Capline Crude Oil Quality Oversight

June 8, 2017
Marathon Petroleum Statistics at a Glance

- Fortune 50 company
- Established in 1887
- Third-largest U.S. refiner
  - Largest in Midwest
- 2016 revenues and other income: $63.4 B
- 2016 net income attributable to MPC: $1.17 B
- Employees: approximately 44,460
- Headquartered in Findlay, Ohio
- Approximately 2,730 Speedway convenience stores
- Approximately 5,500 Marathon brand retail outlets
- Extensive terminal and pipeline network
MPC’s Fully Integrated Downstream System

Refining and Marketing
- Seven-plant refining system with ~1.8 MMBPCD capacity
- One biodiesel facility and interest in three ethanol facilities
- One of the largest wholesale suppliers in our market area
- One of the largest producers of asphalt in the U.S.
- ~5,500 Marathon Brand retail outlets across 19 states
- Owns/operates 20 asphalt/light product terminals, while utilizing third-party terminals at 121 light product and two asphalt locations
- 2,074 owned/leased railcars, 163 owned transport trucks

Speedway
- ~2,730 locations in 21 states
- Second largest U.S. owned/operated c-store chain

Midstream (including MPLX)
- Owns, leases or has interest in ~10,800 miles of crude and refined product pipelines
- 62 light product terminals with ~24 million barrels of storage capacity
- 18 owned inland waterway towboats with more than 200 barges
- Owns/operates over 5,600 miles of gas gathering and NGL pipelines
- Owns/operates 55 gas processing plants, 14 NGL fractionation facilities and two condensate stabilization facilities
2016 Refinery Throughput and Consolidated Sales

Crude Throughput
1,699 MBPD

- U.S. 58%
- Canada 19%
- Other International 23%

Other Feedstocks 151 MBPD

Refinery Yields
1,883 MBPD

- Gasoline 900
- Distillate 617
- Asphalt 58
- Other 308

Sales*
35 B GAL

- Speedway 17%
- Marathon Brand 14%
- Wholesale/Spot 53%
- Asphalt & Other 16%

*Includes refined products purchased for resale. MBPD = thousand barrels per day B GAL = billions of gallons
Key Strengths
Balanced Operations

Crude Oil Refining Capacity

- PADD II: 40%
- PADD III: 60%

As of March 31, 2017

Assured Sales of Gasoline Production
(Speedway + Brand + Wholesale Contract Sales)

- Assured Sales: ~70%
- Wholesale and Other Sales: ~30%

As of March 31, 2017

Crude Slate

- Sour Crude: 67%
- Sweet Crude: 33%

1Q 2017
Rated Crude Oil Refining Capacity
System capacity: 1,817,000 BPCD

Garyville, Louisiana
543,000 BPCD

Galveston Bay, Texas
459,000 BPCD

Catlettsburg, Kentucky
273,000 BPCD

Robinson, Illinois
231,000 BPCD

Detroit, Michigan
132,000 BPCD

Canton, Ohio
93,000 BPCD

Texas City, Texas
86,000 BPCD

As of Jan. 1, 2017
BPCD = barrels per calendar day
Growth-oriented, diversified MLP with high-quality, strategically located assets with leading midstream position

Two primary businesses

- **Logistics & Storage** includes transportation, storage and distribution of crude oil, refined petroleum products and other hydrocarbon-based products

- **Gathering & Processing** includes gathering, processing, and transportation of natural gas and the gathering, transportation, fractionation, storage and marketing of NGLs

Investment grade credit profile with strong financial flexibility

MPC as sponsor has interests aligned with MPLX

- MPLX assets are integral to MPC

- Growing stable cash flows through continued investment in midstream infrastructure
Marathon Pipe Line LLC (MPL) operates the 1.2 million barrels per day, Louisiana-to-Illinois Capline pipeline.

Built in 1967, it was once a major pipeline to deliver imported and Gulf of Mexico crude to the U.S. Midwest.

Capline is the nation's largest crude pipeline, 632-miles, 40-inch diameter with 16 mainline pumping stations.

MPL has operated the line since 2013.

Co-owners:
- Hardin Street Holdings LLC
- Plains Pipeline, L.P.
- Plains Capline LLC
- BP Oil Pipeline Company
There is more than 10 million barrels of storage capacity on Capline – 21 tanks at St. James, 4 tanks at Liberty, and 21 tanks at Patoka (not all are presently utilized)

All crude entering Capline from various types of receipt locations (pipeline, terminals, dock) fall under the sampling/testing oversight program

There is enforcement of quality and procedures for exclusions and re-admittance

The Quality Oversight program is outlined in the “Capline Measurement and Quality Manual”, which can be found on the Capline Pipeline website
Published in 2007 after years of collaborative meetings and discussions on selection of methods, laboratories, collection of data, and determination of specs for all types of crude.

Quality Manual contains:

- Contamination Protection Guidelines – examples of contamination and concentration limits
- Crude Oil Property Limitations – specifications for all crude oil selected properties and/or based on groupings
- LLS program
- Assay requirements for new crude types

All types of crude moving on Capline are sampled and tested once a year. The results are published on the Capline website and compared to assay results for the particular crude provided prior to the nomination.
The program started in late 1996 and went into full effect in October 1998.

Two years of testing went into establishing the baselines; it was designed to somewhat control the blending.

Specifications were dynamic to respond to changing crude oil quality as new production was brought on stream; the change process is described in the quality manual.

The ongoing program was modified a few times, usually at the request of the refineries that purchased LLS.

Current LLS Quality Program was published June 2007.

### TABLE 1. CAPLINE PIPELINE COMMON STREAM QUALITY LLS SPECIFICATIONS

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>API Gravity</td>
<td>ASTM D-5002</td>
<td>34 - 41.0</td>
</tr>
<tr>
<td>Sulfur, %w</td>
<td>ASTM D-4294</td>
<td>0.40 max</td>
</tr>
<tr>
<td>Vanadium + Nickel, ppm w</td>
<td>ASTM D-5708A</td>
<td>8.0 max</td>
</tr>
<tr>
<td>Microwear Residue (MCRT), %w</td>
<td>ASTM D-4530</td>
<td>2.0 max</td>
</tr>
<tr>
<td>Light Ends (C2 – nC5), %v</td>
<td>Intertek In House</td>
<td>6.0 max</td>
</tr>
<tr>
<td>Total Acid Number (TAN), mg KOH/g</td>
<td>ASTM D-664</td>
<td>0.70 max</td>
</tr>
<tr>
<td>High Temperature Simulated Distillation (HTSD)</td>
<td>ASTM D-2887</td>
<td>•</td>
</tr>
<tr>
<td>20 % w Distilled, deg F</td>
<td></td>
<td>280 - 380</td>
</tr>
<tr>
<td>50 % w Distilled, deg F</td>
<td></td>
<td>510 - 610</td>
</tr>
<tr>
<td>1020+ deg F Residue, %w</td>
<td></td>
<td>4.0 - 12.5</td>
</tr>
</tbody>
</table>
In a Nutshell

- All batches entering Capline system at St James are sampled
- Retains are kept for 90 days in case concerns arise
- 30% of samples selected on a random basis in a given month are tested by a third-party lab
- Data is collected, reviewed by the Capline administrator and discussed at quarterly meetings with Capline quality representatives
- Results are shared only with owner representatives and MPL
- If evidence of noncompliance is found, notification is sent to terminal operators and connecting carriers; in addition, notification of the receipt of an off-spec batch is communicated to all Capline quality representatives
Test Data

CAPLINE SALT - 2 TESTING
LIGHT LOUISIANA SWEET (LLS) COMMON STREAM QUALITY PROGRAM

<table>
<thead>
<tr>
<th>API Gravity</th>
<th>Sulfur Content</th>
<th>Total Metals as V &amp; Ni</th>
<th>MCRT, w/%</th>
<th>Total C2 thru C5</th>
<th>TAN</th>
<th>HTSD</th>
<th>HTSD</th>
<th>1020+ Resid, w/%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>34 - 41.0</td>
<td>&lt; 0.400</td>
<td>8.0 max</td>
<td>2.0 max</td>
<td>6.0 max</td>
<td>0.70 max</td>
<td>250 - 350</td>
<td>510 - 610</td>
</tr>
</tbody>
</table>

**API**

**Sulfur (wt%)**

**MCRT (wt%)**

**V & Ni (ppm)**
## Test Data

### CAPLINE SLATE - 2 TESTING

<table>
<thead>
<tr>
<th>LIGHT LOUISIANA SWEET (LLS) COMMON STREAM QUALITY PROGRAM</th>
<th>API Gravity</th>
<th>Sulfur Content</th>
<th>Total Metals</th>
<th>MCRU, w/w%</th>
<th>Total C2 thru C5</th>
<th>TAN</th>
<th>HTSD 20%</th>
<th>HTSD 50%</th>
<th>1020+ Resid, w/w%</th>
</tr>
</thead>
</table>

Test Specification —

- 34 - 41.0
- < 0.400
- 8.0 max
- 2.0 max
- 6.0 max
- 0.70 max
- 280-380
- 530-630
- 4.0-12.5

### Graphs

- **C2 through C5 (vol%)**
- **TAN (mgKOH/g)**
- **HTSD 50% (degF)**
- **1020+ (wt%)**