Presentation to the 5th International Meeting of the CCQTA/COQA

Dennis L. Sutton
COQA Executive Director
June 2016
Previous Joint Meetings

- Alternating between Canada and the US -
  - 2008- Calgary
  - 2010- New Orleans
  - 2012- Kananaskis
  - 2014- San Francisco
  - 2016- Edmonton
The Crude Oil Quality Association (COQA)
Outline

- Mission and Purpose
- Background
- Subcommittees
- Organizational Structure
- Sponsors and Supporters
- Future
COQA’s Mission

■ Ensure quality and consistency of crude oil are maintained from production to refinery
■ Expand definition of quality beyond API gravity and sulfur
■ Oppose indiscriminate alteration in quality, e.g. blending
■ Promote communication between all sectors of industry
We ....

- Promote better understanding of crude oil quality issues throughout the petroleum industry through
  - Open meetings – three times annually
  - Encouraging exchange of technical information on issues and experience impacting transportation, handling, storage, and refining of crude oil
  - Cooperation with other industry groups, e.g. American Fuel & Petrochemical Manufacturers (AFPM), the Canadian Crude Quality Technical Association (CCQTA) and American Petroleum Institute (API)
  - And, disseminating information on our Website www.coqa-inc.org
Our web site

- The web site is currently maintained by our Executive Assistant- Crude Quality Inc.
- The web site contains meeting archives that are a wealth of reference information.
- The front page contains news and current events, so check it out!
Welcome to the Crude Oil Quality Association!

The Crude Oil Quality Association (COQA) is dedicated to the belief that maintaining the integrity and consistency of the refining characteristics of crude oil streams is of importance to all parties involved in crude oil activity, from production locations to the refinery.

To this end, we hold three meetings annually. These meetings are open to the public and we welcome your attendance and involvement.

Upcoming COQA Events

**Joint CCQTA-COQA Meeting in Edmonton, June 7-10, 2016**

*Dates: 07 – 10 Jun, 2016*
Meetings Policy

- Open forum for discussion of technical issues related to production, handling, transportation, and refining
- No restrictions on attendance or participation
- Consideration given to views of all
- Adhere to a strict anti-trust policy, and not discuss:
  - Price, pricing policy, cost, or discounts
  - Sales & production quotas, territories, allocations, shares
  - Endorsement or disparagement of products or services
  - Liabilities, warranties, guarantees, conditions of sale
  - Coercive practices or control of competition
Background - the beginnings

- 1994: Small group of refiners and pipeline operators met in Midland, TX and formed the Refiner’s Crude Oil Quality Group (RCOQ)
- 1996: RCOQ renamed Crude Oil Quality Group (COQG) to recognize broader interests of members
- Archives from 1998 to date are available on the web site
Background - early issues

Many of the issues discussed 15+ years ago are still relevant today

- In 1998, Jim Healey and Kevin Waguespack published an article in Hydrocarbon Processing magazine on “Managing Crude Oil Quality for Refining and Profitability”.
- High TAN crudes and their impact in the refinery.
- In 1999, the archives note discussion on True Vapor Pressure testing technology.
Background

Some other projects in the early 2000s

- Methanol in crude-relevant to Gulf of Mexico operations where methanol is used as a hydrate inhibitor
- Water Measurement in Crude- BS&W vs. Karl Fischer
- A comprehensive survey of additives in crude oil led by Dr. Larry Kremer of Baker Petrolite
Background- LLS specs

- One of the most significant accomplishments of the COQA, together with the work of Shell Pipeline, was the implementation of comprehensive specifications for Light Louisiana Sweet (LLS) crude oil moving on Capline pipeline from St. James, LA.

- These are still in place today and now managed by Marathon Pipeline, Capline operator.
# LLS specs

<table>
<thead>
<tr>
<th>Property</th>
<th>Significance</th>
<th>Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>API Gravity</td>
<td>A general indication of the quality</td>
<td>34-41</td>
</tr>
<tr>
<td>Sulfur, wt %</td>
<td>Will affect processing</td>
<td>0.40 max</td>
</tr>
<tr>
<td>Vanadium + Nickel, ppm</td>
<td>Will affect catalyst poisoning</td>
<td>8.0 max</td>
</tr>
<tr>
<td>Microcarbon Residue, wt%</td>
<td>A measure of the vacuum resid content</td>
<td>2.0 max</td>
</tr>
<tr>
<td>Light Ends (C2- C5s), vol %</td>
<td>Included to ensure condensate was not added</td>
<td>6.0 max</td>
</tr>
<tr>
<td>Total Acid Number*</td>
<td>A measure of crude corrosivity; very important to refiners with metallurgy constraints</td>
<td>0.70 max</td>
</tr>
<tr>
<td>High Temperature Simulated Distillation (HTSD)</td>
<td>HTSD is a fast, accurate gas chromatographic method for measuring the boiling range distribution. These parameters ensure predictable yields and value for the refiners.</td>
<td>280-380 510-610 4.0-12.5</td>
</tr>
</tbody>
</table>
In 2005, the COQA began diligently pursuing the establishment of specifications for WTI at Cushing, OK. Discussions among interested parties, testing of batches at Cushing, and statistical evaluation headed by Clifford Mills, culminated in a letter from COQA recommending specs similar to LLS.
Background- WTI specs initiative

- Because these specs involved multiple operators, and had commercial implications to the NYMEX Light Sweet crude contracts, they have not been formally published by NYMEX, though data suggests the COQA specs are being generally followed.

- This initiative brought significant media attention to COQA and our activities.
Incorporation

- 2009: Through the hard work of Harry Giles, the Crude Oil Quality Association incorporated as a non-profit association under Section 501(c)(6) of the Internal Revenue Code. These organizations are primarily business leagues, boards of trade, etc. but does include the National Football League.

- although their budget is significantly different from ours 😊
Most Recently

- COQA has partnered with Hydrocarbon Publishing and the Opportunity Crudes Conferences, and with Argus and their Argus Americas Crude Summits.

- When possible, COQA meetings have been scheduled to facilitate collaboration with the ASTM Crude Oil: Sampling, Testing, and Evaluation course, allowing attendees to attend both the course and COQA meetings!
Most Recently

- In 2013, COQA recognized quality challenges associated with a growing sector of our industry and established a Crude-by-Rail Subcommittee.

- Crude-by-Rail has brought crude oil quality to the mainstream media, and COQA members have been involved with many other related initiatives, e.g. API Task Force.
Domestic Sweet Subcommittee

- Current NYMEX specifications for Domestic Sweet (WTI) at Cushing inadequate
- Additional specifications recommended
  - Ni & V, MCR, Acid number, and distillation yields
- Testing to date demonstrates these do not affect market liquidity
- NYMEX has stated they will formally adopt and publish these but has not yet done so
Asphaltenes/ Crude Compatibility Subcommittee

- Report to be provided this afternoon.
Crude-by-Rail Subcommittee

- Formed June 2013 to address issues related to quality of crude oil transported by rail, and
- Provide a forum for exchange of “best practices”
Corporate Governance

- Executive Board
  - Executive Director
  - Treasurer
  - Secretary
  - Seven members at large, including one CCQTA position
  - Current board includes various industry sectors - midstream, refining, trading, consulting, support

- And, an Advisory Board
  - Comprised of representatives of each corporate member
Directors

- Jim Healey, Mapco, 1994-1996
- Dennis Sutton, retired from Marathon Petroleum, 2014 - ?
Financial Support

As a not for profit organization, we rely on the gracious support of our corporate members.

Our support is through

- Annual memberships
- Event sponsors at our meetings
- Individual Meeting Attendance fees
Membership

- Two classes of corporate / organizational membership
  - Sponsor
  - Supporter

- Collectively, members encompass a broad cross-section of petroleum industry
  - Up- mid- and downstream, oilfield services, independent inspectors, among others
Our 2016 Corporate Sponsors

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Inspectorate

Maxxam Analytics
Merichem
North Dakota Pet. Council
Nalco Champion
Plains Marketing
Schneider Electric
US Dept. of Energy
Western Refining
Welcome to Our Newest Corporate Supporter - GE Water & Process Technologies

GE is a world leader in advanced technologies to solve the world’s most complex challenges related to water scarcity, quality, productivity, the environment and energy.
Special Thanks to Our Event Sponsors at this Meeting!
Next COQA Meeting

- October 12 & 13, Westin Oaks, Houston, TX
- Scheduled to coordinate with the Opportunity Crudes Conference – October 9-11
  - With travel challenges, one trip and you can attend both outstanding events!
Currently

- So, where are we today?

**WTI price jumps above $50 US for 1st time in 7 months before retreating**

*Crude price has rallied after a series of production cuts including Fort McMurray*

CBC News  Posted: May 26, 2016 8:37 AM ET  |  Last Updated: May 26, 2016 5:00 PM ET

The price of oil is trading above $50 US a barrel on Thursday, for the first time in seven months. (Reuters)

- Despite volatile prices, we still have many crude quality challenges.
A Recent Blog

- John Auers of Turner, Mason and Co. publishes a weekly blog that is often related to crude oil issues including quality.

John Auers' Turning Point

Authors: John Mayes and John Auers

May 31, 2016

Strange Brew: The Adventures of the Canadian Oil Industry
Future

Why Predicting Oil Prices Is Hard

May 28 article
The Future Crude Price

West Texas Intermediate Crude Oil Prices

- Historical spot price
- STEO price forecast
- 95% NYMEX futures upper confidence interval
- 95% NYMEX futures lower confidence interval

Source: EIA
Future

- So, as the crude picture changes, there are still many crude quality issues and challenges.
- They are just a little different.
  - Crude-by-Rail
  - Light Tight Oil Quality
  - Light Ends Measurement and Specifications
  - Processing Changing Crude Slates
  - WTI Quality
  - Crude Exports
Comments, Questions?