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Argus White Paper: LLS – The Emergence of a Secondary Benchmark

Light Louisiana Sweet (LLS) at the US Gulf coast is quickly rising in importance as a secondary benchmark supplementing the traditional benchmark WTI. WTI has become a marker reflecting the economics of the US Midcontinent market. But LLS is reflective of market economics at the Gulf coast for light sweet grades, whether foreign or domestic, and correlates more closely to global crude prices.

LLS is also growing because it has all the qualities of a robust benchmark. It has an actively traded spot market, other crudes can be blended to make LLS quality oil, and the Argus index for LLS is based on a volume-weighted average (VWA) of deals done across the entire trading day.

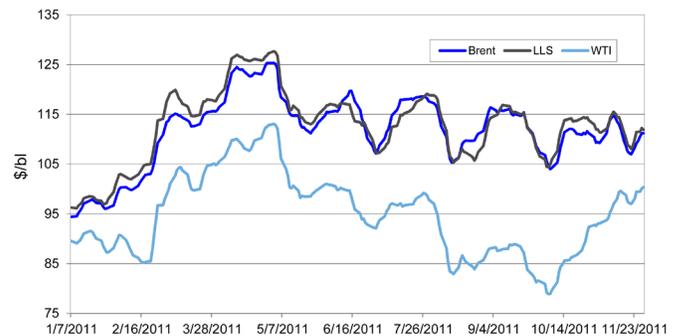
Trade activity on LLS swaps has risen sharply as global crude market participants seek to hedge their physical exposure in the US Gulf coast market. Traders now arrive at differentials to WTI by starting with the LLS-Brent spread. The price of refined products across the entire US more closely tracks Gulf coast crude than midcontinent crude. And refiners and producers along the US Gulf coast have shifted to marking even their quarterly and annual reports to LLS prices instead of WTI.

The WTI inversion and the situation at Cushing

A crude oversupply in the US Midwest has combined with a pipeline bottleneck to weigh on the value of WTI at the pricing center of Cushing, Oklahoma, starting in 2007. This has pushed the US benchmark to unusual discounts to other global benchmarks. At first, WTI's inverted relationship to other benchmarks would correct itself after short periods of time with WTI returning to its more traditional premium to Brent relatively quickly. But since September 2010, WTI has been unable to regain its premium to Brent and has seen its discounts to the European benchmark increase to more than \$20/bl at times.

Once crude reaches Cushing it can only move north to refineries in the Midwest or into storage tanks. While demand in the Midwest remains steady, the volume of crude flowing into Cushing continues to grow leading to large increases in storage volumes. This hit an all-time high of just under 42mn bl in April of this year. The glut has reduced since April to around 32mn bl.

LLS-BRENT CORRELATION



Will proposed pipeline projects alleviate the WTI inversion?

Several pipeline projects have been proposed to take crude from Cushing down to the US Gulf coast. But it is unclear if the proposed projects will bring WTI prices back into correlation with global markets. The main two projects under discussion now are the reversal of the Seaway pipeline and Wrangler. Approval to build TransCanada's Keystone XL, which was to have 700,000 b/d of capacity, has been delayed until the latter part of 2012. Seaway is due to be reversed in the second quarter of 2012, sending an initial 150,000 b/d of crude to the US Gulf coast. Wrangler, a project from Enbridge and Enterprise, will have a capacity of 800,000 b/d and is expected to be operational in 2013.

Even if these and other smaller pipeline projects come to fruition, the WTI disconnect looks likely to continue for some years to come. Many analysts foresee that increased domestic US production out of the Bakken, Eagle Ford and West Texas shale plays will weigh on WTI prices and cause the over-supply in the Midwest to linger. Companies are also building additional storage, in anticipation of more crude making its way to Cushing. At the beginning of 2011, Cushing had a nameplate capacity of some 58.2mn bl of storage and an additional 13.3mn bl of tank space was expected to be built, with another 7mn bl of capacity to be added in 2012 to take Cushing up to some 78.5mn bl of total storage capacity by the end of that year.

Petroleum

illuminating the markets

How is LLS being used as a secondary benchmark?

The uncertain duration of the WTI inversion has forced market participants to look for hedging strategies to supplement the traditional futures hedge. Companies have turned to LLS as a benchmark for a variety of purposes.

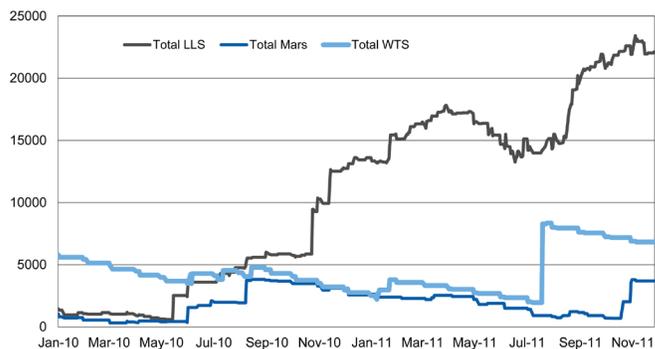
- In the last 12 months, the open interest in Argus LLS swaps on CME has grown by over 350pc.
- Going out to the end of 2012, every monthly contract for Argus LLS swaps on CME has at least 1mn bl of open interest.
- LLS is now the basis for discussion on Bakken and Eagle Ford crude values, currently talked at around a \$2/bl discount to LLS.
- When the US government agreed to release over 30mn bl of crude from the Strategic Petroleum Reserve in August 2011 to ease supply shortages due to disruptions to Libyan supply, all the crude released was priced against the Argus LLS price.

Why are companies placing their trust in LLS?

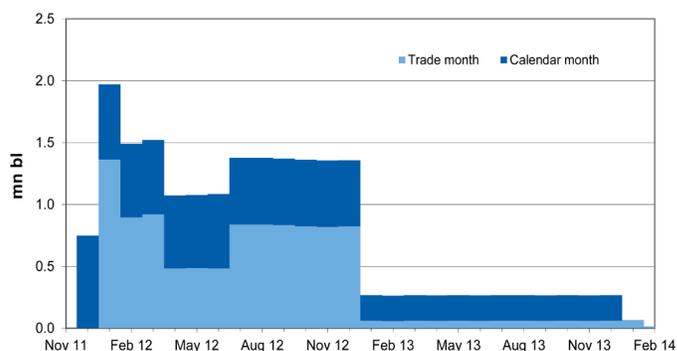
Companies trust the LLS market because it meets all the requirements that market participants expect from a marker crude.

- LLS has an active and transparent spot market that regularly sees over 300,000 b/d being traded.
- The LLS physical market has a diverse array of buyers and sellers, normally around 30 companies on each side in any given month.
- LLS reacts to both global and local fundamentals because it has to compete directly with foreign grades coming into the US Gulf coast while also being affected by local demand and supply issues.
- LLS is a blended grade that can be created by mixing either foreign or domestic crudes. It can benefit uniquely from the growth in shale production. As a result, its production lifespan is evergreen.
- LLS is traded as a differential to WTI, which is backed by a deep financial market with a robust regulatory structure.
- LLS swaps can be cleared on both CME Nymex and ICE.
- The LLS physical price index for swaps is Argus LLS, which uses a volume-weighted average of deals done methodology that has gained wide acceptance.

CRUDE SWAPS OPEN INTEREST CME CLEARPORT



ARGUS LLS-WTI SWAPS OPEN INTEREST BY MATURITY (SNAPSHOT ON 7 NOV)



Are there other alternatives besides LLS?

Some consider that Brent could rise as a viable alternative in the Americas region. But Brent has many issues. Although LLS and Brent are correlated, Brent reflects European market fundamentals and not fundamentals in the Americas. And North Sea production and traded volumes are in decline, which has led to index design changes and protracted debates on how to construct a viable index at all. While 1.5mn b/d of Brent, Forties, Oseberg and Ekofisk were produced four years ago that figure is now closer to 1mn b/d. Brent is unlikely to win the trust in the Americas in the same way as has LLS.

Many have searched for a benchmark that is sour and heavy, but none has emerged. Heavy sour crude is *baseload* supply, sold through long-term and framework contracts often tied to monthly pricing formulas. Light sweet crude is *marginal* supply, sold spot and flowing in ever-changing arbitrage patterns around the world. Light sweet is the benchmark, and heavy sour trades at a differential to it.

What is Argus' role in the development of benchmarks?

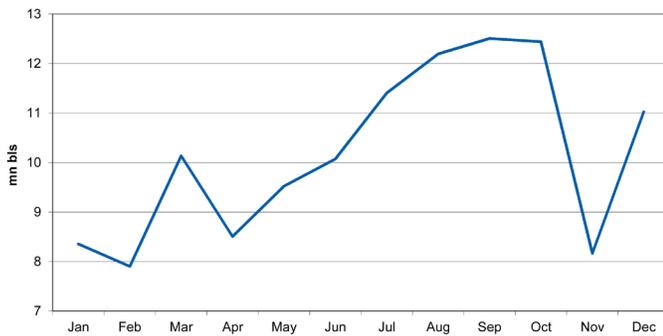
LLS is available to the industry as a tool for trade in part because participants trust the Argus LLS index. Argus validates physical transactions throughout the entire trading day, and produces a volume-weighted average differential price. Fixed prices are arrived at by adding that average differential to the Nymex settlement price. Argus also is completely transparent, publishing the price and volume of every deal that is used in the final index price. This method was arrived at in partnership with industry and is considered robust. As a result, swaps markets have trusted the index and been confident to trade it with derivative instruments.

It is also possible that physical LLS could trade at a fixed price, independent of WTI. All that need happen is for industry participants to step up as market makers and provide leadership

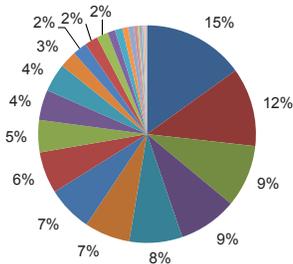
liquidity. Argus as always would report the market in the way it is trading and publish additional assessments based on those fixed price transactions. The same is true of Mars crude at the Gulf coast. Two fixed price markets emerging side by side for LLS and Mars would provide the industry with a powerful Atlantic basin benchmark center and a brighter future for transparent pricing mechanisms. Benchmarks can transition from secondary status to primary status if there is both leadership and partnership.

At present, LLS is already widely used as a secondary benchmark because it fulfills the requirements of a robust marker crude. Going forward, the use of LLS is expected to expand as a regional and international pricing tool and derivatives index.

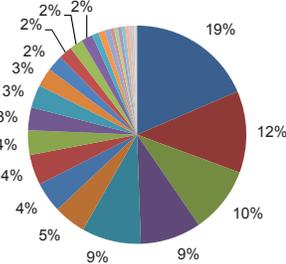
LLS PHYSICAL SPOT VOLUMES



DECEMBER LLS BUYERS



DECEMBER LLS SELLERS



CME Clearport	Code
Argus LLS Trade Month Swap Futures	A4
Argus LLS vs. WTI (Argus) Trade Month Swap Futures	E5
LLS (Argus) Trade Month Swap Futures	LI
LLS (Argus) vs. WTI Spread Calendar Swap Futures	WJ
LLS (Argus) Calendar Swap Futures	XA

ICE	Code
Crude Outright - Argus LLS Swap	ARH
Crude Diff - Argus LLS vs Brent 1st Line Swap	ARI
Crude Diff - Argus LLS vs Dated Brent Swap	ARJ
Crude Diff - Argus LLS vs WTI 1st Line Swap	ARK
Crude Diff - Argus LLS vs WTI Trade Month Swap	ARL



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