

BAKER & O'BRIEN
I N C O R P O R A T E D

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MID-CONTINENT REFINERS MAKING THE MOST OF WTI DISCONNECT

How long before expanded North-to-South logistics “shut the party down”?

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Baker & O'Brien, Inc.'s first quarter 2011 release to *PRISM*^{TM1} subscribers reflects higher margins overall and improvement in every district except for PADD 1. When compared against the previous quarter, refinery cash margins² have risen, on average, over \$2 per barrel, driven primarily by very large gains in PADDs 2 and 4 (each up over \$8/Bbl.), benefitting from the well-publicized crude oil bottleneck in the Cushing region.

PRISM Cash Margins vs. Previous Periods (\$/Bbl.)

	<u>11Q1 vs. 10Q4</u>	<u>11Q1 vs. 10Q1</u>
PADD 1	-1.04	-1.01
PADD 2	+8.02	+10.21
PADD 3	+0.19	+3.30
PADD 4	+8.31	+12.33
PADD 5	+0.20	+3.98
U.S. Overall	+2.14	+4.86

Thus far, April and early May 2011 indicate continued widening of the light-heavy spread and improved crack spreads. While the light-heavy crude oil price differential (LLS-Maya) indicates favorable conditions for refineries with heavier crude oil slates, the big “winners” of late have been those Mid-Continent refineries that have access to crude oils (e.g., WTI, Canadian Heavy) which are “land-locked” without an easy outlet to the U.S. Gulf Coast or other U.S. markets.

Key Refining Margin Metrics, \$/Bbl.

	2011	2011	2010	2010	2009
	<u>Apr</u>	<u>Q1</u>	<u>Q1</u>	<u>Annual</u>	<u>Annual</u>
LLS crude price	126.00	107.20	79.90	82.70	64.30
LLS – Maya	18.00	17.80	10.20	12.60	7.80
USGC LLS 321*	9.20	5.00	6.10	4.90	4.70
USGC LLS 6321**	2.00	1.40	3.50	2.10	2.60
Chicago WTI 321***	28.10	17.10	6.80	10.10	9.30

* LLS deemed conversion to 67% conventional 87R gasoline and 33% ULSD

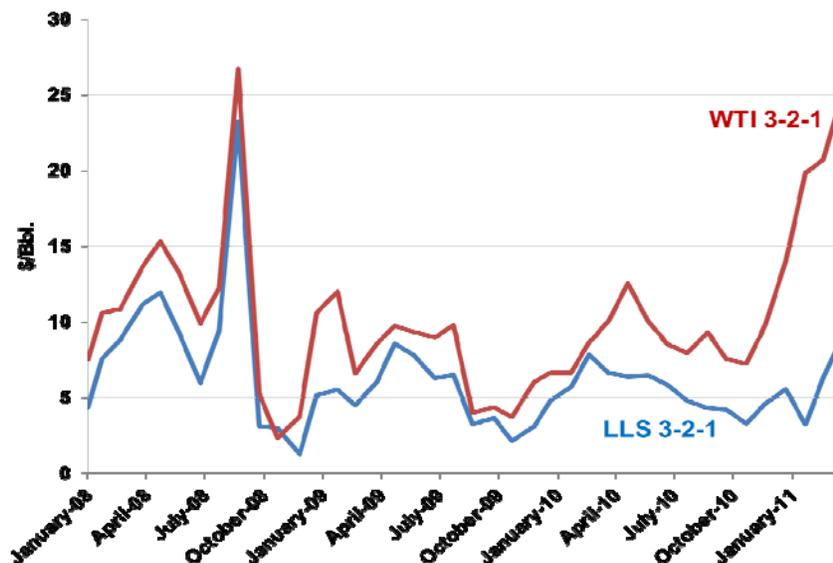
** LLS deemed conversion to 50% conventional 87R gasoline, 33% ULSD and 17% Fuel Oil

*** WTI deemed conversion to 33% conventional 87R gasoline, 33% RBOB and 33% ULSD

¹ *PRISM* is Baker & O'Brien's refining database system that models the operational and economic performance details for all of the refineries in the U.S.

² Net Cash Margin (Refinery EBITA), US\$ per barrel of input.

Historically, Gulf Coast refineries in PADD 3 (e.g., Texas and Louisiana) have outperformed inland refineries (e.g., Illinois, Indiana, Ohio, and Oklahoma). The Gulf Coast refineries are generally more complex (allowing them to process much cheaper crude oils) and have access to a greater variety of crude oils due to their proximity to the water. However, increased crude oil supply to the Mid-Continent has greatly depressed prices of domestic light-sweet crude oils versus waterborne crude oils. The situation was exacerbated in early 2011 due to refineries conducting their scheduled off-season turnarounds (thus reducing demand for light sweet crude oils). The chart below shows the benefits of running a barrel of WTI-priced crude oil compared to LLS during the last three years.



Refineries processing WTI (and crude oils that are WTI-based) are now benefitting from historically low crude oil prices relative to LLS and waterborne light-sweet grades (prices that are historically Brent-based).

After selling at a discount to LLS of a little over \$4/Bbl. during the fourth quarter of 2010, the WTI discount exploded to more than \$20/Bbl. at times during the first quarter of 2011, averaging \$13/Bbl. for the full quarter. As a result of the high WTI discounts, the industry is evaluating and implementing a number of projects to take advantage of the large WTI discounts. Although per-barrel transport costs are more expensive than pipelines, both rail and barge transportation is being utilized to capture a portion of the WTI discount. Once more efficient rail infrastructure is constructed and additional pipeline capacity is placed into service, the current high discounts will likely decrease. However, a return to historical norms may not happen until 2013 and, in the meantime, Mid-Continent refiners with access to these inland crude oils will continue realizing hefty margins relative to other areas of the country.

About Baker & O'Brien

Baker & O'Brien is an independent professional consulting firm specializing in technology, economics, and management practice for the international oil, gas, chemical, and related industries. With offices in Dallas, Houston, and London, the firm focuses primarily on the downstream industry and assists clients with strategic studies, mergers and acquisitions, and

technology evaluations. The firm also provides expert services to support insurance claims and a wide range of commercial disputes in the energy industry.

About *PRISM*

Baker & O'Brien's *PRISM* software is used to perform detailed analysis of individual refineries and the refining value chain from crude oil load port to products truck rack. The system combines a large historical database with a robust refinery simulator to provide analytical support to competitive analysis, strategic planning, crude oil valuation, and delivered cost of supply. The *PRISM* database currently includes operational and economic performance details for all refineries in the U.S. and Canada, most refineries in Europe, and selected refineries in the Asia Pacific region. The *PRISM* system is available for license and is used in consulting assignments for Baker & O'Brien clients.