calculated using California Implementation Guidelines for Estimating Mass Emissions of fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/CARB, February 1999 revised screening emissions factors.
- Only fugitive VOCs emitted from components in gas service are calculated.
- Fugitive emissions from heavy oil liquid service components are negligible.
- The percentage of VOCs of the total hydrocarbons is 100% by weight.

Steam Generators (S-1246-342-0 through '346-0)

- The unit is fired on natural gas, TEOR and/or TVR gas (per applicant)
- Natural Gas Heating Value: 1,000 Btu/scf (District Practice)
- F-Factor for Natural Gas and TEOR gas: 8,568 dscf/MMBtu at 68°F (40 CFR 60)
- TEOR and TVR gas has composition and properties very close to natural gas; therefore, the heating value and F-Factor for TEOR gas, TVR gas, and natural gas can reasonably be assumed to be the same
- The CO_2-based F-Factor for natural gas: 1,024.2 dscf/MMBtu corrected to 60°F (40 CFR 60, Appendix A, Method 19)

B. Emission Factors

S-1246-212-2 (existing tank)

Emissions from this existing tank is calculated using the District spreadsheet for Tank Emissions - Fixed Roof Crude Oil less than 26° API. The spreadsheet for tanks was developed using the equations for fixed-roof tanks from EPA AP-42, Chapter 7.1 (see Appendix B).

S-1246-296-19 (TEOR operation)

Emissions from these units are estimated using component counts and California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities Table IV-2c Oil and Gas Production Screening Value Ranges Emission Factors (see Appendix C).

S-1246-342-0 through '346-0 (Steam Generators)

Pollutant	Emission Factors EF (lb/MMBtu)		Source
NO_X	0.0085	7 ppmv NO_X (@ 3%O2)	Per Applicant
SO_X	0.0043	1.5 gr-S/100 scf fuel	Per Applicant
PM_{10}	0.0076		AP-42, Table 1.4-2 (7/98)
CO	0.026	35 ppmv CO (@ 3%O2)	Per Applicant
VOC	0.0055		AP-42, Table 1.4-2 (7/98)

$$\frac{1.5\,gr-S}{100\,scf\ fuel}\times\frac{scf\ fuel}{1000\,Btu}\times\frac{1E6\,Btu}{MMBtu}\times\frac{lb-S}{7000\,gr-S}\times\frac{2\,lb-SO_2}{lb-S}=0.0043\frac{lb-SO_2}{MMBtu}$$

Since TEOR and TVR gas is very close in composition to natural gas, its EF can reasonably be assumed to be the same as that of natural gas.

C. Calculations

1. Pre-Project Potential to Emit (PE1)

S-1246-212-2 (Tank)

Since the tank currently has no vapor recovery system installed, the pre-project emissions are uncontrolled. Pre-project potential to emit is calculated based on the District calculator for Fixed Roof Crude Oil less than 26 API (see Appendix B). The following table summarizes the daily and annual post-project potential emissions.

Permit Unit	Daily PE1 (lb-VOC/day)	Annual PE1 (lb-VOC/year)
S-1246-212	103.2	37,673

S-1246-296-17 (TEOR operation)

Per current permit and calculations shown in Appendix C,

Permit Unit	Daily PE1 (lb-VOC/day)	Annual PE1 (lb-VOC/year)
S-1246-296-17	305.0	111,325

S-1246-342-0 through '346-0 (Steam Generators)

Since these are new emissions units, daily and annual PE1 = 0 for all pollutants.

2. Post Project Potential to Emit (PE2)

S-1246-212-2 (Tank)

Since this tank will be removed from service, PE2 = 0 for all pollutants.

S-1246-296-19 (TEOR operation)

Per current permit and calculations shown in Appendix C,

Permit Unit	Daily PE2 (lb-VOC/day)	Annual PE2 (lb-VOC/year)
S-1246-296-19	345.6	126,144

S-1246-342-0 through '346-0 (Steam Generators)

The daily and annual post project potentials to emit for the steam generators are calculated as follows, and are summarized in the table below:

Daily PE2 (lb/day) = (EF lb/MMBtu) × (Heat Input MMBtu/hr) × (24 hr/day)

Annual PE2 (lb/yr) = (EF lb/MMBtu) × (Heat Input MMBtu/hr) × (8,760 hr/yr)

Daily Post Project Emissions (PE2) (Each Steam Generator)				
Pollutant	Emission Factors (lb/MMBtu)	Heat Input Rating (MMBtu/hr)	Daily Hours of Operation (hrs/day)	PE2 (lb/day)
NO_x	0.0085	85	24	17.3
SO_x	0.0043	85	24	8.8
PM_{10}	0.0076	85	24	15.5
CO	0.026	85	24	53.0
VOC	0.0055	85	24	11.2

Annual Post Project Emissions (PE2) (Each Steam Generator)				
Pollutant	Emission Factors (lb/MMBtu)	Heat Input Rating (MMBtu/hr)	Annual Hours of Operation (hrs/yr)	PE2 (lb/yr)
NO_x	0.0085	85	8,760	6,329
SO_x	0.0043	85	8,760	3,202
PM_{10}	0.0076	85	8,760	5,659
CO	0.018	85	8,760	19,360
VOC	0.0055	85	8,760	4,095

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Facility emissions are already above the Offset and Major Source Thresholds for NO_X, SO_X, PM_{10}, CO, and VOC; therefore, SSPE1 calculations are not necessary.

4. Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Facility emissions are already above the Offset and Major Source Thresholds for NO_X, SO_X, PM_{10}, CO, and VOC; therefore, SSPE2 calculations are not necessary.

5. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

Major Source Determination (lb/year)					
	NO_X	SO_X	PM_{10}	CO	VOC
Pre-Project SSPE (SSPE1)	> 20,000	> 140,000	> 140,000	> 200,000	> 20,000
Post Project SSPE (SSPE2)	> 20,000	> 140,000	> 140,000	> 200,000	> 20,000
Major Source Threshold	20,000	140,000	140,000	200,000	20,000
Major Source?	Yes	Yes	Yes	Yes	Yes

This source is an existing Major Source for NOx, SOx, PM10, CO, and VOC and will remain a Major Source for NOx, SOx, PM10, CO, and VOC.

*40 CFR Part 51 - Appendix S requirement for PM2.5
On May 8, 2008 EPA finalized regulations to implement NSR program for PM2.5. The new requirements became effective July 15, 2008. Under the new regulations a major source for PM2.5 is defined as 100 tons/year. As shown in Appendix D, the SSPE1 for PM10 is 130,514 lb/year. The SSPE is below 200,000 lb/year for PM10 and assuming all of the PM10 is PM2.5, the facility is not a major source of PM2.5. The facility is proposing to install 16 new steam generators at this location. The increase in PM10 emissions from these projects will be less than 200,000 lb/year; therefore, these projects will not be a Federal Major Modification for PM2.5.

6. Baseline Emissions (BE)

The BE calculation (in lbs/year) is performed pollutant-by-pollutant for each unit within the project, to calculate the QNEC and if applicable, to determine the amount of offsets required.

Pursuant to Section 3.7 of District Rule 2201, BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22 of District Rule 2201.

S-1246-212-2

Clean Emissions Unit, Located at a Major Source
Pursuant to Rule 2201, Section 3.12, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

This emissions unit is equipped with a PV-vent, which meets the requirements for achieved-in-practice BACT in BACT Guideline 7.3.1 "Petroleum and Petrochemical Production - Fixed Roof Organic Liquid Storage or Processing Tank, < 5,000 bbl Tank capacity. Therefore, Baseline Emissions (BE) are equal to the Pre-Project Potential to Emit (PE1).

As calculated in Section VII.C.1 above, PE1 is summarized in the following table:

Baseline Emissions [BE] (lb/year)					
	NO_X	SO_X	PM_{10}	CO	VOC
S-1246-212-2	0	0	0	0	37,673

S-1246-296-19

Clean Emissions Unit, Located at a Major Source
Pursuant to Rule 2201, Section 3.12, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

This emissions unit is served by vapor control with a control efficiency greater than 95%. Therefore, Baseline Emissions (BE) are equal to the Pre-Project Potential to Emit (PE1).

As calculated in Section VII.C.1 above, PE1 is summarized in the following table:

Baseline Emissions [BE] (lb/year)					
	NO_X	SO_X	PM_{10}	CO	VOC
S-1246-296-19	0	0	0	0	111,325

S-1246-342-0 through '346-0

Since these are new emissions units, BE = PE1 = 0 for all pollutants.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "*any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.*"

As discussed in Section VII.C.5 above, the facility is not a Major Source for PM2.5 emissions; therefore, the project does not constitute a SB 288 Major Modification for PM2.5 emissions.

Fugitive emissions are not included in SB 288 Major Modification calculations except for those sources enumerated in 40 CFR 51.165(a)(4). The proposed operation is not a source enumerated in 40 CFR 51.165(a)(4). Therefore, the emissions from permit S-1246-296 will not be included in the SB288 Major Modification determination for this project.

As discussed in Section VII.C.5 above, the facility is an existing Major Source for NO_X, SO_X, PM_{10}, CO, and VOC; however, the project by itself would need to be a significant increase in order to trigger a Major Modification. The emission units within this project do not have a total potential to emit which is greater than SB 288 Major Modification threshold for VOC (see table below). Therefore, the project cannot be a significant increase and the project does not constitute a SB 288 Major Modification.

SB 288 Major Modification Thresholds (Existing Major Source)			
Pollutant	Project PE (lb/year)	Threshold (lb/year)	Major Modification?
NO_x	6,329 x 5 = 31,645	50,000	No
SO_x	3,202 x 5 = 16,010	80,000	No
PM_{10}	5,659 x 5 = 28,295	30,000	No
VOC	4,095 x 5 = 20,475	50,000	No

8. Federal Major Modification

As discussed in Section VII.C.5 above, the facility is not a Major Source for PM2.5 emissions; therefore, the project does not constitute a Federal Major Modification for PM2.5 emissions.

District Rule 2201, Section 3.17 states that major modifications are also federal major modifications, unless they qualify for either a "Less-Than-Significant Emissions Increase" exclusion or a "Plantwide Applicability Limit" (PAL) exclusion.

A Less-Than-Significant Emissions Increase exclusion is for an emissions increase for the project, or a Net Emissions Increase for the project (as defined in 40 CFR 51.165 (a)(2)(ii)(B) through (D), and (F)), that is not significant for a given regulated NSR pollutant, and therefore is not a federal major modification for that pollutant.

- To determine the post-project projected actual emissions from existing units, the provisions of 40 CFR 51.165 (a)(1)(xxviii) shall be used.

- To determine the pre-project baseline actual emissions, the provisions of 40 CFR 51.165 (a)(1)(xxxv)(A) through (D) shall be used.

- If the project is determined not to be a federal major modification pursuant to the provisions of 40 CFR 51.165 (a)(2)(ii)(B), but there is a reasonable possibility that the project may result in a significant emissions increase, the owner or operator shall comply with all of the provisions of 40 CFR 51.165 (a)(6) and (a)(7).

- Emissions increases calculated pursuant to this section are significant if they exceed the significance thresholds specified in the table below.

Significant Threshold (lb/year)	
Pollutant	Threshold (lb/year)
VOC	0
NO_x	0
PM_{10}	30,000
SO_x	80,000

The Net Emissions Increases (NEI) will be calculated below to determine if this project has significant emission increases.

BAE = Baseline Actual Emissions. The actual emissions created by the project during the baseline period.

PAE = Projected Actual Emissions. The post-project projected emissions of the units in this project.

BPE = Baseline Potential Emissions. The portion of the unit's emissions following the project that an existing unit *could have accommodated* during the baseline period (as defined in 40 CFR 51.165 (a)(1)(xxviii)(B)-3), excluding any emissions unrelated to this particular project, including any increased utilization due to product demand growth.

Fugitive emissions are not included in Federal Major Modification calculations except for those sources enumerated in 40 CFR 51.165(a)(4). The proposed operation is not a source enumerated in 40 CFR 51.165(a)(4). Therefore, the emissions from permit S-1246-296 will not be included in the Federal Major Modification determination for this project.

The Net Emissions Increases (NEI) for purposes of determination of a "Less-Than-Significant Emissions Increase" exclusion will be calculated below to determine if this project qualifies for such an exclusion.

Net Emission Increase for New Units (NEI_N)

Per 40 CFR 51.165 (a)(2)(ii)(D) for new emissions units in this project,

$NEI_N = PE2_N - BAE$

BAE = 0 for the new units therefore $NEI_N = PE2_N$

NEI_N (NO_X) = 6,329 x 5 = 31,645 lb/year
NEI_N (SO_X) = 3,202 x 5 = 16,010 lb/year
NEI_N (PM_{10}) = 5,659 x 5 = 28,295 lb/year
NEI_N (VOC) = 4,095 x 5 = 20,475 lb/year

NEI (NO_X) = 31,645 lb/year
NEI (SO_X) = 16,010 lb/year
NEI (PM_{10}) = 28,295 lb/year
NEI (VOC) = 20,475 lb/year

The NEI for this project will be greater than the federal Major Modification threshold of 0 lb/year for NO_X and VOC. Therefore, this project does not qualify for a "Less-Than-Significant Emissions Increase" exclusion and is thus determined to be a Federal Major Modification for NO_X and VOC.

VIII. Compliance

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

S-1246-342-0 through '346-0 (Steam Generators)

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new steam generator with a PE2 greater than 2 lb/day for NO_X, SO_X, PM_{10}, CO, and VOC emissions. BACT is triggered for NO_X, SO_X, PM_{10}, CO, and VOC emissions since the PE2 is greater than 2 lbs/day.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

AIPE = PE2 – HAPE

Where,
AIPE = Adjusted Increase in Permitted Emissions, (lb/day)
PE2 = Post-Project Potential to Emit, (lb/day)
HAPE = Historically Adjusted Potential to Emit, (lb/day)

HAPE = PE1 x (EF2/EF1)

Where,
PE1 = The emissions unit's Potential to Emit prior to modification or relocation, (lb/day)

EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1

EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

AIPE = PE2 – (PE1 * (EF2 / EF1))

There are no emission factor changes in this project; therefore, EF2 / EF1 = 1.

S-1246-296-19 (TEOR Operation)

AIPE = 345.6 – (305.0 * (1))
= 345.6 – 305.0 * 1
= 40.6 lb-VOC/day

As demonstrated above, the AIPE is greater than 2.0 lb/day for VOC emissions; therefore BACT is triggered.

d. Major Modification

As discussed in Section VII.C.7 above, this project does constitute a Major Modification for NO_X and VOC; therefore BACT is triggered.

2. BACT Guideline

S-1246-342-0 through '346-0 (Steam Generators)

BACT Guideline 1.2.1 (Steam Generator ≥ 5 MMBtu/hr, Oilfield) has been rescinded. Therefore, a project specific BACT analysis will be performed to determine BACT for this project (see Appendix E).

S-1246-296-19 (TEOR Operation)

BACT Guideline 7.1.1 applies to Thermally Enhanced Oil Recovery – Steam Drive Oil Wells (see Appendix F)

3. Top-Down BACT Analysis

S-1246-342-0 through '346-0 (Steam Generators)

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see Appendix E), BACT has been satisfied with the following:

NO_X: 7 ppmvd @ 3% O_2
SO_X: Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2
PM_{10}: Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2
CO: 35 ppmvd @ 3% O_2
VOC: Gaseous fuel

Therefore, the following conditions will be included on the permit to ensure compliance:

- Emissions from the gas-fired unit shall not exceed any of the following limits: 7 ppmvd NOx @ 3% O2 or 0.0085 lb-NOx/MMBtu, 0.0043 lb-SOx/MMBtu, 0.0076 lb-PM10/MMBtu, 35 ppmvd CO @ 3% O2 or 0.026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, and 4306]
- This unit shall only be fired on PUC-quality natural gas, ethane-rich natural gas, TEOR gas, TVR gas, or a combination thereof. [District Rule 2201]

S-1246-296-19 (TEOR Operation)

Pursuant to the attached Top-Down BACT Analysis (see Appendix F), BACT has been satisfied with the following:

VOC: Vapor control system and inspection and maintenance program with either a) Non-condensables balanced casing vent system tied into tank vapor control system or b) Non-condensables incinerated at steam generator, incinerator, or equal

Therefore, the following condition will be included on the permit to ensure compliance:

- Collected vapors shall be disposed of in District approved incineration devices, as listed on this permit, or in Department of Oil, Gas and Geothermal Resources (DOGGR) approved vapor disposal wells. Permittee shall make documentation of DOGGR approval for injection wells readily available for District inspection upon request. [District Rule 2201]

B. Offsets

1. Offset Applicability

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post Project Stationary Source Potential to Emit (SSPE2) equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The following table compares the post-project facility-wide annual emissions in order to determine if offsets will be required for this project.

Offset Determination (lb/year)					
	NO_X	SO_X	PM_{10}	CO	VOC
Post Project SSPE (SSPE2)	> 20,000	> 54,750	> 29,200	> 200,000	> 20,000
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	Yes	Yes	Yes	Yes	Yes

2. Quantity of Offsets Required

As seen above, the facility is an existing Major Source for all pollutants and the SSPE2 is greater than the offset thresholds; therefore offset calculations will be required for this project.

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = (Σ[PE2 – BE] + ICCE) x DOR, for all new or modified emissions units in the project,

Where,
PE2 = Post Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE)

There are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

Offsets Required (lb/year) = (Σ [PE2 – BE]) x DOR

NOx

For each steam generator,

$PE2_{S-1246-342-0}$ = 6,329 lb/year
$BE_{S-1246-342-0}$ = 0 lb/year

Offsets Required (lb/year) = ([6,329 – 0]) x DOR
= 6,329 lb NOx/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,582	1,582	1,582	1,583

For this project,

Offsets Required (lb/year) = ($[PE2 – BE]_{S-1246-342-0}$ + $[PE2 – BE]_{S-1246-343-0}$ + $[PE2 – BE]_{S-1246-344-0}$ + $[PE2 – BE]_{S-1246-345-0}$ + $[PE2 – BE]_{S-1246-346-0}$)

Offsets Required (lb/year) = ([6,329 – 0] + [6,329 – 0] + [6,329 – 0] + [6,329 – 0] + [6,329 – 0])
= 31,645 lb NO_X/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
7,911	7,911	7,911	7,912

Assuming an offset ratio of 1.5:1, the amount of NO_X ERCs that need to be withdrawn is:

Offsets Required (lb/year) = ([6,329 – 0] + [6,329 – 0] + [6,329 – 0] + [6,329 – 0] + [6,329 – 0]) x 1.5
= 31,645 x 1.5
= 47,468 lb NO_X/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
11,867	11,867	11,867	11,867

The applicant has stated that the facility plans to use ERC certificates C-629-2, C-892-2, C-971-2, C-972-2, C-973-2, C-974-2, C-975-2, C-976-2, C-977-2, C-978-2, C-979-2, C-980-2, C-981-2, C-982-2, C-983-2, C-984-2, C-985-2, C-986-2, C-987-2, C-988-2, C-989-2, C-990-2, C-991-2, C-992-2, C-993-2, C-994-2, C-995-2, N-816-2, N-817-2, N-818-2, N-819-2, N-821-2, N-823-2, N-881-2, S-2905-2, S-3016-2, S-3316-2 to offset the

increases in NO_X emissions associated with this project. The above certificate has available quarterly NO_X credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #C-629-2	500	500	500	500
ERC #C-892-2	146	0	0	0
ERC #C-971-2	0	0	0	68
ERC #C-972-2	0	0	0	73
ERC #C-973-2	0	0	0	74
ERC #C-974-2	16	70	0	44
ERC #C-975-2	0	0	0	140
ERC #C-976-2	0	0	0	154
ERC #C-977-2	0	0	0	155
ERC #C-978-2	0	0	0	201
ERC #C-979-2	154	0	20	24
ERC #C-980-2	0	0	0	198
ERC #C-981-2	0	0	0	196
ERC #C-982-2	0	0	0	203
ERC #C-983-2	0	0	0	203
ERC #C-984-2	0	0	0	233
ERC #C-985-2	0	0	0	264
ERC #C-986-2	0	0	0	263
ERC #C-987-2	0	0	0	298
ERC #C-988-2	0	0	0	343
ERC #C-989-2	0	0	0	353
ERC #C-990-2	18	0	0	408
ERC #C-991-2	0	0	0	530
ERC #C-992-2	0	0	0	514
ERC #C-993-2	34	0	0	550
ERC #C-994-2	0	0	0	649
ERC #C-995-2	403	0	0	1,177
ERC #N-816-2	0	0	0	97
ERC #N-817-2	0	0	1	111
ERC #N-818-2	535	447	204	583
ERC #N-819-2	432	153	0	1,032
ERC #N-821-2	3,072	6,397	3,023	1,353
ERC #N-823-2	0	0	0	433
ERC #N-881-2	3,386	355	411	411
ERC #S-2905-2	5,500	1,560	905	2,630
ERC #S-3016-2	0	9,202	0	0
ERC #S-3316-2	0	2,077	8,486	0
Total	14,196	20,761	13,550	14,465

As seen above, the facility has sufficient credits to fully offset the quarterly NO_X emissions increases associated with this project.

SOx

For each steam generator,

$PE2_{S\text{-}1246\text{-}342\text{-}0}$ = 3,202 lb/year
$BE_{S\text{-}1246\text{-}342\text{-}0}$ = 0 lb/year

Offsets Required (lb/year) = ([3,202 – 0]) x DOR
= 3,202 lb SOx/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
800	800	801	801

For this project,

Offsets Required (lb/year) = ([PE2 – BE]$_{S-1246-342-0}$ + [PE2 – BE]$_{S-1246-343-0}$ + [PE2 – BE]$_{S-1246-344-0}$ + [PE2 – BE]$_{S-1246-345-0}$ + [PE2 – BE]$_{S-1246-346-0}$)

Offsets Required (lb/year) = ([3,202 – 0] + [3,202 – 0] + [3,202 – 0] + [3,202 – 0] + [3,202 – 0])
= 16,010 lb SO_X/year

Assuming an offset ratio of 1.5:1, the amount of SO_X ERCs that need to be withdrawn is:

Offsets Required (lb/year) = ([3,202 – 0] + [3,202 – 0] + [3,202 – 0] + [3,202 – 0] + [3,202 – 0]) x 1.5
= 16,010 x 1.5
= 24,015 lb SO_X/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
6,003	6,004	6,004	6,004

The applicant has stated that the facility plans to use ERC certificates S-2830-5, S-2832-5, S-3322-5 to offset the increases in SO_X emissions associated with this project. The above certificate has available quarterly SO_X credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-2830-5	3,800	0	3,800	3,800
ERC #S-2832-5	0	3,200	0	0
ERC #S-3322-5	4,094	4,091	4,088	4,087
Total	7,894	7,291	7,888	7,887

As seen above, the facility has sufficient credits to fully offset the quarterly SO_X emissions increases associated with this project.

PM10

For each steam generator,

$PE2_{S\text{-}1246\text{-}342\text{-}0}$ = 5,659 lb/year
$BE_{S\text{-}1246\text{-}342\text{-}0}$ = 0 lb/year

Offsets Required (lb/year) = ([5,659 – 0]) x DOR
= 5,659 lb PM10/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1414	1415	1415	1415

For this project,

Offsets Required (lb/year) = $([PE2 - BE]_{S\text{-}1246\text{-}342\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}343\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}344\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}345\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}346\text{-}0})$

Offsets Required (lb/year) = ([5,659 – 0] + [5,659 – 0] + [5,659 – 0] + [5,659 – 0] + [5,659 – 0])
= 28,295 lb PM_{10}/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
7,073	7,074	7,074	7,074

Assuming an offset ratio of 1.5:1, the amount of PM10 ERCs that need to be withdrawn is:

Offsets Required (lb/year) = ([5,659 – 0] + [5,659 – 0] + [5,659 – 0] + [5,659 – 0] + [5,659 – 0]) x 1.5
= 28,295 x 1.5
= 42,443 lb PM_{10}/year

Calculating the appropriate quarterly emissions to be offset is as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
10,610	10,611	10,611	10,611

The applicant has stated that the facility plans to use ERC certificates S-3050-4, S-2064-4, S-567-4, S-3046-4, C-1092-4, C-1093-4 to offset the increases in PM10 emissions associated with this project. The above certificate has available quarterly PM10 credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-3050-4	92	0	304	1,004
ERC #S-2064-4	0	172	71	5
ERC #S-567-4	466	18	0	309
ERC #S-3046-4	4,000	1,888	3,148	0
ERC #C-1092-4	2,261	0	0	9,829
ERC #C-1093-4	0	0	0	20,242
Total	6,819	2,078	3,523	31,389

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
PM10 Emissions to be offset: (at a 1.0:1 ratio):	7,073	7,074	7,074	7,074
ERCs applied from certificate S-3050-4 fully withdrawn:	92	0	304	1,004
Remaining PM10 Emissions to be offset: (at a 1.0:1 ratio):	6,981	7,074	6,770	6,070
ERCs applied from certificate S-2064-4 fully withdrawn:	0	172	71	5
Remaining PM10 Emissions to be offset: (at a 1.0:1 ratio):	6,981	6,902	6,699	6,065
ERCs applied from certificate S-567-4 fully withdrawn:	466	18	0	309
Remaining PM10 Emissions to be offset: (at a 1.0:1 ratio):	6,515	6,884	6,699	5,756

Per Rule 2201 Section 4.13.7, Actual Emission Reductions (i.e. ERCs) that occurred from October through March (i.e. 1st and 4th Quarter), inclusive, may be used to offset increases in PM during any period of the year.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 Emissions to be offset: (at a 1.0:1 ratio):	6,515	6,884	6,699	5,756
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	9,773	10,326	10,049	8,634
ERCs applied from certificate S-3046-4 fully withdrawn:	4,000	1,888	3,148	0
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	5,773	8,438	6,901	8,634
Available ERCs from certificate C-1092-4:	2,261	0	0	9,829
4th qtr. ERCs from certificate C-1092-4 applied to 2nd qtr. ERCs:	0	1,195	0	-1,195
Adjusted ERCs from certificate C-1092-4:	2,261	1,195	0	8,634
ERCs applied from certificate C-1092-4 fully withdrawn:	2,261	1,195	0	8,634
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	3,512	7,243	6,901	0
Available ERCs from certificate C-1093-4:	0	0	0	20,242

4th qtr. ERCs from certificate C-1093-4 applied to 1st, 2nd, 3rd qtr. ERCs:	3,512	7,243	6,901	-17,656
Adjusted ERCs from certificate C-1093-4:	3,512	7,243	6,901	2,586
ERCs applied from certificate C-1093-4 partially withdrawn:	3,512	7,243	6,901	0
Remaining ERCs from certificate C-1093-4:	0	0	0	2,586
Remaining PM10 emissions to be offset (at a 1.5:1 ratio):	0	0	0	0

As seen above, the facility has sufficient credits to fully offset the quarterly PM10 emissions increases associated with this project.

VOC

For each steam generator,

PE2 = 4,095 lb/year
BE = 0 lb/year

For the TEOR operation,

$PE2_{S\text{-}1246\text{-}296\text{-}19}$ = 126,144 lb/year
$BE_{S\text{-}1246\text{-}296\text{-}19}$ = 111,325 lb/year

For the storage tank,

$PE2_{S\text{-}1246\text{-}212\text{-}2}$ = 0 lb/year
$BE_{S\text{-}1246\text{-}212\text{-}2}$ = 37,673 lb/year

For this project,

$$\text{Offsets Required (lb/year)} = ([PE2 - BE]_{S\text{-}1246\text{-}342\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}343\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}344\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}345\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}346\text{-}0} + [PE2 - BE]_{S\text{-}1246\text{-}296\text{-}19} + [PE2 - BE]_{S\text{-}1246\text{-}212\text{-}2}) \times DOR$$

$$\text{Offsets Required (lb/year)} = ([4,095 - 0] + [4,095 - 0] + [4,095 - 0] + [4,095 - 0] + [4,095 - 0] + [126,144 - 111,325] + [0 - 37,673]) \times DOR$$

$$= -2,379 \rightarrow 0 \text{ lb VOC/year}$$

As demonstrated in the calculation above, the amount of offsets is zero; therefore, VOC offsets will not be required for this project.

CO-Offset Calculations:

CO offsets are triggered by CO emissions in excess of 200,000 lb/year for the facility.

However, pursuant to Section 4.6.1, "Emission Offsets shall not be required for the following: increases in carbon monoxide in attainment areas if the applicant demonstrates to the satisfaction of the APCO, that the Ambient Air Quality Standards are not violated in the areas to be affected, and such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of Ambient Air Quality Standards (AAQS)."

The Technical Services Section of the San Joaquin Valley Unified Air Pollution Control District performed a CO modeling run, using the EPA AERMOD air dispersion model, to determine if the CO emissions from the refractory curing equipment would exceed the State and Federal AAQS (Appendix I). Modeling of the worst case 1 hour and 8 hour CO impacts were performed. These values were added to the worst case ambient concentration (background) measured and compared to the ambient air quality standards. Results of the modeling are presented below:

Ambient Modeling Results for CO		
	1 hr std	**8 hr std**
AAQS (ug/m^3)	23,000	10,000
Worst case ambient (background) (ug/m^3)	4,078	2,563
Modeled impact (ug/m^3)	65.57	46.12
Modeled ambient CO (ug/m^3)	4,143	2,609

This modeling demonstrates that the proposed increase in CO emissions will not cause a violation of the CO ambient air quality standards. Therefore, the increase in CO emissions is exempt from offsets pursuant to Section 6.4.1.

Proposed Rule 2201 (offset) Conditions:

- Prior to operating equipment under this Authority to Construct, permittee shall surrender NO_X emission reduction credits for the following quantity of emissions: 1st quarter – 1,582 lb, 2nd quarter - 1,582 lb, 3rd quarter - 1,582 lb, and fourth quarter - 1,583 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
- Prior to operating equipment under this Authority to Construct, permittee shall surrender SO_X emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 800 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
- Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter – 1414 lb, 2nd quarter - 1415 lb, 3rd quarter - 1415 lb, and fourth quarter - 1415 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

- ERC Certificate Numbers C-629-2, C-892-2, C-971-2, C-972-2, C-973-2, C-974-2, C-975-2, C-976-2, C-977-2, C-978-2, C-979-2, C-980-2, C-981-2, C-982-2, C-983-2, C-984-2, C-985-2, C-986-2, C-987-2, C-988-2, C-989-2, C-990-2, C-991-2, C-992-2, C-993-2, C-994-2, C-995-2, N-816-2, N-817-2, N-818-2, N-819-2, N-821-2, N-823-2, N-881-2, S-2905-2, S-3016-2, S-3316-2, S-2830-5, S-2832-5, S-3322-5, S-3050-4, S-2064-4, S-567-4, S-3046-4, C-1092-4, C-1093-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:
a. Any new Major Source, which is a new facility that is also a Major Source,
b. Major Modifications,
c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
d. Any project which results in the offset thresholds being surpassed, and/or
e. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

a. New Major Source

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

b. Major Modification

As demonstrated in VII.C.7, this project does constitute a Major Modification; therefore, public noticing for Major Modification purposes is required.

c. PE > 100 lb/day

Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII.C.2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant, therefore public noticing for PE > 100 lb/day purposes is not required.

d. Offset Threshold

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Threshold				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO_X	> 20,000	> 20,000	20,000 lb/year	No
SO_X	> 54,750	> 54,750	54,750 lb/year	No
PM_{10}	> 29,200	> 29,200	29,200 lb/year	No
CO	> 200,000	> 200,000	200,000 lb/year	No
VOC	> 20,000	> 20,000	20,000 lb/year	No

As detailed above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

e. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e. SSIPE = SSPE2 – SSPE1. The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	Project PE2 (lb/year)	Project PE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO_x	31,645	0	31,645	20,000 lb/year	Yes
SO_x	16,010	0	16,010	20,000 lb/year	No
PM_{10}	28,295	0	28,295	20,000 lb/year	No
CO	96,800	0	96,800	20,000 lb/year	Yes
VOC	20,475 + 126,144 = 146,619	111,325 + 37,673 = 148,998	-2,379	20,000 lb/year	No

As demonstrated above, the SSIPEs for NO_X, PM10, and CO were greater than 20,000 lb/year; therefore public noticing for SSIPE purposes is required.

2. Public Notice Action

As discussed above, public noticing is required for this project for Federal Major Modification for NO_X and VOC emissions, and SSIPE greater than 20,000 lb/year for NO_X, PM10, and CO emissions. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Proposed Rule 2201 (DEL) Conditions:

The DELs are stated in the following ATC conditions:

S-1246-296-19 (TEOR Operation)

- Fugitive VOC emissions rate for the TEOR operation, calculated using CAPCOA California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, Table IV-2c, Oil and Gas Production Screening Value Ranges Emission Factors (Feb 1999) and the total number of components in gas/light liquid service, shall not exceed 345.6 lb-VOC/day. [District Rule 2201]

S-1246-342-0 through '346-0 (Steam Generators)

- Emissions from the gas-fired unit shall not exceed any of the following limits: 7 ppmvd NOx @ 3% O2 or 0.0085 lb-NOx/MMBtu, 0.0043 lb-SOx/MMBtu, 0.0076 lb-PM10/MMBtu, 35 ppmvd CO @ 3% O2 or 0.026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320]
- This unit shall only be fired on PUC-quality natural gas, ethane-rich natural gas, TEOR gas, TVR gas, or a combination thereof. [District Rule 2201]

E. Compliance Assurance

1. Source Testing

S-1246-296-19 (TEOR Operation)

No source testing is required to demonstrate compliance with Rule 2201.

S-1246-342-0 through '346-0 (Steam Generators)

This unit is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, and District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*. Source testing requirements, in accordance with District Rules 4305 and 4306, will be discussed in Section VIII, *District Rules 4305 and 4306*, of this evaluation.

- Source testing to measure fuel combustion NOx and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]

2. Monitoring

S-1246-342-0 through '346-0 (Steam Generators)

As discussed in Section IV of this document, the facility has proposed to use natural gas or field gas also known as TEOR or TVR gas from the oilfield where the steam generator involved with this project is located. Therefore, the sulfur content of the natural gas or TEOR or TVR gas must be tested on an ongoing basis. Therefore, the following conditions will be listed on proposed permits to ensure compliance:

- When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be quarterly. If a quarterly fuel content source test fails to show compliance, weekly testing shall resume. [District Rule 1070, 2201, 4305, 4306, and 4320]
- If unit is fired on non-certified gas then sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 4084, D 3246 or grab sample analysis by GC-FPD/TCD, double GC for H2S and mercaptans, performed in the laboratory or draeger tubes. Should the applicant decide to use different methodology, the methodology must be approved by the District prior to its use. [District Rule 1070, 2201, 4305, 4306, and 4320]
- If fuel analysis is used to demonstrate compliance with the conditions of this permit, the fuel higher heating value for each fuel shall be certified by third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rule 2201, 4305, 4306, and 4320]

As required by District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, and District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, this unit is subject to monitoring requirements. Monitoring requirements, in accordance with District Rules 4305 and 4306, will be discussed in Section VIII, *District Rules 4305 and 4306*, of this evaluation.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following conditions will be placed on the ATC's to ensure compliance:

S-1246-342-0 through '346-0 (Steam Generators)

The following condition will appear on the permit:

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305 and 4306, and 40 CFR 60.48c(i)]

As required by District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, and District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3* this unit is subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rules 4305 and 4306, will be discussed in Section VIII, *District Rules 4305 and 4306*, of this evaluation.

S-1246-296-19 (TEOR Operation)

As required by District Rule 4401, *Steam-Enhanced Crude Oil Production Wells* this unit is subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rule 4401, will be discussed in Section VIII, under District Rule 4401 discussion of this evaluation.

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis

Section 4.14.1 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis. Refer to Appendix I of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_X, CO, and SO_X. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_X, CO, or SO_X.

The proposed location is in a non-attainment area for PM_{10}. The increase in the ambient PM_{10} concentration due to the proposed equipment is shown on the table titled Calculated Contribution. The levels of significance, from 40 CFR Part 51.165 (b)(2), are shown on the table titled Significance Levels.

Significance Levels					
Pollutant	Significance Levels ($\mu g/m^3$) - 40 CFR Part 51.165 (b)(2)				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM_{10}	1.0	5	N/A	N/A	N/A

Calculated Contribution					
Pollutant	Calculated Contributions ($\mu g/m^3$)				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM_{10}	0.46	2.3	N/A	N/A	N/A

As shown, the calculated contribution of PM_{10} will not exceed the EPA significance level. This project is not expected to cause or make worse a violation of an air quality standard.

G. Compliance Certification

Pursuant to Section 4.15.2, the owner of the proposed new major source or federal major modification shall demonstrate to the satisfaction of the APCO that all major stationary sources owned or operated by such person (or any entity controlling, controlled by, or under common control with such person) in California which are subject to emission limitations are in compliance or on a schedule for compliance with all applicable limitations and standards.

As discussed in Section VIII-Rule 2201-C.1.b, this source is undergoing a Federal Major Modification, therefore this requirement is applicable. Included in Appendix G is Berry Petroleum Company's compliance certification.

H. Alternative Siting Analysis

Section 4.15.1 of this Rule requires that an analysis of alternative sites, sizes and production processes is required under Section 173 of the Federal Clean Air Act. The applicant is required to prepare an analysis functionally equivalent to the requirements of Division 13, Section 21000 et seq. of the Public Resources Code.

The proposed steam generators and wells will be located at an existing oilfield to support current operations; therefore, an alternate site would be impractical.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

Section 3.20.5 states that a minor permit modification is a permit modification that does not meet the definition of modification as given in Section 111 or Section 112 of the Federal Clean Air Act. Since this project is a Title I modification (i.e. Federal Major Modification), the proposed project is considered to be a modification under the Federal Clean Air Act. As a result, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

As discussed above, the facility has applied for a Certificate of Conformity (COC) (see Appendix H); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued

compliance with this rule is expected. The facility shall not implement the changes requested until the final permit is issued.

Rule 4001 New Source Performance Standards (NSPS)

S-1246-342-0 through '346-0 (Steam Generators)

This rule incorporates the New Source Performance Standards from Part 60, Chapter 1, Title 40, Code of Regulation (CFR).

This rule is applicable to all new sources of air pollution and modification of existing sources of air pollution.

The applicable Subparts that might be applicable are listed and discussed below:

40 CFR Part 60 Subpart Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

§60.40b Applicability

Pursuant to this section, the requirements of 40 CFR Part 60 Subpart Db apply to units that have a maximum design heat input capacity of greater than 29 MW (100 MMBtu/hr). Since the new steam generator being installed has a heat input of 85 MMBtu/hr, this subpart does not apply.

40 CFR Part 60, Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

§60.40c(a) Applicability

Pursuant to this section, the requirements of 40 CFR Part 60 Subpart Dc apply to steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989 with a maximum heat input of greater than 10 MMBtu/hr but no more than 100 MMBtu/hr.

The facility is proposing to install a new steam generator with a heat input of 85 MMBtu/hr; therefore, this project is considered to be a construction of a new affected facility, as defined in 40 CFR Part 60.2, and the steam generator is subject to Subpart Dc.

However, Subpart Dc has no emission requirements for gas-fired units. Therefore, only the General Provisions (notification and record-keeping) of Subpart Dc are applicable to this project. A detailed discussion of Subpart Dc is as follows:

§60.42c Standards for Sulfur Dioxide

The SO_X standards in this section only apply to emission units that combust coal or fuel oil. Berry Petroleum Company is proposing to operate the new steam generator on gaseous

fuel only. Therefore, the requirements of this section are not applicable and no further discussion is required.

§60.43c Standards for Particulate Matter

The PM standards in this section only apply to emission units that combust coal, oil, wood, a mixture of these fuels, or a mixture of these fuels with any other fuels and have heat input capacity of 8.7 MW (30 MMBtu/hr) or greater.

Berry Petroleum Company is proposing to operate the new steam generator on gaseous fuel only. Therefore, the requirements of this section are not applicable and no further discussion is required.

§60.44c Compliance and Performance Test Methods and Procedures for Sulfur Dioxide

Since there are no standards listed for sulfur dioxide emissions from the steam generators, the requirements of §60.44c are not applicable and no further discussion is required.

§60.45c Compliance and Performance Test Methods and Procedures for Particulate Matter

Per §60.45c(a), the owner or operator of an affected facility subject to the PM and/or opacity standards under §60.43c shall conduct an initial performance test as required under §60.8, and shall conduct subsequent performance tests as requested by the Administrator, to determine compliance with the standards using the procedures listed therein.

Since this unit is not subject to the PM and/or opacity standards under §60.43c, this section does not apply and no further discussion is required.

§60.46c Emission Monitoring for Sulfur Dioxide

The steam generator is not subject to the sulfur dioxide provisions of this subpart; therefore, this section is not applicable.

§60.47c Emission Monitoring for Particulate Matter

Per §60.47c(a), the owner or operator of an affected facility combusting coal, oil, or wood that is subject to the opacity standards under §60.43c shall install, calibrate, maintain, and operate a COMS for measuring the opacity of the emissions discharged to the atmosphere and record the output of the system.

Since this unit is combusting gaseous fuel only and is not subject to the opacity standards under §60.43c, this section does not apply and no further discussion is required.

§60.48c Reporting and Recordkeeping Requirements

§60.48c(a)(1) requires the permittee to notify the Administrator (per §60.7) of the date of construction or reconstruction, and actual startup. Section (a)(1) requires that the notification includes design heat input and identification of fuels for this permit unit. District

Rule 4001, section 3.0 defines the Administrator as the APCO of the District. Therefore, the following condition will be included on the permit to ensure compliance with this section of the subpart:

- Permittee shall submit notification to the District of the date of construction and actual startup. Notifications shall be postmarked no later than 30 days after construction and 15 days after actual startup. The notifications shall include the design heat input and identification of fuels for this permit unit. [40 CFR 60.48c(a)(1)]

§60.48c(b) requires the owner or operator of an emission unit subject to the SO_2 emission limits of §60.42c, or the PM or opacity limits of §60.43c, shall submit to the Administrator the performance test data from the initial and any subsequent performance tests and, if applicable, the performance evaluation of the CEMS and/or COMS using the applicable performance specifications in appendix B of this part. However, since the steam generator is not subject to §60.42c or §60.43c, this section is not applicable.

§60.48c(c) is only applicable to coal, oil or wood-fired units, and is therefore not applicable to this steam generator.

§60.48c(d) and (e) are only applicable to units subject to the SO_2 limits of this subpart, and are therefore not applicable to the steam generator.

§60.48c(f) contains fuel supplier certification provisions only for oil, coal, and other fuels combusted in combination to oil or coal. Since this steam generator will operate on gaseous fuel only, this section is not applicable to the steam generator.

§60.48c(g)(1) requires the owner or operator of each affected facility shall record and maintain records of the amount of each fuel combusted during each operating day.

- Permittee shall record the amount of each fuel combusted during each operating day. [40 CFR 60.48c(g)(1)]

§60.48c(h) is only applies to units subject to an annual capacity factor limit, and is therefore not applicable to the steam generator.

§60.48c(i) requires records to be kept for two years. Therefore, the following condition (previously proposed in this engineering evaluation) will be included on the permit to ensure compliance with this section of the subpart:

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320, and 40 CFR 60.48c(i)]

§60.48c(j) requires reporting to be submitted to EPA every 6 months. However, since no reporting requirements are applicable to the steam generator, this section is not applicable.

Therefore, compliance with District Rule 4001 requirements is expected.

Rule 4101 Visible Emissions

District Rule 4101, Section 5.0, indicates that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour, which is dark or darker than Ringlemann 1 or equivalent to 20% opacity.

A permit condition will be listed on the permits as follows:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

For the tanks and TEOR operation, as long as the equipment is properly maintained and operated, compliance with visible emissions limits is expected under normal operating conditions.

Therefore, compliance with District Rule 4101 requirements is expected.

Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants that could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected. The following condition will be listed on the permits:

- {98} No air contaminant shall be released into the atmosphere, which causes a public nuisance. [District Rule 4102]

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix I), the total facility prioritization score including this project was greater than one. Therefore, a health risk assessment was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

HRA Summary		
Unit	Cancer Risk	T-BACT Required
S-1246-296-19 and '342-0 through '346-0	0.03 per million	No

Discussion of T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 10 in a million). As outlined by the HRA Summary in Appendix I of this report, the emissions increases for this project was determined to be less than significant.

The following condition will be listed on the permits to ensure compliance:

- The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]
- Units S-1246-342, '343, '344 are approved to be operated at the following location: 35°15'34.03" -119°34'54.15". [District Rule 2201]
- Units S-1246-345, 346 are approved to be operated at the following location: 35°15'21.95" -119°34'54.65". [District Rule 2201]

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

As discussed in Sections VII.A of this document, the F-Factor for NG, TEOR gas, and TVR gas is the same. Thus:

F-Factor for Natural Gas/TEOR/TVR: 8,710 dscf/MMBtu at 68 °F, equivalent to

$$Corrected\ F-factor = \left(\frac{8{,}710 dscf}{MMBtu}\right) \times \left(\frac{60^{o}F + 459.6}{68^{o}F + 459.6}\right) = 8{,}578 \frac{dscf}{MMBtu}\ at\ 60^{o}F$$

F-Factor:	8,578 dscf/MMBtu at 60 °F
PM10 Emission Factor:	0.0076 lb-PM10/MMBtu
Percentage of PM as PM10 in Exhaust:	100%
Exhaust Oxygen (O_2) Concentration:	3%

Excess Air Correction to F Factor = $\frac{20.9}{(20.9 - 3)} = 1.17$

$$GL = \left(\frac{0.0076\ lb - PM}{MMBtu} \times \frac{7{,}000\ grain}{lb - PM}\right) / \left(\frac{8{,}578\ ft^{3}}{MMBtu} \times 1.17\right)$$

$$GL = 0.0053\ grain/dscf < 0.1\ grain/dscf$$

Therefore, compliance with District Rule 4201 requirements is expected and a permit condition will be listed on the permit as follows:

- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Rule 4301 Fuel Burning Equipment

This rule specifies maximum emission rates in lb/hr for SO_2, NO_2, and combustion contaminants (defined as total PM in Rule 1020). This rule also limits combustion contaminants to ≤ 0.1 gr/scf. According to AP 42 (Table 1.4-2, footnote c), all PM emissions from natural gas combustion are less than 1 μm in diameter. The requirements of section 5.0 of this Rule are as follows:

- Combustion contaminates - Not to exceed 0.1 gr/dscf @ 12% CO_2 and 10 lb/hr.
- SO_x emissions - Not to exceed 200 lb/hr
- NO_x emissions - Not to exceed 140 lb/hr

$$PM\left(\frac{gr}{dscf}\right) = \frac{\text{PM Emissions}\left(\frac{lb-PM}{MMBtu}\right)\times 7{,}000\frac{gr-PM}{lb-PM}}{F_{factor\,CO_2}\left(\frac{dscf}{MMBtu}\right)\times\left(\frac{100\%}{12\%}\right)}$$

$$= \frac{\left(0.0076\frac{lb-PM}{MMBtu}\right)\left(7{,}000\frac{gr-PM}{lb-PM}\right)}{\left(1{,}024.2\frac{dscf}{MMBtu}\right)\left(\frac{100\%}{12\%}\right)}$$

$$= 0.0062\frac{gr-PM}{dscf}$$

Permit	PM (gr/dscf)	PM (lb/hr)	SO_x (lb/hr)	NO_x (lb/hr)
S-1246-342-0 through '346-0	0.0062	0.43	0.37	0.72
Rule Limit	0.1	10	200	140

The above table indicates compliance with the maximum emissions in this rule; therefore, continued compliance is expected.

Rule 4304 Equipment Tuning Procedure for Boilers, Steam Generators and Process Heaters

Pursuant to District Rule 4306, Section 6.3.1, the steam generator is not required to tune since it follows a District approved Alternate Monitoring scheme where the applicable emission limits are periodically monitored. Therefore, the unit is not subject to this rule.

Rule 4305 Boilers, Steam Generators and Process Heaters – Phase 2

The proposed steam generator is natural gas-fired with a maximum heat input of 85.0 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4305, the unit is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters – Phase 2.*

In addition, the unit is also subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3* and Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5 MMBtu/hr.*

Since the emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4305.

Rule 4306 Boilers, Steam Generators and Process Heaters – Phase 3

The proposed steam generator is natural gas-fired with a maximum heat input of 85.0 MMBtu/hr each. Pursuant to Section 2.0 of District Rule 4306, the unit is subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3.*

In addition, the unit is also subject to District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5 MMBtu/hr*

Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4306 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4306.

Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater Than 5.0 MMBtu/hr

This rule limits NOx, CO, SO2 and PM10 emissions from boilers, steam generators and process heaters rated greater than 5 MMBtu/hr. This rule also provides a compliance option of payment of fees in proportion to the actual amount of NOx emitted over the previous year.

The units in this project are all rated at greater than 5 MMBtu/hr heat input and are subject to this rule.

Section 5.1 NOx Emission Limits

Section 5.1 states that an operator of a unit(s) subject to this rule shall comply with all applicable requirements of the rule and one of the following, on a unit-by-unit basis:

5.1.1 Operate the unit to comply with the emission limits specified in Sections 5.2 and 5.4; or
5.1.2 Pay an annual emissions fee to the District as specified in Section 5.3 and comply with the control requirements specified in Section 5.4; or
5.1.3 Comply with the applicable Low-use Unit requirements of Section 5.5.

Section 5.2.1 states that on and after the indicated Compliance Deadline, units shall not be operated in a manner which exceeds the applicable NOx limit specified in Table 1 of this rule, shown below. On and after October 1, 2008, units shall not be operated in a manner to which exceeds a carbon dioxide (CO) emissions limit of 400 ppmv.

Rule 4320 Emissions Limits				
Category	Operated on gaseous fuel		Operated on liquid fuel	
	NO_X Limit	CO Limit	NO_X Limit	CO Limit
2. Units with a total rated heat input >20.0 MMBtu/hr	a) Standard Schedule 7 ppmv or 0.008 lb/MMBtu; or	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv
	b) Staged Enhanced Schedule Initial Limit 9 ppmv or 0.011 lb/MMBtu; and			
	Final Limit 5 ppmv or 0.0062 lb/MMBtu			

- the proposed NO_x emission factor is 7 ppmvd @ 3% O_2 (0.008 lb/MMBtu), and
- the proposed CO emission factor is 35 ppmvd @ 3% O_2 (0.026 lb/MMBtu).

Therefore, compliance with Section 5.2 of District Rule 4320 is expected.

A permit condition listing the emissions limits will be listed on permit as shown in the DEL section above.

Section 5.4 Particulate Matter Control Requirements

Section 5.4.1 states that to limit particulate matter emissions, an operator shall comply with one of the options listed in the rule.

Section 5.4.1.1 provides option for the operator to comply with the rule by firing the unit exclusively on PUC-quality gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases;

Section 5.4.1.2 provides option for the operator to comply with the rule by limiting the fuel sulfur content to no more than five (5) grains of total sulfur per hundred (100) standard cubic feet.

Section 5.4.1.3 provides option for the operator to comply with the rule by installing and properly operating an emissions control system that reduces SO2 emissions by at least 95% by weight; or limit exhaust SO2 to less than or equal to 9 ppmv corrected to 3 % O2.

The steam generator will be fired on natural gas/TEOR gas/TVR gas. Berry Petroleum Company will have a fuel sulfur content limit of no more than 1.5 gr S/100 scf or will reduce SO2 emissions by at least 95% by weight. Therefore, compliance with this section of the rule is expected.

Section 5.5 Low-Use Unit

This section discusses the requirements of low-use units. Berry Petroleum Company is not requesting low-use status; therefore, this section of the rule is not applicable to this project.

Section 5.7 Monitoring Provisions

Section 5.7.1 requires that permit units subject to District Rule 4320, Section 5.2 shall either install and maintain an operational APCO approved Continuous Emission Monitoring System (CEMS) for NO_X, CO and O_2, or implement an APCO-approved alternate monitoring.

Berry Petroleum Company has proposed to implement Alternate Monitoring Scheme A (pursuant to District Policy SSP-1105), which requires periodic monitoring of NO_X, CO, and O_2 concentrations at least once a month using a portable analyzer. The following conditions will be placed in the permits to ensure compliance with the requirements of this alternate monitoring plan:

- {2395} The permittee shall monitor and record the stack concentration of NO_X, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]
- If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320]
- All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated

in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320]

- The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320]

Section 5.7.6 requires monitoring SOx emissions. The following conditions will be placed in the permits to be in compliance with this rule requirement:

- PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320]
- If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320]
- If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320]

Section 5.8 Compliance Determination

Section 5.8.1 requires that the operator of any unit have the option of complying with either the applicable heat input (lb/MMBtu), emission limits or the concentration (ppmv) emission limits specified in Section 5.2. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling). Therefore, the following condition will be retained or listed on the permits as follows:

- {2976} The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320]

Section 5.8.2 requires that all emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0. Therefore, the following permit condition will be listed on the permits as follows:

- {2972} All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320]

Section 5.8.4 requires that for emissions monitoring pursuant to Sections 5.7.1 and 6.3.1 using a portable NO_X analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period. Therefore, the following previously listed permit condition will be on the permits as follows:

- {2937} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

Section 5.8.5 requires that for emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. Therefore, the following permit condition will be listed on the permit as follows:

- {2980} For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320]

Section 6.1 Recordkeeping

Section 6.1 requires that the records required by Sections 6.1.1 through 6.1.5 shall be maintained for five calendar years and shall be made available to the APCO and EPA upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule. Therefore, the following permit condition will be listed on the permit as follows:

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320 and 40 CFR 60.48c(i)]

Section 6.2, Test Methods

Section 6.2 identifies test methods to be used when determining compliance with the rule. The following conditions will be listed on the permits:

- {109} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]
- The following test methods shall be used: NO_X (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O_2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities – EPA Method 2; Stack gas moisture content – EPA Method 4; SOx – EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content – EPA Method 11 or 15; and fuel hhv (MMBtu) –ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320]

Section 6.3, Compliance Testing

Section 6.3.1 requires that each unit subject to the requirements in Section 5.2 shall be source tested at least once every 12 months, except if two consecutive annual source tests demonstrate compliance, source testing may be performed every 36 months. If such a source test demonstrates non-compliance, source testing shall revert to every 12 months. The following conditions will be included in the permits:

- A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320]
- Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 2201, 4305, 4306 and 4320]
- {110} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Sections 6.3.2.1 through 6.3.2.7 address the requirements of group testing which is not proposed in this project. Therefore these sections are not applicable.

Conclusion

Conditions will be incorporated into the permit in order to ensure compliance with each section of this rule, see attached draft permits. Therefore, compliance with District Rule 4320 requirements is expected.

Rule 4351 Boilers, Steam Generators and Process Heaters – Phase 1

This rule applies to boilers, steam generators, and process heaters at NO_x Major Sources that are not located west of Interstate 5 in Fresno, Kings, or Kern counties. If applicable, the emission limits, monitoring provisions, and testing requirements of this rule are satisfied when the unit is operated in compliance with Rule 4320. Therefore, compliance with this rule is expected.

Rule 4401 Steam-Enhanced Crude Oil Production Wells

The purpose of this rule is to limit the VOC emissions from steam-enhanced crude oil production well vents. This rule is applicable to all steam-enhanced crude oil production wells and any associated vapor collection and control systems.

Section 3.0, Definitions

Section 3.20.2 defines leak as: the dripping of VOC-containing liquid or the detection of a concentration of total organic compound, above background, determined according to the test method specified in Section 6.3.3 that exceeds the values specified in Table 1, Section 3.20.2.1 and Section 3.20.2.2 of this rule. Any liquid or gas coming from a component undergoing repair or replacement, or during sampling of process fluid from a component into a container is not considered a leak provided such activities are done as expeditiously as possible and with minimal spillage of material and VOC emissions to the atmosphere.

Rule 4401 Gas Leak in ppmv as Methane		
Type of Components	Major Gas Leak	Minor Gas Leak
1. PRDs	Greater than 10,000	400 to 10,000
2. Components other than PRDs	Greater than 10,000	2,000 to 10,000

Section 3.20.2.1 defines Major Liquid Leak as: a visible mist or a continuous flow of liquid that is not seal lubricant.

Section 3.20.2.2 defines Minor Liquid Leak as: a liquid leak, except seal lubricant, that is not a major liquid leak and drips liquid at a rate of more than three drops per minute.

Therefore, the following conditions are listed on the permit to ensure compliance:

- A gas leak is defined as the detection of a concentration of total organic compounds, above background (measured in accordance with EPA Method 21) that exceeds the following values: 1) A major gas leak is a detection of greater than 10,000 ppmv as methane; and 2) A minor gas leak is a detection of 400 to 10,000 ppmv as methane for pressure relief devices (PRDs) and 2,000 to 10,000 for components other than PRDs. [District Rule 4401]
- A liquid leak is defined as the dripping of VOC-containing liquid. A major liquid leak is a visible mist or a continuous flow of liquid that is not seal lubricant. A minor liquid leak is a liquid leak that is not a major liquid leak and drips liquid at a rate of more than three drops per minute, except for seal lubricant. [District Rule 4401]

Section 4.0, Exemptions

Section 4.1 states that any steam-enhanced crude oil production well undergoing service or repair during the time the well is not producing is exempt from the requirements of this Rule. Therefore, the following condition will be listed on the permit to ensure compliance:

- During the time any steam-enhanced crude oil production well is undergoing service or repair while the well is not producing, it shall be exempt from the emission control requirements of District Rule 4401, 5.0. [District Rule 4401]

Section 5.0, Requirements

Per Section 5.0, the requirements of Sections 5.1 through 5.4 are effective only until December 31, 2008. Therefore, the requirements of these sections are no longer applicable to this project.

Per Section 5.0, the requirements of Sections 5.5 through 5.9 shall be effective on and after January 1, 2009. Therefore, the requirements of these sections are applicable to this project and are discussed below.

Section 5.5.1 requires that the steam-enhanced crude oil production well vent is closed and the front line production equipment downstream of the wells that carry produced fluids (crude oil or mixture of crude oil and water) is connected to a VOC collection and control system as defined in Section 3.0. The well vent may be temporarily opened during periods of attended service or repair of the well provided such activity is done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall keep the steam-enhanced crude oil production well vents closed and the front line production equipment downstream of the wells that carry produced fluids (crude oil or mixture of crude oil and water) shall be connected to a VOC collection and control system. The well vent may be temporarily opened during periods of attended service or repair of the well provided such activity is done as expeditiously as possible

with minimal spillage of material and VOC emissions to the atmosphere. [District Rule 4401]

Section 3.50 defines the VOC collection and control system as "An APCO-approved system that is not open to the atmosphere and that is composed of hard-piping, ductwork connections and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to an APCO-approved control device that has a VOC destruction or removal efficiency of at least 99%, or that transports gases or vapors back to a process system."

Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall install and maintain an APCO-approved VOC collection and control system that is not open to the atmosphere and that is composed of hard-piping, ductwork connections and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to an APCO-approved control device that has a VOC destruction or removal efficiency of at least 99%, or that transports gases or vapors back to a process system. [District Rule 2201 and 4401]

Section 5.6.1 requires that an operator shall be in violation of this rule if any District inspection demonstrates that one or more of the conditions in Section 5.6.2 exist at the facility or if any operator inspection conducted pursuant to Section 5.8 demonstrates that one or more of the conditions in Section 5.6.2 exist at the facility.

Section 5.6.2 requires that the following conditions shall be used for determination of violation during an inspection pursuant to the provisions of Section 5.6.1:

5.6.2.1 Existence of an open-ended line or a valve located at the end of the line that is not sealed with a blind flange, plug, cap, or a second closed valve that is not closed at all times, except during attended operations requiring process fluid flow through the open-ended lines. Attended operations include draining or degassing operations, connection of temporary process equipment, sampling of process streams, emergency venting, and other normal operational needs, provided such operations are done as expeditiously as possible and with minimal spillage of material and VOC emissions to the atmosphere.

5.6.2.2 Existence of a component with a major liquid leak as defined in Section 3.0.

5.6.2.3 Existence of a component with a gas leak greater than 50,000 ppmv.

5.6.2.4 Existence of a component leak described in Section 5.6.2.4.1 through Section 5.6.2.4.3 in excess of the allowable number of leaks specified in Table 3.

5.6.2.4.1 A minor liquid leak, or
5.6.2.4.2 A minor gas leak, or
5.6.2.4.3 A gas leak greater than 10,000 ppmv up to 50,000 ppmv.

Rule 4401 Number of Allowable Leaks	
Number of Steam-Enhanced Crude Oil Production Wells Connected to a VOC Collection and Control System	Number of Allowable Leaks
1 to 25	3
26 to 50	6
51 to 100	8
101 to 250	10
251 to 500	15
More than 500	One (1) for each 20 wells tested with a minimum of 50 wells tested.

Therefore, the following condition will be listed on the permit to ensure compliance:

- During District compliance inspection, the following conditions shall be used to determination of a violation: 1) Existence of an open-ended line or a valve located at the end of the line that is not sealed with a blind flange, plug, cap, or a second closed valve that is not closed at all times, except during attended operations requiring process fluid flow through the open-ended lines. Attended operations include draining or degassing operations, connection of temporary process equipment, sampling of process streams, emergency venting, and other normal operational needs, provided such operations are done as expeditiously as possible and with minimal spillage of material and VOC emissions to the atmosphere; 2) Existence of a component with a major liquid leak; 3) Existence of a component with a gas leak greater than 50,000 ppmv; or 4) Existence of a component leak consisting of a minor liquid or gas leak, or a gas leak greater than 10,000 ppmv up to 50,000 ppmv, in excess of the allowable number of leaks specified in Table 3 of Rule 4401. [District Rule 4401]

Section 5.7.1 requires that an operator shall not use any component with a leak as defined in Section 3.0, or that is found to be in violation of the provisions of Section 5.6.2. However, components that were found leaking may be used provided such leaking components have been identified with a tag for repair, are repaired, or awaiting re-inspection after being repaired within the applicable time frame specified in Section 5.9 of this rule. Therefore, the following condition will be listed on the permit to ensure compliance:

- The permittee shall not use any components that leak in excess of the applicable leak standards as specified in this permit. Components that have been found leaking in excess of the applicable leak standards of this rule may be used provided such leaking components have been identified with a tag for repair, are repaired, or are awaiting re-inspection after being repaired, within the applicable time period specified in this permit. [District Rule 4401]

Section 5.7.2 requires that each hatch shall be closed at all times except during sampling or adding of process material through the hatch, or during attended repair, replacement, or

maintenance operations, provided such activities are done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall keep all hatches closed at all times except during sampling or adding of process material through the hatch, or during attended repair, replacement, or maintenance operations, provided such activities are done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere. [District Rule 4401]

Section 5.7.3 requires that an operator shall comply with the requirements of Section 6.7, if there is any change in the description of major components or critical components. Section 6.7 requires that by January 30 of each year after 2008, an operator shall submit to the APCO for approval, in writing, an annual report indicating any changes to an existing Operator Management Plan. Therefore, the following condition will be listed on the permit to ensure compliance:

- By January 30 of each year, permittee shall submit to the APCO for approval, in writing, an annual report indicating any changes to the existing, approved OMP. [District Rule 4401]

Section 5.8.1 requires that except for pipes and unsafe-to-monitor components, as operator shall inspect all other components pursuant to the requirements of Section 6.3.3 at least once every year.

Section 5.8.2 requires that an operator shall visually inspect all pipes at least once every year. Any visual inspection of pipes that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected within 24 hours after detecting the leak. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of this rule. Therefore, the following condition will be listed on the permit to ensure compliance:

- Except for pipes and unsafe-to-monitor components, permittee shall visually inspect all pipes at least once every year. Any visual inspection of pipes that indicates a leak that cannot be immediately repaired to meet the leak standards of Rule 4401 shall be inspected within 24 hours after detecting the leak. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of Rule 4401. [District Rule 4401]

Section 5.8.3 requires that in addition to the inspections required by Section 5.8.1, an operator shall inspect for leaks all accessible operating pumps, compressors, and pressure relief devices (PRDs) in service as follows:

5.8.3.1 An operator shall audio-visually (by hearing and by sight) inspect for leaks all accessible operating pumps, compressors, and PRDs in service at least once each calendar week.

5.8.3.2 Any audio-visual inspection of an accessible operating pump, compressor, and PRD performed by an operator that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected not later than

24 hours after conducting the audio-visual inspection. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of this rule.

Therefore, the following conditions will be listed on the permit to ensure compliance:

- Permittee shall inspect audio-visually (by hearing and by sight) for leaks all accessible operating pumps, compressors, and pressure relief devices (PRDs) in service at least once each calendar week. [District Rule 4401]
- Any audio-visual inspection of an accessible operating pump, compressor, and PRD performed by an operator that indicates a leak that cannot be immediately repaired to meet the leak standards of Rule 4401 shall be inspected not later than 24 hours after conducting the audio-visual inspection. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of Rule 4401. [District Rule 4401]

Section 5.8.4 requires that in addition to the inspections required by Section 5.8.1, Section 5.8.2 and Section 5.8.3, an operator shall perform the following inspections:

5.8.4.1 An operator shall initially inspect a PRD that releases to the atmosphere as soon as practicable but not later than 24 hours after the discovery of the release. An operator shall re-inspect the PRD not earlier than 24 hours after the initial inspection but not later than 15 calendar days after the initial inspection.

5.8.4.2 An operator shall inspect all new, replaced, or repaired fittings, flanges, and threaded connections within 72 hours of placing the component in service.

5.8.4.3 Except for PRDs subject to the requirements of Section 5.8.4.1, an operator shall inspect a component that has been repaired or replaced not later than 15 calendar days after the component was repaired or replaced.

Therefore, the following conditions will be listed on the permit to ensure compliance:

- Permittee shall initially inspect a PRD that releases to the atmosphere as soon as practicable but not later than 24 hours after the discovery of the release. Permittee shall re-inspect the PRD not earlier than 24 hours after the initial inspection but not later than 15 calendar days after the initial inspection. [District Rule 4401]
- Permittee shall inspect all new, replaced, or repaired fittings, flanges, and threaded connections within 72 hours of placing the component in service. [District Rule 4401]
- Except for PRDs, an operator shall inspect a component that has been repaired or replaced not later than 15 calendar days after the component was repaired or replaced. [District Rule 4401]

Section 5.8.5 requires that an operator shall inspect all unsafe-to-monitor components during each turnaround. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall inspect all unsafe-to-monitor components during each turnaround. [District Rule 4401]

Section 5.8.6 requires that a District inspection in no way fulfills any of the mandatory inspection requirements that are placed upon operators and cannot be used or counted as an inspection required of an operator.

Section 5.9.1 requires that an operator shall affix a readily visible weatherproof tag to a leaking component upon detection of the leak. An operator shall include the following information on the tag:

1) The date and time of leak detection.
2) The date and time of leak measurement.
3) For a gaseous leak, the leak concentration in ppmv.
4) For a liquid leak, whether it is a major liquid leak or a minor liquid leak.
5) Whether the component is an essential component, an unsafe-to-monitor component, or a critical component.

Section 5.9.2 requires that an operator shall keep the tag affixed to the component until an operator has met all of the following conditions:

1) Repaired or replaced the leaking component, and
2) Re-inspected the component using the test method in Section 6.3.3, and
3) The component is found to be in compliance with the requirements of this rule.
4) An operator shall minimize a component leak in order to stop or reduce leakage to the atmosphere immediately to the extent possible, but not later than one (1) hour after detection of the leak.

Section 5.9.3 requires that an operator shall minimize a component leak in order to stop or reduce leakage to the atmosphere immediately to the extent possible, but not later than one (1) hour after detection of the leak.

Therefore, the following conditions will be listed on the permit to ensure compliance:

- Permittee shall affix a readily visible weatherproof tag to a leaking component upon detection of the leak. The following information shall be included on the tag: 1) the date and time of leak detection; 2) the date and time of leak measurement; 3) leak concentration in ppmv for a gaseous leak; 4) description of whether it is a major liquid leak or a minor liquid leak; and 5) whether the component is an essential component, an unsafe-to-monitor component, or a critical component. [District Rule 4401]
- Permittee shall keep the tag affixed to the component until all of the following conditions have been met: 1) the leaking component has been repaired or replaced, and 2) the component has been re-inspected using the test methods described in this permit; and 3) the component is found to be in compliance with the requirements of Rule 4401. [District Rule 4401]
- Permittee shall minimize a component leak in order to stop or reduce leakage to the atmosphere immediately to the extent possible, but not later than one (1) hour after detection of the leak. [District Rule 4401]

Section 5.9.4 requires that except for leaking critical components or leaking essential components subject to the requirements of Section 5.9.7, if an operator has minimized a leak but the leak still exceeds the applicable leak limits as defined in Section 3.0, an operator shall

comply with at least one of the requirements of Section 5.9.4.1, Section 5.9.4.2, or Section 5.9.4.3 as soon as practicable but not later than the time period specified in Table 4.

5.9.4.1 Repair or replace the leaking component; or
5.9.4.2 Vent the leaking component to a VOC collection and control system as defined in Section 3.0, or
5.9.4.3 Remove the leaking component from operation.

Therefore, the following condition will be listed on the permit to ensure compliance:

- Except for leaking critical components or leaking essential components, if the operator has minimized a leak but the leak still exceeds the applicable leak limits, the operator shall comply with at least one of the following requirements as soon as practicable but not later than the time period specified in Table 4 of Rule 4401: 1) repair or replace the leaking component; 2) vent the leaking component to a VOC collection and control system; or 3) remove the leaking component from operation. [District Rule 4401]

Section 5.9.5 requires that the leak rate measured after leak minimization has been performed shall be the leak rate used to determine the applicable repair period specified in Table 4.

Section 5.9.6 requires that the time of the initial leak detection shall be the start of the repair period specified in Table 4.

Therefore, the following condition will be listed on the permit to ensure compliance:

- The leak rate, measured after leak minimization has been performed, shall be used to determine the applicable repair period specified in Table 4 of Rule 4401 and the time of initial leak detection shall be the start of the repair period specified in Table 4 of Rule 4401. [District Rule 4401]

Section 5.9.7 requires that if the leaking component is an essential component or a critical component that cannot be immediately shut down for repairs, and if the leak has been minimized but the leak still exceeds the applicable leak standard of this rule, the operator shall repair or replace the essential component or critical component to eliminate the leak during the next process unit turnaround, but in no case later than one year from the date of the original leak detection, whichever comes earlier. Therefore, the following condition will be listed on the permit to ensure compliance:

- If the leaking component is an essential component or a critical component that cannot be immediately shut down for repairs, and if the leak has been minimized but the leak still exceeds the applicable leak standard of this rule, the operator shall repair or replace the essential component or critical component to eliminate the leak during the next process unit turnaround, but in no case later than one year from the date of the original leak detection, whichever comes earlier. [District Rule 4401]

Section 6.1, Recordkeeping and Submissions

Section 6.1 requires that an operator shall maintain the records required by Sections 6.1 and 6.2 for a period of five (5) years. These records shall be made available to the APCO upon request. Therefore, the following condition will be listed on the permit to ensure compliance:

- All records required by this permit shall be maintained and retained on-site for a minimum of five (5) years and made available for District, ARB, and EPA inspection upon request. [District Rule 4401]

Section 6.1.1 requires that the operator of any steam-enhanced crude oil production well shall maintain records of the date and well identification where steam injection or well stimulation occurs. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall maintain monitoring records of the date and well identification where steam injection or well stimulation occurs. [District Rule 4401]

Section 6.1.2 states that effective January 15, 1998, a small producer shall maintain monthly records of county-specific crude oil production. For the purpose of this rule, the monthly crude oil production records required by the California Division of Oil, Gas, and Geothermal Resources may be used to satisfy Section 6.1.2. This facility is a "Small Producer" and all of its operation occur within Kern County; therefore the following condition will be listed on the permit to ensure compliance:

- Permittee shall maintain monthly records of county-specific crude oil production. [District Rule 4401]

Section 6.1.3 states that the operator of any steam enhanced crude oil production well shall keep source test records which demonstrate compliance with the control efficiency requirements of the VOC collection and control system as defined in Section 3.0. Therefore, the following condition will be listed on the permit to ensure compliance:

- Unless waived by the District, permittee shall maintain source test records which show that the control efficiency requirements of the VOC collection and control system have been satisfied. [District Rule 4401]

Section 6.1.5 requires that effective on and after January 1, 2009, the inspection log maintained pursuant to Section 6.4. A condition will be included on the permit to ensure compliance with this requirement as discussed under Section 6.4.

Section 6.1.6 states that effective on and after January 1, 2009, records of each calibration of the portable hydrocarbon detection instrument utilized for inspecting components, including a copy of current calibration gas certification from the vendor of said calibration gas cylinder, the date of calibration, concentration of calibration gas, instrument reading of calibration gas before adjustment, instrument reading of calibration gas after adjustment, calibration gas expiration date, and calibration gas cylinder pressure at the time of calibration. Therefore, the following condition will be listed on the permit to ensure compliance:

- Records shall be maintained of each calibration of the portable hydrocarbon detection instrument utilized for inspecting components. The records shall include a copy of the current calibration gas certification from the vendor of the calibration gas cylinder, the date of calibration, the concentration of calibration gas, the instrument reading of calibration gas before adjustment, the instrument reading of calibration gas after adjustment, the calibration gas expiration date, and the calibration gas cylinder pressure at the time of calibration. [District Rule 4401]

Section 6.1.7 states that effective on and after January 1, 2009, an operator shall maintain copies at the facility of the training records of the training program operated pursuant to Section 6.5. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall establish and implement an employee training program for inspecting and repairing components and recordkeeping procedures, as necessary. Permittee shall maintain at the facility the copies of the training records of the training program. [District Rule 4401]

Section 6.1.8 states that effective on and after January 1, 2009, an operator shall keep a copy of the APCO-approved Operator Management Plan at the facility. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall maintain a copy of the latest APCO-approved Operator Management Plan (OMP) at the facility and make it available to the APCO, ARB, and US EPA upon request. [District Rule 4401]

Sections 6.1.9 and 6.1.10 specify recordkeeping and submission requirements for gauge tanks. This permit covers thermally enhanced oil recovery wells and does not include any gauge tanks. Therefore, the requirements of these sections are not applicable to this operation and no further discussion is required.

Section 6.2, Compliance Source Testing

Section 6.2.1 requires that an operator shall source test annually all vapor collection and control systems used to control emissions from steam-enhanced crude oil production well vents to determine control efficiency of the device(s) used for destruction or removal of VOC. Compliance testing shall be performed annually by source testers certified by ARB. Testing shall be performed during June, July, August, or September of each year if the system's control efficiency is dependent upon ambient air temperature.

Section 6.2.2 states that the APCO may waive the annual testing requirement of Section 6.2.1 if all uncondensed VOC emissions collected by a vapor collection and control system are incinerated in fuel burning equipment, an internal combustion engine or in a smokeless flare.

Section 6.2.3 states that the APCO may waive the annual testing requirement of Section 6.2.1 for a vapor control system which does not have a VOC destruction device.

Therefore, the following condition will be listed on the permit to ensure compliance:

- Annual control efficiency compliance tests shall be performed by source testers certified by the California Air Resource Board (CARB) on all vapor collection and control systems used to control emissions from steam-enhanced crude oil production wells. Testing shall be performed during June, July, August, or September of each year if the system's control efficiency is dependent upon ambient air temperature. The APCO may waive these source testing requirements if the vapor control system does not exhaust to atmosphere, or if all uncondensed VOC emissions collected by the vapor collection and control system are incinerated in fuel burning equipment, an internal combustion engine, or in a smokeless flare. [District Rule 4401]

Section 6.2.5 specifies compliance testing requirements for gauge tanks. This permit covers thermally enhanced oil recovery wells and does not include any gauge tanks. Therefore, the requirements of this section are not applicable to this operation and no further discussion is required.

Section 6.3, Test Methods

Section 6.3.1 specifies that the control efficiency of any VOC control device, measured and calculated as carbon, shall be determined by EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case EPA Method 25a may be used. EPA Method 18 may be used in lieu of EPA Method 25 or EPA Method 25a provided the identity and approximate concentrations of the analytes/compounds in the sample gas stream are known before analysis with the gas chromatograph and the gas chromatograph is calibrated for each of those known analyte/compound to ensure that the VOC concentrations are neither under- or over-reported.

Therefore, the following condition will be listed on the permit to ensure compliance:

- The control efficiency of any VOC control device, measured and calculated as carbon, shall be determined by EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case EPA Method 25a may be used. EPA Method 18 may be used in lieu of EPA Method 25 or EPA Method 25a provided the identity and approximate concentrations of the analytes/compounds in the sample gas stream are known before analysis with the gas chromatograph and the gas chromatograph is calibrated for each of those known analyte/compound to ensure that the VOC concentrations are neither under- or over-reported. [District Rule 4401]

Section 6.3.2 requires that the VOC content shall be shall be analyzed by using the latest revision of ASTM Method E168, E169, or E260 as applicable. Analysis of halogenated exempt compounds shall be analyzed by CARB Method 432. Therefore, the following condition will be listed on the permit to ensure compliance:

- VOC content shall be determined using ASTM Method E168-67, E169-63, or E260-73 as applicable. Halogenated exempt compounds shall be determined by ARB Method 422. [District Rule 4401]

Section 6.3.3 specifies that leak detection shall be performed with a portable hydrocarbon detection instrument in accordance with EPA Method 21. Where safety is a concern, such as measuring leaks from compressor seals or pump seals when the shaft is rotating, a person shall measure leaks by placing the instrument probe inlet at a distance of one (1) centimeter or less from the surface of the component interface. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall perform leak inspections at least annually, using a portable hydrocarbon detection instrument in accordance with USEPA Method 21. Where safety is a concern, such as measuring leaks from compressor seals or pump seals when the shaft is rotating, a person shall measure leaks by placing the instrument probe inlet at a distance of one centimeter or less from the surface of the component interface. [District Rule 4401]

Section 6.3.5 requires that the VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. Therefore, the following condition will be listed on the permit to ensure compliance:

- VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. [District Rule 4401]

Section 6.4, Inspection Log

Section 6.4 states that effective on and after January 1, 2009, an operator shall maintain an inspection log in which an operator records, at a minimum, all of the following information for each inspection performed:

6.4.1 The total number of components inspected, and the total number and percentage of leaking components found by component type.

6.4.2 The location, type, and name or description of each leaking component and description of any unit where the leaking component is found.

6.4.3 The date of leak detection and the method of leak detection.

6.4.4 For gaseous leaks, the leak concentration in ppmv, and for liquid leaks record whether the leak is a major liquid leak or a minor liquid leak.

6.4.5 The date of repair, replacement, or removal from operation of leaking components.

6.4.6 The identify and location of essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier.

6.4.7 The methods used to minimize the leak from essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier.

6.4.8 The date of re-inspection and the leak concentration in ppmv after the component is repaired or is replaced.

6.4.9 The inspector's name, business mailing address, and business telephone number.

6.4.10 The date and signature of the facility operator responsible for the inspection and repair program certifying the accuracy of the information recorded in the log.

Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall maintain an inspection log in which, at a minimum, all of the following information shall be recorded for each inspection performed: 1) The total number of components inspected, and the total number and percentage of leaking components found by component type; 2) The location, type, and name or description of each leaking component and description of any unit where the leaking component is found; 3) The date of leak detection and the method of leak detection; 4) For gaseous leaks, the leak concentration in ppmv, and for liquid leaks record whether the leak is a major liquid leak or a minor liquid leak; 5) The date of repair, replacement, or removal from operation of leaking components; 6) The identify and location of essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier; 7) The methods used to minimize the leak from essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier; 8) The date of re-inspection and the leak concentration in ppmv after the component is repaired or is replaced; 9) The inspector's name, business mailing address, and business telephone number; and 10) The date and signature of the facility operator responsible for the inspection and repair program certifying the accuracy of the information recorded in the log. [District Rule 4401]

Section 6.5, Employee Training Program

Effective on and after January 1, 2009, an operator shall establish and implement an employee training program for inspecting and repairing components and recordkeeping procedures, as necessary. Therefore, the following condition will be listed on the permit to ensure compliance:

- Permittee shall establish and implement an employee training program for inspecting and repairing components and recordkeeping procedures, as necessary. Permittee shall maintain at the facility the copies of the training records of the training program. [District Rule 4401]

Section 6.6, Operator Management Plan

Section 6.6 states that by June 30, 2008, an operator whose existing wells are subject to this rule or whose existing wells are exempt pursuant to Section 4.0 of this rule on or before December 14, 2006 shall prepare and submit an Operator Management Plan for approval by the APCO. An operator may use diagrams, charts, spreadsheets, or other methods approved by the APCO to describe the information required by Section 6.6.4 through Section 6.6.7

below. The Operator Management Plan shall include, at a minimum, all of the following information:

6.6.1 A description of all wells and all associated VOC collection and control systems subject to this rule, and all wells and all associated VOC collection and control systems that are exempt pursuant to Section 4.0 of this rule.

6.6.2 Identification and description of any known hazard that might affect the safety of an inspector.

6.6.3 Except for pipes, the number of components that are subject to this rule by component type.

6.6.4 Except for pipes, the number and types of major components, inaccessible components, unsafe-to-monitor components, critical components, and essential components that are subject to this rule and the reason(s) for such designation.

6.6.5 Except for pipes, the location of components subject to the rule (components may be grouped together functionally by process unit or facility description).

6.6.6 Except for pipes, components exempt pursuant to Section 4.8 (except for components buried below ground) may be described in the Operator Management Plan by grouping them functionally by process unit or facility description. The results of any laboratory testing or other pertinent information to demonstrate compliance with the applicable exemption criteria for components for which an exemption is being claimed pursuant to Sections 4.8 shall be submitted with the Operator Management Plan.

6.6.7 A detailed schedule of an operator's inspections of components to be conducted as required by this rule and whether the operator inspections of components required by this rule will be performed by a qualified contractor or by an in-house team.

6.6.8 A description of the training standards for personnel that inspect and repair components.

6.6.9 A description of the leak detection training for conducting the test method specified in Section 6.3.3 for new operators, and for experienced operators, as necessary.

Section 6.7 states that by January 30 of each year after 2008, an operator shall submit to the APCO for approval, in writing, an annual report indicating any changes to an existing Operator Management Plan.

Section 6.8 states that the APCO shall provide written notice to the operator of the approval or incompleteness of a new or revised Operator Management Plan within 60 days of receiving such Operator Management Plan. If the APCO fails to respond in writing within 60 days after the date of receiving the Operator Management Plan, it shall be deemed approved. No provision of the Operator Management Plan, approved or not, shall conflict with or take precedence over any provision of this rule.

Therefore, the following conditions will be listed on the permit to ensure compliance:

- Permittee shall maintain a copy of the latest APCO-approved Operator Management Plan (OMP) at the facility and make it available to the APCO, ARB, and US EPA upon request. [District Rule 4401]
- By January 30 of each year, permittee shall submit to the APCO for approval, in writing, an annual report indicating any changes to the existing, approved OMP. [District Rule 4401]
- In accordance with the approved OMP, permittee shall meet all applicable operating, leak standards, inspection and re-inspection, leak repair, record keeping, and notification requirements of Rule 4401. [District Rule 4401]

Section 7.0, Compliance Schedule

Section 7.0 establishes the compliance schedule requirements for existing and new steam-enhanced crude oil production wells. These are new steam-enhanced crude oil production wells and will be operating in compliance with the requirements of this rule. Therefore, no further discussion is required.

Conclusion

Conditions will be incorporated into the permit in order to ensure compliance with each section of this rule, see attached draft permit. Therefore, compliance with District Rule 4401 requirements is expected.

Rule 4801 Sulfur Compounds

A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 % by volume calculated as SO_2, on a dry basis averaged over 15 consecutive minutes.

As discussed in Section VIII, under District Rule 4201, the three fuel sources have identical F-Factors and since the SOx emissions factor is the same, the sulfur compounds calculations are similar for all fuel sources.

Using the ideal gas equation and the emission factors presented in Section VII, the sulfur compound emissions are calculated as follows:

$$\text{Volume } SO_2 = \frac{n\,RT}{P}$$

With:

N = moles SO_2
T (Standard Temperature) = 60°F = 520°R
P (Standard Pressure) = 14.7 psi
R (Universal Gas Constant) = $\frac{10.73\,psi \cdot ft^3}{lb \cdot mol \cdot °R}$

$$\frac{0.0043\,lb - SOx}{MMBtu} \times \frac{MMBtu}{8{,}578\,dscf} \times \frac{1\,lb \cdot mol}{64\,lb} \times \frac{10.73\,psi \cdot ft^3}{lb \cdot mol \cdot °R} \times \frac{520°R}{14.7\,psi} \times \frac{1{,}000{,}000 \cdot parts}{million} = 2.97\,\frac{parts}{million}$$

$$SulfurConcentration = 2.97\,\frac{parts}{million} < 2{,}000 \text{ ppmv (or 0.2\%)}$$

Therefore, compliance with District Rule 4801 requirements is expected.

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The California Department of Oil, Gas, and Geothermal Resources (DOGGR) is the public agency having principal responsibility for approving the Project. As such, DOGGR serves as the Lead Agency for the project. Consistent with CEQA Guidelines §15081, DOGGR has prepared a Mitigated Negative Declaration which is currently being circulated for public review and comment. The comment period for the Lead Agency's environmental document closes June 4, 2011.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency the District complies with CEQA by considering the Mitigated Negative Declaration prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CEQA Guidelines §15096).

The District's engineering evaluation of the project (this document) demonstrates that compliance with District rules and permit conditions would reduce Stationary Source emissions from the project to levels below the District's thresholds of significance for criteria pollutants. The District's proposed approval of the project is being circulated for public comment concurrent with the CEQA process to eliminate avoidable delays. Consistent with CEQA requirements, if the Lead Agency approves the project, the District will review the Lead Agency's final environmental document and reach its on conclusion on whether and how to approve the project.

Greenhouse Gas (GHG) Significance Determination

The GHG direct emissions from the proposed steam generator can be calculated using the following equation:

GHG (metric tons as CO_2) = EF (kg-CO2/MMBtu) * Ht Input/yr x (1×10^{-3})

where EF = 52.87 kg-CO_2/MMBtu for 1,000 Btu/scf natural gas
(CARB Compendium of Emission Factors, 2008)

GHG (metric tons as CO_2) = 52.87×85 MMBtu/hr x 8760 hr/yr x 10^{-3}
= 39,367 metric tons as CO_2

As shown in the above calculation, the GHG as CO_2 is already above the District threshold of 230 metric tons of CO_2 equivalent. To address the potential increase in GHG emissions, Berry Petroleum Company is proposing to comply with the best performance standard (BPS) developed by the District for steam generators (see Appendix J). The steam generator will utilize high efficiency variable speed drive electric motors and a bare tube area exceeding 235 ft/MMBTU of heat input, which meets the District's BPS. The following conditions will be included to ensure compliance with the GHG requirements.

- This steam generator shall be equipped with variable frequency drive electric motors on the air blower and the water pump. [California Environmental Quality Act]
- This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [California Environmental Quality Act]

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Issue Authorities to Construct S-1246-296-19, '342-0, '343-0, '344-0, '345-0, '346-0 subject to the permit conditions on the attached draft Authorities to Construct in Appendix K.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-1246-296-19	3020-09-A	865 wells @ $9.34 per well	$8079.10
S-1246-342-0	3020-02-H	85 MMBtu/hr steam generator	$953.00
S-1246-343-0	3020-02-H	85 MMBtu/hr steam generator	$953.00
S-1246-344-0	3020-02-H	85 MMBtu/hr steam generator	$953.00
S-1246-345-0	3020-02-H	85 MMBtu/hr steam generator	$953.00
S-1246-346-0	3020-02-H	85 MMBtu/hr steam generator	$953.00

Appendices

A: Current Permits
B: Tank Emissions Calculations
C: Fugitive Emissions Calculations
D: Stationary Source Potential to Emit
E: BACT Guideline 1.2.1 and BACT Analysis
F: BACT Guideline 7.1.1 and BACT Analysis
G: Compliance Certification
H: Certificate of Conformity
I: HRA Summary and Ambient Air Quality Analysis
J: Best Performance Standard for Steam Generators
K: Draft ATCs

APPENDIX A

Current Permits

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: S-1246-212-2 **EXPIRATION DATE:** 03/31/2010

SECTION: 34 **TOWNSHIP:** 12N **RANGE:** 24W

EQUIPMENT DESCRIPTION:
42,000 GALLON FIXED ROOF PETROLEUM STORAGE TANK

PERMIT UNIT REQUIREMENTS

1. True vapor pressure of the petroleum liquid stored shall be less than 0.5 psia. [District Rule 4623] Federally Enforceable Through Title V Permit
2. Permittee shall conduct True Vapor Pressure (TVP) testing of the organic liquid stored in this tank at least once every 24 months during summer (July - September), and/or whenever there is a change in the source or type of organic liquid stored in this tank in order to maintain exemption from the rule. [District Rule 4623] Federally Enforceable Through Title V Permit
3. For crude oil with an API gravity of 26 degrees or less, the TVP shall be determined using the latest version of the Lawrence Berkeley National Laboratory "test Method for Vapor pressure of Reactive Organic Compounds in Heavy Crude Oil Using Gas Chromatograph", as approved by ARB and EPA. [District Rule 4623, 6.4.4] Federally Enforceable Through Title V Permit
4. For other organic liquids, the true vapor pressure (TVP) shall be measured using Reid vapor pressure ASTM Method D323, and converting the RVP to TVP at the tank's maximum organic liquid storage temperature. The conversion of RVP to TVP shall be done in accordance of the oil and gas section of "California Air Resources Boards (ARB) Technical Guidance Document to the Criteria and Guidelines Regulations for AB 2588", dated August 1989. As an alternative to using ASTM D 323, the TVP of crude oil with an API gravity range of greater than 26 degrees up to 30 degrees may be determined by using other equivalent test methods approved by APCO, ARB and EPA. [District Rule 4623, 6.4.3] Federally Enforceable Through Title V Permit
5. The operator of a fixed roof tank shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
6. As used in this permit, the term "source or type" shall mean liquids with similar characteristics. The operator shall maintain records of API gravity of petroleum liquids stored in this unit to determine which are from common source. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. This unit has a storage capacity less than 420,000 gallons and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40CFR 60 Subpart K, Ka and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
8. The requirements of District Rule 4623 (Amended December 20, 2001) does not apply to this source because of low vapor pressure. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1246-296-17 **ISSUANCE DATE:** 10/07/2010

LEGAL OWNER OR OPERATOR: BERRY PETROLEUM COMPANY
MAILING ADDRESS: ATTN: EH&S MANAGER
5201 TRUXTUN AVENUE SUITE 100
BAKERSFIELD, CA 93309-0422

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

SECTION: 01 **TOWNSHIP:** 31S **RANGE:** 22E

EQUIPMENT DESCRIPTION:
THERMALLY ENHANCED OIL RECOVERY (TEOR) OPERATION SERVING 584 WELLS INCLUDING GAS/LIQUID SEPARATORS, HEAT EXCHANGERS, COMPRESSORS, INLET SEPARATOR VESSELS, CONDENSATE PUMPS, SULFUR SCRUBBER, VAPOR PIPING FROM TANKS '337 AND '-339 AND VAPOR PIPING TO STEAM GENERATORS S-1246-3, '-24, '-46, '-119, '-292, AND '-293 AND/OR DOGGR APPROVED GAS DISPOSAL WELLS (NMWSS): INCREASE NUMBER OF TEOR WELLS FROM 584 TO 760, ADD AUTHORIZED LOCATIONS OF OPERATION

CONDITIONS

1. The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102] Federally Enforceable Through Title V Permit
3. TEOR operation is authorized to operate at the following locations: Sections 1, 2, 3, 11, and 12 T31S, R22E. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Well vent vapor from this TEOR operation shall only be incinerated in approved steam generators or disposed of in DOGGR approved gas disposal wells. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Well vent vapor from this TEOR operation shall not be incinerated in approved steam generators unless it is first scrubbed in a fuel gas sulfur scrubber and sulfur compounds are reduced by a minimum of 95%. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DAVID WARNER, Director of Permit Services
S-1246-296-17 : Oct 7 2010 10:25AM -- EDGEHILR : Joint Inspection NOT Required

6. Compliance with scrubber sulfur removal efficiency requirement shall be demonstrated by measurement of total sulfur compound concentrations at scrubber inlet and outlet. The measurement shall be conducted on grab samples taken at scrubber inlet and outlet using one of the following test methods: ASTM D3246 or double GC for H2S and mercaptans, or equivalent test method with prior District approval. Grab samples shall be taken and analyzed upon initial use of the scrubber and, thereafter, every six months. If scrubber is not in use at six-month anniversary date, then efficiency shall be demonstrated within two weeks of returning scrubber to service. For each month in which scrubber is operated and laboratory analysis of grab samples is not required, operator shall monitor and adjust scrubber performance as needed using gas-detection tubes calibrated for existing sulfur species or other equivalent District approved sulfur detection method(s) or device(s). [District NSR Rule] Federally Enforceable Through Title V Permit
7. Well vent vapor collection and control system includes piping from sulfur scrubbers to District approved incinerating devices. Well vent vapor collection and control system includes bypass piping around sulfur scrubbers to DOGGR-approved vapor disposal well(s). [District NSR Rule] Federally Enforceable Through Title V Permit
8. Fugitive VOC emissions rate for the TEOR operation, calculated using CAPCOA California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, Table IV-2c, Oil and Gas Production Screening Value Ranges Emission Factors (Feb 1999) and the total number of components in gas/light liquid service, shall not exceed 305.0 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. During the time any steam-enhanced crude oil production well is undergoing service or repair while the well is not producing, it shall be exempt from the emission control requirements of District Rule 4401, 5.0 (as amended December 14, 2006). [District Rule 4401, 4.1] Federally Enforceable Through Title V Permit
10. The annual inspection requirements of Section 5.8.1 through Section 5.8.5 of Rule 4401 shall not apply to components exclusively handling gas/vapor or liquid with a VOC content of ten percent by weight (10 wt %) or less, as determined by the test methods in Section 6.3.5 of Rule 4401. [District Rule 4401 4.9] Federally Enforceable Through Title V Permit
11. An operator shall not operate a steam-enhanced crude oil production well unless the operator complies with the following requirements: The steam-enhanced crude oil production well vent is closed and the front line production equipment downstream of the wells that carry produced fluids (crude oil or mixture of crude oil and water) is connected to a VOC collection and control system as defined in Section 3.0 of Rule 4401, the well vent may be temporarily opened during periods of attended service or repair of the well provided such activity is done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere, the steam-enhanced crude oil production well vent is open and the well vent is connected to a VOC collection and control system as defined in Section 3.0 of Rule 4401. [District Rule 4401, 5.5.1 and 5.5.2] Federally Enforceable Through Title V Permit
12. An operator shall be in violation of this rule if any District inspection demonstrates or if any operator inspection conducted pursuant to Section 5.8 of Rule 4401 demonstrates the existence of a component with a major liquid leak, a component with a gas leak greater than 50,000 ppmv, or an open-ended line or a valve located at the end of the line that is not sealed with a blind flange, plug, cap or a second closed valve that is not closed at all times, except during attended operations as defined by Section 5.6.2.1 of Rule 4401 requiring process fluid flow through the open-ended lines. [District Rule 4401 5.6.2] Federally Enforceable Through Title V Permit
13. Gas and liquid leaks are as defined in Section 3.20 of Rule 4401. [District Rule 4401 3.20] Federally Enforceable Through Title V Permit
14. An operator shall be in violation of this rule if any District inspection demonstrates or if any operator inspection conducted pursuant to Section 5.8 of Rule 4401 demonstrates the existence of any combination of components with minor liquid leaks, minor gas leaks, or gas leaks greater than 10,000 ppmv up to 50,000 ppmv that totals more than number of leaks allowed by Table 3 of Rule 4401. [District Rule 4401 5.6.2] Federally Enforceable Through Title V Permit
15. An operator shall not use any component with a leak as defined in Section 3.0 of Rule 4401, or that is found to be in violation of the provisions of Section 5.6.2 of Rule 4401. However, components that were found leaking may be used provided such leaking components have been identified with a tag for repair, are repaired, or awaiting re-inspection after being repaired within the applicable time frame specified in Section 5.9 of Rule 4401. [District Rule 4401 5.7.1] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

16. Each hatch shall be closed at all times except during sampling or adding of process material through the hatch, or during attended repair, replacement, or maintenance operations, provided such activities are done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere. [District Rule 4401 5.7.2] Federally Enforceable Through Title V Permit

17. An operator shall comply with the requirements of Section 6.7 of Rule 4401 if there is any change in the description of major components or critical components. [District Rule 4401 5.7.3] Federally Enforceable Through Title V Permit

18. Except for pipes and unsafe-to-monitor components, an operator shall inspect all other components pursuant to the requirements of Section 6.3.3 of Rule 4401 at least once every year. [District Rule 4401 5.8.1] Federally Enforceable Through Title V Permit

19. An operator shall visually inspect all pipes at least once every year. Any visual inspection of pipes that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected within 24 hours after detecting the leak. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of Rule 4401. [District Rule 4401 5.8.2] Federally Enforceable Through Title V Permit

20. In addition to the inspections required by Section 5.8.1 of Rule 4401, an operator shall inspect for leaks all accessible operating pumps, compressors, and PRDs in service as follows: An operator shall audio-visually (by hearing and by sight) inspect for leaks all accessible operating pumps, compressors,and PRDs in service at least once each calendar week. Any audio-visual inspection of an accessible operating pump, compressor, and PRD performed by an operator that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected not later than 24 hours after conducting the audio-visual inspection. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of Rule 4401. [District Rule 4401 5.8.3] Federally Enforceable Through Title V Permit

21. In addition to the inspections required by Sections 5.8.1, 5.8.2 and 5.8.3 of Rule 4401, operator shall perform the following: initially inspect a PRD that releases to the atmosphere as soon as practicable but not later than 24 hours after the discovery of the release, re-inspect the PRD not earlier than 24 hours after the initial inspection but not later than 15 calendar days after the initial inspection, inspect all new, replaced, or repaired fittings, flanges, and threaded connections within 72 hours of placing the component in service. Except for PRDs subject to the requirements of Section 5.8.4.1 of Rule 4401, an operator shall inspect a component that has been repaired or replaced not later than 15 calendar days after the component was repaired or replaced. [District Rule 4401 5.8.4] Federally Enforceable Through Title V Permit

22. An operator shall inspect all unsafe-to-monitor components during each turnaround. [District Rule 4401 5.8.5] Federally Enforceable Through Title V Permit

23. District inspection in no way fulfills any of the mandatory inspection requirements that are placed upon operators and cannot be used or counted as an inspection required of an operator. [District Rule 4401 5.8.6] Federally Enforceable Through Title V Permit

24. An operator shall affix a readily visible weatherproof tag to a leaking component upon detection of the leak and shall include the following information on the tag: date and time of leak detection, date and time of leak measurement, for a gaseous leak, the leak concentration in ppmv, for a liquid leak, whether it is a major liquid leak or a minor liquid leak, whether the component is an essential component, an unsafe-to monitor component, or a critical component. [District Rule 4401 5.9.1] Federally Enforceable Through Title V Permit

25. An operator shall keep the tag affixed to the component until an operator has met all of the following conditions: repaired or replaced the leaking component, re-inspected the component using the test method in Section 6.3.3, and 5.9.2.3 of Rule 4401, or the component is found to be in compliance with the requirements of this rule. [District Rule 4401 5.9.2] Federally Enforceable Through Title V Permit

26. An operator shall minimize a component leak in order to stop or reduce leakage to the atmosphere immediately to the extent possible, but not later than one (1) hour after detection of the leak. [District Rule 4401 5.9.3] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

27. Except for leaking critical components or leaking essential components subject to the requirements of Section 5.9.7 of Rule 4401, if an operator has minimized a leak but the leak still exceeds the applicable leak limits as defined in Section 3.0 of Rule 4401, an operator shall comply with at least one of the following requirements as soon as practicable but not later than the time period specified in Table 4 of Rule 4401: Repair or replace the leaking component; or vent the leaking component to a VOC collection and control system as defined in Section 3.0 of Rule 4401, or remove the leaking component from operation. [District Rule 4401 5.9.4] Federally Enforceable Through Title V Permit

28. The repair period in calendar days shall not exceed 14 days for minor gas leaks, 5 days for major gas leaks less than or equal to 50,000 ppmv, 2 days for gas leak greater than 50,000 ppmv, 3 days for minor liquid leaks, 2 days for major liquid leaks. [District Rule 4401 5.9.4] Federally Enforceable Through Title V Permit

29. The leak rate measured after leak minimization has been performed shall be the leak rate used to determine the applicable repair period specified in Table 4 of Rule 4401. [District Rule 4401 5.9.5] Federally Enforceable Through Title V Permit

30. The time of the initial leak detection shall be the start of the repair period specified in Table 4 of Rule 4401. [District Rule 4401 5.9.6] Federally Enforceable Through Title V Permit

31. If the leaking component is an essential component or a critical component that cannot be immediately shut down for repairs, and if the leak has been minimized but the leak still exceeds the applicable leak standard of this rule, the operator shall repair or replace the essential component or critical component to eliminate the leak during the next process unit turnaround, but in no case later than one year from the date of the original leak detection, whichever comes earlier. [District Rule 4401 5.9.7] Federally Enforceable Through Title V Permit

32. The operator of any steam-enhanced crude oil production well shall maintain records of the date and well identification where steam injection or well stimulation occurs. [District Rule 4401 6.1.1] Federally Enforceable Through Title V Permit

33. An operator of any steam-enhanced crude oil production well shall keep source test records which demonstrate compliance with the control efficiency requirements of the VOC collection and control system as defined in Section 3.0 of Rule 4401. [District Rule 4401 6.1.3] Federally Enforceable Through Title V Permit

34. Operator of any steam-enhanced crude oil production well shall keep an inspection log maintained pursuant to Section 6.4 of Rule 4401. [District Rule 4401 6.1.5] Federally Enforceable Through Title V Permit

35. Records of each calibration of the portable hydrocarbon detection instrument utilized for inspecting components, including a copy of current calibration gas certification from the vendor of said calibration gas cylinder, the date of calibration, concentration of calibration gas, instrument reading of calibration gas before adjustment, instrument reading of calibration gas after adjustment, calibration gas expiration date, and calibration gas cylinder pressure at the time of calibration shall be maintained. [District Rule 4401 6.1.6] Federally Enforceable Through Title V Permit

36. An operator shall maintain copies at the facility of the training records of the training program operated pursuant to Section 6.5 of Rule 4401. [District Rule 4401 6.1.7] Federally Enforceable Through Title V Permit

37. Operator shall keep a copy of the APCO-approved Operator Management Plan at the facility. [District Rule 4401 6.1.8] Federally Enforceable Through Title V Permit

38. An operator that discovers that a PRD has released shall record the date that the release was discovered, and the identity and location of the PRD that released. An operator shall submit such information recorded during the calendar year to the APCO no later than 60 days after the end of the calendar year. [District Rule 4401 6.1.11] Federally Enforceable Through Title V Permit

39. An operator shall source test annually all vapor collection and control systems used to control emissions from steam-enhanced crude oil production well vents to determine the control efficiency of the device(s) used for destruction or removal of VOC. Compliance testing shall be performed annually by source testers certified by ARB. Testing shall be performed during June, July, August, or September of each year if the system's control efficiency is dependent upon ambient air temperature. [District Rule 4401 6.2.1] Federally Enforceable Through Title V Permit

40. If approved by EPA, ARB, and the APCO, an operator need not comply with the annual testing requirement of Section 6.2.1 if all uncondensed VOC emissions collected by a vapor collection and control system are incinerated in fuel burning equipment, an internal combustion engine or in a smokeless flare. [District Rule 4401 6.2.2] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

41. If approved by EPA, ARB, and the APCO, an operator need not comply with the annual testing requirement of Section 6.2.1 for a vapor control system which does not have a VOC destruction device. [District Rule 4401 6.2.3] Federally Enforceable Through Title V Permit

42. An operator seeking approval pursuant to Section 6.2.2 or Section 6.2.3 shall submit a written request and supporting information to the APCO. The District shall evaluate the request and if approved by the APCO, the District shall provide EPA and ARB with a copy of the evaluation and shall request EPA and ARB approval. The District evaluation and the APCO request shall be deemed approved unless EPA or ARB objects to such approval in writing within 45 days of the receipt of the APCO request. [District Rule 4401 6.2.4] Federally Enforceable Through Title V Permit

43. An operator shall comply with the following requirements for each gauge tank, as defined in Section 3.17 of Rule 4401: Conduct an initial TVP testing of the produced fluid in each gauge tank not later than June 14, 2007. Thereafter, an operator shall conduct periodic TVP testing of each gauge tank at least once every 24 months during summer (July - September), and whenever there is a change in the source or type of produced fluid in the gauge tank. The TVP testing shall be conducted at the actual storage temperature of the produced fluid in the gauge tank using the applicable TVP test method specified in Section 6.4 of Rule 4623 (Storage of Organic Liquids). The operator shall submit the TVP testing results to the APCO as specified in Section 6.1.10 of Rule 4401. [District Rule 4401 6.2.5] Federally Enforceable Through Title V Permit

44. The control efficiency of any VOC control device, measured and calculated as carbon, shall be determined by EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case EPA Method 25a may be used. EPA Method 18 may be used in lieu of EPA Method 25 or EPA Method 25a provided the identity and approximate concentrations of the analytes/compounds in the sample gas stream are known before analysis with the gas chromatograph and the gas chromatograph is calibrated for each of those known analyte/compound to ensure that the VOC concentrations are neither under- or over-reported. [District Rule 4401 6.3.1] Federally Enforceable Through Title V Permit

45. VOC content shall be analyzed by using the latest revision of ASTM Method E168, E169, or E260 as applicable. Analysis of halogenated exempt compounds shall be performed by using ARB Method 432. [District Rule 4401 6.3.2] Federally Enforceable Through Title V Permit

46. Leak inspection, other than audio-visual, and measurements of gaseous leak concentrations shall be conducted according to EPA Method 21 using an appropriate portable hydrocarbon detection instrument calibrated with methane. The instrument shall be calibrated in accordance with the procedures specified in EPA Method 21 or the manufacturer's instruction, as appropriate, not more than 30 days prior to its use. The operator shall record the calibration date of the instrument. Where safety is a concern, such as measuring leaks from compressor seals or pump seals when the shaft is rotating, a person shall measure leaks by placing the instrument probe inlet at a distance of one (1) centimeter or less from the surface of the component interface. [District Rule 4401 6.3.3] Federally Enforceable Through Title V Permit

47. The VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. [District Rule 4401 6.3.5] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

48. Operator shall maintain an inspection log in which an operator records, at a minimum, all of the following information for each inspection performed: The total number of components inspected, total number and percentage of leaking components found by component type, location, type, and name or description of each leaking component and description of any unit where the leaking component is found, date of leak detection and the method of leak detection. For gaseous leaks, the leak concentration in ppmv, and for liquid leaks record whether the leak is a major liquid leak or a minor liquid leak. the date of repair, replacement, or removal from operation of leaking components, identify and location of essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier, methods used to minimize the leak from essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier, the date of re-inspection and the leak concentration in ppmv after the component is repaired or is replaced, the inspector's name, business mailing address, and business telephone number, date and signature of the facility operator responsible for the inspection and repair program certifying the accuracy of the information recorded in the log. [District Rule 4401 6.4] Federally Enforceable Through Title V Permit

49. All records of required monitoring data and support information shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request. [District Rules 2520, 9.4.2 and 4401, 6.1] Federally Enforceable Through Title V Permit

50. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

51. Collected vapors shall be disposed of in District approved incineration devices, as listed on this permit, or in Department of Oil, Gas and Geothermal Resources (DOGGR) approved vapor disposal wells. Permittee shall make documentation of DOGGR approval for injection wells readily available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit

52. The operator shall maintain records of the fugitive component count and calculated VOC emissions. [District Rule 2201] Federally Enforceable Through Title V Permit

53. Permittee shall maintain a written record of inlet and outlet sulfur compound measurements and recharging dates and such records shall be made readily available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit

54. Permittee shall maintain with the permit a current listing of all steam enhanced wells with casing vents connected to the well vent collection and control system. [District Rules 1070 and 2520, 9.3.2] Federally Enforceable Through Title V Permit

55. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

56. ATCs S-1246-296-16 shall be implemented prior to or concurrently with this ATC. [District Rule 2201]

APPENDIX B

Tank Emissions Calculations

Tank Input Data	
permit number (S-xxxx-xx-xx)	1246-212
facility tank I.D.	T-11
nearest city {1: Bakersfield, 2: Fresno, 3: Stockton}	1
tank ROC vapor pressure (psia)	0.5
liquid bulk storage temperature, Tb (°F)	180
is this a constant-level tank? **{yes, no}**	no
will flashing losses occur in this tank (only if first-line tank)? **{yes, no}**	no
breather vent pressure setting range (psi)	0.06
diameter of tank (feet)	21.1
capacity of tank (bbl)	1,000
conical or dome roof? **{c, d}**	c
shell height of tank (feet)	16
average liquid height (feet)	8
are the roof and shell the same color? **{yes,no}**	yes
For roof: color {1:Spec Al, 2:Diff Al, 3:Light, 4:Med, 5:Red, 6:White}	4
condition {1: Good, 2: Poor}	1
-----This row only used if shell is different color from roof-----	3
-----This row only used if shell is different color from roof-----	1

Liquid Input Data	A	B
maximum daily fluid throughput (bbl)		2,000
maximum annual fluid throughput (bbl)		730,000
-----This row only used if flashing losses occur in this tank-----		
-----This row only used if flashing losses occur in this tank-----		-
molecular weight, Mw (lb/lb-mol)		100

Calculated Values	A	B
daily maximum ambient temperature, Tax (°F)		77.65
daily minimum ambient temperature, Tan (°F)		53.15
daily total solar insulation factor, I (Btu/ft^2-day)		1648.9
atmospheric pressure, Pa (psia)		14.47
water vapor pressure at daily maximum liquid surface temperature (Tlx), Pvx (psia	143.8	3.2094
water vapor pressure at daily minimum liquid surface temperature (Tln), Pvn (psia	133.0	2.4283
water vapor pressure at average liquid surface temperature (Tla), Pva (psia)	138.4	2.7876
roof outage, Hro (feet)		0.2198
vapor space volume, Vv (cubic feet)		2874.19
paint factor, alpha		0.68
vapor density, Wv (lb/cubic foot)		0.0078
daily vapor temperature range, delta Tv (degrees Rankine)		49.04
vapor space expansion factor, Ke		0.1437

Results	lb/year	lb/day
Standing Storage Loss	1,173	3.21
Working Loss	36,500	100.00
Flashing Loss	N/A	N/A
Total Uncontrolled Tank VOC Emissions	**37,673**	**103.2**

Summary Table	
Permit Number	1246-212
Facility Tank I.D.	T-11
Tank capacity (bbl)	1,000
Tank diameter (ft)	21.1
Tank shell height (ft)	16
Conical or Dome Roof	Conical
Maximum Daily Fluid Throughput (bbl/day)	2,000
Maximum Annual Fluid Throughput (bbl/year)	730,000
Maximum Daily Oil Throughput (bbl/day)	N/A
Maximum Annual Oil Throughput (bbl/year)	N\A
Total Uncontrolled Daily Tank VOC Emissions (lb/day)	103.2
Total Uncontrolled Annual Tank VOC Emissions (lb/year)	37,673

APPENDIX C

Fugitive Emissions Calculations

Berry Petroleum Company
S-1246-296 PE1

Fugitive Emissions Using Screening Emission Factors
California Implementation Guidelines for Estimating Mass Emissions
of Fugitive Hydrocarbon Leaks at Petroleum Facilities
Table IV-2c. Oil and Gas Production
Screening Value Ranges Emission Factors

Weight percentage of VOC in the total organic compounds in gas (neglect non-organics)? 100 %
Weight percentage of VOC in the total organic compounds in oil (neglect non-organics)? 100 %

Equipment Type	Service	Component Count	Total allowable leaking components	Screening Value EF - TOC < 10,000 ppmv (lb/day/source)	Screening Value EF - TOC ≥ 10,000 ppmv (lb/day/source)	VOC emissions (lb/day)
Valves	Gas/Light Liquid	3,826	38	1.852E-03	7.333E+00	285.69
	Light Crude Oil	0	0	1.005E-03	3.741E+00	0.00
	Heavy Crude Oil	0	0	7.408E-04	N/A*	0.00
Pump Seals	Gas/Light Liquid	18	0	5.270E-02	4.709E+00	0.95
	Light Crude Oil	0	0	1.402E-02	4.709E+00	0.00
	Heavy Crude Oil	0	0	N/A	N/A	N/A
Others	Gas/Light Liquid	10	0	7.778E-03	7.281E+00	0.08
	Light Crude Oil	0	0	6.931E-03	3.757E-01	0.00
	Heavy Crude Oil	0	0	3.016E-03	N/A*	0.00
Connectors	Gas/Light Liquid	23,092	0	6.349E-04	1.370E+00	14.66
	Light Crude Oil	0	0	5.291E-04	1.238E+00	0.00
	Heavy Crude Oil	0	0	4.233E-04	4.233E-04	0.00
Flanges	Gas/Light Liquid	2,414	0	1.482E-03	3.228E+00	3.58
	Light Crude Oil	0	0	1.270E-03	1.376E+01	0.00
	Heavy Crude Oil	0	0	1.217E-03	N/A*	0.00
Open-ended Lines	Gas/Light Liquid	0	0	1.270E-03	2.905E+00	0.00
	Light Crude Oil	0	0	9.524E-04	1.175E+00	0.00
	Heavy Crude Oil	0	0	7.937E-04	3.762E+00	0.00

* Emission factor not available. All components from equipment type and service will be assessed as < 10,000 ppmv

Number of wells: 760

Total VOC Emissions (lb/hr) = 12.71
Total VOC Emissions (lb/day) = 305.0
Total VOC Emissions (lb/yr) = 111,325

Berry Petroleum Company
S-1246-296 PE2

Fugitive Emissions Using Screening Emission Factors
California Implementation Guidelines for Estimating Mass Emissions
of Fugitive Hydrocarbon Leaks at Petroleum Facilities
Table IV-2c. Oil and Gas Production
Screening Value Ranges Emission Factors

Weight percentage of VOC in the total organic compounds in gas (neglect non-organics)? 100 %
Weight percentage of VOC in the total organic compounds in oil (neglect non-organics)? 100 %

Equipment Type	Service	Component Count	Total allowable leaking components	Screening Value EF - TOC < 10,000 ppmv (lb/day/source)	Screening Value EF - TOC ≥ 10,000 ppmv (lb/day/source)	VOC emissions (lb/day)
Valves	Gas/Light Liquid	4,405	43	1.852E-03	7.333E+00	323.42
	Light Crude Oil	0	0	1.005E-03	3.741E+00	0.00
	Heavy Crude Oil	0	0	7.408E-04	N/A*	0.00
Pump Seals	Gas/Light Liquid	21	0	5.270E-02	4.709E+00	1.09
	Light Crude Oil	0	0	1.402E-02	4.709E+00	0.00
	Heavy Crude Oil	0	0	N/A	N/A	N/A
Others	Gas/Light Liquid	12	0	7.778E-03	7.281E+00	0.09
	Light Crude Oil	0	0	6.931E-03	3.757E-01	0.00
	Heavy Crude Oil	0	0	3.016E-03	N/A*	0.00
Connectors	Gas/Light Liquid	26,586	0	6.349E-04	1.370E+00	16.88
	Light Crude Oil	0	0	5.291E-04	1.238E+00	0.00
	Heavy Crude Oil	0	0	4.233E-04	4.233E-04	0.00
Flanges	Gas/Light Liquid	2,779	0	1.482E-03	3.228E+00	4.12
	Light Crude Oil	0	0	1.270E-03	1.376E+01	0.00
	Heavy Crude Oil	0	0	1.217E-03	N/A*	0.00
Open-ended Lines	Gas/Light Liquid	0	0	1.270E-03	2.905E+00	0.00
	Light Crude Oil	0	0	9.524E-04	1.175E+00	0.00
	Heavy Crude Oil	0	0	7.937E-04	3.762E+00	0.00

* Emission factor not available. All components from equipment type and service will be assessed as < 10,000 ppmv

Number of wells: 875

Total VOC Emissions (lb/hr) = 14.40
Total VOC Emissions (lb/day) = 345.6
Total VOC Emissions (lb/yr) = 126,144

APPENDIX D

Stationary Source Potential to Emit

Detailed SSPE Report

Region	*Facility*	*Unit*	*Mo*	*NOx*	*SOx*	*PM10*	*CO*	*VOC*	*Number of Outstanding ATCs*
S	1246	0	2						0
S	1246	3	26	3975	21069	1678	7504	1214	4
S	1246	9	18	1577	125	219	1489	131	0
S	1246	10	10	1577	125	333	3679	241	0
S	1246	19	27	9855	5475	3468	18068	1643	2
S	1246	24	23	3627	574	1007	6850	604	3
S	1246	46	24	9461		1997	22075	1445	9
S	1246	55	6						0
S	1246	66	2						0
S	1246	68	2						0
S	1246	69	2						0
S	1246	77	9	0	0	0	0	0	1
S	1246	78	5	0	0	0	0	0	1
S	1246	79	5	0	0	0	0	0	1
S	1246	80	5	0	0	0	0	0	1
S	1246	82	2						0
S	1246	83	2						0
S	1246	84	6	0	0	0	0	0	1
S	1246	93	2	0	0	0	0	7832	0
S	1246	95	11	0	0	0	0	12958	2
S	1246	96	8	0	0	0	0	4015	0
S	1246	100	2						0
S	1246	101	2						0
S	1246	109	3						0
S	1246	110	3						0
S	1246	116	7	540	3300	228	2520	165	0

Notes:

Blank values for a particular permit unit do not necessarily relfect zero emissions. For units with blank values, the PE must still be determined based on physical PE or as limited by permit condition.

For permits that show outstanding ATCs, consult PAS ATC Emission Profile records to determine what the highest PE is for each pollutant.

ATCs for new units (e.g. S-XXXX-X-0) must be added in separately.

ERC's for onsite reductions must be added in separately per Rule 2201 as well.

Region	Facility	Unit	Mo	NOx	SOx	PM10	CO	VOC	Number of Outstanding ATCs
S	1246	119	8	3974	63206	1104	7506	1214	3
S	1246	120	2						0
S	1246	121	2						0
S	1246	122	2						0
S	1246	123	2						0
S	1246	124	4						0
S	1246	125	3						0
S	1246	126	4						0
S	1246	127	4						0
S	1246	128	2						0
S	1246	129	2						0
S	1246	130	2						0
S	1246	131	2						0
S	1246	133	2						0
S	1246	134	6						0
S	1246	143	12	500	14	38	420	28	0
S	1246	144	3						0
S	1246	145	8	0	0	0	0	83220	0
S	1246	148	2						0
S	1246	149	2						0
S	1246	150	2						0
S	1246	152	5	0	0	0	0	32449	2
S	1246	153	5	0	0	0	0	9563	0
S	1246	154	5	0	0	0	0	9563	0
S	1246	155	5	0	0	0	0	9563	0
S	1246	158	4	0	0	0	0	9563	0
S	1246	159	2						0
S	1246	161	3						0
S	1246	162	3						0

Notes:

Blank values for a particular permit unit do not necessarily relfect zero emissions. For units with blank values, the PE must still be determined based on physical PE or as limited by permit condition.

For permits that show outstanding ATCs, consult PAS ATC Emission Profile records to determine what the highest PE is for each pollutant.

ATCs for new units (e.g. S-XXXX-X-0) must be added in separately.

ERC's for onsite reductions must be added in separately per Rule 2201 as well.

Region	Facility	Unit	Mo	NOx	SOx	PM10	CO	VOC	Number of Outstanding ATCs
S	1246	163	3						0
S	1246	166	3						0
S	1246	167	3						0
S	1246	168	3						0
S	1246	169	3						0
S	1246	170	6	4380	110	329	3687	256	1
S	1246	171	5	3000	86	228	2520	165	0
S	1246	172	3						0
S	1246	173	3						0
S	1246	174	3						0
S	1246	175	3						0
S	1246	177	5						0
S	1246	179	2						3
S	1246	180	2						0
S	1246	182	3						0
S	1246	183	2						0
S	1246	184	2						0
S	1246	185	2						0
S	1246	186	2	0	0	0	0	3158	0
S	1246	191	2						0
S	1246	197	2	0	0	0	0	0	0
S	1246	200	2						0
S	1246	201	2						0
S	1246	202	10	0	0	0	0	750	0
S	1246	203	12	4380	125	333	3679	241	1
S	1246	205	3						0
S	1246	206	3						0
S	1246	207	8	2941	63	224	2470	162	0
S	1246	208	2						0

Notes:

Blank values for a particular permit unit do not necessarily relfect zero emissions. For units with blank values, the PE must still be determined based on physical PE or as limited by permit condition.

For permits that show outstanding ATCs, consult PAS ATC Emission Profile records to determine what the highest PE is for each pollutant.

ATCs for new units (e.g. S-XXXX-X-0) must be added in separately.

ERC's for onsite reductions must be added in separately per Rule 2201 as well.

Region	Facility	Unit	Mo	NOx	SOx	PM10	CO	VOC	Number of Outstanding ATCs
S	1246	209	2						0
S	1246	210	2						0
S	1246	211	2						0
S	1246	212	2						0
S	1246	213	2						0
S	1246	214	2						0
S	1246	215	2						0
S	1246	216	2						0
S	1246	217	2						0
S	1246	233	2						0
S	1246	236	5						0
S	1246	237	5	0	0	0	0	16	0
S	1246	238	5	0	0	0	0	12	0
S	1246	239	5	0	0	0	0	9	0
S	1246	240	5	0	0	0	0	12	0
S	1246	241	3						0
S	1246	242	4						0
S	1246	244	2						0
S	1246	245	2						0
S	1246	250	3						0
S	1246	251	3						0
S	1246	252	14	9855	10950	2738	18068	1643	3
S	1246	253	14	9855	10950	2738	18068	1643	3
S	1246	254	14	9855	10950	2738	18068	1643	3
S	1246	255	8	17780	10960	800	4460	3040	1
S	1246	256	4						1
S	1246	257	4						1
S	1246	258	15	0	0	0	0	0	0
S	1246	259	5	0	0	0	0	80	1

Notes:

Blank values for a particular permit unit do not necessarily relfect zero emissions. For units with blank values, the PE must still be determined based on physical PE or as limited by permit condition.

For permits that show outstanding ATCs, consult PAS ATC Emission Profile records to determine what the highest PE is for each pollutant.

ATCs for new units (e.g. S-XXXX-X-0) must be added in separately.

ERC's for onsite reductions must be added in separately per Rule 2201 as well.

Region	Facility	Unit	Mo	NOx	SOx	PM10	CO	VOC	Number of Outstanding ATCs
S	1246	260	5	0	0	0	0	2220	1
S	1246	261	5	0	0	0	0	40	1
S	1246	263	5	0	0	0	0	920	1
S	1246	264	3						1
S	1246	266	6	500	14	38	420	28	1
S	1246	268	15	8367	10950	1016	46997	96214	5
S	1246	269	10	9855	3668	2738	18068	1643	2
S	1246	290	14	0	0	0	0	27704	2
S	1246	292	12	5957	4393	5659	26061	4095	5
S	1246	293	9	5957	4393	5659	26061	4095	4
S	1246	294	8	5957	2122	5659	27550	4095	1
S	1246	296	10	0	0	0	0	6935	7
S	1246	297	1	0	0	0	0	78	1
S	1246	298	1	0	0	0	0	39	1
S	1246	299	1	0	0	0	0	39	1
S	1246	300	4	0	0	0	0	4015	0
S	1246	304	1	0	0	0	0	80	1
S	1246	305	2	0	0	0	0	639	0
S	1246	306	2	0	0	0	0	639	0
S	1246	307	2	0	0	0	0	598	0
S	1246	308	2	0	0	0	0	391	0
S	1246	310	3	0	0	0	0	4015	0
S	1246	311	5	5957	2122	5659	19360	4095	1
S	1246	314	3	5957	2122	5659	19360	4095	2
S	1246	315	3	0	0	0	0	4015	0
S	1246	318	4	5957	2122	5659	19360	4095	1
S	1246	319	1	6329	2122	5659	19360	4095	1
S	1246	320	1	6329	2122	5659	19360	4095	1
S	1246	321	1	6329	2057	5659	19360	4095	1

Notes:

Blank values for a particular permit unit do not necessarily relfect zero emissions. For units with blank values, the PE must still be determined based on physical PE or as limited by permit condition.

For permits that show outstanding ATCs, consult PAS ATC Emission Profile records to determine what the highest PE is for each pollutant.

ATCs for new units (e.g. S-XXXX-X-0) must be added in separately.

ERC's for onsite reductions must be added in separately per Rule 2201 as well.

Region	Facility	Unit	Mo	NOx	SOx	PM10	CO	VOC	Number of Outstanding ATCs
S	1246	332	1	5957	4989	5659	19360	4095	0
S	2265	0	3						0
S	2265	1	13	72620	4292	49932	200429	54662	0
	SSPE (lbs)			249160	185570	130514	622237	444105	

Notes:

Blank values for a particular permit unit do not necessarily relfect zero emissions. For units with blank values, the PE must still be determined based on physical PE or as limited by permit condition.

For permits that show outstanding ATCs, consult PAS ATC Emission Profile records to determine what the highest PE is for each pollutant.

ATCs for new units (e.g. S-XXXX-X-0) must be added in separately.

ERC's for onsite reductions must be added in separately per Rule 2201 as well.

APPENDIX E

BACT Guideline 1.2.1 and BACT Analysis

Best Available Control Technology (BACT) Guideline 1.2.1
Last Update: 3/11/2005

Steam Generator (> or = 5 MMBtu/hr, Oil Field)

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	50 ppmvd @ 3% O2		
NOx	14 ppmvd @ 3% O2	7 ppmvd @ 3% O2 with SCR 9 ppmvd @ 3% O2	
PM10	Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2		
SOx	Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2		
VOC	Gaseous fuel		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is requried for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Details Page.

BACT Analysis for Steam Generators (S-1246-342-0 through '346-0)

1. BACT Analysis for NO_X Emissions:

Step 1 - Identify All Possible Control Technologies

The District adopted District Rule 4320 on October 16, 2008. The NO_X emission limits requirements in District Rule 4320 are lower than the limits in BACT Guideline 1.2.1 (Steam Generator ≥ 5 MMBtu/hr, Oilfield); which has been rescinded. Therefore, a project specific BACT analysis will be performed to determine BACT for this project. District Rule 4320 includes a compliance option that limits oilfield steam generators with heat input ratings > 20.0 MMBtu/hr to 7 ppm @ 3% O_2. This emission limit is Achieved in Practice control technology for the BACT analysis. District Rule 4320 also contains an enhanced schedule with initial and final limit options that allows applicants additional time to meet the requirements of the rule. The enhanced schedule NO_X emission initial limit requirement is 9 ppmv @ 3% O_2 and final limit of 5 ppmv @ 3% O_2. Since this is an enhanced option in the rule, the final limit of 5 ppmv @ 3% O_2 will be considered the Technologically Feasible control technology for the BACT analysis.

The following are possible control technologies:

1. 5 ppmvd @ 3% O2 - Technologically Feasible
2. 7 ppmvd @ 3% O2 - Achieved in Practice

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. 5 ppmvd @ 3% O2 - Technologically Feasible
2. 7 ppmvd @ 3% O2 - Achieved in Practice

Step 4 - Cost Effectiveness Analysis

The applicant has proposed a NOx limit of 7 ppmvd @ 3% O_2, therefore a cost analysis for the 5 ppmvd with SCR (0.0062 lb/MMBTU) option is required.

SCR Cost Effective Analysis:

Assumptions:

- Industry standard (IS) is assumed to be a NOx emission rate of 15 ppmv @3% O2 in accordance with Rule 4306
- Unit's maximum emissions are defined by the burner size multiplied by the emissions rate and a maximum annual operating schedule of 8,760 hours

Calculations:

Industry Std NOx Emissions = 85 MMBtu/hr x 0.018 lb/MMBtu x 8,760 hr/yr
= 13,403 lb/yr

Feasible NOx Emissions = 85 MMBtu/hr x 0.0062 lb/MMBtu x 8,760 hr/yr
= 4,617 lb/yr

NOx reduction due to SCR:

Total reduction = Emissions $_{(15\ ppmv)}$ – Emissions $_{(5\ ppmv)}$
Total reduction = 13,403 lb/yr – 4,617 lb/yr
Total reduction = 8,786 lb/yr = 4.39 ton/yr

SCR Capital Cost (PCL Construction, August 19, 2010): $745,000.00 (includes all purchased equipment, taxes, freight and installation of SCR for a 85 MMBtu/hr unit) – detailed cost follow/attached.

Equivalent Annual Capital Cost (CC):

$$A = (P)\left[\frac{(i)(1+i)^n}{(1+i)^n - 1}\right] \text{ where:}$$

A: Equivalent annual capital cost of the control equipment
P: Present value of the control equipment
I: Interest rate (District policy is to use 10%)
n: Equipment life (District policy is to use 10 years)

$$A = (\$745{,}000)\left[\frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1}\right] = \frac{\$121{,}050}{yr}$$

Annual Direct Cost (ADC):

Operation & Maintenance = $125,000/yr (PCL quote)

Annual Indirect Cost (AIC) = included (PCL quote)

Total Annualized Cost = CC + ADC + AIC
= $121,050 + $125,000 + $0
= $246,050/yr

Cost Effectiveness:

Cost effectiveness = $246,050/4.39 ton/yr
Cost effectiveness = $56,047/ton

The cost effectiveness is greater than the $24,500/ton cost effectiveness threshold of the District BACT policy. Therefore, the use of SCR with ammonia injection is not cost effective and is not required as BACT.

Step 5 – Select BACT

BACT for NOx emissions from the oilfield steam generator is 7 ppmv @ 3% O2. The applicant has proposed to install the steam generators each with a NOx emission limit of 7 ppmvd @ 3% O2; therefore, BACT for NOx emissions is satisfied.

2. BACT Analysis for SO_X Emissions

Step 1 - Identify All Possible Control Technologies

The District adopted District Rule 4320 on October 16, 2008. BACT Guideline 1.2.1 (Steam Generator ≥ 5 MMBtu/hr, Oilfield) has been rescinded. Therefore, a project specific BACT analysis will be performed to determine BACT for this project.

The SJVAPCD BACT Clearinghouse Guideline 1.2.1 (1st quarter, 2005) identifies the following technologies:

1. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2 - Achieved in Practice

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. **Achieved-In-Practice:** Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2

Step 4 - Cost Effectiveness Analysis

The applicant has proposed the use of natural gas, TEOR gas, and/or TVR gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf. Since the applicant has chosen the most effective control technology in step 3, a cost effectiveness analysis is not required.

Step 5 - Select BACT

BACT for SO_X is the most effective control option not eliminated in the steps above: natural gas and/or waste gas treated for sulfur. This BACT is selected and has been proposed by the applicant.

3. BACT Analysis for PM_{10} Emissions

Step 1 - Identify All Possible Control Technologies

The District adopted District Rule 4320 on October 16, 2008. BACT Guideline 1.2.1 (Steam Generator ≥ 5 MMBtu/hr, Oilfield) has been rescinded. Therefore, a project specific BACT analysis will be performed to determine BACT for this project.

The SJVAPCD BACT Clearinghouse Guideline 1.2.1 (1st quarter, 2005) identifies the following technologies:

1. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2 - Achieved in Practice

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2 - Achieved in Practice

Step 4 - Cost Effectiveness Analysis

The applicant has proposed the use of natural gas, TEOR gas, and/or TVR gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf. Since the applicant has chosen the most effective control technology in step 3, a cost effectiveness analysis is not required.

Step 5 - Select BACT

BACT for PM_{10} is the most effective control option not eliminated in the steps above: natural gas and/or waste gas treated for sulfur. This BACT is selected and has been proposed by the applicant.

4. BACT Analysis for CO Emissions

Step 1 - Identify All Possible Control Technologies

The District adopted District Rule 4320 on October 16, 2008. BACT Guideline 1.2.1 (Steam Generator ≥ 5 MMBtu/hr, Oilfield) has been rescinded. Therefore, a project specific BACT analysis will be performed to determine BACT for this project.

The SJVAPCD BACT Clearinghouse Guideline 1.2.1 (1st quarter, 2005) identifies the following technologies:

1. 50 ppmvd @ 3% O2 - Achieved-In-Practice

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. 50 ppmvd @ 3% O2 - Achieved-In-Practice

Step 4 - Cost Effectiveness Analysis

The applicant has proposed a CO emission limit that meets 50 ppmvd @ 3% O2. Since the applicant has chosen the most effective control technology in step 3, a cost effectiveness analysis is not required.

Step 5 - Select BACT

BACT for CO emissions from the oilfield steam generator is 50 ppmv @ 3% O2. The applicant has proposed to install the steam generators each with a CO emission limit of 35 ppmvd @ 3% O2; therefore, BACT for CO emissions is satisfied.

5. BACT Analysis for VOC Emissions

Step 1 - Identify All Possible Control Technologies

The District adopted District Rule 4320 on October 16, 2008. BACT Guideline 1.2.1 (Steam Generator ≥ 5 MMBtu/hr, Oilfield) has been rescinded. Therefore, a project specific BACT analysis will be performed to determine BACT for this project.

The SJVAPCD BACT Clearinghouse Guideline 1.2.1 (1st quarter, 2005) identifies the following technologies:

2. Gaseous fuel - Achieved-In-Practice

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. Gaseous fuel - Achieved-In-Practice

Step 4 - Cost Effectiveness Analysis

The applicant has proposed the used of natural gas and/or waste gas treated for sulfur. Since the applicant has chosen the most effective control technology in step 3, a cost effectiveness analysis is not required.

Step 5 - Select BACT

BACT for VOC is the most effective control option not eliminated in the steps above: gaseous fuel. This BACT is selected and has been proposed by the applicant.

APPENDIX F

BACT Guideline 7.1.1 and BACT Analysis

Per » B A C T » Bact Guideline.asp?category Level1=7&category Level2=1&category Level3=1&last Update=3 » 11 :

Back Details Page

Best Available Control Technology (BACT) Guideline 7.1.1
Last Update: 3/11/1994

Thermally Enhanced Oil Recovery - Steam Drive Oil Wells**

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
PM10		1. Vapor control system with either a) Scrubber with 50% PM10 removal, or b) Non-condensables incinerated at steam generator, incinerator, or equal and having a vapor sulfur content no greater than 0.2gr S/100 dscf	1. Vapor control system with either a) Transfer of noncondensable vapors to gas pipeline or b) Re-injection to formation
SOx		1. Vapor control system with either a) Scrubber with 95% sulfur removal, or b) Non-condensables incinerated at steam generator, incinerator, or equal and having a vapor sulfur content no greater than 0.2gr S/100 dscf	1. Vapor control system with either a) Transfer of noncondensable vapors to gas pipeline or b) Re-injection to formation
VOC	1. Vapor control system and inspection and maintenance program with either a) Non-condensables balanced casing vent system tied into tank vapor control system or b) Noncondensables incinerated at steam generator, incinerator, or equal		1. Vapor control system with either a) Transfer of noncondensable vapors to gas pipeline or b) Re-injection to formation

** *Control Options wording clarified 10/1/02. No change to any options or limits.*

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is requried for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Details Page.

BACT Analysis for TEOR Operation (S-1246-296-19)

Top Down BACT Analysis for VOC emissions:

Step 1 - Identify All Possible Control Technologies

The SJVAPCD BACT Clearinghouse Guideline 7.1.1 (1st quarter, 2011) identifies the following technologies:

1. Vapor control system and inspection and maintenance program with either:
   a) Non-condensable balanced casing vent system tied into tank vapor control system or
   b) Non-condensable incinerated at steam generator, incinerator, or equal (Achieved-In-Practice).

2. Vapor control system with either:
   a) Transfer of non-condensable vapors to gas pipeline, or
   b) Re-injection to formation (Alternate Basic Equipment)

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. Vapor control system with either:
   a) Transfer of non-condensable vapors to gas pipeline, or
   b) Re-injection to formation (Alternate Basic Equipment)
2. Vapor control system and inspection and maintenance program with either:
   a) Non-condensable balanced casing vent system tied into tank vapor control system or
   b) Non-condensable incinerated at steam generator, incinerator, or equal (Achieved-In-Practice).

Step 4 - Cost Effectiveness Analysis

A cost effectiveness analysis is not required as the applicant proposes to use a combination of both technologies listed.

Step 5 - Select BACT

The applicant is proposing to tie the steam-enhanced crude oil well production vapors to a tank vapor control system and non-condensable routed to a steam generator for incineration (Achieved-in-Practice) or re-inject the vapors into the formation via disposal wells. Therefore, BACT is satisfied.

APPENDIX G

Compliance Certification

Berry Petroleum Company

5201 Truxtun Ave.
Bakersfield, CA 93309-0640

(661) 616-3900
www.bry.com

RECEIVED

FEB - 8 2011

SJVAPCD
Southern Region

February 8, 2011

Mr. Stanley Tom
San Joaquin Valley APCD
1990 E. Gettysburg Avenue
Fresno, CA 93726

RE: ATC Application S-1246, 1112037 Compliance Certification per District Rule 2201 Section 4.15.2

Dear Mr. Tom:

Pursuant to the requirement of San Joaquin Valley APCD Rule 2201 section 4.15.2, Berry Petroleum Company (BPC) submits this Compliance Certification regarding other owned, operated, or controlled major stationary sources in California. As of the date of this letter, BPC asserts that all major stationary sources owned or operated by BPC (or by any entity controlling, controlled by, or under common control with BPC) in California, which are subject to emission limitations, are in compliance or on a schedule for compliance with all applicable emission limitations and standards.

If you should have any questions or require additional information please contact Mr. John Ludwick at phone number (661) 616-3807 or cell phone number (661) 703-2920.

Sincerely,

Robert Boston
Manager of EH&S

APPENDIX H

Certificate of Conformity

San Joaquin Valley
Unified Air Pollution Control District

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

RECEIVED
JAN 26 2011
SJVAPCD
Southern Region

I. TYPE OF PERMIT ACTION (Check appropriate box)

[✓] SIGNIFICANT PERMIT MODIFICATION
[ ] MINOR PERMIT MODIFICATION
ADMINISTRATIVE AMENDMENT

COMPANY NAME: Berry Petroleum Company	FACILITY ID: S – 1246
1. Type of Organization: [✓] Corporation [ ] Sole Ownership [ ] Government [ ] Partnership [ ] Utility	
2. Owner's Name:	
3. Agent to the Owner: Berry Petroleum Company	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial **all** circles for confirmation):

(✓) Based on information and belief formed after reasonable inquiry, the source identified in this application will continue to compl with the applicable federal requirement(s).

(✓) Based on information and belief formed after reasonable inquiry, the source identified in this application will comply with appli federal requirement(s) that will become effective during the permit term, on a timely basis.

(✓) Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

(✓) Based on information and belief formed after reasonable inquiry, information and statements in the submitted application packa including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Robert E. Boston — Signature of Responsible Official

1/26/2011 — Date

Robert Boston
Name of Responsible Official (please print)

Manager, EH&S
Title of Responsible Official (please print)

APPENDIX I

HRA Summary and Ambient Air Quality Analysis

San Joaquin Valley Air Pollution Control District
Risk Management Review
REVISED

To:	Steven Roeder, AQE – Permit Services
From:	Trevor Joy, AQS – Technical Services
Date:	June 1, 2011
Facility Name:	Berry Petroleum Co
Location:	Heavy Oil Western
Application #(s):	S-1246-296-19, 342-0 thru 346-0
Project #:	1110237

A. RMR SUMMARY

Categories	Units 296 (addition of 115 new wells to the TEOR system), and 342-0 thru 346-0 (0.1098 MMSCF/hr [each] TEOR Gas Fired Steam Generators)	Project Totals	Facility Totals
Prioritization Score	0.02	0.02	>1.0
Acute Hazard Index	0.08	0.08	0.46
Chronic Hazard Index	0.00	0.00	0.03
Maximum Individual Cancer Risk (10^{-6})	0.03	0.03	1.21
T-BACT Required?	No		
Special Permit Conditions?	Yes		

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Unit # 296
No special conditions required.

Unit # 342 thru 346
{1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102] N

Units 342, 343, and 344 shall only be operated at Pad B. And units 345 and 346 shall only be used at Pad J.

B. RMR REPORT

I. Project Description

Technical Services received a revised request on February 7, 2011 to perform an Ambient Air Quality Analysis and a Risk Management Review for the proposed modification to unit 296 – the addition of 115 new wells; and the proposed installation of units 342 thru 346 – TEOR gas fired steam generators (0.1098 MMScf/hr [each]). A revised request was received on May 17, 2011 to increase the emissions per steam generator to 0.646 lbs/hr-PM10 and 5,659 lbs/yr-PM10. Also, 3 steam generators will be located at pad B and 2 steam generators will be located at Pad J.

II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Emissions were calculated using "Oilfield Equipment Fugitives Heavy Crude Oil" emission factors for unit 296 and the spreadsheet "Petroleum Steam Generators.xls" Tab -- Steam Gen NG CVRG for units 342 thru 346. NOTE: units 342, 343, 345, 346 are all steam generators that can run on Natural Gas (0.085 MMSCF/hr) OR TEOR Gas (0.109819 MMSCF/hr). The original RMR analysis, based on the worst case scenario -- all 5 units operating at the location with the highest risk, was used. This RMR analysis was the worst case compared to 2 units operating 56 meters closer to the nearest receptor and 3 units operating 255 meters further away from the nearest receptor. In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905, March 2, 2001), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTs database. The prioritization score for the facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined analysis was required and performed. AERMOD was used, with the parameters outlined below and meteorological data for Fellows 2004 – 2008 (RMR) and Bakersfield 2005 – 2009 (AAQA) to determine the maximum dispersion factors. The project was run using: imported terrain, specific unit locations, and specific receptors. These dispersion factors were input into the HARP model to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameter Units 296			
Closest Receptor - Business (m)	700	Closest Receptor – Resident (m)	700
Fugitive Oilfield Emissions (VOC lbs/hr)	4.3	Fugitive Oilfield Emissions (VOC lbs/yr)	37,673
Area Source Length (m)	804	Area Source Width (m)	402

Analysis Parameter Units 342 thru 346 (each)			
Closest Receptor - Business (m)	1084	Closest Receptor – Resident (m)	1084
TEOR Gas (MMScf/hr)	0.109819	TEOR Gas (MMScf/yr)	962
Release Ht (m)	6.1	Gas Exit Temp (K)	366
Gas Exit Velocity (m/s)	9.5	Stack Inside Diameter (m)	1.067

Technical Services also performed modeling for criteria pollutants CO, NOx, SOx and PM_{10}; as well as a RMR. The emission rates used for criteria pollutant modeling were

	NOx	Sox	CO	PM10
Lbs/hr	3.6	1.87	11.05	3.2
Lbs/yr	31,645	16,380	---	28,295

*the emissions of a single unit were multiplied by 5 to reflect the project having 5 identical units.

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*
Values are in $\mu g/m^3$

Steam Generator	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO_x	Pass[1]	X	X	X	Pass
SO_x	Pass[2]	Pass	X	Pass	Pass
PM_{10}	X	X	X	Pass[3]	Pass[3]

*Results were taken from the attached PSD spreadsheet.
[1]The project was compared to the 1-hour NO2 National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures. The criteria pollutant 1-hour value passed using TIER I NO_2 NAAQS modeling
[2]The project was compared to the 1-hour SO2 National Ambient Air Quality Standard that became effective on August 23, 2010 using the District's approved procedures.
[3]The maximum predicted concentration for emissions of these criteria pollutants from the proposed unit are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

III. Conclusion

The acute and chronic hazard indices were below 1.0; and the cancer risk is less than or equal to 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

Attachments:

A. RMR request from the project engineer
B. Prioritization score with toxic emissions summary
C. HEARTS – Facility Summary
D. HARP Risk Report
E. AAQA spreadsheet

APPENDIX J

Best Performance Standard for Steam Generators

San Joaquin Valley
Unified Air Pollution Control District

Best Performance Standard (BPS) x.x.xx

Date: 6/24/10

Class	**Steam Generators**
Category	**Oilfield**
Best Performance Standard	**Very High Efficiency Steam Generator Design With:** 1. A convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer) or a manufacturer's overall thermal efficiency rating of 88%. **And** 2. Variable frequency drive high efficiency electrical motors driving the blower and water pump.
Percentage Achieved GHG Emission Reduction Relative to Baseline Emissions	13.0%

District Project Number	C-1100391
Evaluating Engineer	Steve Roeder
Lead Engineer	Arnaud Marjollet
Initial Public Notice Date	April 28, 2010
Final Public Notice Date	May 28, 2010
Determination Effective Date	June 24, 2010

APPENDIX K

Draft ATCs

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-1246-296-19 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: BERRY PETROLEUM COMPANY
MAILING ADDRESS: ATTN: EH&S MANAGER
5201 TRUXTUN AVENUE SUITE 100
BAKERSFIELD, CA 93309-0422

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

SECTION: 02 **TOWNSHIP:** 31S **RANGE:** 22E

EQUIPMENT DESCRIPTION:
MODIFICATION OF THERMALLY ENHANCED OIL RECOVERY (TEOR) OPERATION WELL VENT VAPOR CONTROL SYSTEM SERVING 760 WELLS INCLUDING GAS/LIQUID SEPARATORS, HEAT EXCHANGERS, COMPRESSORS, INLET SEPARATOR VESSELS, CONDENSATE PUMPS, SULFUR SCRUBBER, VAPOR PIPING FROM TANK '337 AND VAPOR PIPING TO STEAM GENERATORS S-1246-3, `-24, `-46, '-119, '-292, AND '-293 AND/OR DOGGR APPROVED GAS DISPOSAL WELLS (NMWSS): INCREASE NUMBER OF TEOR WELLS FROM 760 TO 875 AND ADD STEAM GENERATORS S-1246-342, '343, '344, '345, '346 AS APPROVED INCINERATION DEVICES

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Authority to Construct (ATC) S-1246-296-17 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201]
4. Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1246-212-2 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

DAVID WARNER, Director of Permit Services
S-1246-296-19 : May 18 2011 11:48AM -- TOMS : Joint Inspection NOT Required

5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102] Federally Enforceable Through Title V Permit

6. TEOR operation is authorized to operate at the following locations: Sections 1, 2, 3, 11, and 12 T31S, R22E. [District Rule 2201] Federally Enforceable Through Title V Permit

7. Well vent vapor from this TEOR operation shall only be incinerated in approved steam generators or disposed of in DOGGR approved gas disposal wells. [District Rule 2201] Federally Enforceable Through Title V Permit

8. Well vent vapor from this TEOR operation shall not be incinerated in approved steam generators unless it is first scrubbed in a fuel gas sulfur scrubber and sulfur compounds are reduced by a minimum of 95%. [District Rule 2201] Federally Enforceable Through Title V Permit

9. Compliance with scrubber sulfur removal efficiency requirement shall be demonstrated by measurement of total sulfur compound concentrations at scrubber inlet and outlet. The measurement shall be conducted on grab samples taken at scrubber inlet and outlet using one of the following test methods: ASTM D3246 or double GC for H2S and mercaptans, or equivalent test method with prior District approval. Grab samples shall be taken and analyzed upon initial use of the scrubber and, thereafter, every six months. If scrubber is not in use at six-month anniversary date, then efficiency shall be demonstrated within two weeks of returning scrubber to service. For each month in which scrubber is operated and laboratory analysis of grab samples is not required, operator shall monitor and adjust scrubber performance as needed using gas-detection tubes calibrated for existing sulfur species or other equivalent District approved sulfur detection method(s) or device(s). [District NSR Rule] Federally Enforceable Through Title V Permit

10. Well vent vapor collection and control system includes piping from sulfur scrubbers to District approved incinerating devices. Well vent vapor collection and control system includes bypass piping around sulfur scrubbers to DOGGR-approved vapor disposal well(s). [District NSR Rule] Federally Enforceable Through Title V Permit

11. Fugitive VOC emissions rate for the TEOR operation, calculated using CAPCOA California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, Table IV-2c, Oil and Gas Production Screening Value Ranges Emission Factors (Feb 1999) and the total number of components in gas/light liquid service, shall not exceed 345.6 lb-VOC/day. [District Rule 2201]

12. During the time any steam-enhanced crude oil production well is undergoing service or repair while the well is not producing, it shall be exempt from the emission control requirements of District Rule 4401, 5.0 (as amended December 14, 2006). [District Rule 4401, 4.1] Federally Enforceable Through Title V Permit

13. The annual inspection requirements of Section 5.8.1 through Section 5.8.5 of Rule 4401 shall not apply to components exclusively handling gas/vapor or liquid with a VOC content of ten percent by weight (10 wt %) or less, as determined by the test methods in Section 6.3.5 of Rule 4401. [District Rule 4401 4.9] Federally Enforceable Through Title V Permit

14. An operator shall not operate a steam-enhanced crude oil production well unless the operator complies with the following requirements: The steam-enhanced crude oil production well vent is closed and the front line production equipment downstream of the wells that carry produced fluids (crude oil or mixture of crude oil and water) is connected to a VOC collection and control system as defined in Section 3.0 of Rule 4401, the well vent may be temporarily opened during periods of attended service or repair of the well provided such activity is done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere, the steam-enhanced crude oil production well vent is open and the well vent is connected to a VOC collection and control system as defined in Section 3.0 of Rule 4401. [District Rule 4401, 5.5.1 and 5.5.2] Federally Enforceable Through Title V Permit

15. An operator shall be in violation of this rule if any District inspection demonstrates or if any operator inspection conducted pursuant to Section 5.8 of Rule 4401 demonstrates the existence of a component with a major liquid leak, a component with a gas leak greater than 50,000 ppmv, or an open-ended line or a valve located at the end of the line that is not sealed with a blind flange, plug, cap or a second closed valve that is not closed at all times, except during attended operations as defined by Section 5.6.2.1 of Rule 4401 requiring process fluid flow through the open-ended lines. [District Rule 4401 5.6.2] Federally Enforceable Through Title V Permit

16. Gas and liquid leaks are as defined in Section 3.20 of Rule 4401. [District Rule 4401 3.20] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

17. An operator shall be in violation of this rule if any District inspection demonstrates or if any operator inspection conducted pursuant to Section 5.8 of Rule 4401 demonstrates the existence of any combination of components with minor liquid leaks, minor gas leaks, or gas leaks greater than 10,000 ppmv up to 50,000 ppmv that totals more than number of leaks allowed by Table 3 of Rule 4401. [District Rule 4401 5.6.2] Federally Enforceable Through Title V Permit

18. An operator shall not use any component with a leak as defined in Section 3.0 of Rule 4401, or that is found to be in violation of the provisions of Section 5.6.2 of Rule 4401. However, components that were found leaking may be used provided such leaking components have been identified with a tag for repair, are repaired, or awaiting re-inspection after being repaired within the applicable time frame specified in Section 5.9 of Rule 4401. [District Rule 4401 5.7.1] Federally Enforceable Through Title V Permit

19. Each hatch shall be closed at all times except during sampling or adding of process material through the hatch, or during attended repair, replacement, or maintenance operations, provided such activities are done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere. [District Rule 4401 5.7.2] Federally Enforceable Through Title V Permit

20. An operator shall comply with the requirements of Section 6.7 of Rule 4401 if there is any change in the description of major components or critical components. [District Rule 4401 5.7.3] Federally Enforceable Through Title V Permit

21. Except for pipes and unsafe-to-monitor components, an operator shall inspect all other components pursuant to the requirements of Section 6.3.3 of Rule 4401 at least once every year. [District Rule 4401 5.8.1] Federally Enforceable Through Title V Permit

22. An operator shall visually inspect all pipes at least once every year. Any visual inspection of pipes that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected within 24 hours after detecting the leak. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of Rule 4401. [District Rule 4401 5.8.2] Federally Enforceable Through Title V Permit

23. In addition to the inspections required by Section 5.8.1 of Rule 4401, an operator shall inspect for leaks all accessible operating pumps, compressors, and PRDs in service as follows: An operator shall audio-visually (by hearing and by sight) inspect for leaks all accessible operating pumps, compressors,and PRDs in service at least once each calendar week. Any audio-visual inspection of an accessible operating pump, compressor, and PRD performed by an operator that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected not later than 24 hours after conducting the audio-visual inspection. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of Rule 4401. [District Rule 4401 5.8.3] Federally Enforceable Through Title V Permit

24. In addition to the inspections required by Sections 5.8.1, 5.8.2 and 5.8.3 of Rule 4401, operator shall perform the following: initially inspect a PRD that releases to the atmosphere as soon as practicable but not later than 24 hours after the discovery of the release, re-inspect the PRD not earlier than 24 hours after the initial inspection but not later than 15 calendar days after the initial inspection, inspect all new, replaced, or repaired fittings, flanges, and threaded connections within 72 hours of placing the component in service. Except for PRDs subject to the requirements of Section 5.8.4.1 of Rule 4401, an operator shall inspect a component that has been repaired or replaced not later than 15 calendar days after the component was repaired or replaced. [District Rule 4401 5.8.4] Federally Enforceable Through Title V Permit

25. An operator shall inspect all unsafe-to-monitor components during each turnaround. [District Rule 4401 5.8.5] Federally Enforceable Through Title V Permit

26. District inspection in no way fulfills any of the mandatory inspection requirements that are placed upon operators and cannot be used or counted as an inspection required of an operator. [District Rule 4401 5.8.6] Federally Enforceable Through Title V Permit

27. An operator shall affix a readily visible weatherproof tag to a leaking component upon detection of the leak and shall include the following information on the tag: date and time of leak detection, date and time of leak measurement, for a gaseous leak, the leak concentration in ppmv, for a liquid leak, whether it is a major liquid leak or a minor liquid leak, whether the component is an essential component, an unsafe-to-monitor component, or a critical component. [District Rule 4401 5.9.1] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

28. An operator shall keep the tag affixed to the component until an operator has met all of the following conditions: repaired or replaced the leaking component, re-inspected the component using the test method in Section 6.3.3, and 5.9.2.3 of Rule 4401, or the component is found to be in compliance with the requirements of this rule. [District Rule 4401 5.9.2] Federally Enforceable Through Title V Permit

29. An operator shall minimize a component leak in order to stop or reduce leakage to the atmosphere immediately to the extent possible, but not later than one (1) hour after detection of the leak. [District Rule 4401 5.9.3] Federally Enforceable Through Title V Permit

30. Except for leaking critical components or leaking essential components subject to the requirements of Section 5.9.7 of Rule 4401, if an operator has minimized a leak but the leak still exceeds the applicable leak limits as defined in Section 3.0 of Rule 4401, an operator shall comply with at least one of the following requirements as soon as practicable but not later than the time period specified in Table 4 of Rule 4401: Repair or replace the leaking component; or vent the leaking component to a VOC collection and control system as defined in Section 3.0 of Rule 4401, or remove the leaking component from operation. [District Rule 4401 5.9.4] Federally Enforceable Through Title V Permit

31. The repair period in calendar days shall not exceed 14 days for minor gas leaks, 5 days for major gas leaks less than or equal to 50,000 ppmv, 2 days for gas leak greater than 50,000 ppmv, 3 days for minor liquid leaks, 2 days for major liquid leaks. [District Rule 4401 5.9.4] Federally Enforceable Through Title V Permit

32. The leak rate measured after leak minimization has been performed shall be the leak rate used to determine the applicable repair period specified in Table 4 of Rule 4401. [District Rule 4401 5.9.5] Federally Enforceable Through Title V Permit

33. The time of the initial leak detection shall be the start of the repair period specified in Table 4 of Rule 4401. [District Rule 4401 5.9.6] Federally Enforceable Through Title V Permit

34. If the leaking component is an essential component or a critical component that cannot be immediately shut down for repairs, and if the leak has been minimized but the leak still exceeds the applicable leak standard of this rule, the operator shall repair or replace the essential component or critical component to eliminate the leak during the next process unit turnaround, but in no case later than one year from the date of the original leak detection, whichever comes earlier. [District Rule 4401 5.9.7] Federally Enforceable Through Title V Permit

35. The operator of any steam-enhanced crude oil production well shall maintain records of the date and well identification where steam injection or well stimulation occurs. [District Rule 4401 6.1.1] Federally Enforceable Through Title V Permit

36. An operator of any steam-enhanced crude oil production well shall keep source test records which demonstrate compliance with the control efficiency requirements of the VOC collection and control system as defined in Section 3.0 of Rule 4401. [District Rule 4401 6.1.3] Federally Enforceable Through Title V Permit

37. Operator of any steam-enhanced crude oil production well shall keep an inspection log maintained pursuant to Section 6.4 of Rule 4401. [District Rule 4401 6.1.5] Federally Enforceable Through Title V Permit

38. Records of each calibration of the portable hydrocarbon detection instrument utilized for inspecting components, including a copy of current calibration gas certification from the vendor of said calibration gas cylinder, the date of calibration, concentration of calibration gas, instrument reading of calibration gas before adjustment, instrument reading of calibration gas after adjustment, calibration gas expiration date, and calibration gas cylinder pressure at the time of calibration shall be maintained. [District Rule 4401 6.1.6] Federally Enforceable Through Title V Permit

39. An operator shall maintain copies at the facility of the training records of the training program operated pursuant to Section 6.5 of Rule 4401. [District Rule 4401 6.1.7] Federally Enforceable Through Title V Permit

40. Operator shall keep a copy of the APCO-approved Operator Management Plan at the facility. [District Rule 4401 6.1.8] Federally Enforceable Through Title V Permit

41. An operator that discovers that a PRD has released shall record the date that the release was discovered, and the identity and location of the PRD that released. An operator shall submit such information recorded during the calendar year to the APCO no later than 60 days after the end of the calendar year. [District Rule 4401 6.1.11] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

42. An operator shall source test annually all vapor collection and control systems used to control emissions from steam-enhanced crude oil production well vents to determine the control efficiency of the device(s) used for destruction or removal of VOC. Compliance testing shall be performed annually by source testers certified by ARB. Testing shall be performed during June, July, August, or September of each year if the system's control efficiency is dependent upon ambient air temperature. [District Rule 4401 6.2.1] Federally Enforceable Through Title V Permit

43. If approved by EPA, ARB, and the APCO, an operator need not comply with the annual testing requirement of Section 6.2.1 if all uncondensed VOC emissions collected by a vapor collection and control system are incinerated in fuel burning equipment, an internal combustion engine or in a smokeless flare. [District Rule 4401 6.2.2] Federally Enforceable Through Title V Permit

44. If approved by EPA, ARB, and the APCO, an operator need not comply with the annual testing requirement of Section 6.2.1 for a vapor control system which does not have a VOC destruction device. [District Rule 4401 6.2.3] Federally Enforceable Through Title V Permit

45. An operator seeking approval pursuant to Section 6.2.2 or Section 6.2.3 shall submit a written request and supporting information to the APCO. [District Rule 4401 6.2.4]

46. An operator shall comply with the following requirements for each gauge tank, as defined in Section 3.17 of Rule 4401: Conduct an initial TVP testing of the produced fluid in each gauge tank not later than June 14, 2007. Thereafter, an operator shall conduct periodic TVP testing of each gauge tank at least once every 24 months during summer (July - September), and whenever there is a change in the source or type of produced fluid in the gauge tank. The TVP testing shall be conducted at the actual storage temperature of the produced fluid in the gauge tank using the applicable TVP test method specified in Section 6.4 of Rule 4623 (Storage of Organic Liquids). The operator shall submit the TVP testing results to the APCO as specified in Section 6.1.10 of Rule 4401. [District Rule 4401 6.2.5] Federally Enforceable Through Title V Permit

47. The control efficiency of any VOC control device, measured and calculated as carbon, shall be determined by EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case EPA Method 25a may be used. EPA Method 18 may be used in lieu of EPA Method 25 or EPA Method 25a provided the identity and approximate concentrations of the analytes/compounds in the sample gas stream are known before analysis with the gas chromatograph and the gas chromatograph is calibrated for each of those known analyte/compound to ensure that the VOC concentrations are neither under- or over-reported. [District Rule 4401 6.3.1] Federally Enforceable Through Title V Permit

48. VOC content shall be analyzed by using the latest revision of ASTM Method E168, E169, or E260 as applicable. Analysis of halogenated exempt compounds shall be performed by using ARB Method 432. [District Rule 4401 6.3.2] Federally Enforceable Through Title V Permit

49. Leak inspection, other than audio-visual, and measurements of gaseous leak concentrations shall be conducted according to EPA Method 21 using an appropriate portable hydrocarbon detection instrument calibrated with methane. The instrument shall be calibrated in accordance with the procedures specified in EPA Method 21 or the manufacturer's instruction, as appropriate, not more than 30 days prior to its use. The operator shall record the calibration date of the instrument. Where safety is a concern, such as measuring leaks from compressor seals or pump seals when the shaft is rotating, a person shall measure leaks by placing the instrument probe inlet at a distance of one (1) centimeter or less from the surface of the component interface. [District Rule 4401 6.3.3] Federally Enforceable Through Title V Permit

50. The VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. [District Rule 4401 6.3.5] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

51. Operator shall maintain an inspection log in which an operator records, at a minimum, all of the following information for each inspection performed: The total number of components inspected, total number and percentage of leaking components found by component type, location, type, and name or description of each leaking component and description of any unit where the leaking component is found, date of leak detection and the method of leak detection. For gaseous leaks, the leak concentration in ppmv, and for liquid leaks record whether the leak is a major liquid leak or a minor liquid leak. the date of repair, replacement, or removal from operation of leaking components, identify and location of essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier, methods used to minimize the leak from essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier, the date of re-inspection and the leak concentration in ppmv after the component is repaired or is replaced, the inspector's name, business mailing address, and business telephone number, date and signature of the facility operator responsible for the inspection and repair program certifying the accuracy of the information recorded in the log. [District Rule 4401 6.4] Federally Enforceable Through Title V Permit

52. All records of required monitoring data and support information shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request. [District Rules 2520, 9.4.2 and 4401, 6.1] Federally Enforceable Through Title V Permit

53. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

54. Collected vapors shall be disposed of in District approved incineration devices, as listed on this permit, or in Department of Oil, Gas and Geothermal Resources (DOGGR) approved vapor disposal wells. Permittee shall make documentation of DOGGR approval for injection wells readily available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit

55. The operator shall maintain records of the fugitive component count and calculated VOC emissions. [District Rule 2201] Federally Enforceable Through Title V Permit

56. Permittee shall maintain a written record of inlet and outlet sulfur compound measurements and recharging dates and such records shall be made readily available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit

57. Permittee shall maintain with the permit a current listing of all steam enhanced wells with casing vents connected to the well vent collection and control system. [District Rules 1070 and 2520, 9.3.2] Federally Enforceable Through Title V Permit

58. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-1246-342-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: BERRY PETROLEUM COMPANY
MAILING ADDRESS: ATTN: EH&S MANAGER
5201 TRUXTUN AVENUE SUITE 100
BAKERSFIELD, CA 93309-0422

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 1,582 lb, 2nd quarter - 1,582 lb, 3rd quarter - 1,582 lb, and fourth quarter - 1,583 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOx emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 800 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

DAVID WARNER, Director of Permit Services
S-1246-342-0 : Jun 7 2011 3:26PM -- TOMS : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 1,414 lb, 2nd quarter - 1,415 lb, 3rd quarter - 1,415 lb, and fourth quarter - 1,415 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

6. ERC Certificate Numbers C-629-2, C-892-2, C-971-2, C-972-2, C-973-2, C-974-2, C-975-2, C-976-2, C-977-2, C-978-2, C-979-2, C-980-2, C-981-2, C-982-2, C-983-2, C-984-2, C-985-2, C-986-2, C-987-2, C-988-2, C-989-2, C-990-2, C-991-2, C-992-2, C-993-2, C-994-2, C-995-2, N-816-2, N-817-2, N-818-2, N-819-2, N-821-2, N-823-2, N-881-2, S-2905-2, S-3016-2, S-3316-2, S-2830-5, S-2832-5, S-3322-5, S-3050-4, S-2064-4, S-567-4, S-3046-4, C-1092-4, C-1093-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

7. Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1246-212-2 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]

8. This unit is approved to be operated at the following location: 35°15'34.03" -119°34'54.15". [District Rule 4102]

9. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

10. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

11. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

12. A totalizing mass or volumetric fuel flow meter to measure the amount of gas combusted in the unit shall be installed, utilized, and maintained. [40 CFR 60.48c(g)(1)]

13. This unit shall only be fired on PUC-quality natural gas, ethane-rich natural gas, TEOR gas, tank vapor recovery (TVR) gas, or a combination thereof. [District Rule 2201]

14. Natural gas and/or TEOR and TVR gas combusted in this unit shall have a sulfur content no greater than 1.5 gr S/100 scf. [District Rules 2201 and 4320]

15. This unit shall be fired on natural gas, TEOR gas, and/or TVR gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf. [District Rule 2201]

16. Emissions rates from unit shall not exceed any of the following limits: 7 ppmv NOx @ 3% O2 or 0.0085 lb-NOx/MMBtu, 0.0076 lb-PM10/MMBtu, 35 ppmv CO @ 3% O2 or 0.0026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320]

17. Source testing to measure fuel combustion NOx and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]

18. Source testing to measure NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

19. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]

20. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

21. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 5.5.5, 4306, 5.5.5, and 4320]

24. The following test methods shall be used: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rule 1081, 4305, 4306, 4320, and 4351]

25. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306. [District Rules 4305, 4306, and 4320]

26. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]

27. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]

28. All NOx, CO, and O2 emission emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

29. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be quarterly. If a quarterly fuel content source test fails to show compliance, weekly testing shall resume. [District Rule 1070, 2201, 4305, 4306, and 4320]

30. If unit is fired on non-certified gas then sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 4084, D 3246 or grab sample analysis by GC-FPD/TCD, double GC for H2S and mercaptans, performed in the laboratory or draeger tubes. Should the applicant decide to use different methodology, the methodology must be approved by the District prior to its use. [District Rule 1070, 2201, 4305, 4306, and 4320]

31. If fuel analysis is used to demonstrate compliance with the conditions of this permit, the fuel higher heating value for each fuel shall be certified by third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rule 2201, 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

32. Permittee shall submit notification to the District of the date of construction and actual startup. Notifications shall be postmarked no later than 30 days after construction and 15 days after actual startup. The notifications shall include the design heat input and identification of fuels for this permit unit. [40 CFR 60.48c(a)(1)]

33. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]

34. Permittee shall record the fuel gas sulfur content and higher heating value and the daily amount of each fuel combusted. [District Rule 1070 and 40 CFR 60.48c(g)(1)]

35. This steam generator shall be equipped with variable frequency drive electric motors on the air blower and the water pump. [California Environmental Quality Act]

36. This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [California Environmental Quality Act]

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320 and 40 CFR 60.48c(i)]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-1246-343-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: BERRY PETROLEUM COMPANY
MAILING ADDRESS: ATTN: EH&S MANAGER
5201 TRUXTUN AVENUE SUITE 100
BAKERSFIELD, CA 93309-0422

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 1,582 lb, 2nd quarter - 1,582 lb, 3rd quarter - 1,582 lb, and fourth quarter - 1,583 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOx emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 800 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

DAVID WARNER, Director of Permit Services
S-1246-343-0 : Jun 7 2011 3:26PM -- TOMS : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 1,414 lb, 2nd quarter - 1,415 lb, 3rd quarter - 1,415 lb, and fourth quarter - 1,415 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
6. ERC Certificate Numbers C-629-2, C-892-2, C-971-2, C-972-2, C-973-2, C-974-2, C-975-2, C-976-2, C-977-2, C-978-2, C-979-2, C-980-2, C-981-2, C-982-2, C-983-2, C-984-2, C-985-2, C-986-2, C-987-2, C-988-2, C-989-2, C-990-2, C-991-2, C-992-2, C-993-2, C-994-2, C-995-2, N-816-2, N-817-2, N-818-2, N-819-2, N-821-2, N-823-2, N-881-2, S-2905-2, S-3016-2, S-3316-2, S-2830-5, S-2832-5, S-3322-5, S-3050-4, S-2064-4, S-567-4, S-3046-4, C-1092-4, C-1093-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
7. Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1246-212-2 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]
8. This unit is approved to be operated at the following location: 35°15'34.03" -119°34'54.15". [District Rule 4102]
9. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
10. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
11. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
12. A totalizing mass or volumetric fuel flow meter to measure the amount of gas combusted in the unit shall be installed, utilized, and maintained. [40 CFR 60.48c(g)(1)]
13. This unit shall only be fired on PUC-quality natural gas, ethane-rich natural gas, TEOR gas, tank vapor recovery (TVR) gas, or a combination thereof. [District Rule 2201]
14. Natural gas and/or TEOR and TVR gas combusted in this unit shall have a sulfur content no greater than 1.5 gr S/100 scf. [District Rules 2201 and 4320]
15. This unit shall be fired on natural gas, TEOR gas, and/or TVR gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf. [District Rule 2201]
16. Emissions rates from unit shall not exceed any of the following limits: 7 ppmv NOx @ 3% O2 or 0.0085 lb-NOx/MMBtu, 0.0076 lb-PM10/MMBtu, 35 ppmv CO @ 3% O2 or 0.0026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320]
17. Source testing to measure fuel combustion NOx and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]
18. Source testing to measure NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
19. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]
20. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
21. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 5.5.5, 4306, 5.5.5, and 4320]

24. The following test methods shall be used: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rule 1081, 4305, 4306, 4320, and 4351]

25. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306. [District Rules 4305, 4306, and 4320]

26. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]

27. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]

28. All NOx, CO, and O2 emission emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

29. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be quarterly. If a quarterly fuel content source test fails to show compliance, weekly testing shall resume. [District Rule 1070, 2201, 4305, 4306, and 4320]

30. If unit is fired on non-certified gas then sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 4084, D 3246 or grab sample analysis by GC-FPD/TCD, double GC for H2S and mercaptans, performed in the laboratory or draeger tubes. Should the applicant decide to use different methodology, the methodology must be approved by the District prior to its use. [District Rule 1070, 2201, 4305, 4306, and 4320]

31. If fuel analysis is used to demonstrate compliance with the conditions of this permit, the fuel higher heating value for each fuel shall be certified by third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rule 2201, 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

32. Permittee shall submit notification to the District of the date of construction and actual startup. Notifications shall be postmarked no later than 30 days after construction and 15 days after actual startup. The notifications shall include the design heat input and identification of fuels for this permit unit. [40 CFR 60.48c(a)(1)]

33. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]

34. Permittee shall record the fuel gas sulfur content and higher heating value and the daily amount of each fuel combusted. [District Rule 1070 and 40 CFR 60.48c(g)(1)]

35. This steam generator shall be equipped with variable frequency drive electric motors on the air blower and the water pump. [California Environmental Quality Act]

36. This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [California Environmental Quality Act]

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320 and 40 CFR 60.48c(i)]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-1246-344-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: BERRY PETROLEUM COMPANY
MAILING ADDRESS: ATTN: EH&S MANAGER
5201 TRUXTUN AVENUE SUITE 100
BAKERSFIELD, CA 93309-0422

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 1,582 lb, 2nd quarter - 1,582 lb, 3rd quarter - 1,582 lb, and fourth quarter - 1,583 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOx emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 800 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

DAVID WARNER, Director of Permit Services
S-1246-344-0 : Jun 7 2011 3:26PM -- TOMS : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 1,414 lb, 2nd quarter - 1,415 lb, 3rd quarter - 1,415 lb, and fourth quarter - 1,415 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

6. ERC Certificate Numbers C-629-2, C-892-2, C-971-2, C-972-2, C-973-2, C-974-2, C-975-2, C-976-2, C-977-2, C-978-2, C-979-2, C-980-2, C-981-2, C-982-2, C-983-2, C-984-2, C-985-2, C-986-2, C-987-2, C-988-2, C-989-2, C-990-2, C-991-2, C-992-2, C-993-2, C-994-2, C-995-2, N-816-2, N-817-2, N-818-2, N-819-2, N-821-2, N-823-2, N-881-2, S-2905-2, S-3016-2, S-3316-2, S-2830-5, S-2832-5, S-3322-5, S-3050-4, S-2064-4, S-567-4, S-3046-4, C-1092-4, C-1093-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

7. Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1246-212-2 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]

8. This unit is approved to be operated at the following location: 35°15'34.03" -119°34'54.15". [District Rule 4102]

9. Permittee shall notify the District Compliance Division of each location at which the operation is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 2201]

10. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

11. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

12. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

13. A totalizing mass or volumetric fuel flow meter to measure the amount of gas combusted in the unit shall be installed, utilized, and maintained. [40 CFR 60.48c(g)(1)]

14. This unit shall only be fired on PUC-quality natural gas, ethane-rich natural gas, TEOR gas, tank vapor recovery (TVR) gas, or a combination thereof. [District Rule 2201]

15. Natural gas and/or TEOR and TVR gas combusted in this unit shall have a sulfur content no greater than 1.5 gr S/100 scf. [District Rules 2201 and 4320]

16. This unit shall be fired on natural gas, TEOR gas, and/or TVR gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf. [District Rule 2201]

17. Emissions rates from unit shall not exceed any of the following limits: 7 ppmv NOx @ 3% O2 or 0.0085 lb-NOx/MMBtu, 0.0076 lb-PM10/MMBtu, 35 ppmv CO @ 3% O2 or 0.0026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320]

18. Source testing to measure fuel combustion NOx and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]

19. Source testing to measure NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

20. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

21. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

22. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

23. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

24. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 5.5.5, 4306, 5.5.5, and 4320]

25. The following test methods shall be used: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rule 1081, 4305, 4306, 4320, and 4351]

26. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306. [District Rules 4305, 4306, and 4320]

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]

28. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]

29. All NOx, CO, and O2 emission emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

30. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be quarterly. If a quarterly fuel content source test fails to show compliance, weekly testing shall resume. [District Rule 1070, 2201, 4305, 4306, and 4320]

31. If unit is fired on non-certified gas then sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 4084, D 3246 or grab sample analysis by GC-FPD/TCD, double GC for H2S and mercaptans, performed in the laboratory or draeger tubes. Should the applicant decide to use different methodology, the methodology must be approved by the District prior to its use. [District Rule 1070, 2201, 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

32. If fuel analysis is used to demonstrate compliance with the conditions of this permit, the fuel higher heating value for each fuel shall be certified by third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rule 2201, 4305, 4306, and 4320]

33. Permittee shall submit notification to the District of the date of construction and actual startup. Notifications shall be postmarked no later than 30 days after construction and 15 days after actual startup. The notifications shall include the design heat input and identification of fuels for this permit unit. [40 CFR 60.48c(a)(1)]

34. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]

35. Permittee shall record the fuel gas sulfur content and higher heating value and the daily amount of each fuel combusted. [District Rule 1070 and 40 CFR 60.48c(g)(1)]

36. This steam generator shall be equipped with variable frequency drive electric motors on the air blower and the water pump. [California Environmental Quality Act]

37. This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [California Environmental Quality Act]

38. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320 and 40 CFR 60.48c(i)]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-1246-345-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: BERRY PETROLEUM COMPANY
MAILING ADDRESS: ATTN: EH&S MANAGER
5201 TRUXTUN AVENUE SUITE 100
BAKERSFIELD, CA 93309-0422

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 1,582 lb, 2nd quarter - 1,582 lb, 3rd quarter - 1,582 lb, and fourth quarter - 1,583 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOx emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 800 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

DAVID WARNER, Director of Permit Services
S-1246-345-0 : Jun 7 2011 3:26PM -- TOMS : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 1,414 lb, 2nd quarter - 1,415 lb, 3rd quarter - 1,415 lb, and fourth quarter - 1,415 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
6. ERC Certificate Numbers C-629-2, C-892-2, C-971-2, C-972-2, C-973-2, C-974-2, C-975-2, C-976-2, C-977-2, C-978-2, C-979-2, C-980-2, C-981-2, C-982-2, C-983-2, C-984-2, C-985-2, C-986-2, C-987-2, C-988-2, C-989-2, C-990-2, C-991-2, C-992-2, C-993-2, C-994-2, C-995-2, N-816-2, N-817-2, N-818-2, N-819-2, N-821-2, N-823-2, N-881-2, S-2905-2, S-3016-2, S-3316-2, S-2830-5, S-2832-5, S-3322-5, S-3050-4, S-2064-4, S-567-4, S-3046-4, C-1092-4, C-1093-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
7. Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1246-212-2 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]
8. This unit is approved to be operated at the following location: 35°15'21.95" -119°34'54.65". [District Rule 4102]
9. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
10. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
11. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
12. A totalizing mass or volumetric fuel flow meter to measure the amount of gas combusted in the unit shall be installed, utilized, and maintained. [40 CFR 60.48c(g)(1)]
13. This unit shall only be fired on PUC-quality natural gas, ethane-rich natural gas, TEOR gas, tank vapor recovery (TVR) gas, or a combination thereof. [District Rule 2201]
14. Natural gas and/or TEOR and TVR gas combusted in this unit shall have a sulfur content no greater than 1.5 gr S/100 scf. [District Rules 2201 and 4320]
15. This unit shall be fired on natural gas, TEOR gas, and/or TVR gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf. [District Rule 2201]
16. Emissions rates from unit shall not exceed any of the following limits: 7 ppmv NOx @ 3% O2 or 0.0085 lb-NOx/MMBtu, 0.0076 lb-PM10/MMBtu, 35 ppmv CO @ 3% O2 or 0.0026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320]
17. Source testing to measure fuel combustion NOx and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]
18. Source testing to measure NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
19. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]
20. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
21. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 5.5.5, 4306, 5.5.5, and 4320]

24. The following test methods shall be used: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rule 1081, 4305, 4306, 4320, and 4351]

25. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306. [District Rules 4305, 4306, and 4320]

26. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]

27. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]

28. All NOx, CO, and O2 emission emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

29. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be quarterly. If a quarterly fuel content source test fails to show compliance, weekly testing shall resume. [District Rule 1070, 2201, 4305, 4306, and 4320]

30. If unit is fired on non-certified gas then sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 4084, D 3246 or grab sample analysis by GC-FPD/TCD, double GC for H2S and mercaptans, performed in the laboratory or draeger tubes. Should the applicant decide to use different methodology, the methodology must be approved by the District prior to its use. [District Rule 1070, 2201, 4305, 4306, and 4320]

31. If fuel analysis is used to demonstrate compliance with the conditions of this permit, the fuel higher heating value for each fuel shall be certified by third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rule 2201, 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

32. Permittee shall submit notification to the District of the date of construction and actual startup. Notifications shall be postmarked no later than 30 days after construction and 15 days after actual startup. The notifications shall include the design heat input and identification of fuels for this permit unit. [40 CFR 60.48c(a)(1)]

33. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]

34. Permittee shall record the fuel gas sulfur content and higher heating value and the daily amount of each fuel combusted. [District Rule 1070 and 40 CFR 60.48c(g)(1)]

35. This steam generator shall be equipped with variable frequency drive electric motors on the air blower and the water pump. [California Environmental Quality Act]

36. This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [California Environmental Quality Act]

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320 and 40 CFR 60.48c(i)]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-1246-346-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: BERRY PETROLEUM COMPANY
MAILING ADDRESS: ATTN: EH&S MANAGER
5201 TRUXTUN AVENUE SUITE 100
BAKERSFIELD, CA 93309-0422

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR PCL NATURAL GAS/TEOR/TVR GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL MAGNA FLAME LE ULTRA LOW NOX BURNER, OXYGEN CONTROLLER, AND FLUE GAS RECIRCULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 1,582 lb, 2nd quarter - 1,582 lb, 3rd quarter - 1,582 lb, and fourth quarter - 1,583 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOx emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 800 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

DAVID WARNER, Director of Permit Services
S-1246-346-0 : Jun 7 2011 3:26PM – TOMS : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 1,414 lb, 2nd quarter - 1,415 lb, 3rd quarter - 1,415 lb, and fourth quarter - 1,415 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/08). [District Rule 2201]
6. ERC Certificate Numbers C-629-2, C-892-2, C-971-2, C-972-2, C-973-2, C-974-2, C-975-2, C-976-2, C-977-2, C-978-2, C-979-2, C-980-2, C-981-2, C-982-2, C-983-2, C-984-2, C-985-2, C-986-2, C-987-2, C-988-2, C-989-2, C-990-2, C-991-2, C-992-2, C-993-2, C-994-2, C-995-2, N-816-2, N-817-2, N-818-2, N-819-2, N-821-2, N-823-2, N-881-2, S-2905-2, S-3016-2, S-3316-2, S-2830-5, S-2832-5, S-3322-5, S-3050-4, S-2064-4, S-567-4, S-3046-4, C-1092-4, C-1093-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
7. Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1246-212-2 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]
8. This unit is approved to be operated at the following location: 35°15'21.95" -119°34'54.65". [District Rule 4102]
9. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
10. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
11. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
12. A totalizing mass or volumetric fuel flow meter to measure the amount of gas combusted in the unit shall be installed, utilized, and maintained. [40 CFR 60.48c(g)(1)]
13. This unit shall only be fired on PUC-quality natural gas, ethane-rich natural gas, TEOR gas, tank vapor recovery (TVR) gas, or a combination thereof. [District Rule 2201]
14. Natural gas and/or TEOR and TVR gas combusted in this unit shall have a sulfur content no greater than 1.5 gr S/100 scf. [District Rules 2201 and 4320]
15. This unit shall be fired on natural gas, TEOR gas, and/or TVR gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf. [District Rule 2201]
16. Emissions rates from unit shall not exceed any of the following limits: 7 ppmv NOx @ 3% O2 or 0.0085 lb-NOx/MMBtu, 0.0076 lb-PM10/MMBtu, 35 ppmv CO @ 3% O2 or 0.0026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320]
17. Source testing to measure fuel combustion NOx and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]
18. Source testing to measure NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
19. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]
20. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
21. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 5.5.5, 4306, 5.5.5, and 4320]

24. The following test methods shall be used: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rule 1081, 4305, 4306, 4320, and 4351]

25. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306. [District Rules 4305, 4306, and 4320]

26. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]

27. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]

28. All NOx, CO, and O2 emission emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

29. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be quarterly. If a quarterly fuel content source test fails to show compliance, weekly testing shall resume. [District Rule 1070, 2201, 4305, 4306, and 4320]

30. If unit is fired on non-certified gas then sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 4084, D 3246 or grab sample analysis by GC-FPD/TCD, double GC for H2S and mercaptans, performed in the laboratory or draeger tubes. Should the applicant decide to use different methodology, the methodology must be approved by the District prior to its use. [District Rule 1070, 2201, 4305, 4306, and 4320]

31. If fuel analysis is used to demonstrate compliance with the conditions of this permit, the fuel higher heating value for each fuel shall be certified by third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rule 2201, 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

32. Permittee shall submit notification to the District of the date of construction and actual startup. Notifications shall be postmarked no later than 30 days after construction and 15 days after actual startup. The notifications shall include the design heat input and identification of fuels for this permit unit. [40 CFR 60.48c(a)(1)]

33. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]

34. Permittee shall record the fuel gas sulfur content and higher heating value and the daily amount of each fuel combusted. [District Rule 1070 and 40 CFR 60.48c(g)(1)]

35. This steam generator shall be equipped with variable frequency drive electric motors on the air blower and the water pump. [California Environmental Quality Act]

36. This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [California Environmental Quality Act]

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320 and 40 CFR 60.48c(i)]