Argus Crude Pricing Workshop
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A view of Argus

- One of the world’s leading PRAs, Argus has more than 1000 staff members and offices in the world’s principal commodity trading and production centres
- Publishing more than 11,000 daily spot and forward price assessments, plus market intelligence for world commodities markets
- Coverage includes:
  - Energy, including oil, natural gas, power, coal, asphalt, base oils, biomass, emissions and more
  - Fertilizers
  - Petrochemicals
  - Metals
- Services
  - Price reporting and indexation
  - Consulting
  - Conferences
- Indexation examples
  - US crude oil
  - European gasoline
  - Asia-Pacific LPG
  - Coal
  - US and European environmental markets

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Current US crude oil landscape
US production continues to ramp up

Source: Energy Information Administration (EIA)
Pipeline bottlenecks of 2019 have been solved

### Crude Pipeline Additions

<table>
<thead>
<tr>
<th>Commission Year</th>
<th>Name</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>EPIC</td>
<td>400,000 b/d</td>
</tr>
<tr>
<td>2019</td>
<td>Cactus II</td>
<td>670,000 b/d</td>
</tr>
<tr>
<td>2020*</td>
<td>Gray Oak</td>
<td>900,000 b/d</td>
</tr>
<tr>
<td></td>
<td>*Partial service in 2019/full service in 2020</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>Red Oak</td>
<td>Not yet defined</td>
</tr>
<tr>
<td>2021</td>
<td>Wink to Webster</td>
<td>1,500,000 b/d</td>
</tr>
</tbody>
</table>
US crude exports will grow to multiple destinations

US Crude Exports by Region (mn b/d)

(Source: U.S. Census Bureau)


Asia/Pacific | Europe | Canada | Latin America | Other

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WTI around the world
US Crude Markets exceptionally liquid and transparent

WTI Midland - “Premier Light-sweet Grade”
44 API | 0.44% S
Basis: all Midland terminals
Delivery: Houston, Corpus Christi, Cushing

WTI Houston - “Light-sweet secondary”
44 API | 0.44% S
Basis: Magellan East Houston (MEH)
Delivery: Houston refineries, Louisiana (via pipe), Exported

WCS Houston - “The Heavy-sour Benchmark”
20.5 API | 3.61% S
Basis: Houston area terminals
Delivery: Houston refineries, Exported

Mars/ASCI - “The Medium-sour Benchmark”
29.6 API | 1.81% S
Basis: Clovelly
Delivery: Louisiana refineries, LOOP, St. James, Exports
US crude pricing now influences prices around the world
WTI Houston follows global pricing
US crude has found increasing favour among European buyers.

Market liquidity and transparency is gradually improving.

Argus editorial team gathers trades, bids and offers and surveys market views to create an assessment.
## Assessing the delivered Rotterdam market

### Argus cif Rotterdam assessments

<table>
<thead>
<tr>
<th>Grade</th>
<th>Typical API °</th>
<th>Sulphur %</th>
<th>Delivery dates</th>
<th>PA code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonny Light</td>
<td>34.5</td>
<td>0.14</td>
<td>12d to month ahead+2d</td>
<td>PA0025154</td>
</tr>
<tr>
<td>BTC Blend</td>
<td>37.73</td>
<td>0.15</td>
<td>12d to month ahead+2d</td>
<td>PA0025153</td>
</tr>
<tr>
<td>CPC Blend</td>
<td>46.79</td>
<td>0.58</td>
<td>12d to month ahead+2d</td>
<td>PA0025152</td>
</tr>
<tr>
<td>Escravos</td>
<td>34</td>
<td>0.15</td>
<td>12d to month ahead+2d</td>
<td>PA0025156</td>
</tr>
<tr>
<td>Qua Iboe</td>
<td>36.6</td>
<td>0.13</td>
<td>12d to month ahead+2d</td>
<td>PA0025155</td>
</tr>
<tr>
<td>Saharan Blend</td>
<td>46</td>
<td>0.10</td>
<td>12d to month ahead+2d</td>
<td>PA0025157</td>
</tr>
<tr>
<td>WTI delivery period 1</td>
<td><strong>42-44</strong></td>
<td><strong>Max 0.275</strong></td>
<td>12d to month ahead+2d</td>
<td>PA0025158</td>
</tr>
<tr>
<td>WTI delivery period 2*</td>
<td></td>
<td></td>
<td>Month ahead+3d to 60d</td>
<td>PA0027278</td>
</tr>
</tbody>
</table>

*Added September 2019
WTI steady against Dubai – until Coronavirus
Higher sulphur going into Asian market

<table>
<thead>
<tr>
<th>Grade</th>
<th>Typical API°</th>
<th>Typical sulphur (%)</th>
<th>Cargo size</th>
<th>Basis/Location</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTI</td>
<td>42-44</td>
<td>≤0.45</td>
<td>1.8mn-2.2mn bl</td>
<td>delivered Yosu</td>
<td>Arrival three months after trade</td>
</tr>
</tbody>
</table>
Growing markets at both ends of the spectrum
WTL Midland market is evolving

WTL diff to WTI Midland Enterprise

WTL Physical Volume

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WTL exports and fob discussion are starting to emerge

WTL exports by destination

0.00 1.50 3.00 4.50 6.00

The Netherlands South Korea Colombia Italy UK India Japan

Preliminary vessel tracking data compiled by Argus
Heavy Canadian sours are trading actively at US Gulf
Conclusions
Concluding thoughts

- The US landscape continues to change drastically each year in the short term

- Onshore pricing will remain liquid and transparent to allow for benchmarking of new and evolving markets

- New FOB markets will emerge and existing ones will grow

- Heavy Canadian grades at the coast could emerge as markers for similar quality crudes out of the Americas