SUBMISSION COVER SHEET

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Registered Entity Identifier Code (optional): 17-325

Organization: New York Mercantile Exchange, Inc. ("NYMEX")

Filing as a: ☒ **DCM** ☐ **SEF** ☐ **DCO** ☐ **SDR**

Please note - only ONE choice allowed.

Filing Date 12/14/2017 Filing Description: Amendments to Rule 200101. ("Contract Specifications") of the Light Sweet Crude Oil Futures Contract Commencing with the January 2019 Contract Month and Beyond

SPECIFY FILING TYPE

Please note only ONE choice allowed per Submission.

Organization Rules and Rule Amendments

☐	Certification	§ 40.6(a)
☐	Approval	§ 40.5(a)
☐	Notification	§ 40.6(d)
☐	Advance Notice of SIDCO Rule Change	§ 40.10(a)
☐	SIDCO Emergency Rule Change	§ 40.10(h)

Rule Numbers:

New Product **Please note only ONE product per Submission.**

☐	Certification	§ 40.2(a)
☐	Certification Security Futures	§ 41.23(a)
☐	Certification Swap Class	§ 40.2(d)
☐	Approval	§ 40.3(a)
☐	Approval Security Futures	§ 41.23(b)
☐	Novel Derivative Product Notification	§ 40.12(a)
☐	Swap Submission	§ 39.5

Official Product Name:

Product Terms and Conditions (product related Rules and Rule Amendments)

☒	Certification	§ 40.6(a)
☐	Certification Made Available to Trade Determination	§ 40.6(a)
☐	Certification Security Futures	§ 41.24(a)
☐	Delisting (No Open Interest)	§ 40.6(a)
☐	Approval	§ 40.5(a)
☐	Approval Made Available to Trade Determination	§ 40.5(a)
☐	Approval Security Futures	§ 41.24(c)
☐	Approval Amendments to enumerated agricultural products	§ 40.4(a), § 40.5(a)
☐	"Non-Material Agricultural Rule Change"	§ 40.4(b)(5)
☐	Notification	§ 40.6(d)

Official Name(s) of Product(s) Affected: See filing.

Rule Numbers: See filing.

Christopher Bowen
Managing Director and Chief Regulatory Counsel
Legal Department

December 14, 2017

VIA ELECTRONIC PORTAL

Mr. Christopher J. Kirkpatrick
Office of the Secretariat
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

Re: CFTC Regulation 40.6(a) Certification. Notification Regarding Amendments to Rule 200101. ("Contract Specifications") of the Light Sweet Crude Oil Futures Contract Commencing with the January 2019 Contract Month and Beyond.
NYMEX Submission No. 17-325

Dear Mr. Kirkpatrick:

New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") is notifying the Commodity Futures Trading Commission ("CFTC" or "Commission") that it is self-certifying rule amendments to Rule 200101. ("Contract Specifications") of the Light Sweet Crude Oil Futures contract (Rulebook Chapter 200, Commodity Code CL) (the "Contract") effective Tuesday, January 2, 2018, and commencing with the January 2019 contract month and beyond (collectively, the "Rule Amendments").

Specifically, the Exchange is amending the quality specifications of the Contract to include five additional quality test parameters (the "Additional Quality Parameters") which will provide further assurance that the quality and integrity of the domestic sweet crude oil stream (also referred to as "WTI" or "DSW") is maintained. The five additional quality parameters include tests for distillation, vanadium, nickel, total acid number ("TAN"), and micro carbon residue. The specific test parameters and their corresponding test methodologies are detailed below in Appendix A. In addition, the Exchange is deleting the reference to specific domestic crude oil grades in conformity with standard industry practice, which does not reference specific crude oil grades in the domestic sweet common stream.

The Exchange is implementing the Rule Amendments in order to ensure that the quality parameters of the Contract conform with the oil industry standards established by Enterprise Products Partners L.P. ("Enterprise") that govern the common stream specifications for WTI type domestic sweet ("DSW") crude oil which is deliverable against the Contract in Cushing, Oklahoma. Enterprise has announced that the Additional Quality Parameters will be applicable to Enterprise's common stream specifications for DSW crude oil deliveries in Cushing effective starting in January 2019.

Further, the Exchange is adopting the Additional Quality Parameters based on consultation with and feedback from the oil industry and the Crude Oil Quality Association ("COQA"), an industry group that represents refiners, midstream terminal operators, pipelines, and oil producers. The COQA was established in 1994, and provides a forum for companies to analyze and make recommendations related to crude oil quality issues to ensure the integrity and consistency of the quality characteristics of crude oil streams. COQA and its industry members have recommended the adoption of the Additional Parameters to enhance the quality assurance and stability of the WTI domestic sweet crude oil stream, which is deliverable against the Contract.

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COQA recently initiated a comprehensive testing program in Cushing to monitor and publicly disseminate WTI quality data that include the Additional Quality Parameters based on random samples of domestic sweet crude oil in Cushing, Oklahoma. These test results are posted online to provide transparency and quality data that can be analyzed by commercial participants, financial companies, and trading entities. The quality data that is presented by this COQA-sponsored monitoring program provides critical and timely information on crude oil quality, which will enhance the price discovery mechanism of the Contract. The quality test data is reported online at the following web link: http://crudemonitor.us.

According to the test results of the COQA monitoring program, the quality of WTI domestic sweet crude oil in Cushing is already substantially complying with Additional Quality Parameters, and has complied with these test standards on average for the last six months, as well as for the past one-year and five-year periods.[1] Based on this quality test data, it appears that adoption of the Additional Parameters has already been implemented in the crude oil market, and the additional tests represent no material change to the quality of WTI domestic sweet (DSW) crude oil delivered in Cushing. In fact, several terminals in Cushing have already implemented the Additional Quality Parameters as part of their quality assurance programs. Consequently, the Exchange believes that the adoption of the Additional Parameters will have little or no impact on the contract value for existing open interest positions for contract months effective starting in January 2019 and beyond.

Further, the Exchange believes that the Rule Amendments and the Additional Quality Parameters will have little or no impact on the deliverable supply of WTI type crude oil that is available for delivery against the Contract. The most recent deliverable supply analysis of crude oil supplies in Cushing is provided in Appendix B. Amendments to Rule 200101. are provided in Appendix A in blackline format.

The Exchange reviewed the designated contract market core principles ("Core Principles") as set forth in the Commodity Exchange Act ("CEA" or "Act") and identified that the Rule Amendments may have some bearing on the following Core Principles:

- **Contract Not Readily Subject to Manipulation:** The Contract is not readily subject to manipulation because of its structural attributes and active underlying market.

- **Position Limitations or Accountability**: The speculative position limits for the Contract as demonstrated in this submission are consistent with the Commission's guidance.

- **Availability of General Information:** The Exchange will make publicly available the details of the contract's amendments by publishing a Special Executive Report ("SER") to the market. The SER will also be posted on the CME Group website. In addition, will update the NYMEX rulebook to reflect the Rule Amendments of the Contract.

- **Daily Publication of Trading Information**: The Exchange will publish the Contract's trading volumes, open interest levels, and price information daily on its website and through quote vendors for the Contract.

Pursuant to Section 5c(c) of the Act and CFTC Regulation 40.6(a), the Exchange hereby certifies that the amendments comply with the Act, including regulations under the Act. There were no substantive opposing views to this proposal.

[1] See COQA test results for domestic sweet (DSW) crude oil at: http://crudemonitor.us/crude.php?acr=DSW

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The Exchange certifies that this submission has been concurrently posted on the Exchange's website at http://www.cmegroup.com/market-regulation/rule-filings.html.

Should you have any questions concerning the above, please contact the undersigned at (212) 299-2200 or via e-mail at CMEGSubmissionInquiry@cmegroup.com.

Sincerely,

/s/ Christopher Bowen
Managing Director and Chief Regulatory Counsel

Attachments: Appendix A: NYMEX Rule 200101. ("Contract Specifications") (blackline format)
Appendix B: Cash Market Overview and Analysis of Deliverable Supply

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APPENDIX A

NYMEX Rulebook

(**bold/underline** indicates addition; ~~strikethrough~~ indicates deletion)

(Effective January 2, 2018)

Chapter 200
Light Sweet Crude Oil Futures

200101. CONTRACT SPECIFICATIONS

(ALL CONTRACT MONTHS PRIOR TO JANUARY 2019)

The contract grade for delivery on futures contracts shall be "crude oil" which shall mean a mixture of hydrocarbons that exists in a liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Crude oil as used herein refers to the direct liquid hydrocarbon production from oil wells, or a blend of such, in its natural form, not having been enhanced or altered in any manner or by any process that would result in misrepresentation of its true value for adaptability to refining as whole crude petroleum. For the purpose of this contract, condensates are excluded from the definition of crude petroleum.

Light sweet crude oil meeting all of the following specifications and designations shall be deliverable in satisfaction of futures contract delivery obligations under this rule:

200101.A. Domestic Crudes (Deliverable at Par)
1. Deliverable Crude Streams

West Texas Intermediate
Low Sweet Mix (Scurry Snyder)
New Mexican Sweet
North Texas Sweet
Oklahoma Sweet
South Texas Sweet

Blends of these crude streams are only deliverable if such blends constitute a pipeline's designated "common stream" shipment which meets the grade and quality specifications for domestic crude. ~~Enterprise Products Company's~~ **Enterprise Products Partners L.P.** (including any successor in such capacity, "Enterprise") and Enbridge Pipeline (Ozark) LLC's (including any successor in such capacity, "Enbridge") Common Domestic Sweet Streams that meet quality specifications in Sections 101.A.2.-7. of this rule are deliverable as Domestic Crude.

2. Sulfur: 0.42% or less by weight as determined by ASTM Standard D-4294, or its latest revision;

3. Gravity: Not less than 37 degrees American Petroleum Institute ("API"), nor more than 42 degrees API as determined by ASTM Standard D-287, or its latest revision;

4. Viscosity: Maximum 60 Saybolt Universal Seconds at 100 degrees Fahrenheit as measured by ASTM Standard D-445 and as calculated for Saybolt Seconds by ASTM
Standard D-2161;

5. Reid vapor pressure: Less than 9.5 pounds per square inch at 100 degrees Fahrenheit, as determined by ASTM Standard D-5191-96, or its latest revision;

6. Basic Sediment, water and other impurities: Less than 1% as determined by ASTM D-96-88 or D-4007, or their latest revisions;

7. Pour Point: Not to exceed 50 degrees Fahrenheit as determined by ASTM Standard D-97.

200101.B. Foreign Crudes

1. Deliverable Crude Streams

U.K.: Brent Blend (for which the seller shall be paid a 30 cent per barrel discount below the last settlement price)

Nigeria: Bonny Light (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

Nigeria: Qua Iboe (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

Norway: Oseberg Blend (for which the seller shall be paid a 55 cent per barrel discount below the last settlement price)

Colombia: Cusiana (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

2. Each foreign crude stream must meet the following requirements for gravity and sulfur, as determined by ASTM Standards referenced in Sections 101.A.2.-3. of this rule:

Foreign Crude Stream	Minimum Gravity	Maximum Sulfur
Brent Blend	36.4 API	0.46%
Bonny Light	33.8 API	0.30%
Qua Iboe	34.5 API	0.30%
Oseberg Blend	35.4 API	0.30%
Cusiana	34.9 API	0.40%

3. In the event that a Federal U.S. Superfund tax and/or Oil Spill tax is in effect at the time of delivery for foreign crude oil, the buyer shall reimburse the seller for all such taxes that have been or will be paid by the seller.

No blends of foreign crude oil streams or foreign and domestic crude oil streams shall be Deliverable.

200101. CONTRACT SPECIFICATIONS

(ALL CONTRACT MONTHS COMMENCING WITH JANUARY 2019 AND BEYOND)

The contract grade for delivery on futures contracts shall be "crude oil" which shall mean a mixture of hydrocarbons that exists in a liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Crude oil as used herein refers to the direct liquid hydrocarbon production from oil wells, or a blend of such, in its natural form, not having been enhanced or altered in any manner or by any process that would result in misrepresentation of its true value for adaptability to refining as whole crude petroleum. For the purpose of this contract, condensates are excluded from the definition of crude petroleum.

Light sweet crude oil meeting all of the following specifications and designations shall be deliverable in satisfaction of futures contract delivery obligations under this rule:

200101.A. Domestic Crudes ~~(Deliverable at Par)~~

1. Deliverable Crude Streams

~~West Texas Intermediate~~
~~Low Sweet Mix (Scurry Snyder)~~
~~New Mexican Sweet~~
~~North Texas Sweet~~
~~Oklahoma Sweet~~
~~South Texas Sweet~~

Blends of ~~these~~ **West Texas Intermediate ("WTI") type light sweet** crude streams are only deliverable if such blends constitute a pipeline's designated "common stream" shipment which meets the grade and quality specifications for domestic crude. ~~Enterprise Products Company's~~ **Enterprise Products Partners L.P.** (including any successor in such capacity, "Enterprise") and Enbridge Pipeline (Ozark) LLC's (including any successor in such capacity, "Enbridge") Common Domestic Sweet **("DSW")** Streams that meet quality specifications in Sections 101.A.2.- 12 ~~7~~. of this rule are deliverable as Domestic Crude.

2. Sulfur: 0.42% or less by weight as determined by ASTM Standard D-4294, or its latest revision;

3. Gravity: Not less than 37 degrees American Petroleum Institute ("API"), nor more than 42 degrees API as determined by ASTM Standard D-287, or its latest revision;

4. Viscosity: Maximum 60 Saybolt Universal Seconds at 100 degrees Fahrenheit as measured by ASTM Standard D-445 and as calculated for Saybolt Seconds by ASTM Standard D-2161;

5. Reid vapor pressure: Less than 9.5 pounds per square inch at 100 degrees Fahrenheit, as determined by ASTM Standard D-5191-96, or its latest revision;

6. Basic Sediment, water and other impurities: Less than 1% as determined by ASTM D-96-88 or D-4007, or their latest revisions;

7. Pour Point: Not to exceed 50 degrees Fahrenheit as determined by ASTM Standard D-97;

8. Micro Method Carbon Residue: 2.40% or less by mass; as determined by ASTM Standard D4530-15, or its latest revision;

9. Total Acid Number (TAN): 0.28 mg KOH/g or less as determined by the first inflection point; using ASTM Standard D664-11a (2017), or its latest revision;

10. Nickel: 8 parts per million (ppm) or less by mass; as determined by ASTM Standard D5708-15, Test Method B, or its latest revision;

11. Vanadium: 15 ppm or less by mass; as determined by ASTM Standard D5708-15, Test Method B, or its latest revision;

12. High-Temperature Simulated Distillation (HTSD) as determined by ASTM Standard D7169-16, or its latest revision, as follows:

(a) Light Ends <220°F by HTSD: Not more than 19% by mass;

(b) 50% Point by HTSD: 470°F- 570°F;

(c) Vacuum Residuum >1020°F by HTSD: Not more than 16% by mass.

200101.B. Foreign Crudes

1. Deliverable Crude Streams

U.K.: Brent Blend (for which the seller shall be paid a 30 cent per barrel discount below the last settlement price)

Nigeria: Bonny Light (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

Nigeria: Qua Iboe (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

Norway: Oseberg Blend (for which the seller shall be paid a 55 cent per barrel discount below the last settlement price)

Colombia: Cusiana (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

2. Each foreign crude stream must meet the following requirements for gravity and sulfur, as determined by ASTM Standards referenced in Sections 101.A.2.-3. of this rule:

Foreign Crude Stream	Minimum Gravity	Maximum Sulfur
Brent Blend	36.4 API	0.46%
Bonny Light	33.8 API	0.30%
Qua Iboe	34.5 API	0.30%
Oseberg Blend	35.4 API	0.30%
Cusiana	34.9 API	0.40%

3. In the event that a Federal U.S. Superfund tax and/or Oil Spill tax is in effect at the time of delivery for foreign crude oil, the buyer shall reimburse the seller for all such taxes that have been or will be paid by the seller.

No blends of foreign crude oil streams or foreign and domestic crude oil streams shall be Deliverable.

NYMEX Rulebook

(~~strikethrough~~ indicates deletion)

(Effective November 20, 2018)

Chapter 200
Light Sweet Crude Oil Futures

~~200101. CONTRACT SPECIFICATIONS~~

~~(ALL CONTRACT MONTHS PRIOR TO JANUARY 2019)~~

~~The contract grade for delivery on futures contracts shall be "crude oil" which shall mean a mixture of hydrocarbons that exists in a liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Crude oil as used herein refers to the direct liquid hydrocarbon production from oil wells, or a blend of such, in its natural form, not having been enhanced or altered in any manner or by any process that would result in misrepresentation of its true value for adaptability to refining as whole crude petroleum. For the purpose of this contract, condensates are excluded from the definition of crude petroleum.~~

~~Light sweet crude oil meeting all of the following specifications and designations shall be deliverable in satisfaction of futures contract delivery obligations under this rule:~~

~~200101.A. Domestic Crudes (Deliverable at Par)~~
~~1. Deliverable Crude Streams~~

~~West Texas Intermediate~~
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~~New Mexican Sweet~~
~~North Texas Sweet~~
~~Oklahoma Sweet~~
~~South Texas Sweet~~

~~Blends of these crude streams are only deliverable if such blends constitute a pipeline's designated "common stream" shipment which meets the grade and quality specifications for domestic crude. Enterprise Products Company's (including any successor in such capacity, "Enterprise") and Enbridge Pipeline (Ozark) LLC's (including any successor in such capacity, "Enbridge") Common Domestic Sweet Streams that meet quality specifications in Sections 101.A.2.-7. of this rule are deliverable as Domestic Crude.~~

~~2. Sulfur: 0.42% or less by weight as determined by ASTM Standard D-4294, or its latest revision;~~

~~3. Gravity: Not less than 37 degrees American Petroleum Institute ("API"), nor more than 42 degrees API as determined by ASTM Standard D-287, or its latest revision;~~

~~4. Viscosity: Maximum 60 Saybolt Universal Seconds at 100 degrees Fahrenheit as measured by ASTM Standard D-445 and as calculated for Saybolt Seconds by ASTM Standard D-2161;~~

~~5. Reid vapor pressure: Less than 9.5 pounds per square inch at 100 degrees Fahrenheit, as determined by ASTM Standard D-5191-96, or its latest revision;~~

~~6. Basic Sediment, water and other impurities: Less than 1% as determined by ASTM D-96-88 or D-4007, or their latest revisions;~~

~~7. Pour Point: Not to exceed 50 degrees Fahrenheit as determined by ASTM Standard D-97.~~

~~**200101.B. Foreign Crudes**~~

~~1. Deliverable Crude Streams~~

~~U.K.: Brent Blend (for which the seller shall be paid a 30 cent per barrel discount below the last settlement price)~~

~~Nigeria: Bonny Light (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)~~

~~Nigeria: Qua Iboe (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)~~

~~Norway: Oseberg Blend (for which the seller shall be paid a 55 cent per barrel discount below the last settlement price)~~

~~Colombia: Cusiana (for which the seller shall be paid 15 cent per barrel premium above the last settlement price)~~

~~2. Each foreign crude stream must meet the following requirements for gravity and sulfur, as determined by ASTM Standards referenced in Sections 101.A.2.-3. of this rule:~~

~~**Foreign Crude Stream**~~	~~**Minimum Gravity**~~	~~**Maximum Sulfur**~~
~~**Brent Blend**~~	~~36.4 API~~	~~0.46%~~
~~**Bonny Light**~~	~~33.8 API~~	~~0.30%~~
~~**Qua Iboe**~~	~~34.5 API~~	~~0.30%~~
~~**Oseberg Blend**~~	~~35.4 API~~	~~0.30%~~
~~**Cusiana**~~	~~34.9 API~~	~~0.40%~~

~~3. In the event that a Federal U.S. Superfund tax and/or Oil Spill tax is in effect at the time of delivery for foreign crude oil, the buyer shall reimburse the seller for all such taxes that have been or will be paid by the seller.~~

~~No blends of foreign crude oil streams or foreign and domestic crude oil streams shall be Deliverable.~~

200101. CONTRACT SPECIFICATIONS

~~(ALL CONTRACT MONTHS COMMENCING WITH JANUARY 2019 AND BEYOND)~~

The contract grade for delivery on futures contracts shall be "crude oil" which shall mean a mixture of hydrocarbons that exists in a liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Crude oil as used herein refers to the direct liquid hydrocarbon production from oil wells, or a blend of such, in its natural form, not having been enhanced or altered in any manner or by any process that would result in

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Light sweet crude oil meeting all of the following specifications and designations shall be deliverable in satisfaction of futures contract delivery obligations under this rule:

200101.A. Domestic Crudes~~s~~

1. Deliverable Crude Streams

Blends of West Texas Intermediate ("WTI") type light sweet crude streams are only deliverable if such blends constitute a pipeline's designated "common stream" shipment which meets the grade and quality specifications for domestic crude. ~~Enterprise Products Company's~~ **Enterprise Products Partners L.P.** (including any successor in such capacity, "Enterprise") and Enbridge Pipeline (Ozark) LLC's (including any successor in such capacity, "Enbridge") Common Domestic Sweet ("DSW") Streams that meet quality specifications in Sections 101.A.2.- 12. of this rule are deliverable as Domestic Crude.

2. Sulfur: 0.42% or less by weight as determined by ASTM Standard D-4294, or its latest revision;

3. Gravity: Not less than 37 degrees American Petroleum Institute ("API"), nor more than 42 degrees API as determined by ASTM Standard D-287, or its latest revision;

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5. Reid vapor pressure: Less than 9.5 pounds per square inch at 100 degrees Fahrenheit, as determined by ASTM Standard D-5191-96, or its latest revision;

6. Basic Sediment, water and other impurities: Less than 1% as determined by ASTM D-96-88 or D-4007, or their latest revisions;

7. Pour Point: Not to exceed 50 degrees Fahrenheit as determined by ASTM Standard D-97;

8. Micro Method Carbon Residue: 2.40% or less by mass; as determined by ASTM Standard D4530-15, or its latest revision;

9. Total Acid Number (TAN): 0.28 mg KOH/g or less as determined by the first inflection point; using ASTM Standard D664-11a (2017), or its latest revision;

10. Nickel: 8 parts per million (ppm) or less by mass; as determined by ASTM Standard D5708-15, Test Method B, or its latest revision;

11. Vanadium: 15 ppm or less by mass; as determined by ASTM Standard D5708-15, Test Method B, or its latest revision;

12. High-Temperature Simulated Distillation (HTSD) as determined by ASTM Standard D7169-16, or its latest revision, as follows:

(a) Light Ends <220°F by HTSD: Not more than 19% by mass;

(b) 50% Point by HTSD: 470°F- 570°F;

(c) Vacuum Residuum >1020°F by HTSD: Not more than 16% by mass.

200101.B. Foreign Crudes

1. Deliverable Crude Streams

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Nigeria: Qua Iboe (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

Norway: Oseberg Blend (for which the seller shall be paid a 55 cent per barrel discount below the last settlement price)

Colombia: Cusiana (for which the seller shall be paid a 15 cent per barrel premium above the last settlement price)

2. Each foreign crude stream must meet the following requirements for gravity and sulfur, as determined by ASTM Standards referenced in Sections 101.A.2.-3. of this rule:

Foreign Crude Stream	Minimum Gravity	Maximum Sulfur
Brent Blend	36.4 API	0.46%
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Qua Iboe	34.5 API	0.30%
Oseberg Blend	35.4 API	0.30%
Cusiana	34.9 API	0.40%

3. In the event that a Federal U.S. Superfund tax and/or Oil Spill tax is in effect at the time of delivery for foreign crude oil, the buyer shall reimburse the seller for all such taxes that have been or will be paid by the seller.

No blends of foreign crude oil streams or foreign and domestic crude oil streams shall be Deliverable.

APPENDIX B

Cash Market Overview and Analysis of Deliverable Supply

In estimating deliverable supply for the Light Sweet Crude Oil Futures, the New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") relied on long-standing precedent, which provides that the key component in estimating deliverable supply is the portion of typical production and supply stocks that could reasonably be considered to be readily available for delivery. In its guidance on estimating deliverable supply, the Commodity Futures Trading Commission ("CFTC" or "Commission") states:

> In general, the term "deliverable supply" means the quantity of the commodity meeting a derivative contract's delivery specifications that can reasonably be expected to be readily available to short traders and saleable by long traders at its market value in normal cash marketing channels at the derivative contract's delivery points during the specified delivery period, barring abnormal movement in interstate commerce. Typically, deliverable supply reflects the quantity of the commodity that potentially could be made available for sale on a spot basis at current prices at the contract's delivery points. For a non-financial physical-delivery commodity contract, this estimate might represent product which is in storage at the delivery point(s) specified in the futures contract or can be moved economically into or through such points consistent with the delivery procedures set forth in the contract and which is available for sale on a spot basis within the marketing channels that normally are tributary to the delivery point(s).[2]

I. Methodology and Data Sources

The Exchange considered three components in evaluating deliverable supply estimates of the Domestic Light Sweet Common Stream Crude Oil for the Cushing, Oklahoma delivery location of the Light Sweet Crude Oil Futures contract:

(1) Crude Oil Production;

(2) Crude Oil Flows to the delivery area; and

(3) Crude Oil Storage in the delivery area.

A. Crude Oil Production

While crude oil production information is, in part, available from other sources, particularly at the state level from energy or tax revenue authorities, the Exchange determined to use production information collected by the U.S. Department of Energy ("DOE") Energy Information Administration ("EIA"). Specifically, the Exchange has chosen to rely on the EIA production data because it constitutes a single source, employing common standards, across all states. The EIA data are highly regarded but they do not provide sufficient breakdown on the quality characteristics of the oil production to determine the subset of total production that would qualify as Domestic Light Sweet under the terms of the futures contract.

B. Crude Oil Flows to the Cushing Delivery Area

To determine the flows of Domestic Light Sweet crude oil into the delivery area, NYMEX consulted with industry executives and professionals from pipeline and storage terminal operators in Cushing as well as other major industry participants. It is noteworthy that the estimates provided here are materially less than the production that can readily access the delivery mechanism and which *could* be delivered due to the fact

[2] http://www.ecfr.gov/cgi-bin/text-idx?SID=74959c3dbae469e2efe0a42b45b8dfae&mc=true&node=ap17.1.38_11201.c&rgn=div9

that the sources we used were specifically knowledgeable about *actual* Cushing deliveries. Thus, the information provided is not what *could be* delivered — the standard which is in accordance with Commission's policy and precedent — but what actually *is* delivered. The Exchange believes that the Cushing delivery mechanism for light sweet crude oil and corresponding commercial secondary market constitutes such a sophisticated and highly-developed commercial market mechanism that, at any time, the actual flows to and stocks in the delivery area represent precisely the deliverable supply sufficient to support the mechanism. In other words, even though at any time there is additional production that *could* be delivered to the delivery mechanism, we are only including what *actually* flows in our estimate of deliverable supply.

C. Crude Oil Storage in the Cushing Delivery Area

Storage data are provided on a weekly basis by EIA. Details are provided for the U.S. Petroleum Administration for Defense Districts ("PADDs") and Cushing. There are five PADDs and, in some cases, they correspond to broad regions. PADD 2 broadly includes the Midwest; PADD 3 broadly includes U.S. Gulf Coast states and New Mexico; PADD 4 contains the Rocky Mountain States excluding New Mexico. Cushing is the only single location where crude oil official inventory numbers are collected and publicly disseminated on a regular basis anywhere in the world. The actual geographic market that is consistently most applicable to the NYMEX crude oil futures contract would, therefore, include much of PADD 2, not just Cushing.

Nonetheless, NYMEX includes only inventories reported at Cushing, so these underestimate relevant storage. As with production, EIA does not provide details on the quality characteristics of stored crude oil, but the industry experts with whom NYMEX consulted consistently estimated that 60% to 70% of the crude oil stored at Cushing qualified as Domestic Light Sweet Common Stream (to be conservative, the Exchange will discount 40% of inventory in its calculation of deliverable supply estimates).

II. The Cushing Physical Delivery Mechanism: Scope of Deliverable Crude Oil

The Cushing physical delivery mechanism is comprised of a network of nearly two dozen pipelines and 10 storage terminals, several with major pipeline manifolds. Two of the storage facilities — Enterprise Products Partners L.P. ("Enterprise") and Enbridge — and their pipeline manifolds are the core of the Cushing physical delivery mechanism.[3] Physical volumes delivered against the Light Sweet Crude Oil Futures contract within the Enterprise and Enbridge systems are at par value. Any deliveries made on futures contracts elsewhere in Cushing require the seller to compensate the buyer for the lower of the transportation netbacks from these facilities to where the delivery occurs. Detailed information about the inflowing and outflowing pipelines is contained below in Table 2.

Terminating obligations in the Light Sweet Crude Oil Futures contract are fulfilled by delivering any of six "Domestic Production Streams" of crude oil: (i) West Texas Intermediate ("WTI"); (ii) Low Sweet Mix ("Scurry Snyder"); (iii) New Mexican Sweet; (iv) North Texas Sweet; (v) Oklahoma Sweet; or (vi) South Texas Sweet. Additionally, a seventh stream, defined as "The Domestic Common Stream" transported by Enterprise (formerly Teppco Pipeline), is also deliverable. Market participants commonly refer to the combination of all of the deliverable streams, including the Domestic Common Stream, as "WTI." In addition, the Domestic Common Stream includes a fungible blend of light sweet streams produced in the U.S. shale oil areas, including the Bakken, Niobrara, and Permian producing areas. Furthermore, each of these light sweet crude oil streams is fungibly blended and included as part of the "Domestic Common Stream" within the complex that comprises the Cushing delivery mechanism, as well as in the WTI physical market which calls for delivery in the Cushing delivery mechanism.

[3] Three of the major sources for the cash-market information provided herein are Plains All America, Enterprise and Enbridge. Enterprise oversees the vast majority of deliveries in the Cushing Delivery Market and, as indicated, Enterprise and Enbridge are the core delivery mechanism operators. Plains and Enbridge account for about 60% of the storage available at Cushing.

III. Physical Market Trading Structure and Term Contracts

A. Physical Market Trading Structure

Typically, there is a chronology of sales and purchases of crude oil in the onshore U.S. market that starts with a sale from producer and finishes with a purchase by an end-user to consume the crude oil. First-sales are from producers to aggregators or other middleman-type firms with delivery at the property where it is produced. The first-sale buyer transports oil downstream from the point of sale. Usually the first-sale buyer resells the oil to someone other than the end-user but sometimes sells directly to the end-user.

Final sales are sales to end-users who when they consume the oil remove it from the supply chain. End-users, however, also resell oil. Such end-user re-sales sometimes occur during the same commercial cycle in which they purchased it; other times, they occur during a later commercial cycle after the oil has been stored for a period of time. Like end-users, other buyers of oil also can either resell it immediately or store it first for some period of time and then resell it later. Thus, it is a common commercial practice that the first-sale and multiple subsequent re-sales occur in the same delivery cycle.

As discussed above, the Cushing delivery market is essentially a major reseller market where buyers either: resell the oil to someone else; store the oil and resell it later; store the oil and then consume it later; or transport it to consume it. The Cushing market is essentially downstream of first-sales. Most of the sales in the Cushing market are for resale and not for either storage or final-sale; in fact, the physical market in "WTI," in which the standard form of delivery is within the pipeline system at Cushing, is estimated to be 10-20 times the multiple of "WTI" oil that flows to Cushing. As such, it is clear that most sales are for resale because they constitute the selling, over-and-over (thus, *re*-selling), of the base physical oil that flows to Cushing. *Argus Media* documents about 5-8 times the flow in "WTI" sales but does not capture all of the sales.[4]

B. Term Contracts

The Exchange has spoken with and interviewed a number of market participants regarding common commercial practices with respect to the use of term contracts in the U.S. onshore crude oil market.[5] The responses we received were consistent and they can be summarized as follows:

- Almost all first-sales of production are sold term; as discussed in the previous section, typically for delivery on the property where it is produced (or nearest gathering pipeline or holding tank), and typically to middleman-firms or aggregators. These middleman-firms typically resell the crude oil to other middleman-firms (or participants performing that function) or to end-users. Typically, the first-sales contracts are "evergreen" contracts that can be discontinued by either party with notice. NYMEX is including evergreen contracts in the "term contracts" category.
- There are no restrictions applied to the resale of crude oil bought first-sale on a term basis from producers. In fact, that would clearly not be applicable because sales are typically to aggregators or others acting in a middleman-firm role with the expressed responsibility of reselling the oil.
- The Cushing market is downstream of first-sales; in other words, Cushing is downstream of any term sales from producers. Thus, even if barrels were sold term by the producer, in the Cushing market those barrels are re-sold and re-delivered by either the purchaser from the producer or a subsequent purchaser from that original purchaser. The Cushing market mechanism, which consists of trading and physical delivery of light sweet crude oil, is a commercial secondary (or

[4] The commercial market for physical delivery of light sweet crude oil in Cushing is a *secondary* (or *spot*) market mechanism. The number of physical deliveries in this market each month is 240 million barrels or higher (240,000 futures contracts equivalent or higher).

[5] These include: Plains All America, a major Midcontinent aggregator and marketer and operator of pipeline and storage terminals including in Cushing; JSK Consulting, the principal of which is a seasoned Midcontinent oil market participant and professional with 40 years of experience in trading, operating transportation and storage in Cushing, and refining; and an Energy Market Participant Group of several dozen market participants organized through Hunton & Williams LLP to discuss and comment on Regulatory issues.

spot) market which is extremely liquid, comprised of broad participation and results in a substantial quantity of physical delivery of crude oil.

- Some end-user refiners in the Cushing market purchase specific light sweet crude oil streams, such as Bakken or Niobrara Light Sweet crude oil, on a term basis, and these refiners tend to segregate a portion of the specific light sweet crude streams for processing at their refineries. Based on conversations with refiners in the Cushing market, the Exchange estimates that approximately 10% of the deliverable supply for Cushing is segregated and designated for use by end-user refiners, and therefore is not available for re-sale in the Cushing market. Consequently, the Exchange will reduce its estimate of deliverable supply in Cushing by 10% to account for the specific light sweet streams that are designated for processing and segregated by the end-user refiners.
- Our sources expressly advised us that any production sold long-term was available for potential re-sale, such as during periods of refinery maintenance, and this is especially the case in the Cushing market.

C. Crude Oil Production

The production area that supplies crude oil to Cushing via pipeline and rail is comprised of the following eight (8) states: North Dakota, Montana, Wyoming, Colorado, New Mexico, Onshore Texas, Oklahoma, and Kansas.

In the three-year period of 2013 through 2015, the average production of crude oil available in the eight states was approximately 5.5 million barrels per day. Based on discussions with industry participants, our estimate of the portion of that average production which would qualify as Domestic Light Sweet Common Stream is 50% or higher— i.e., 2.7 million barrels per day. The 2.7 million barrels per day of crude oil production is equivalent to approximately 80 million barrels per month, or 80,000 futures contracts equivalents (contract size: 1,000 barrels).

Table 1 below provides annual production data available for production in the eight states that supply the Cushing crude oil market for the period of 2013 through 2015. The data show that production has been steadily growing in recent years and this trend is expected to continue. As indicated above, the production data are provided not as direct inputs to deliverable supply, but to demonstrate that production levels are more than sufficient to support the actual flows of deliverable product to the delivery location.

D. Crude Oil Flows to the Cushing Delivery Area

Over the last three years, pipeline capacity for delivering crude oil to Cushing increased by about 815,000 b/d according to the EIA[6]. The key development was the construction of the 590,000 b/d TransCanada Keystone pipeline that originates in Hardisty, Alberta, Canada. Until mid-2012, there was only one pipeline that could deliver crude oil from the Midwest to the Gulf Coast. The 96,000-b/d ExxonMobil Pegasus pipeline between Patoka, Illinois and Nederland, Texas originally shipped crude oil northward. The pipeline was reversed in 2006 in order to ship Canadian heavy oil to the Gulf Coast.

Currently, there is approximately 3.0 million b/d of inflow pipeline capacity to Cushing and 2.7 million barrels per day of outflow capacity. In addition, 87.7 million barrels of storage capacity exists in the Cushing area which continues to grow steadily.

The Exchange collects inbound and outbound Cushing crude oil flows periodically but not on an on-going or scheduled basis as such information is proprietary and non-public. Based on information provided by pipeline and storage terminal operators in Table 2 below, as of March 2015, actual flows of crude oil to Cushing have ranged from 1.6 million to 1.8 million barrels per day, with Domestic Light Sweet Common Stream Crude Oil averaging between 920,000 and 1,000,000 barrels per day.[7] On a 30-day monthly basis,

[6] http://www.eia.gov/forecasts/steo/special/pdf/2013_sp_02.pdf

[7] The sources were: Plains All America, an aggregator and marketer of crude oil production and pipeline and storage terminal operator at Cushing; Enbridge, a pipeline and storage terminal operator at Cushing; and JSK Consulting, the principal of which is a seasoned

actual flows of Domestic Light Sweet Common Stream Crude Oil compute into 27.6 million to 30.0 million barrels per month or 27,600 to 30,000 Light Sweet Crude Oil futures contract equivalents.

As of February 2013, the previous time the Exchange collected such information, Domestic Light Sweet Common Stream Crude Oil flows into Cushing averaged between 665,000 and 750,000 barrels per day as illustrated in Table 3 below. On a 30-day monthly basis, actual flows of Domestic Light Sweet Common Stream Crude Oil ranged from 19.95 million to 22.5 million barrels per month or 19,950 to 22,500 futures contract equivalents. Given that the Exchange only collects such information on a periodic basis, the Exchange is unable to provide a three-year average of Domestic Light Sweet Common Stream Crude Oil flows into Cushing. As such, the Exchange determined to average the 2013 and 2015 estimated flows data collected. The average of the ranges for the 2013 and 2015 Domestic Light Sweet Common Stream Crude Oil flows data into Cushing are 23,775 to 26,250 contract equivalents. The midpoint of the average of the ranges is approximately 25,000 contract equivalents.

E. Crude Oil Storage in the Cushing Delivery Area

As of September 30, 2015, EIA reported that shell storage capacity at Cushing was 87.7 million barrels and working capacity was 73.0 million barrels.[8] Currently, there is substantial excess working capacity at Cushing (nearly 10 million barrels). Finally, it should be noted that, at least on a temporary basis, storage can exceed working capacity and it is common for an individual tank to reach 85-90% of shell capacity (which exceeds the 83% average underlying the EIA estimates).

Table 4 below provides monthly averages of weekly Cushing stocks for the period beginning January 2013 through December 2015 as published by the EIA. During that time period, inventories averaged over 41 million barrels and ranged from about 19 million to 61 million barrels. NYMEX asked operators of storage in Cushing if they would share specific data on quantities of Domestic Light Sweet Common Stream Crude Oil stored at their facilities and they responded that such data were confidential. As discussed above, the Exchange estimated that approximately 60% of the total oil stored at Cushing qualified as Domestic Light Sweet Common Stream Crude Oil. Based on the foregoing, for the 2013 – 2015 period, the monthly average Domestic Light Sweet Common Stream Crude Oil stored at Cushing was approximately 24.9 million barrels or 24,900 futures contract equivalents.

The Exchange has further evaluated both operational practices at storage facilities as well as commercial practices by customers of storage facilities to determine if some components of inventoried product could rightfully be considered *not* to be readily deliverable.

With respect to operational practices, based on discussions with some industry experts, the Exchange conservatively estimates that 6.75% of stored product, on average, is required for operational minimums.[9] This converts into discounting an estimated 1.7 million barrels of Domestic Light Sweet crude oil based on the three-year average storage level (or 1,700 contract equivalents). In applying a discount of 6.75% to account for operational minimums, average monthly Domestic Light Sweet Common Stream Crude Oil for the 2013 – 2015 period is further reduced to approximately 23,200 contract equivalents.

With respect to commercial practices, the Exchange specifically sought whether storage customers were expressly allotting any stored barrels at Cushing for refining and was, therefore, unavailable for secondary market delivery. We consistently heard from market participants that was not the case; that barrels stored

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Midcontinent oil market participant and professional with 40 years of experience in trading, operating transportation and storage in Cushing, and refining.

[8] http://www.eia.gov/petroleum/storagecapacity/table2.pdf Shell capacity is defined by EIA as the design capacity of a petroleum storage tank which is always greater than or equal to working storage capacity.

[9] We have been advised that, for older tanks, the operational minimum is 9% and, for newer tanks, it is 4.5%. Our assessment is that the majority of tanks at Cushing would qualify as newer. Nonetheless, to be conservative, we have applied the mid-point percentage—6.75%-- for all of Cushing.

at Cushing are not specifically targeted for scheduled refining. Rather, refiners typically store barrels targeted for scheduled refining in tanks on the premises at their respective refineries or at other storage facilities. However, we did hear from one refiner that they keep barrels stored at Cushing for the contingency that there could be some unexpected interruption in their refinery supply; and, rather than refine the barrels stored at Cushing, they use them to trade for other barrels they would refine. Thus, the Exchange determined to further reduce the average monthly Domestic Light Sweet Common Stream crude oil stored at Cushing to account for this *contingency storage* in our estimate of deliverable supply. We estimate this quantity to be 2 million barrels (or 2,000 contract equivalents) of Domestic Light Sweet crude oil. Therefore, for the 2013 – 2015 period, the Exchange estimates stored product at Cushing (adjusted for quality specifications, operational minimums and contingency storage) and which is readily available for delivery against the Light Sweet Crude Oil futures contract to be approximately 21,200 contract equivalents.

ANALYSIS OF DELIVERABLE SUPPLY

Based on the above analysis, the Exchange determined at this time to base its estimates of deliverable supply on the sum of:

- Storage: 21,200 contract equivalents (which represents the average monthly inventory for the 2013 – 2015 period adjusted to account for quality specifications, operational minimums and contingency storage); and
- Inflow: 25,000 contract equivalents (which represents the midpoint of the average of the ranges of the 2013 and 2015 Domestic Light Sweet Common Stream Crude Oil flows into Cushing).

Additionally, and as noted in the above analysis, the Exchange shall apply a 10% haircut to the sum of inventory and flows into Cushing in order to discount segregated barrels that may be designated for processing by end-user refiners, and typically not available for re-sale in the Cushing market.

Based on the foregoing, the Exchange estimates deliverable supply of crude oil deliverable against the Light Sweet Crude Oil Futures contract at approximately **41,600** futures contract equivalents per month. The current spot month position limit of 3,000 contracts represents **7.2%** of the estimated monthly deliverable supply.

Table 1
U.S. Crude Oil Production[10]
For Eight States that Supply Cushing, Oklahoma
(Thousand Barrels per Day)

Year	Crude Oil Production (Thousand Barrels per Day)
2013	4,542
2014	5,627
2015	6,241
Average	**5,470**

Table 2
Crude Oil Flows to Cushing (as of March 2015)
(Barrels/Day)[11]

Incoming Pipelines	Capacity	Owner	Estimated Flows (in Barrels/Day)
Keystone XL (from Steele City, NE)	575,000	Transcanada	200,000 - 250,000 BD (Heavy sour)
Basin Pipeline (Permian)	450,000	Plains	250,000 (80% WTI)
Centurion North Pipeline (Permian)	120,000	Occidental	95,000 - 100,000 (100% WTI)
Spearhead Pipeline (Canada)	210,000	Enbridge	150,000 - 175,000 (Canadian sour)
Flanagan South (Canada/Bakken)	585,000	Enbridge	400,000 - 450,000 (10% WTI, 90% Sour)
White Cliffs Pipeline (Niobrara)	150,000	Rose Rock	100,000 - 120,000 (100% WTI)
Plains Cashion, OK Pipeline	100,000	Plains	80,000 (100% WTI)
Mississippi Lime Pipeline	175,000	Plains	110,000 (100% WTI)
Pony Express Pipeline (Niobrara)	320,000	Tallgrass	180,000 – 200,000 (100% WTI)
Hawthorn (Stroud to Cushing)	90,000	Hawthorn	20,000 – 25,000 (100% WTI)
Great Salt Plains	30,000	JP Energy	15,000 – 20,000 (100% WTI)
Northern Cimarron	30,000	Rose Rock	15,000 – 20,000 (100% WTI)
Midcontinent Pipeline	30,000	Sunoco Logistics	25,000 – 30,000 (100% WTI)
Glass Mountain Pipeline	140,000	Rose Rock	40,000 – 50,000 (100% WTI)
TOTAL In-Bound Capacity: 3.0 Million B/D Capacity			**WTI Flow: 920,000 – 1,000,000 B/D**

Outgoing Pipelines	Capacity (B/D)	Owner
Seaway Pipeline	850,000	Enterprise
Keystone MarketLink	700,000	Transcanada
BP#1 (to Chicago)	180,000	BP
Occidental Centurion South	60,000	Occidental
Ozark (to Wood River, IL)	235,000	Enbridge
Osage (to Eldorado, KS)	150,000	Magellan/NCRA
Coffeyville CVR pipeline	110,000	CVR Energy
Phillips (to Ponca City, OK)	122,000	ConocoPhillips
Phillips (to Borger, TX)	59,000	NuStar
PAA Red River Pipeline	30,000	Plains All America
Sun (twin lines to Tulsa)	70,000	Sunoco
PAA Cherokee	50,000	Plains
West Tulsa (to Tulsa)	50,000	Enbridge
Eagle (to Ardmore)	20,000	Blue Knight
Magellan Tulsa	30,000	Magellan
Diamond Pipeline (to Memphis)	200,000	Plains (in 2016)
TOTAL Out-bound Capacity: 2.7 Million B/D		

[10] The production listed here includes North Dakota, Montana, Wyoming, Colorado, New Mexico, Onshore Texas, Oklahoma, and Kansas. The web link is: http://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbblpd_a.htm

[11] Sources: Plains All American Pipeline Company, JSK Consulting, and other industry sources.

Table 3

Crude Oil Flows to Cushing (as of February 2013) (Barrels/Day)[12]

Incoming Pipelines	Capacity	Owner	Estimated Flows (in Barrels/Day)
Keystone XL Pipeline	590,000	Transcanada	200,000 to 225,000 BD (Heavy sour)
Basin Pipeline	450,000	Plains	400,000 to 440,000 (75% WTI)
Occidental Pipeline	120,000	Occidental	100,000 to 120,000 (100% WTI)
Spearhead Pipeline	240,000	Enbridge	120,000 to 140,000 (Canadian sour)
White Cliffs Pipeline	70,000	SemGroup	65,000 to 70,000 (100% WTI)
Plains Oklahoma Pipeline	100,000	Plains	90,000 to 100,000 (100% WTI)
Cherokee Pipeline	50,000	Plains	40,000 to 50,000 (100% Sour)
Ark City Pipeline	30,000	SemGroup	25,000 to 30,000 (100% WTI)
MV Magellan Pipeline	30,000	SemGroup	25,000 to 30,000 (100% WTI)
Midcontinent Pipeline	50,000	Sunoco	45,000 to 50,000 (100% WTI)
Bakken Crude via Rail	90,000	Various	15,000 to 20,000 (100% WTI)
TOTAL ESTIMATE	**1.820 Million B/D**		**WTI Flow: 665,000 – 750,000 B/D**

[12] Sources: Plains All American Pipeline Company, JSK Consulting, and other industry sources.

Table 4

Cushing Storage[13]

Average of Weekly Stocks

(in Thousand Barrels)

Year	Month	Stock
2013	Jan	51,253
	Feb	50,711
	Mar	49,567
	Apr	50,551
	May	49,916
	Jun	49,193
	Jul	44,798
	Aug	37,432
	Sep	33,254
	Oct	33,618
	Nov	39,174
	Dec	40,412
2014	Jan	41,058
	Feb	35,099
	Mar	29,081
	Apr	26,474
	May	22,750
	Jun	21,226
	Jul	19,480
	Aug	19,496
	Sep	20,263

[13] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=W_EPC0_SAX_YCUOK_MBBL&f=W

	Oct	20,274
	Nov	23,559
	Dec	28,080
2015	Jan	36,601
	Feb	46,689
	Mar	55,300
	Apr	61,381
	May	60,368
	Jun	57,183
	Jul	57,312
	Aug	57,389
	Sep	54,483
	Oct	53,569
	Nov	57,549
	Dec	61,150
Three-Year Average		**41,547**