MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY AIR QUALITY DIVISION

January 4, 2023

PERMIT TO INSTALL 20-12C

ISSUED TO Tuscola Energy, Inc.

LOCATED AT

7611 Bay City Forestville Road Wisner Township, Michigan 48071

IN THE COUNTY OF

Tuscola

STATE REGISTRATION NUMBER N1586

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203:

December 8, 2022

DATE PERMIT TO INSTALL APPROVED: January 4, 2023	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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COMMON ACRONYMS

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm BTU ℃	Actual cubic feet per minute British Thermal Unit Degrees Celsius
CO CO2e	Carbon Monoxide Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic noter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NOx	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig scf	Pounds per square inch gauge Standard cubic feet
SCI	Standard cubic reet
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
hð	Microgram
μm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year
-	

GENERAL CONDITIONS

- 1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. (R 336.1201(1))
- 2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. (R 336.1201(4))
- 3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. (R 336.1201(6)(b))
- 4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. (R 336.1201(8), Section 5510 of Act 451, PA 1994)
- 5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. (R 336.1219)
- 6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. (R 336.1901)
- 7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal condition or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). (R 336.1912)
- 8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
- 9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
- 10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

- 11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). (R 336.1301)
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this Permit to Install.
- 12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). (**R 336.1370**)
- 13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. (R 336.2001)

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Unit ID Device(s))		
EUNIXON3TANK	Storage tank for oil from the Nixon 3-23 sour well.	Flexible Group ID FGOILPRODUCTION	
EUNIXON3SEP	Separator for the Nixon 3-23 sour well.	FGOILPRODUCTION	
EUNIXON4TANK	Storage tank for oil from the Nixon 4-23 sour well.	FGOILPRODUCTION	
EUNIXON4SEP	Separator for the Nixon 4-23 sour well.	FGOILPRODUCTION	
EUNIXON5TANK	Storage tank for oil from the Nixon 5-23 sour well.	FGOILPRODUCTION	
EUNIXON5SEP	Separator for the Nixon 5-23 sour well.	FGOILPRODUCTION	
EUNIXON6TANK	Storage tank for oil from the Nixon 6-23 sour well.	FGOILPRODUCTION	
EUNIXON6SEP	Separator for the Nixon 6-23 sour well.	FGOILPRODUCTION	
EUWASTEWATERTK1	Storage tank for water separated from the oil.	FGOILPRODUCTION	
EUNIXON14TANK	Storage tank for oil from the Nixon 14-23 sweet well.	FGOILPRODUCTION	
EUWASTEWATERTK2	Storage tank for water separated from the oil in the oil treatment system.	FGOILTREATSYS	
EUOILTREATSYSTK1	Oil storage tank for the oil treatment system.	FGOILTREATSYS	
EUOILTREATSYSTK2	Oil storage tank for the oil treatment system. FGOILTREATS		
EUOILTREATSYSTK3	Oil storage tank for the oil treatment system.	FGOILTREATSYS	
EUOILTREATSYSTK4	Oil storage tank for the oil treatment system.	FGOILTREATSYS	

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

FLEXIBLE GROUP SPECIAL CONDITIONS

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGOILTREATSYS	Process equipment for heat treatment of oil from offsite	EUOILTREATSYSTK1
	wells.	EUOILTREATSYSTK2
		EUOILTREATSYSTK3
		EUOILTREATSYSTK4
		EUWASTEWATERTK2
FGOILPRODUCTION	All permitted oil production equipment at the facility.	EUNIXON3TANK
		EUNIXON3SEP
		EUNIXON4TANK
		EUNIXON4SEP
		EUNIXON5TANK
		EUNIXON5SEP
		EUNIXON6TANK
		EUNIXON6SEP
		EUWASTEWATERTK1
		EUNIXON14TANK

FGOILTREATSYS FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Process equipment for heat treatment of oil from offsite wells.

Emission Unit: EUOILTREATSYSTK1, EUOILTREATSYSTK2, EUOILTREATSYSTK3, EUOILTREATSYSTK4, EUWASTEWATERTK2

POLLUTION CONTROL EQUIPMENT

Flare

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- 1. The permittee shall not burn any sour natural gas in FGOILTREATSYS. Sour gas is defined as any gas containing more than 1 grain of hydrogen sulfide or more than 10 grains of total sulfur per 100 standard cubic feet.¹ (R 336.1225)
- 2. The permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for FGOILTREATSYS. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate FGOILTREATSYS unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum the plan shall include:
 - a) Identification of the equipment and, if applicable, air-cleaning device and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair.
 - b) Description of the items or conditions to be inspected and frequency of the inspections or repairs.
 - c) Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.
 - d) Identification of the major replacement parts that shall be maintained in inventory for quick replacement.
 - e) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the PM / MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1910, R 336.1911, R 336.1912)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

 The permittee shall not operate FGOILTREATSYS unless all emergency relief valves, all permitted storage tanks, and all dehydrators are vented to a flare, an incinerator or a vapor recovery system. (R 336.1224, R 336.1225, R 336.1403, R 336.1702(a), R 336.1910)

- 2. The permittee shall not load out the following permitted tanks unless a vapor return system is installed, maintained and operated in a satisfactory manner:
 - a) EUOILTREATSYSTK1
 - b) EUOILTREATSYSTK2
 - c) EUOILTREATSYSTK3
 - d) EUOILTREATSYSTK4
 - e) EUWASTEWATERTK2

(R 336.1224, R 336.1225, R 336.1702(a))

- 3. The permittee shall properly operate all of the following:
 - a) a continuously burning pilot flame at the flare. Pilot fuel shall be only sweet gas. Sweet gas is defined as any gas containing 1 grain or less of hydrogen sulfide or 10 grains or less of total sulfur per 100 standard cubic feet.
 - b) A mechanism that will automatically stop flow of fuel to the FGOILTREATSYS tank oil treatment torches in the event that the flare pilot flame is extinguished. The permittee shall not resume oil circulation unless the flare pilot flame is re-ignited and maintained.
 - (R 336.1224, R 336.1225, R 336.1403, R 336.1702(a), R 336.1910)

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1201(3))

1. The permittee shall maintain a log of all maintenance activities conducted according to the PM / MAP (pursuant to SC III.2). The permittee shall keep this log on file at a location approved by the AQD District Supervisor and make it available to the Department upon request. (R 336.1911, R 336.1912)

VII. <u>REPORTING</u>

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

FGOILPRODUCTION FLEXIBLE GROUP CONDITIONS

DESCRIPTION

All permitted oil production equipment at the facility.

Emission Unit: EUNIXON3TANK, EUNIXON3SEP, EUNIXON4TANK, EUNIXON4SEP, EUNIXON5TANK, EUNIXON5SEP, EUNIXON6TANK, EUNIXON6SEP, EUWASTEWATERTK1, EUNIXON14TANK

POLLUTION CONTROL EQUIPMENT

Flare

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

	Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1.	Hydrogen sulfide (H ₂ S) (CAS No. 7783-06-4)	460 lbs per day	Calendar day	FGOILPRODUCTION	SC VI.1 SC VI.2	R 336.1225, 40 CFR 52.21(c) & (d)
2.	Hydrogen sulfide (H ₂ S) (CAS No. 7783-06-4)	50 tons per year	12-month rolling time period as determined at the end of each calendar month	FGOILPRODUCTION	SC VI.1 SC VI.2 SC VI.3	R 336.1205(3)

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The permittee shall not use FGOILPRODUCTION to process any sour wells other than Nixon 5, Nixon 3, Nixon 4, and Nixon 6 without prior notification to and approval by the AQD. The sour wells may be left open, when not being pumped. Furthermore, the sour wells shall not be pumped simultaneously except as noted below: ¹ (R 336.1225)
 - a) Nixon 3 well may be pumped simultaneously with Nixon 4 well
 - b) During hydrogen sulfide concentration testing, as specified in SC VI.1(b)
- 2. The permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for FGOILPRODUCTION. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate FGOILPRODUCTION unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum the plan shall include:
 - a) Identification of the equipment and, if applicable, air-cleaning device and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair
 - b) Description of the items or conditions to be inspected and frequency of the inspections or repairs
 - c) Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures
 - d) Identification of the major replacement parts that shall be maintained in inventory for quick replacement

e) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits

If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the PM / MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1910, R 336.1911, R 336.1912)**

IV. <u>DESIGN/EQUIPMENT PARAMETER(S)</u>

1. The permittee shall properly operate all of the following: (R 336.1224, R 336.1225, R 336.1403, R 336.1702(a), R 336.1910)

- A continuously burning pilot flame at the flare. Pilot fuel shall be only sweet gas. Sweet gas is defined as any gas containing 1 grain or less of hydrogen sulfide or 10 grains or less of total sulfur per 100 standard cubic feet.
- b) A mechanism that will automatically shut down the Nixon Farms well pump jacks to stop fluid flow by cutting off the electrical power supply in the event that the flare pilot flame is extinguished. The permittee shall not resume fluid flow into FGOILPRODUCTION unless the flare pilot flame is re-ignited and maintained.
- c) A mechanism that will automatically stop flow of gas to the FGOILPRODUCTION in the event that the flare pilot flame is extinguished. The permittee shall not resume gas flow into FGOILPRODUCTION unless the flare pilot flame is re-ignited and maintained.
- d) A mechanism that will automatically stop flow of fuel to the FGOILPRODUCTION tank oil treatment torches in the event that the flare pilot flame is extinguished. The permittee shall not resume oil circulation unless the flare pilot flame is re-ignited and maintained. The permittee shall not burn any sour natural gas in FGOILPRODUCTION tank oil treatment torches. Sour gas is defined as any gas containing more than 1 grain of hydrogen sulfide or more than 10 grains of total sulfur per 100 standard cubic feet.

2. The flare shall be properly engineered. (R 336.1224, R 336.1225, R 336.1403, R 336.1702(a), R 336.1910)

- The permittee shall not operate FGOILPRODUCTION unless all emergency relief valves, all permitted storage tanks, and all dehydrators are vented to a flare, an incinerator or a vapor recovery system. (R 336.1224, R 336.1225, R 336.1403, R 336.1702(a), R 336.1910)
- 4. The permittee shall not load out any permitted tanks unless a vapor return system is installed, maintained and operated in a satisfactory manner. (R 336.1224, R 336.1225, R 336.1702(a))

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1201(3))

- 1. The permittee shall monitor and record all of the following at the frequency indicated:
 - a) Volumetric flow rate of sour gas going to the flare daily
 - b) Annual readings of the concentration of hydrogen sulfide in the produced sour gas from the wells while being pumped which is representative of the three wells sending the highest volume of gas to the flare annually. Both of the following are acceptable means of determining the concentration of hydrogen sulfide in the sour gas:
 - I. Colorimetric detector tube
 - II. laboratory gas analysis

(R 336.1205(1)(a)(ii), R 336.1225, 40 CFR 52.21(c) & (d))

2. Each calendar month the permittee shall calculate the mass flow rate of hydrogen sulfide (H₂S) that went to the flare each day using all of the following: (R 336.1225, 40 CFR 52.21(c) & (d))

- a) The most recently determined concentration of hydrogen sulfide in the sour gas
- b) The individual daily volume of sour gas that went to the flare
- c) The following equation:

 $\frac{lbs H_2S}{day} = \frac{ft^3 sour \ gas}{day} \times \frac{ft^3 H_2S}{100 \ ft^3 sour \ gas} \times \frac{lbmol \ H_2S}{385 ft^3 H_2S} \times \frac{34 \ lb \ H_2S}{lbmol \ H_2S}$

- 3. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period H₂S emission calculation records for FGOILPRODUCTION, as required by SC II.2. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205(3))**
- 4. The permittee shall record on a daily basis which well is pumping and the timeframe. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205(3))**
- 5. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. The permittee shall keep these records on file at a location approved by the AQD District Supervisor and make them available to the Department upon request. (R 336.1205(3), R 336.1225, 40 CFR 52.21(c) & (d))
- 6. The permittee shall maintain a log of all maintenance activities conducted according to the PM / MAP (pursuant to SC III.2). The permittee shall keep this log on file at a location approved by the AQD District Supervisor and make it available to the Department upon request. (R 336.1911, R 336.1912)

VII. <u>REPORTING</u>

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVFLARE	NA	50	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

NA