

AIR CO/RN105499271/CO

Texas Commission on Environmental Quality**Investigation Report**CARRIZO OIL & GAS INC
CN601505373**COPY****UTA FACILITY**

RN105499271

Investigation # 844836

Incident # 143039 142816

Investigator: JOHN MALIK

Site Classification

Conducted: 07/27/2010 -- 08/02/2010

SIC Code: 1311

Program(s): AIR NEW SOURCE
PERMITS

Investigation Type : Compliance Investigation

Location : SOUTH OF PECAN STREET AND
MITCHELL STREET INTERSECTION OFF OF
PECAN STREET IN ARLINGTON TEXAS

Additional ID(s) :

Address: ; ,

Activity Type : REGION 04 - DFW METROPLEX
AIR RECON - Air Reconnaissance investigation
AIRCOMPL - Air Complaint Investigation
FI AIR MON - FI AIR MON - Air Focused Investigation for
General Monitoring
GFIR - Air - Gas Find IRPrincipal(s) :

Role	Name
RESPONDENT	CARRIZO OIL & GAS INC

Contact(s) :

Role	Title	Name	Phone
Regulated Entity Contact	PRODUCTION MANAGER	MR DAN PETRI	Work (713) 358-6478
		BARNETT SHALE	

Other Staff Member(s) :

Role	Name
Investigator	XIN RAO
Supervisor	ALYSSA TAYLOR
QA Reviewer	LUKE JONES

Associated Check List

<u>Checklist Name</u>	<u>Unit Name</u>
COMPLAINT INVESTIGATION - AIR	BS CMPL
AIR FOCUSED INVESTIGATION - GENERAL MONITORING	BS CMPL
AIR FOCUSED INVESTIGATION - EQUIPMENT MONITORING	BS CMPL

Investigation Comments :

INTRODUCTION:

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COMPLAINANT INFORMATION:

COMPLAINANT NAME/ADDRESS: See Confidential File (Ref: Complaint Nos. 142816 and 143039).

TIME, DATE, FREQUENCY, DURATION OF THE ODOR: The alleged odor occurred on 7/27/2010 and 08/02/2010.

DESCRIPTION OF THE ALLEGED EFFECTS:

The investigator arrived at the complainant's location at 2:00 PM on July 27, 2010, and met with the complainant. The complainant reiterated that the odors had been detected during the morning hours, which caused a headache. The complainant described the odor as that of burning diesel fuel oil. The investigator remained at the complainant's location until 2:40 PM. No odors were noted.

On August 2, 2010, the investigator arrived at the complainant's location at 2:40 PM. The investigator conducted an odor survey. No odors were noted at the complainant's property or surrounding areas. The complainant was contacted by phone and informed about the results of investigation.

INVESTIGATION INFORMATION:**METEOROLOGICAL DATA OBTAINED WITH AN ANEMOMETER AT THE TIME OF THE INVESTIGATION:**

On July 27, 2010, at 1:04 PM the skies were clear with wind from the west/south west (220 Degrees) at 2 to 3 mph, a temperature of 89 degrees Fahrenheit, and a relative humidity of 57%.

On August 2, 2010, at 2:49 PM the skies were clear with wind from the west at 0.0 to 3.0 mph, a temperature of 102 degrees Fahrenheit, and a relative humidity of 23%. This information was obtained with an anemometer while at the Carrizo UTA Facility.

LOCATION OF THE ODOR: No odor was noted during this investigation.

DESCRIPTION OF THE ODOR: No odor was noted during this investigation.

DESCRIPTION OF THE EFFECTS ON THE INVESTIGATOR:

No odors were noted during this investigation. There were no effects on the investigator.

SOURCE EMISSIONS CONSISTENT WITH THE ALLEGED ODOR?

No odors were noted during this investigation. However, emissions from the facilities at the site would be consistent with the odors alleged by the complainant.

DESCRIPTION OF THE LAND USE IN THE AREA SURROUNDING WHERE THE ODOR WAS DETECTED:

No odor was noted during this investigation. The land use in the areas to the east, northeast, and southeast of the site is primarily residential. Buildings associated with the University of Texas at Arlington are located to the north and west.

DESCRIPTION OF THE TERRAIN FEATURES OF THE AREA:

The area is primarily flat with a slight decrease in elevation immediately to the south.

LOCATION OF THE SOURCE OF THE ODOR:

No odors were noted during this investigation. However, the site is located approximately 600 feet southeast of the intersection of Pecan Street and Mitchell Street in Arlington, Tarrant County.

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SPECIFIC CAUSE OF THE ODOR: No odors were noted during this investigation.

COMPLAINANT LOG NECESSARY/APPROPRIATE? Yes, an odor log and affidavit were left with the complainant during a previous investigation.

Introduction

This investigation was conducted in response to two complaints (Incident No. 142816 and 143039) submitted to the Texas Commission on Environmental Quality (TCEQ) DFW Region on July 27, 2010, at 8:40 AM and August 02, 2010 at 9:35 AM, respectively. In both the complaints, the complainant alleged that there was a strong smell of diesel fumes from the oil and gas (drilling/fracking) facility, which was causing an instant migraine and making them sick. The alleged facility is located approximately 600 feet southeast of the intersection of West Mitchell Street and South Pecan Street in Arlington, Tarrant County. This was an unannounced investigation because it was initiated by a complaint.

On July 27, 2010, Mr. John Malik (Lead) and Ms. Xin Rao, Environmental Investigators ('Investigator') of the Texas Commission on Environmental Quality (TCEQ) Dallas/Fort Worth (DFW) Region office, conducted an Air Quality Complaint (AIR-CMPL) Investigation/GasFindIR (AIR GFIR) Investigation / Air Focused - Monitoring (FI-MON) Investigation at the Carrizo Oil & Gas, Inc. ('Carrizo'), UTA Facility ('regulated entity' or 'site'). At 10:55 AM on July 27, 2010, Mr. Malik called the complainant and informed them that the investigation would be conducted on the same day.

On August 02, 2010, Mr. Malik continued the investigation at the UTA Facility, as a result of the second complaint. At 11:15 AM on August 2, 2010, Mr. Malik called the complainant and informed them that the investigation would be conducted on the same day.

Daily Narrative

On Tuesday, July 27, 2010, the investigators arrived at the UTA Facility at 1:04 PM and started monitoring air for hydrocarbons with the Toxic Vapor Analyzer (TVA) and for carbon monoxide (CO) with the Q-RAE at the gate of the facility, south of the faculty staff parking F-17. The sky was clear; the wind was from WSW (220 degrees). The temperature was 89.7 degrees Fahrenheit and the relative humidity was 57%. No odors were detected. Visible emissions were noted at the time of the investigation; Ms. Rao observed visible emissions from the portable combustion engine exhaust. The opacity of the visible emissions was determined by the U.S. Environmental Protection Agency Test Method 9. The opacity averaged 13% over a six minute time period (Attachment 1, Visible Emission Observation Form), which was within the 30% limit, as specified in 30 Texas Administrative Code 111.111(a)(8)(A).

The GasFind IR Camera (GFIR) was utilized to monitor the site for potential hydrocarbon emissions from the portable combustion engine. Emissions from these operations are expected and appeared to be normal operations.

The investigators conducted a reconnaissance survey around the facility. The survey began at the gate of the facility, south of the faculty staff parking F-17, at 1:30 pm to 1:40 pm (see Attachment - 2 Location A). No odors were detected. Visible emissions were noted at the time of the investigation, which were within the 30% limit, as specified in 30 Texas Administrative Code 111.111(a)(8)(A).

The investigators moved to the intersection of Hosack Street and South Center Street from 1:42 pm to 1:48 pm (see Location B). No odors or visible emissions were noted. The TVA did not detect any concentration of VOC. This observation post was not ideal for viewing the facility with the GFIR due to vegetation.

The investigators proceeded to Location C, which was located west of Center Street and

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approximately 100 feet south of the alleged site from 1:49 pm to 1:55 pm. No odors or visible emissions were noted. The TVA did not detect any concentration of VOC. This observation post was not ideal for viewing the facility with the GFIR due to vegetation and boundary wall. The investigators departed this area at 1:58 pm.

The investigators arrived at the complainant's property at 2:00 PM on July 27, 2010, and met with the complainant. The complainant reiterated that the odors had been detected during the morning hours, which caused a headache. The complainant described the odor as that of burning diesel fuel oil. The investigator then conducted the odor survey at the complainant's property. The skies were clear with wind from the west south west at 2 to 3 mph, the temperature was 89 degrees Fahrenheit, and a relative humidity of 57%. No odors were noted at the complainant's property. A Q-RAE and TVA were used to monitor the ambient air. TVA had readings of -0.23 to 0.0 parts per million (ppm). Due to low battery charge, the Q-Rae started beeping on the west side of the complainant's property and showed oxygen at 14% in air under the carport, which was open from all three sides. As the investigator moved to the open area, the oxygen level went up to 20.9%. The investigator went back again under the carport but the oxygen level stayed at 20.9%. The investigator stayed under the carport for fifteen minutes, but the oxygen level stayed at 20.9%. During this time TVA readings were between - 0.36 ppm to - 0.22 ppm.

The investigators provided the complainant a summa canister and showed the complainant how to take an ambient air sample. The complainant signed the chain of custody and citizen operated evacuated canister procedure form. Summa can number 00437 was given to the complainant at 2:20 PM. The investigators remained at the complainant's location until 2:40 PM.

On Monday August 2, 2010, the investigation continued at the UTA Facility in response to the second complaint, which was filed the same day at 9:35 AM. The complainant informed the TCEQ that the summa canister which was left with the complainant on July 27, 2010, was used at 9:00 am on August 2, 2010, and it was ready to be picked up. Mr. Malik called the complainant and left a phone message that the investigation was scheduled for the same day.

Mr. Malik arrived at the UTA Facility at 2:45 PM on the same day and started monitoring air with the TVA and the V-RAE (a CO monitor) at the gate of the facility, south of the faculty staff parking F-17. The sky was clear; the wind was from W at 0.0 to 3 mph. The temperature was 102 degree Fahrenheit and relative humidity was 23%. The TVA had readings of 0.18 ppm. On the V-RAE CO concentrations were zero ppm. No odors were detected.

The GFIR camera was utilized. Heat sources and potential hydrocarbon emissions from the portable combustion engine, tanks, pipelines and other equipment being used were observed. Emissions from these operations are expected and appeared to be normal operations.

The investigator conducted a reconnaissance survey around the facility. The survey began at the gate of the facility, south of the faculty staff parking F-17, at 2:55 pm to 3:05 pm (see Attachment-2 Location A). No odors were detected. The emissions from the portable combustion engine appeared to be normal operation.

The investigator proceeded to Location C, located west of Center Street and approximately 100 feet south of the alleged site from 3:10 pm to 3:25 pm. No odors or visible emissions were noted. The TVA did not detect any concentration of VOC. CO concentrations were zero ppm on the V-RAE. This observation post was not ideal for viewing the facility with the GFIR due to vegetation and boundary wall.

The investigator moved to the intersection of Hosack Street and South Center Street from 3:27 pm to 3:44 pm (see Location B). Light diesel odor was detected. The wind was from SSW (200 degrees). This location was downwind from the facility. A 30-minute summa sample was collected at the corner of South Center Street and Hosack Street approximately 100 yards north east of the facility. Canister # 00256 and critical orifice CO-51 were utilized. GPS location of the sample was N 32.72641 and W 097.106300. The TVA did not detect any concentration of VOC. This observation

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post was not ideal for viewing the facility with the GFIR due to vegetation.

The investigator arrived at the complainant's property at 5:08 PM on August 2, 2010. The complainant was not home. The investigator then conducted the odor survey at the complainant's property. The skies were clear with wind from the south/southwest at 2 to 3 mph, the temperature was 103 degrees Fahrenheit, and a relative humidity of 20.5%. No odors were noted at the complainant's property. The V-RAE and TVA were used to monitor the ambient air. TVA had readings of 0.18 to 0.0 parts per million (ppm). CO was zero ppm on the V-RAE. The investigator left the property at 5:15 pm.

On Wednesday August 4, 2010, Mr. Malik picked up the summa sample from the complainant to send to the lab for analysis. The complainant included the proper affidavits and chain of custody forms for summa sampling and summa handling. Both summa canister samples were sent to the laboratory in Austin for analysis on August 7, 2010. The laboratory results indicate that no target compounds exceeded an applicable short-term or long-term AMCV. A copy of the results from the summa samples are included in Attachment 4.

In addition to providing the used summa canister, the complainant provided an affidavit alleging health impacts from the site and a copy of written letter from their doctor regarding effects from operations at the site on the complainant. The letter from the doctor was addressed to the TCEQ and was dated June 10, 2010. The original letter was received by the TCEQ DFW Region office on June 14, 2010. The evaluation of the complainant's affidavit and the content of the letter from the doctor is included within the scope of this investigation. A copy of the complainant's affidavit and letter from the doctor are included in the confidential file associated with Incident Number 143039. In the complainant's affidavit, the complainant alleges that nuisance conditions occurred and references the doctor's letter. The complainant states that the letter supports the alleged health effects the complainant has experienced due to exposure of diesel exhaust and other drilling and fracking related chemicals emitted from this site. In the letter from the doctor, the doctor notes that since November 23, 2007, the complainant has experienced health effects, including exacerbation of asthma, frequent migraines, increased fatigue, elevated white blood cell count, nausea, decreased appetite, aching joints, flu-like symptoms, low temperature, sleep disturbance, elevated blood pressure, nasal congestion, coughing, airway spasms, and shortness of breath. It should be noted that in the seventeen years prior to November 23, 2007, the letter indicates that the complainant's condition was stable. The doctor further indicates that the complainant's illness has been steadily progressing. During December of 2009, blood tests detected volatile solvents in the complainant's blood, including ethyl benzene, xylene, hexane, 2-methylpentane, and 3-methylpentane.

The doctor notes that there is nothing in the complainant's work experience or other aspects of life, which would support the detection of these volatile solvents. It should be noted that the results of air samples taken with summa canisters taken downwind of this site by TCEQ investigators during past investigations have revealed concentrations of the compounds which were detected in the complainant's blood although the concentrations of those specific compounds did not exceed an applicable short-term or long-term Air Monitoring Comparison Value (AMCV). In summary, the letter indicates that it is of the doctor's medical opinion, that the complainant's medical history, laboratory results, progression of illness, and inability to recover as discussed above, is related to the constant and continuous exposure to diesel exhaust fumes and other chemicals associated with the oil and gas drilling, fracking, and compression activities. No other potential sources of the compounds have been located in the area.

In addition, the complainant gave their doctor permission to release their medical records to TCEQ. These records along with a Business Records Affidavit are included in the confidential file associated with Incident Number 143039.

30 Texas Administrative Code (TAC) 101.4 prohibits the discharge from any source whatsoever one or more air contaminants or combinations thereof, in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare. According to the

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Texas Commission on Environmental Quality Interoffice Memorandum, "Nuisance Violations", dated October 7, 2008, for instances of adverse effects to human health requiring medical or other professional treatment, "if the complainant alleges his/her health was significantly impacted by an air contamination, a nuisance condition can be substantiated with documentation from a health professional indicating the individual was adversely impacted by the alleged contaminant. The health professional must be a certified/authorized to diagnose health conditions and prescribe medication (e.g. doctor, nurse practitioner, physician's assistant, etc.)". Therefore, based on the complainant's allegations in the affidavit and the documentation provided in the letter from the doctor, a violation of 30 TAC §101.4 will be cited.

Exit Interview

Mr. Dan Petri, Carrizo Manager of Compliance and ES&H, was verbally informed of the results of the investigation on September 30, 2010. Additionally, a written exit interview was provided via email on September 30, 2010, and is included in Attachment 3.

GENERAL FACILITY AND PROCESS INFORMATION:**Process Description**

The site is a natural gas drilling site and fracking site. Facilities at the site consist of portable fracking engines, six gas wells, six separators, six produced water storage tanks, and portable sand cans. Emissions from the produced water storage tanks are authorized under 30 Texas Administrative Code (TAC) §106.352.

BACKGROUND:

The regulated entity has a compliance history rating of 3.01 and a performance classification of average by default. The customer has a compliance history rating of 3.01 and a performance classification of average.

Monitoring Results:

During investigations, monitoring results with the TVA have indicated the following:

January 5, 2010 - maximum TVA reading of 15 ppm

February 27, 2010 - maximum TVA reading of 3 ppm

March 25, 2010 - average TVA readings were 0.5 ppm with a maximum of 5.8 ppm

Summa sample results from November 9, 2009, through August 2, 2010, did not show any target compounds exceeding an applicable short-term or long-term AMCV (See ACL #'s 091112, 100106, 100117, 100124, 100130, 100332, 100807, and 100808 in Attachment 4). However, these sample results do indicate that compounds were found to be present on or near the complainant's property. Specifically, ethylbenzene, m & p-xylene, 2-methylpentane, and 3-methylpentane were detected during summa canister sampling and were also found to be present in the complainant's blood based on medical documentation provided by the complainant.

No other potential sources of the compounds listed above have been located in the area so the likely source appears to be the Carrizo UTA Facility.

Current Enforcement Actions

One violation is being alleged for the failure to prevent the discharge from any source whatsoever one or more air contaminants or combinations thereof, in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare. Details regarding the alleged violation can be found below. The alleged violation is being handled as a Category A.10 violation in accordance with the Texas Commission on Environmental Quality, Enforcement Initiation Criteria (EIC) Revision No 12, effective July 1, 2008.

Agreed Orders, Court Orders, and Other Compliance Agreements

None.

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Prior Enforcement Issues

There has been no air quality related prior enforcement issues associated with this regulated entity in the five years prior to this investigation.

Complaints

A review of the region files indicates that twenty-six previous odor complaints have been filed against this regulated entity in the five years prior to this investigation. Nuisance conditions were not confirmed during the investigations associated with these complaints. For additional information regarding these complaints, reference Incident Numbers 113212, 113213, 113700, 114381, 114518, 115484, 117483, 117555, 105236, 131069, 126331, 123227, 112603, 112615, 112616, 112928, 112931, 113208, 106748, 107676, 107677, 133958, 134687, 134729, 134787, and 135503 and Investigation Numbers 781225, 776657, 765070, 764415, 745546, 737165, 737166, 737167, 682210, 737164, 680370, 794538, 794341, 794314, and 790790.

ADDITIONAL INFORMATION:**Conclusions and Recommendations**

A Notice of Enforcement (NOE) letter will be sent to Carrizo and a copy of the investigation report will be sent to the complainant.

Additional Issues

None noted during this investigation.

NOE Date: 10/5/2010

**OUTSTANDING ALLEGED VIOLATION(S)
ASSOCIATED TO A NOTICE OF ENFORCEMENT**

Track No: 409547

**Compliance Due Date: To Be Determined
Violation Start Date: Unknown**

30 TAC Chapter 101.4

5C THSC Chapter 382.085(a)

5C THSC Chapter 382.085(b)

Alleged Violation:

Investigation: 844836

Comment Date: 10/01/2010

Failure to comply with 30 Texas Administrative Code (TAC) 101.4 which prohibits the discharge from any source whatsoever one or more air contaminants or combinations thereof, in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare.

According to the Texas Commission on Environmental Quality Interoffice Memorandum, "Nuisance Violations", dated October 7, 2008, for instances of adverse effects to human health requiring medical or other professional treatment, "if the complainant alleges his/her health was significantly impacted by an air contamination, a nuisance condition can be substantiated with documentation from a health professional indicating the individual was adversely impacted by the alleged contaminant. The health professional must be a certified/authorized to diagnose health conditions and prescribe medication (e.g. doctor, nurse practitioner, physician's assistant, etc.)". The complainant provided an affidavit alleging health impacts from the site and a copy of written letter from their doctor regarding effects from operations at the site on the complainant. The letter from the doctor was addressed to the TCEQ and was dated June 10, 2010. In the complainant's affidavit, the complainant alleges that nuisance conditions occurred and references the doctor's letter. The complainant states that the letter supports the alleged health effects the complainant has experienced due to exposure of diesel exhaust and other drilling and fracking related chemicals emitted from this site. In the letter from the doctor, the doctor notes that since

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November 23, 2007, the complainant has experienced health effects, including exacerbation of asthma, frequent migraines, increased fatigue, elevated white blood cell count, nausea, decreased appetite, aching joints, flu-like symptoms, low temperature, sleep disturbance, elevated blood pressure, nasal congestion, coughing, airway spasms, and shortness of breath. It should be noted that in the seventeen years prior to November 23, 2007, the letter indicates that the complainant's condition was stable. The doctor further indicates that the complainant's illness has been steadily progressing. During December of 2009, blood tests detected volatile solvents in the complainant's blood, including ethyl benzene, xylene, hexane, 2-methylpentane, and 3-methylpentane.

Signed 
Environmental Investigator

Date 10/11/2010

Signed 
Supervisor

Date 10-1-10**Attachments: (in order of final report submittal)**

- Enforcement Action Request (EAR)
 Letter to Facility (specify type): NOE
 Investigation Report
 4 Sample Analysis Results
 Manifests
 NOR

- Maps, Plans, Sketches
 Photographs
 Correspondence from the facility
 Other (specify):

- 1- Visible Emission Observation Form
2- Odor Survey Map
3- Exit Interview

Confidential Information - see
 confidential file with
 Incident # 143039