DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

B546226214

FACILITY: Quantum Resources Management LLC, Rich Field		**SRN / ID:** B5462
LOCATION: 7770 McTaggert Rd, NORTH BRANCH		**DISTRICT:** Lansing
CITY: NORTH BRANCH		**COUNTY:** LAPEER
CONTACT: Ken Bodmer , Foreman		**ACTIVITY DATE:** 07/09/2014
STAFF: Michelle Luplow	**COMPLIANCE STATUS:**	**SOURCE CLASS:** MAJOR
SUBJECT: Announced, scheduled compliance inspection with ROP No.: ROP-MI-B5462-2009a.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

Personnel Present: Ken Bodmer (kbodmer@qracq.com), Foreman/Manager
Dwayne Donnely, Plant Operator
Other relevant personnel: Jacob Thompson (jathompson@qracq.com)

Purpose: Conduct an announced, scheduled, partial compliance evaluation (PCE) inspection of Quantum Resources Management Rich Field site. Compliance was determined based on Quantum Resources Renewable Operating Permit, MI-ROP-B5462-2009a. This activity was done as part of a full compliance evaluation (FCE).

Facility Background/Regulatory Overview: Quantum Resources Rich Field is a natural gas sweetening facility. The sour gas produced from Quantum's tank battery B7394 is sent through lines directly to this site for the removal of H2S from the gas. They are a major source of criteria air pollutants, specifically SO2. K. Bodmer said that all of the gas produced at the Quantum sites is used within Quantum: no gas is sold.

Quantum has a glycol dehydrator unit that is subject to the NESHAP for Oil and Natural Gas Production Subparts A and HH for area sources of HAP. In addition to the dehydrator, there are 3 engines located onsite that are subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines Subparts A and ZZZZ for area sources of HAP: a 120 HP natural gas-fired engine (Quantum uses their own sweet natural gas to power the equipment) that is used to compress the gas, a 280 HP natural gas-fired engine used for backup, and a <50 HP propane-fired emergency generator which is located at the office. There are other units associated with the gas sweetening process that are included in Quantum's only emission unit, EUGAS-TREATING.

D. Donnely and K. Bodmer explained the gas sweetening process to me: Sour gas (gas containing H2S) from the tank battery enters through an inlet where D. Donnely will sample the gas with a Drager tube to determine H2S concentration. The gas previously entered the sodium hydrosulfide (NaSH) chamber where free water was knocked out from the gas, but K. Bodmer said that hasn't been used in approximately 15 years. The gas then enters the 120 HP Ajax compressor engine to compress the gas from 6 psi up to 300 psi. From the compressor engine room the gas enters the DMEA building where the H2S is removed. The H2S is separated from the DMEA via the reboiler and is then sent to get injected with water back into the injection wells. The clean, sweetened gas is sent back to the field.

Inlet sour gas and the stripper tower tail gas are occasionally diverted to the flare to burn the H2S which creates SO2 emissions.

In the 2014 ROP renewal application, Quantum Resources submitted a list of equipment/emission units that were exempt from Rule 201 and also exempt under Rule 212(4) that were presumed to be located at the gas sweetening site. K. Bodmer and D. Donnely explained the status of each piece of equipment:

Emission Unit ID	Description	Status
DVWATER-HEATER	Water heater for storage tanks; 250,000 BTU/hr	Active
DVSULFINOL-REBO	Burner for DMEA reboiler; 3.5 MMBTU/hr, maintained at 235°F	Active
DVHOTWATER-SUPPL	Hot water to DMEA unit; 50,000 BTU/hr; MDEA and water heated in 1 vessel	Active
DVHCR-GLY-REBOIL	Burner for Glycol Reboiler; 100,000 BTU/hr	Out of Service
DVSTAB-REBOIL	Burner on hydrocarbon recovery unit; 350,000 BTU/hr	Not present at this site
DVLINE-HTR	Gas line heater for hydrocarbon recovery unit; 250,000 BTU/hr	Not present at this site
DVGLYCOL-REBOIL	Sweet gas glycol reboiler burner; 125,000 BTU/hr	Out of Service

As indicated in the table, certain emission units are not at this facility and it may be necessary to amend the 2014 ROP Staff Report to remove the items not present onsite, provided there are discussions, verification and concurrence with the company that this is accurate.

There were at least 2 methanol 500 gallon drums located onsite which are exempt per Rule 284(n).

During power outages, K. Bodmer and D. Donnely explained that all gas is sent to the flare and that the gas stream is sampled for H2S every hour in order to keep records of H2S concentrations being sent to the flare.

Inspection: At approximately 11:00 a.m. on July 9, 2014 I met with Ken Bodmer and Dwayne Donnely at the Quantum Resources sweetening plant, following the inspection at the Quantum tank battery. I had given K. Bodmer the "Environmental Inspections: Rights and Responsibilities" brochure during the tank battery inspection; K. Bodmer manages both sites. There were no detectable odors onsite during the inspection. The grounds are kept clean of debris, however much of the site is rusty from the processing of the H2S acid gas.

Emission Limits
Sulfur dioxide emissions are limited to 2,227 lb/day from the flare. Quantum is required to submit monthly reports on SO2 daily emissions from the flare. Upon review of the past year's monthly submittals, Quantum has stayed below their emission limits and is therefore in compliance with those limits.

Process/Operational Restrictions
The permit requires that all waste gas has to be burned in the flare, injected back into productive formation or have equivalent control of H2S and mercaptans. Based on the process description that D. Donnely and K. Bodmer provided, the tail gas from the DMEA stripper is sent either to the flare or is compressed and mixed with water to be injected back into the ground ("productive formation"). The inlet sour gas, when necessary, is sent to the flare only. Quantum is in compliance with this condition.

Conditions 2-4 require that a pilot flame be burning continuously, fueled only by sweet natural gas, and that a system to continuously monitor the flare pilot flame is installed and will shut in the wells if the flare goes out. The flare was operating during the inspection and a continuous monitor digital display is used to monitor the operation of the flare. Quantum is in compliance with these conditions.

Quantum is also required to have H2S sensors installed in every building housing the sweetening process and a visual alarm should be triggered when the H2S concentration is at or about 50 ppm. They are also required to have the sensors automatically begin shutdown of the process inflow gas streams if the H2S concentration is over 100 ppm. K. Bodmer said that there are 4 main sweetening process buildings and each one has an H2S monitor, this includes: 1 in the sweetening process building, 1 in the injection building, 1 in the compressor building. We verified that there was one in compressor engine building. K. Bodmer said the alarm is triggered at 20 ppm – their "low alarm" with a light, and the wells are shut in at 100 ppm "high alarm." Quantum is in compliance with this condition.

Condition 8 requires that a maintenance program be implemented, designed to prevent or mitigate odorous emissions from the storage tanks, vents, and all potential emission points at the source, and approved by the district supervisor. Per previous inspections conducted by Ken Terry, Quantum's daily log book entries, which record information about that status of the plant, has been considered an acceptable maintenance program; however, I recommended that a concrete plan be developed in lieu of the daily logbook. The daily log entries, which I viewed at the natural gas sweetening plant, were adequate for compliance at this time.

Monitoring/Recordkeeping
According to the monthly SO2 emission reports a gas chromatograph is used to determine the H2S concentration in the tail gas stream (H2S that has been removed from the natural gas stream). Quantum is required to record once per hour the concentration of H2S in this gas stream to the flare as well as continuously measure and record the volumetric flow rate of the waste gas to the flare. D. Donnely said that the H2S concentration is recorded more than once per hour. The digital recorder for both gas flow rate and H2S concentration is located in the DMEA stripper building. While onsite, I got readings of 61% and 68% H2S for 9:45 and 10:45 a.m. for that day. The digital recorder also records how much gas was sent to the flare per day. For example, the monitor recorded that on July 8, 2014 0.4 mcf was sent to the flare. Quantum is in compliance with all monitoring requirements

Reporting
Quantum is required to submit monthly SO2 emissions reports. SO2 emissions are to be based on 24 hour averages of the H2S content of the gas sent to the flare. Quantum has submitted all monthly SO2 emissions reports since the last inspection. Quantum takes the chromatograph readings and averages the H2S concentration over a 24-hour period. Quantum is in compliance with this condition.

Annual and semi-annual reports are also required to be submitted. Quantum is in compliance with this condition as well. See the FCE for complete details.

Other Requirements
Quantum is required to have fencing, warning signs or other deterrents to prevent unauthorized individuals from entering the site. There are several "Danger – Poison Gas" signs located at the entrance of the facility (west side) on the fencing as well as on the north side fencing. Verifying that all 4 sides of the fencing have these signs may be a good idea at a future inspection. Quantum is in compliance with this requirement at this time.

An emergency procedures plan is also required per Quantum's ROP. Quantum currently has a "Richfield Emergency Evacuation Plan" that appears to have been updated in 2008 and that, according to K. Bodmer, is currently being updated at Quantum's Texas headquarters. K. Bodmer said that updates will include going house to house in the neighboring area to update residents and their addresses. He said the last time they updated this list was approximately 10 years ago. He said that nothing in the plan will change except for residences.

K. Bodmer said that the fire department comes out to the site once per year to review and approve of Quantum's Richfield Emergency Evacuation Plan. Once the plan has been updated K. Bodmer said that Quantum will provide it to the fire department. Quantum is required to have the approval of the local fire department every year before June 1st. While I didn't ask for documentation that this occurred for 2014, K. Bodmer said the fire department had already visited the site for 2014. The fire department/responders for Quantum that visited the site in 2014, according to K. Bodmer, are the North Branch and Burlington Fire Departments and the Deerfield Township fire department. Quantum is in compliance with this condition.

K. Bodmer confirmed that there have been no abnormal releases at the facility since the last inspection was conducted in 2012.

At this time Quantum Resources Rich Field Gas Plant is in compliance with all state and federal rules and regulations.

NAME Michelle Lydon DATE 8-13-14 SUPERVISOR