SYNTHETIC MINOR OPERATING PERMIT

PERMITEE: Pruet Production Company

FACILITY: Cedar Creek Oil & Gas Field, Area No. 5

LOCATION: Sections [17,18,19,20,30,31,& 32] T4N, R13E, Brooklyn, Conecuh Co., AL

PERMIT NUMBER	DESCRIPTION OF EQUIPMENT, ARTICLE OR DEVICE
103-0020-X006	(19) Oil & Gas production sites, each with: One (1) - 0.5 MMBtu/Hr heater treater Two (2) – 400 BBL crude storage tank One (1) – 400 BBL salt water storage tank One (1) – 500 BBL power oil storage tank Vapor Recovery Unit, Closed vent system, & Flare (1) Double-well Oil & Gas production site, with: Two (2) - 0.5 MMBtu/Hr heater treaters Four (4) – 400 BBL crude storage tank Two (2) – 400 BBL salt water storage tank Two (2) – 500 BBL power oil storage tank Vapor Recovery Unit, Closed vent system, & Flare

See the following page for a list of the sites covered by this permit

In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, Ala. Code §§ 22-28-1 to 22-28-23, as amended, the Alabama Environmental Management Act, Ala. Code §§ 22-22A-1 to 22-22A-17, as amended, and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and use the equipment, device or other article described above.

ISSUANCE DATE : **DRAFT**

Alabama Department of Environmental Management

DRAFT

Pre-September 18, 2015 Sites: [For NSPS OOOOa Applicability]

Emission Point	Production Site Name	Emission Point	Production Site Name
1712A	McMillan 17-12	1716A	Hamiter 17-16
1806A	McCreary 18-6	1802A	McCreary 18-2
1812A	Harper 18-12	1913A	Nielson 19-13
2913A	Salter 29-13	2908A	Boothe-Casey 29-8
2906A	Boothe-Casey 29-6	2910A	Thomasson 29-10
3004A	Mack 30-4	3015A	Mary Mack 30-15
3014A	Mary Mack 30-14	3103A	Godwin 31-3
3202A	CCL&T 32-2	3203A	Hamiter 32-3
1902A	CCL&T 19-2 & Landreneau 18-10		

Table 1: Pre-9/18/2015 Wells

Post-September 18, 2015 Sites: [For NSPS OOOOa Applicability]

(as of permit issuance)

Emission Point	Production Site Name	Emission Point	Production Site Name
20NEA	20-NE [Unconstructed]	31-SEA	31-SE [Unconstructed]
20SEA	20-SE [Unconstructed]		

Table 2: Post-9/18/2015 Wells

DRAFT

1. This permit is issued on the basis of Rules and Regulations existing on the date of issuance. In the event additional Rules and Regulations are adopted, it shall be the permit holder's responsibility to comply with such rules.

2. This permit expires and the application is cancelled if construction has not begun within 24 months of the date of issuance of the permit.

3. This permit is not transferable. Upon sale or legal transfer, the new owner or operator must apply for a permit within 30 days.

4. The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

5. The permittee shall not use as a defense in an enforcement action that maintaining compliance with conditions of this permit would have required halting or reducing the permitted activity.

6. Additions and revisions to the conditions of this Permit will be made, if necessary, to ensure that the Department's air pollution control rules and regulations are not violated.

7. Nothing in this permit or conditions thereto shall negate any authority granted to the Department pursuant to the Alabama Environmental Management Act or regulations issued thereunder.

8. A new permit application must be made for new sources, replacements, alterations or design changes which may result in the issuance of, or an increase in the issuance of, air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants.

9. On completion of construction of the device(s) for which this permit is issued, written notification of the fact is to be submitted to the Chief of the Air Division. The notification shall indicate whether the device(s) was constructed as proposed in the application. The device(s) shall not be operated until authorization to operate is granted by the Chief of the Air Division. Failure to notify the Chief of the Air Division of completion of construction and/or operation without authorization could result in revocation of this permit.

10. This process including all air pollution control devices and capture systems for which this permit is issued shall be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants. Procedures for ensuring that the above equipment is properly operated and maintained so as to minimize the emission of air contaminants shall be established.

11. In case of shutdown of air pollution control equipment for scheduled maintenance for a period greater than **8 hours**, the intent to shut down shall be reported to the Air Division at least 24 hours prior to the planned shutdown, **unless accompanied by the immediate shutdown of the emission source.**

DRAFT

12. In the event there is a breakdown of equipment in such a manner as to cause increased emission of air contaminants for a period greater than **8 hours**, the person responsible for such equipment shall notify the Department within an additional 24 hours and provide a statement giving all pertinent facts, including the duration of the breakdown. The Department shall be notified when the breakdown has been corrected.

13. This permit is issued with the condition that, should obnoxious odors arising from the plant operations be verified by Air Division inspectors, measures to abate the odorous emissions shall be taken upon a determination by the Alabama Department of Environmental Management that these measures are technically and economically feasible.

14. Records will be maintained of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the process equipment and any malfunction of the air pollution control equipment. These records will be kept in a permanent form suitable for inspection and will be retained for at least two years following the date of each occurrence.

15. All deviations from requirements within this permit shall be reported to the Department within 48 hours of the deviation or by the next work day while providing a statement with regards to the date, time, duration, cause and corrective actions taken to bring the sources back into compliance. A review and evaluation of this report shall be utilized in Departmental determination of whether or not a violation of a permit requirement or requirements occurred.

16. Submittal of other reports regarding monitoring records, fuel analyses, operating rates, and equipment malfunctions may be required as authorized in the Department's air pollution control rules and regulations. The Department may require stack emission testing at any time.

17. The Department must be notified in writing at least 10 working days in advance of all emission tests to be conducted and submitted as proof of compliance with the Department's air pollution control rules and regulations. To avoid problems concerning testing methods and procedures, the following shall be included with the notification letter:

    a. The date the test crew is expected to arrive, the date and time anticipated of the start of the first run, how many and which sources are to be tested, and the names of the persons and/or testing company that will conduct the tests.

    b. A complete description of each sampling train to be used, including type of media used in determining gas stream components, type of probe lining, type of filter media, and probe cleaning method and solvent to be used (if test procedure requires probe cleaning).

    c. A description of the process to be tested, including the feed rate, any operating parameter used to control or influence the operations, and the rated capacity.

DRAFT

d. A sketch or sketches showing sampling point locations and their relative positions to the nearest upstream and downstream gas flow disturbances.

e. A pretest meeting may be held at the request of the source owner or the Department. The necessity for such a meeting and the required attendees will be determined on a case-by-case basis.

f. All test reports must be submitted to the Department within 30 days of the actual completion of the test, unless an extension of time is specifically approved by the Department.

18. Any performance tests required shall be conducted and data reduced in accordance with the test methods and procedures contained in each specific permit condition unless the Director (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, or (3) approves the use of an alternative method, the results of which he has determined to be adequate for indicating whether a specific source is in compliance.

19. If any well is redrilled or its surface equipment relocates to another site, this Permit remains valid for that well unless or until it is revoked for failure to comply with ADEM Air Division Rules and Regulations. The owner or operator of this well must provide written notification of the intent to relocate the plant to this site at least two weeks in advance. The written notification should include the planned construction beginning date and the projected startup date. Failure to provide this written notification is a violation of this permit condition and is grounds for revocation of this permit.

20. At no time shall either the NO_X, CO, VOC, or SO_2 emissions exceed 95 tons/twelve-consecutive-months.

21. Each well shall be equipped with a flare, and natural gas shall not be emitted into the atmosphere unless it is properly burned.

a. Each flare shall be equipped and operated with an air assist system and either a spark igniter or a continuous pilot light.

b. Flared gas shall be properly burned to maintain the ground level concentrations of hydrogen sulfide to less than twenty (20) parts per billion beyond plant property limits, averaged over a thirty (30) minute period.

c. Venting of sour gas to the atmosphere with an H_2S content greater than 160 ppmv triggers an immediate inspection, corrective action, and reporting to the Department within 48 hours or two work days, except as provided for in proviso 20(b).

d. If it is unsafe to vent, such as during the initial flowback stage of well completion, or if it is technically infeasible to vent such as when vessels or equipment are being de-pressured and/or emptied and the reduced pressure

DRAFT

will not allow flow of the process gas stream to the combustion device, then venting to the atmosphere of any gas stream shall be allowed for only as long as the above conditions exist.

22. Each emission source shall comply with the following opacity standards:

    a. Except for one 6-minute period during any 60-consecutive minute period, each source shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.

    b. At no time shall each source discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.

23. Compliance with the opacity standards specified in Proviso 22 shall be shown by performing *daily visual inspections* and *visible emissions observations* on emission sources as specified below:

    a. Provided that the facility is operating, a *daily visual inspection* of each emission source shall be performed to determine the presence or absence of visible emissions.

        i. If, during *daily visual inspections* or at any other time, instantaneous opacity of emissions in excess of 10% are noted <u>and</u> not corrected within a period of 1 hour, then a *visible emissions observation* as specified in Proviso 22(b) must be performed at the end of that period.

        ii. *Daily visual inspections* must be conducted by an observer that is <u>familiar</u> with the procedures of Method 9 of 40 CFR Part 60 Appendix A.

    b. Provided that facility personnel observes visible emissions in excess of 10% opacity as specified in Proviso 22(a)(i) <u>and</u> the visible emissions have not been corrected within a period of 1 hour, a *visible emissions observation* shall be performed on that source.

        i. Each *visible emissions observation* shall be conducted for a period of at least 15 minutes.

        ii. *Visible emissions observations* must be conducted using Method 9 by an observer that is <u>certified and familiar</u> with Method 9 procedures.

    c. Both *daily visual inspections* and *visible emissions observations* shall be performed as required with the following parameters:

        i. Both *daily visual inspections* and *visible emissions observations* shall only be conducted during daylight hours.

        ii. Record of time, date, and duration of each *daily visual inspection* or *visible emissions observation* shall be maintained.

DRAFT

iii. Record of corrective actions taken to eliminate visible emissions shall be maintained.

24. The heaters shall not burn fuel other than propane or sweet natural gas (<160 ppmv H_2S), unless approval is granted by the Department for an alternative fuel.

25. The requirements of 40 CFR 60 Subpart OOOOa apply as follows to sources which commenced construction, reconstruction, or modification after September 18, 2015, for which applicable definitions are listed in §60.5430a.

    a. Each well conducting a well completion operation following hydraulic fracturing or refracturing shall follow the procedures specified in §60.5375a(a)&(f).

    b. At each *collection of fugitive emissions components* as defined in §60.5430a, all detected sources of fugitive emissions, defined as any visible emission from a *fugitive emissions component* observed using optical gas imaging or an instrument reading of 500 ppm (methane or VOC) or greater using Method 21, observed shall be repaired as per §60.5397a(h). For the purposes of this, modification occurs when

        i. A new well is drilled at an existing well site.

        ii. A well at an existing well site is hydraulically fractured or refractured.

26. Compliance with the Subpart OOOOa requirements of Proviso 25 of the permit shall be shown by the following:

    a. Newly fractured or refractured wells must be logged as in §60.5375a(b) and determine initial compliance as per §60.5410a(a) [§60.5375a(c)] and continuing compliance as per §60.5415a(a) [§60.5375a(d)]

    b. The initial notification requirement from §60.5420a(a)(2) [§60.5375a(e)] for hydraulically fractured/refractured well completion operations is met by requesting a Temporary Authorization to Operate as per Proviso 9 of this permit if it includes the following:

        i. Well name

        ii. Well UTM Coordinates

        iii. Driving directions to the site OR a map showing the roads

    c. For each *collection of fugitive emissions components*, develop an emissions monitoring plan in accordance with §60.5397a(c)-(e), and monitor for fugitive emissions initially within 60 days of startup as specified in §60.5397a(f)(1) and semiannually thereafter as specified in §60.5397a(g).

DRAFT

27. To demonstrate compliance with facility-wide limits of Proviso 20 of the permit, the following requirements must be met.

    a. The volumetric flow rate of each gas stream that is to be vented to the flare shall be monitored, recorded, and summed:

    [Stream (MScf/day)]
    [Facility (MScf/day)]

        i. When possible and practicable, a continuous monitoring system meeting the following requirements shall be utilized:

            1. In the event that multiple streams share a point of commonality, a single meter at this common point shall be utilized as representative of all streams, OR a single meter shall be utilized for each stream.

            2. Calibration, maintenance and operation of metering system shall be performed in accordance to manufacturer's specification.

        ii. In the event that a gas stream normally measured by a continuous meter becomes diverted from that continuous meter due to a closed valve or a non-operating compressor, the flow rate shall be accounted for by another estimation method.

        iii. In the event that a continuous meter is not practicable, the flow rates shall be accounted for by utilizing special estimating methods (i.e. engineer estimates, material balance, computer simulation, special testing etc.).

        iv. Other flow measurement methods as approved by the Department may be utilized.

    b. The gas properties of each process stream that can be sent to a flare shall be determined according to the requirements specified below:

        i. Testing shall consist of capturing one representative sample of each stream at a frequency of no less than once every six months.

        ii. After an initial measurement of each stream and provided that multiple process streams can be sent to the flare and that it is possible to capture a common stream whose contents would be representative of all the streams, that common stream may be used instead of the individual process streams for subsequent measurements.

        iii. They hydrogen sulfide content (mol% H_2S) of the gas stream shall be determined by utilizing the Tutwiler procedures in 40 CFR §60.648 or the chromatographic analysis procedures in ASTM E-260 or the stain tube procedures in GPA 2377-86 or those provided by the stain tube manufacture or equivalent methods and procedures.

        [Stream (H_2S Mole %)]

DRAFT

iv. The gas molecular weight (MW), VOC content (mol% VOC), and heat content (btu/scf) of the gas stream shall be determined utilizing the chromatographic analysis procedures in 40 CFR Part 60 Appendix A, Method 3, Method 18, Method 19, Method 25A, or equivalent methods and procedures.

[Stream (VOC Mole%)]
[Stream (Mole Wt)]
[Stream (BTU/Scf)]

v. The frequency of testing, the components tested for, and the methods and procedures to be used may be modified upon receipt of Department approval.

c. The gas properties of fuel gas used in fuel-burning emission sources at the facility shall be determined according to the requirements specified below:

i. Testing shall consist of capturing one representative sample of each fuel gas stream at a frequency of no less than once every six months.

1. If fuel gas is from a common source or header, such as that purchased from a gas plant, one representative sample per common source may suffice for multiple affected fuel-burning emission sources under this proviso.

2. If a process stream is used as fuel gas for any fuel-burning emission source, representative samples captured and analyzed as per (b) of this proviso may suffice for affected fuel-burning emission sources under this proviso.

ii. They hydrogen sulfide content (mol% H_2S) of the fuel gas shall be determined by utilizing the Tutwiler procedures in 40 CFR §60.648 or the chromatographic analysis procedures in ASTM E-260 or the stain tube procedures in GPA 2377-86 or those provided by the stain tube manufacturer or equivalent methods and procedures.

[Stream (H_2S Mole %)]

iii. The heat content (btu/scf) of the fuel gas shall be determined utilizing the procedures in 40 CFR Part 60 Appendix A, Method 19 or equivalent methods and procedures.

[Stream (BTU/Scf)]

iv. The frequency of testing, the components tested for, and the methods and procedures to be used may be modified upon receipt of Department approval.

d. Vapors from the storage tanks shall be routed through a closed vent system to either a flare or a process stream.

e. Operating hours of each heater shall be monitored and recorded monthly.

DRAFT

f. Facility-wide CO and VOC emissions shall be calculated for each pollutant on a monthly and rolling-twelve-month basis in accordance to the requirements specified in Proviso 20.

i. Facility-wide Tons CO/month (CO TPM) shall be calculated as follows:

[Facility CO (TPM)] =	[Flare CO (TPM)] + [Heater CO (TPM)]
[Flare CO (TPM)] =	$\{\Sigma_{Month}$[Flare Feed (MMscf/day)]}*[Flare Gas Heat Val. (MMbtu/MMscf)]*[0.37 lb CO/MMBtu]*[1 Ton/2000 lb]
[Htr. CO (TPM)] =	[Op. Time (Hrs/Month)]*[Htr. Rating (MMBtu/Hr)] *[8.24E-2 lb CO/MMBtu]*[1 Ton/2000 lb]

ii. Facility-wide Tons SO_2/month (SO_2 TPM) shall be calculated as follows using standard temperatures & pressure of 60 ˚F and 14.65 psia unless otherwise noted:

[Facility SO_2 (TPM)] =	[Flare SO_2 (TPM)] + [Heater SO_2 (TPM)] + [Engine SO_2 (TPM)]
[Flare SO_2 (TPM)] =	$\{\Sigma_{Month}$[Flare Feed (MMscf/day)]}*[Flare Feed H_2S (Mol%)]*[1.68E+5 lb SO_2/MMscf]*[1 Ton/2000 lb]
[Htr. SO_2 (TPM)] =	[Op. Time (Hrs/Month)]*[Htr. Rating (MMBtu/Hr)] /[Fuel Heat Val. (MMBtu/MMscf)]*[1.68E+5 lb SO_2/MMscf]*[Htr. Fuel H_2S (Mol%)]* [1 Ton/2000 lb]

iii. Facility-wide Tons NO_X/month (NO_X TPM) shall be calculated as follows:

[Facility NO_X (TPM)] =	[Total Flare NO_X (TPM)] + [Total Heater NO_X (TPM)] + [Total Engine NO_X (TPM)] + [Other 103-0021 Permit NO_X (TPM)]
[Flare NO_X (TPM)] =	$\{\Sigma_{Month}$[Flare Feed (MMscf/day)]}*[Flare Gas Heat Val. (MMbtu/MMscf)]*[0.068 lb NO_X/MMBtu]*[1 Ton/2000 lb]
[Htr. NO_X (TPM)] =	[Op. Time (Hrs/Month)]*[Htr. Rating (MMBtu/Hr)] *[9.80E-2 lb NO_X/MMBtu]*[1 Ton/2000 lb]

iv. Facility-wide Tons VOC/month (VOC TPM) shall be calculated as follows using standard temperatures & pressure of 60 ˚F and 14.65 psia unless otherwise noted:

DRAFT

[Facility VOC (TPM)] =	[Flare VOC (TPM)] + [Heater VOC (TPM)]
[Flare VOC (TPM)] =	$\{\Sigma_{Month}$[Flare Feed (MMscf/day)]}*[Feed Gas VOC MW (Lb VOC/Lb-mol)]*[2626.95 Lb-mol/MMscf]* [1 Ton/2000 lb]* [Percent Uncombusted (2%)]
[Htr. VOC (TPM)] =	[Op. Time (Hrs/Month)]*[Htr. Rating (MMBtu/Hr)] *[5.39E-3 lb VOC/MMBtu]*[1 Ton/2000 lb]

v. Total values for each criteria pollutant calculated in (f)(i)-(iv) of this proviso shall be summed monthly with values calculated the preceding eleven months to create rolling-twelve-month-totals as required by Proviso 20.

vi. Other methods and procedures that are used to calculate emissions may be approved by the Department.

28. The following data shall be measured, recorded, and kept on file in a form suitable for inspection for a period of two (2) years:

a. As per Proviso 23, records of daily visual inspections and visible emissions observations performed on emission sources including time, date, and observation notes.

b. As per Proviso 27(a), volume of gas flared at the facility, accounting for all process streams on a monthly and rolling-twelve-month basis.
[MMScf/month]
[MMScf/12-months]

c. As per Proviso 27(b), gas analyses of process gas streams.
[Stream (H_2S Mole %)]
[Stream (VOC Mole%)]
[Stream (Mole Wt)]
[Stream (BTU/Scf)]

d. As per Proviso 27(c), gas analyses of fuel gas, unless process gas is used as fuel.
[Stream (H_2S Mole %)]
[Stream (BTU/Scf)]

e. As per Proviso 27(e) monthly operating hours of each heater.
[Hrs/month]

f. As per Proviso 27(f), facility-wide emissions of CO & VOC by pollutant.
[Tons/month]
[Tons/twelve-consecutive-months]

29. Periodic Monitoring Reports should be submitted to the Department as follows:

DRAFT

a. A summary of monthly measurements and calculations required by Provisos 28(b), (e), & (f) shall be included in all reports.

b. Any deviations from permit conditions that occurred during the reporting period shall be included in Periodic Monitoring Reports.

c. Reports shall be annual and submitted on the following schedule, or as otherwise approved by the Department:

Reporting Period:	*June 1 – May 31*	*Submitted by:*	*July 31*

30. For any well subject to Subpart OOOOa, an annual LDAR Report should be submitted to the Department and EPA as follows:

a. A copy of each fugitive emissions survey within the stipulated reporting period.

b. Each Annual LDAR report shall include the information listed in §60.5420a(b)(1) & (7)(i)-(xii). If an applicable well completion operation occurred in the reporting period, the report shall also include the information listed in §60.5420a(b)(2)

c. LDAR reports shall be annual and submitted to the Department by mail and to EPA by their CEDRI website (https://cdx.epa.gov/) as per §60.5420a(b)(11) on the following schedule or as otherwise approved by the Department:

Reporting Period:	*Oct. 25 – Oct. 24*	*Submitted by:*	*Jan. 22*

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