

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
**ACTIVITY REPORT: On-site Inspection**

P117357130

<b>FACILITY:</b> Omimex Energy - White River Production LLC.		<b>SRN / ID:</b> P1173
<b>LOCATION:</b> 11165 Chase Road, MONTAGUE		<b>DISTRICT:</b> Grand Rapids
<b>CITY:</b> MONTAGUE		<b>COUNTY:</b> MUSKEGON
<b>CONTACT:</b> Ken Prior , Operations Manager - Michigan		<b>ACTIVITY DATE:</b> 02/02/2021
<b>STAFF:</b> Chris Robinson	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b>
<b>SUBJECT:</b> FY'21 inspection to determine the facility's compliance status with applicable air quality rules and regulations.		
<b>RESOLVED COMPLAINTS:</b>		

The purpose of this report is to document the findings of an onsite scheduled inspection of Omimex Energy's White River Production LLC. facility (White River, SRN P1173) located at 11165 Chase Road in Montague, Michigan. The inspection was conducted by AQD staff Chris Robinson (CR) on February 2, 2021 to determine White River's compliance status with the requirements of the federal Clean Air Act and Part 55 (Michigan's Air Pollution Control Rules) of Act 451 (Natural Resources and Environmental Protection Act (NREPA)).

Following current field work guidance CR contacted Ken Prior, Omimex Energy's Operations Manager, on January 21, 2021 to schedule the inspection. Typically, AQD inspections are unannounced. However, due to the Covid19 pandemic and since this facility is a remote unmanned station, inspections are being scheduled in advance to ensure proper staff will be onsite and to prepare for any Covid19 related entry procedures.

In accordance with the Memo of Understanding (MOU) between EGLE's Air Quality Division and Oil, Gas and Minerals Division (OGMD), CR contacted Staff Dusenbury to inform him of the upcoming inspections of Omimex Energy's Claybanks 2 and White River facilities which were going to be conducted on the same day. CR met with both Mr. Dusenbury and Mr. Prior on February 2, 2021, again notifying Mr. Prior that the purpose behind the inspection was to determine compliance with applicable air quality rules and regulations. The process and process equipment were discussed while still at the Claybanks 2 facility. Mr. Prior later provided a walk-through of White River as well as pertinent information. Proper PPE, including facial coverings, and social distancing were maintained throughout the entire inspection.

Weather conditions were approximately 32°F, mostly cloudy with northerly winds at approximately 14 mph ([www.weatherunderground.com](http://www.weatherunderground.com)). No odors or visible emissions were observed offsite. However, a slight sour gas (H<sub>2</sub>S) odor was observed, on site, near the buildings and process equipment.

### **A) Facility Description**

Omimex White River facility (White River) is an oil/gas extraction facility, built in approximately 2007, that extracts from five (5) local wells. The natural gas and crude oil are separated. The separated natural gas is considered to be sour gas since the H<sub>2</sub>S contains more than 1 grain of hydrogen sulfide or more than 10 grains of total sulfur per 100 standard cubic feet. The extracted oil is stored onsite in above ground horizontal storage tanks until it is sold and trucked offsite. H<sub>2</sub>S is only stripped from the natural gas that is used for onsite fuel. The remaining unused natural gas along with any stripped H<sub>2</sub>S is reinjected into the underground reservoir. White River operates the following equipment: Compressor engine, an electrical engine, oil, and condensate storage tanks, high- and low-pressure separators, a glycol dehydrator for removing water from the gas stream, a

stationary flare, an Amine plant for removing H<sub>2</sub>S from the gas stream, load out for transporting the oil offsite, a vapor recovery unit (VRU) and a portable flare(s).

The following five (5) stages are used in processing the oil/natural gas. Each stage is designed to separate out the oil and sour gas by lowering the pressure applied.

#### **STAGE #1**

The sour oil/natural gas mixture is extracted from the wells and sent to one of four (4) 500,000 Btu/hr. natural gas fired high-pressure separators. The separators lower the pressure allowing the sour gas to separate from the oil. Any oil extracted in this stage is transferred to the oil storage tank while the remaining oil/sour gas mixture is transferred to the heated treaters (Stage #2). The heated treaters are also known as low pressure separators.

#### **STAGE #2**

Stage #2 consists of one 750,000 Btu/hr. natural gas fired heated treater that heats the mixture to approximately 90°F - 100°F. The treaters continue to lower the pressure of the gas to approximately 30 lbs. preparing it for stage #3. Oil separated during this stage is again transferred to the storage tanks. The sour gas is then transferred to the compressor.

#### **STAGE #3**

The engine is equipped with a compressor used for reinjection, or transferring natural gas to the Amine plant, glycol dehydrator or the flare. If the sour gas is ever transferred offsite, the compressor would then be used to correct the pressure for pipeline transfer which would be approximately 900 lbs. of pressure.

#### **STAGE #4**

Prior to fuel consumption any liquid in the natural gas must be removed. At this stage, all the sour gas would have entered the triethylene glycol dehydrator. The gas is passed through the contactor tower which contains a series of baffles used to extract the water from the gas stream. The water is then separated from the glycol using a re-boiler. Emissions are captured by the VRU and typically reinjected into the reservoir.

#### **Stage #5**

The final stage, prior to being used for fuel, involves the facility's amine plant. This plant is used for removing H<sub>2</sub>S from the gas stream which is known as "sweetening". Emissions are captured by the VRU and typically reinjected into the reservoir.

### **B) Compliance Evaluation**

#### **1) Rule 201/Significance Levels and Rule 201 Permitting Exemptions**

Since no active or voided Permit to Installs (PTIs) exist for this facility CR discussed Rule 201 permitting requirements which prohibits the construction of any process or process equipment without having a PTI or qualifying exemption. Mr. Prior indicated that the equipment at White River is covered under the same exemptions used at Claybanks 2.

During the inspection Mr. Prior provided CR with a copy of a letter dated May 18, 2007, which AQD had on file, discussing permitting issues at Claybanks 2. The letter provided 2007 data on NO<sub>x</sub> and

CO Potential to Emit (PTE) and actual emissions for several Omimex facilities, including White River. White River's NOx PTE was 41.6 tons per year (tpy) with actual NOx emissions of 37.0 tpy. CR discussed this with Mr. Prior, and he disagreed with the 2007 calculations because the engine horsepower rating of 203 HP (1,800 RPM) used did not take into consideration the engine's operating limitations due to the frame which limits the engine to 1500 RPM and the fact that the engine's turbo has now been removed. Although it was appropriate at the time to include the turbo, the lack of having one now should be factored into the facility's current PTE. The engine's frame only limits the operator from operating the engine above 1500 RPM to prevent damage. The restriction of the frame preventing damage is not an enforceable restriction limiting PTE; so, it cannot be used to restrict PTE. Therefore, the max rating of should be used when calculating PTE.

When evaluating the use of exemptions, "project" emissions must be reviewed in order to determine if significance levels were exceeded or not. If they were then none of the processes/process equipment covered under the entire "Project" are eligible to use exemptions. White River was constructed as a new facility; therefore, the entire facility represents the "project". The 37.0 tons of NOx presented in the letter, which is very close to the 40tpy significance level, did not include facility-wide (Project) emissions or all applicable air contaminants such as SO2. AQD staff from the Cadillac District Office sent Omimex Energy a letter dated May 1, 2007 following up on a PTE submittal for several of Omimex Energy's facilities. This letter informed Mr. Prior that he may want to consider obtaining a PTI for sites that show actual emissions close to significance, specifically calling out White River. If Omimex chooses to use any exemptions at White River, then a proper review of Project Significance levels must be conducted and provided to the AQD.

In addition, use of exemptions Rule 288(2)(c) for the stationary flare and Rule 288(2)(d) for the amine plant were discussed with Mr. Prior. Exemption Rule 288(2)(c) exempts sweet gas flares. Although the stationary flare at White River typically burns sweet gas it is designed to burn sour gas in cases of emergencies or repairs. Mr. Prior has indicated that there have been past incidents when sour gas has been directed to the flare for combustion. Since the stationary flare is capable of combusting sour gas and it has done so in the past this exemption would not apply. Nor would it apply to any portable maintenance type flares attached directly to the well heads since they only combust sour gas.

Exemption Rule 288(2)(d) exempts equipment used for the separation of or fractionation of sweet natural gas but specifically excludes natural gas sweetening "equipment". Per discussions with Mr. Prior, Mr. Prior felt that this exemption would apply to the amine plant since he felt that White River, by definition, was not a sweetening facility. Rule 288(2)(d) is referring to the equipment used in the process of sweetening natural gas not a "Sweetening facility" as it is defined in Rule 119(cc). Therefore, this exemption would not be applicable to the facility's natural gas sweetening equipment.

A Rule 201 violation for installing and operating process equipment without a Permit to Install will be cited.

## **2) Michigan's Part 4 Rules**

Michigan's Part 4 Rules pertain to sulfur bearing compounds, more specifically Rule 403 applies to Oil and Natural gas producing or transporting facilities and natural gas-processing facilities. White River is an oil/natural gas producing facility and is therefore subject to these Rules. It is a

misconception that if a source is not a sweetening facility by definition, they would not be subject to Rule 403. Under Rule 403 facilities that are not considered to be a “sweetening facility” would only be excluded from Rules 403(4), 403(5) and 403(6); the remaining requirements would still apply. However, in order to be excluded from the definition the system needs to be enclosed with no possible Hydrogen Sulfide emissions.

Per Rule 119(cc) "sweetening facility" means a facility or process that removes hydrogen sulfide or sulfur-containing compounds, or both, from a sour gas, sour crude oil, or sour condensate stream and converts it to sweet gas, sweet crude, or sweet condensate. **The term "sweetening facility" does not include a facility or process that operates in an enclosed system and does not emit hydrogen sulfide to the outer air.**

CR discussed White River’s “closed-loop” system with Mr. Prior. Since the plant is designed with a bypass allowing Hydrogen Sulfide to be routed to the flare for combustion, the facility is not operating in a true closed-loop system. Therefore, the amine plant would not meet the requirements to be excluded from the definition of a “Sweetening Facility” and all requirements of Rule 403 are applicable. A review of these rules is below:

- **Rule 403(1)** *“Except as provided in subrule (3) of this rule, it is unlawful for a person to cause or allow the emission of sour gas from an oil- or natural gas-producing or transporting facility or a natural gas- processing facility without burning or equivalent control of hydrogen sulfide and mercaptans”.*

**\*Typically, any H<sub>2</sub>S removed from the natural gas being used for fuel or the remaining sour gas is collected by the VRU and reinjected. However, in emergencies or for repairs sour gas is directed to the flare for combustion so White River appears to be in compliance with this requirement.**

- **Rule 403(2)** Except as provided in subrule (3) of this rule, sour gas that is burned at an oil- or natural gas-producing or transporting facility or at a natural gas-processing facility shall be burned in a properly engineered flare, incinerator, or other combustion system with elevated discharge to the atmosphere. If the flare, incinerator, or other combustion system burns sour gas in such volume and with such hydrogen sulfide concentration that the daily quantity of hydrogen sulfide in the gas is less than 28 pounds, then it shall be equipped with either a pilot flame which will burn continuously when gas flows to the flare, incinerator, or other combustion system or with an automatic ignition system, unless otherwise authorized by the department. If the flare, incinerator, or other combustion system burns sour gas in such volume and with such hydrogen sulfide concentration that the daily quantity of hydrogen sulfide in the gas is 28 pounds or more, then it shall be equipped with a continuously burning pilot flame and a mechanism which will operate, upon failure of the pilot flame, to shut off the flow of gas, unless otherwise authorized by the department.

**\* The H<sub>2</sub>S concentration being combusted in the flare during maintenance and emergency activities is unknown. However, Mr. Prior informed CR that the flare is equipped with a continuous pilot and a mechanism for shutting off the well supply if loss of flame is detected. Since the facility is already equipped for the worst-case scenario they appear to be in compliance with this requirement.**

- **Rule 403(3)** *“The provisions of subrules (1) and (2) of this rule do not apply to either of the following:*

*(a) Crude oil-producing facilities that serve a well or group of wells which attained an average production level of 10 or less barrels per day per well before January 1, 1978, unless the department has received 1 complaint of odors regarding the facility, and the owner or operator is unable to or fails to demonstrate, to the satisfaction of the department, that the uncontrolled hydrogen sulfide and mercaptan emissions do not cause an odor nuisance or health hazard”.*

**\* Since the facility was constructed after January 1, 1978, a demonstration has never been provided and the AQD received an odor complaint on July 19, 2019, Subrules 1 and 2 are applicable.**

*(b) “A vessel or a battery of vessels that releases a total daily volume of vapors of less than 5,000 standard cubic feet, if the owner or operator demonstrates both of the following: (i) Combustion of the vapors is not economically reasonable. (ii) The uncontrolled release of the vapors will not cause a violation of the provisions of R 336.1901”.*

**\* Vapors from the tank battery are controlled by the VRU and either reinjected or combusted by the stationary flare. White River appears to be in compliance with this requirement.**

- **Rule 403(4)** A person shall not cause or allow the emission of sulfur dioxide from a new sweetening facility, unless such emissions are controlled using the best available control technology.

**\* Emissions generated by the sweetening facility are either reinjected into the formation or combusted in the stationary flare. White River appears to be in compliance with this requirement.**

- **Rule 403(5)** *The operator of a sour gas-, crude-, or condensate-sweetening facility-ties shall do all of the following:*

*(a) Monitor the mass flow rate of hydrogen sulfide either entering the plant or going to the waste gas flare or flares on a periodic schedule specified by the department. The monitoring program shall include a determination of the hydrogen sulfide concentration using colorimetric detector tubes or their equivalent and a determination of the volumetric gas flow rate. The monitoring data shall be submitted to the department in an acceptable format within 30 days following the end of the month in which the data were collected.*

**\*White River’s compliance with this requirement is unknown at this time, however the AQD has never received any H2S data for White River. Since the facility felt that they were excluded from the definition of a Sweetening facility they did not believe Rule 403 applied.**

*(b) Provide fencing, warning signs, or other measures as necessary to warn or deter unauthorized individuals from entering the plant property or buildings. Signs shall read: "Danger--Poison Gas," with at least 1 sign on each side of the plant property.*

**\* The property appears to be properly posted with fencing and warning signs.**

(c) *Provide control of malodorous emissions from any pressure relief valve or valves, storage tanks, and dehydrator vent or vents by burning or equivalent control.*

**\* Control of malodorous emissions is being conducted as required by Rule 403(c) by using the VRU to capture emissions and either reinjecting or combusting them in the flare.**

(d) *Conduct a program of continuous monitoring of concentrations of hydrogen sulfide in any building enclosing a sweetening process. The sensor shall be placed as close to process equipment as practicable. The system shall be designed, installed, and maintained to provide a visual alarm when the hydrogen sulfide concentration is more than 50 ppm.*

**\* Each building is equipped with H<sub>2</sub>S monitors with both audible and visual alarms. Per Mr. Prior the alarms are set to go off when H<sub>2</sub>S concentrations exceed 10 ppm.**

(e) *Automatically begin a safe and orderly shutdown of all process inflow streams to the facility if the concentration of hydrogen sulfide is more than 100 ppm in any building enclosing a sweetening process. Full operation may be resumed only after successful corrective measures have been applied.*

**\* Per Mr. Prior if the building H<sub>2</sub>S concentrations reach 20 ppm, the facility shuts down which includes closing the Axelson valves at the production packs which stops flow into the facility from the wells. White River appears to be in compliance with this requirement.**

(f) *Automatically commence shut-in of the facility within 1 second after extinguishment of the flare flame, unless otherwise authorized by the department. Operation of the facility shall not continue unless corrective measures taken to reignite the flame are successful.*

**\* Per Mr. Prior the flare is equipped with a flare outage detector that shuts off the flow from the wells and shuts down the facility if flame loss is detected. White River Appears to be in compliance with this requirement.**

- **Rule 403(6)** *A new sweetening facility shall not be installed at a distance of less than 1,300 feet from an existing residence, unless otherwise authorized by the department. Such authorization shall depend upon a satisfactory showing by a permit applicant that an odor nuisance shall not result from a lesser setback distance.*

**\* Based on Google Earth the nearest residence to the Amine plant is to the northeast. This residence appears in a 1993 aerial map confirming it predates the construction of the amine plant. Therefore, the setback requirement applies to this residence. It is unclear if the 1,300 ft is from the residential property line or home; however, in this case the majority of the residential property is well within 1,300 ft. of the plant. The distance from the northeast corner of the Amine plant to the southeast corner of the residential home is approximately 1,213 ft. Since proper AQD authorization has not been given to construct the amine plant within these setback limits, White River is not in compliance with this requirement. Proper authorization would most likely be in the form of a PTI, which White River does not have.**

### **C) Federal Air Quality Rules and Regulations**

New Source Performance Standards (NSPS) for Crude Oil and Natural Gas Facilities promulgated in **40 CFR Part 60, Subparts OOOO and OOOOa** do not apply to White river since this facility was constructed prior to August 23, 2011.

The exact installation date of the compressor engine is unknown. However, since it is less than 500hp and was not manufactured after July 1, 2008 or modified/reconstructed after June 12, 2006 it does not appear that the compressor engine is subject to the NSPS for Stationary Spark Ignition Internal Combustion Engines as promulgated in **40 CFR Part 60, Subpart JJJJ**.

The compressor engine does appear to be subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) as promulgated in **40 CFR Part 63, Subpart ZZZZ (RICE MACT)**. Assuming, at this time, that this facility is Minor for Hazardous Air Pollutants (HAPS) the applicable requirements are contingent on the construction date of the engine. Since the construction date provided by Mr. Prior of ~2007 corresponds to the applicability dates for this Standard AQD is unsure if the engine would be considered existing or new. If it were constructed prior to June 12, 2006, it would be considered an Existing Area source subject to operating, monitoring, and record keeping requirements. If the engine were constructed on or after June 12, 2006 then this would be considered a new area source subject to the requirements of NSPS JJJJ through the RICE MACT. As discussed above NSPS JJJJ does not appear to be applicable. In either case, EPA, not the AQD, has delegation of authority over the Area Source Rice MACT.

The NESHAP for Oil and Natural Gas Production Facilities as promulgated in **40 CFR Part 63, Subpart HH** appears to apply to the triethylene glycol dehydrator. At this time, the AQD is assuming that White River is an area source for HAPS, which will be re-evaluated later if necessary, and the AQD does not have Area source delegation for this MACT.

#### **D) Stationary Source Determination**

White River extracts oil/gas from five (5) wells all appearing to be adjacent to the facility. More specifically, they are within a quarter mile (1,320-ft) from the facility with the farthest being approximately 1,250 ft from the well to the nearest onsite structure. Actual property boundaries of White River are unknown. Since the wells are within a ¼ mile from the facility the wells should be aggregated to the facility and included as one stationary Source. Therefore, Potential to Emit calculations should include emissions generated from these wells and the equipment used to maintain these wells (Summit Petroleum vs United States Environmental Protection Agency, 2012).

#### **E) Compliance Determination**

Based on the information discussed above Omimex Energy's White River Production facility does not appear to be in compliance with all applicable air quality rules and regulations, specifically Rule 201 of Michigan's Air Pollution Control Rules for the construction of process equipment without first obtaining a permit and Rule 403 for constructing a Sweetening Facility within 1,300 ft from a residence without proper authorization. A Violation Notice will be issued.

NAME 

DATE 3/25/2021

SUPERVISOR 