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| KEY NORTH AMERICAN HUB PRICES |            |
|-------------------------------|------------|
| 11:42 PM CST / March 17, 2011 |            |
| GAS HUB                       | CURRENT \$ |
| Carthage, TX                  | 3.71       |
| Katy Hub, TX                  | 3.82       |
| Waha Hub, TX                  | 3.75       |
| Henry Hub, LA                 | 3.85       |
| Perryville, LA                | 3.80       |
| Houston Ship Channel          | 3.80       |
| Agua Dulce TX                 | 3.80       |
| Opal Hub, Wyo.                | 3.64       |
| Blance Hub, NM                | 3.63       |
| Cheyenne Hub, Wyo.            | 3.65       |
| Chicago Hub                   | 3.88       |
| Ellisburg NE Hub              | 4.01       |
| New York Hub                  | 4.14       |
| AECO , Alberta                | 3.69       |

Source: Bloomberg

**FEATURE**

**World Economic Forum, CERA Report: Natural Gas Faces Bright Future, Many Challenges**

Advances in recovery of unconventional gas resources, especially in shale plays, are expected to make natural gas the preferred energy source in coming years, according to Energy Vision 2011, a report published by the World Economic Forum in partnership with IHS Cambridge Energy Research Associates.

From an environmental standpoint, natural gas has long been recognized as the preferred fossil fuel due to its lower emissions of greenhouse gas and other pollutants. But declining production from conventional reserves caused the energy industry to look beyond natural gas to reduce emissions at reasonable costs.

Prior to 2007, experts anticipated that North America would significantly in-



crease its liquefied natural gas (LNG) imports. However, this outlook changed as the unconventional gas revolution swept through the continent. The shale-gas plays were suddenly able to deliver abundant and cost-effective natural gas supplies, due to improvements extraction methods such

*(continued on page 3)*

**INSIDE LOOK AT PROCESSING**

**Bush, Clinton: U.S. Economy Needs Clean Energy, Oil And Gas**

Former U.S. presidents George W. Bush and Bill Clinton agree that while oil will continue to fuel the U.S. for decades to come, low-emission natural gas and improved efficiency will lead the change to cleaner alternative fuels.

According to The Houston Chronicle, the once political rivals joined together to address energy executives at the CERAWEEK conference in Houston, Texas last week to stress the importance of producing natural gas.

The panel was closed to the media at their request, but conference attendees spoke to The Houston Chronicle of their speeches.

The pair made several suggestions to bring about the change to cleaner energy. Bush suggested converting the nation's cars and trucks to run on natural gas. He added that building more natural gas pipeline systems into the Northeast would help ease the region to be

less dependent on oil. Clinton suggested closing older coal-fired power plants and replacing them with natural gas facilities.

Both presidents spoke about the political turmoil in Egypt, Tunisia, and Libya, and its effects on oil prices. The continuing strife had sent oil prices above \$100 a barrel before the disaster in Japan brought it back down to \$97, the lowest one-day drop since October 2010.

According to The Houston Chronicle, Clinton said Libyan Leader Moammar Gaddafi can use the nation's oil riches to fight rebels. "Gaddafi has enough money to hire mercenaries to open fire on his own people by selling oil that was rightfully (theirs)," Clinton said.

He also addressed concerns over the slow-moving process of permitting offshore drilling projects in the Gulf of Mexico, saying the U.S. economy cannot afford "delays."

*(continued on page 6)*

## Japan to Increase LNG Imports Following Earthquake, Tsunami

There has been an increase in liquefied natural gas (LNG) imports into Japan this week in the wake of the devastating earthquake and ensuing tsunami that hit the country last week and shut down a great deal of its energy infrastructure and operations, most notably a number of nuclear power plants.

Japanese utilities are expected to increase their LNG imports by 1.5 million tons in April to make up for the loss of power generation from nuclear and thermal power plants.

According to a report from Reuters, South Korean officials said that they will be shipping LNG supplies to utilities in Japan on a swap basis with state-run Korea Gas Corp., negotiating agreements with LNG sellers to expedite the process.

“To help Japan recover from the quake, we decided to supply some LNG from im-

port volumes for late March through April, as long as it does not disrupt local supply,” South Korean officials said in a statement. This swap agreement is unlikely to disrupt South Korean supplies since the country has already secured 98% of its LNG for the year through short-term and long-term contracts.

Russia shipped 19,500 cubic meters of LNG to Japan during the weekend and agreed to ship an additional 100,000 cubic meters of LNG this week, according to the Russian news agency Itar-Tass.

In addition, Qatar announced in a statement that it was ready to meet Japan’s LNG needs through its two state-controlled companies, Qatargas and Rasgas.

“Qatargas stands ready to provide all the support to its long-term partners and foundation customers in Japan to meet any increased requirements for LNG at this time,” Qatargas said in a statement. “Qatargas can

also rely on our sister company RasGas to support Qatargas’ efforts to meet our Japanese buyers and partners needs.”

Officials with Royal Dutch Shell also announced they intended to divert shipments of LNG to Japan to meet demand in the country for its power needs.

While many market analysts anticipated that demand for oil in Japan will drop and have a negative effect on global crude prices, it is expected that global LNG as well as natural gas prices related to the Pacific market will increase in the next few weeks.

Officials from Tokyo Electric Power Co. announced that all four of its LNG import terminals were operating normally and were not affected by the earthquake or tsunami. – Frank Nieto

## Chesapeake Midstream’s Low-Risk Model Proves Beneficial

Chesapeake Midstream Partners LP continues to benefit from what the company’s CEO Mike Stice calls a low-risk business model. The company secured \$56.8 million in minimum volume commitments from its customers in Q4 2010, which highlights the company’s abil-

ity to withstand any changes in focus from producers.

“We continue to see a shift in drilling activity from the dry gas in the Barnett shale to the liquids-rich plays in our Mid-Continent and Permian [Basin] regions. With our Barnett revenue protected by

“Operationally this seamless transition means accelerated cash at a minimum cost. Our ability to essentially flip the switch and have these assets immediately contribute to our bottom line is extremely efficient and effective.”

The first of these dropdown agreements occurred late last year when the partnership acquired the 220-mile Springridge natural gas gathering system and its related facilities in the Haynesville shale for \$500 million. Following this acquisition, the company had more than \$500 million in liquidity.

Stice stated that the company has several strong dropdown candidates including the 210-mile Mansfield pipeline with 530 million cubic feet per day (MMcf/d) throughput in the Haynesville; the 360-mile North Marcellus pipeline system with 330 MMcf/d of throughput; the 850-mile Central Marcellus pipeline system

our contractual terms, we actually benefit from the additional Mid-Continent activity related to this shift to oilier plays,” Stice said during a recent conference call to discuss Q4 earnings.

The company’s finances are also supported by dropdown deals from its parent, Chesapeake Energy Corp., which can be incorporated very quickly.

“It allows us to move the assets into the partnership quickly, with immediate integration of personnel, processes and tools,” he said.

| Resin Prices                   |           |        |        |          |        |
|--------------------------------|-----------|--------|--------|----------|--------|
| MARKET UPDATE – March 11, 2011 |           |        |        |          |        |
| Total Offers 15,601,220 lbs    |           | Spot   |        | Contract |        |
| Resin                          | Total lbs | Low    | High   | Bid      | Offer  |
| LDPE - Film                    | 2,603,244 | \$.720 | \$.890 | \$.820   | \$.860 |
| LLDPE - Film                   | 2,252,324 | \$.680 | \$.740 | \$.675   | \$.715 |
| PP Homo - Inj                  | 2,189,956 | \$.760 | \$.830 | \$.770   | \$.810 |
| HDPE - Inj                     | 1,984,772 | \$.640 | \$.690 | \$.615   | \$.655 |
| HDPE - Blow Mold               | 1,539,036 | \$.640 | \$.690 | \$.610   | \$.650 |
| PP Copo - Inj                  | 1,220,564 | \$.800 | \$.880 | \$.790   | \$.830 |
| HMWPE - Film                   | 1,190,484 | \$.680 | \$.730 | \$.655   | \$.695 |
| LLDPE - Inj                    | 895,472   | \$.700 | \$.720 | \$.700   | \$.740 |
| GPSS                           | 744,000   | \$.690 | \$.860 | \$.820   | \$.870 |
| HIPS                           | 615,000   | \$.860 | \$.950 | \$.890   | \$.940 |
| LDPE - Inj                     | 366,368   | \$.770 | \$.820 | \$.800   | \$.840 |

Market Update | Source: Plastics Exchange

with 120 MMcf/d of throughput; the 110-mile Eagle Ford pipeline system; 10 miles of pipeline in the Granite Wash with 40 MMcf/d of throughput; and 15 miles of pipeline in the Niobrara.

“We continue to evaluate the potential for additional asset acquisitions from Chesapeake, as well as third-party acquisition opportunities as they become available in the marketplace. I see both

acquisition types as opportunities to expand our scale in our current areas of operation, as well as expand our footprint into other regions,” Stice said.

The company’s predictable cash flow also benefitted from a large number of new well connects in the quarter that increased the company’s volumes by more than 6% from the previous year’s quarter.

These new well connects and minimum volume commitments helped Chesapeake Midstream to experience a 59% increase in adjusted EBITDA (earnings before interest, taxes, depreciation and amortization) in the quarter to \$115.6 million from Q4 2009. – **Frank Nieto**

## World Economic Forum ... (continued from page 1)

as hydraulic fracturing and horizontal drilling.

“The unconventional gas revolution is the most important energy development so far this century and it has the potential to boost gas production far beyond North America,” said IHS CERA chairman and Pulitzer Prize-winning author of *The Prize*, Daniel Yergin. “The resulting changes to the supply outlook and fundamental economics of natural gas will be transformative. They can have far-reaching impact on the electric power industry and the fuel choices in the years ahead. Understanding what this may mean is a top-level topic for the energy industry worldwide.”

Currently natural gas provides approximately 24% of the world’s primary energy. With improved unconventional-resource technology being exported around the world, that figure will increase, according to the report. Shale-gas production volumes may not reach similar levels outside of North America, but countries in Asia and Europe are expected to increase production from such other unconventional resources as coal-bed methane (CBM) in the next few years.

“Estimates of the world’s recoverable gas resource nearly double when unconventional gas resources are included – bringing the total to roughly 250 years of supply at today’s rate of production,” according to the report.

Despite this increased unconventional production in Europe and Asia, LNG will continue to play an important part of the energy mix in those markets. The report noted that global LNG trade doubled from 2000 to 2010 and will increase an additional 50% by 2020.

*“With many policy discussions today focusing on emissions and carbon reduction, natural gas represents an opportunity for progress, since a modern natural-gas plant can produce electricity with half the greenhouse gas emissions of an older coal-fired plant.”*

**Roberto Bocca,**  
Senior Director and Head of Energy,  
World Economic Forum

While Japan and South Korea remain the largest importers of LNG worldwide, other countries in Asia are rapidly increasing their import levels. The largest increase has come from China, which has built a strong portfolio of supply contracts and will more than double its LNG import terminals by 2013. India, Thailand, Indonesia, Pakistan and Singapore will also be increasing their import capacities over the next two years.

Although gas production is rapidly increasing, demand has been growing at a more measured pace. Primary usages – space and water heating in residential and commercial applications, fuel and

feedstock for industrial applications and power generation – remain unchanged in many of these markets. Still, there is definite room for growth in established areas of demand, as well as in transportation.

“In the context of a world with increasing demand for energy, gas is playing a critical role. It is particularly attractive for power generation as a relatively cheaper and cleaner source of energy,” noted Roberto Bocca, senior director and head of energy at the World Economic Forum. “With many policy discussions today focusing on emissions and carbon reduction, natural gas represents an opportunity for progress, since a modern natural-gas plant can produce electricity with half the greenhouse gas emissions of an older coal-fired plant.”

A significant growth area for the gas sector is in transportation. Currently, natural-gas vehicles (NGV) make up only 1% of today’s global vehicle fleet. In countries such as Pakistan, Argentina, Iran and Italy, which promote NGV use through policy, tax incentives and refueling infrastructure, these vehicles are popular. Similar policies and incentives could increase NGV use in other parts of the world. In addition, these vehicles work well in fleet applications where vehicles are refueled at a central station.

As the production and demand segments of the gas industry undergo changes caused by increased supplies

from unconventional resources, market dynamics used to supply these volumes are likely to experience their own changes, the report noted.

*“To give natural gas the space to grow, governments and regulators possess numerous policy instruments to help forge a clean electricity coalition among natural gas, renewables, nuclear and carbon capture and storage (CCS),”*

**Peter Voser,**  
CEO, Royal Dutch Shell.

“The surge of gas supply in the midst of a global recession has challenged some longstanding tenets of gas markets. In particular, an abundance of spot gas at low prices challenged the structure of long-term contracts with their relatively inflexible delivery provisions, prevalent in Europe and Asia. Spot markets are becoming increasingly active, but long-term contracts will remain a central strategy to provide guaranteed demand to suppliers, guaranteed supply to customers, funding for infrastructure construction and energy security,” said the report. “Over the last two years, however, the market has responded to shifting dynamics with the negotiation of increased flexibility within contracts.”

Gas prices in North America have also been undergoing changes of their own, as oil-linked prices have come under stress in recent years and the traditional relationships between oil and gas prices have been remade. As gas supplies continue to increase as compared to oil supplies, future gas contracts linked to oil prices will require more flexibility.

Energy Vision 2011 includes perspectives from high-level representatives of industry, government and non-governmental organizations. Contributors include Total chairman and CEO Christophe de Margerie; Director General of Gazprom Export, and deputy chairman of Gazprom, Alexander Medvedev; GDF Suez chairman and CEO Gérard Mestrallet; Eni CEO Paolo Scaroni; Royal Dutch Shell CEO Peter Voser; and Eurogas special envoy Simon Blakey.

“The global gas market is regional and characterized by long-term contracts and varying price formulas in each zone. However, this regional separation is now weakening. Unlike pipeline gas, cargoes of LNG can be easily diverted into to new destinations, thanks to the increase in logistical capacities in the past few years. Now it is possible to arbitrage among different import markets,” de Margerie said. “LNG thus plays a balancing role across world gas markets. So far, this arbitrage phenomenon involves only limited volumes of gas, but its importance will grow as the share of LNG in world gas consumption increases.”

He added that this ability to link regional markets will increase the price of gas and that the current depressed price is a result of the global economic crisis and will not last.

Medvedev stated that efforts to combat climate change through zero-emission power generation are unrealistic at this stage. It is more realistic to seek to lower carbon emissions by promoting natural gas as a cleaner alternative to both oil and coal.

“Natural gas offers a cost-comfortable solution to the climate-change problem.

Fighting climate change is an expensive exercise that is sure to involve increases in total energy bills well above their current levels,” he said.

Voser stated that with global energy demand expected to double in the first half of this century—along with the need to reduce carbon emissions—natural gas can play an important part of the energy solution. But, the natural gas industry must work closely and effectively with governments to establish policy frameworks that reflect its benefits.

“To give natural gas the space to grow, governments and regulators possess numerous policy instruments to help forge a clean electricity coalition among natural gas, renewables, nuclear and carbon capture and storage (CCS),” Voser said.

Carbon markets would provide the most effective way to create this alliance while also stimulating investment in necessary technologies to further grow natural gas production.

“However, as CO<sub>2</sub> pricing looks set to remain patchy at best for some considerable time, the non-transparent standards and mandates that are the political compromise should at least aim to replicate the outcomes of CO<sub>2</sub> pricing, with least-cost solutions implemented first. In some regimes, though, the absence of a strong carbon price combined with ambitious obligations for renewable power perversely impose high system costs while extending the life of ‘old’ coal-fired generation,” he said.

While natural gas’ future has never looked brighter, more work must be done politically and economically to help it realize its full potential as one of the world’s premier fuels. — **Frank Nieto**



## Granite Wash, Marcellus Represent Growth Areas for MarkWest

MarkWest Energy Partners LP finished FY 2010 with record distributable cash flow of \$241 million, adjusted EBITDA (earnings before interest, taxes, depreciation and amortization) of \$333 million and segment operating income of \$472 million. These results were due to year-over-year gathering volumes increasing by nearly 15%, as well as strong natural gas liquids (NGL) prices and processing margins.

“Our focus remains on expanding our presence in liquids-rich resource plays that provide superior economics for MarkWest and our producer customers,” Frank Semple, president and CEO of MarkWest, said during a recent conference call to discuss Q4 2010 earnings.

“The result of this strategy is that we are seeing volume increases, even in a low natural gas pricing environment, and we are also benefitting financially from the uplift in processing margins. We’ve been executing this strategy for a number of years and our operational performance in 2010 demonstrates that this strategy continues to be very successful.”

The company saw increases in gathering volumes in western Oklahoma, which includes its systems in Foss Lake and the Granite Wash. On a year-over-year basis, these volumes rose 3% to 191 million cubic feet per day (MMcf/d). Semple noted that while volumes in Foss Lake have dropped recently due to lower prices, production out of the Granite Wash continues to increase.

This increase in liquids production out of the play resulted in the company recently announcing the expansion of its gathering system at its Arapahoe natural gas processing complex. This expansion will increase the company’s processing capacity in the Granite Wash to 220 MMcf/d when it comes online in Q3 2011.

“The Granite Wash continues to be one of the most profitable plays in the U.S.

for Newfield, Linn Energy and other producers. MarkWest has been a premiere midstream service provider in western Oklahoma for nearly a decade and is ideally positioned to continue supporting the increasing production from the Granite Wash and surrounding areas,” he said.

Another growth area for the company has also been in Oklahoma with the Woodford Shale experiencing a 25% increase on a year-over-year basis in Q4 2010 with 521 MMcf/d compared with Q4 2009.

*“The Granite Wash continues to be one of the most profitable plays in the U.S. for Newfield, Linn Energy and other pro-ducers. MarkWest has been a premiere midstream service provider in western Oklahoma for nearly a decade and is ideally positioned to continue supporting the increasing production from the Granite Wash and surrounding areas,”*

**Frank Semple,**  
CEO, MarkWest Energy Partners

Semple noted that this growth has been very fast for the company since it only had gathering volumes of 100 MMcf/d just three years earlier. Despite this growth, the company anticipates a modest drop in production out of the play in 2011 since much of the gas in the shale is dry and prices are expected to remain low throughout the year.

“However, a portion of the Woodford produces liquids-rich gas, and we expect Newfield and other producers to continue to prioritize their drilling resources on the rich area of the Woodford. The liquids-rich acreage of the Woodford is also more profitable for MarkWest and our producers because of the processing upgrade,” he said.

In Appalachia, MarkWest’s Northeast segment’s five processing facilities and the Siloam fractionation and marketing

complex in Kentucky and West Virginia experienced flat gas processing volumes in 2010 compared with 2009. The segment did experience a 5% increase in NGL volumes, including record volumes at the Siloam complex, due to higher volumes from EQT Corp.’s Huron/Berea Shale operations as well as increased NGL volumes from the Marcellus Shale.

The Siloam facility will continue to fractionate the heavier NGLs from MarkWest’s Marcellus operations until its 60,000 barrels per day Houston, Pa. fractionator comes online in Q3 2011.

“We have been the leading processor in the Northeast for more than 20 years and the acquisition of EQT’s Langley processing complex in southeastern Kentucky further strengthens our significant competitive position in West Virginia and Kentucky. It also provides a number of growth opportunities,” Semple said.

These growth opportunities include adding a 60 MMcf/d cryogenic processing plant at the Langley complex as well as the Ranger pipeline that will deliver NGLs from Langley to Siloam. Combined, these projects will cost about \$100 million but are expected to significantly reduce transportation costs.

“Over time, we believe that the liquids-rich shale production in Appalachia will extend from the Huron/Berea Shale in southeastern Kentucky to the Marcellus Shale in southwest Pennsylvania and northern West Virginia,” Semple said. “MarkWest is uniquely positioned to capitalize on this growing area with our existing NGL capabilities, multiple processing facilities, strategic downstream access and two large fractionation marketing and storage complexes. Our vision is to ultimately connect our two systems serving the Huron/Berea and Marcellus shale into a fully integrated midstream solution that

will significantly benefit producers in the Appalachian basin.”

By mid-2012, the company anticipates its processing capacity in the Marcellus to grow to 750 MMcf/d when it adds a new processing facility in Wetzel County, West Virginia.

The company continues to co-develop Project Mariner with Sunoco Logistics,

which would transport ethane from Marcellus to the Gulf Coast via pipeline and marine vessels.

“Project Mariner has significant advantages relative to the other announced ethane projects [in the play], including the lowest project cost and the lowest required volume commitment by produc-

ers. The project will also utilize existing Sunoco pipelines and has the shortest construction timeline,” he said.

The company’s activities in the Marcellus will help them increase their fee-based revenue to 50% by 2012 due to new contracts signed with producers in the play.

– Frank Nieto

## Bush, Clinton: U.S. Economy Needs Clean Energy, Oil And Gas... (continued from page 1)

Approaching the one-year anniversary of the Deepwater Horizon explosion and Macondo oil spill, only two permits have been approved so far. Noble Energy’s application for a permit to bypass Well #2 in Mississippi Canyon Block 519, approximately 70 miles southeast of Venice, La., was approved Feb. 28. The second permit approval was issued to BHP Billiton Petroleum to continue production on its Well SB 201 on Green Canyon Block 653 in Shenzi Field.

Clinton added his opinions on the continued environmental concerns regarding hydraulic fracturing. According to The Houston Chronicle, Clinton said energy companies have been producing natural gas in Arkansas for years “without a problem.” He did stress, however, that it is important to find out if there is anything in the water near those operations and make sure everything is safe to avoid potential environmental disasters.

Both presidents outlined their energy initiatives, with Bush endorsing the development of nuclear power and shale gas. While Clinton agreed with Bush’s sentiments, he added a caution about the challenges attached to nuclear power, such as waste storage and project financing.

The 30th Annual CERAWEEK, sponsored by IHS CERA, was held March 7-11 in Houston.

– Rebecca Torrellas

## NEWS & TRENDS

### Golden Pass Announces In-Service Date for Commercial Operations

The Golden Pass LNG Terminal LLC and Golden Pass Pipeline LLC, both Houston-based, reported that it has been granted in-service authority by the Federal Energy Regulatory Commission (FERC) and has commenced commercial operations.

Phase 1 commissioning activities and performance tests of its liquefied natural gas (LNG) receiving terminal were successfully completed in early March. The 69-mile interstate pipeline was suc-

cessfully commissioned earlier in the year. Phase 1 operations will enable nominal send out capacity of 1 billion cubic feet per day of natural gas (Bcf/d). Phase 2 of the terminal is expected to commence commercial operations in the May/June timeframe.

Golden Pass LNG operates state-of-the-art terminal and pipeline facilities near Sabine Pass, Texas. These facilities are designed to safely and reliably receive and

transport natural gas throughout Texas and Interstate markets. When fully operational, the terminal will be among the largest LNG import facilities worldwide, with the capacity to import 15.6 million metric tons of LNG annually. The pipeline, with multiple intra and interstate connections, has a nominal send-out capacity of 2.5 Bcf/d.

### Shaybah NGL Program Bidder Selected

Saudi Aramco, Dhahran, Saudi Arabia, has finalized its bid selection for the four Lump Sum Turn Key (LSTK) contracts of the Shaybah natural gas liquids (NGL) Program, selecting Samsung Engineering Co. Ltd. to perform the engineering, pro-

curement and construction (EPC) work for all the four packages.

The scope of this major award includes the construction of the inlet facilities, NGL recovery trains, dehydration, residue gas compression, acid gas compression, NGL

storage and shipping, the upgrade of the gas handling capacity for the four existing Shaybah gas oil separation plants (GOSPs) and other associated facilities.

It also includes a major upgrade to increase the power generation capacity to

more than 1 Giga Watt by installing four cogeneration units, seven single cycle units, a 50-kilometer 230 kilo volt transmission line, and the associated electrical and non-electrical utilities.

In line with Saudi Aramco's corporate objectives to meet its commitment

for the supply of gas to the local market, the company is building a grassroots NGL recovery plant at the Shaybah Field in Rub' al-Khali, also known as the Empty Quarter.

These facilities will extract valuable NGL components from 2,400 million standard

cubic feet per day of Shaybah associated gas arriving from different existing GOSPs.

## Joint Industry Project: Large Potential for LNG in Regional Shipping, Power Generation

Investments in infrastructure for small scale liquefied natural gas (LNG) power production might be justified when the total demand for electric power exceeds 500 MW within a 120,000 km<sup>2</sup> island region with no pipeline connection. This is one of the findings in a joint industry project on the future small scale LNG value-chain in South East Asia. The study also identifies noteworthy potential for LNG as fuel for ships in regional trade, and predicts a future market for LNG bunkering in Singapore.

The Joint Industry Project (JIP), which was initiated by DNV, Oslo, Norway, during Singapore Maritime Week in 2010, mobilized a consortium of 16 participants from all parts of the LNG value chain. Among the members are Gazprom, Rolls-Royce, Wartsila, Hanjin Shipping, I.M. Skaugen, Keppel, The Linde Group, Trans LNG, DNV, BW group, BBG, the Maritime and Port Authority of Singapore, the two Singapore universities, NUS and NTU. The JIP is also supported by Innovation Norway and The Norwegian Embassy in Singapore. The study examined two areas of future use of LNG in South East Asia. These were LNG for small scale power production in offgrid island regions and LNG as fuel for ship propulsion.

"Substantial market opportunities will evolve throughout the small scale LNG value-chain in South East Asia in the next decade," says managing director Bjørn Tore Markussen of DNV's Clean Technology Centre in Singapore. He has

been in charge of the Joint Industry Project and is in no doubt. "The companies who seize the opportunities early in these evolving markets will be well positioned for interesting growth if entry risks are managed properly."

The study identified multiple island regions in South East Asia outside any pipeline grid where total demand for electrical power exceeds 500 MW. Based on a number of underlying parameters and assumptions, various financially feasible scenarios were modelled. For example, Eastern Indonesia might have a demand for up to 70 small scale 50 MW power plants by 2020. Equally, Southern Philippines could require up to 45 plants, while the estimated demand for Northern Vietnam might be seven small power plants. The distribution of LNG to these power plants would require close to 60 small scale LNG carriers by 2020 if this number of plants is built. As the price of crude oil is rising faster than the price of natural gas, the financial incentives for using LNG for power generation are equally increasing with considerable environmental benefits to be gained from such a fuel switch.

Shipping is a vital part of the future LNG supply chains in South East Asia. The study forecasts that container feeders might be the first ship segment to adopt LNG for propulsion regionally. About 20 % of the regional container feeders are up for renewal by 2020. Local and regional ferries are also well suited to use LNG for propulsion in the longer term.

Singapore is identified as the regionally preferred site for future LNG bunkering, due to large shipping volumes, calm seas for bunkering operations and the fact that infrastructure for LNG bunkering is already under construction. With stricter requirements for environmental performance, and an increasingly competitive expected price for LNG as fuel for ships, a shift to LNG propulsion may have an exciting impact on Singapore as a bunkering hub.

Mr Lam Yi Young, Chief Executive of the Maritime and Port Authority of Singapore (MPA), says "With the push towards cleaner fuel for ships, the results of this Joint Industry Project are timely in evaluating the potential for LNG bunkering services in Singapore. LNG's lower carbon dioxide emissions, minimal sulphur and nitrogen content as well as the abundant availability, allows it to be a viable alternative fuel source for ships, which is also in line with MPA's commitment to promoting environmentally-friendly shipping."

"The consortium is eager to use the findings from the LNG study to build business for the participants and to inform regional stakeholders about the opportunities that lie ahead," says Markussen, "DNV as a company has already decided to invest into a next phase of the JIP. We are now inviting old and new members to join the consortium and one or more of the many project streams that will be kicked off in April and May."

## First Reserve Corp. Expands Energy Infrastructure Team

First Reserve Corp., Greenwich, Conn., reported the expansion of its energy infrastructure team with the appointment of three professionals effective immediately. James Berner joins the team as director. Adi Blum and Mark Saxe join as vice president. The combined expertise and talent of these executives will add immediate and significant value to the group already in place at First Reserve.

“The strong energy and principal investment experience these individuals possess is highly relevant to the execution of our infrastructure investment strategy and sector focus,” says Mark Florian, managing director of First Reserve Corp. “They are excellent examples of the high level of talent First Reserve attracts and the requisite skillset we seek to advance investment opportunities generated from industry relationships.”

James Berner has over 17 years of energy-related debt and equity-finance experience including principal energy investing, deal sourcing, execution and governance in the U.S., Europe and Asia. Berner’s responsibilities will include deal origination, structuring, execution, moni-

toring and exit strategy, with particular emphasis on the worldwide energy infrastructure sector. Berner comes to First Reserve from General Electric Capital Energy Financial Services (EFS), where he was a managing director and led coverage of the U.S. utility sector. He previously led principal investment activities in GE EFS’s Singapore office and project finance in London. Prior to that, he was in project and trade finance at Deutsche Bank, Siemens and the U.S. Export-Import Bank. Berner holds a BA from Cornell University and an MBA from The Wharton School of the University of Pennsylvania.

Mark Saxe joins First Reserve from Loews Corporation, where he served as a director. Saxe was at Loews for six and half years, where he gained broad energy infrastructure experience. He was instrumental in the structuring and execution of significant investments, including Boardwalk Pipeline Partners, a major provider of interstate transportation and storage of natural gas in the U.S. Prior to Loews Corporation, Saxe was an analyst in the Investment Banking Division at Lehman Brothers. He holds a BCom from McGill University.

Adi J. Blum joins from High Road Capital Partners, a middle market private equity firm where he served as a vice president. At High Road Capital Partners, Blum managed structuring and diligence for transactions, was engaged in portfolio company oversight and served on the board of directors of portfolio companies. Prior to High Road, he was an Associate in Citigroup’s Mergers & Acquisitions group, where he focused on several transactions in the energy, transportation and infrastructure sectors. He was also an associate at Silver Oak Partners, where he worked on consulting assignments focused on creating greater efficiencies for state governments. Blum holds a B.S. in International Affairs from Georgetown University, School of Foreign Service and an M.B.A from New York University, Stern School of Business.

Saxe’s and Blum’s responsibilities will include investment origination, structuring, due diligence, and execution and monitoring for the infrastructure team.

## Targa to Acquire Storage and Terminaling Facility in Channelview, TX

Targa Resources Partners LP, Houston, has reported that, through its wholly owned subsidiary, Coast Energy Group LLC, it has acquired a refined petroleum products and crude oil storage and terminaling facility in Channelview, TX. Located on Carpenter’s Bayou along the Houston Ship Channel, the Terminal can handle multiple grades of blend stocks, products and crude. The transaction was paid entirely with cash funded through borrowings under the Partnership’s senior secured revolving credit facility.

Total value of the transaction is below the Hart-Scott-Rodino Act minimum.

“This transaction will be immediately accretive to the Partnership’s unit holders and is complementary to our existing terminal asset base and business along the Gulf Coast. This acquisition enables us to apply our current terminaling expertise to an expanded product slate on a long-term fee basis and enhances the Partnership’s cash flow mix and geographical footprint. We expect to invest incremental growth capital in the near future to expand the ca-

capacity of the Terminal supported by new long term contracts. This is the first acquisition for our recently added products and crude storage and terminaling team who has been charged with growing this asset base. They are actively negotiating other refined products and crude storage and terminaling acquisition opportunities that could be consummated this year. If we were to acquire these properties, they would also generate fee-based income and potentially provide organic growth opportunities,” says Rene Joyce, Chief Executive



Officer of the partnership's general partner and of Targa Resources Corp.

The terminal has approximately 544,000 barrels of storage capacity and

contains blending and heating capabilities, tanker truck and barge loading and unloading infrastructure. Currently, the capacity is 100% leased to customers that

include a multi-national oil company and regional refineries.

## T-Rex Acquires Delcor's Offshore Fabrication Facility

Houston-based, privately-held T-Rex Engineering & Construction LC recently acquired a fabrication facility and associated assets in Houston from Delcor USA Inc. for an undisclosed price, significantly expanding T-Rex's fabrication capabilities for the offshore oil and gas industry.

The assets include a 63,000-square-foot fabrication building, 10 overhead cranes and 1,200 linear feet of waterfront bulkhead that can accommodate up to 5,500 short tons capacity load-outs.

Product offerings include build-to-specification Pipeline End Terminals and Manifolds (PLETs / PLEMs), Umbilical Termination Assembly (UTA) frames, Pig Launchers, Process Piping and skid packages, In-line Sleds (ILS), Manifolds, Jumpers, Spreader Bars, riser blades, mudmats, topside and quarters packages, pipeline and other related offshore equipment.

"This facility, which is located on Carpenter's Bayou near the Houston Ship Channel, gives T-Rex the ability

to build large structures, both topside and subsea, required for any project, in any water depth," says Gary A. Sidwell, president of T-Rex.

Founded in 2008, T-Rex is led by Bobby Hillin, Jr., a former NASCAR top-level series winner, to provide engineering support and fabrication services to the offshore oil and gas industry.

## Golden Pass Announces In-Service Date for Commercial Operations

The Golden Pass LNG Terminal LLC and Golden Pass Pipeline LLC, both Houston-based, reported that it has been granted in-service authority by the Federal Energy Regulatory Commission (FERC) and has commenced commercial operations.

Phase 1 commissioning activities and performance tests of its liquefied natural gas (LNG) receiving terminal were successfully completed in early March. The 69-

mile interstate pipeline was successfully commissioned earlier in the year. Phase 1 operations will enable nominal send out capacity of 1 billion cubic feet per day of natural gas (Bcf/d). Phase 2 of the terminal is expected to commence commercial operations in the May/June timeframe.

Golden Pass LNG operates state-of-the-art terminal and pipeline facilities near Sabine Pass, Texas. These facilities are de-

signed to safely and reliably receive and transport natural gas throughout Texas and Interstate markets. When fully operational, the terminal will be among the largest LNG import facilities worldwide, with the capacity to import 15.6 million metric tons of LNG annually. The pipeline, with multiple intra and interstate connections, has a nominal send-out capacity of 2.5 Bcf/d.

## PIPELINES & TECHNOLOGY

### Mackenzie Gas Project Receives NEB Approval

The Mackenzie Gas Project moved a step closer to fruition, at least from a regulatory standpoint, as Canada's National Energy Board (NEB) issued a certificate of public convenience and necessity for the Cdn\$16.2 billion (US\$16.1 billion) project.

This latest approval from the NEB follows a decade-long battle between regulatory officials in Canada and the project's five partners, Imperial Oil, Mackenzie Val-

ley Aboriginal Pipeline LP, ConocoPhillips, ExxonMobil and Shell Canada.

While the project, which is still awaiting further regulatory approval, has finally gotten NEB approval, the partners previously said that the earliest they could make a final decision on whether to proceed with the project would be late 2013.

Last April, the partners pushed back the project's potential start-up date by five

years with the earliest estimate being in 2018 due to regulatory delays, no financing agreement in place, weather constraints and re-staffing requirements.

The project includes a 760-mile, 1.2 billion cubic feet per day (Bcf/d) natural gas pipeline that would have the capability to expand capacity to 1.8 Bcf/d, as well as a gathering system and a gas processing plant.

Much of the cost estimates and market analysis tied to the development of the project were conducted in 2007.

Although there have been questions regarding the feasibility of the project, given the large amounts of unconventional resources discovered and put into develop-

ment in the last few years, Pius Rolheiser, a spokesman for Imperial Oil, said the project will be needed to replenish declining conventional resources.

“There’s a significant focus on current conditions in the market. Well, Mackenzie is a project that could come on stream

no earlier than very late this decade and would operate for a period of 20-plus years after that,” he told the Toronto Star.

— Frank Nieto

## Plasma Cutting and Gouging Process Approved for Use On Ruby Pipeline

For the first time ever, Hypertherm Powermax plasma systems are being used to create better weld repairs and tie-in points on a natural gas pipeline. The plasma process was successfully used on the Ruby Pipeline, a 675-mile, 42-inch wide natural gas transmission pipeline on a right-of-way through parts of four states: Wyoming, Utah, Nevada, and Oregon.

“The Hypertherm plasma technology makes the industry much more efficient and works to eliminate hazards associated with the use of the old hand grinders,” says Sonny Weems, Superintendent of Associated Pipe Line Contractors.

Associated Pipe Line is using Hypertherm plasma in two different ways: to gouge out excess metal, and to make cuts on individual sections of pipe during the tie-in process. In the past, pipe line builders needing to gouge out excess metal had to rely on hand grinding. The process was lengthy—typically taking at least 45 minutes for each small area—and dangerous with flying debris causing an average of one serious eye injury per day.

With plasma, the work takes less than 15 minutes, and eye injuries are eliminated since there is no flying debris. “Making the switch to Hypertherm and using plasma for gouging has reduced grinding from a major part of the weld repair process to a minor clean-up role,” says Kenny Glaze, a 20-year veteran welder and Local 798 union member.

“Before plasma, I had to use a grinder to access the repair area. That generally

took 45 minutes or more of hand grinding. But now that I’m using a Powermax45 plasma system, I can gouge down to the repair area in a third of the time,” Glaze says.

Hypertherm plasma systems, like the Powermax unit Glaze used, can remove 6.2 pounds of metal per hour. Another time saving benefit is that the plasma leaves behind a weldable edge, and for Associated Pipe Line Contractors, hired to build sections of the line, every minute saved helps keep the project on its tight schedule and under budget. For the welders though, time saved is just the beginning. Fatigue and safety come into play as well. The grinder is heavier and harder to hold than the plasma torch and grinding presents safety hazards, such as eye injuries, from flying debris.

There are other options, but unfortunately, they aren’t much better. For instance, carbon arc gouging presents a problem because the carbon winds up puddling on the pipe and must then be ground off. On the other hand, the plasma system Glaze is using is highly portable, light weight and can cut ½-inch mild steel with ease.

Another advantage of using plasma is the increased visibility of the repair area. When making a repair, the goal is to remove the weld bead without touching the pipe sec-

tion. “This is where plasma really pays off for the welder doing the job,” Glaze says. “The welder can see very precisely what he is doing. A wrong move while gouging or grinding can require the removal of a complete section of pipe at a cost of \$60,000 or more. We’re here to fix things, not to create more problems.”

In addition to speed and safety, plasma torches weigh less than hand grinders, so they are easier to handle and offer better visibility to the work area. This ease of use and visibility are critical since even the smallest mistake can result in having to remove and replace a complete section of pipe.

Hypertherm plasma is also used to smooth out the ends of each individual piece of pipe, before the pipe is tied in to



Hypertherm Powermax plasma systems are now being used on the Ruby Pipeline (Photo courtesy: Hypertherm Powermax).

the line. In the past, Associated, like other pipeline companies, used oxyfuel. But because the resulting cut wasn’t as smooth

or precise as plasma, secondary work was always needed. Now, thanks to plasma, the crew can immediately weld the pipe to the line.

Hypertherm designs and manufactures advanced metal cutting systems for use in a variety of industries such as shipbuilding, manufacturing, and automotive repair. Its product line includes handheld

and mechanized plasma and laser systems, consumables, as well as CNC motion and height controls and cutting software. Hypertherm systems are trusted for performance and reliability that results in increased productivity and profitability for tens of thousands of businesses. The New Hampshire based company's reputation for metal cutting innovation dates

back more than 40 years, to 1968, with Hypertherm's invention of water injection plasma cutting. The company, consistently named one of the best places to work in America, has more than 1,000 associates along with operations and partner representation worldwide.

## Magellan Midstream Proceeds to Next Project Phase of Houston-to-El Paso Pipeline

Magellan Midstream Partners, L.P., Tulsa, Okla., is proceeding with permitting and final engineering for the potential reversal and conversion of a portion of the partnership's Houston-to-El Paso pipeline to crude oil service. The reversed pipeline system would have a capacity of up to 200,000 barrels per day. Recent expressions of interest received from potential shippers indicate sufficient support exists to justify the project. However, the partnership will make a

definitive decision on this project once binding agreements are executed.

"Recent market dynamics continue to favor the reversal and conversion of Magellan's Houston-to-El Paso pipeline to crude oil service as new outlets for West Texas crude oil are sought by producers," says Mike Mears, chief executive officer. "We believe our pipeline system coupled with the crude oil distribution system purchased last year would provide the most direct and cost-efficient route to deliver

West Texas crude oil to the refineries on the Houston Ship Channel and Texas City."

Management continues to finalize the scope of this project and to negotiate binding agreements with shippers and expects to make a decision on this project within the next 2 months. If the project is approved and this schedule is maintained, the partnership expects the reversed crude oil pipeline to be operational within 18 to 24 months.

## Keystone XL Pipeline in Final Stages of Federal Review

TransCanada Corp., Calgary, has confirmed that the regulatory process for the Keystone XL pipeline has now entered the final stages of review by the U.S. Department of State.

"Keystone XL has been under review since 2008 and we are confident we have addressed the major questions raised by regulators and government agencies," says Russ Girling, TransCanada's president and chief executive. "We expect a final regulatory decision for this project by late 2011 and we are pleased the Department of State has committed it will conclude its review of Keystone XL by the end of the year. The Keystone expansion is expected to be operational in 2013."

Since 2008, TransCanada has held more than 90 open houses and public meetings along the pipeline route; given hundreds of hours of testimony to local, state and

federal officials and submitted thousands of pages of information to government agencies in response to questions. The Department of State concluded in the spring of 2010 that Keystone XL would have limited impact on the environment during construction and operation.

"A growing number of opinion leaders, elected officials, labor unions, associations and members of the public are showing their support for Keystone XL," adds Girling. "Instability and unrest in Libya and other parts of the Middle East demonstrate the need for the U.S. to receive a safe, secure, stable supply of oil – Keystone XL will provide that. The project will help put America back to work, creating 20,000 jobs and injecting billions into the U.S. economy."

The U.S. Department of Energy stated in a recent study that "increased Canadian

oil imports will help reduce U.S. imports of foreign oil from sources outside of North America." This supports TransCanada's point that we can reduce America's dependence on oil from Venezuela and the Middle East by up to 40 percent with the Keystone XL pipeline. As the American GI Forum of Texas recently pointed out, the oil that the Keystone system will deliver is "conflict free."

The study also confirmed that the construction of Keystone XL would not change global refinery carbon dioxide or total life cycle greenhouse gas emissions. Earlier analysis by The Perryman Group out of Texas regarding the economic benefits of the project concluded that:

- More than \$585 million in new taxes will go to the states and communities along the pipeline route

- An additional \$5.2 billion in property taxes will be paid over the operating life of the pipeline
- More than \$6.5 billion in personal income will go to Americans
- U.S.-based producers will have new options to move crude oil to American refineries.
- “Keystone XL is a shovel-ready project that is funded completely by private sector

investment at no cost to American taxpayers,” concludes Girling. “It will be a safe, modern and leading-edge pipeline.

## NGL PRICES

### NGL Prices Remain Stable Despite Crude Oil Price Drop

While crude oil prices have lost more than \$8 per barrel in the week following the earthquake and tsunami in Japan, natural gas liquids (NGL) prices have remained relatively firm.

For the week of March 9, the largest loss in value was for C<sub>5+</sub>, which fell 4% at both Mont Belvieu and Conway. This was anticipated, considering its close relationship with crude. Crude oil prices fell due to an expected decrease in demand from Japan.

“Barring a major economic slowdown, the U.S. petrochemical industry may become a key player in providing incremental petrochemicals to bridge the supply/demand gap created by the Japanese crisis. Additionally, the U.S. could become a major supplier of LPGs to Japan,” according to En\*Vantage’s *Weekly Energy Report*.

The price at Mont Belvieu was down to \$2.41, while the Conway price fell to \$2.43. Both prices were the lowest at their respective hubs in a month. This was also the fourth straight week that the Kansas price was greater than its Texas counterpart, which is rare.

Meanwhile, isobutane posted strong gains at Mont Belvieu after experiencing a sharp drop in value last week. The NGL is used to make alkylate, a key component in summer-grade gasoline. As refiners switch over to this blend, isobutane will continue to post gains. For the week of March 9, Mont Belvieu isobutane gained 5% in value to \$1.91. The Conway price moved in the opposite direction as it lost 3% in value to fall to \$1.83, the lowest price at the hub since it was \$1.82 the week of February 2.

Butane prices continued to drop as refiners switched from winter-grade gasoline blends. However, these price drops weren’t as sharp as in the past few weeks and it appears that butane prices are stabilizing. The Conway price was down 2% to \$1.63, the lowest price at the hub since it was \$1.59 the week of February 9. The Mont Belvieu price of \$1.76 was largely unchanged from last week.

Heating demand dropped again this week as winter weather gave way to spring temperatures across much of the

| NGL PRICES             |       |        |        |        |        |         |
|------------------------|-------|--------|--------|--------|--------|---------|
| Mont Belvieu           | Eth   | Pro    | Norm   | Iso    | Pen+   | NGL Bbl |
| March 9 - 15, '11      | 65.11 | 134.36 | 175.62 | 191.04 | 240.83 | \$56.68 |
| March 2 - 8, '11       | 66.55 | 140.06 | 176.04 | 181.52 | 250.38 | \$58.00 |
| Feb. 23 - March 1, '11 | 68.53 | 147.35 | 182.46 | 194.13 | 241.68 | \$59.25 |
| Feb. 16 - 22, '11      | 66.99 | 138.48 | 178.48 | 195.03 | 221.97 | \$56.43 |
| February '11           | 61.86 | 137.14 | 173.64 | 187.12 | 224.73 | \$55.21 |
| January '11            | 59.41 | 134.69 | 168.71 | 178.54 | 214.96 | \$53.39 |
| 4th Qtr '10            | 59.07 | 126.07 | 162.01 | 168.24 | 198.89 | \$50.59 |
| 3rd Qtr '10            | 44.99 | 106.98 | 138.23 | 143.25 | 171.45 | \$42.37 |
| 2nd Qtr '10            | 50.97 | 108.43 | 145.01 | 157.23 | 178.04 | \$44.64 |
| 1st Qtr '10            | 70.8  | 123.84 | 151.72 | 165.09 | 183.29 | \$50.45 |
| March 10 - 16, '10     | 60.02 | 112.32 | 144.6  | 147.73 | 184.85 | \$46.69 |
| Conway, Group 140      | Eth   | Pro    | Norm   | Iso    | Pen+   | NGL Bbl |
| March 9 - 15, '11      | 47.36 | 125.6  | 162.7  | 182.5  | 242.7  | \$52.60 |
| March 2 - 8, '11       | 49.5  | 129.78 | 166.7  | 188.5  | 252.95 | \$54.52 |
| Feb. 23 - March 1, '11 | 47.06 | 135.85 | 172    | 189.5  | 253.83 | \$55.20 |
| Feb. 16 - 22, '11      | 47.3  | 123.6  | 168.18 | 204    | 224.58 | \$51.99 |
| February '11           | 44.36 | 126.61 | 161.11 | 191.61 | 224.17 | \$51.13 |
| January '11            | 44.01 | 128.53 | 162.52 | 174.39 | 207.59 | \$49.79 |
| 4th Qtr '10            | 47.01 | 120.8  | 157.16 | 161.69 | 193.86 | \$47.80 |
| 3rd Qtr '10            | 31.16 | 101.46 | 132.39 | 141.93 | 163.91 | \$39.04 |
| 2nd Qtr '10            | 31.56 | 103.03 | 130.96 | 145.2  | 172.55 | \$39.90 |
| 1st Qtr '10            | 59.82 | 123.81 | 143.58 | 160.7  | 181.55 | \$48.69 |
| March 10 - 16, '10     | 46.14 | 108.66 | 133.44 | 149.67 | 182.5  | \$43.89 |

Data Provided by Intercontinental Exchange.  
Individual product prices in cents per gallon. NGL barrel in \$/42 gallons

country. Propane prices reflected these changes with Mont Belvieu down 3% to \$1.34, its lowest price since it reached the same value the week of February 9. The Conway price fell 2% to \$1.26, its lowest price in a month.

The biggest surprise this week for NGL prices was that ethane remained strong. The Mont Belvieu price dropped only 1% to 65¢, its lowest price in five weeks. The Conway price fell a bit more, as it was down 2% to 47¢, which was its second highest price since the beginning of the year. – Frank Nieto



## FRAC SPREAD

### Frac Spread Margins Largely Down Despite Feedstock Price Reductions

Natural gas liquids (NGL) frac-spread margins fell in all but one case at both Mont Belvieu and Conway for the week of March 9, despite drops for natural-gas feedstock prices. Frac spread margins were negatively impacted by NGL price drops at both hubs.

For the week of March 9, natural-gas feedstock prices were down 2% to \$3.67 per million Btu (/MMBtu) at Conway and down 1% to \$3.76/MMBtu at Mont Belvieu.

While NGL prices were generally stable this week, it was not enough to stabilize frac-spread margins at both hubs. However, should prices remain at this level it is likely that margins will improve.

The biggest drop in margin at Conway was for ethane, which was down 6%, while propane had the largest decrease in margin at Mont Belvieu at 5%. The lone NGL to show an improvement at either hub during the week of March 9 was Mont Belvieu isobutane at 7%. Butane had the smallest drop in margin at Conway at 2%.

The theoretical NGL barrel fell at both Mont Belvieu and Conway with the Kansas price down 4% to \$52.60 per barrel (bbl) with a margin drop of 4% to \$39.20/bbl, while the Texas price was down 2% to \$56.68/bbl with a margin drop of 3% to \$42.95/bbl.

Despite having the largest price drops at both hubs, the most profitable NGL to make remained C<sub>5+</sub> at \$2.02 per gallon (/gal) at Conway and \$1.99/gal at Mont Belvieu. This was followed, in order, by isobu-

tane at \$1.46/gal at Conway and \$1.54/gal at Mont Belvieu; butane at \$1.25/gal at Conway and \$1.37/gal at Mont Belvieu; propane at 92¢/gal at Conway and \$1.00/gal at Mont Belvieu; and ethane at 23¢/gal at Conway and 40¢/gal at Mont Belvieu.

Natural gas in storage for the week of March 11, the most recent data available from the Energy Information Administration, was down 56 billion cubic feet to 1.618 trillion cubic feet (Tcf) from 1.674 Tcf the previous week. This was almost the same storage level as last year at the same time, when it was 1.617 Tcf and 1% greater than the five-year average of 1.595 Tcf. Storage volumes should begin to increase in the next month or so as the injection season kicks off.

However, according to the U.S. National Weather Service's forecast for the week of March 22, heating demand is likely to remain intact next week in several key Northeastern states. The forecast calls for colder-than-normal temperatures in New England and New York, and normal temperatures in the rest of the Northeast. Heating demand will be low in most of the Southeast, the Gulf Coast and parts of the Southwest, where warmer-than-normal temperatures are expected. Colder weather is expected along the West Coast, and normal late-March weather is expected in the Midwest and Rockies.

– Frank Nieto

| Current Frac Spread (Cents/Gal) |        |                            |              |                |
|---------------------------------|--------|----------------------------|--------------|----------------|
| MARCH 18, 2011                  | Conway | Change from Start of Month | Mont Belvieu | Start of Month |
| Ethane                          | 47.36  |                            | 65.11        |                |
| Shrink                          | 24.33  |                            | 24.93        |                |
| Margin                          | 23.03  | -6.28%                     | 40.18        | -3.15%         |
| Propane                         | 125.6  |                            | 134.36       |                |
| Shrink                          | 33.62  |                            | 34.44        |                |
| Margin                          | 91.98  | -3.52%                     | 99.92        | -5.23%         |
| Normal Butane                   | 162.7  |                            | 175.62       |                |
| Shrink                          | 38.06  |                            | 38.99        |                |
| Margin                          | 124.64 | -2.40%                     | 136.63       | -0.16%         |
| Iso-Butane                      | 182.5  |                            | 191.04       |                |
| Shrink                          | 36.55  |                            | 37.45        |                |
| Margin                          | 145.95 | -3.38%                     | 153.59       | 6.76%          |
| Pentane+                        | 242.7  |                            | 240.83       |                |
| Shrink                          | 40.7   |                            | 41.7         |                |
| Margin                          | 202    | -4.38%                     | 199.13       | -4.47%         |
| NGL \$/Bbl                      | 52.6   | -3.51%                     | 56.68        | -2.27%         |
| Shrink                          | 13.41  |                            | 13.74        |                |
| Margin                          | 39.2   | -3.89%                     | 42.95        | -2.81%         |
| Gas (\$/mmBtu)                  | 3.67   | -2.39%                     | 3.76         | -0.53%         |
| Gross Bbl Margin (in cents/gal) | 89.55  | -3.88%                     | 99.74        | -2.91%         |
| NGL Value in \$/mmBtu           |        |                            |              |                |
| Ethane                          | 2.61   | -4.32%                     | 3.58         | -2.16%         |
| Propane                         | 4.36   | -3.22%                     | 4.66         | -4.07%         |
| Normal Butane                   | 1.76   | -2.40%                     | 1.9          | -0.24%         |
| Iso-Butane                      | 1.14   | -3.18%                     | 1.19         | 5.24%          |
| Pentane+                        | 3.13   | -4.05%                     | 3.11         | -3.81%         |
| Total Barrel Value in \$/mmBtu  | 12.99  | -3.53%                     | 14.44        | -2.34%         |
| Margin                          | 9.32   | -3.97%                     | 10.68        | -2.96%         |

Price, Shrink of 42-gal NGL barrel based on following: Ethane, 36.5%; Propane, 31.8%; Normal Butane, 11.2%; Isobutane, 6.2%; Pentane+, 14.3%, Fuel, frac, transport costs not included. Conway gas based on NGPL Midcontinent zone, Mont Belvieu based on Houston Ship Channel. Shrink is defined as Btus that are removed from natural gas through the gathering and processing operation. | Source: Frank Nieto

**SNAPSHOT**

**Midcontinent Express' Lamar Interconnection Was Its Most Active Receipt Point in 2010**

The Midcontinent Express Pipeline was brought online on August 1, 2009, by Kinder Morgan Energy Partners, the 500-mile pipeline's operator, and Energy Transfer Partners. Last May, Energy Transfer Partners transferred its 49.9% interest in the pipeline to Regency Energy Partners.

The pipeline runs from the southeast corner of Oklahoma, across northeast Texas, northern Louisiana, central Mississippi and into Alabama and has a capacity of 1.432 billion cubic feet per day with two compressor stations and multiple interconnections that provide it with access to the Eastern U.S.

In 2010, its first full year of operation, the 1.432-billion-cubic-foot pipeline's top 10 customers were Chesapeake Energy Marketing with 925,000 dekatherms per day (Dth/d) of capacity; Newfield Exploration Mid-Continent with 415,000 Dth/d; Cross Timbers Energy Services with 350,000 Dth/d; Total Gas & Power North America with 204,000 Dth/d; EOG Resources with 100,000 Dth/d; Sandridge Energy with 75,000 Dth/d; Quicksilver Resources with 50,000 Dth/d; Iberdrola Renewables, Q-West Energy and Tenaksa Marketing Ventures each with 30,000 Dth/d.

There was a great deal of volatility at many of the major receipt and delivery points along the system due to maintenance work, but throughout the year Kinder Morgan's interconnection at Lamar with the NGPL pipeline was the most active receipt point in every month.

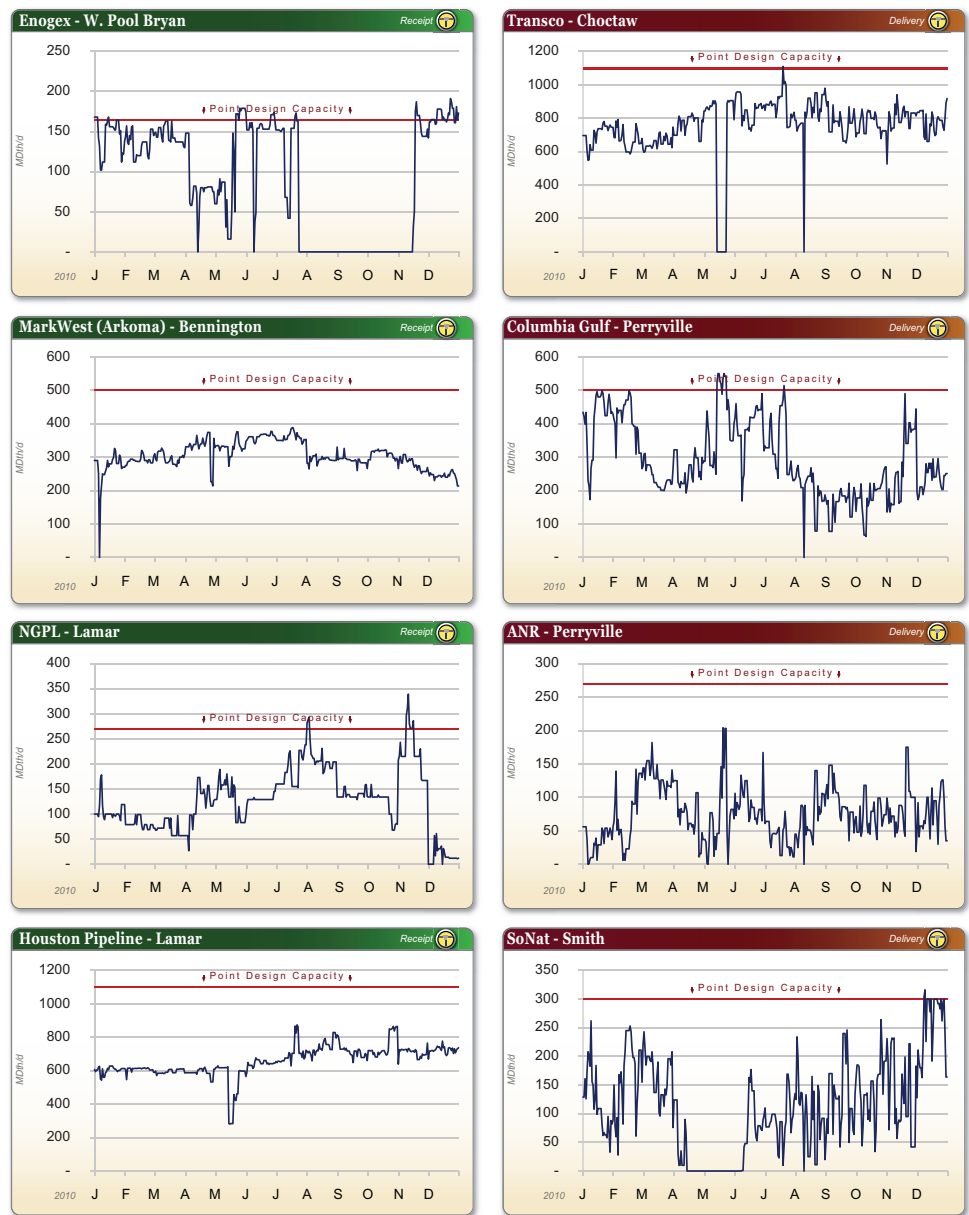
The interconnection's most active months were in August and December when it averaged 732,000 Dth/d and 739,000 Dth/d respectively. May was the least active month with an average of 542,000 Dth/d. — Frank Nieto

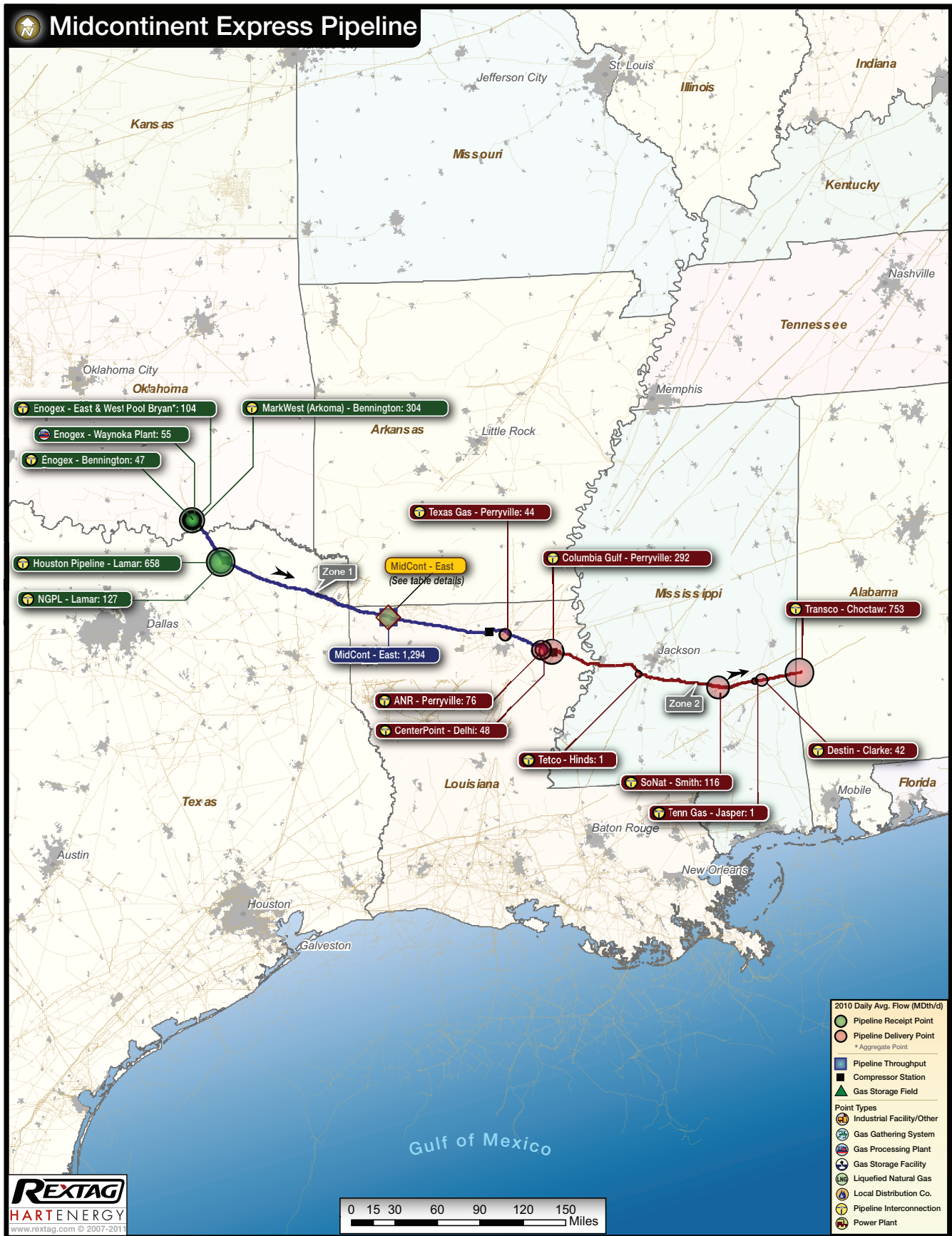
| General Information |                                                               |                      |             | FERC Code: 216 |  |
|---------------------|---------------------------------------------------------------|----------------------|-------------|----------------|--|
| Owner:              | Kinder Morgan Energy (50%)<br>/Energy Transfer Partners (50%) | System Capacity:     | 1,432 Bcf/d |                |  |
| Operator:           | Kinder Morgan Energy Partners L.P.                            | Seasonal Storage:    | None        |                |  |
| Miles of Pipeline:  | 502                                                           | Compressor Stations: | 2           |                |  |

| Top 10 Transport Customers |                                        |          | Capacity (MDth/d) |                            |          |
|----------------------------|----------------------------------------|----------|-------------------|----------------------------|----------|
| Rate                       | Customer Name                          | Capacity | Rate              | Customer Name              | Capacity |
| FT                         | Chesapeake Energy Marketing, Inc.      | 925      | FT                | Sandridge Energy, Inc.     | 75       |
| FT                         | Newfield Exploration Mid-continent Inc | 415      | FT                | Quicksilver Resources Inc. | 50       |
| FT                         | Cross Timbers Energy Services, Inc.    | 350      | FT                | Iberdrola Renewables, Inc. | 30       |
| FT                         | Total Gas & Power North America, Inc.  | 204      | FT                | Q-west Energy Company      | 30       |
| FT                         | EOG Resources, Inc.                    | 100      | FT                | Tenaska Marketing Ventures | 30       |

**Midcontinent Express Pipeline - Major Receipt & Delivery Points**





Midcontinent Express Pipeline - Ranked Averages

Top Receipt Point Averages for 2010

Averages in MDth/d

| No. | Point Name                       | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1   | HPL / MEP LAMAR                  | 614 | 561 | 607 | 581 | 542 | 633 | 716 | 732 | 708 | 763 | 699 | 739 |
| 2   | MARKWEST / MEP BENNINGTON BRYAN  | 271 | 267 | 303 | 326 | 336 | 357 | 366 | 289 | 288 | 315 | 275 | 249 |
| 3   | MEP / NGPL LAMAR                 | 109 | 74  | 72  | 113 | 134 | 127 | 188 | 210 | 137 | 123 | 222 | 17  |
| 4   | ENOGEX / MEP WEST POOL BRYAN     | 148 | 123 | 148 | 82  | 103 | 143 | 98  | 0   | 0   | 0   | 70  | 172 |
| 5   | ENOGEX / MEP WAYNOKA PLANT BRYAN | 105 | 94  | 105 | 43  | 50  | 83  | 61  | 0   | 0   | 0   | 40  | 83  |
| 6   | CEGT / MEP DELHI RICHLAND        | 0   | 0   | 0   | 0   | 9   | 51  | 28  | 94  | 95  | 102 | 98  | 99  |
| 7   | ENOGEX / MEP BENNINGTON BRYAN    | 71  | 98  | 88  | 14  | 42  | 61  | 41  | 0   | 0   | 0   | 29  | 118 |
| 8   | ENOGEX / MEP EAST POOL BRYAN     | 10  | 23  | 20  | 18  | 11  | 23  | 19  | 0   | 0   | 0   | 5   | 23  |
| 9   | NGPL / MEP ATLANTA CASS          | 0   | 0   | 0   | 1   | 0   | 0   | 2   | 0   | 0   | 0   | 0   | 0   |

\* "0" values may also include smaller units less than 1 MDth/d \*\* "Point Name" as filed originally by pipeline company

Top Delivery Point Averages for 2010

Averages in MDth/d

| No. | Point Name                        | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1   | TRANS / MEP DEL CHOCTAW           | 714 | 617 | 663 | 752 | 605 | 835 | 896 | 836 | 761 | 779 | 788 | 795 |
| 2   | COL GULF / MEP PERRYVILLE MADISON | 418 | 380 | 244 | 257 | 409 | 387 | 346 | 204 | 156 | 187 | 274 | 241 |
| 3   | SONAT / MEP SMITH                 | 121 | 156 | 173 | 28  | 0   | 61  | 90  | 95  | 130 | 147 | 128 | 257 |
| 4   | ANR / MEP PERRYVILLE RICHLAND     | 36  | 63  | 134 | 75  | 72  | 91  | 42  | 71  | 95  | 74  | 85  | 77  |
| 5   | TEX GAS / MEP PERRYVILLE OUACHITA | 20  | 16  | 97  | 55  | 116 | 37  | 68  | 13  | 19  | 26  | 41  | 22  |
| 6   | DESTIN / MEP CLARKE               | 3   | 0   | 11  | 1   | 0   | 42  | 58  | 87  | 54  | 67  | 95  | 92  |
| 7   | TENN / MEP JASPER                 | 0   | 0   | 2   | 2   | 0   | 0   | 0   | 0   | 0   | 0   | 7   | 4   |
| 8   | TETCO / MEP HINDS                 | 0   | 0   | 2   | 0   | 0   | 0   | 1   | 0   | 0   | 4   | 1   | 0   |

\* "0" values may also include smaller units less than 1 MDth/d \*\* "Point Name" as filed originally by pipeline company





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