What You May Have Missed

Highlights of Recent Crude Oil Events

June 2015

Dennis L. Sutton
Executive Director COQA
OUTLINE

• Opportunity Crudes Conference
• RBN Energy/ Turner, Mason & Company
• Argus Americas Crude Conference
• EUCI North American Crude Transloading Forum
• Platts Rockies Oil & Gas Conference
4th OPPORTUNITY CRUDES CONFERENCE-
SEPT. 14-16, 2014- HOUSTON

• Hosted by Hydrocarbon Publishing
• Previous Conferences in 2008, 2010, and 2012
• COQA served as a Promotional Partner
• 2 ½ day Conference beginning with a workshop on Sunday
4th OPPORTUNITY CRUDES CONFERENCE-
SEPT. 14-16, 2014- HOUSTON

• Emphasis on the processing aspects of our industry
• 30 internationally renowned technology experts and business strategists addressing four themes:
  1. Outlooks of Global Crude Markets & Supply Logistics
     • North American Crude Supply and Logistics- Martin Tallett, President- EnSys Energy
2. Interworking of Crude Quality Analyses, Assay Management & Blending
   • Matthew Goitia, Bill Lywood, Colin Stewart, Hege Dammen, David Alexander

3. Latest Developments in Resid Upgrading and Tight Oil Processing
   • Crude Compatibility, Asphaltene Precipitation
   • Sam Lordo

4. Technologies and Strategies of Increasing Fuel and Petrochemical Yields
“Surviving the Flood of Light Crude Oil” – A Joint Conference
Presented by RBN Energy and Turner, Mason & Co

• Houston- August 19 & 20
• Why are refineries limited in the portion of light crude that can be run? What are the current limits on light crude runs? If U.S. refineries cannot absorb all of this volume and it cannot be exported, where will all this light crude go?
“Surviving the Flood of Light Crude Oil”

• Primary Speakers were Rusty Braziel (RBN Energy) and John Auers (Turner, Mason & Co.)
• You can subscribe to RBN’s Energy blog, published daily. Discusses markets related to crude, NGLs, and natural gas.
• You can subscribe to John Auer’s weekly blog.
“Surviving the Flood of Light Crude Oil”

You asked for a miracle, I gave you fracking and tight oil. But even I cannot get rid of the Jones Act.
ARGUS AMERICAS CRUDE SUMMIT-January 27-29, 2015-HOUSTON

• My title for the Conference-
  “Moving Forward Amidst Chaos and Price Uncertainty”
TIMING IS EVERYTHING 😊

Crude Oil Quality Association  www.coqa-inc.org
ARGUS AMERICAS CRUDE SUMMIT

• Conference has grown significantly in recent years and had about 500 in attendance!
• The COQA has been well represented as a Partnering Organization and through speakers.
• In the past three years, speakers have included Dennis Sutton, Bruce Carlile, Hege Dammen, Bill Lywood, Dr. Bagawandoss, Ashok Anand, and Matthew Goitia.
ARGUS AMERICAS CRUDE SUMMIT

• The timing of the conference in light of the dramatic crude oil price decline led to a “very measured” tone.

• Four keynote speakers:
  • The Honorable Newt Gingrich, Speaker of the House, 1995-1999
  • Joe Gorder, Chairman, President, and CEO, Valero Energy
  • Harold G. Hamm, Chairman and CEO, Continental Resources
  • Greg Armstrong, Chairman and CEO, Plains
ARGUS AMERICAS CRUDE SUMMIT

• Sessions during the 1 ½ day conference included:
  • Production, Policy and Price
  • Opportunities for Crude Absorption
  • Bracing for Change
  • North American Crude Transportation
  • Latin American Markets
ARGUS AMERICAS CRUDE SUMMIT

• Key Takeaways:
  • “Reduce the Pentagon to a Triangle and reduce 40% of the bureaucracy” – Newt Gingrich
  • As an E&P company, “the old paradigm was to find plays with multiple years of inventory. The new paradigm is to find plays with multiple decades of inventory. “- Harold Hamm
Lots of discussion on exports. A special workshop on “Shale Crude Oil and Condensate Exports- What does the Future Hold?”

“If crude exports are relaxed and no change to the Jones Act, you can export to the Middle East cheaper than to PADD I”- Peter Halliday, Baker & O’Brien
ARGUS AMERICAS CRUDE SUMMIT

• General feeling that the crude price needs to be ~$70/bbl for sustainability.
• Entire plays will not “dry up”, but instead companies will tap the “sweet spots” in the prolific plays.
• Over 2/3s of the Eagle Ford can be produced at $60/bbl, and over half of the DJ Basin at this price.
EUCI NORTH AMERICAN CRUDE OIL TRANSLOADING FORUM

- March 4 & 5, 2015 in Denver
- A small focused conference with about 20 attendees involved in moving crude by rail
EUCI NORTH AMERICAN CRUDE OIL TRANSLOADING FORUM

• Speakers during the 1 ½ day conference included:
  • Gary Weimer, Weimer Consulting
  • James Rader, Watco Compliance Services (Keynote)
  • Paula Watkins, API
  • Dennis Sutton, COQA
  • Laurence Pearlman, Oliver Wyman
EUCI NORTH AMERICAN CRUDE OIL TRANSLOADING FORUM

• Emphasis on the rail aspects- safety, car design, inspections.
• Session by Sutton addressed “Crude, the Product- Sampling, Assays, and Regulations”
• Paula Watkins discussed API Recommended Practice 3000
CRUDE OIL SPECIFICATIONS?

• Finished products, e.g., motor gasoline and diesel fuel, have very well defined specifications.

• Intermediate products, such as naphtha and gas oil, have generally accepted ranges. Price may be negotiated based on differing quality.

• Crude oil usually has few if any defined specifications. Contracts will often read “normal production quality”, or for foreign grades “normal export quality”.

Crude Oil Quality Association

www.coqa-inc.org
EUCI NORTH AMERICAN CRUDE OIL TRANSLOADING FORUM

• An added bonus- a tour of the Musket’s rail facility north of Denver, courtesy of Brian Kernke.
PLATTS 9th ANNUAL ROCKIES OIL & GAS CONFERENCE

9th Annual
Rockies Oil & Gas
Managing New Realities — Basin Economics, Production, Markets, Takeaway, and Prices
April 27–28, 2015 • Four Seasons Hotel Denver • Denver, Colorado

Crude Oil Quality Association  www.coqa-inc.org
PLATTS 9th ANNUAL ROCKIES OIL & GAS CONFERENCE

• Attendance of about 50- mostly small producers
• Topics included:
  • Production Outlook- Established and Emerging Plays
  • Fracking Bans and Negotiation Efforts
  • Flaring Targets and Responses
  • Crude Quality in Rail Shipping
PLATTS 9th ANNUAL ROCKIES OIL & GAS CONFERENCE

• Topics (continued):
  • Crude Demand- featured discussion of Utah’s waxy crudes
  • Crude Price Outlook
  • A number of talks related to Natural Gas and Natural Gas Liquids
PLATTS 9th ANNUAL ROCKIES OIL & GAS CONFERENCE

• Concluded with Brian Scheid and Herman Wang from Platts Washington DC office

• Three topics to watch for:
  • Strategic Petroleum Reserve (SPR)
  • Renewable Fuel Standard (FRS)
  • Keystone XL

• Prediction- No change to the Jones Act
PLATTS 9th ANNUAL ROCKIES OIL & GAS CONFERENCE

• Brian Scheid and Herman Wang do an outstanding weekly Podcast titled “Capitol Crude”. Check it out!

Cellulosic ethanol attempts a comeback, and Congress tackles a crude policy framework
September 8, 2014 (7:36 mins)

On this week’s Capitol Crude, Platts senior editors Brian Scheid and Herman Wang explain how the US Congress is looking to lay the groundwork for future crude oil policy, meaning it’s a perfect time to start paying attention to it, despite its reputation for being stuck in a cycle of dead-end legislation and inaction.

Additionally, while times have been tough for the cellulosic biofuels industry, new hope arises after a plant opening and two more major facilities are set to come online soon.
Addressing the Issue of Crude Quality in Rail Shipping

Presentation for PLATTS 9th ANNUAL ROCKIES OIL & GAS CONFERENCE

April 2015

Dennis L. Sutton
COQA/ PetroQual LLC
IDENTIFY THE INCIDENT
FIRE GENERATED BY A BURNING WEED. NO PETROLEUM USED!

http://commons.wikimedia.org/wiki/Fire#/media/File:Fire02.jpg

Crude Oil Quality Association www.coqa-inc.org
OUTLINE

• Bakken crude quality, comparison to other crudes
• Bakken crude - light component characteristics
• Development of API Recommended Practice 3000
• Crude oil conditioning and the new standards adopted by the North Dakota Industrial Commission
• Effect of treating equipment on Bakken quality
• Addressing the role of light components in railroad incidents
• Future Work
BAKKEN CRUDE-CONCLUSIONS

• BKN crude is a light sweet crude oil
  • API gravity ~40 to 43° and sulfur < 0.3 wt.%
  • Similar to other light sweet crude oils
• Quality is very consistent
  • Both well-to-well and throughout the supply chain
  • Little variation throughout entire basin
• Classified correctly
  • As a Class 3 Flammable Liquid
  • Recommended to be categorized as Packing Group I-
    because of ambiguity of D86 test
BAKKEN VS. EAGLE FORD- A FREQUENT QUESTION

- Both Bakken crude and Eagle Ford are light, sweet grades, rich in naphtha, and low in vacuum residuum (the highest boiling components).
- The biggest difference between them is that the Bakken is quite consistent across the basin (38-44 API at the wellhead) while the Eagle Ford is quite variable (30 API to > 60 API).
WHAT’S NEXT- OPERATIONALLY?


• The order sets operating standards for conditioning equipment to properly separate production fluids into gas and liquid.

• The new standard requires that Bakken crude vapor pressure will not exceed 13.7 psi.

• This order became effective April 1, 2015.
IMPLICATIONS OF 13.7 psi VAPOR PRESSURE MAXIMUM

• 13.7 psi is about 1 psi lower than the maximum allowable vapor pressure for finished gasoline.

• Data from the NDPC study shows about 95% of samples were <13.7 psi.

• The order will result in greater attention to proper operation of heater treaters.

• Companies worked hard to meet the 13.7 psi limit by April 1.

• Even with this specification, Bakken crude oil will still be Packing Group I, as are most other crude grades.
# CRUDE BY RAIL INCIDENTS - 2015 (involving fires)

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Railroad</th>
<th>Crude Source</th>
<th>Type of Incident</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 14</td>
<td>Near Timmins, Ontario, CANADA</td>
<td>Canadian National</td>
<td>Canadian Synthetic, Alberta</td>
<td>Derailment</td>
</tr>
<tr>
<td>February 16</td>
<td>Mt. Carbon, West Virginia, USA</td>
<td>CSX</td>
<td>Bakken, North Dakota</td>
<td>Derailment</td>
</tr>
<tr>
<td>March 5</td>
<td>Galena, Illinois, USA</td>
<td>BNSF</td>
<td>Bakken, North Dakota</td>
<td>Derailment</td>
</tr>
<tr>
<td>March 7</td>
<td>Near Gogoma, Ontario, CANADA</td>
<td>Canadian National</td>
<td>Canadian Synthetic, Alberta</td>
<td>Derailment</td>
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<tr>
<td>May 6</td>
<td>Heimdal, North Dakota, USA</td>
<td>BNSF</td>
<td>Bakken, North Dakota</td>
<td>Derailment</td>
</tr>
</tbody>
</table>
CONCLUSIONS- WHAT WE KNOW

• Crude oil is flammable. Its flammability is a result of the chemical characteristics, and this is what makes it valuable as an energy source.

• Incidents have not occurred spontaneously. They are associated with derailments.

• 2015 incidents have involved both Bakken crude and Canadian synthetic crude- a much lower vapor pressure material.

• Vapor pressure alone does NOT define the ignitability and flammability characteristics of a crude oil.
CONCLUSIONS- WHAT WE KNOW

• The movements of crude by rail are up about 50 fold since 2008.

• About 2/3s of current crude by rail movements are Bakken crude oil.

• Per EIA data, over 1 million b/d of crude moved by rail in North America in January 2015.
Crude-by-rail movements (2014)

Source: U.S. Energy Information Administration based on data from the Surface Transportation Board and other information
CONCLUSIONS- WHAT WE DON’T KNOW

• How does the vapor pressure of a crude oil affect the response in a derailment?
WHAT’S NEXT- ANALYTICALLY?

• The US Department of Energy has been commissioned to carry out work in 2015 on the flammability/ignitability of crude oil.

Crude Oil Quality Association  www.coqa-inc.org
COQA MEETINGS

• The COQA is a not-for-profit industry organization. Meetings are open to the public, and the registration fee is a bargain at only $100.

• The next meeting will be October 22 in New Orleans. Check the web site www.coqa-inc.org for details.

• Then, our first meeting of 2016 will be in San Antonio, TX.
Thank You!

See You in New Orleans!