

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

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U.S. REFINING MARGINS IMPROVE, BUT SOME REFINERIES REMAIN AT RISK
Could changing market factors and mounting environmental expenses doom some refineries?
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During the fourth quarter of 2010, U.S. refining industry performance improved relative to the prior quarter. While the U.S. Gulf Coast crack spreads were somewhat lower in the fourth quarter, the light-heavy crude oil price differential (LLS-Maya) continued to favor refineries with heavier crude slates. January 2011 indicates a continued widening of the light-heavy spread and improved crack spreads.

Key Refining Margin Metrics, \$/Bbl.

	2011	2010	2010	2010	2009
	Jan	Q4	Q3	Annual	Annual
LLS crude price	97.56	89.18	79.62	82.73	64.34
LLS – Maya	15.86	13.59	12.12	12.55	7.80
USGC LLS 321*	5.67	4.03	4.22	4.89	4.70
USGC LLS 6321**	2.10	1.12	1.70	2.14	2.56

* 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

Baker & O'Brien, Inc.'s fourth quarter 2010 release to *PRISM*^{TM1} subscribers indicates that overall 2010 margins are higher than in 2009, with U.S. fourth quarter 2010 cash margins improving in every district. When compared against the previous quarter, refinery cash margins² have risen, on average, \$1.20 per barrel. Bucking the trend was PADD 4, which showed a decrease of nearly \$3 per barrel, reversing last quarter's improvement relative to other PADDs.

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

	10Q4 vs. 10Q3	10Q4 vs. 09Q4
PADD 1	+2.28	+2.95
PADD 2	+0.66	+4.80
PADD 3	+1.83	+6.29
PADD 4	-2.82	+8.09
PADD 5	+0.29	+6.42
U.S. Overall	+1.20	+5.83

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.

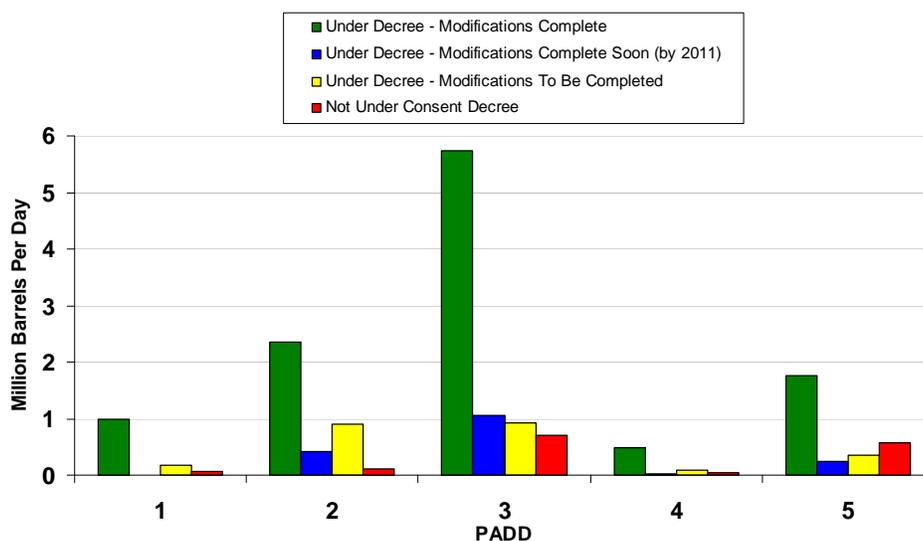
² Net Cash Margin (Refinery EBITA), US\$ per barrel of input.

Some refineries have experienced very favorable market conditions recently. Refineries running WTI (and similar quality grades that are priced against WTI) have benefitted from historically low prices relative to LLS and other waterborne imports of light-sweet grades (prices that are Brent-based). Coking refineries have enjoyed respectable light-heavy spreads. Refineries in a position to export refined products have benefitted from an uptick in exports, driven by opportunities to supply Latin America and Europe. However, crack spreads generally remain low, keeping some U.S. refineries at risk.

Further darkening some refineries' long-term prospects are the potential costs of consent decree settlements yet to be reached with the U.S. Environmental Protection Agency (EPA). Since 2000, the EPA has entered into settlements with refiners to reduce air emissions under the Clean Air Act. In January, the EPA reached an agreement with HOVENSA resulting in penalties of more than \$5 million and requiring significant investments in pollution controls. In addition, this agreement was most likely the cause of the announcement that a portion of the refinery will be shutdown and the refinery's crude oil processing capacity will be reduced. The investment required for the 104 refineries that had settled through 2010 was expected to top \$5 billion – an average of more than \$50 million per refinery.

Refineries representing more than 10% of U.S. crude capacity are not yet under a consent decree with the EPA. The median capacity for these remaining refineries is less than 70 thousand barrels per day (MB/D) and more than half of them process a light crude slate and operate a Fluid Catalytic Cracking (FCC) unit, one of the four key “problem areas” identified by the EPA. Considering Baker & O'Brien's refinery viability factors - which include *PRISM* cash margin estimates that place 35% of these refineries in the fourth quartile - many of the refineries that have not been included in an agreement may already be at risk.

Even if refinery owners reach an agreement with the EPA, the expected costs of repairs, controls, and testing could be very significant. For some refiners, it might not be a question of negotiating the best agreement, but whether they can afford to operate with any agreement at all.



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 load port to 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.