

Barnett Shale Formation Projects Phase I and Phase II

In response to a request by Agency executive management and the TCEQ Region 4 office, the Mobile Monitoring Team deployed to the Dallas/Fort Worth area to the Barnett Shale Formation Phase I Project from August 25 – 28, 2009. As part of a multi-phase project, this trip was intended to assess 12 specific sites perceived to be associated with citizen odor complaints. In addition, it was used to pinpoint multiple residential areas that are located adjacent to potential emissions sources including natural gas compressor stations and oil/natural gas gathering facilities.

This information was used to focus Agency efforts during the Phase II Project from October 9 – 16, 2009, by providing information to help evaluate the impact of Barnett Shale area emissions on air quality in this region as related to ozone measurements and potential public exposure to air toxic compounds by specific source and general air shed monitoring. Though only a limited sub-set, Barnett Shale emission sources associated with oil/gas production and processing included: well installation and rigs, well-heads, compressor stations, gathering facilities including tank batteries, salt-water disposal facilities, and processing/production facilities. As with Phase I, site assessments were conducted in five individual counties that are located in the DFW area including: Tarrant, Wise, Denton, Parker, and Johnson Counties.

Phase I Observations and Results Included:

- Thirty-one GasFindIR (infrared) images were recorded that documented specific emission sources at a variety of companies and locations. Of 12 individual emission sites request by the TCEQ Region 4 office, specific emission sources were identified in 11 cases (nothing at goat farm area of Chesapeake Energy Shady Oaks 1H, 2H, 3H).
- Specific industries and locations identified included: Enbridge G & P North Texas LP Weatherford Plant - processing column, Crosstex Energy Services – Silver Creek Gas Plant – flare, Devon Alliston G.U. #1 Tinsley neighborhood gathering facility – tank hatch, Range Production Co., City of Denton airport tank battery – tank hatch and vents, Spindletop Oil/Gas tank battery in Ponder – vents, Chesapeake Oil/Gas tank battery in Grapevine - scrubber and vents, Carrizo Oil & Gas UTA Facility – vent stack, ETC Falcon Compressor Station tank battery – tank hatch, Burlington Resources Oil & Gas Company Wise County Poor Farm Gas Unit #1-B tank battery in Decatur – vent and tank hatch, Spindletop Oil & Gas OLEX US #6 tank battery – vents, Crosstex Energy Treating Services Blue Mound Compressor Station – storage tanks and vent stacks, Chesapeake Energy tank battery in Fort Worth – tank hatch, Devon Energy LP S.H. Griffin Estate 19H & 16 in Dish – tank hatches and controller boxes, EOG Resources Bowerman Canter Unit tank battery between Cresson and Godley – vent, Devon Energy LP S.H. Griffin Estate Well #4 – controller boxes, two Chesapeake Energy facility tank batteries between Cresson and Godley – vents, pipe fittings and controller boxes, Devon Energy Company Justin Compressor Station – vent stack and tank battery, Crosstex Energy Services Justin Devon Plant – unlit flare, XT0 Energy USA Trust A1H tank battery in Denton County – vents, and Targa North Texas LP Bryan Compressor Station tank battery – roof-top and vent.
- One IR image and a canister sample were collected downwind of the Devon Energy, Glen P. Shoop “F” 10H, 15H, and 16H Lease outside of Decatur. Canister results resulted in low percentage levels including benzene at 15 parts per million by volume (ppmv) were detected from the open-ended pipe at the natural gas wellhead.
- One IR image and a canister were collected downwind of the Crosstex North Texas Gathering LP Kemp Compressor Station tank battery outside of Weatherford. Canister findings included a strong presence of highly reactive volatile organic compounds (HRVOCs) and 24 parts per billion by volume (ppbv) of benzene.
- Two IR images and canister samples were collected downwind of Salty Disposal’s Well outside of Springtown, Texas. A disposal facility for oil/gas gathering that included a waste trough and tank battery, results included a variety of VOCs including 93 ppbv of benzene and 42 ppbv of styrene.
- Three IR images and two canister samples were collected downwind of the Crosstex North Texas Gathering Facility outside of Cleburne. A variety of HRVOCs was detected.

Phase II Observations and Results Included:

- Thirty-three GasFindIR images were recorded that documented specific emission sources at a variety of companies and locations. Specific industries and locations identified included: Carrizo Oil & Gas UTA facility – vent stack, Crosstex Energy Services Devon Plant – unlit flare (canisters also), Decatur tank battery – vents, Crosstex North Texas Gathering LP Kemp Compressor Station tank battery outside Weatherford – tank hatches, Enbridge G&P North Texas LP Weatherford Plant - amine column and dehydrator unit, HRB Operating Company, Incorporated, McKissick Unit #1, Boonsville (Bend Congl. Gas) tank battery outside Decatur - tank roof-top, Crosstex Energy Treating Services Blue Mound Compressor Station – multiple storage tanks and vent stacks (canisters also), ETC Gas Plant in Godley – flares, Chesapeake Energy Little Hoss Compressor Station in Godley tank battery – vents, Sauder Mgmt. Co. Compressor Station Tank Battery outside Cleburne – hatch and vents, Bridgeport Tank Truckers (BTT), Coleman #2 Lease just south of Bridgeport – tanks and truck unloading, Quicksilver Resources T & P Unit tank battery outside Granbury – vents (canister also), Day Lease Central Tank Battery in Blue Mound – hatch (canister also), and Crosstex Energy Services White Settlement Compressor Station tank battery outside Weatherford – vent (canister also).
 - RTGC and NOx monitoring was conducted downwind of the Enbridge Springtown Plant located along FM 51. The maximum NOx was 83 ppbv, while maximum RTGC concentrations included: 7200 ppbv of ethane; 7100 ppbv of propane; 1700 ppbv of isobutane; 4500 ppbv of n-butane, 700 ppbv of cyclohexane, 100 ppbv of n-hexane, and 23 ppbv of benzene. Several canisters samples were also collected and IR images show tank battery emissions, amine vessel and fitting, and hot process emissions.
 - RTGC monitoring continued downwind of a tank battery at the Arrow Production, Stroud Lease in Springtown. Ethane and propane were detected at the 3-7 ppmv levels and toluene was measured in the 20 ppbv range. IR images show tank battery emissions from vents and canisters were collected.
 - RTGC monitoring was conducted downwind of the Devon Energy Company LP, Justin Compressor Station located just west of Dish and maximum RTGC results included 19 ppmv of ethane, 3.1 ppmv of propane, and 570 ppbv of isobutane. IR images and canisters were also collected showing vent stack and tank emissions.
 - RTGC monitoring was conducted downwind of the Targa North Texas LP, Bryan Compressor Station outside of Decatur. Maximum RTGC concentrations at the Targa facility included: 1.1 ppmv of benzene, 2.7 ppmv of isopentane, 2.5 ppmv of n-pentane, 850 ppbv of toluene, and approximately 150 of ethylbenzene. Canister samples were collected to verify these concentrations. IR images were also recorded. We were approached by a complainant at the Targa facility, and she talked of continuing odors in the area. Please note that these elevated benzene concentrations were detected approximately 100 yards from two occupied homes.
 - As requested by CEO, NOx monitoring was conducted near the Eagle Mountain CAM station, and the area between Pelican Bay and Saginaw was also monitored. Trace concentrations were detected.
 - RTGC and NOx monitoring were conducted downwind of the Chesapeake Energy facility located on East 1st street. During this monitoring, Tony Walker, Terry Clawson, and Tim Doty conducted an interview with the Dallas Morning News. Little was detected during this event.
 - RTGC and NOx monitoring was conducted downwind of the Crosstex compressor station on Blue Mound Road West. Few VOCs were detected, though one peak of 60 ppbv of NOx was obtained.
 - NOx surveying/monitoring was also conducted around the Keller and Eagle Mountain CAM station. No data was collected during the survey around the Keller station due to the physical layout of the area and the prevalent wind direction at the time. Eagle Mountain results included NOx measurements in the 40 -70 ppbv range.
 - In response to several tank batteries and a rig, RTGC residential air shed sampling was conducted in the Sendera Ranch neighborhood located on the north side of FM 718. Nothing was detected.
 - Several other independent canister samples were also collected of a variety of sources including: tank battery at Kenny Renshaw Baseball Field in Decatur, processing plant in Bridgeport, tank battery in Haslett, tank batteries in Blue Mound area, Eagle Mountain XTO Facility, Fort Worth IH 35W active drilling rig, Dish tank battery, and Johnson County Crosstex Compressor Station north of Cleburne, ETC Godley Gas Plant, and the Bosque Disposal System facility outside Cleburne.
 - Various geographic areas were studied for possible inclusion on future monitoring trips including but not limited to: Ponder, Blue Mound, Springtown, Dish, Grapevine, Justin, Arlington, Weatherford, Cleburne, Decatur, Keller, Rhome, Avondale, and Denton.
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