

EVALUATION DATA

| | | | |
|--------------------|---------------------------|------------------|-----------------|
| Company: | AERA Energy LLC | Appl #s: | TV44-05 & 14583 |
| Address: | 66893 Sargent Canyon Road | UTM Coordinates: | |
| | San Ardo, CA 93450 | Horiz: | 3980.6 |
| | | Vert: | 693.3 |
| Contact Person: | Tim Parcel | (559) 935-7418 | |
| | | (831) 385-7704 | |
| District Engineer: | Mike Sewell | SIC Code: | 1311 |
| Start: | 5/25/11 | SCC Code: | 1-02-006-02 |
| Finish: | 6/20/11 | | 1-02-006-04 |

Site Location: 66893 Sargent Canyon Road, San Ardo

I. PROJECT DESCRIPTION

Aera Energy LLC has submitted applications for the replacement of their existing Central Treatment Complex (CTC). This equipment will impact the facilities' Casing Head Gas Processing System, the Central Water Plant & Reclamation Facility, and the Oil Treating Facility permits (PTOs 12979, 12741 & 11548); and the Facilities' Title V Permit.

II. APPLICABLE RULES

200 ATC & P/O Required
207 NSR
218 Title V
300 Fees
400 Visible emissions shall be less than Ringelmann 1
402 No emission shall constitute a nuisance
403 Particulate Matter
404 Sulfur Compounds and Nitrogen Oxides
412 Sulfur Content of Fuels
417 Storage of Organic Liquids
424 NESHAPS, Subpart HH - Oil & Natural Gas Production Facilities
427 Steam Drive Crude Oil Production Wells
1000 Toxic Air Contaminants

III. EQUIPMENT LIST

REPLACEMENT OF CENTRAL TREATING COMPLEX (CTC):

This Project Includes The Removal Of The Existing CTC Equipment And The Installation Of The Following:

Crude Oil Dehydration

Includes seven strainers, seven desanders, seven free water knock out vessels, three heat exchangers, three unfired heater treaters, two 16,130 bbl capacity Lease Automatic Custody Transfer (LACT) tanks, one 16,130 bbl capacity reject tank, one 2,500 bbl capacity sludge tank, one LACT unit, and six transfer pumps.

Water Treating Plant

Includes six fin fan coolers, four 12,100 bbl capacity storage tanks, one 6,800 bbl capacity storage tanks, two 16,130 bbl capacity storage tanks, three 170 ton capacity salt storage tanks, 320 bbl capacity brine holding tank, twenty-six transfer pumps, three filters, three induced gas flotation units, six primary softeners, and six polishers.

Secondary Treatment Loop

Includes one unfired heater treater, one 1,084 bbl capacity skim tank, one 5,376 backwash tank, one 5,376 bbl spent brine tank, 4,500 bbl capacity waste water tank, one Unicel gas floatation cell, and thirteen transfer pumps.

Drain System

Includes two 250 bbl capacity drain tanks, one 10,960 bbl capacity overflow tank, and four transfer pumps.

Tank Vapor Collection System

Includes inlet cooler (fin-fan air cooler), suction scrubber, and two 60 hp electric motor driven compressors.

Emergency Flare System

Includes knockout drum, two condensate pumps, and 12 MM scf/day capacity smokeless unassisted utility flare.

Compression Plant

Includes inlet cooler (wet surface air cooler), suction scrubber, four 350 Bhp electric motor drive compressors, oil separator, four lube oil pumps, two oil coolers, discharge scrubber, and after cooler.

Utility Air System

IV. DESIGN REVIEW

This proposed new equipment is designed to operate, and the applicant has requested that this equipment be permitted, at maximum capacity 24 hours per day, 365 days per year.

V. EMISSIONS CALCULATIONS

Rule 207 Review of New or Modified Sources

Emission calculations for this equipment will be based upon the following emission factors:

| Flare Emission Factors (Lbs/MMBtu) | | | | | | | |
|--|--------|-----------------|-----------------|----------------------|----------------------|-------|-----------------|
| Cooling Tower Emission Factor (Lbs/1,000 gallons recirculation rate) | | | | | | | |
| Heater/Treaters (Lbs/MMscf) | | | | | | | |
| Equipment | VOC | NO _x | SO _x | PM ₁₀ | PM _{2.5} | CO | CO ₂ |
| Flare | 0.0648 | 0.133 | 0.00 | 0.0076 | 0.0038 | 0.370 | 117.771 |
| WSAC | -- | -- | -- | 2.09E-4 ¹ | 1.05E-4 ² | -- | -- |
| Fugitives | | | | | | | |
| Heater/Treaters | 5.80 | 140.00 | 0.60 | 5.00 | 2.50 ² | 35.00 | 61.83 |

- Notes: ¹ - Manufacturers Design Drift Rate of 0.005% and TDS Value of 500 mg/l
² - PM₁₀ Factor Modified by PM_{10/2.5} factor of 50%.

| Relative Fugitive Emission Calculations (Lbs VOC/day) | | | | | | |
|---|----------|---------|----------------------|-----------|------------|--------|
| | Valves | Flanges | Threaded Connections | Open Ends | Pump Seals | Other |
| Historical Operation | 3,542 | 1,156 | 5,940 | 75 | 52 | 43 |
| Proposed Operation | 1,750 | 5,100 | 3,500 | 35 | 40 | 700 |
| Change in Equipment # | -1,792 | 3,944 | -1,990 | -40 | 12 | 657 |
| Emission Factor ¹ | 0.288 | .0432 | 0.0024 | 0.993 | 1.128 | 0.024 |
| Emissions | -516.096 | 170.38 | -4.776 | -39.72 | 13.536 | 15.768 |
| Total ² | -360.9 | | | | | |

Note: ¹ - Average Fugitive Emission Factor for the Synthetic Organic Chemicals Manufacturing Industry – **these factors are only being used for comparison purposes**

only.

² - This is **not** an actual emissions reduction, only a calculation to show that the proposed project does not increase fugitive emission.

Emissions from the emergency flare will be based upon 0.124 MMscf/day (2 pilot lights at 62 scf/hr each) and the cooling towers will be based upon the recirculation rate of 1,920 gallons/minute for the WSAC units. Historical emissions from the fired Heater/Treaters which will be removed are based upon average fuel consumption of 26.847 MMscf from calendar years 2007 – 2009. Fugitive VOC emissions are not quantifiable and as shown above the relative quantity of fugitive emission will be reduced when this project is fully implemented; therefore, fugitive VOC emissions will be shown as zero.

| Daily Potential to Emit (Lbs/Day) | | | | | | | |
|-----------------------------------|-------|-----------------|-----------------|------------------|-------------------|-------|-----------------|
| Equipment | VOC | NO _x | SO _x | PM ₁₀ | PM _{2.5} | CO | CO ₂ |
| Flare | 0.20 | 0.40 | 0.00 | 0.00 | 0.00 | 1.10 | 0.18 |
| WSAC | -- | -- | -- | 0.58 | 0.29 | -- | -- |
| Fugitives | 0.0 | -- | -- | -- | -- | -- | -- |
| Heater/Treaters | -0.43 | -10.3 | -0.04 | -0.37 | -0.19 | -2.57 | -4.55 |
| Totals | -0.23 | -9.9 | -0.04 | 0.21 | 0.10 | -1.47 | -4.37 |

VI. CONCLUSIONS

Compliance Check

207 NSR

Best Available Control Technology (BACT)

The BACT thresholds from Sections 4.1.1 and 5.2 of the rule, the proposed project’s maximum daily emissions, the facilities’ “new emissions increase” and the determination as to whether BACT and offsets are required are shown in the following tables.

State BACT Determination

| Pollutant | BACT Emission Threshold (Lbs/day) | Flare Emissions (Lbs/day) | BACT Required? |
|------------------------------------|-----------------------------------|---------------------------|----------------|
| NO _x as NO ₂ | 25 | 0.40 | No |
| VOC | 25 | 0.20 | No |

Federal BACT Determination

| Pollutant | BACT Emission Threshold (Lbs/day) | New Emissions Increase (Lbs/day) | BACT Required? |
|------------------------------------|-----------------------------------|----------------------------------|----------------|
| NO _x as NO ₂ | 150 | Previously Offset ¹ | Yes |
| NO _x as NO ₂ | 150 | Previously Offset ¹ | Yes |
| VOC | 150 | Previously Offset ¹ | Yes |
| CO | 550 | Previously Offset ¹ | Yes |
| PM ₁₀ | 82 | Previously Offset ¹ | Yes |
| PM _{2.5} | 54.79 | 0.10 | No |

Notes: 1 - Previously Offset for Applications 12903 - 12913, therefore BACT is required for all new projects.

As can be seen in the table above, this project requires BACT for all pollutants with the exception of PM_{2.5} as prior projects have triggered federal BACT requirements.

For this equipment, the applicant has proposed the following as BACT.

BACT Proposals

| Source | Pollutant | Applicant's Proposal | Additional Discussion Required? |
|-----------------|------------------|--------------------------|---------------------------------|
| Cooling Tower | PM ₁₀ | 0.005% Design Drift Rate | No |
| Emergency Flare | ALL | Smokeless Utility Flare | No |

Offsets

The facility net emissions increase, which establishes the calculation methodology for offsets is based upon the methodology contained in Section 7.4 of Rule 207.

Net Emissions Increase (Pounds/Day)

| EQUIPMENT | PM ₁₀ | PM _{2.5} |
|-----------|------------------|-------------------|
| | | |

| | | |
|---------------------------|------|------|
| Central Treatment Complex | 0.21 | 0.10 |
|---------------------------|------|------|

Note: 1 - Previously Offset for Applications 12903 - 12913, therefore offsets are required for all new projects.

Determination if Offsets are Required

| Pollutant | Offset Threshold (Lbs/day) | Net Emissions Increase (Lbs/day) | Offsets Required |
|-------------------|----------------------------|----------------------------------|------------------|
| PM ₁₀ | Previously Offset | 0.21 | Yes |
| PM _{2.5} | -- | 0.10 | No |

As can be seen in the table above, offsets are required for the PM₁₀ emissions.

The offsets provided must fully offset the net emission increase by quarter. The net emissions increase by quarter is shown in the following table.

Net Emissions Increase (Pounds)

| Pollutant | First | Second | Third | Fourth |
|------------------|-------|--------|-------|--------|
| PM ₁₀ | 9.0 | 9.1 | 9.2 | 9.2 |

Aera Energy has proposed to fully offset the project by calendar quarter as established above. The offsets proposed to be utilized are those presently held by Aera in the District ERC bank. Since Aera Energy is a *major source* and the District is presently nonattainment with the State Ambient Air Quality Standards for ozone and PM₁₀, offsets for PM₁₀ are required to be supplied at a 1.15:1 ratio as specified in Section 4.3 of Rule 207. Therefore, the required offsets for this project are shown in the following table.

Offsets Required (Pounds)

| Pollutant | First | Second | Third | Fourth |
|------------------|-------|--------|-------|--------|
| PM ₁₀ | 10.35 | 10.465 | 10.58 | 10.58 |

The offsets required for this project equate on an annual basis to 0.02112 tons of PM₁₀ based upon the maximum quarterly emissions from the 3rd and 4th quarter.

The permits will be conditioned such that the required offsets will be surrendered prior to operation of the crude oil dehydration plant.

Air Quality Impact Analysis

In their application, Aera Energy provided a SCREEN3 modeling run which addressed the Air Quality Impacts of the emissions from the equipment. The only emissions with modeled impacts were the PM₁₀ emissions from the cooling towers. The project impacts were combined with background concentrations to verify that the project would not contribute to violations of the Ambient Air Quality Standards for both PM₁₀ and PM_{2.5}.

The first table addresses the Air Quality Increment in Area E and the second table is a comparison of the project impacts combined with background concentrations versus the ambient air quality standards.

Increment Analysis - Area E

| Pollutant | Maximum Modeled Impact Area E (ug/m ³) | Designated Area E (ug/m ³) | Averaging Period | Below Allowable Increment Consumption |
|-------------------|--|--|------------------|---------------------------------------|
| PM ₁₀ | 0.994 | 10.8 | annual | yes |
| | 2.447 | 21.1 | 24-hour | yes |
| PM _{2.5} | 0.497 | 4 | annual | yes |
| | 1.223 | 9 | 24-hour | yes |

The table above indicates that the project does not exceed any air quality increment. Therefore, the project complies with the air quality increment provisions of Rule 207.

Cumulative Impacts Vs. Ambient Air Quality Standards

| Pollutant | Avg. Period | Max. Project Impact | Bckgnd Conc. (ug/m ³) | Total Impact (ug/m ³) | State Standard (ug/m ³) | Federal Standard (ug/m ³) | Below Applicable Standard(s) |
|-----------|-------------|---------------------|-----------------------------------|-----------------------------------|-------------------------------------|---------------------------------------|------------------------------|
|-----------|-------------|---------------------|-----------------------------------|-----------------------------------|-------------------------------------|---------------------------------------|------------------------------|

| | | (ug/m ³) | | | | | |
|-------------------|-----------------------|----------------------|------|-------|----|-----|-----|
| PM ₁₀ | 24-hour | 2.447 | 56.0 | 58.45 | 50 | 150 | no |
| | annual ⁽¹⁾ | 0.994 | 24.9 | 25.89 | 30 | -- | yes |
| | annual ⁽²⁾ | 0.994 | 25.9 | 26.89 | -- | 50 | yes |
| PM _{2.5} | 24-hour | 1.223 | 24.5 | 25.72 | -- | 65 | yes |
| | annual | 0.497 | 5.7 | 6.20 | 12 | 15 | yes |

⁽¹⁾ Annual Arithmetic Mean.

⁽²⁾ Annual Geometric Mean.

This table above identifies that the project emission concentrations when combined with background concentrations from calendar year 2004 exceeds the State ambient air quality standards for PM₁₀. Although the table identifies an exceedance of the State PM₁₀ standard, the District has determined that this project will not cause or contribute to a violation of an ambient air quality standard. The basis for this determination is the fact that existing PM₁₀ concentrations at the Moss Landing and King City stations already exceed the standard, the fact that the localized emissions from this project will not impact the Moss Landing nor the King City stations, and the fact that the District is implementing a PM₁₀ Plan that will reduce background emissions to below the State standard. Therefore, the project as proposed complies with the Ambient Air Quality Standard provisions of Rule 207.

Visibility Impacts

A visibility analysis of the project’s gaseous emissions is required under Rule 207. The applicant provided a “Visibility Screening Analysis” to address the contributions of gaseous emissions (primarily NO_x) and particulate (PM₁₀) emissions to visibility impairment on the nearest Class I area, the Pinnacles National Monument which is 60 kilometers northeast of the project site. This “Level 1” analysis from EPA Workbook for Estimating Visibility Impairment (EPA 450/4-80-031) calculated the contrast parameters as:

| <u>Contrast Parameter</u> | <u>Absolute Value</u> |
|---------------------------|-----------------------|
| C ₁ | 0.000 |
| C ₂ | 0.000 |
| C ₃ | 0.000163797 |

Since the absolute value of each contrast parameter is less than 0.1, this project’s visibility impacts on the Pinnacles National Monument is considered insignificant.

Soil & Vegetation Impacts

The proposed project is not expected to have any adverse impacts on soils and vegetation in the

District.

Public Notice

Since this project triggers the requirements for offsets, this project will be public noticed inviting written public comments for a 30-day period following publication.

218 Title V

The facility presently holds a Title V permit. The Title V permit will be revised to incorporate this new equipment and appropriate conditions prior to operation.

300 ARF

Emissions from this new equipment will be less than 1 ton per year of PM.

400 (Visible Emissions) & 402 (Nuisances)

No visible or nuisance type emissions are expected from this installation. Permit will be conditioned with these requirements.

403 Particulate Matter

Particulate matter in the exhaust from the emergency flare will not exceed the 0.15 grain per standard dry cubic foot of exhaust gas. This is confirmed by the 0.0038 lbs/MMBtu and the EPA f factor of 8,710 dscf/MMBtu, which equates to a grain loading of 0.0031 grains/dscf $[(0.0038 \text{ lbs/MMBtu})(7,000 \text{ grains/lb})/(8,710 \text{ dscf/MMBtu}) = 0.0031 \text{ lbs/dscf}]$.

404 Sulfur Compounds & Nitrogen Oxides

This rule limits sulfur emissions (SO₂) to 0.2% by volume (2000 ppmv). NO_x limitations do not apply to this equipment as it is not used in the production of power or heat.

Compliance with the 0.2% by volume (2000 ppmv) limit for SO₂ for the emergency flare is assumed due to the following calculation based upon the AP-42 emission factor of 0.00059 lbs SO₂/MMBtu heat input. Utilizing this emission factor and the f factor from EPA Method 19, the SO₂ concentration for this flare would equate to 0.40 ppmv $[(0.00059 \text{ lbs SO}_2\text{/MMBtu}) * ((\text{MM Lbmole air}) / (64.1 \text{ lbmole air})) * (379 \text{ Ft}^3 \text{ Air}) / (\text{lbmole Air})] / (8,710 \text{ sdcfm}) = 0.40 \text{ ppmv}]$. This value is well below the 2000 ppmv SO₂ allowed in this rule.

412 Sulfur Content of Fuels

The pilot fuel for the emergency flare is LPG which is in compliance with the requirements of this

rule. Under emergency use, the flare may combust casing or process gas that is would not meet the requirements of this rule.

417 Storage of Organic Liquids

All tanks with the exception of the fire water and utility water storage tanks are vented to the gas collection system. These tanks are vented to a vapor recovery and disposal system that meets the requirements of Section 3.1.3 of this rule.

424 - NESHAPS

Subpart HH - Oil and Natural Gas Production Facilities

This subpart is applicable to: 1) each glycol dehydration unit; 2) each storage vessel with the potential for flash emissions; 3) the group of all ancillary equipment, except compressors, intended to operate in volatile hazardous air pollutant service at natural gas processing plants; and 4) compressors intended to operate in volatile hazardous air pollutant service. The equipment proposed in this application are not listed in the above 4 categories; therefore, this application is not subject to this subpart.

427 Steam Drive Crude Oil Production Wells

Historically, the facility has been in compliance with the requirements of this I & M Rule and continued compliance is expected. Permits will be conditioned with the requirements of this rule.

1000 Toxic Air Contaminants

The applicant did not include in their application an analysis to address the requirements of Rule 1000. However, since no Unit Risk Values, RELs, nor RFCs exist for PM, a Rule 1000 analysis would be an empty analysis without a result. Therefore, this proposed project is in compliance with the requirements of this rule.

Conclusions

This equipment as proposed has the ability to comply with all District Rules and Regulations.

VII. RECOMMENDATION

Issue Authorities to Construct and a Revised Title V Permit after public notification and EPA review.