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Gas Processing Plants reduce the heating content and lower the hydrocarbon dew point by extracting various Natural Gas Liquids (NGLs) from the unprocessed gas. These are hydrocarbon compounds that may be in a gaseous state in the unprocessed gas, but that condense or “fall out” into liquids during the Processing operations. This Processing operation involves subjecting the gas to extremely cold temperatures to draw out the Natural Gas Liquids. There are different technological types of Gas Processing Plants, including refrigeration plants, and turbo cryogenic expander plants. Some types of plants can remove higher amounts of Natural Gas Liquids than others.

Natural gas, after processing and in its pure state, is Methane, also known as C1, or “residue gas”. The processed “residue gas” can usually be sold into a Market Pipeline at the plant tailgate.

Natural Gas Liquids, which are recovered during Gas Processing, are in ascending order Ethane (C2), Propane (C3) Iso Butane (IC4) Normal Butane (NC4) Pentanes (C5) and Hexanes (C6). The plant produces a mixture of the above liquids (C2 through C6), typically in a combined form, known as “raw mix” or “Y Grade”. In order to separate this Y Grade mix of C2 to C6, into their separate components, the liquids must be “fractionated”. This can be done on the location of the Gas Processing Plant, if a fractionator is present. However, much of Colorado’s “Y Grade mix” is transported by liquids pipelines to remote fractionators where this service is provided. Typical

destinations for fractionation of Colorado Natural Gas Liquids are fractionators in Conway, KS, Hobbs, NM and Mt. Belvieu, TX.

But, remember there are financial benefits to gas processing. The Natural Gas Liquids are far more valuable in liquid form than they were in the gaseous state. In some cases, the value of an MMBTU of liquids can be three four, or more times higher than an MMBTU of residue gas. And in many Colorado producing areas, as much as 30% of the wellhead gas volume can be converted to valuable Natural Gas Liquids. Although the financial benefit of Gas Processing varies by price and gas quality, I have seen examples where the total value of a well’s monthly production was almost doubled.

Although Gas Processing Plants are expensive to build and operate, the economic benefit for both the gas producing company and the Gas Plant operator are usually quite positive. But, as a royalty owner, how do you fit into this equation? Do you share in the benefits, and/or the costs? We will discuss this next month, when the subject will be Gas Gathering and Processing Agreements.

Donald Phend is a Certified Public Accountant licensed in Colorado, with over 35 years of experience in the oil and gas field. A significant portion of his practice is devoted to oil and gas issues, including taxation, transaction structuring, and litigation support and expert witness testimony in oil and gas cases. He serves as a director and treasurer of CAMRO. Comments, questions, and suggestions for future columns are welcome. Please feel free to contact him at phendcpa@aol.com.

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Protecting Our Property Rights - Protecting Our Future

Natural Gas Processing Issues for Royalty Owners

Part 1 The physical aspects of gas processing.

This is the first part in a series of columns where we will discuss what goes into calculating the amount of royalty payment that you receive for natural gas produced in Colorado. This segment will discuss the requirements for natural gas to be processed, and the actual processing operation. Future columns will discuss the types of gas processing agreements that are common in Colorado, and the possible costs, deductions, and losses that might possibly (but not always) be charged against royalty owners net payments.

First, the oil and gas industry is full of technical acronyms. It is important to know what these are, because you may encounter them referenced in conversation and correspondence related to your royalty interest. However, it is frustrating to have to continually refer back through the body of a document to refresh your memory as to the meaning of dozens of alphabet soup initials. Therefore, when I initially mentioning such a term, I will give any common acronyms, but will continue to refer to the concept by its full name. I will also continue to capitalize these specific terms to provide an easier reference.

I often receive requests from royalty owners asking me to “look at” their royalty check, and tell them if I think they are being paid properly. Unfortunately, the information on most royalty checks is just the tip of the iceberg. It may (or may not) meet statutory or legal requirements for disclosure to royalty owners, but it does not begin to reveal how your payment was actually calculated.

In Colorado, the physical state of Natural Gas as it emerges from the wellhead is not in useable form, except in rare and unusual cases. It requires certain processes to be performed to it, in order to put it in a state where it can be sold, and ultimately used by a consumer.

At the very least, the gas needs to be Gathered from individual wellheads, and moved to a common, centralized point, where it can be Compressed and injected into a Market Pipeline. Often this gas also requires Dehydration, to remove water vapor content that is present.

This service is commonly referred to as “Gathering, Dehydration and Compression” (“GDP”, if you like acronyms). Market Pipelines are a regulated industry, and require gas entering their system to meet certain specific requirements. First, the gas needs to be “Gathered” from individual wells, and moved to a common point where it can enter a market pipeline. This service is performed by a “Gathering System”, typically a network of low pressure pipes connected to each individual well in a geographic area, and terminating in a common area which contains a compressor and an inlet to a market pipeline.

2017 Colorado Legislature

CAMRO is currently monitoring 7 bills of interest to royalty owners and industry .

HB17-1016 Concerning the ability of an urban renewal authority to exclude the valuation attributable to the extraction of mineral resources located within an urban renewal area from the total amount of taxable property subject to division for the purpose of financing urban renewal projects.

HB17-1047 Concerning the scheduled repeal of reports by the department of local affairs to the general assembly.

HB17-1124 Concerning a requirement that a local government that interferes with oil and gas operations compensate persons damaged by the interference.

HB17-1141 Concerning the malicious deprivation of constitutional rights by a federal employee related to public lands.

SB17-014 Concerning a prohibition against the imposition of inspection requirements for underground petroleum storage tanks or the charging of inspection fees for the inspection of underground petroleum storage tanks by a local government.

Second, the water content must be below a minimum percentage, in order to prevent corrosion in the pipeline, as well as to be useable to the consumer. This “Dehydration” service may be performed by a dehydrator unit at a wellhead, or somewhere else in the gathering system.

Third, it needs to be Compressed to the Market Pipeline pressure, which is usually far higher than most wells produce on their own. Compressors are expensive pieces of equipment, and it therefore makes sense to use one compressor near the inlet of a Market Pipeline, so it can serve multiple wells. Typically, the pressure in the Market Pipeline is far higher than the pressure of the Gathering System, so compression is required to move the gas into the Market Pipeline.

As an interesting side note, these compressors are powered by large engines, often fueled by some of the same gas they are compressing. An important question for royalty owners is “am I getting paid my royalty on the gas used by the compressor”? We will address this issue in a future column.

Additionally, the gas from the wellhead may contain impurities, such as carbon dioxide (CO2) or hydrogen sulphide (H2S). In order to meet Market Pipeline specifications, the percentage of these impurities must be reduced to an acceptable level. This process is commonly known as Treating. It can be done using an “amine unit” near the well, or at a Gas Processing Plant (discussed in more detail later.)

Finally, the “heating content” of the gas must fall within a narrowly defined range. Much of the gas produced in Colorado is too “hot” for Market Pipeline specifications. In this case, the basic measure of gas volume, the MCF (Thousand Cubic Feet – the gas contained in a 10’ by 10’ by 10’ cube at a standard temperature and pressure) has too much heating energy. A good analogy is that of a pine log versus an oak log in your fireplace. They may be the same physical size, but burning the oak log will put more heat into your home.

The actual measure of heat in natural gas is usually measured by the Million British Thermal Units (MMBTU). A British Thermal Unit is the amount of energy needed to raise one pound of water one degree Fahrenheit. Therefore, one million British Thermal Units will raise the temperature of one million pounds of water by one degree. (The terms

MCF and MMBTU are in such common usage, that I will disregard my previous statements about not using acronyms.) Just remember that when you are buying an MCF, you are buying a specified volume of gas, and when you buy an MMBTU you are buying a specific amount of heat. They are not necessarily on a 1 to 1 ratio.

As mentioned above, much of Colorado’s gas has a heating content too high for pipeline specifications. For example, much of the gas in the Denver Julesburg Basin East of Denver has a ratio of between 1.25 to 1.30 MMBTU per MCF. Gas in the Pisceance Basin in Western Colorado often has gas in the range of 1.15 to 1.25 MMBTU per MCF.

Pipelines have a federally regulated requirement for the heating content of gas. For example, Colorado Interstate Gas Company, LLC, recently issued the following standard for some of its gas:

Shipper warrants that all Gas Tendered will have a Gross Heating Value of not more than 1,235 Btu's nor less than 968 Btu's per cubic foot at a pressure of 14.73 p.s.i.a. and a temperature of 60 degrees Fahrenheit.

In addition, the Market Pipeline requires that gas meet a “hydrocarbon dew point” standard to enter the pipeline. The hydrocarbon dew point is the temperature at which some of the gas will change form from a gaseous state to a liquid state. This is required by the Market Pipeline because they do not want liquids condensing in their line, which could cause operational problems. The same Colorado Interstate Gas Company, LLC hydrocarbon dew point standard reads:

Shipper warrants that the hydrocarbon dew point of all Gas Tendered will not exceed a temperature of 25 degrees Fahrenheit at any pressure between 100 p.s.i.a. and 1,480 p.s.i.a. as calculated from the Gas composition.

A solution to these dual “problems” of high heating content and hydrocarbon dew point temperatures is to have the gas processed in a Gas Processing Plant. These Gas Processing Plants may be owned by the same company that operates wells, however many companies outsource this procedure to third party companies, often called Midstream Companies.

However, the need for Gas Processing is not necessarily a problem – it can yield significant financial benefits.

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2017 Conference and Annual Meeting.
June 23-24 2017

Pinehurst Country club
6255 W. Quincy Ave.
Denver CO 80235

Early Registration (ends April 10) 2017

Member \$100.00
Non Member \$200.00

Registration April 11 to May 31 2017

Member \$125.00
Non Member \$225.00

Late Registration ,ends June 19 2017

Member \$150.00
Non Member \$250.00

Non member registration includes 1 year membership to CAMRO

Room Reservations
Hyatt Regency Hotel - Belmar
7310 Alaska Dr. Lakewood, CO 80226
Phone (303) 922-2511

Rate \$142-\$162 per night will apply through May 23, 2017 for the nights of June 23-24 2017

Call the hotel directly and ask for CAMRO room block, or online at CAMRO.us/events and click on Room Reservations.

Conference Coordinators

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To Register:

Online at CAMRO.us

By telephone call Cristy or Debra

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Make check payable to CAMRO and mail to:

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SB17-035 Concerning tampering with equipment associated with oil and gas gathering operations.

SB17-105 Concerning consumers' right to know their electric utility charges by requiring investor-owned electric utilities to provide their customers with a comprehensive breakdown of cost on their monthly bills.

At the Federal Level:

House majority leader Kevin McCarthy reports the following;

Summary

The House will use the Congressional Review Act to overturn the Bureau of Land Management Planning 2.0 rule, which was intended to improve BLM’s ability to administer public lands. In reality, this power grab centralizes control in the federal government over large swaths of land, especially out west.

The rule reduces the authority of county commissioners and of state and field officers who know their land best, giving that power to Washington bureaucrats to centrally manage resources in places they don’t even live.

The Effect

This rule isn’t small-ball. It will consolidate BLM’s authority to prepare and implement resource management plans for more than 175 million acres of lands in 11 western states, according to the

American Stewards of Liberty. That’s over 4,000 times the size of Washington, D.C.

According to the National Association of Counties, the BLM manages land in 477 of the nation’s 3,069 counties, sometimes controlling over 90% of a county’s land.

Who It Hurts

In Garfield County, Colorado, over 60% of the land is owned by the federal government. When Washington applied the same type of approach as BLM’s Planning 2.0 rule for sage-grouse conservation, County Commissioner Tom Jankovsky said, it blocked \$33 billion in natural gas reserves in the county from being accessed.

And Finally:

Five years ago, in February of 2012, the Boulder County Board of County Commissioners imposed a moratorium on all new applications for oil or gas development in Boulder County.

The Colorado Attorney General has filed suit in Boulder County District Court to compel compliance with Colorado law.

“It is not the job of industry to enforce Colorado law; that is the role of the Attorney General on behalf of the People of Colorado. Regrettably, Boulder County’s open defiance of State law has made legal action the final recourse available to the State.”- Cynthia Coffman Colorado Attorney General