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26 July 2011

Department of Interior
Office of Natural Resources Revenue
P.O. Box 25165
MS 61013C
Denver, Colorado 80225

RE: Advance Notice of Proposed Rulemaking on Federal Oil and Gas Valuation
RIN 1012-AA01
30 CFR Parts 1202 and 1206

Argus Media appreciates the opportunity to respond to the ONRR Federal Oil and Gas Valuation rulemaking and believes it can make a contribution to the Office's understanding of oil and gas index pricing, benchmarks, and price reporting agencies in this early stage of the rule's development. ONRR has requested comment on

- How well index prices currently represent the value for oil and gas produced in different regions or areas of the country.
- The existing use of index pricing to determine the value of production for oil and gas royalty purposes and whether the use of index pricing should be expanded or altered.

Argus will answer these two questions for the crude oil and natural gas markets by explaining the basic nature of the price assessments used in indexation, the current use of indexation in each market, the standards applied by government entities in judging the reliability of price reporting agencies, and provide a regional review of the price indices available.

Argus Media and its role in energy market indexation

Argus is a leading provider of price assessments, business intelligence and market data for the global crude oil, petroleum products, gas, LPG, coal, electricity, biofuels, biomass, emissions and transportation industries. It is headquartered in London, and has offices in Washington, Houston, Calgary, Moscow, Singapore, Tokyo, Beijing, New York, Kiev, Sydney, Astana, Portland, Johannesburg and Dubai as well as employees in other key locations. Argus was founded in 1970 and is a privately held UK-registered company, owned by its employees and the family of its founder. Argus has operated in the US since 1986.

Argus publishes daily prices for crude oil, natural gas, and NGL physical spot markets. These spot markets represent the marginal clearing price in an open and arms-length market. These prices are used by energy companies, financial services and governments as price references or price benchmarks. The prices are used to index long term contracts, spot market contracts, derivatives transactions such as swaps, and are used in corporate internal transfer pricing, market analysis, performance measures, risk management analysis and capital investment decisions. Government entities also frequently use Argus spot market prices to determine taxation and royalty calculations.

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Argus has an important role in the proper functioning of the energy markets. Confidence in the prices published by Argus creates confidence in the markets themselves, which in turn encourages liquidity, effective clearing of trades, accurate price discovery and overall market transparency.

Argus recognizes that its clients and other industry stakeholders expect it to meet the highest standards in the field of price reporting, and to value principles that support its important role. Argus has a published ethics policy to ensure objectivity. Argus is an independent firm, with a clear corporate governance and compliance program. Argus also respects transparency and disclosure by making its processes public, and by providing market information openly. Argus ensures that it has the resources to achieve these values, by hiring and retaining qualified and experienced staff, and regularly training employees. Argus maintains its credibility as a price reporting agency by consistently applying its methodologies for price discovery, and thus maintaining its high and long standing reputation.

Argus uses a market-appropriate methodology to assess prices in the markets it covers. Argus consults with the range of participants involved in different markets and publishes methodologies for each price report on its website. Each methodology is reviewed regularly to ensure that it always meets the needs of market participants and is in line with industry practice. Argus seeks to reflect the way markets are traded, rather than impose its own view.

The prices reported by Argus and other price reporting agencies allow the energy sector to operate efficiently and effectively to the benefit of consumers and producers. Term contracts can be indexed to a transparent spot market price at an active market center and counterparties can be sure that they are receiving fair market value. This same system of indexation can be trusted by government entities as a robust representation of market value for oil and gas. The sections below will outline why Argus feels these spot market prices accurately represent value in the crude oil and natural gas markets.

Crude Oil Indexation

The Argus methodology for crude oil prices

Argus publishes crude oil prices in all world market centers, including in the Americas region the US Gulf coast, US midcontinent, US west coast, Canada, and Latin America.

Argus crude price assessments rely on a wide variety of sources for information including producers, refiners, marketers, importers, traders, brokers and data from electronic trading platforms. Transactions done in the spot market are primarily received from the back offices of principal firms and Argus strives to verify all deal prices, counterparties, and volumes. For the majority of Gulf coast and midcontinent crude markets, Argus publishes a volume-weighted average price. This allows all deals to be included in Argus price assessments - regardless of size - and weights them according to the volume of each deal. Argus seeks to be transparent, so we publish the price and volume of every deal that is included in the volume-weighted averages, as well as conversion trades, box deals and forward strips.

Argus publishes the low and the high of deals done throughout the entire trading day and volume-weighted averages for most US grades of crude oil. In illiquid markets, Argus pricing represents an intelligent assessment of the range within which a crude grade could have traded. Such assessments are based on bids and offers through the entire day, price movements for similar grades and extensive polling of market participants.

The Argus methodology for price reporting is developed in consultation with industry, in order to provide a service that is useful to our clients and acceptable to other stakeholders like governments and regulators. Argus seeks to report the market in the way that it is traded and to include as much liquidity as possible in the price assessments. We publish detailed methodology documents online at www.argusmedia.com/methodology, which provide the in-depth structure around each price assessment.

The use of Argus prices in indexation

Companies in the US actively use Argus crude prices for a variety of purposes that include indexation of long term contracts, spot market contracts, derivatives transactions such as swaps and exchange settlements, internal transfer pricing, market analysis, and performance measures. Companies in the US crude market have overwhelmingly adopted Argus prices as a means of indexing term crude oil contracts and for use in other benchmarking functions. Brokers and traders involved in US crude trade have estimated that over 80pc of the US domestic crude that changes hands based on an index price is linked to Argus pricing. A few select examples of the use of Argus prices in indexation may provide the ONRR with evidence of how widespread the application of spot market prices is within the crude oil industry, and how much trust is placed in these prices by arms-length counterparties, state and national agencies, and foreign national governments.

Mineral Management Service RIK program

The former MMS used *Argus* pricing in its last four Invitations for Offers for Strategic Petroleum Reserve (SPR) fill, in which RIK crude oil was taken into the SPR. Those invitations were as follows:

Solicitation No. M07PX14954. **Sale Period:** July 1, 2007 through December 31, 2007
Solicitation No. M08PX15014. **Sale Period:** January 1, 2008 through June 30, 2008
Solicitation No. MMS-RIKOIL-2008-SPR-002. **Sale Period:** July 1, 2008 through December 31, 2008
Solicitation No. MMS-RIKOIL-2009-SPR-002. **Sale Period:** April 1, 2009 through December 31, 2009

In all four solicitations, the MMS utilized the following formula to calculate the value of royalty volumes to be taken into the SPR:

(Calendar NYMEX + Daily Roll) + (*Argus* Weighted Average Crude Type Differential)

Strategic Petroleum Reserve

In its recent offer for the sale of 30.64mn bl of light crude oil out of the SPR during the month of August 2011, under the Notice of Sale DE-NS96-11PO97000, the Department of Energy stated that:

> "The Daily Index Price (DIP) applicable to all SPR sweet crude oil streams offered for sale is the volume-weighted average (to the $0.001) of all trading day transactions assessed for the near month for Light Louisiana Sweet crude oil at St. James, LA, as published for the date by Petroleum Argus."

"Petroleum Argus" is the former corporate name of what is now Argus Media.

Argus Sour Crude Index (ASCI)

The ASCI price was launched in May 2009, and is an index that represents the value of medium sour crude in the US Gulf coast market by creating a single volume-weighted average of all transactions for three grades of crude oil: Mars, Poseidon, and Southern Green Canyon. Saudi Aramco, Kuwait Petroleum and Iraq's Somo currently use the ASCI price for all exports to the US. The term contracts use an ASCI base price with monthly adjustment factors applied. Crudes priced against the ASCI benchmark include Arab Extra Light, Arab Light, Arab Medium, Arab Heavy, Kuwait Export Blend, Basrah Light and Kirkuk.

Companies that purchase crude imports on an ASCI price basis include ExxonMobil, Shell, Chevron, Marathon, Valero, BP, ConocoPhillips, PBF, Total, Koch, Tesoro, Lion Oil and Hunt.

CME Nymex and ICE

Both the Intercontinental Exchange (ICE) and the Chicago Mercantile Exchange (CME) use Argus prices to settle swaps contracts. CME lists a total of 21 derivative contracts that are indexed to Argus US crude spot price assessments. ICE lists 12 contracts indexed to Argus US crude spot price assessments. The detailed descriptions of these contracts are located on the CME and ICE websites.

Global taxation/royalty authorities

ONRR should note that the use of spot market prices to index both royalties and other forms of taxation is both common and accepted practice. In many of these jurisdictions, the markets are far more opaque than in the US, so an added level of confidence can be placed in the use of US spot market prices in indexation.

- The UK government uses *Argus* prices in assessing statutory market values for non arm's length sales of North Sea crudes.
- The Belgian ministry of economic affairs uses *Argus* prices in its formula to set the maximum retail values for petroleum products including LPG within Belgium.
- France's energy regulator uses *Argus* prices in its official formula for GDF Suez supply costs.
- Russia's state-owned gas exporter Gazprom uses *Argus* prices for the increasing proportion of its gas sales to Europe which are indexed to spot European gas prices.
- The Russian government uses *Argus* prices in its formulas to set export duty levels for crude, petroleum products and LPG.

The Minerals Management Service approved publication process

In determining how well index prices represent the value of oil and gas, the ONRR may find it useful to review the [2000] process used by the Mineral Management Service to review publications deemed to be acceptable for use in royalty calculations. Whereas the spot markets themselves are robust, different publications devote different levels of rigor and auditability to their processes and so may not provide a price series that could be considered robust. In addition, different methodological approaches may produce prices series that are very different and perhaps not suitable for all purposes to which the index needs to be applied by the agency.

All *Argus* publications and data feeds containing US crude prices were approved by the former MMS as publications that royalty payers should use to value oil produced from Federal leases not sold at arm's length effective from June 1, 2000. The approval was published under the "Approved Publications and Tables for Use in Applying Revised Royalty Valuation Regulations for Federal Oil," Federal Register, Vol. 65, No. 114; Tuesday, June 13, 2000; pp. 37043-37044. Department of the Interior, Minerals Management Service (MMS), 30 CFR Part 206, RIN 1010-AC09.

At that time MMS required that any approved publication meet the following minimum criteria:

A. Publications buyers and sellers frequently use.
B. Publications frequently mentioned in purchase or sales contracts.
C. Publications which use adequate survey techniques, including development of spot price estimates based on daily surveys of buyers and sellers of crude oil.
D. Publications independent from MMS, other lessors, and lessees.

This filing adequately demonstrates that Argus Media has met and continues to meet each of these requirements.

Regional review of index prices

ONRR is seeking input on how well index prices currently represent the value for oil and gas produced in different regions or areas of the country. Regardless of region, Argus is regularly reviewing the viability of existing assessments by observing the amount of spot trade, the number of participants, the amount of participants providing information, and other factors. Should an assessment become unreliable as a result of a degradation of these factors, Argus will engage with industry about whether to de-list that assessment. Argus is also regularly reviewing emerging markets in order to determine if price assessments are viable based on the same criteria. This year, Argus launched a quote for Bakken crude at Clearbrook, Minnesota, after a long review process.

As a result of these practices, Argus believes that all its published assessments are robust and represent the value for the crude produced. Not all regions however have markets centers where an open spot market is observable. The following describes the array of Argus prices on a regional basis.

Gulf of Mexico coast (including Texas, Louisiana, Mississippi and Alabama, as well as onshore areas within those states)

In the Gulf of Mexico region, Argus assesses prices for: Bonito, Eugene Island, Heavy Louisiana Sweet (HLS), Light Louisiana Sweet (LLS) for one and two months forward, Mars for one and two months forward, Poseidon, Sothern Green Canyon (SGC), Thunder Horse, WTI Midland, West Texas Sour (WTS) for one and two months forward. Specific locations and other details are available in our methodology.

Indexation using Gulf of Mexico crude assessments instead of midcontinent crude assessments (such as WTI and WTS) has gained favor in the last 18 months as WTI has traded at a steep discount to world markets. The price of WTI increasingly reflects only US midcontinent fundamentals, because of rising imports from Canada and an inability for crude to leave the midcontinent. WTI prices often fall well below the value of comparable crudes on the world market. Domestic crude at the US Gulf coast however remains responsive to global crude values because it competes with imports. This trend encouraged Middle East exporters to the US to switch their pricing basis from WTI to the Argus Sour Crude Index (ASCI) in 2010.

New crude streams are emerging in the Gulf of Mexico region that may provide more pricing information in the next few years. This should keep the diversity and depth of price benchmarks robust for years to come.

- Cascade/Chinook: A floating production, storage and offloading (FPSO) vessel with 80,000 b/d production capacity.
- Eagle Ford: Production of light crude is forecast to reach between 550,000 and 780,000 b/d by 2013 depending on recovery rates.
- Jack and St. Malo: First production expected by 2014.
- Big Foot: The development will have a crude production capacity of 75,000 b/d and first oil is anticipated in 2014.
- Mars B: The project will draw production from eight Mississippi Canyon blocks and has a capacity of 100,000 boe/d. Production is slated to start in 2015.
- Tubular Bells: The project will have 60,000 b/d of production capacity. First oil is scheduled for 2014.
- Caesar/Tonga: Production was delayed to 2012 from mid 2011.

Midcontinent (including Oklahoma and North Dakota)
In the midcontinent region, *Argus* assesses values for: WTI Cushing, WTI CMA, WTI P-Plus and Bakken. Specific locations and other details are available in our methodology.

The WTI Cushing market forms the physical basis for the Nymex Light Sweet Crude contract, but rarely trades as a traditional physical spot market except during the three days between Nymex expiry and the pipeline scheduling deadline. During these days, trade will occur for the spread ("roll") between the first month physical and the first month futures in order to establish value. As a result, Argus uses the WTI Nymex settlement price as the fixed price basis for all of its US domestic crude prices while the concurrent month is prompt, and uses its own assessment of WTI Cushing prices derived from the roll trades as the fixed price basis between expiry and scheduling. Argus quotes this basis value as the "WTI Formula Basis."

As a consequence of this dominance of futures over WTI, the long-standing WTI P-Plus market has become far less liquid, and most companies are hedging WTI related midcontinent using the WTI CMA market, which values WTI versus a Calendar Month Average (CMA) of the Nymex settlement prices. This market has garnered most of the volume that used to be on the P-Plus market, although both markets remain as robust values.

Southwest (including New Mexico and the Permian and San Juan Basin areas)
Argus does not publish crude prices for this region.

Rocky Mountain area (including Wyoming, Montana and Colorado and Utah outside the San Juan basin)
Argus does not publish crude prices for this region. Some price reporting agencies publish prices for Wyoming Sweet crude, but Argus does not feel that an assessment for this grade is viable. In addition, Argus has chosen to not assess Bakken crude in this region as the information necessary to form an assessment is not available.

West Coast states (primarily California and Alaska)
In the West Coast region, Argus assesses values for: San Joaquin Light Blend, Line 63, Midway Sunset and ANS (Alaskan North Slope). Specific locations and other details are available in our methodology.

The US West Coast market sees a limited amount of spot trade. In the case of ANS, because the grade is shipped waterborne into the region, spot deals are for larger volumes and so tend to occur less frequently than they would if the grade was delivered by pipeline. For domestic Californian grades, much of that volume is sold on long term contracts and little spot activity emerges. However, although ANS spot trade is limited, Argus captures all of the available trade for the grade and this is a distinct strength in the Argus assessment of ANS. In the first half of 2011, Argus has captured an average of just under 2mn bl per month of ANS spot trade or just below 12mn bl for the year through June.

Typical structure of contracts based on indices
ONRR has requested input on whether value should be based on first-of-month prices, daily spot prices, or some mixture of the two when considering the use of index prices. Most crude oil contracts that use indices in the US use spot market prices published by a price reporting agency, averaged over a period of time:

- Calendar month average, using the prior trade day price to stand for weekends and holidays.
- Calendar month average, using only trade day prices.

- Trade month average, using trade day prices for the pipeline scheduling month from the 26th of a month to the 25th of the following month.
- 3 or 5 trade day averages in the case of waterborne deliveries.

Non-arm's-length contracts
ONRR has requested input on whether it should use published index prices to value Federal oil and gas sold under non-arm's-length contracts as well as arm's length contracts. Argus feels that its price assessments are viable for both purposes. Many companies use Argus prices to index transactions with arms-length counterparties, while at the same time using Argus prices to value internal transfer prices, internal mark-to-market calculations, and other purposes.

<u>Natural Gas Indexation</u>
The Argus methodology for natural gas prices
Argus launched a daily and monthly natural gas index service based on volume-weighted averages called Argus Natural Gas Americas in 2009. Prior to that date, Argus published daily assessments and analysis of natural gas markets in other publications. Argus Natural Gas Americas publishes daily prices for more than 100 hubs in the US and Canada. Bid week indexes are also calculated each month at over 75 hubs.

Argus prices are used in European natural gas markets and global LPG markets to index spot and forward business. Argus prices are referenced extensively in contracts and are used to settle futures contracts when they go to delivery and for mark-to-market purposes. Argus gas indices in the US are available for usage by market participants to settle contracts and for internal pricing functions.

The prices in Argus Natural Gas Americas are based on data submitted to Argus voluntarily by the risk management divisions or non-commercial departments of market participants. Argus will not use subjective judgments to calculate its daily natural gas indexes in the US. Argus currently only incorporates data reported directly to it by market participants. Data received from the back offices, risk management and non-commercial divisions of market participants is collated using software developed by Argus to match each company's own description of hubs and index locations to a standard naming convention. Using this data, the volume weighted index price is calculated by dividing the sum of the product of the total price and volume at each index location by the total volume.

The FERC process for approving indices
In determining how well index prices represent the value of oil and gas, the ONRR may find it useful to review the Federal Energy Regulatory Commission (FERC) process for approving indices for use in jurisdictional tariffs. FERC sets out minimum standards for a price reporting agency in five areas: codes of conduct and confidentiality; completeness; data verification; error correction and monitoring; verifiability and accessibility. Whereas the spot markets themselves are robust, different publications devote different levels of rigor and auditability to their processes. Therefore, all publishers may not provide a price series that can be considered equally robust.

FERC approved the Argus Natural Gas Americas methodology for use in jurisdictional tariffs on August 27, 2009, under Docket number PL03-3-008. A copy of this approval is available at http://www.argusmedia.com/Natural-Gas-LNG/~/media/Files/PDFs/Miscell/FERC%20approved.ashx. Argus met the FERC approval by exceeding the minimum standards in every area:

1. Argus publishes its methodology publicly on its website setting out how data is obtained and treated and how indexes are calculated. Argus enters into confidentiality agreements with all data providers.

Gas prices are submitted voluntarily by non-commercial divisions of companies. The methodology explains the outliers procedure and has a summary of the Argus ethics policy.

2. Argus publishes volume and transaction details as well as the low, high and volume-weighted average price (index).
3. Argus verifies data with data providers where possible and has an error resolution process that includes publishing corrections when notified of an error that significantly changes the volume-weighted average.
4. The Argus compliance officer audits the gas index procedures at least annually, and the results of the audit are made public on the website.
5. The Argus Natural Gas Americas report is available to any market participant who wishes to subscribe.

Regional review of index prices

ONRR is seeking input on how well index prices currently represent the value for oil and gas produced in different regions or areas of the country. In the natural gas markets, it is important to note that FERC, in a 2004 staff report, stated that following a period of uncertainty and illiquidity, the market had returned to being comfortable with price indices:

> "The staff report notes that the overall average level of confidence in price indices, as shown by responses to the March 2004 survey, is 6.93 on a scale of one to ten. By industry group, the average ranged from 7.49 for gas utilities to 6.74 for marketers.… A number of commenters and conference participants indicate that confidence in indices has improved."

The staff report also said that analysis of annual reporting of gas transactions under Order No. 704 has shown that index publishers are deriving their index prices from a relatively small amount of gas volumes. "That a relatively small amount of gas volumes are being used to determine index prices may be a matter of some concern as a number of indexes are used to set the price of physical and financial gas contracts," the report said. In spite of these concerns, Argus believes that its natural gas indexes are robust and viable for use in royalty purposes for natural gas production. While the volumes reported may vary among its 100 daily indexes and 75 bid week indexes, a representative index can be found for nearly every point on the US gas pipeline grid. The breadth and depth of Argus indexation is extensive enough to satisfy all market participants. The few locations where participants believe volumes are minimal indicate that that liquid markets do not exist, and gas is flowing there on the basis of long-term contracts and/or with few spot market participants.

While gas production and trading practices differ in various regions of the country, the thorough nature of the Argus methodology, and its commitment to providing accurate natural gas price indexes, ensures highly accurate indexes at all locations where royalty production occurs in conjunction with a viable spot market. The general geographic areas where royalty production occurs are reviewed below.

Gulf of Mexico coast (including Texas, Louisiana, Mississippi and Alabama, as well as onshore areas within those states)

The Gulf of Mexico is one of the most concentrated areas of natural gas production in North America, and therefore comprises some of the most actively traded gas indexes. Argus has indexes in Texas, Louisiana, Mississippi and Alabama. The following index locations are only a fraction of the complete set of indexes.

Texas

In Texas, Argus publishes indexes for a variety of intrastate hubs and long-line, interstate pipelines. The locations indexed include: Agua Dulce; Houston Ship Channel; Katy; Natural Gas Pipe Line (NGPL) in the South Texas and TexOk zones; Texas Eastern Transmission (Tetco) South Texas Zone; Tetco West Louisiana; Tetco East Texas; Tennessee Gas Pipeline Zone 0 in the North and South pools; and Transcontinental Gas Pipe Line zones 1 and 2.

Among the intrastate facilities, the emergence of over-the-counter trading on the Intercontinental Exchange (ICE) has resulted in some subtle changes to the definition of the Houston Ship Channel, one of the predominant benchmarks in the Gulf region. The Ship Channel can be geographically described as the body of water from the north end of Galveston Bay to the channel's turning basin. Most fixed price OTC activity is conducted at Energy Transfer Partners' Houston Pipe Line ICE meter, with buyers at other locations on the wider Ship Channel usually paying a premium to the index price based on the value of gas transportation. So the Houston Ship Channel index has come to represent trading at the ICE meter, rather than the price end-users have to pay.

Recent changes among interstates include the tariff change granted by FERC allowing Tennessee Gas Pipeline to bifurcate the pool in Zone 0 (Texas) in two zones, North and South. This became effective November 1, 2009. Barnett Shale gas production in north central Texas can be reliably priced by Argus' NGPL TexOk zone index. This supply source has influenced pricing on the Gulf Coast and Midcontinent, as well as in Texas.

Louisiana

The Louisiana gas transportation market is dominated by interstate pipeline facilities. Argus index locations in the state include: the Henry Hub; ANR Pipeline (southeast leg), Columbia Gulf Transmission, both for onshore locations and the mainline; Southern Natural Gas; Tetco's East Louisiana Zone; the 500 and 800 legs of Tennessee Gas Pipeline; Texas Gas Transmission in Zone SL and Zone 1; and the Trunkline Gas zones for East Louisiana, West Louisiana and Zone 1A.

In recent years, production quantities from offshore south Louisiana delivered onshore have declined, while output has increased from unconventional gas plays, such as the Bossier and Haynesville shales. This shift in production has been accompanied at times by a change in the long-term trend in the indexes themselves. At present, gas delivered at north Louisiana locations frequently carries a lower price than production in south Louisiana, a reversal from five years ago.

Alabama

The Mobile Bay area has seen continued development of natural gas infrastructure over the past decade as producers have exploited offshore plays. Argus is the first publisher to commence a daily index on Gulfstream Natural Gas, and continued expansions on Florida Gas Transmission have made the pipeline's Zone 3 an ever more viable trading location.

Mississippi

The building of new, so-called "bullet" pipelines which source gas in the shale plays has contributed to additional volumes flowing to several locations in Mississippi. Most notably, those locations are the 30-inch line of Tetco in Zone M-1 at Kosciusko and the Station 85 pooling point on Transcontinental Gas Pipe Line. The bullet pipelines generally flow gas west to east and include ETC Tiger Pipeline, the Southeast Supply Header and Midcontinent Express Pipeline.

Midcontinent (including Oklahoma and North Dakota)

The Midcontinent is a broad region where natural gas trading activity comprises locations in production areas, market centers and interconnects with pipelines carrying Canadian gas. For the purpose of the computation of royalties on domestic production, many Argus indexes are relevant in the Midcontinent area.

Oklahoma

In Oklahoma, these include ANR Pipeline (southwest leg); CenterPoint Gas Transmission; ONEOK Gas Transmission; Panhandle Eastern Pipe Line; Natural Gas Pipe Line (Midcontinent zone) and Southern Star Natural Gas. Recently developed gas from plays in the Woodford Shale and Cana Shale may flow into these pipelines, as well as conventional supplies from the Hugoton and other basins.

Citygates

The citygate locations of Chicago, Illinois, and the local distribution company systems of MichCon and Consumers Energy in Michigan are highly liquid indexes, but for the most part are geographically removed from the location of federal royalty production.

Canadian supply

The value of both Midcontinent and Chicago supply is often determined by competing Canadian supplies from Alberta. Ventura, Iowa, is the pooling point for shippers looking to aggregate natural gas receipts from Northern Border Pipeline — a major shipper of Canadian gas supply — into Northern Natural Gas. A premium emerged in 2009 for gas that can be transferred to another pooling point for potential delivery on Northern Border towards Chicago, rather than gas that must be delivered into Northern Natural's system only. The Argus Northern Border Pipe Line Ventura index includes deliveries into the pipeline that are not for delivery to Northern Natural.

North Dakota

Despite an increase in natural gas production related to development of Bakken Shale oil, insufficient liquidity exists to index contracts to gas transactions in North Dakota. Argus has been examining the volume of trades reported on Williston Basin Interstate Pipeline, but this volume has yet to meet the liquidity threshold for establishing a new index.

Southwest (including New Mexico and the Permian and San Juan Basin areas)

Argus publishes indexes at the following locations in the Southwest: the Waha area; and Transwestern Pipeline and El Paso Natural Gas in both the Permian and San Juan basins. Transwestern and El Paso are primarily sourced by conventional plays in those two basins, and much of their supply moves to California, Arizona and Nevada. San Juan basin supply also includes some coalbed methane and gas flowing north to south on Northwest Pipeline and TransColorado Pipeline. El Paso and Transwestern will at times source gas from the Midcontinent, depending on price differentials.

The Waha area has four separate market centers with a total of 38 direct interconnections to a number of interstate and intrastate pipelines, which provide transportation to southwestern states, East Texas and the Midcontinent area. During periods of high demand in one of those regions caused by weather differentials, the ultimate destination of gas sourced at Waha can be the Texas intrastate markets, the Midcontinent or the West Coast.

West Coast states (primarily California and Alaska)
Argus indexes on the West Coast include the Pacific Gas & Electric (PG&E) Citygates; the PG&E South Path (also known as the Baja Path); the citygates of Southern California Gas (SoCal); and the border of the SoCal system. Gas production in Kern County, California, and elsewhere in the state is most likely indexable to the SoCal border or the PG&E South Path. Argus publishes no indexes for Alaskan gas production.

Rocky Mountain area (including Wyoming, Montana, and Colorado and Utah outside the San Juan basin)
Argus indexes include: the Cheyenne hub ; Colorado Interstate Gas for Rocky Mountain supply; several pooling points on Northwest Pipeline; receipt points on Kern River Gas Transmission; the Opal hub; and the White River Hub. Opal and White River are in Wyoming.

The consumption of Rocky Mountain gas historically has been limited to local markets or the Northwest, with limited access to the Southwest. Growth of pipeline capacity in recent years has provided new markets, most notably with the Rockies Express Pipeline, which begins in Cheyenne and ends in Ohio. The Ruby Pipeline is expected to come on line in July 2011, and will flow gas from Opal, Wyoming, to Malin, California, where it will connect with the PG&E system. The pipeline's eventual capacity will be 1.5 billion cubic feet per day.

Typical structure of contracts based on indices
ONRR has requested input on whether value should be based on first-of-month prices, daily spot prices, or some mixture of the two when considering the use of index prices.

Companies in the US use natural gas indexes for a variety of purposes. These include indexation of long-term contracts, spot market contracts, and marking to market and benchmarking of derivatives transactions, such as locational differentials to Nymex natural gas futures or "basis swaps." Monthly prices are established in advance of each month, during "bid week," and these prices are usually used for baseload demand (demand that is expected to be constant on a daily basis). Spot market prices are used for daily "swing" demand (demand that can vary from day to day). Buyers and sellers in the US use both monthly prices and daily spot market prices published by various price reporting agencies. Argus gas indexes are considered by several companies for use as a benchmark in contracts.

The difference between the monthly "bid week" price and the average of daily prices during a month can vary significantly when compared to each other for the same location or hub. While both are highly accurate, the two kinds of indexes reflect different time horizons. It is the norm for buyers and sellers to maintain a portfolio of various kinds of contracts; few parties want to either entirely buy on the daily markets or lock in 100% of their obligations a month at a time.

In order to establish the best royalty payment practices, Argus recommends that a comparison of daily and monthly (bid week) averages be performed for various locations. Argus natural gas data could be made available for this purpose. A comparison of potential past royalty payments could be derived for a variety of gas producing leases under the two scenarios.

Some combination of daily and bid week indexing also could be employed for royalties. On a long-term basis, natural gas generally trades for the heating season and the cooling season. Typically, the November-March heating season has high demand, and daily prices can be prone to sharp increases, often met through storage withdrawals. The April-October cooling season is less prone to price spikes but is characterized by production that not only meets daily needs but fills storage reservoirs. As producers manage natural gas price risk, it is common to lock in a high proportion of volumes for long-term sales to be priced at bid week but leave some output available to capture high daily spot prices, should those conditions arise.

ONNR needs to carefully weigh the relative fairness of creating a royalty mechanism based on a combination of daily and bid week indexes. The current price relationships between daily and bid week indexes at the same location and among different locations cannot be guaranteed to hold in the future. But some of the trends cited in the above comments may be useful in establishing initial *ceterus paribus* assumptions. In addition to consulting index price data, the ONRR should consult experts from diverse disciplines, as well as forward natural gas price curves, to best carry out its mandate.

In conclusion, Argus feels that the ONRR should feel confident in the use of published spot market prices as indices in the calculation of both oil and gas royalties. These spot market prices are an important element in ensuring that the agency receives fair value for the public's resources, and also provides an early certainty through the prompt daily dissemination of price data on market value.

Sincerely,

Daniel C. Massey
President
Argus Media Inc.