The battle for a Gulf crude contract

WTI/Brent driven a broader look at US crude pricing
**WTI Midland-Houston spread narrows with additional takeaway**

MEH vs Midland compared with transported costs ($/b)

- WTI Midland-MEH spread
- Bridgellac
- Longhorn
- Enterprise Midland-ECHO
- Cactus + Double Eagle to Houston
- Cactus + Double Eagle to Magellan Corpus Christi
- Rail
- Truck

Source: S&P Global Platts, Magellan, Enterprise, Plains All American, Kinder Morgan, sources

**Exchanges CME, ICE face off for USGC light sweet crude contract**

<table>
<thead>
<tr>
<th></th>
<th>CME WTI Cushing</th>
<th>CME WTI Houston</th>
<th>ICE Permian WTI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contract unit</strong></td>
<td>1,000 barrels</td>
<td>1,000 barrels</td>
<td>1,000 barrels</td>
</tr>
<tr>
<td><strong>Listed contracts</strong></td>
<td>“All” (9 years)</td>
<td>Months out to 3CY</td>
<td>96 months</td>
</tr>
<tr>
<td><strong>API</strong></td>
<td>37-42</td>
<td>40-44</td>
<td>36-44</td>
</tr>
<tr>
<td><strong>Sulfur max</strong></td>
<td>0.42%</td>
<td>0.275%</td>
<td>0.45%</td>
</tr>
<tr>
<td><strong>Nickel max</strong></td>
<td>8 ppm</td>
<td>4 ppm</td>
<td>-</td>
</tr>
<tr>
<td><strong>Vanadium max</strong></td>
<td>15 ppm</td>
<td>4 ppm</td>
<td>-</td>
</tr>
<tr>
<td><strong>Delivery point</strong></td>
<td>Enterprise Products Partners and Enbridge Pipeline terminals: Cushing, Oklahoma</td>
<td>Enterprise Crude Houston (ECHO), Enterprise Houston Ship Channel (EHSC) and Genoa Junction terminals: Greater Houston, Texas area</td>
<td>Magellan East Houston terminal: Houston, Texas</td>
</tr>
</tbody>
</table>

Source: S&P Global Platts
The story so far…

Daily volume on Houston crude futures ('000 b lots)

Both contracts in line with observed physical markets

Houston vs Cushing, physical and futures ($/b)
Permian pipeline build-out to support increased production

Export Capacity by Region

Source: S&P Global Platts

US waterborne crude exports average 2.5 million b/d Q1 2019

Source: S&P Global Platts Analytics
Valuing US crude exports

- Platts FOB USGC assessments reflect value of export cargoes from across the Gulf rather than a single location, expecting quality to be defined by spec rather than loadpoint
- Separate assessments for WTI, Bakken and Eagle Ford crude and condensate
- FOB prices reflect loadings from ports along the Gulf Coast, including Corpus Christi, Houston, Beaumont, Nederland, Port Arthur
- Methodology based on typical Aframax-sized cargo, reflecting most common export volume, loading 15-45 days forward
- Spot market notably focused more on European destinations at this size and period
- Asia trade tends to be CFR

Source: S&P Global Platts

S&P Global Platts

FOB USGC values complement CFR North Asia, delivered NWE

<table>
<thead>
<tr>
<th>CFR North Asia at Singapore close</th>
<th>Northwest Europe Delivered at London close</th>
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</thead>
<tbody>
<tr>
<td>WTI MEH</td>
<td>WTI Midland (Basis R’dam)</td>
</tr>
<tr>
<td>LOOP Sour</td>
<td>WTI Midland (Basis Augusta)</td>
</tr>
<tr>
<td>PCAQH00</td>
<td>AWTIC00</td>
</tr>
<tr>
<td>PCAQI00</td>
<td>AWTIA00</td>
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</tbody>
</table>

Assessed values include freight and other associated costs.

Launched March 2018.

Source: S&P Global Platts

S&P Global Platts

Priced on DAP basis as differential to 20-60 day forward Dated Brent strip.

Launched September 2018.
Suezmax/day of US crude to Europe despite scarce open spot arb

US Gulf Coast crude DAP Europe

- US crude increasingly coming into Europe and beyond
- Eagle Ford 45 and WTI Midland regularly processed in Europe
- Assessment for 20-60 days forward into Rotterdam and Augusta
- Platts assessment reflecting cargoes of 500kb to 700kb
CIF Europe crude values growing in relevance

- Platts CIF methodology gaining more momentum
- US deliveries increasingly part of the European delivered crude market
- Well over half of the Forties loading program moves to the far East each month
- Southwold, Dunbar frequently act as staging grounds for voyages further East
- China is a frequent buyer of Forties and Ekofisk when economics permit

North Sea crude sourcing by region (%)

- North Sea
- Russia (Urals)
- Middle East
- West Africa
- North Africa
- Russia (Arctic)
- US Gulf Coast
- Black Sea (CPC Blend)
- Other

Source: S&P Global Platts

Platts to reflect CIF Rotterdam offers in Dated Brent from November 2019 loadings

- Platts has confirmed that with effect from October 1, 2019, it will reflect competitive offers for Brent, Forties, Oseberg, Ekofisk and Troll crude oil cargoes on a CIF Rotterdam basis in its Dated Brent crude oil benchmark.
- This step will enable the inclusion of a greater amount of market data in the North Sea’s light, sweet crude oil benchmark, and ensure that the grades currently reflected in Dated Brent continue to play the fullest possible role in establishing the value of North Sea crude.
- Offers on a CIF Rotterdam basis for Brent, Forties, Oseberg, Ekofisk and Troll will be considered when evaluating the most competitively available light, sweet crude oil grade in the North Sea. Should a firm CIF Rotterdam offer for any of the five grades currently reflected in the Dated Brent assessment, after adjusting for freight, port fees, and sailing time, be more competitive than a comparable bid for those grades on an FOB basis the CIF Rotterdam offer would take precedence in the final assessment of Dated Brent on the loading dates in question.

Source: S&P Global Platts
Methodology

• **TIMING OF APPLICATION:** Platts will reflect competitive CIF offers for cargoes loading from November 2019 onwards, which will start to appear in Dated Brent assessments from October 1.

• **FREIGHT ADJUSTMENT FACTOR:** Platts will phase in the level of freight adjustment over the course of three months until it reaches 80%. From October 1, a factor of 40% will be applied to November-loading CIF equivalent cargoes in the Dated Brent assessment, rising to 60% for December-loading cargoes, and 80% for January-loading cargoes onwards. These percentages would be applied to the cargo’s freight rate from its respective terminal to Rotterdam and associated port fees. CIF offers for inclusion in this process should be a full 600,000-barrel cargo on an Aframax-sized ship with a tolerance of 1% in the seller’s option.

• **CALCULATION OF FREIGHT ADJUSTMENT FACTOR:** Platts will publish a 10-day rolling freight average the day before each day’s Market on Close assessment process, to ensure the freight factor is fully known before the assessment process begins. This will be based on its 10 previous assessments of the Dirty Cross-UK/Continent 80,000 mt freight assessment before the date of publication. Platts will apply a freight adjustment factor of the relevant percentage to this 10-day average to adjust CIF Rotterdam offers of each of the five grades in Dated Brent to determine their value. The derived FOB values would be used in determining value versus an FOB bid in the assessment process for each of the five grades in the Dated Brent basket.

Addition of further grades in Dated Brent assessment

• Platts has consulted widely on the inclusion in the FOB Dated Brent assessment process of other grades beyond the current five in Dated Brent.

• Platts has noted support for other grades to be included in Dated Brent in the future.

• Reflecting competitive CIF Rotterdam offers of Brent, Forties, Oseberg, Ekofisk and Troll crude in Dated Brent is a critical enabling step for future methodology development and potential inclusion of grades from outside of the North Sea, should that become necessary.

• Platts does not have any immediate plans to bring further grades into the North Sea crude oil basket.
Discussion and questions