Crude Oil Quality Association (COQA)

Dennis L. Sutton

October 30, 2014
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)
We ....

- And, disseminating information on our Website
  [www.coqa-inc.org](http://www.coqa-inc.org)

- The web site has been updated in 2014 BUT is still a work in progress. It has become very obvious that the current COQA Director is not a web expert 😊

- 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 Events

**Fall Crude Oil Quality Association Meeting**

Dates: 30 – 31 Oct, 2014
Website

Argus Americas Crude Summit

Dates: 27 – 29 Jan, 2015

The 7th annual Argus Americas Crude Summit returns to Houston January 27-29, 2015. Once again, we are pleased to announce that COQA will be a supporting partner for the conference. Thus, COQA members will receive a 20% registration discount.

News and Announcements

Turner Mason’s Turning Point Blog Features Crude Oil Quality

by Dennis Sutton | Sep 30, 2014

John Auers’ Turning Point Blog is featuring a 2 part series on crude oil quality. John’s blog, which runs weekly, covers industry topics related particularly to refining, marketing, logistics, and future outlooks. John is Executive Vice President of Turner, Mason & Company (TM&C), a consulting engineering firm that has participated in past COQA meetings. Most recently, Michael Leger, President of TM&C, spoke at the Fall 2013 COQA meeting in Dallas.
Meet jointly every other year with CCQTA, our Canadian sister organization

- In 2007, we recognized the growing areas of common interest between the CCQTA and the COQA, and the benefits of periodic joint meetings

- Alternate between U.S. and Canadian locations
  - 2008- Calgary
  - 2010- New Orleans
  - 2012- Kananaskis
  - 2014- San Francisco
  - 2016- TBD
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.
## 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>
Background- WTI specs initiative

- 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.
Education Subcommittee

- Developed presentations for non-technical professionals on crude oil quality. While similar in scope, each focuses on personnel in three petroleum industry sectors:
  - Pipelines
  - Refining
  - Management and trading
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
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”
Directors

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

- Individuals on a meeting-by-meeting basis

- Collectively, members encompass a broad cross-section of petroleum industry
  - Up- mid- and downstream, oilfield services, independent inspectors, among others
Our 2014 Corporate Sponsors

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Marathon Pipeline
NCRA
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Valero
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Baker Hughes
Cameron
Haverly Systems
Hydrocarbon Publ. Co.
Inspectorate
Maxxam Analytics

Merichem
Nalco Champion
Plains Marketing
Spiral Software
US Dept. Energy
Western Refining
US Monthly Crude Oil Production
January 1992 to December 2012

Source: EIA
Carpe Diem Blog
Future

- So, as the US 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
  - Crude Exports
2015 Meetings

- February 19, Marriott West Loop, Houston, TX
- June, Twin Cities, MN
- Late October / early November, TBD
Questions?