San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

JAN 15 2019

Charlotte Campbell
California Resources Production Corporation
11109 River Run Blvd
Bakersfield, CA 93311

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: C-273
Project Number: C-1182294

Dear Ms. Campbell:

Enclosed for your review and comment is the District's analysis of California Resources Production Corporation's application for Authority to Construct (ATC) permits for the installation of five (5) Ultra Low Emissions (ULE) natural gas/field gas-fired backup Aereon Model CEB 1200 (or equivalent) thermal oxidizers to be operated at various unspecified locations within your Kettleman North Dome Stationary Source (District facility C-273) in Kings County.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice and 45-day EPA notice comment periods, the District intends to issue the ATCs. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Sajjad Ahmad of Permit Services at (559) 230-5903.

Sincerely,

Arnaud Marjollet
Director of Permit Services

AM:sa

Enclosures

cc: Tung Le, CARB (w/ enclosure) via email
cc: Gerardo C. Rios, EPA (w/ enclosure) via email

Samir Sheikh
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

Authority to Construct Application Review

Field Gas-Fired Backup Thermal Oxidizers

Facility Name:	California Resources Production Corp.	Date:	January 7, 2019
Mailing Address:	11109 River Run Blvd Bakersfield, CA 93311	Engineer: Lead Engineer:	Sajjad Ahmad Joven Refuerzo
Contact Person:	Charlotte Campbell (Sr. Environmental Advisor)		
Telephone:	(661) 529-4323		
E-Mail:	charlotte.campbell@crc.com		
Application #s:	C-273-57-0 thru '-61-0		
Project #:	C-1182294		
Deemed Complete:	July 26, 2018		

I. Proposal

California Resources Production Corporation (herein after called 'the facility') has requested Authority to Construct (ATC) permits for the installation of five (5) new 41 MMBtu/hr natural gas/field gas-fired Aereon Model CEB 1200 (or equivalent) backup thermal oxidizers. Each unit will be allowed to operate for a maximum of 720 hours per year (equivalent to operation of 24 hours/day and 30 days/year) as a backup whenever natural gas processing plant is down during emergencies or when natural gas cannot be shipped through the sales line. The units will also operate during maintenance operations of the various gas processing equipment.

The proposed units will serve as VOC control devices for the gas production facility.

The facility has requested that the thermal oxidizers be allowed to operate at various unspecified locations within the same Stationary Source (C-273) for operational flexibility.

The draft ATCs are included in Appendix A.

Equivalent Equipment Requirements:

As stated above, the facility has proposed to install five Aereon Model CEB 1200 (or equivalent) backup thermal oxidizers. In order to provide flexibility to the facility and to specify how "equivalent equipment" will be determined, the following conditions will be listed on the ATCs pursuant to District Policy APR-1040, *Flexibility in Equipment Descriptions in ATCs (3/14/2004)*:

- The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]

- The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]

- Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]

- No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]

Title V Permit Requirements:

ATCs C-273-32-0 thru '-47-0 were previously issued to the facility under project C-1172045 to install fifteen natural gas-fired micro turbines and a gas processing plant. As a worst-case, it will be assumed that all ATCs '-32-0 thru '-47-0 will be implemented, so that the Pre-Project Stationary Source Potential to Emit (SSPE1) for NOx and VOC emissions will be greater than Major Source thresholds for this project.

The facility has indicated that ATCs '-32-0 thru '-47-0 will be implemented and an initial Title V application has already been submitted to the District to comply with District Rule 2530 *Federally Enforceable Potential to Emit.* Therefore, the following condition will be listed on the new ATCs to ensure compliance:

- Authority to Construct (ATC) permits C-273-32-0 thru '-47-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this ATC. [District Rule 2201]

II. Rules Applicable or Evaluated

Rule 2201	New and Modified Stationary Source Review Rule (2/18/16)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
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 4311	Flares (6/18/09)
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 Environ mental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The facility's 'Kettleman North Dome Oil Field' is located in Kings County, within Section 11P, Township 22S, Range 17E. The facility has indicated the initial operation location of the units (see Appendix B); however, for operational flexibility the facility has requested to operate the units at various unspecified locations within the same Stationary Source (C-273).

The District has verified that the entire Stationary Source (C-273) is not located within 1,000 feet of the outer boundaries of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

The proposed thermal oxidizers will be allowed to operate for a maximum of 720 hours per year (equivalent to operation of 24 hours/day and 30 days/year) as a backup whenever natural gas processing plant is down during emergencies or when natural gas cannot be shipped through the sales line. The units will also operate during maintenance operations of the various gas processing equipment. Each unit will utilize natural gas as pilot fuel.

V. Equipment Listing

C-273-57-0: 41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 1)

C-273-58-0: 41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 2)

C-273-59-0: 41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 3)

C-273-60-0: 41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 4)

C-273-61-0: 41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 5)

VI. Emission Control Technology Evaluation

Operation of the proposed thermal oxidizers will result in oxides of nitrogen (NOx), oxides of sulfur (SOx), particulate matter less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), and VOC emissions. The units are the VOC control devices for the natural gas production facility and are expected to achieve a minimum 98% VOC destruction efficiency, as the proposed units will be Ultra Low Emission (ULE) units with low NOx and low VOC emissions, per manufacturer's specifications (see Appendix C).

These units are designed on the principle of increased air/fuel mixing to lower the combustion temperature, thus reducing NOx formation while increasing the VOC destruction efficiency.

The combustion air is provided by a variable frequency drive air fan to control the amount of the combustion air. The waste field gas will enter via an injector into an air/fuel mixing chamber that is designed with static mixers to promote mixing by inducing increased swirl patterns. This causes the waste field gas to flow turbulently across the air stream to start the mixing process. The waste gas and air mixture is allowed to propagate up the diffuser and into the head of the burner. The head of the burner is covered with a proprietary burner cloth. The cloth is made up of fibers of FeCr alloy that are knitted together like a wool sweater. This generates a material with millions of tortured paths for the gases to pass through. This is the final and most critical phase of the mixing process, just prior to combustion.

VII. General Calculations

A. Assumptions

To streamline emission calculations, $PM_{2.5}$ emissions are assumed to be equal to PM_{10} emissions. Only if needed to determine if a project is a Federal major modification for $PM_{2.5}$ will specific $PM_{2.5}$ emission calculations be performed.

- Daily operation of each unit is 24 hours per day (worst case)
- Annual operation of each unit will be limited to 720 hours per year. The facility proposed maximum operation of 30 days per year, which translates to 720 hours per day based on worst case operation of 24 hours per day. Therefore, annual operation will be limited by allowable hours instead of number of days for operational flexibility.
- Maximum heat input of each unit is 41 MMBtu/hr (per manufacturer)
- Natural gas F-factor is 8,578 dscf/MMBtu (corrected to 60°F based on F-factor of 8,710 dscf/MMBtu @ 68°F per EPA 40 CFR 60 Appendix B, Method 19)
- Higher heating value of natural gas is 1,000 Btu/scf (District Practice)
- Molar Specific Volume of a gas @ 60 °F is 379.5 ft^3/lb-mol
- Molecular weight for S: 32.06 lb/lb-mole (as H_2S)
- Sulfur content of natural gas: 10.0 grain-S/100 scf (per applicant)
- The units are VOC control devices for the natural gas production facility.

B. Emission Factors

Natural Gas/Field Gas-fired Thermal Oxidizers Emission Factors			
Pollutant		**lb/MMBtu**	**Source**
NOx	--	0.018	Applicant Proposed BACT based on Manufacturer's Specifications
SOx	10 grain-S/100 dscf	0.0285*	Mass balance below
PM_{10}	7.6 lb/10^6 scf	0.0076*	AP-42, Table 1.4-2 (7/1998) (see Appendix D)
CO	--	0.01	Applicant Proposed BACT based on Manufacturer's Specifications
VOC	--	0.008	

*Emission factors converted in units of lb/MMBtu as follows:

SOx

$$\frac{10\ gr-S}{100\ dscf}\times\frac{1\ dscf}{1{,}000\ Btu}\times\frac{10^6 Btu}{MMBtu}\times\frac{1\ lb}{7{,}000\ gr}\times\frac{64\ lb-SO_2}{32\ lb-S}=0.0285\frac{lb-SO_2}{MMBtu}$$

PM_{10}

$$\frac{7.6\ lb-PM_{10}}{10^6\ ft^3-NG}\times\frac{1\ ft^3-NG}{1{,}000\ Btu}\times\frac{10^6\ Btu}{MMBtu}=0.0076\ \frac{lb-PM_{10}}{MMBtu}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

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

2. Post Project Potential to Emit (PE2)

Daily and annual PE2 for each thermal oxidizer are calculated using the following equations and summarized in the following table:

Daily PE2 = Rating (MMBtu/hr) x EF (lb/MMBtu) x Operation (hr/day)

Annual PE2 = Rating (MMBtu/hr) x EF (lb/MMBtu) x Operation (hr/year)

Daily and Annual Potential Emissions (PE2)						
Pollutant	Rating (MMBtu/hr)	Emission Factor (lb/MMBtu)	Operation (hours/day)	Operation (hours/year)	Daily PE2 (lb/day)	Annual PE2 (lb/year)
NOx	41	0.018	24	720	17.7	531
SOx	41	0.0285	24	720	28.0	841
PM_{10}	41	0.0076	24	720	7.5	224
CO	41	0.01	24	720	9.8	295
VOC	41	0.008	24	720	7.9	236

Project Total Emissions:

Project total PE for all five thermal oxidizers is calculated in the tables below:

Project Total Daily PE2 (lb/day)					
Permit Unit	**NOx**	**SOx**	**PM_{10}**	**CO**	**VOC**
ATC C-273-57-0	17.7	28.0	7.5	9.8	7.9
ATC C-273-58-0	17.7	28.0	7.5	9.8	7.9
ATC C-273-59-0	17.7	28.0	7.5	9.8	7.9
ATC C-273-60-0	17.7	28.0	7.5	9.8	7.9
ATC C-273-61-0	17.7	28.0	7.5	9.8	7.9
Project Total PE2 (lb/day) =	**88.5**	**140.0**	**37.5**	**49.0**	**39.5**

Project Total Annual PE2 (lb/year)					
Permit Unit	**NOx**	**SOx**	**PM_{10}**	**CO**	**VOC**
ATC C-273-57-0	531	841	224	295	236
ATC C-273-58-0	531	841	224	295	236
ATC C-273-59-0	531	841	224	295	236
ATC C-273-60-0	531	841	224	295	236
ATC C-273-61-0	531	841	224	295	236
Project Total PE2 (lb/year) =	**2,655**	**4,205**	**1,120**	**1,475**	**1,180**
Project Total PE2 (ton/year) =	**1.3**	**2.1**	**0.6**	**0.7**	**0.6**

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

Pursuant to District Rule 2201, the 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 (AER) that have occurred at the source, and which have not been used on-site.

SSPE1 is based on projects C-1172045, C-1172745, C-1181170, and C-1181625 as below assuming that all ATCs issued under those projects will be implemented:

SSPE1 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
C-273-18-3	5,622	69	230	24,321	6,478
C-273-19-3	5,622	69	230	24,321	6,478
C-273-20-3	5,622	69	230	24,321	6,478
C-273-21-1	0	0	0	0	56,575*
C-273-22-1	0	0	0	0	11,315*
C-273-23-1	0	0	0	0	11,315*
C-273-24-1	669	1	35	612	35
ATC C-273-32-0	659	569	152	1,798	180
ATC C-273-33-0	659	569	152	1,798	180
ATC C-273-34-0	659	569	152	1,798	180
ATC C-273-35-0	659	569	152	1,798	180
ATC C-273-36-0	659	569	152	1,798	180
ATC C-273-37-0	659	569	152	1,798	180
ATC C-273-38-0	659	569	152	1,798	180
ATC C-273-39-0	659	569	152	1,798	180
ATC C-273-40-0	659	569	152	1,798	180
ATC C-273-41-0	659	569	152	1,798	180
ATC C-273-42-0	659	569	152	1,798	180
ATC C-273-43-0	659	569	152	1,798	180
ATC C-273-44-0	659	569	152	1,798	180
ATC C-273-45-0	659	569	152	1,798	180
ATC C-273-46-0	659	569	152	1,798	180
ATC C-273-47-0	0	0	0	0	1,514*
ATC C-273-48-0	0	0	0	0	92*
ATC C-273-49-0	0	0	0	0	92*
ATC C-273-50-0	0	0	0	0	364*
ATC C-273-51-0	1,667	202	476	12,144	4,008
ATC C-273-52-0	659	569	152	1,798	180
ATC C-273-53-0	659	569	152	1,798	180
ATC C-273-54-0	659	569	152	1,798	180
ATC C-273-55-0	659	569	152	1,798	180
ATC C-273-56-0	659	569	152	1,798	180
SSPE1	**32,382**	**11,790**	**4,241**	**121,679**	**108,344**
SSPE1 for Major Source (excluding fugitive emissions)*	**32,382**	**11,790**	**4,241**	**121,679**	**27,077**

*Fugitive emissions only. Per Rule 2201 Section 3.19, fugitive emissions are included in all calculations, except for in Section 3.24 (Major Source calculations) and as allowed in the applicable 40 CFR Part 51.165.

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

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

Based on the annual PE2 for units C-273-57-0 thru '-61-0 calculated in Section VII.C.2 of this documents, SSPE2 is summarized in the table below:

SSPE2 (lb/year)					
Permit Unit	**NOx**	**SOx**	**PM_{10}**	**CO**	**VOC**
C-273-18-3	5,622	69	230	24,321	6,478
C-273-19-3	5,622	69	230	24,321	6,478
C-273-20-3	5,622	69	230	24,321	6,478
C-273-21-1	0	0	0	0	56,575*
C-273-22-1	0	0	0	0	11,315*
C-273-23-1	0	0	0	0	11,315*
C-273-24-1	669	1	35	612	35
ATC C-273-32-0	659	569	152	1,798	180
ATC C-273-33-0	659	569	152	1,798	180
ATC C-273-34-0	659	569	152	1,798	180
ATC C-273-35-0	659	569	152	1,798	180
ATC C-273-36-0	659	569	152	1,798	180
ATC C-273-37-0	659	569	152	1,798	180
ATC C-273-38-0	659	569	152	1,798	180
ATC C-273-39-0	659	569	152	1,798	180
ATC C-273-40-0	659	569	152	1,798	180
ATC C-273-41-0	659	569	152	1,798	180
ATC C-273-42-0	659	569	152	1,798	180
ATC C-273-43-0	659	569	152	1,798	180
ATC C-273-44-0	659	569	152	1,798	180
ATC C-273-45-0	659	569	152	1,798	180
ATC C-273-46-0	659	569	152	1,798	180
ATC C-273-47-0	0	0	0	0	1,514*
ATC C-273-48-0	0	0	0	0	92*
ATC C-273-49-0	0	0	0	0	92*
ATC C-273-50-0	0	0	0	0	364*
ATC C-273-51-0	1,667	202	476	12,144	4,008
ATC C-273-52-0	659	569	152	1,798	180
ATC C-273-53-0	659	569	152	1,798	180
ATC C-273-54-0	659	569	152	1,798	180
ATC C-273-55-0	659	569	152	1,798	180
ATC C-273-56-0	659	569	152	1,798	180
ATC C-273-57-0	531	841	224	295	236
ATC C-273-58-0	531	841	224	295	236
ATC C-273-59-0	531	841	224	295	236
ATC C-273-60-0	531	841	224	295	236
ATC C-273-61-0	531	841	224	295	236
SSPE2	**35,037**	**15,995**	**5,361**	**123,154**	**109,524**
SSPE2 for Major Source (excluding fugitive emissions)*	**35,037**	**15,995**	**5,361**	**123,154**	**28,257**

*Fugitive emissions only. Per Rule 2201 Section 3.19, fugitive emissions are included in all calculations, except for in Section 3.24 (Major Source calculations) and as allowed in the applicable 40 CFR Part 51.165.

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

Rule 2201 Major Source Determination (lb/year)						
	NOx	SOx	PM_{10}	$PM_{2.5}$	CO	VOC
SSPE1	32,382	11,790	4,241	4,241	121,679	27,077
SSPE2	35,037	15,995	5,361	5,361	123,154	28,257
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	Yes	No	No	No	No	Yes

Note: $PM_{2.5}$ assumed to be equal to PM_{10}

As seen in the table above, the facility is an existing Major Source for NOx and VOC emissions and will remain a major source for both NOx and VOC emissions as a result of this project.

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO_2	SO_2	PM	PM_{10}	CO	VOC
Estimated Facility PE before Project Increase	16.2	5.9	2.1	2.1	60.8	13.5
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

*Since this source is not included in the 28 specific source categories specified in 40 CFR 51.165, the fugitive emissions are not included in the Rule 2410 Major Source Determination.

As shown above, the facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility.

6. Baseline Emissions (BE)

The BE calculation (in lb/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 District Rule 2201, BE = PE1 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 District Rule 2201.

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."

Since this facility is a major source for NOx and VOC emissions, the project's PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if the SB 288 Major Modification calculation is required.

SB 288 Major Modification Thresholds			
Pollutant	**Project PE2 (lb/year)**	**Threshold (lb/year)**	**SB 288 Major Modification Calculation Required?**
NOx	2,655	50,000	No
SOx	4,205	80,000	No
PM_{10}	1,120	30,000	No
VOC	1,180	50,000	No

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute an SB 288 Major Modification.

8. Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. Emission decreases may not cancel out the increases for this determination.

Step 1

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project.

The project's combined total emission increases are calculated in Section VII.C.2 of this document and compared to the Federal Major Modification Thresholds in the following table.

Federal Major Modification Thresholds for Emission Increases			
Pollutant	**Total Emissions Increases (lb/yr)**	**Thresholds (lb/yr)**	**Federal Major Modification?**
NOx*	2,655	0	Yes
VOC*	1,180	0	Yes
PM_{10}	1,120	30,000	No
$PM_{2.5}$	1,120	20,000	No
SOx	4,205	80,000	No

*If there is any emission increases in NOx or VOC, this project is a Federal Major Modification and no further analysis is required.

Since there is an increase in NOx and VOC emissions, this project constitutes a Federal Major Modification. Federal Offset quantities are calculated below.

Federal Offset Quantities:

The Federal offset quantity is only calculated only for the pollutants for which the project is a Federal Major Modification. The Federal offset quantity is the sum of the annual emission changes for all new and modified emission units in a project calculated as the potential to emit after the modification (PE2) minus the actual emissions (AE) during the baseline period for each emission unit multiplied by the applicable federal offset ratio. There are no special calculations performed for units covered by an SLC.

NOx **Federal Offset Ratio** **1.5**

Permit No.	Actual Emissions (lb/year)	Potential Emissions (lb/year)	Emissions Change (lb/yr)
C-273-57-0	0	531	531
C-273-58-0	0	531	531
C-273-59-0	0	531	531
C-273-60-0	0	531	531
C-273-61-0	0	531	531
		Net Emission Change (lb/year):	2,655
		Federal Offset Quantity: (NEC x 1.5)	**3,983**

VOC **Federal Offset Ratio** **1.5**

Permit No.	Actual Emissions (lb/year)	Potential Emissions (lb/year)	Emissions Change (lb/yr)
C-273-57-0	0	236	236
C-273-58-0	0	236	236
C-273-59-0	0	236	236
C-273-60-0	0	236	236
C-273-61-0	0	236	236
		Net Emission Change (lb/year):	1,180
		Federal Offset Quantity: (NEC x 1.5)	**1,770**

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO_2 (as a primary pollutant)
- SO_2 (as a primary pollutant)
- CO
- PM
- PM_{10}

I. Project Emissions Increase - New Major Source Determination

The post-project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). The PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination: Potential to Emit (tons/year)						
	NO_2	SO_2	PM	PM_{10}	CO	VOC
Total PE from New and Modified Units	1.3	2.1	0.6	0.6	0.7	0.6
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	No	No	No	No	No	No

As shown in the table above, the potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore Rule 2410 is not applicable and no further analysis is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix E.

VIII. Compliance Determination

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

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 Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*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

As calculated in Section VII.C.2 of this evaluation, the facility is proposing to install five new natural gas/field gas-fired thermal oxidizers each with a PE2 greater than 2 lb/day for NOx, SOx, PM_{10}, CO, and VOC emissions. However, the proposed units are control devices for VOC emissions from the natural gas production facility. VOC is the only pollutant from the emission units (i.e. natural gas processing equipment). NOx, SOx, PM_{10}, and CO emissions are incidental to the control devices (i.e. byproducts of combustion in the thermal oxidizers) and are not subject to BACT per District practice. Therefore, BACT is triggered for VOC emissions only for each new thermal oxidizer.

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

As discussed in Section I above, there are no modified emissions units associated with this project. Therefore BACT is not triggered.

d. SB 288/Federal Major Modification

As discussed in Section VII.C.8 above, this project does constitute a Federal Major Modification for NOx and VOC emissions. Since units are control devices for VOC, BACT is triggered only for VOC emissions for each thermal oxidizer.

2. BACT Guideline

District's BACT Clearinghouse currently does not include a BACT Guideline that could be applied to this class and category. Therefore, a new project specific BACT is performed for the proposed thermal oxidizers with this project (see Appendix F).

2. Top-Down BACT Analysis

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

VOC: ULE thermal oxidizer using natural gas fuel with emissions ≤ 0.008 lb-VOC/MMBtu (98% control efficiency) and ≤ 0.018 lb-NOx/MMBtu

Therefore, the following conditions will be listed on the ATCs to ensure compliance with the BACT requirements:

- Emission rates from this unit shall not exceed any of the following limits: 0.018 lb-NOx/MMBtu; 0.0285 lb-SOx/MMBtu; 0.0076 lb-PM_{10}/MMBtu; 0.01 lb-CO/MMBtu; or 0.008 lb-VOC/MMBtu. [District Rule 2201]

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NOx	**SOx**	**PM_{10}**	**CO**	**VOC**
SSPE2	35,037	15,995	5,361	123,154	109,524
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	Yes	No	No	No	Yes

2. Quantity of Offsets Required

As seen above, the facility is an existing Major Source for NOx and VOC emissions and the SSPE2 is greater than the offset thresholds. Therefore offset calculations will be required for this project for NOx and VOC emissions.

NOx:

The quantity of offsets in pounds per year for NOx 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 = PE1 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 = HAE

The facility is proposing to install five new emissions units; therefore, BE = 0 for each unit. Also, there are no increases in cargo carrier emissions; therefore offsets for the project can be determined as follows:

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

PE2 (NOx) = 531 lb/year (for each unit)
BE (NOx) = 0 lb/year
ICCE = 0 lb/year

The project is a Federal Major Modification and therefore the correct offset ratio for NOx is 1.5:1. Therefore, the amount of NOx ERCs that need to be withdrawn is:

Offsets Required (lb/year) = ([531 – 0] x 5 + 0) x 1.5
= 3,983 lb-NOx/year

This is the amount of overall NOx offset required for the project and the amount of offsets required for each new thermal oxidizer can be calculated as follows:

Offsets Required per Thermal Oxidizer = Total Offsets for Project / 5 units
= 3,983 lb-NOx/year ÷ 5
= 797 lb-NOx/year

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

Quarterly offsets required (lb/qtr) = (797 lb-NOx/year) ÷ (4 quarters/year)
= 199.25 lb-NOx/qtr

As shown in the calculation above, the quarterly amount of offsets required for this project, when evenly distributed to each quarter, results in fractional pounds of offsets being required each quarter. Since offsets are required to be withdrawn as whole pounds, the quarterly amounts of offsets need to be adjusted to ensure the quarterly values sum to the total annual amount of offsets required.

To adjust the quarterly amount of offsets required, the fractional amount of offsets required in each quarter will be summed and redistributed to each quarter based on the number of days in each quarter. The redistribution is based on the Quarter 1 having the fewest days and the Quarters 3 and 4 having the most days. The redistribution method is summarized in the following table:

Redistribution of Required Quarterly Offsets (where X is the annual amount of offsets, and X ÷ 4 = Y.z)				
Value of z	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**
.0	Y	Y	Y	Y
.25	Y	Y	Y	Y+1
.5	Y	Y	Y+1	Y+1
.75	Y	Y+1	Y+1	Y+1

Therefore the appropriate quarterly emissions to be offset for each unit are as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total Annual
199	199	199	200	797

The appropriate quarterly emissions to be offset for all five units are as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total Annual
995	995	995	1,000	3,985

The applicant has stated that the facility plans to use ERC certificate S-4142-2 to offset the increases in NOx emissions associated with this project. This certificate was recently split into S-4997-2 to provide offsets for project C-1172045 and the remainder was issued to the facility as S-4998-2 with the following available quarterly NOx credits:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-4998-2	15,781	15,781	15,781	15,781

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

Proposed Rule 2201 (offset) Conditions:

The following conditions will be listed on each ATC:

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 199 lb, 2nd quarter - 199 lb, 3rd quarter - 199 lb, and 4th quarter - 200 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]

- ERC Certificate Number S-4998-2 (or a certificate split from this certificate) 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]

VOC:

The quantity of offsets in pounds per year for VOC 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 = PE1 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 = HAE

The facility is proposing to install five emissions units; therefore, BE = 0 for each unit. Also, there are no increases in cargo carrier emissions; therefore offsets for the project can be determined as follows:

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

PE2 (VOC) = 236 lb/year (for each unit)
BE (VOC) = 0 lb/year
ICCE = 0 lb/year

The project is a Federal Major Modification and therefore the correct offset ratio for VOC is 1.5:1. Therefore, the amount of VOC ERCs that need to be withdrawn is:

Offsets Required (lb/year) = ([236 – 0] x 5 + 0) x 1.5
= 1,770 lb-VOC/year

This is the amount of overall VOC offset required for the project and the amount of offsets required for each new thermal oxidizer can be calculated as follows:

Offsets Required per Thermal Oxidizer = Total Offsets for Project / 5 units
= 1,770 lb-VOC/year ÷ 5
= 354 lb-VOC/year

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

Quarterly offsets required (lb/qtr) = (354 lb-VOC/year) ÷ (4 quarters/year)
= 88.5 lb-VOC/qtr

As shown in the calculation above, the quarterly amount of offsets required for this project, when evenly distributed to each quarter, results in fractional pounds of offsets being required each quarter. Since offsets are required to be withdrawn as whole pounds, the quarterly amounts of offsets need to be adjusted to ensure the quarterly values sum to the total annual amount of offsets required.

To adjust the quarterly amount of offsets required, the fractional amount of offsets required in each quarter will be summed and redistributed to each quarter based on the number of days in each quarter. The redistribution is based on the Quarter 1 having the fewest days and the Quarters 3 and 4 having the most days. The redistribution method is summarized in the following table:

Redistribution of Required Quarterly Offsets
(where X is the annual amount of offsets, and X ÷ 4 = Y.z)

Value of z	Quarter 1	Quarter 2	Quarter 3	Quarter 4
.0	Y	Y	Y	Y
.25	Y	Y	Y	Y+1
.5	Y	Y	Y+1	Y+1
.75	Y	Y+1	Y+1	Y+1

Therefore the appropriate quarterly emissions to be offset for each unit are as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total Annual
88	88	89	89	354

The appropriate quarterly emissions to be offset for all five units are as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total Annual
440	440	445	445	1,770

The applicant has stated that the facility plans to use ERC certificate S-4487-1 to offset the increases in VOC emissions associated with this project. This certificate was recently split into S-4991-1 to provide offsets for project C-1171022 and the remainder was issued to the facility as S-4992-1 with the following available quarterly VOC credits:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-4992-1	8,611	8,611	8,611	8,610

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

Proposed Rule 2201 (offset) Conditions:

The following conditions will be listed on each ATC:

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 88 lb, 2nd quarter - 88 lb, 3rd quarter - 89 lb, and 4th quarter - 89 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]

- ERC Certificate Number S-4992-1 (or a certificate split from this certificate) 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]

3. ERC Withdrawal Calculations

NOx:

The applicant must identify the ERC Certificate(s) to be used to offset the increase of NOx emissions for the project. As indicated in previous section, the applicant is proposing to use ERC certificate #S-4998-2 to mitigate the increases of NOx emissions associated with this project.

VOC:

The applicant must identify the ERC Certificate(s) to be used to offset the increase of VOC emissions for the project. As indicated in previous section, the applicant is proposing to use ERC certificate #S-4992-1 to mitigate the increases of VOC emissions associated with this project.

See Appendix G for detailed ERC withdrawal calculations.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
c. Any project which results in the offset thresholds being surpassed,
d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or
e. Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

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.

As demonstrated in Section VII.C.8, this project is a Federal Major Modification for NOx and VOC emissions. Therefore, public noticing for Federal Major Modification purposes is required.

b. PE > 100 lb/day

Applications which include a new emissions unit with a PE 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.

c. Offset Threshold

Pursuant to District Rule 2201, Section 4.5.3, offset requirements shall be triggered on a pollutant-by-pollutant basis, unless exempted pursuant to Section 4.6, offsets shall be required if the post-project Stationary Source Potential to Emit (SSPE2) equals or exceeds specific offset threshold levels as listed in table below.

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

Offset Thresholds				
Pollutant	**SSPE1 (lb/year)**	**SSPE2 (lb/year)**	**Offset Threshold**	**Public Notice Required?**
NOx	32,382	35,037	20,000 lb/year	No
SOx	11,790	15,995	54,750 lb/year	No
PM_{10}	4,241	5,361	29,200 lb/year	No
CO	121,679	123,154	200,000 lb/year	No
VOC	108,344	109,524	20,000 lb/year	No

As detailed above, SSPE1 is already above offset thresholds for NOx and VOC emissions and there were no new thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds					
Pollutant	**SSPE2 (lb/year)**	**SSPE1 (lb/year)**	**SSIPE (lb/year)**	**SSIPE Public Notice Threshold**	**Public Notice Required?**
NOx	35,037	32,382	2,655	20,000 lb/year	No
SOx	15,995	11,790	4,205	20,000 lb/year	No
PM_{10}	5,361	4,241	1,120	20,000 lb/year	No
CO	123,154	121,679	1,475	20,000 lb/year	No
VOC	109,524	108,344	1,180	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

e. Title V Significant Permit Modification

Since this facility does not have a Title V operating permit, this change is not a Title V significant Modification, and therefore public noticing is not required.

2. Public Notice Action

As discussed above, public noticing is required for this project for being a Federal Major Modification. 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)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. 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:

- Emission rates from this unit shall not exceed any of the following limits: 0.018 lb-NOx/MMBtu; 0.0285 lb-SOx/MMBtu; 0.0076 lb-PM_{10}/MMBtu; 0.01 lb-CO/MMBtu; or 0.008 lb-VOC/MMBtu. [District Rule 2201]

- The unit shall only burn produced gas and/or PUC quality gas with a fuel sulfur concentration not exceeding 10 grain/100 dscf. [District Rules 2201 and 4801]

- The unit shall not operate for more than 720 hours in any calendar year. [District Rule 2201]

- A flame shall be present at all times when combustible gases are vented. [District Rule 2201]

E. Compliance Assurance

1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

2. Monitoring

The following conditions will be listed on the ATCs to ensure compliance with NOx and CO emission limits:

- The permittee shall monitor and record the stack concentration of NOx, CO, and O_2 at least once every quarter (in any quarter that the unit is operated) 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 quarter. [District Rule 2201]

- If either the NOx or CO concentrations corrected to 3% O_2, 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 Rule 2201]

- All NOx, CO, and O_2 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 Rule 2201]

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 listed on the ATCs to ensure compliance:

- The permittee shall maintain records of: (1) the date and time of NOx, CO, and O_2 measurements, (2) the O_2 concentration in percent and the measured NOx and CO concentrations corrected to 3% O_2, (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 Rule 2201]

- The permittee shall maintain records of the number of hours this unit operates in any calendar year. [District Rule 2201]

- {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an 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 District's Technical Services Division conducted the required analysis. Refer to Appendix H of this document for the HRA and AAQA summary.

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

The proposed location is in a non-attainment area for the state's PM_{10} as well as federal and state $PM_{2.5}$ thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM_{10} and $PM_{2.5}$.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Federal Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Section VIII above, this project constitutes a Federal Major Modification, therefore this requirement is applicable. The facility's compliance certification is included in Appendix I.

H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes to install five natural gas fired backup thermal oxidizers.

Since the project will involve with the installment of new equipment at an existing facility, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

As calculated in Section VII.C.2 of this document, the current project by itself will not result the facility to become a Major Source for any pollutants. However, this facility will become a major source for NOx and VOC emissions, with the implementation of ATCs C-273-32-0 thru '-47-0 issued under project C-1172045. Pursuant to Rule 2520 and as required by permit condition #1 listed on ATCs C-273-32-0 thru '-47-0, the facility will have up to 12 months after commencing

operation authorized by those ATCs to either submit an initial Title V application or comply with District Rule 2530 *Federally Enforceable Potential to Emit.*

Since current project by itself will not cause the facility to become a Major Source for any pollutant, no special conditions are necessary on current ATCs to ensure compliance with this rule.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to backup thermal oxidizers.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to backup thermal oxidizers.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As the thermal oxidizers will be fired solely on natural gas, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity. The following condition will be listed on ATCs to ensure compliance:

- {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]

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which 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 and the following condition will be listed on ATCs to ensure compliance:

- {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 HRA and AAQA summary (Appendix H), the total facility prioritization score including this project was greater than one. Therefore, an HRA 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:

RMR Summary						
Permit Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required?	Special Permit Requirements?
ATC C-273-57-0 thru '-61-0 (Thermal Oxidizers)	0.122	0.07	0.01	2.06E-06	Yes	Yes
Project Totals	0.61	0.34	0.01	1.03E-05		
Facility Totals	>1	0.53	0.03	1.67E-05		

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 required for this project because the HRA indicates that the risk is above the District's thresholds for triggering T-BACT requirements.

As outlined by the HRA summary in Appendix H, T-BACT is triggered for these units because of emissions of Polycyclic Aromatic Hydrocarbons (PAHs) which are considered VOC emissions. T-BACT is satisfied with BACT for VOC emissions (see Appendix F), which is VOC emissions ≤ 0.008 lb/MMBtu; 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 20 in a million). As outlined by the HRA summary in Appendix H of this report, the emissions increases for this project was determined to be less than significant.

The following condition will be included on each ATC to ensure compliance with the HRA parameters:

- This unit shall not operate closer than 804 meters from the property boundary. [District Rule 4102]

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. The following calculations demonstrate compliance with this rule:

Assumptions:

F-Factor for Natural Gas:	8,578 dscf/MMBtu
PM_{10} emission factor:	0.0076 lb-PM_{10}/MMBtu
Percentage of PM as PM_{10} in exhaust:	100%
Exhaust oxygen (O_2) concentration:	3%
Excess air correction to F-Factor =	$\frac{20.9}{(20.9 - 3)} = 1.17$

Grain Loading Calculations:

$$Grain\ Loading\ (GL) = 0.0076 \frac{\text{lb-PM}}{\text{MMBtu}} \times \frac{7{,}000\ \text{grain}}{\text{lb-PM}} \times \frac{\text{MMBtu}}{8{,}578\ dscf} \div 1.17 = 0.005 \frac{\text{grain}}{\text{dscf}}$$

Since this is less than 0.1 grain/dscf, compliance with this rule is expected. The following condition will be listed on the ATCs to ensure compliance:

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

Rule 4301 Fuel Burning Equipment

The purpose of this rule is to limit the emission of air contaminants from fuel burning equipment. Section 3.1 defines fuel burning equipment as any furnace, boiler, apparatus, stack, etc. used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer.

The proposed thermal oxidizers are direct-fired units in which the burner flame comes in direct contact with the gases being burned and is therefore not subject to this rule.

Rule 4311 Flares

The purpose of this rule is to limit the emissions of volatile organic compounds (VOC), oxides of nitrogen (NOx), and sulfur oxides (SOx) from the operation of flares.

Section 3.11 defines flare as a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or temperature control.

As indicated on the manufacturer's specification sheets (see Appendix C), the proposed thermal oxidizers are equipped with devices for fuel-air mix control and temperature control. Therefore, these units do not meet the definition of a flare and the requirements of this rule are not applicable to these units. No further discussion is required.

Rule 4801 Sulfur Compounds

The purpose of this rule is to limit the emissions of sulfur compounds. Section 3.1 specifies that 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 sulfur dioxide (SO_2), on a dry basis averaged over 15 consecutive minutes.

Using the ideal gas equation, the sulfur compound emissions from the thermal oxidizers are calculated as follows:

Volume $SO_2 = \frac{nRT}{P}$

Where,

n = moles SO_2
T (standard temperature) = 60 ° F = 520 ° R
P (Standard Pressure) = 14.7 psi
R (universal gas constant) = $\frac{10.73\,\text{psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot {}^\circ\text{R}}$
Molecular weight of SOx (as SO_2) = 64.06 lb/lb-mol

$$0.0285 \frac{\text{lb-SOx}}{\text{MMBtu}} \times \frac{1\ \text{MMBtu}}{8{,}578\ ft^3_{exhaust}} \times \frac{1\ lb-mol}{64.06\ \text{lb-SOx}} \times \frac{10.73\ \text{psi-}\ ft^3}{\text{lb-mol - °R}} \times \frac{520\ °R}{14.7\ psi} \times \frac{10^6\ ft^3}{MM\ ft^3} = 20\ \text{ppm}$$

Since 20 ppmv is ≤ 2000 ppmv, the thermal oxidizers are expected to comply with Rule 4801; therefore, the following condition will be listed on the ATCs to ensure compliance:

- The unit shall only burn produced gas and/or PUC quality gas with a fuel sulfur concentration not exceeding 10 grain/100 dscf. [District Rules 2201 and 4801]

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)

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 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; and
- 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.

Greenhouse Gas (GHG) Significance Determination

It is determined that no other agency has or will prepare an environmental review document for the project. Thus the District is the Lead Agency for this project.

The District's engineering evaluation (this document) demonstrates that the project would not result in an increase in project specific greenhouse gas emissions. The District therefore concludes that the project would have a less than cumulatively significant impact on global climate change.

Per District Policy, project specific greenhouse gas emissions less than or equal to 230 metric tons-CO_2e/year are considered to be zero for District permitting purposes and are exempt from further environmental review.

District CEQA Findings

The District is the Lead Agency for this project because there is no other agency with broader statutory authority over this project. The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing use. Furthermore, the District determined that the activity will not have a significant effect on the environment. Therefore, the District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15301 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects

which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

Indemnification Agreement/Letter of Credit Determination

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATCs C-273-57-0 thru '-61-0 subject to the permit conditions on the attached draft ATCs in Appendix A.

X. Billing Information

Annual Permit Fees			
Permit Number	**Fee Schedule**	**Fee Description**	**Annual Fee**
C-273-57-0 thru '-61-0	3020-02-H	41 MMBtu/hr	$1,183

Appendixes

A: Draft ATCs
B: Equipment Location
C: Manufacturer's Specifications
D: AP-42 Emission Factors
E: Quarterly Net Emissions Change (QNEC)
F: BACT Guideline and BACT Analysis
G: ERC Withdrawal Calculations
H: HRA and AAQA Summary
I: Compliance Certification

APPENDIX A

Draft ATCs

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: C-273-57-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA RESOURCES PRODUCTION CORP.
MAILING ADDRESS: 11109 RIVER RUN BLVD
BAKERSFIELD, CA 93311

LOCATION: KETTLEMAN NORTH DOME UNIT
KINGS COUNTY, CA

EQUIPMENT DESCRIPTION:
41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 1)

CONDITIONS

1. Authority to Construct (ATC) permits C-273-32-0 thru '-47-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this ATC. [District Rule 2201]
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 199 lb, 2nd quarter - 199 lb, 3rd quarter - 199 lb, and 4th quarter - 200 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]
3. ERC Certificate Number S-4998-2 (or a certificate split from this certificate) 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]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 88 lb, 2nd quarter - 88 lb, 3rd quarter - 89 lb, and 4th quarter - 89 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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.

Samir Sheikh, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

C-273-57-0 : Jan 7 2019 11:56AM – AHMADS : Joint Inspection NOT Required

5. ERC Certificate Number S-4992-1 (or a certificate split from this certificate) 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]
6. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
7. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]
8. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]
9. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
10. {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]
11. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
12. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
13. The unit shall not operate closer than 804 meters from the property boundary. [District Rule 4102]
14. A flame shall be present at all times when combustible gases are vented. [District Rule 2201]
15. Emission rates from this unit shall not exceed any of the following limits: 0.018 lb-NOx/MMBtu; 0.0285 lb-SOx/MMBtu; 0.0076 lb-PM10/MMBtu; 0.01 lb-CO/MMBtu; or 0.008 lb-VOC/MMBtu. [District Rule 2201]
16. The unit shall only burn produced gas and/or PUC quality gas with a fuel sulfur concentration not exceeding 10 grain/100 dscf. [District Rules 2201 and 4801]
17. This unit shall not operate for more than 720 hours in any calendar year. [District Rule 2201]
18. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every quarter (in any quarter that the unit is operated) 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 quarter. [District Rule 2201] Federally Enforceable Through Title V Permit
19. 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 Rule 2201] Federally Enforceable Through Title V Permit
20. 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 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 Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. 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 Rule 2201] Federally Enforceable Through Title V Permit

22. The permittee shall maintain records of the number of hours this unit operates in any calendar year. [District Rule 2201]

23. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: C-273-58-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA RESOURCES PRODUCTION CORP.
MAILING ADDRESS: 11109 RIVER RUN BLVD
BAKERSFIELD, CA 93311

LOCATION: KETTLEMAN NORTH DOME UNIT
KINGS COUNTY, CA

EQUIPMENT DESCRIPTION:
41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 2)

CONDITIONS

1. Authority to Construct (ATC) permits C-273-32-0 thru '-47-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this ATC. [District Rule 2201]
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 199 lb, 2nd quarter - 199 lb, 3rd quarter - 199 lb, and 4th quarter - 200 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]
3. ERC Certificate Number S-4998-2 (or a certificate split from this certificate) 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]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 88 lb, 2nd quarter - 88 lb, 3rd quarter - 89 lb, and 4th quarter - 89 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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.

Samir Sheikh, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

Central Regional Office • 1990 E. Gettysburg Ave. • Fresno, CA 93726 • (559) 230-5900 • Fax (559) 230-6061

5. ERC Certificate Number S-4992-1 (or a certificate split from this certificate) 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]
6. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
7. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]
8. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]
9. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
10. {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]
11. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
12. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
13. The unit shall not operate closer than 804 meters from the property boundary. [District Rule 4102]
14. A flame shall be present at all times when combustible gases are vented. [District Rule 2201]
15. Emission rates from this unit shall not exceed any of the following limits: 0.018 lb-NOx/MMBtu; 0.0285 lb-SOx/MMBtu; 0.0076 lb-PM10/MMBtu; 0.01 lb-CO/MMBtu; or 0.008 lb-VOC/MMBtu. [District Rule 2201]
16. The unit shall only burn produced gas and/or PUC quality gas with a fuel sulfur concentration not exceeding 10 grain/100 dscf. [District Rules 2201 and 4801]
17. This unit shall not operate for more than 720 hours in any calendar year. [District Rule 2201]
18. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every quarter (in any quarter that the unit is operated) 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 quarter. [District Rule 2201] Federally Enforceable Through Title V Permit
19. 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 Rule 2201] Federally Enforceable Through Title V Permit
20. 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 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 Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. 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 Rule 2201] Federally Enforceable Through Title V Permit

22. The permittee shall maintain records of the number of hours this unit operates in any calendar year. [District Rule 2201]

23. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: C-273-59-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA RESOURCES PRODUCTION CORP.
MAILING ADDRESS: 11109 RIVER RUN BLVD
BAKERSFIELD, CA 93311

LOCATION: KETTLEMAN NORTH DOME UNIT
KINGS COUNTY, CA

EQUIPMENT DESCRIPTION:
41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 3)

CONDITIONS

1. Authority to Construct (ATC) permits C-273-32-0 thru '-47-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this ATC. [District Rule 2201]
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 199 lb, 2nd quarter - 199 lb, 3rd quarter - 199 lb, and 4th quarter - 200 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]
3. ERC Certificate Number S-4998-2 (or a certificate split from this certificate) 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]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 88 lb, 2nd quarter - 88 lb, 3rd quarter - 89 lb, and 4th quarter - 89 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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.

Samir Sheikh, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

Central Regional Office • 1990 E. Gettysburg Ave. • Fresno, CA 93726 • (559) 230-5900 • Fax (559) 230-6061

5. ERC Certificate Number S-4992-1 (or a certificate split from this certificate) 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]
6. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
7. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]
8. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]
9. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
10. {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]
11. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
12. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
13. The unit shall not operate closer than 804 meters from the property boundary. [District Rule 4102]
14. A flame shall be present at all times when combustible gases are vented. [District Rule 2201]
15. Emission rates from this unit shall not exceed any of the following limits: 0.018 lb-NOx/MMBtu; 0.0285 lb-SOx/MMBtu; 0.0076 lb-PM10/MMBtu; 0.01 lb-CO/MMBtu; or 0.008 lb-VOC/MMBtu. [District Rule 2201]
16. The unit shall only burn produced gas and/or PUC quality gas with a fuel sulfur concentration not exceeding 10 grain/100 dscf. [District Rules 2201 and 4801]
17. This unit shall not operate for more than 720 hours in any calendar year. [District Rule 2201]
18. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every quarter (in any quarter that the unit is operated) 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 quarter. [District Rule 2201] Federally Enforceable Through Title V Permit
19. 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 Rule 2201] Federally Enforceable Through Title V Permit
20. 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 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 Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. 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 Rule 2201] Federally Enforceable Through Title V Permit

22. The permittee shall maintain records of the number of hours this unit operates in any calendar year. [District Rule 2201]

23. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: C-273-60-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA RESOURCES PRODUCTION CORP.
MAILING ADDRESS: 11109 RIVER RUN BLVD
BAKERSFIELD, CA 93311

LOCATION: KETTLEMAN NORTH DOME UNIT
KINGS COUNTY, CA

EQUIPMENT DESCRIPTION:
41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 4)

CONDITIONS

1. Authority to Construct (ATC) permits C-273-32-0 thru '-47-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this ATC. [District Rule 2201]
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 199 lb, 2nd quarter - 199 lb, 3rd quarter - 199 lb, and 4th quarter - 200 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]
3. ERC Certificate Number S-4998-2 (or a certificate split from this certificate) 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]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 88 lb, 2nd quarter - 88 lb, 3rd quarter - 89 lb, and 4th quarter - 89 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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.

Samir Sheikh, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

Central Regional Office • 1990 E. Gettysburg Ave. • Fresno, CA 93726 • (559) 230-5900 • Fax (559) 230-6061

5. ERC Certificate Number S-4992-1 (or a certificate split from this certificate) 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]
6. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
7. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]
8. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]
9. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
10. {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]
11. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
12. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
13. The unit shall not operate closer than 804 meters from the property boundary. [District Rule 4102]
14. A flame shall be present at all times when combustible gases are vented. [District Rule 2201]
15. Emission rates from this unit shall not exceed any of the following limits: 0.018 lb-NOx/MMBtu; 0.0285 lb-SOx/MMBtu; 0.0076 lb-PM10/MMBtu; 0.01 lb-CO/MMBtu; or 0.008 lb-VOC/MMBtu. [District Rule 2201]
16. The unit shall only burn produced gas and/or PUC quality gas with a fuel sulfur concentration not exceeding 10 grain/100 dscf. [District Rules 2201 and 4801]
17. This unit shall not operate for more than 720 hours in any calendar year. [District Rule 2201]
18. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every quarter (in any quarter that the unit is operated) 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 quarter. [District Rule 2201] Federally Enforceable Through Title V Permit
19. 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 Rule 2201] Federally Enforceable Through Title V Permit
20. 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 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 Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. 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 Rule 2201] Federally Enforceable Through Title V Permit

22. The permittee shall maintain records of the number of hours this unit operates in any calendar year. [District Rule 2201]

23. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: C-273-61-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA RESOURCES PRODUCTION CORP.
MAILING ADDRESS: 11109 RIVER RUN BLVD
BAKERSFIELD, CA 93311

LOCATION: KETTLEMAN NORTH DOME UNIT
KINGS COUNTY, CA

EQUIPMENT DESCRIPTION:
41 MMBTU/HR NATURAL GAS/FIELD GAS-FIRED AEREON MODEL CEB 1200 (OR EQUIVALENT) ULTRA LOW EMISSION (ULE) BACKUP THERMAL OXIDIZER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN THE SAME STATIONARY SOURCE C-273 (UNIT 5)

CONDITIONS

1. Authority to Construct (ATC) permits C-273-32-0 thru '-47-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this ATC. [District Rule 2201]
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions: 1st quarter - 199 lb, 2nd quarter - 199 lb, 3rd quarter - 199 lb, and 4th quarter - 200 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]
3. ERC Certificate Number S-4998-2 (or a certificate split from this certificate) 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]
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 88 lb, 2nd quarter - 88 lb, 3rd quarter - 89 lb, and 4th quarter - 89 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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.

Samir Sheikh, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

C-273-61-0 : Jan 7 2019 11:56AM – AHMADS : Joint Inspection NOT Required

5. ERC Certificate Number S-4992-1 (or a certificate split from this certificate) 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]
6. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
7. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]
8. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]
9. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
10. {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]
11. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
12. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
13. The unit shall not operate closer than 804 meters from the property boundary. [District Rule 4102]
14. A flame shall be present at all times when combustible gases are vented. [District Rule 2201]
15. Emission rates from this unit shall not exceed any of the following limits: 0.018 lb-NOx/MMBtu; 0.0285 lb-SOx/MMBtu; 0.0076 lb-PM10/MMBtu; 0.01 lb-CO/MMBtu; or 0.008 lb-VOC/MMBtu. [District Rule 2201]
16. The unit shall only burn produced gas and/or PUC quality gas with a fuel sulfur concentration not exceeding 10 grain/100 dscf. [District Rules 2201 and 4801]
17. This unit shall not operate for more than 720 hours in any calendar year. [District Rule 2201]
18. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every quarter (in any quarter that the unit is operated) 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 quarter. [District Rule 2201] Federally Enforceable Through Title V Permit
19. 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 Rule 2201] Federally Enforceable Through Title V Permit
20. 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 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 Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. 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 Rule 2201] Federally Enforceable Through Title V Permit
22. The permittee shall maintain records of the number of hours this unit operates in any calendar year. [District Rule 2201]
23. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]

APPENDIX B

Equipment Location

KNDU Incinerators
Section 11, T22S, R17E

APPENDIX C

Manufacturer's Specifications

Advanced Combustion & Process Controls, INC.

May 3, 2018
Attn: Mr. Jacob Rhodes
California Resources Corporation,
28590 Highway 119, P.O. Box 1001
Tupman, CA

REFERENCE: Incinerator CEB 1200, Quotation# A18259P

Dear Mr. Rhodes,

Pursuant to your request, Advanced Combustion & Process Controls, Inc. is pleased to submit a proposal to supply one (1) Aereon, Low NOx Incinerator – CEB 1200 Incinerator.

1.0 HOW A CEB WORKS

This is how CEB® works:

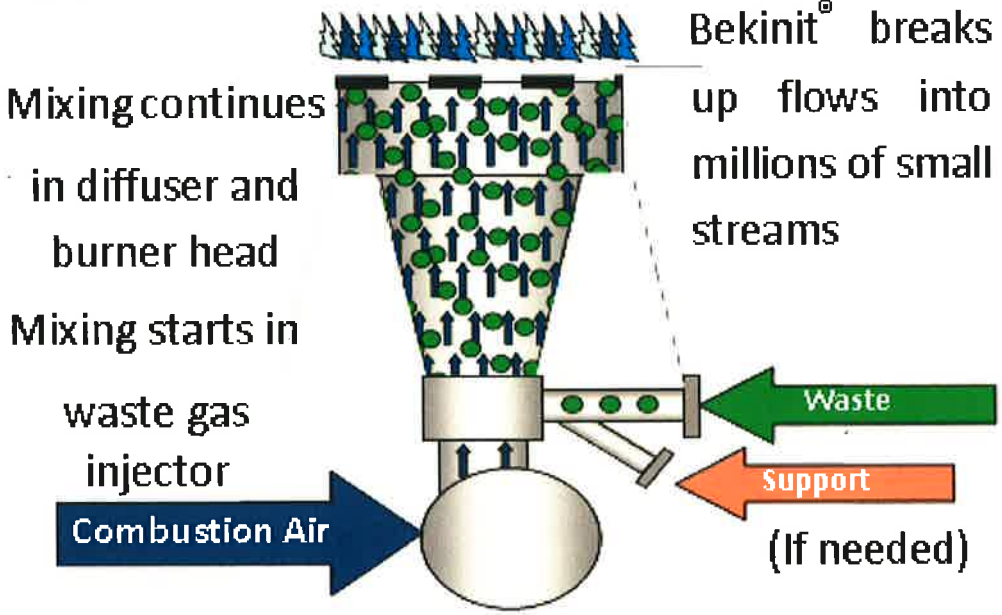
⇒ 100% of the combustion air is provided by a combustion air fan that is driven by a variable frequency drive.

⇒ The waste gas from your process enters the CEB® through the waste gas injector where it will flow past static mixers. This is also where the support gas will enter the system, if needed. This causes the waste gas to flow turbulently across the air stream to start the mixing process.

⇒ The waste gas and air mixture is allowed to propagate up the diffuser and into the head of the burner. The head of the burner is covered with Bekaert's proprietary Bekinit® burner cloth.

⇒ The Bekinit is made up of fibers of FeCr alloy that are knitted together like a wool sweater. This generates a material with millions of tortured paths for the gases to pass through. This is the final and most critical phase of the mixing process, just prior to combustion.

⇒ See the graphic below for more details:



1648 Art Street
Bakersfield, CA 93312
Ph 661.615.1193
Lic # 947213

2.0 DESIGN CONDITIONS

2.1 DESIGN DATA

THE FOLLOWING WAS PROCESS CONDITIONS WERE PROVIDED:

	CASE 1
GAS CONSTITUENT	
Methane	**82.65**
Ethane	**7.15**
Propane	**4.64**
Iso-Butane	**0.69**
n-Butane	**1.60**
i-Pentane	**0.43**
n-Pentane	**0.44**
Hexane +	**1.22**
Oxygen	**0.0**
Carbon dioxide	**0.92**
Nitrogen	**0.26**

2.2 DESIGN ANALYSI CEB 1200

DESIGNED THERMAL LOAD	MMBTU/HR.	41.0
NUMBER OF CEB-1200	QTY	1
MAXIMUM FLOW	SCFM	500.0
MINIMUM FLOW REQUIRED FOR UNIT OPERATION	SCFM	22.5
MINIMUM PRESSURE	PSIG	3.0
MAXIMUM PRESSURE	PSIG	6.0
MAXIMUM GAS TEMPERATURE	DEG F	200
THERMAL LOAD MAXIMUM CAPACITY PER CEB-1200	MMBTU/HR.	41.0
NOx EMISSIONS	**LB/MMBTU**	**0.018**
CO EMISSIONS	**LB/MMBTU**	**0.01**
VOC EMISSIONS	**LB/MMBTU**	**0.008**
OVERALL DESTRUCTION EFFICIENCY	%	99.9
REQUIRED PILOT GAS- NATURAL GAS (@ 15-150 PSIG/PILOT) PER PILOT	SCFH	120

PLEASE TAKE YOUR TIME TO CAREFULLY REVIEW THE DESIGN CONDITIONS STATED ABOVE AND NOTIFY ADVANCED COMBUSTION & PROCESS CONTROLS, INC. IMMEDIATELY IF ANY CONDITION DOES NOT MATCH YOUR LATEST REQUIREMENTS. THIS WILL HELP US TO REDUCE TURNAROUND TIME WHILE PROVIDING YOU A BETTER SERVICE, THANK YOU.

3.0 TECHNICAL SUMMARY

3.1 CEB SCOPE OF SUPPLY

ITEM	QTY.	DESCRIPTION
1	1	**CEB® 1200. Unit will include the following:** • One combustion air blower equipped with an Allen Bradley variable frequency drive, which will provide 100% of the combustion air required for the combustion process. • Combustion Air Blower Features Include: o One (1) TEFC Motor 40 HP - Premium Efficiency. Motor rated for Class 1 Division 2 o One (1) External Air Inlet Vane Damper with a modulating electric actuator. o One (1) Differential pressure switch across the blower. o One (1) Air intake filter equipped with a differential pressure gauge. • CEB -1200 is complete with following: o Air-Gas Mixing device and designed to accept Assist gas if required. o Premix-Chamber with Burner Knit to process the vapor load of the above gas composition. o One (1) 304 SST Insulated Stack. o One (1) Type- K Thermocouple to measure pre-mix chamber temperature. o One (1) Type –S Thermocouple to measure the process temperature and main flame detection. o One (1) Dedicated High Stack Temperature Type-S thermocouple. o One (1) Pilot equipped with Type-K thermocouple for pilot confirmation and a spark rod. o All Gas wetted parts to be 304 SST. • One (1) CEB-1200 Control panel. • Insulated exhaust stack with two 4" emission testing ports. Testing ports will be 2.5 times the diameter downstream of the burner and 0.5 times the diameter upstream of the top and will be offset by 90°. Emission testing ports will be 4" ANSI 150# RFWN flanges. • Includes galvanized one (1) caged ladder and two (2) platforms, with locations near the emission test ports and one near the pilot.

2 1 **CEB-1200 Control Panel:**

- The CEB-1200 Control System will include a NEMA 4X SS control panel (Unclassified)
- Communication Over Ethernet.
- The Control Panel utilizes an Allen Bradley Compact Logix Control System for efficient operation of the system. Control panel will include:
  - System Power On/Off Control.
  - System Remote/Manual Selector.
  - Air Conditioner for the panel.
  - One (1) Panel View Plus 600 HMI Terminal- Color Display
  - Panel is designed for 480V/3Ph/60Hz electrical power input.
  - (Note: Customer will need to provide additional required Circuit Breakers and Fuses for the incoming power).
  - **Power Requirements**, 480VAC/3Ph/60Hz 80 Amps, 120VAC/1 Ph/60Hz 15 Amps.

- Following Pushbuttons will be provided on the control panel
  - System Start
  - System Stop
  - Pilot Start
  - Emergency Stop
  - Alarm Reset
- CEB System Status/Alarm Conditions are illustrated by Indication lights. Conditions Monitored Include:
  - System Power On
  - System Operating
  - Pilot On
  - System Alarm
- Following Operating/Data and Alarm Conditions are available via Ethernet.
  - System Pre-Mix Temperature
  - System Operating Temperature
  - Main Valve open/close status
  - Pilot Operating Status
  - Blower Frequency
  - Blower General Alarm
  - System General Alarm
- Minimum System safeties monitored by the control system include:
  - Blower Low Pressure (Manual Reset)
  - High Pre-Mix temperature (Remote or Manual Reset)
  - Pilot Flame Failure (Remote or Manual Reset)
  - Burner Flame Failure (Manual Reset)
  - High Stack Temperature (Manual Reset)
  - Low Stack Temperature (Remote or Manual Reset)
  - High Gas inlet Pressure (Remote or Manual Reset)
- Additional data can be programmed upon request.

3	1	**One (1) Skid Mounted Pilot Gas, Process Gas Train** • **Pilot gas train to include:** ○ One (1) 1/2" SW Manual Isolation Gate Valve ○ One (1) 1/2" SW Y-Strainer ○ One (1) ½" 150# Flanged Pressure Regulator ○ One (1) ½" SW Solenoid Shutdown Valve ○ One (1) 2-1/2" Dial Pressure Gauge with isolation Valve ○ All Piping on Pilot Gas Train Piping to be 304 SST • **Process Gas Train to Include:** ○ One (1) 3" 150# Manual Isolation Gate Valve (CS Body/SST Trim) ○ One (1) 3" 150# Pneumatic Actuated On/Off valve (CS body/SST Trim) ○ One (1) 3" 150# Pneumatic Actuated Control Valve w/4-20 mA Positioner. ○ One (1) 3" 150# Detonation Arrester (CS body/ 304 SST element) ○ One (1) Pressure gauge and a Pressure switch with Isolation valve. ○ All Piping on Gas Train to be 304 SST

4.0 STANDARD DELIVERY FOR CEB-1200

P&ID & GA Submittal:	Drawings For Information Only
Client approval of GA Drawings:	n/a
Fabricating the project:	18 weeks after acceptance of the order
Total Delivery Time	20 Weeks

Thank you for your interest in our services. If you have any questions, or if we can be of further assistance, please give us a call.

Sincerely,

David Bopp
Advanced Combustion
& Process Controls, Inc.
sdbopp@acpcpro.net

1648 Art Street
Bakersfield, CA 93312
Ph 661. 615.1193
Lic # 947213

APPENDIX D

AP-42 Emission Factors

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 \text{ scf}] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

	SELECTION #
COAL (ANTHRACITE)	0
COAL (BITUMINOUS)	1
COAL (LIGNITE)	2
OIL (CRUDE, RESIDUAL, OR DISTILLATE)	3
GAS (NATURAL)	4
GAS (PROPANE)	5
GAS (BUTANE)	6
WOOD	7
WOOD BARK	8
MUNICIPAL SOLID WASTE	9

STANDARD O2 CORRECTION FOR EXTERNAL COMBUSTION IS 3%		
Type of fuel (use table above)	4	GAS
O2 correction (i.e., 3%)	3	%
Enter LB/MMBTU emission factor		
NOx	0.018	LB/MMBTU
CO	0.010	LB/MMBTU
VOC (as methane)	0.008	LB/MMBTU

CALCULATED EQUIVALENT CONCENTRATIONS		
NOx	15	ppmv
CO	14	ppmv
VOC (as methane)	19	ppmv

pV = R*T		
pressure (p)	1	atm
universal gas constant (R*)	0.7302	atm-scf/lbmole-oR
temperature (oF)	60	oF
calculated		
molar specific volume (V)	379.5	scf/lbmole
Molecular weights		
NOx	46	lb/lb-mole
CO	28	lb/lb-mole
VOC (as methane)	16	lb/lb-mole

F FACTORS FROM EPA METHOD 19 @ 68 F			
COAL (ANTHRACITE)	10100	DSCF/MMBTU	COAL
COAL (BITUMINOUS)	9780	DSCF/MMBTU	COAL
COAL (LIGNITE)	9860	DSCF/MMBTU	COAL
OIL (CRUDE, RESIDUAL, OR DISTILLATE)	9190	DSCF/MMBTU	OIL
GAS (NATURAL)	8710	DSCF/MMBTU	GAS
GAS (PROPANE)	8710	DSCF/MMBTU	GAS
GAS (BUTANE)	8710	DSCF/MMBTU	GAS
WOOD	9240	DSCF/MMBTU	WOOD
WOOD BARK	9600	DSCF/MMBTU	WOOD BARK
MUNICIPAL SOLID WASTE	9570	DSCF/MMBTU	SOLID WASTE
F FACTOR USED IN CALCULATIONS	8710	DSCF/MMBTU	GAS

	SELECTION #
COAL (ANTHRACITE)	0
COAL (BITUMINOUS)	1
COAL (LIGNITE)	2
OIL (CRUDE, RESIDUAL, OR DISTILLATE)	3
GAS (NATURAL)	4
GAS (PROPANE)	5
GAS (BUTANE)	6
WOOD	7
WOOD BARK	8
MUNICIPAL SOLID WASTE	9

STANDARD O2 CORRECTION FOR EXTERNAL COMBUSTION IS 3%		
Type of fuel (use table above)	4	GAS
O2 correction (i.e., 3%)	3	%
Enter concentrations		
NOx	15	ppmv
CO	14	ppmv
VOC (as methane)	19	ppmv

CALCULATED EQUIVALENT LB/MMBTU VALUES		
NOx	0.018	LB/MMBTU
CO	0.01	LB/MMBTU
VOC (as methane)	0.008	LB/MMBTU

pV = R*T		
pressure (p)	1	atm
universal gas constant (R*)	0.7302	atm-scf/lbmole-oR
temperature (oF)	60	oF
calculated		
molar specific volume (V)	379.5	scf/lbmole
Molecular weights		
NOx	46	lb/lb-mole
CO	28	lb/lb-mole
VOC (as methane)	16	lb/lb-mole

F FACTORS FROM EPA METHOD 19			
COAL (ANTHRACITE)	10100	DSCF/MMBTU	COAL
COAL (BITUMINOUS)	9780	DSCF/MMBTU	COAL
COAL (LIGNITE)	9860	DSCF/MMBTU	COAL
OIL (CRUDE, RESIDUAL, OR DISTILLATE)	9190	DSCF/MMBTU	OIL
GAS (NATURAL)	8710	DSCF/MMBTU	GAS
GAS (PROPANE)	8710	DSCF/MMBTU	GAS
GAS (BUTANE)	8710	DSCF/MMBTU	GAS
WOOD	9240	DSCF/MMBTU	WOOD
WOOD BARK	9600	DSCF/MMBTU	WOOD BARK
MUNICIPAL SOLID WASTE	9570	DSCF/MMBTU	SOLID WASTE
F FACTOR USED IN CALCULATIONS	8710	DSCF/MMBTU	GAS

APPENDIX E

Quarterly Net Emissions Change (QNEC)

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.
PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr.
PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

ATCs C-273-57-0 thru '-61-0:

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

Pollutant	Annual PE2 (lb/yr)	Quarterly PE2 (lb/qtr)
NOx	531	132.75
SOx	841	210.25
PM_{10}	224	56
CO	295	73.75
VOC	236	59

Since these are new emission units, PE1 is zero, thus:

$PE1_{quarterly}$= 0 lb-PM_{10}/qtr

Quarterly NEC [QNEC]			
Pollutant	PE2 (lb/qtr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NOx	132.75	0	132.75
SOx	210.25	0	210.25
PM_{10}	56	0	56
CO	73.75	0	73.75
VOC	59	0	59

Since QNEC values are entered in PAS database as whole numbers, QNEC will be distributed in four quarters as summarized in the table below:

Pollutant	Quarterly NEC [QNEC]			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
NOx	132	133	133	133
SOx	210	210	210	211
PM_{10}	56	56	56	56
CO	73	74	74	74
VOC	59	59	59	59

APPENDIX F

BACT Guideline and BACT Analysis

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline X.Y.Z

Emission Unit: Natural Gas Production Plant served by a Backup Transportable Thermal Oxidizer

Industry Type: Natural Gas Production

Last Update: Date of finalizing project

Equipment Rating:

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
VOC	ULE thermal oxidizer using natural gas fuel with emissions ≤ 0.008 lb-VOC/MMBtu (98% control efficiency) and ≤ 0.018 lb-NOx/MMBtu		

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 a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required 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 Next Page(s)**

BACT ANALYSIS
Natural Gas Production Plant
Served by Backup Transportable Thermal Oxidizers

Facility Name:	California Resources Production Corp.	Date:	January 7, 2019
Mailing Address:	11109 River Run Blvd	Engineer:	Sajjad Ahmad
	Bakersfield, CA 93311	Lead Engineer:	Joven Refuerzo
Contact Person:	Charlotte Campbell (Sr. Environmental Advisor)		
Telephone:	(661) 529-4323		
E-Mail:	charlotte.campbell@crc.com		
Application #s:	C-273-57-0 thru '-61-0		
Project #:	C-1182294		
Deemed Complete:	July 26, 2018		

I. Proposal

California Resources Production Corporation (herein after called 'the facility') has requested Authority to Construct (ATC) permits for the installation of five (5) new 41 MMBtu/hr natural gas/field gas-fired Aereon Model CEB 1200 (or equivalent) backup thermal oxidizers. Each unit will be allowed to operate for a maximum of 720 hours per year (equivalent to operation of 24 hours/day and 30 days/year) as a backup whenever natural gas processing plant is down during emergencies or when natural gas cannot be shipped through the sales line. The units will also operate during maintenance operations of the various gas processing equipment.

The proposed units will serve as VOC control devices for the gas production facility.

The facility has requested that the thermal oxidizers be allowed to operate at various unspecified locations within the same Stationary Source (C-273) for operational flexibility.

II. Process Description

The proposed thermal oxidizers will be allowed to operate for a maximum of 720 hours per year (equivalent to operation of 24 hours/day and 30 days/year) as a backup whenever natural gas processing plant is down during emergencies or when natural gas cannot be shipped through the sales line. The units will also operate during maintenance operations of the various gas processing equipment. Each unit will utilize natural gas as pilot fuel.

Operating schedule: 24 hr/day and 720 hr/year

III. EMISSION CONTROL TECHNOLOGY EVALUATION:

A. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

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 Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*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.

New emissions units - PE > 2 lb/day

The proposed five thermal oxidizers are new emissions units each with a PE2 greater than 2 lb/day for NOx, SOx, PM_{10}, CO, and VOC emissions. However, the proposed units are control devices for VOC emissions from the natural gas production facility. VOC is the only pollutant from the emission units (i.e. natural gas processing equipment). NOx, SOx, PM_{10}, and CO emissions are incidental to the control devices (i.e. byproducts of combustion in the thermal oxidizers) and are not subject to BACT per District practice. Therefore, BACT is triggered for VOC emissions only for each new thermal oxidizer.

Relocation/modification of emissions units - PE/AIPE > 2 lb/day

This project does not involve the relocation or modification of any emission units. BACT is therefore not triggered under these categories.

SB 288/Federal Major Modification

This project does constitute a Federal Major Modification for NOx and VOC emissions. Since units are control devices for VOC, BACT is triggered only for VOC emissions for each thermal oxidizer.

B. BACT Policy

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. For source categories or classes covered in the BACT Clearinghouse, relevant information under each of the analysis steps may simply be cited from the clearinghouse without further analysis.

However, since there is no BACT Guideline in the BACT Clearinghouse which governs this project's source category, a new BACT determination shall be conducted.

C. BACT Analysis for Natural Gas/Field Gas-Fired Backup Thermal Oxidizers (Permit Units C-273-57-0 thru '-61-0)

1) Top-Down BACT (and T-BACT) Analysis for VOC Emissions

Step 1 – Identify All Possible Control Technologies

The following control options can be identified for this class and category:

1. Thermal oxidizer with uncontrolled VOC and NOx emissions.
2. Ultra-Low Emissions (ULE) thermal oxidizer using natural gas fuel with emissions ≤ 0.008 lb-VOC/MMBtu (98% control efficiency) and ≤ 0.018 lb-NOx/MMBtu.

For the ULE thermal oxidizer, VOC and NOx emission levels were provided by the manufacturer. The proposed thermal oxidizers are designed on the principle of increased air/fuel mixing to lower the combustion temperature, thus reducing NOx formation and increasing VOC destruction efficiency by promoting complete combustion. Each unit will utilize a variable frequency drive air fan to control the amount of the combustion air. The combustion gas will enter via an injector into an air/fuel mixing chamber that is designed with static mixers to promote mixing by inducing increased swirl patterns. This causes the gas to flow turbulently across the air stream to start the mixing process. The waste gas and air mixture is allowed to propagate up the diffuser and into the head of the burner. The head of the burner is covered with a proprietary burner cloth. The cloth is made up of fibers of FeCr alloy that are knitted together like a wool sweater. This generates a material with millions of tortured paths for the gases to pass through. This is the final and most critical phase of the mixing process, just prior to combustion. The better air fuel mixing also promotes completes combustion, thus lowering the VOC emissions.

The applicant has proposed to install ULE natural gas-fired thermal oxidizers with low VOC and NOx emissions. Therefore, ULE thermal oxidizer will be considered an achieved in practice control option.

Technologically Feasible Control: None

Alternate Basic Equipment: None

Step 2 – Eliminate Technologically Infeasible Options

There are no technologically infeasible options.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

1. Ultra-Low Emissions (ULE) thermal oxidizer using natural gas fuel with emissions ≤ 0.008 lb-VOC/MMBtu (98% control efficiency) and ≤ 0.018 lb-NOx/MMBtu (Achieved in Practice).
2. Thermal oxidizer with uncontrolled VOC and NOx emissions.

Step 4 – Cost Effectiveness Analysis

No cost effective analysis is required for the highest ranked control option, which is also considered, achieved in practice.

Step 5 – Select BACT

BACT is satisfied for VOC emissions by the applicant's proposal of a ULE thermal oxidizer fired on natural gas fuel with emissions of ≤ 0.008 lb-VOC/MMBtu (minimum 98% control efficiency) and ≤ 0.018 lb-NOx/MMBtu. In addition, T-BACT for VOC emissions is also satisfied with the proposed use of ULE units with low VOC emissions.

APPENDIX G

ERC Withdrawal Calculations

ERC Withdrawal Calculations

NOx	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC S-4998-2	15,781	15,781	15,781	15,781
Offsets Required (Includes distance offset ratio)	995	995	995	1,000
Amount Remaining	14,786	14,786	14,786	14,781
Credits reissued under ERC S-YYYY-2	14,786	14,786	14,786	14,781

VOC	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC S-4992-1	8,611	8,611	8,611	8,610
Offsets Required (Includes distance offset ratio)	440	440	445	445
Amount Remaining	8,171	8,171	8,166	8,165
Credits reissued under ERC S-YYYY-1	8,171	8,171	8,166	8,165

APPENDIX H

HRA and AAQA Summary

San Joaquin Valley Air Pollution Control District
Risk Management Review

To:	Sajjad Ahmad – Permit Services
From:	Will Worthley – Technical Services
Date:	July 30, 2018
Facility Name:	California Resources Production Corp.
Location:	Kettleman North Dome Unit, Kings County
Application #(s):	C-273-57-0 to 61-0
Project #:	C-1182294

A. RMR SUMMARY

RMR Summary						
Units	**Prioritization Score**	**Acute Hazard Index**	**Chronic Hazard Index**	**Maximum Individual Cancer Risk**	**T-BACT Required?**	**Special Permit Requirements?**
Unit 57-0 to 61-0 (40 MMBtu NG Thermal Oxidizers (Each)	0.122	0.07	0.00	2.06E-06	Yes	Yes
Project Totals	0.61	0.34	0.01	1.03E-05		
Facility Totals	>1	0.53	0.03	1.67E-05		

Proposed Permit Requirements

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 57-0 to 61-0

1. The thermal oxidizers must stay at least 804 meters from the nearest receptor as well as the facility boundary.

   T-BACT is required for these units because of emissions of PAHs-w/o which is a VOC.

B. RMR REPORT

I. Project Description

Technical Services received a request on July 24, 2018, to perform an Ambient Air Quality Analysis and a Risk Management Review for five 40 MMBtu/hr natural gas/field gas-fired thermal oxidizers to be operated at various unspecified locations within C-273.

II. Analysis

Toxic emissions for this proposed unit were calculated using 2001 Ventura County's Air Pollution Control District's emission factors for Natural Gas Fired external combustion and from a refinery gas composition analysis from the 2005 report *FINAL REPORT Test of TDA's Direct Oxidation Process for Sulfur Recovery*, and input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required. The AERMOD model was used, with the parameters outlined below and meteorological data for 2007-2011 from Kettleman to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 57-0 to 61-0 Each			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	5.49	**Closest Receptor (m)**	804
Stack Diameter. (m)	0.91	**Type of Receptor**	Residential
Stack Exit Velocity (m/s)	0.36	**Max Hours per Year**	720
Stack Exit Temp. (°K)	1477	**Fuel Type**	NG/Field Gas
Fuel Usage (mmscf/hr)	0.04	**Fuel Usage (mmscf/yr)**	28.8

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x, and PM10 with the emission rates below:

Unit #	**NO_x (Lbs.)**		**SO_x (Lbs.)**		**CO (Lbs.)**		**PM_{10} (Lbs.)**	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
57-0 to 61-0 (Each)	0.72	518	1.35	973	0.40	288	0.30	219

Criteria Pollutant Modeling Results*

	Background Site	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Tranquility (2016)	Pass	X	Pass	X	X
NO_x	Hanford-Irwin (2016)	Pass[1]	X	X	X	Pass
SO_x	Fresno – Garland (2016)	Pass	Pass	X	Pass	Pass
PM_{10}	Santa Rosa Rancheria (2016)	X	X	X	Pass[2]	Pass[2]
$PM_{2.5}$	Corcoran-Patterson (2016)	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.
[2]The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).
[3]The court has vacated EPA's $PM_{2.5}$ SILs. Until such time as new SIL values are approved, the District will use the corresponding PM_{10} SILs for both PM_{10} and $PM_{2.5}$ analyses.

III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk associated with the project is greater than 1.0 in a million, but less than 20 in a million. **In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT).**

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

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.

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

IV. Attachments

A. RMR request from the project engineer
B. Additional information from the applicant/project engineer
C. Prioritization score w/ toxic emissions summary
D. Facility Summary

APPENDIX I

Compliance Certification

APPENDIX I

Compliance Certification

CALIFORNIA
RESOURCES CORPORATION

January 26, 2018

San Joaquin Valley Air Pollution Control District
Attn: Leonard Scandura
Permit Services Manager
34969 Flyover Ct
Bakersfield, CA 93308

Subject: California Resources Production Corporation - Certification of Compliance

Dear Mr. Scandura:

Rule 2201 section 4.15.2 requires that an owner or operator proposing a federal major modification certify that all major stationary sources owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in California are either in compliance or an a schedule for compliance with all applicable emission limitations and standards. This letter certifies compliance for California Resources Production Corporation (CRPC) and its affiliates.

CRPC has Notices of Violation outstanding issued by your office. However, all issues associated with the Notices of Violation have been addressed. Affiliated companies of CRPC own interests in or own and/or operate other major stationary sources in California. These major stationary sources are currently in compliance with applicable compliance schedules (if any) and substantially comply with all applicable laws and regulations.

This certification is made on information and belief and is based upon a review of CRPC and affiliated company major stationary sources in the State of California by employees of CRPC and its affiliates who have responsibility for compliance with environmental requirements.

This certification is as of the date of its execution.

Sincerely,

Jim Robinson
VP, HSE

cc: Raymond Rodriguez, Environmental Manager-North CRC