MIDSTREAM Monitor

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DUG MIDCONTINENT | MIDSTREAM TECHNICAL FORUM

Staff Shortage Confronts Gas Processors

PAUL HART
HART ENERGY

OKLAHOMA CITY—What's the biggest challenge today in natural gas processing? It's not the gas itself or the technology used to clean it and extract the related NGL. Rather, it's the people—or lack of them—to do the work.

That was a major topic of discussion Nov. 13 in a roundtable focused on "Getting the Most from Gas" during a midstream technical forum, part of Hart Energy's 6th annual DUG Midcontinent Conference and Exhibition.

"The workforce is a tremendous challenge for us," said Geoff Hager, owner and general manager of Tulsa-based Big Elk Energy Systems. He described his concern that energy business careers aren't considered by many high school and

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college students—even in energy-rich Oklahoma. "There's a perception that it's a dirty business. We've gone to high school students interested in both four-year and vocational degrees" to discuss career opportunities and the industry's comparatively good wage scales. The potential for well-paying jobs usually gets students' attention, he noted.

Big Elk manufactures large-scale pipeline measurement and integrity equipment and serves the energy industry in North America and overseas.

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Arturo Puigbo, vice president for sales technology for Linde North America, seconded Hager's concerns. "We have to focus on the next generation, that's a challenge for any organization," he said, noting the average age of energy-industry employees is on the high side of 50. Puigbo emphasized the need to assure the body of knowledge gained over the years by experienced personnel is not lost as they retire and younger employees take their places during the oil and gas industry's ongoing "big crew change."

In a related vein, gas processors face supply and manufacturing challenges nearly as severe as the staffing problem, the panelists agreed. Producers want new gas plants built on shorter cycles so they can put new wells on production quickly. That's difficult, given parts shortages. The Trump administration's tariff rulings have exacerbated the problem for necessary valves and controls manufactured abroad, the panelists said.

"This is very difficult for us because we are in a business that's entirely built on relationships," Hager said. Customers want deadlines met at agreed-upon costs.

Gas processing naturally has its technical issues as well, the panelists agreed. Companies that build NGL extraction plants, such as Linde, have done a remarkable job of improving gas processing technology in recent years to the point that the latest-technology plants can extract nearly 100% of the liquids from a raw gas stream, Puigbo said.

However, plants with that impressive capability tend to be large, some with capacities of 300 million cubic feet per day (MMcf/d), "and that benefits the larger midstreamers," Puigbo added. The challenge now is to transfer that technology to smaller, less expensive plants in the 200 MMcf/d size range that are typically ordered by smaller midstream players.

More Fractures For Less Money

OKLAHOMA CITY—Spacing is crucial in the Stack play, Wade Hutchings, senior vice president of exploration and production at Devon Energy Corp. (NYSE: DVN), said during a keynote address at Hart Energy's DUG Midcontinent conference.

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Devon's 24-well Showboat project in the Stack has delivered critical learnings this year, **Hutchings told conference attendees** at the Cox Convention Center in downtown Oklahoma City. The project located in Blaine County, Okla., had 12 wells per unit.

Following the initial 12-well Showboat spacing project, Devon has quickly recalibrated its completion designs and flowback strategy to improve results at nearby projects, Bernhardt and Horsefly, in the Stack.

"Spacing matters and early projects were spaced too tightly," he said adding the company's next 12 projects will have four to eight wells per unit.

Technical learnings from Devon's Showboat Stack project: 100% increase in clusters per stage while cost per fracture was reduced 40%.

"More fractures for less money, more effective drainage and fewer wells required to access resource," he said.

—HART ENERGY STAFF

FRAC SPREAD

NGL Margins Enduring Tight Squeeze

JOSEPH MARKMAN | HART ENERGY

The update came at lunch between bites of brisket at this week's DUG Midcontinent Conference in Oklahoma City: the **price of natural gas**, which startled the industry when it closed above $4 per million British thermal units (MMBtu) on Nov. 13, was up 17% at midday Nov. 14. By the end of trading, the jump was 18% *in one day*.

CURRENT FRAC SPREAD (CENTS/GAL)				
NOVEMBER 16, 2018	Conway	Change from Start of Week	Mont Belvieu	Last Week
Ethane	16.78		29.95	
Shrink	25.76		24.80	
Margin	-8.98	15.11%	5.15	-39.71%
Propane	62.88		73.25	
Shrink	35.60		34.27	
Margin	27.28	-26.90%	38.98	-23.73%
Normal Butane	72.15		81.70	
Shrink	40.30		38.80	
Margin	31.85	-33.52%	42.90	-26.69%
Isobutane	87.05		86.58	
Shrink	38.70		37.26	
Margin	48.35	-21.61%	49.32	-21.16%
Pentane+	109.58		109.80	
Shrink	43.10		41.49	
Margin	66.48	-15.87%	68.31	-19.17%
NGL $/Bbl	23.79	-5.20%	27.38	-9.62%
Shrink	14.20		13.67	
Margin	9.59	-26.10%	13.71	-23.57%
Gas ($/mmBtu)	3.89	17.19%	3.74	10.66%
Gross Bbl Margin (in cents/gal)	21.47	-27.25%	31.91	-23.83%
NGL Value in $/mmBtu (Basket Value)				
Ethane	0.92	18.34%	1.65	-3.23%
Propane	2.18	-7.12%	2.54	-10.76%
Normal Butane	0.78	-12.33%	0.88	-12.70%
Isobutane	0.54	-8.08%	0.54	-10.03%
Pentane+	1.41	-5.37%	1.42	-10.00%
Total Barrel Value in $/mmbtu	5.84	-4.29%	7.03	-9.14%
Margin	1.95	-29.85%	3.29	-24.51%

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 Midwest region, Mont Belvieu based on Houston region. Shrink is defined as Btus that are removed from natural gas through the gathering and processing operation.

Couple that with NGL prices, most of which suffered double-digit declines last week, and the result is a slew of tightly squeezed margins.

The simple answer is that natural gas storage is very low and winter is approaching. But low storage numbers have been out there for months and winter has been on the calendar since Julius Caesar put it there in 45 B.C. **EnVantage Inc**. suspects that traders who sold short are reconsidering their positions.

"Now we are in November with storage starting out the winter at the lowest levels since 2005 and cold snaps beginning to come through the lower 48," EnVantage said in a report. "The combined U.S. and Canadian storage levels are down nearly 700 [billion cubic feet (Bcf)] when compared to the five-year average. To put things into perspective, the five-year average drawdowns of the two countries are slightly in excess of 2.5 [trillion cubic feet (Tcf)]."

Countering those worrisome numbers is the U.S. Energy Information Administration's (EIA) projection that the upcoming winter will only require a 1.77 Tcf draw in U.S. inventories, which would be the second-lowest in the past decade. EnVantage, however, is not convinced.

"As an industry, we need to take these projections with a large grain of salt as the unexplained variances in the EIA projections [balancing item] are the largest that we have ever seen," the analysts said. "That implies that the EIA projections contain a greater amount of uncertainty than 'normal,' all else being equal."

The Mont Belvieu, Texas, price of ethane dipped below 30 cents per gallon (gal) last week for the first time since early June with no bottom in sight as crude prices continue to fall.

For now, though, Mont Belvieu ethane is 41% below its peak in mid-September and its margin was reduced by 40% in the last week to just over 5 cents/gal.

VIDEO

HEADLINES: Oil Prices' Bumpy Ride

It's been a bumpy ride for oil prices over the last two weeks. West Texas Intermediate (WTI) climbed back slightly at midweek to roughly $56 a barrel following a record-setting 12-day decline.

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American crude has plunged 20% from its recent peak, entering a bear market on Nov. 8. Many industry watchers expected prices to rise as U.S. sanctions against Iran kicked in this month but factors such as pipeline woes in the Bakken and continued production from OPEC have taken a toll. OPEC has recently indicated it is considering cutting production by as much as 1 million barrels per day in response.

U.S. President Donald Trump was joined by French President Emmanuel Macron this week in saying that the pair would continue to put pressure on producers to bring down oil prices. "Oil prices have started to fall and I hope they continue to fall," the French president said in an interview on Nov. 14. Meanwhile, the Energy Information Administration (EIA) reported this week that it expects crude oil output from seven major shale basins in the U.S. to hit a record of 7.9 million barrels per day in December.

Permian Possibilities

The Permian: It's one of those rare place names that merits a definite article. From the legendary Santa Rita No. 1 gusher in 1923 until now, the basin has grown exponentially.

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And it continues to grow. The Permian Basin is expected to still be growing when it marks its centennial in just five years.

A U.S. Energy Information Administration (EIA) midyear report projected Permian crude oil production would hit 3.4 million barrels per day (MMbbl/d) in August. Bear in mind: A decade ago Permian producers could not sustain oil production at 1 MMbbl/d.

Numbers are equally impressive for Permian natural gas. August output was to reach 10.9 billion cubic feet per day (Bcf/d), according to EIA. In 2009, the basin flowed around 5 Bcf/d.

The Permian marked an epic oil output expansion of up to 1.1 MMbbl/d in the first half of 2018—a 53% increase since first-quarter 2017—and that magnitude of increase could occur again in 2019 and again by 2025, some analysts predict.

"It's the basin that keeps on giving," said Cory Richards, CEO of PT Petroleum LLC, at Hart Energy's recent DUG Permian Conference & Exhibition in Fort Worth, Texas. **—PAUL HART | HART ENERGY**

Contact Information:

JOSEPH MARKMAN Senior Editor
jmarkman@hartenergy.com

Contributing Editors: Velda Addison, Darren Barbee, Nissa Darbonne, Brandy Fidler, Leslie Haines, Terrance Harris, Paul Hart, Mary Holcomb, Jessica Morales, Emily Patsy, Erin Pedigo, Larry Prado, Jennifer Presley, Chris Sheehan, Steve Toon, Len Vermillion, Brian Walzel, Alexa West, Peggy Williams

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1616 S. Voss, Suite 1000 • Houston TX 77057-2627 • USA