THE NATURAL GAS ROUNDTABLE OF WASHINGTON

THE CHALLENGE OF NATURAL GAS INTERCHANGEABILITY AND QUALITY

REMARKS OF
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Most gas issues at FERC cluster around two facts of life in today's gas industry: tight supply and high prices. This differs from the last time regulators saw a spate of new gas cases, i.e., the late 80's when we had abundant supplies and low prices. But in both situations, the public wants, and wanted, gas for clean energy and economic feedstocks. The issues of natural gas interchangeability and quality are associated with both tight supply and high prices. FERC held a public conference on these issues last week. Because of the national economy regarding natural gas and FERC's recent public conference, I would like to talk about these issues today.

Specifically, I would like to explain: (1) the Commission's interest in gas interchangeability and quality issues; (2) how these issues have been presented to the Commission thus far; (3) what the concerns of the various industry segments are; and (4) where the Commission sees these issues going.

Before I actually get to these topics, I would like to, first, define the issues, and then describe the national context in which they are arising.

Definitions

Achieving "gas interchangeability" means having the ability to replace gas of a given quality with another gas source without affecting the end use performance of the gas. This is an important issue associated with LNG importation.

One of the most important factors in determining interchangeability relates to the high heating value (HHV or "Btu content") of the vaporized LNG when compared to the HHV of typical domestic pipeline gas. In LNG markets outside the United States, gas is received and burned at a greater HHV (1,100 to 1,180 Btus per cubic foot) and the

facilities are designed generally to produce LNG within this HHV range. By contrast, the typical HHV of the natural gas being delivered into the U.S. pipeline system from the U.S. Gulf Coast region is significantly lower since higher HHV "liquids" components, such as ethane, propane and butane, are stripped out for use as refining process feedstock. In the U.S., the gas can have an HHV as low as 950 Btu per cubic foot, with a more typical HHV within the range of 1,025 and 1,060 Btu.

Achieving "gas quality" means reducing impurities and liquifiable hydrocarbons to an acceptable level in the natural gas stream. This is an important issue for domestic gas. The presence of higher amounts of liquefiable hydrocarbons results in higher heating values and a greater volume of liquids with the possibility of concomitant hydrocarbon dropout in the pipeline with changes in the dewpoint during pipeline transportation.

Tight Gas Supply in the U.S.

Natural gas production levels in the United States have declined over the past several years and are expected to continue to decline. Pipeline gas imports from Canada to the United States are also expected to decline as Canada's domestic demand rises. Natural gas demand in the United States is expected to rise, especially as demand increases for natural gas-fired electric generation. However, 96 percent of natural gas reserves are located outside North America.

New supplies of natural gas in the United States will need to keep up with declines in production from existing reserves and to meet growing demands for natural gas from all consuming sectors. LNG is part of the key to bring natural gas supply and demand in balance and multiple LNG supply proposals have been announced.

In the U.S., LNG imports currently make up about 1 percent of total gas supplies. However, the Department of Energy (DOE) predicts that annual LNG imports will reach 4 Tcf by 2025. Last fall, the National Petroleum Council released a report calling upon FERC and DOE to update natural gas interchangeability standards, based on the anticipated increase in LNG imports and concerns about the impact of injection of large quantities of regasified LNG into the nation's pipelines.

High Gas Prices in the U.S.

Rising natural gas prices have reduced the economic incentive to process out natural gas liquids, such as butane, propane and ethane, from the natural gas stream. Historically, the value of the natural gas liquids extracted from the gas was greater than the value of the gas. But, recently, the value of natural gas has increased dramatically compared to the value of the natural gas liquids. For example, in 2000, natural gas prices averaged $3.88 per MMBtu and natural gas liquids prices averaged $5.44 per MMBtu. In

2003, natural gas prices averaged $5.38 per MMBtu whereas natural gas liquids were valued at $5.26 per MMBtu.[1]

In summary, natural gas interchangeability and quality are timely issues to be concerned with because: (1) with increasing demand for gas, we expect to see significant LNG imports soon and we want to head off an interchangeability problem; and (2) the differing economics of the natural gas and liquids markets are the driving force behind a gas quality problem, and the economics do not look like they are going to change in the foreseeable future.

Now to the topics of my talk:

1. The Commission's Interests in Gas Interchangeability and Gas Quality

FERC's interests in gas interchangeability and gas quality lie in three areas: the end-use of gas, the transportation of gas, and gas supply.

1. We need to ensure safe and efficient end-use of gas: combustion systems and gas-using appliances have tolerances that need to be met;

2. We need to ensure the safe, efficient, reliable and economical transportation of natural gas; and

3. We need to ensure we have an adequate supply of natural gas in our pipeline system.

Updating the Nation's interchangeability standards is important as more high-Btu regasified gas is introduced into the domestic gas stream, prompting pipelines to worry about the impact of the high-Btu gas on the integrity of their systems and LDCs to worry about the safety of regasified gas for end use customers, as well as the potential costs for industrial customers to modify their equipment to accept this gas.

A gas quality issue arises when certain hydrocarbon constituents or other contaminants are in the gas stream. These constituent elements will condense out of the gas at different temperatures (referred to as the "dewpoint") and, once in liquid form, pose serious operational and reliability concerns.

The Natural Gas Council, a broad coalition of natural gas stakeholders, has held three industry-wide meetings to address these issues. On March 2, members of the Natural Gas

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[1] See February 18, 2004 presentation by Joel D. Moxley, Gas Processors Association, at page 5.

Council, in addition to equipment and appliance makers, power generators, and others, are scheduled to address the wide range of technical and regulatory issues involved. In addition, NAESB is considering whether to investigate natural gas quality standards at its next board meeting on March 18.

2. How Have These Issues Been Presented to the Commission Thus Far?

The Commission has dealt with several recent cases raising gas quality issues. The issue was prominent in the certificate proceeding to recommission the Cove Point LNG plant. The LNG interchangeability issue principally pertains to the Btu content of the gas and the effect of high-Btu gas on downstream customers. Washington Gas Light Company asserted that the introduction of this high-Btu imported LNG could affect the performance of combustion equipment and cause safety concerns for end users. Ultimately, the parties settled on a heat content of 1,036 Btu, which is specified in the tariff, along with acceptable levels for ethane, propane, isobutene, normal butane, isopentane, normal pentane, nitrogen, carbon dioxide and specific gravity. The settlement allows Dominion Cove Point to waive the tariff requirement and receive higher-Btu content LNG cargoes under certain circumstances. The Commission expects that each pending and proposed request to authorize additional LNG import facilities will require the Commission to focus on the interchangeability issue.

The Commission has a number of proceedings in which natural gas quality issues have been raised. Some of these proceedings involve tariff proposals to fix specific hydrocarbon dewpoints, Btu limits and other quality parameters on gas injected into the pipeline. In addition, pipelines may seek to impose "must process" requirements on gas injected into their system in order to limit the presence of hydrocarbons that might condense out of the gas stream as the gas moves to market. Other proceedings involve complaints alleging the pipelines had improperly revised their gas quality standards by adopting new provisions concerning Btu content and hydrocarbon dewpoint through website postings and critical notices instead of filings under section 4 of the NGA.

3. Concerns of Various Industry Segments

<u>The Natural Gas Council Collaborative</u>

The Natural Gas Council has initiated a collaborative effort to develop a solution across industry segments. According to the Natural Gas Council, members have agreed to certain general principles. These general principles include: (1) the industry is committed to leading the development of a timely solution to the gas quality and interchangeability issue, in coordination with the FERC; (2) any solution should allow the natural gas delivery system sufficient operational flexibility to maintain system

integrity and reliability for their diverse service regions and customer mix; and (3) any solution should not limit a diverse gas supply.

Where the segments align

LDCs are concerned that gas with high Btu content or with high levels of liquefiables in the gas stream will damage equipment and appliances or will require equipment modifications and retrofits that will be prohibitively expensive. Several estimates were given as to how much it would cost to make these modifications if the Commission were to set a generic standard either for Btu content or hydrocarbon dewpoint that is beyond current equipment operating parameters, and the numbers were in the millions of dollars. The LDC witnesses at the February 18 public conference also pointed out that these changes would take time (many years) to implement.

Pipelines are concerned with hydrocarbon drop out and have thus instituted "must process" contract provisions and the sort of critical notices that have led to the complaints discussed above. When liquids condense out of the gas stream, compressors can become damaged and pipelines can corrode, particularly at low points on the system. Thus, pipelines tend to want to develop "bright lines" in terms of prescribed hydrocarbon dewpoints.

Gas Processors do not want to be forced to run their plants on an uneconomic basis and believe that the cost of any industry solution should be borne by all. Certain processors would like "a measure of uniformity" in hydrocarbon dewpoint.

LNG Operators point out that interchangeability and condensate issues are different. While burners will tolerate a broad range of Btu content, the relative density of gas depending on hydrocarbon content is a greater concern to end users. These witnesses and the INGAA witness endorsed a pipeline-by-pipeline, LNG facility-by-LNG facility approach to standard-setting.

Producers would like to sell as much natural gas, as opposed to liquids, as is possible. They point out that Americans are demanding more gas and the production of it is declining.

Industrial end users do not want to bear the brunt of changing their burner-tip or process equipment to meet changing gas (very expensive) or, in the alternative, they do not want to shut down their equipment to "off spec" gas.

Turbine Manufacturers testified that they can design equipment to tolerate a wide range of heating values, but these variations sometimes necessitate equipment modifications, some of which can be quite costly. Also, as gas quality changes, so do NOx emissions. Emissions performance is critical in new electric generation facilities,

and the manufacturers warrant emissions performance. Thus, the relationship between variations in gas quality in NOx emissions needs to be taken into account in any solution to interchangeability and quality issues.

4. Where the Commission Sees These Issues Going

FERC, state regulators, NAESB, the Natural Gas Council, and industry all have important roles to play in resolving these issues. We are looking forward to progress on the industry's ongoing collaborative efforts, and we anticipate that the Commission will receive many comments following its February 18 public conference.

There are several possible future paths for solutions. Two examples are:

1. An industry collaborative, such as the one described above, reaches consensus, proposes specific standard business practices to the NAESB Wholesale Gas Quadrant and to the Commission, and pipelines implement the consensus approach in individual tariff filings; or

2. If collaboration fails, the Commission is likely to initiate a generic rulemaking proceeding on the issue.

It is important to point out that, in both scenarios, the likely mode of implementing policy would be in individual pipeline tariff filings, on a case-by-case basis.

In the meantime, we are likely to act on the cases pending before the Commission. We will probably act on them according to the unique circumstances of each proceeding and the records in each case. In these proceedings, it is too important to ensure that the gas pipeline system, from wellhead to burner-tip, is able to operate safely, reliably and with economic efficiency to wait for generic solutions that might be put forward later in the year.

Any generic solution should balance the importance of meeting the essential needs of customers (burner-tip and process), and the need for safe and reliable operation of pipelines and distribution. It must also accommodate the greatest economic mix of supply with minimum barriers to new sources of supply. DOE has emphasized the importance of making sure that gas quality or interchangeability issues do not become a barrier to free and open trade in the marketplace.

In terms of timing, the Commission needs to take the time necessary to act intelligently on the issue, but not to take any more time than we must. Industry has continued to operate with a low level of problems, although they would assert that there is a definite cost in processing heavy hydrocarbons in the current economic environment. New LNG sources are ramping up but are perhaps a few years away from landing. Even

so, investment decisions and costly business choices are being made every day that will affect our future. Hence, it is important that the Commission advance the ball on this issue, nevertheless hoping that the industry will work toward a collaborative resolution of these issues.