# Project Application Sheet No: 0123

# *SureSense Provides Major Savings in Anti Foam Usage at Access Midstream Rio Vista Site in Texas*

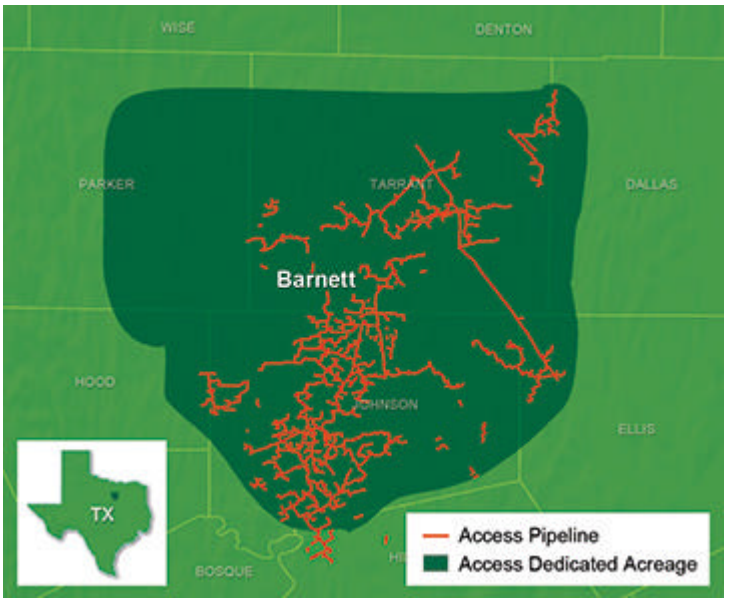
Chesapeake Energy Corporation is the second-largest producer of natural gas and the 11th largest producer of oil and natural gas liquids in the USA. Founded in 1989 and headquartered in Oklahoma City, Chesapeake's operations are focused on discovering and developing its large and geographically diverse resource base of unconventional natural gas and oil assets onshore in the USA.

They currently hold leading positions in the Eagle Ford, Utica, Granite Wash, Cleveland, Tonkawa, Mississippi Lime and Niobrara unconventional liquids fields and the Marcellus, Haynesville, Bossier and Barnett unconventional natural gas shale fields. As one of the first to recognize the vast potential of shale resources unlocked by advances in horizontal drilling techniques, Chesapeake has grown to become the most active driller of onshore wells in the country.

The company also owns substantial marketing and oilfield services businesses through its subsidiaries Chesapeake Energy Marketing Inc, Chesapeake Oilfield Services, L.L.C and Chesapeake Midstream Partners which is now known as Access Midstream Partners since 2012 when Access acquired all the midstream assets of Chesapeake Midstream Partners for approximately US$2B.

Access Midstream in the Barnett Shale is among the most significant onshore natural gas fields in North America and the largest in Texas. Access Midstream's acreage dedication from Chesapeake Energy Corporation in the Barnett Shale region is located primarily in Johnson and Tarrant counties, Texas, which are characterized by thicker natural gas-bearing zones resulting in higher initial production rates. Access believe that the relatively low finding and development costs associated with drilling in the Barnett Shale will lead to extensive future development with Chesapeake, estimating an inventory in excess of 4,000 potential gross drilling locations within their dedicated acreage. Their Barnett Shale gathering systems are comprised of approximately 860 miles of gathering pipeline with approximately 970 million cubic feet (Mmcf/d) of daily throughput using more than 150,000 horsepower of compression. It was at one of Access Midstream's gas gathering and compression sites located at Rio Vista in the heart of the Barnett Shale Gas field seven miles south of Cleburne, and twenty-five miles southwest of Dallas in Johnson County Texas that they were encountering severe foaming problems on the 12" 50 Bar Shale Gas inlet pipe line.

Aqueous foam in Shale Gas pipe lines is caused by the mixture of water and other aqueous chemicals which are injected into the drill hole at high pressure during the Induced Hydraulic Fracturing process known as Fracking. The additional pressure caused by the fracking process forces fluids known as "Produced Water" back to the surface via Cap Strings, special tubes inserted in to the drill hole, where it is piped to the separator. It is here that the foam needs to be detected and Antifoam injected into the pipe line before foam can get into the separators or worse still further downstream into pumps and compressors causing serious damage such as cavitation and loss of production.




Access Operations in the Barnett Shale Gas Field

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To prevent any chance of foam from getting into the inlet separator at the Rio Vista site they dosed anti foaming chemical continuously into the inlet pipe line approximately 12'(3.5m) up stream of the inlet separator on a 24/7 basis. This resulted in the use of approximately 40 gallons of anti foaming chemical per day at US$16 per gallon which is US$640 per day or US$233.6k per year on one site so a solution needed to be found. Enter Hycontrol with their range of foam detection measurement and control systems and a SureSense system was selected for the application.

The SureSense operates by passing a small alternating current through the foam being detected, and uses this to measure impedance. The impedance of the material being sensed is used to determine when foam is present. The SureSense is designed with two electrodes. One is used to sense foam while the other is designed to supply any leakage currents which pass along the body of the sensor. If the sensor is covered with a fouling layer deposited on it, then a leakage current must pass through that layer and down to earth. This leakage may be measure as part of the sensing current and consequently cause false readings. In the case of serious fouling this could cause a false alarm and an unnecessary intervention to the process. In the Hycontrol design the guard electrode supplies all the leakage current leaving the sense electrode to sense only foam. The guard electrode effectively isolates the sensor from the interference caused by fouling. This gives the sensor the ability to continue working reliably even in conditions of extreme fouling. The controller energizes the sensor and processes the measured data. It discriminates between foam spurious events such as splashing. It also determines when foam is present and signals to a process controller or alarm that foam has been detected. Various output interfaces are available including volt free contact digital output relays and 4/20 mA analogue output.

Solar Panel Field Installation at Rio Vista

Field Mounted SureSense Controller at Rio Vista


Anti Foam Dosing Skid & Pump at Rio Vista

A 24VDC SureSense Wall mount version was installed in a GRP field enclosure powered by a solar panel system. The probe was installed on the top of the 12" diameter inlet pipe line with an insertion length of 11". The system was then run for three months under close evaluation and the results were amazing. Scott Norris, Access Midstream Operations Foreman at Rio Vista, said this about the SureSense system;

"*The results were unbelievable. We have reduced our antifoam usage by 98%. The dosing pump used to run 24/7. Since we installed the SureSense system the dosing pump is running on average only 23 minutes per week which will save us over US$200k per year in antifoam chemicals which is amazing. We will definitely be using more SureSense systems from Hycontrol*".

If you have midstream operations in your area make sure you give them a call and introduce them to the Hycontrol Foam Control systems.