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

B719628587

FACILITY: ANR Storage Company - Excelsior Compressor Station		SRN / ID: B7196
LOCATION: 4936 State Rd. NE, KALKASKA		DISTRICT: Gaylord
CITY: KALKASKA		COUNTY: KALKASKA
CONTACT: Brad Stermer , Sr. Environmental Specialist		ACTIVITY DATE: 02/18/2015
STAFF: Bill Rogers	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection, Leak Detection and Repair (LDAR) Inspection, Stack Test, and Record Review		
RESOLVED COMPLAINTS:		

On February 18, 2014, I inspected the ANR Storage Company Excelsior Natural Gas Storage Facility. I was there to observe a BTEX emissions test on the thermal oxidizer exhaust and the first inspection of the thermal oxidizer and its backup condenser under their new Leak Detection and Repair (LDAR) Plan. I conducted a compliance inspection while I was on site. A few days earlier, I had obtained records in order to conduct a record review to complete a Full Compliance Evaluation.

I did not observe any violations during any of these activities.

The records I requested were as required by Renewable Operating Permit MI-ROP-B7196-2012. Mr. Brad Sturmer provided these to me. I did not find any violations in reviewing these records.

I had not announced the compliance inspection, but facility personnel knew I would be on site to observe the stack test and the LDAR Inspection. The compressor and generator engines were not operating at the time of my inspection. The glycol dehydrator was operating. The thermal oxidizer on the glycol dehydrator was operating. The condenser is only to be used as a backup when the thermal oxidizer is not operating, so the condenser was not operating.

Mr. Brad Sturmer provided me with the records I requested. On site, Mr. Ken Price and Mr. Jeff Punjak of ANR, who were there to observe the test and to develop and implement the LDAR Plan, escorted me to the test site. Mr. Price walked through the facility with me when I conducted my inspection.

STACK TEST

The stack test was run by Thomas Schmelter and Dillon King of Bureau Veritas. They had set up a sampling trailer near the glycol dehydrator and thermal oxidizer. The sample method used absorbent tubes with a measured volume of stack exhaust pumped through. Condensate was collected in miniature impinger trains. The impingers were 60 ml size and due to the cold weather were cooled with snow from outside rather than the more common ice cubes. Mr. King kept the impingers well supplied with snow.

Mr. King would recover the condensed water and Buerau Veritas would analyze it for VOCs as well. He told me they had two impinger trains, one for the test and one for the spiked sample.

I arrived during the second of three one-hour runs. The run concluded at 11:05 AM. Mr. King conducted a leak check. The results were 0.0 cubic feet/min at 5 inches Hg.

The leak check before the third run passed at 0.0 cubic feet at 5 inches Hg. Pressure during the test run was far lower than this, under 1 inch Hg.

During the third run I watched Mr. Schmelter conduct a flow check on the thermal oxidizer stack, using a man lift machine as there is no permanent platform for access to the sampling port. He also did something else which I believe to have been a Fyrite combustion gasses check.

The stack test used only one sampling port because the thermal oxidizer stack had only one.

The leak check after the test run passed at 0.0 cubic feet per minute at 5 inches Hg.

During the test ANR personnel recorded total station gas flow and thermal oxidizer temperature each ten minutes. The thermal oxidizer should run at 1400 degrees f or above. During the test it was running at 1471 degrees when I looked at the readouts in the control room.

LEAK DETECTION AND REPAIR

ANR has been implementing a LDAR plan at all their facilities. They are tagging the sampling points with yellow tags for normal points and red tags for "difficult or dangerous to monitor" points. I agree that the red-tagged points I saw were truly difficult or dangerous to reach.

Each facility dehydrator shed has its own unique range of point numbers. Those at the Excelsior Facility start at 250.

Bureau Veritas has tagged the inspection points. Mr. Punjak is developing a process diagram with associated photographs to allow ANR personnel to know in advance all the points they will need to monitor during a LDAR Inspction.

Mr. Schmelter of Bureau Veritas and Mr. Price of ANR conducted the first LDAR Inspection, with Mr. Schmelter sampling and Mr. Price recording the results. Mr. Schmelter used a portable FID. Before the test he did a zero, span, and response test. With zero gas, the FID indicated between 0.02 and -0.02 ppm. Span gas of 493 ppm gave an indication of about 503 ppm. Mr. Schmelter told me the method allows up to 10% error, and a leak would be 500 ppm or greater, so this performance is adequate. The response time for the FID to steady on a reading when challenged with zero or span gas was about 5 seconds or a bit more; Mr. Schmelter said he would assume 10 seconds. The meter would definitely respond before 10 seconds, so that is a safe assumption.

I watched Mr. Schmelter sample all the points inside the dehy building. I noted the two of the points checked. Point 250, background of 9 ppm, highest reading around the flange was 52 ppm; I believe this was the highest value detected. Point 259, background 4 ppm, highest reading 5 ppm.

INSPECTION

GLYCOL DEHYDRATOR, Emission Unit EUEXGLYDEH

Table E-1-1, EUEXGLYDEH, Conditions III.1 and IV.1, require that the dehydrator shall not be operated unless it is equipped with a thermal oxidizer or a condenser. The dehydrator was equipped with both a thermal oxidizer and a condenser. Plant personnel confirm that their practice is to use the thermal oxidizer, but should that fail they would reroute the exhaust from the dehydrator still to the condenser. Condition III.7 allows this, for a limited number of hours in the year.

Condition III.2 requires condenser exhaust temperature to be 100 degrees f or less when using the condenser to control emissions from the dehydrator. In previous inspections ANR personnel told me this is the alarm setpoint for the condenser. The gas withdrawl season is generally cold weather and the condenser is exposed to ambient air, so it would be difficult to exceed an exhaust temperature of 100 degrees f.

Condition III.3 requires thermal oxidizer minimum temperature of 1400 degrees f with a minimum retention time of 0.5 seconds. Mr. Sturmer told me the thermal oxidizers for these facilities send alarms to the operator if temperature drops below 1400 degrees f. During my inspection the readout in the control room indicated 1471 degrees f. At 10:45 AM the readout on the oxidizer itself indicated a stack temperature of 1430 degrees f.

Condition III.4 requires a properly operating glycol separator. This is a phase separator to remove glycol from the gas stream as the gas leaves the dehydrator. It is installed properly.

Condition III.5 requires VOC destruction efficiency to be 95% or greater in the thermal oxidizer. Mr. Sturmer provided calculations showing that the destruction efficiency of the thermal oxidizer should be

well above 95%. A copy of the calculations is attached. These are for a thermal oxidizer at the Blue Lake facility which is identical to the one at Excelsior.

Condition III.6 requires only sweet natural gas fuel for the glycol dehydrator, except that glycol separator emissions may also be burned through the dehydrator burner as a means of reducing air emissions. There was no evidence of any fuel source other than natural gas at this facility. Plant personnel confirmed that the facility stores only commercial quality sweet natural gas, and burns a portion of that gas to power its equipment. This complies with the permit condition.

Condition III.7 requires that the dehydrator not be operated more than 4500 hours per 12 month rolling time period. A Dehydration System Report, attached, indicates the dehy ran 1786 hours using the incinerator and 221 hours using the condenser from March 2014 through February 2015. This complies with the permit condition.

Condition IV.2 requires that the combined capacity of any glycol pumps be no greater than 12.8 gpm. In a previous inspection ANR personnel told me the dehy has two pumps rated at 5 gpm each. The pumps did not appear to have been changed in this inspection.

Condition IV.3 requires a temperature monitor on the thermal oxidizer. I saw the temperature probe for this monitor. I also saw temperature readouts for the thermal oxidizer in the dehy building and in the control room. In previous inspections I was informed there is an alarm that sounds if the temperature drops below 1400 degrees f. On February 11, 2014, we we received a properly certified Control Equipment Alarm Log for July through December 2014. This recorded several alarms, but no violations of Condition IV.3. Where temperature was low during dehydrator operation, it was low enough to trigger the alarm but not low enough to go below 1400 degrees. The alarm did go off several times for temperatures below 1400 degrees, but at this time the equipment was offline or being started, and no natural gas was going through the dehydrator.

Condition IV.4 requires a temperature monitor on the condenser exhaust. I saw the temperature probe for this monitor.

Condition VI.1 requires monitoring alarm events for temperatures outside allowable limits for the control devices on the dehydrator. On February 11, 2015, we received a properly certified Control Equipment Alarm Log which demonstrates this is being done.

Condition VI.2 requires maintaining calculations showing the destruction efficiency of the thermal oxidizer is at least 95%. Mr. Sturmer provided me such calculations for the thermal oxidizer at the original Blue Lake facility. As the thermal oxidizers are the same model, this is sufficient to satisfy the permit condition. A copy of these calculations is attached.

Condition VI.3 requires monitoring hours of operation of the dehydrator for each calendar month and 12 month rolling time period. A Dehydration System Rolling Total Monitoring Report is attached. It meets this requirement.

Condition VI.4 requires recording what control device is in use for the dehy for each calendar day. This information is included in the Monthly Dehydration System Monitoring Report. This report for February and March 2011 is attached.

Condition VI.5 requires recording gas throughput each day. This information is in the Monthly Dehydration System Monitoring Report, attached.

Condition VI.6 requires calculating VOC emissions per day at the end of each calendar month. VOC emissions per day are included in the Monthly Dehydration System Monitoring Report, attached.

Condition VIII.1 requires the condenser stack have a maximum diameter of 2 inches and a minimum height of 20 feet. Condition VIII.2 requires the thermal oxidizer stack have a minimum height of 20 feet; it does not set any diameter for that stack. The stacks appeared to comply with these conditions.

COMPRESSOR ENGINES, Flexible Group FGEXCOMP

Condition VIII.1 and 2 require the compressor engine stacks to hae a maximum diameter of 30 inches and a minimum height of 49.2 feet. The stacks appeared to comply with these conditions.

The engines are Ingersoll Rand 410 KVR models. They appear well maintained. They appear unchanged from previous inspections.

OTHER EQUIPMENT:

The facility has some tanks that are exempt from permitting requirements, including a 400 barrel methanol tank, and a used oil and two brine tanks, each of these three tanks about 300 barrel in capacity. These appear unchanged from previous inspections.

The facility has two natural gas withdrawl heaters rated at 10 million BTU/hour heat input. These appear unchanged from previous inspections.

The facility has two Caterpillar engines used to run electrical generators. They are Cat 6399 models. Their stacks appeared to be approximately 20 feet high and 6 or 8 inches in diameter. They appear unchanged from previous inspections. Two ANR employees independently told me the company is now only using the generators for emergency backup. They are using commercial electricity for all normal operations. In past inspections I was told ANR plans to modify the generator setup so that it will go into operation automatically in the event of a power failure. Plant personnel still say ANR plans to do this, but apparently it hasn't been done yet.

Maintenance appears good.

NAME William J Rogers Jr DATE 2/20/2015 SUPERVISOR