

DOMESTIC SWEET / WTI SPECIFICATIONS

For COQA- June 2011 in Salt Lake City, UT
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Review



- The work that began in earnest in January 2005, reached a significant milestone in August 2010 with Harry Giles' letter from the COQA recommending the immediate adoption of seven additional specifications to better define Domestic Sweet crude oil delivered at Cushing, OK.

General Principles



- Through the entire specifications development process, the COQA sought specs that were meaningful to refiners in more comprehensively defining Domestic Sweet while not limiting the liquidity of the stream.

Specifications

- The letter, dated August 10, 2010 recommended that in addition to the current specifications for API gravity (37-42), sulfur (0.42% or less), viscosity, RVP, BS&W, and pour point, that the following specifications be added:
 - ▣ Micro Method Carbon Residue (MCR): 2.40% or less
 - ▣ Total Acid Number (TAN): 0.28 mg KOH/g or less
 - ▣ Metals: Nickel- 8 ppm or less Vanadium- 15 ppm or less
 - ▣ Three points based on High Temperature Simulated Distillation (HTSD)
 - Light Ends <220°F: Not more than 19% by mass
 - 50% point: 470°F - 570°F
 - Vacuum Residuum >1020°F: Not more than 16% by mass

Towards Implementation



- The effort towards implementation of the COQA specifications is progressing.
 - ▣ CME/NYMEX coordinated a meeting in Cushing on April 6.
 - ▣ Articles by Bloomberg (“Nymex May Tighten WTI Rules as Refiners Question Crude Quality”) and Argus (“Nymex willing to adopt COQA’s Cushing advice”) reported that Nymex may adopt the COQA specs by the second half of 2011 .

Testing Capabilities



- In contrast to 2009 when we performed our survey of Domestic Sweet, there are now multiple options in Cushing for performing the specifications testing.

Marathon Data

WTI/Domestic Sweet Crude Results									
Date	API (°API)	Sulfur (wt%)	MCR (wt%)	TAN	Nickel (wt.ppm)	Vanadium (wt.ppm)	<220°F	50% (°F)	Vac Resid >1020°F
Average	40.8	0.42	1.64	0.1	4	9	12.6	540	14.0
Min	40.4	0.41	1.53	0.1	2	7	12.1	526	11.7
Max	41.3	0.42	1.74	0.1	5	11	13.1	552	16.3
Spec Min								470	
Spec Max	42	0.42	2.40	0.28	8	15	19	570	16
5/25/2011	40.4	0.42	1.74	0.10	5	10	13.1	552	16.3
5/19/2011	41.3	0.42	1.64	0.10	4	9	12.7	542	15.2
5/6/2011	40.4	0.41	1.63	0.10	5	11	12.3	526	11.7
5/11/2011	41.1	0.41	1.53	0.10	2	7	12.1	538	12.6

Other Recent Data

<u>Parameter</u>	<u>Specs</u>	<u>Comments</u>
API Gravity	37-42	All 14 values in the 40-42 range.
Sulfur	<0.42%	All 14 values in the 0.40% - 0.42% range. Over half of the values are above 0.415%.
MCR	<2.40%	All 12 values <2.2!
TAN	<0.28%	All 10 values are <0.24!
Nickel	<8 ppm	All 12 values are <7 ppm. Only 1 is >5 ppm.
Vanadium	<15 ppm	All 12 values are <10 ppm. Only 1 is >6 ppm.

Conclusions



- Reports indicate Nymex's support for the implementation of the COQA specs.
- Analytical capabilities are available in Cushing for conducting necessary specifications testing.
- Data shows the specs have been set appropriately and will not limit liquidity.