

Pioneer Natural Resources

TEEA 2014 Winner: Pollution Prevention



Following the nearly century-old trend of oil and gas exploration in the Texas Panhandle, Pioneer Natural Resources operates more than 675 flowing wells and more than 800 miles of gas-gathering pipeline in the West Panhandle gas field north of Amarillo, Texas. Over 10 years ago, Pioneer's Mid-Continent team began researching, designing, and testing several ways to reduce air emissions from its pigging operations.

Pigging is a standard industry process involving running a spherical ball, called a pig, through a pipeline to sweep out accumulated produced liquids and debris. Loading and retrieving pigs into and from a pipeline often requires opening several hatches and valves that allow small amounts of natural gas to vent into the atmosphere. Demonstrating its commitment to reducing air quality impacts, Pioneer devised a three-tiered approach toward improving its operations and reduced pigging emissions by 90 percent.

First, larger pig launching and receiving barrels were installed that hold up to 14 pigs each. The industry standard is to load and run only one pig at a time, forcing hatches to be opened both for the launching and receiving barrels at least once per day. With this new technique for pig launching and receiving, Pioneer opens hatches at most twice per week, reducing the chances for emissions to escape.

Next, the issue of depressurizing pig barrels, which has traditionally involved opening controlled pressure valves that vent natural gas emissions, was addressed by installing gas blowdown lines to reroute flow to nearby compressor stations and reduce the pressure in a barrel from about 100 pounds of pressure to about 1 pound.

Pioneer's third initiative was to install suction drain lines that route accumulated natural gas liquids back into production. Industry practice has been to drain these liquids into an open-air tub that

allows emission of vapors into the air. By rerouting this material back into its processes, Pioneer is reducing emissions and waste at the same time.

The innovative approaches Pioneer has taken with its pigging operations are a model for the oil and gas industry, and the company is applying its new ideas to pigging in the Eagle Ford Shale as well. Pioneer's Panhandle pigging operations are proof that taking a new, more environmentally conscious look at a traditional way of operating can yield great results.