



Magellan Pipeline Product Specifications

Version 137

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MAGELLAN PIPELINE PRODUCT ACCEPTANCE TERMS

The most current version of the methods referenced in these specifications will prevail at all times. Alternate test methods listed in ASTM or MPL product specification standards may be used. In instances of dispute, tests will be conducted using the referee methods identified in the applicable standard.

Sampling and Analysis

LPG products must be sampled in accordance with D1265. All other products must be sampled utilizing D4057, D4177, and follow the provisions as outline in 40 CFR 1090.1335

Compliance with Magellan pipeline specifications will be determined by the shipper's Certificate of Analysis (COA) produced in accordance with the sampling and testing provisions outlined in 40 CFR 1090.1300 (Subpart N). COAs shall be homogeneous as defined by 40 CFR 1090.1337 and demonstration of per gallon standards will use the worst-case test result for reporting purposes. If a batch COA cannot meet the homogeneity requirements as defined by 40 CFR 1090.1337 COAs shall use the worst-case test results from the upper, middle, and lower samples for all reported test results. All COAs shall meet applicable specifications unless a batch specific waiver is requested and approved through Prospector or written approval.

Exceptions to the homogeneity requirements defined in 40 CFR 1090.1337 are granted for Jet Fuel (Q-grade) and blend stocks (W, W2, T, E, and ZB-grades). COAs shall be determined by the analysis of a composite sample produced in accordance with D5854. A valid Jet Fuel COA represented by a composite sample must also have a demonstration of homogeneity by the upper, middle, and lower samples not deviating more than 1.0° API from the gravity of the composite, nor contain product below the flash point minimum.

Tests performed by the carrier are for carrier's information and do not relieve the shipper of the responsibility to comply with the specifications. Acceptance of fungible products prior to receipt of the Certificate of Analysis does not constitute a waiver of the product specification requirements, nor relieve the shipper of the responsibility for providing a Certificate of Analysis.

The carrier reserves the right to sample the product and/or tank water below any product offered for shipment.



Reporting

It is the responsibility of the shipper to enter a Certificate of Analysis representative of each shipment into Magellan's Prospector database for approval.

All shipments must comply with the PTD requirements of 40 CFR 1090.1100 (Subpart L) and maintain the designation as listed in part 40 CFR 1090.1005 prior to receipt by the carrier.

Test Precision

Delivery test results may be obtained by the carrier upon receipt and evaluated following D3244 and E29 to determine conformance with Magellan specifications.

The carrier reserves the right to reject any products into their fungible system when a sample obtained from any tank level or line sample at origins is found to deviate from the Shipper's Certificate of Analysis. Products not meeting fungible specifications may be downgraded and/or sequestered and the Shipper will be notified.

Corrosivity

Shipments of proprietary grades must not be corrosive, with a minimum NACE test result of B+.

Workmanship

Products must be clear and bright, free of water, impurities, or any adulterant. Individual batches cannot differ markedly in appearance and/or odor from the stored fungible inventory.

Any undissolved water received with incoming product may be deducted from the shipment volume ticketed. Magellan may request the Shipper to remove the water received, and/or invoice the Shipper for water disposal and other costs incurred.

Prohibitions

Heavy metals are not allowed to be present.

Gasoline grades may not contain oxygenates, such as ethers and alcohols. The use of any non-hydrocarbon blending component is prohibited.

Biodiesel is not allowed to be present in fuels at origin unless specified.

Dye's are not allowed to be present in fuels at origin.

MAGELLAN PIPELINE ADDITIVE SPECIFICATIONS

Magellan will permit the types and concentrations of additives detailed below; all other types and concentrations or additives are prohibited.

Additive products containing Dodecenyl Succinic Anhydride or Dodecenyl Succinic Acid (DDSA) will not be reviewed for approval and are strictly prohibited.

Gasoline Additive Specifications

The following additive specifications apply to all grades except aviation products, LPG's, and Natural Gasoline, for the grades noted in each section.

(H, I, J8, L, Q, and W Grade)

Gum Inhibitors and Metal Deactivators

Gasoline shipments may, but are not required to, contain any of the following gum inhibitors and/or metal deactivators:

N, N'di-secondary butyl ortho-phenylenediamine
 N, N'di-secondary butyl para-phenylenediamine
 N, N'disalicylidene-1,2 propanediamine
 N, N'di(1-ethyl-3-methylpentyl)-para-phnylenediamine
 N, N'di-isopropyl-para-phenylenediamine
 N, n'bis-(1, 4-demethylpentyl)-p-phenylenediamine n-Butyl -
 para-aminophenol
 2-6-di-tert-butylphenol
 2,4,6-tri-tert-butylphenol
 Ortho-tert-butylphenol

| | | |
|----------------|----------------|------------------|
| UOP 12P | UOP 12S | UOP 17P |
| UOP 3455 | UOP 5S | Innospec AO-31 |
| Innospec AO-36 | Innospec AO-37 | Ethyl 733 |
| Ethanox 4776 | Ethanox 4720 | Ethanox 4740 |
| Tolad 3905 | Tolad 3910 | Specaid 8Q202 |
| Nalco 88BU-118 | Unichem 7529 | Pitt-Consol M-56 |
| Tolad 4695 | | Specaid 8Q206 |

Gasoline, Fuel Oil, and Diesel Fuel Additives

Corrosion Inhibitors

Products requiring compliance with NACE standard TM0172 may contain any of the following corrosion inhibitors:

| | | |
|------------------|-------------------|--------------------|
| Nalco 5403 | Nalco EC5626A | Baypros 853 |
| Nalco Visco 3554 | Nalco 5405 | UOP Unicor PL |
| Apollo PRI-19 | Lubrizol 541 | Unichem 7504 |
| UOP Unicor | Innospec DCI-4A | Unichem 7501 |
| Innospec DCI-6A | UOP Unicor J | Baker Hughes T249 |
| HiTech 580 | Hitec E-534 | Baker Hughes T9715 |
| Nalco EC5407A | Spec-Aid 8Q110ULS | Baker Hughes T9719 |
| Spec-Aid 8Q22 | Spec-Aid 8Q5127 | |

Fuel Oil and Diesel Fuel Additives

Stability

Fuel oil and/or diesel fuel shipments may contain one or more of the following stability additives as required to achieve compliance with the stability characteristics outlined in the applicable grade specification.

| | | |
|----------------------|--------------------|-----------------|
| Innospec FOA-3 | Chemtec 7220 | Specaid 8Q72 |
| UOP Polyflo-121 | Spec-Aid 8Q403ULS | Nalco 5303 |
| UOP Polyflo-122 | Baker Hughes T9076 | Nalco 5301 |
| UOP Polyflo-128 | Unichem 7530 | UOP Polyflo-195 |
| Baker Hughes T9022-M | Spec-Aid 8Q401 | |

Cold Flow Additives

Fuel oil and/or diesel fuel shipments requiring additives to achieve compliance with low temperature properties may, but are not required to contain one or more of the following pour point depressant additives:

| | | |
|------------------|-------------------|--|
| Hitec 4541 | Innospec PDD-7450 | Tolad 3005-R |
| Innospec 2152 | Spec-Aid 8Q5201 | Tolad 3030 |
| Betz Q5201 | Paradyne 25 | Betz 8Q12 |
| Hitec 4518 | Unichem 8094 | Hitec 4566 |
| Exxon ECA 7305 | Nalco 5375 | Spec-Aid 8Q14ULS |
| UOP Polyflo 6000 | Spec-Aid 8Q72ULS | Baker Hughes T3034 Baker Hughes T3034-D |

Dyes

XR Grade Low Sulfur Fuel Oil is dyed at the Magellan rack.

Seasonal Gasoline Volatility Classes
(Shipments from Origin)

Reid Vapor Pressure, D51911/

| | |
|----------------------------|--------------------------------------|
| March 1 - September 15 | DVPE using EPA formula ^{2/} |
| September 16 – February 28 | DVPE using D5191 formula |

| Distillation, ASTM D 86 ^{3/} | Class AA | Class A | Class B | Class C | Class D | Class E |
|--|----------|---------|---------|---------|---------|---------|
| 10% Evaporated °F, max | 158 | 158 | 149 | 140 | 131 | 122 |
| 50% Evaporated °F, min | 150 | 150 | 150 | 150 | 150 | 150 |
| 50% Evaporated °F, max | 250 | 250 | 245 | 240 | 235 | 230 |
| 90% Evaporated °F, max | 374 | 374 | 374 | 365 | 365 | 365 |
| Final Boiling Point °F, max ^{4/} | 425 | 425 | 425 | 425 | 425 | 425 |
| Residue, vol % max | 2 | 2 | 2 | 2 | 2 | 2 |
| Driveability Index, D4814, max ^{2/3/} | 1250 | 1250 | 1240 | 1230 | 1220 | 1200 |

Pre Ethanol Blend

| | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Vapor to Liquid Ratio=20:1, °F ^{5/} D5188, min | <u>Class 1</u> 140 | <u>Class 2</u> 133 | <u>Class 3</u> 122 | <u>Class 4</u> 116 | <u>Class 5</u> 105 |
| Vapor to Liquid Ratio=20:1, °F ^{5/} Area V only D5188, min | <u>Class 1</u> 140 | <u>Class 2</u> 133 | <u>Class 3</u> 122 | <u>Class 4</u> 122 | <u>Class 5</u> 108 |

Post Ethanol Blend

| | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Vapor to Liquid Ratio=20:1, °F ^{3/5/} D5188, min | <u>Class 1</u> 129 | <u>Class 2</u> 122 | <u>Class 3</u> 116 | <u>Class 4</u> 107 | <u>Class 5</u> 102 |
| Vapor to Liquid Ratio=20:1, °F ^{3/5/} Area V only D5188, min | <u>Class 1</u> 129 | <u>Class 2</u> 122 | <u>Class 3</u> 116 | <u>Class 4</u> 116 | <u>Class 5</u> 105 |

- 1/ All gasoline deliveries will not exceed applicable Federal and State requirements.
- 2/ The calculation required for the EPA compliance period is published in part 1090.1355.
- 3/ Specifications shall be met after blending with 9 % to 10 % denatured fuel ethanol.
- 4/ The final boiling point of all gasoline deliveries at terminals will be at or below 437 °F as determined by ASTM D86
- 5/ D5188 is the referee test method. The alternative equations in D4814 may also be used.



Schedule of Origin Volatility Requirements

| <u>A GRADE</u> | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|-----------------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Colorado | DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Kansas | (DVPE) | 13.50 | 13.50 | 10.00 | 10.00 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | D-5 | D-5 | B-5 | B-5 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Illinois | (DVPE) | 13.50 | 13.50 | 13.50 | 13.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 15.00 | 15.00 |
| | (Class) | D-5 | D-5 | D-5 | D-5 | A-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-3 | A-3 | C-3 | D-4 | E-5 | E-5 |
| Minnesota | (DVPE) | 13.50 | 13.50 | 10.00 | 10.00 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 15.00 | 15.00 |
| | (Class) | D-5 | D-5 | B-5 | B-5 | A-5 | A-5 | A-4 | A-4 | A-3 | A-3 | A-3 | A-3 | C-3 | D-4 | E-5 | E-5 |
| N. Dakota | (DVPE) | 13.50 | 13.50 | 10.00 | 10.00 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 15.00 | 15.00 |
| | (Class) | D-5 | D-5 | B-5 | B-5 | A-5 | A-5 | A-4 | A-4 | A-3 | A-2 | A-2 | A-3 | C-3 | D-4 | E-5 | E-5 |
| Oklahoma | (DVPE) | 13.50 | 13.50 | 10.00 | 10.00 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | D-4 | D-4 | B-4 | B-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

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A GRADE (continued)

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|------------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Texas | (DVPE) | 13.50 | 11.50 | 10.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 13.50 |
| | (Class) | D-4 | C-4 | B-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | A-2 | C-3 | D-4 | D-4 |
| El Paso | (DVPE) | 13.50 | 13.50 | 10.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 13.50 |
| | (Class) | D-4 | D-4 | B-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | A-2 | C-3 | D-4 | D-4 |
| Wisconsin | (DVPE) | 13.50 | 13.50 | 10.00 | 10.00 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 15.00 | 15.00 |
| | (Class) | D-5 | D-5 | B-5 | B-5 | A-5 | A-5 | A-4 | A-4 | A-3 | A-3 | A-3 | A-3 | C-3 | D-4 | E-5 | E-5 |
| Wyoming | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |

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Schedule of Origin Volatility Requirements

A1X GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|----------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Texas | | | | | | | | | | | | | | | | | |
| | (DVPE) | 11.50 | 11.50 | 10.00 | 10.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 10.00 | 11.50 | 11.50 |
| | (Class) | C-3 | C-3 | B-2 | B-2 | A-1 | A-1 | A-1 | A-1 | A-1 | A-1 | A-1 | B-2 | B-2 | B-2 | C-3 | C-3 |
| El Paso | | | | | | | | | | | | | | | | | |
| | (DVPE) | 11.50 | 11.50 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 11.50 | 11.50 |
| | (Class) | C-3 | C-3 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | C-3 | C-3 |

Schedule of Origin Volatility Requirements

| <u>A5 GRADE</u> | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|------------------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Colorado | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Kansas | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Oklahoma | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Texas | (DVPE) | 13.50 | 13.50 | 10.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 13.50 |
| | (Class) | D-4 | C-4 | B-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | A-2 | C-3 | D-4 | D-4 |
| El Paso | (DVPE) | 13.50 | 13.50 | 10.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 13.50 |
| | (Class) | D-4 | C-4 | B-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | A-2 | C-3 | D-4 | D-4 |
| Wyoming | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.



Schedule of Origin Volatility Requirements

AMS GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-30 | Apr. 1-16 | Apr. 16-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|-----------------|-------------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|-------------|--------------|--------------|--------------|---------------|----------------|--------------|--------------|--------------|
| Colorado | (DVPE) (Class) | N/A | N/A | N/A | N/A | N/A | N/A | 7.8 A-3 | 7.8 A-3 | 7.8 A-3 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | N/A | N/A | N/A | N/A |
| Kansas | (DVPE) (Class) | N/A | N/A | N/A | N/A | N/A | N/A | 7.8 A-3 | 7.8 A-3 | 7.8 A-3 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | N/A | N/A | N/A | N/A |
| Oklahoma | (DVPE) (Class) | N/A | N/A | N/A | N/A | N/A | N/A | 7.8 A-3 | 7.8 A-3 | 7.8 A-3 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | N/A | N/A | N/A | N/A |
| Texas | (DVPE) (Class) | N/A | N/A | N/A | N/A | N/A | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | N/A | N/A | N/A | N/A |
| El Paso | (DVPE) (Class) | N/A | N/A | N/A | N/A | N/A | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | 5.7 AA-1 | N/A | N/A | N/A | N/A |
| Wyoming | (DVPE) (Class) | N/A | N/A | N/A | N/A | N/A | N/A | 7.8 A-3 | 7.8 A-3 | 7.8 A-3 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | 7.8 A-2 | N/A | N/A | N/A | N/A |

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Schedule of Origin Volatility Requirements

AR GRADE

| | Jan. 1-15 | Jan. 16-31 | Feb. 1-20 | Feb. 21-29 | Mar. 1-20 | Mar. 21-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|---------------|-----------|------------|-----------|------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|------------|-------------|-----------|-----------|-----------|
| Texas | | | | | | | | | | | | | | | | |
| (DVPE) | 13.50 | 13.50 | 13.50 | 11.50 | 9.00 | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 10.00 | 11.50 | 13.50 | 13.50 |
| (Class) | D-4 | D-4 | D-4 | C-3 | A-3 | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | D-4 |
| Hearne | | | | | | | | | | | | | | | | |
| (DVPE) | 13.50 | 13.50 | 13.50 | 11.50 | 9.00 | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 10.00 | 11.50 | 13.50 | 13.50 | |
| (Class) | D-4 | D-4 | D-4 | C-3 | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | D-4 | |

NR GRADE

| | Jan. 1-20 | Jan. 21-31 | Feb. 1-10 | Feb. 11-19 | Feb. 20-29 | Mar. 1-10 | Mar. 11-30 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-20 | Nov. 21-31 | Dec. 1-31 |
|-----------------|-----------|------------|-----------|------------|------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|------------|-------------|-----------|-----------|------------|-----------|
| Oklahoma | | | | | | | | | | | | | | | | | | |
| (DVPE) | 15.00 | 13.50 | 13.50 | 11.50 | 9.00 | 9.00 | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 11.50 | 13.50 | 13.50 | 15.00 | 15.00 |
| (Class) | E-5 | D-4 | D-4 | C-3 | A-3 | A-3 | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | C-3 | D-4 | D-4 | E-5 | E-5 |
| Texas | | | | | | | | | | | | | | | | | | |
| (DVPE) | 13.50 | 13.50 | 13.50 | 13.50 | 13.50 | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 10.00 | 11.50 | 13.50 | 13.50 | | |
| (Class) | D-4 | D-4 | D-4 | D-4 | D-4 | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | D-4 | | |
| Hearne | | | | | | | | | | | | | | | | | | |
| (DVPE) | 13.50 | 13.50 | 13.50 | 13.50 | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 6.20/7.4* | 10.00 | 11.50 | 13.50 | 13.50 | | | |
| (Class) | D-4 | D-4 | D-4 | D-4 | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | D-4 | | | |

*Post 10 percent ethanol hand blend value.

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters

Schedule of Origin Volatility Requirements

AZ(6,9) GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-20 | Feb. 21-29 | Mar. 1-20 | Mar. 21-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|----------------|--------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Texas | (DVPE) | 8.00 | 8.00 | 8.00 | 8.00 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 8.00 | 8.00 | 8.00 |
| | | | | | | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | | | |
| | Grade | AZ6 | AZ6 | AZ6 | AZ6 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ6 | AZ6 | AZ6 |
| El Paso | (DVPE) | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 8.00 | 8.00 | 8.00 |
| | | | | | | | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | | | |
| | Grade | AZ6 | AZ6 | AZ6 | AZ6 | AZ6 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ9 | AZ6 | AZ6 | AZ6 |

NZ(6,9) GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-20 | Feb. 21-29 | Mar. 1-20 | Mar. 21-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|----------------|--------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Texas | (DVPE) | 8.00 | 8.00 | 8.00 | 8.00 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 8.00 | 8.00 | 8.00 |
| | | | | | | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | | | |
| | Grade | NZ6 | NZ6 | NZ6 | NZ6 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ6 | NZ6 | NZ6 |
| El Paso | (DVPE) | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 8.00 | 8.00 | 8.00 |
| | | | | | | | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | 7.00* | | | |
| | Grade | NZ6 | NZ6 | NZ6 | NZ6 | NZ6 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ9 | NZ6 | NZ6 | NZ6 |

*Value is max RVP on hand blend when blended with 10 percent denatured fuel ethanol.

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters

Revision Date: July 1, 2017

Schedule of Origin Volatility Requirements

NEP GRADE

| | | Jan. | Jan. | Feb. | Feb. | Mar. | Mar. | Apr. | May | June | July | Aug. | Sept. | Sept. | Oct. | Oct. | Nov. | Dec. |
|----------------|---------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|-------------|--------------|-------------|-------------|
| | | 1-15 | 16-31 | 1-15 | 10-29 | 1-15 | 10-31 | 1-30 | 1-31 | 1-30 | 1-31 | 1-31 | 1-15 | 16-30 | 1-15 | 10-31 | 1-30 | 1-31 |
| El Paso | (DVPE) | 11.50 | 11.50 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 11.50 | 11.50 | 11.50 |
| | (Class) | C-3 | C-3 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | C-3 | C-3 | C-3 |
| El Paso | (DVPE) | 11.50 | 11.50 | 11.50 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 11.50 | 11.50 |
| | (Class) | C-3 | C-3 | C-3 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | B-2 | C-3 | C-3 |

Schedule of Origin Volatility Requirements

| <u>V GRADE</u> | | Jan. | Jan. | Feb. | Feb. | Mar. | Mar. | Apr. | May | June | July | Aug. | Sept. | Sept. | Oct. | Nov. | Dec. |
|-----------------------|---------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|
| | | 1-15 | 16-31 | 1-15 | 16-29 | 1-15 | 16-31 | 1-30 | 1-31 | 1-30 | 1-31 | 1-31 | 1-15 | 16-30 | 1-31 | 1-30 | 1-31 |
| Kansas | (DVPE) | 15.00 | 13.50 | 13.50 | 13.50 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | D-5 | D-5 | D-5 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Illinois | (DVPE) | 15.00 | 13.50 | 13.50 | 13.50 | 13.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 13.50 | 15.00 |
| | (Class) | E-5 | D-5 | D-5 | D-5 | D-5 | A-4 | A-4 | A-4 | A-3 | A-3 | A-3 | A-3 | C-3 | D-4 | D-4 | E-5 |
| Minnesota | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 15.00 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | A-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-3 | A-3 | C-3 | D-4 | E-5 | E-5 |
| N. Dakota | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 15.00 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | A-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-3 | A-3 | C-3 | D-4 | E-5 | E-5 |
| Oklahoma | (DVPE) | 13.50 | 13.50 | 13.50 | 13.50 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | D-5 | D-5 | D-4 | D-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Texas | (DVPE) | 13.50 | 13.50 | 13.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 13.50 |
| | (Class) | D-4 | D-4 | D-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | D-4 |
| El Paso | (DVPE) | 13.50 | 13.50 | 11.50 | 10.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 13.50 |
| | (Class) | D-4 | D-4 | C-3 | B-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | D-4 |
| Wisconsin | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 8.50 | 8.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 11.50 | 13.50 | 15.00 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | A-4 | A-4 | A-4 | A-4 | A-3 | A-3 | A-3 | A-3 | C-3 | D-4 | E-5 | E-5 |

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

V1 GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|-----------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Colorado | (DVPE) | 15.00 | 15.00 | 15.00 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | E-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Kansas | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Oklahoma | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 11.50 | 11.50 | 8.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | D-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |
| Wyoming | (DVPE) | 15.00 | 15.00 | 15.00 | 13.50 | 11.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | E-5 | D-5 | C-3 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |

V2 GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|----------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Wyoming | (DVPE) | 15.00 | 15.00 | 15.00 | 15.00 | 13.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 15.00 |
| | (Class) | E-5 | E-5 | E-5 | E-5 | D-4 | C-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | E-5 |

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

V3 GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|----------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| El Paso | (DVPE) | 13.50 | 13.50 | 11.50 | 11.50 | 10.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 11.50 | 13.50 |
| | (Class) | D-4 | D-4 | C-3 | C-3 | B-3 | A-3 | A-2 | A-2 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | C-3 | D-4 |

V3S GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|----------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| El Paso | (DVPE) | N/A | N/A | N/A | N/A | N/A | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 | N/A | N/A | N/A | N/A |
| | (Class) | | | | | | AA-1 | AA-1 | AA-1 | AA-1 | AA-1 | AA-1 | AA-1 | | | | |

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

V8 GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-31 | Apr. 1-15 | Apr. 16-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|------------------|---------|--------------|---------------|--------------|---------------|--------------|--------------|---------------|-------------|--------------|--------------|--------------|---------------|----------------|--------------|--------------|--------------|
| Kansas | (DVPE) | N/A | 15.00 | 15.00 | 15.00 | 13.50 | 11.50 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | (Class) | | E-5 | E-5 | E-5 | D-4 | C-3 | | | | | | | | | | |
| Minnesota | (DVPE) | N/A | N/A | 15.00 | 15.00 | 13.50 | 11.50 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | (Class) | | | E-5 | E-5 | D-4 | C-3 | | | | | | | | | | |
| Oklahoma | (DVPE) | 15.00 | 15.00 | 13.50 | 13.50 | 13.50 | 11.50 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | (Class) | E-5 | E-5 | D-4 | D-4 | D-4 | C-3 | | | | | | | | | | |
| Texas * | (DVPE) | N/A | N/A | N/A | 13.50 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 11.5 | 13.5 | N/A | N/A |
| | (Class) | | | | D-4 | | | | | | | | C-3 | D-4 | | | |
| Wisconsin | (DVPE) | N/A | N/A | 15.00 | 15.00 | 13.50 | 11.50 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | (Class) | | | E-5 | E-5 | D-4 | C-3 | | | | | | | | | | |

*For Little Rock destination only

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

V66 GRADE

| | Jan. | Jan. | Feb. | Feb. | Mar. | Mar. | Apr. | May | June | July | Aug. | Sept. | Sept. | Oct. | Nov. | Dec. |
|---------|------|-------|------|-------|------|-------|------|------|------|------|------|-------|-------|------|------|------|
| | 1-15 | 16-31 | 1-15 | 16-29 | 1-15 | 16-31 | 1-30 | 1-31 | 1-30 | 1-31 | 1-31 | 1-15 | 16-30 | 1-31 | 1-30 | 1-31 |
| (DVPE) | N/A | N/A | N/A | N/A | N/A | N/A | 6.60 | 6.60 | 6.60 | 6.60 | 6.60 | 6.60 | 6.60 | N/A | N/A | N/A |
| (Class) | | | | | | | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | A-2 | | | |

VTX GRADE

| | Jan. | Jan. | Feb. | Feb. | Mar. | Mar. | Apr. | May | June | July | Aug. | Sept. | Sept. | Oct. | Nov. | Dec. |
|---------|-------|-------|-------|-------|------|-------|------|------|------|------|------|-------|-------|-------|-------|-------|
| | 1-15 | 16-31 | 1-15 | 16-29 | 1-15 | 16-31 | 1-30 | 1-31 | 1-30 | 1-31 | 1-31 | 1-15 | 16-30 | 1-31 | 1-30 | 1-31 |
| (DVPE) | 13.50 | 13.50 | 13.50 | 11.50 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 10.00 | 11.50 | 13.50 | 13.50 |
| (Class) | D-5 | D-5 | D-4 | C-4 | A-4 | A-4 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | B-2 | C-3 | D-4 | D-5 |

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

VMS GRADE

| | | Jan. 1-15 | Jan. 16-31 | Feb. 1-15 | Feb. 16-29 | Mar. 1-15 | Mar. 16-31 | Apr. 1-15 | Apr. 16-30 | May 1-31 | June 1-30 | July 1-31 | Aug. 1-31 | Sept. 1-15 | Sept. 16-30 | Oct. 1-31 | Nov. 1-30 | Dec. 1-31 |
|-----------------|---------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|
| Colorado | (DVPE) | N/A | N/A | N/A | N/A | N/A | N/A | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | N/A | N/A | N/A | N/A |
| | (Class) | | | | | | | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | | | | |
| Kansas | (DVPE) | N/A | N/A | N/A | N/A | N/A | N/A | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | N/A | N/A | N/A | N/A |
| | (Class) | | | | | | | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | | | | |
| Oklahoma | (DVPE) | N/A | N/A | N/A | N/A | N/A | N/A | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | N/A | N/A | N/A | N/A |
| | (Class) | | | | | | | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | | | | |
| Wyoming | (DVPE) | N/A | N/A | N/A | N/A | N/A | N/A | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | 7.80 | N/A | N/A | N/A | N/A |
| | (Class) | | | | | | | A-3 | A-3 | A-3 | A-2 | A-2 | A-2 | A-2 | | | | |

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification

applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Grade: A Grade 91.0 Premium Unleaded Gasoline Specifications

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|--------------------------------------|---------------|---------|--------------|--------------------------|
| Gravity, ° API | D287 | | Report | |
| Color | | | Undyed | |
| Volatility ^{2/} | | | | |
| RVP ^{6/8/} | D5191 | | | |
| Distillation ^{9/} | D86 | | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667, 7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | | Report | |
| (R+M)/2 | | 91.0 | | |
| Sulfur, ppm ^{8/} | D2622 | | 80 | |
| Oxygenates, vol% ^{7/} | D4815, D5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Odor ^{5/} | | | Nonoffensive | |

A Grade 91.0 Premium Unleaded Gasoline Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1090.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

A1X Grade 91.0 Premium Unleaded Export Gasoline Specifications

(This fuel is for export from the United States only)

| Product Property ^{1/} | Test Method | Origin | | |
|--------------------------------------|---------------|----------------|----------------|----------------|
| | | Minimum | Maximum | |
| Gravity, ° API | D287 | Report | | |
| Color | | Undyed | | |
| RVP ^{2/} | | | | |
| Distillation | D86 | <u>Class A</u> | <u>Class B</u> | <u>Class C</u> |
| 10% Evaporated °F, max | | 158 | 149 | 140 |
| 50% Evaporated °F, min | | 170 | 170 | 170 |
| 50% Evaporated °F, max | | 250 | 245 | 240 |
| 90% Evaporated °F, max | | 374 | 374 | 365 |
| Final Boiling Point °F, max | | 430 | 430 | 430 |
| Residue, vol% max | | 2 | 2 | 2 |
| Drivability Index, max | | 1250 | 1240 | 1230 |
| Vapor Liquid Ratio | D5188 | <u>Class 1</u> | <u>Class 2</u> | <u>Class 3</u> |
| | | 129 | 122 | 116 |
| Benzene, vol % | D3606 | | | 2 |
| Aromatics, vol % | D5769, D5580 | | | 32.0 |
| Olefins, vol % | D1319, D6550 | | | 12.5 |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | | 0.003 |
| Copper Corrosion | D130 | | | 1 |
| Silver Corrosion | D7667,7671 | | | 1 |
| Gum, Existent, mg/100 ml | D381 | | | 4 |
| Oxidation Stability, minutes | D525 | | 240 | |
| Phosphorus, g/gal | D3231 | | | 0.003 |
| Lead, g/gal | D3237 | | | 0.01 |
| Octane | | | | |
| RON | D2699 | | 94 | |
| MON | D2700 | | | Report |
| Report (R+M)/2 | | | 91 | |
| Sulfur, ppm | D2622 | | | 80 |
| Oxygenates, vol % | D4815, D5599 | | | 0.05 |
| Haze Rating ^{4/} | D4176 | | | 2 |
| NACE Corrosion | TM0172, D7548 | | B+ | |
| Odor ^{5/} | | | | Nonoffensive |

A1X Grade 91.0 Premium Unleaded Export Gasoline Specifications (continued)**Foot Notes:**

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Seasonal Gasoline Volatility Schedule.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ Values below the detectible limit of an approved method may be reported as a zero value.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- Fuel shall comply with the exemptions for export fuels as listed in 40 CFR 1090.645.
- This product is non-additized gasoli

A5. AMS Grade 88.5 Premium Unleaded Gasoline Specifications

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|--------------------------------------|---------------|---------|--------------|--------------------------|
| Gravity, ° API | D287 | | Report | |
| Color | | | Undyed | |
| Volatility ^{2/} | | | | |
| RVP ^{6/8/} | D5191 | | | |
| Distillation ^{9/} | D86 | | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667,7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | | Report | |
| (R+M)/2 | | 88.5 | | |
| Sulfur, ppm ^{8/} | D2622 | | 80 | |
| Oxygenates, vol % ^{7/} | D4815, 5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Odor ^{5/} | | | Nonoffensive | |

A5, AMS Grade 88.5 Premium Unleaded Gasoline Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any A5 product with a 7.8 or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline
- This product is non-additized gasoline.



AR Grade 93.0 Premium RBOB Gasoline

(This Reformulated Before Oxygenate Blending (RBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum | Delivery ^{1/} |
|--------------------------------------|---------------|---------|--------------|------------------------|
| Gravity, ° API | D287 | | Report | |
| Color | | | Undyed | |
| Volatility ^{2/} | | | | |
| RVP ^{6/8/} | D5191 | | | |
| Distillation ^{9/} | D86 | | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667, 7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane ^{9/} | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | 82.0 | | |
| (R+M)/2 | | 93.0 | | |
| Sulfur, ppm ^{8/} | D2622 | | 80 | |
| Oxygenates, vol% ^{7/} | D4815, D5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Odor ^{5/} | | | Nonoffensive | |

AR Grade 93.0 Premium RBOB Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1090.1010(a) gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)2. In accordance with 40 CFR 1010(a) gasoline will be designated upon receipt as Winter RBOB, or Summer RBOB based on the RVP of the gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Product shall meet the Reformulated Gasoline (RFG) standard of 1090.220.
- Summer RBOB - This product meets the requirements for summer reformulated or conventional gasoline.
- This product is non-additized gasoline

AZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum |
|--|---------------|---------|---------------|
| Gravity °API @ 60°F | D 287 | | Report |
| Octane (after 10% E Fuel ethanol per ASTM D4806) | | | |
| RON | D 2699 | | Report |
| MON | D 2700 | | Report |
| (R+M)/2 | | 91.0 | |
| Oxygen Content, wt% ^{1/} | D 4815 | | 0.05 |
| RVP, psi (E0 not blended) | D 5191 | | 8.00 |
| RVP, psi (E10 blend) | D 5191 | | 9.00 |
| Distillation, °F | D86 | | |
| 50% | | | 237 |
| 90% | | | 335 |
| End Point | | | 430 |
| Benzene, vol% | D 3606 | | 4.9 |
| Aromatics, vol% | D 5769, D5580 | | 30.0 |
| Olefins, vol% | D 1319, D6650 | | 10.0 |
| Corrosion (Cu)3 hrs @ 122°F(50°C) | D 130 | | 1 |
| Corrosion (Ag) 3 hrs @122°F (50°C) | D 7667,7671 | | 1 |
| Mercaptan sulfur, wt.% ^{2/} | D 3227 | | 0.002 |
| Existent Gum, mg/100 ml | D 381 | | 4 |
| Oxidation stability, minutes | D 525 | 240 | |
| Phosphorous, gms/gal | D 3231 | | 0.003 |
| Lead, gms/gal | D 5059 | | 0.01 |
| Sulfur, ppm | D 5453, D2622 | | 80 |
| NACE | TM0172, D7548 | B+ | |
| Haze ^{3/} | D 4176 | | 2 |
| CARB Predictive Model | | | Pass |
| Color | | | Undyed |
| Odor | Olfactory | | Non-Offensive |

AZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

AZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

- Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 91 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

AZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum |
|--|---------------|---------------|---------|
| Gravity °API @ 60°F | D 287 | | Report |
| Octane (after 10% E Fuel ethanol per ASTM D4806) | | | |
| RON | D 2699 | | Report |
| MON | D 2700 | | Report |
| (R+M)/2 | | 91.0 | |
| Oxygen Content (wt%) ^{1/} | D 4815 | | 0.05 |
| RVP, psi (E0 not blended) | D 5191 | | 5.70 |
| RVP, psi (E10 blend) | D 5191 | | 7.00 |
| Distillation, °F | D86 | | |
| E200 | | 25% | 65% |
| E300 | | 65% | 100% |
| End Point | | | 430 |
| Benzene, vol% | D 3606 | | 4.9 |
| Aromatics, vol% | D 5769/ D5580 | | 55 |
| Olefins, vol% | D 1319, D6650 | | 25 |
| Corrosion (Cu)3 hrs @ 122°F(50°C) | D 130 | | 1 |
| Corrosion (Ag) 3 hrs @122°F (50°C) | D 7667,7671 | | 1 |
| Mercaptan sulfur, wt.% ^{2/} | D 3227 | | 0.002 |
| Existent Gum, mg/100 ml | D 381 | | 4 |
| Oxidation stability, minutes | D 525 | 240 | |
| Phosphorous, gms/gal | D 3231 | | 0.003 |
| Lead, gms/gal | D 5059 | | 0.01 |
| Sulfur, ppm | D 5453, D2622 | | 80 |
| NACE | TM0172, D7548 | B+ | |
| Haze ^{3/} | D 4176 | | 2 |
| VOC Emission Performance Reduction, % | | -27.5 | |
| Color | | Undyed | |
| Odor | Olfactory | Non-Offensive | |

AZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D 4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

AZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

- This product does not meet the requirements for summer reformulated gasoline. Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 91 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

D Grade High Cetane #2 Ultra Low Sulfur Diesel Fuel Specifications

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|-------------------------------------|---------------|---------|---------|--------------------------|
| Gravity, °API | D287 | Report | | |
| Color | D1500 | | 2.0 | 2.5 |
| Distillation ^{5/} | D86, D2887 | | | |
| IBP, °F | | 340 | | |
| 50% Recovered, °F | | 460 | | |
| 90% Recovered, °F | | 540 | 640 | |
| Copper Corrosion | D130 | | 1 | |
| Cetane | | | | |
| Cetane Number | D613 | 48 | | |
| Or | | | | |
| Cetane Index, A or B | D4737 | 48 | | |
| Cetane Index ^{2/} | D976 | 40 | | |
| Flash Point, °F | D93 | 140 | | 140 |
| Stability | | | | |
| Thermal, % reflectance (W or Y) | D6468 (W) | 75 | | |
| | D6468 (Y) | 82 | | |
| Aging Period (Minutes) | D6468 | 90 | | |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.20 | |
| Cloud Point, °F ^{3/} | D2500 | | | |
| Pour Point, °F ^{3/} | D97 | | | |
| Viscosity, cSt at 104 °F | D445 | 1.9 | 4.1 | |
| Ash, wt % | D482 | | 0.01 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Sulfur, ppm | D2622 | | 11 | |

D Grade High Cetane #2 Ultra Low Sulfur Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery
- 2/ ASTM D976 result is required for ultra-low sulfur diesel fuel to demonstrate aromatics compliance per 40 CFR 1090.305.

| 3/ <u>Month</u> | <u>Pour Point °F, max</u> | <u>Cloud Point °F, max</u> |
|-----------------|---------------------------|----------------------------|
| January | 0 | +14 |
| February | 0 | +14 |
| March | 0 | +14 |
| April | +10 | +20 |
| May | +10 | +20 |
| June | +10 | +20 |
| July | +10 | +20 |
| August | 0 | +14 |
| September | 0 | +14 |
| October | 0 | +14 |
| November | 0 | +14 |
| December | 0 | +14 |

- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 5/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- D-grade complies with the ULSD standards of 40 CFR 1090.305
- D-grade is designated as ULSD in accordance with 40 CFR 1090.1015

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: D-grade shipments may not be dyed.

E Grade Denatured Fuel Ethanol Specifications

| Specification Points | Method | Minimum | Maximum |
|---------------------------------------|---------------------------------|---------|---------|
| Apparent Proof or Density @ 60°F | Hydrometer, D4052 | Report | |
| Water, vol%, Maximum | E203, E1064, D7923 | | 1.0 |
| Ethanol, vol% | D5501 | 93.5 | |
| Methanol, vol% | D5501 | | 0.5 |
| Sulfur, ppm (wt/wt) | D5453 | | 10. |
| Solvent Washed Gum, | D381 | | |
| | mg/100mL (Air Jet Method) | | 5 |
| Existent Sulfate, mg/kg | D7319, D7328 | | 4 |
| Chloride, mg/L | D7319 | | 5 |
| Copper, mg/L | D1688 | | |
| | Method A, Modified per D4806 | | 0.08 |
| Acidity (as acetic acid), Mass % | D7795 | | 0.007 |
| PhE | D6423 | 6.5 | 9.0 |
| Workmanship ^{3/} | MMP | | |
| Denaturant Content vol% ^{2/} | D4806 | | 2 |

Footnotes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Only approved denaturants as listed in part 1090.275 with a max denaturant concentration of 3.0 volume percent are approved as described in part 1090.275 and D4806.
- 3/ Workmanship at the time of acceptance, and the finished fuel shall be visually free from undissolved water, sediment, or suspended matter and shall be clear and bright.
- 4/ All fuel shall comply with 40 CFR Subpart M - Renewable Fuel Standard.

Notes:

| Corrosion Inhibitor Additive, one of the following is required: | | | | | | |
|---|-----------------------|---------------------------|--|--------------------|-------------------|---------------------|
| Minimum treat rate | Vendor | Additive | | Minimum treat rate | Vendor | Additive |
| 6 lbs/1000 bbls | Ashland | Amergy ECI-6 | | 5 lbs/1000 bbls. | Nalco Water | EC5624A Plus |
| 20 lbs/1000 bbls. | Betz | ACN 13 | | 20 lbs/1000 bbls. | Petrolite | Tolad 3222 |
| 20 lbs/1000 bbls. | G. E. Betz | Endcor GCC9711 | | 13 lbs/1000 bbls. | Petrolite | Tolad 3224 |
| 3 lbs/1000 bbls. | G.E. Power & Water | 8Q123ULS | | 10 lbs/1000 bbls. | US Water Services | CorrPro 656X |
| 5 lbs/1000 bbls. | Innospec | DCI-11 Plus/ ClearTrak | | 13 lbs/1000 bbls. | US Water Services | CorrPro 656 or 656T |
| 3 lbs/1000 bbls. | Midcontinental | MCC5011PHE | | 5 lbs/1000 bbls. | US Water Services | CorrPro N or NT |
| 7 lbs/1000 bbls. | Apollo Water Services | FCA-1008 | | | | |

H Grade Normal Butane Specifications

| Product Property | Test Method | Origin Test Results | | Deliveries ^{1/} |
|---|-------------|---------------------|---------|--------------------------|
| | | Minimum | Maximum | |
| Composition, POD or Chromatography analysis | D2163 | | | |
| Liquid vol % | | | | |
| Normal Butane | | 95 | | |
| Isobutane | | | 3 | |
| Pentanes | | | 3 | |
| Propane | | | 3 | |
| Specific Gravity | D1657 | 0.580 | 0.588 | |
| Vapor Pressure at 100 °F, psi | D1267 | | 43 | |
| Weathering, | D1837 | | | |
| 95% Evaporated Temp, °F (Corrected) | | | 36 | |
| Residues, | D2158 | | | |
| Non-Volatile Residue at 100°F, ml | | | 0.05 | |
| Oil, No oil stain observation, ml | | | 0.3 | |
| Sulfur, ppm | D3246 | | 30 | |
| Copper Corrosion Dryness, Inspection | D1838 | | 1 | |
| Free Water Content | | | 0 | |

Additives: H grade normal butane shipments must be unstenched and contain no additives.

1/ Delivered products meet all applicable requirements at time and place of delivery.

I Grade Iso-Butane Specifications

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|---|--------|---------|---------|--------------------------|
| Composition, POD or Chromatography analysis | D2163 | | | |
| Liquid vol % | | | | |
| Isobutane | | 95 | | |
| Propane | | | 3.0 | |
| Normal Butane | | | 5.0 | |
| Pentanes | | | 0.5 | |
| Specific Gravity | D1657 | 0.560 | 0.570 | |
| Vapor Pressure at 100 °F, psi | D1267 | | 62 | |
| Weathering, | D1837 | | | |
| 95% Evaporated Temp, °F (Corrected) | | | 31 | |
| Residues, | D2158 | | 0.05 | |
| Non-Volatile Residue at 100 °F, ml | | | | |
| Oil, No oil stain observation, ml | | | 0.3 | |
| Sulfur, | D1266 | | | |
| grains per hundred cubic feet | | | 15 | |
| Copper Corrosion | D1838 | | 1 | |
| Dryness, Inspection | | | | |
| Free Water Content | | | 0 | |

Foot Notes:

1/ Delivered products meet all applicable requirements at time and place of delivery.

Notes:

- H grade normal butane shipments must be unstenched and contain no additives.

L Grade Propane Specifications

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|-----------------------------------|--------|---------|---------|--------------------------|
| Composition | | | | |
| Chromatography analysis | D2163 | | | |
| Liquid vol % | | | | |
| Propane | | 90 | | |
| Propylene | | | 5.0 | |
| Butanes and C4+ | | | 2.5 | |
| Pentanes and C5+ | | None | | |
| Specific gravity | D1657 | 0.500 | 0.510 | |
| Vapor pressure at 100 °F, psi | D1267 | 175 | 208 | |
| Weathering, 95% evaporated | D1837 | | -37 | |
| Temp, °F (corrected) | | | | |
| Residues, | D2158 | | | |
| Nonvolatile residue at 100 °F, ml | | | 0.05 | |
| Oil, no oil stain observation, ml | | 0.3 | | |
| Sulfur, | D2784 | | 10 | |
| grains per hundred cubic feet | | | | |
| Copper Corrosion | D1838 | | 1 | |
| Dryness, Valve Freeze, seconds | D2713 | 60 | | |

Foot Notes:

1/ Delivered products meet all applicable requirements at time and place of delivery.

Notes:

L Grade shipments must be unstenched and contain no additives. Unless otherwise notified in writing by shipper, L Grade propane deliveries will be odorized at the rate of 1.5 pounds Ethyl Mercaptan/10,000 gallons.

NEP Grade 87.0 Regular Unleaded Export Gasoline Specifications

(This fuel is for export from the United States only)

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|--------------------------------------|---------------|----------------|----------------|--------------------------|
| Gravity, °API | D287 | | Report | |
| Color | | | Undyed | |
| RVP ^{2/} | | | | |
| Distillation | D86 | <u>Class A</u> | <u>Class B</u> | <u>Class C</u> |
| 10% Evaporated °F, max | | 158 | 149 | 140 |
| 50% Evaporated °F, min | | 170 | 170 | 170 |
| 50% Evaporated °F, max | | 250 | 245 | 240 |
| 90% Evaporated °F, max | | 374 | 374 | 365 |
| Final Boiling Point °F, max | | 430 | 430 | 430 |
| Residue, vol% max | | 2 | 2 | 2 |
| Drivability Index, max | | 1250 | 1240 | 1230 |
| | | <u>Class 1</u> | <u>Class 2</u> | <u>Class 3</u> |
| Vapor Liquid Ratio °F, min | D5188 | 129 | 122 | 116 |
| Benzene, vol % | D3606 | | 2.0 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.002 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667,7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | 82.0 | | |
| Report (R+M)/2 | | 87.0 | | |
| Sulfur, ppm | D2622 | | 80 | |
| Oxygenates, vol % | D4815, D5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Odor ^{5/} | | | Nonoffensive | |

NEP Grade 87.0 Regular Unleaded Export Gasoline Specifications (continued)**Foot Notes:**

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Seasonal Gasoline Volatility Schedule.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ Values below the detectible limit of an approved method may be reported as a zero value.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- Fuel shall comply with the exemptions for export fuels as listed in 40 CFR 1090.645.
- This product is non-additized gasoline.

NR Grade 87.0 Regular RBOB Unleaded Gasoline

(This Reformulated Before Oxygenate Blending (RBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum | Delivery ^{1/} |
|--------------------------------------|---------------|---------|--------------|------------------------|
| Gravity, ° API | D287 | | Report | |
| Color | | | Undyed | |
| Volatility ^{2/} | | | | |
| RVP ^{6/8/} | D5191 | | | |
| Distillation ^{9/} | D86 | | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667, 7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane ^{9/} | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | 82.0 | | |
| (R+M)/2 | | 87.0 | | |
| Sulfur, ppm ^{8/} | D2622 | | 80 | |
| Oxygenates, vol% ^{7/} | D4815, D5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Odor ^{5/} | | | Nonoffensive | |

NR Grade 87.0 Regular RBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1090.1010(a) gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)2. In accordance with 40 CFR 1010(a) gasoline will be designated upon receipt as Winter RBOB, or Summer RBOB based on the RVP of the gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Product shall meet the Reformulated Gasoline (RFG) standard of 1090.220.
- Summer RBOB - This product meets the requirements for summer reformulated or conventional gasoline.
- This product is non-additized gasoline.

NZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum |
|--|---------------|---------|---------------|
| Gravity °API @ 60°F | D 287 | | Report |
| Octane (after 10% E Fuel ethanol per ASTM D4806) | | | |
| RON | D 2699 | | Report |
| MON | D 2700 | | Report |
| (R+M)/2 | | 87.0 | |
| Oxygen Content, wt% ^{1/} | D 4815 | | 0.05 |
| RVP, psi (E0 not blended) | D 5191 | | 8.00 |
| RVP, psi (E10 blend) | D 5191 | | 9.00 |
| Distillation, °F | D86 | | |
| 50% | | | 237 |
| 90% | | | 335 |
| End Point | | | 430 |
| Benzene, vol% | D 3606 | | 4.9 |
| Aromatics, vol% | D 5769, D5580 | | 30.0 |
| Olefins, vol% | D 1319, D6650 | | 10.0 |
| Corrosion (Cu)3 hrs @ 122°F(50°C) | D 130 | | 1 |
| Corrosion (Ag) 3 hrs @122°F (50°C) | D 7667,7671 | | 1 |
| Mercaptan sulfur, wt.% ^{2/} | D 3227 | | 0.002 |
| Existent Gum, mg/100 ml | D 381 | | 4 |
| Oxidation stability, minutes | D 525 | 240 | |
| Phosphorous, gms/gal | D 3231 | | 0.003 |
| Lead, gms/gal | D 5059 | | 0.01 |
| Sulfur, ppm | D 5453, D2622 | | 80 |
| NACE | TM0172, D7548 | B+ | |
| Haze ^{3/} | D 4176 | | 2 |
| CARB Predictive Model | | | Pass |
| Color | | | Undyed |
| Odor | Olfactory | | Non-Offensive |

NZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D 4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

NZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

- Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 87 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

NZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum |
|--|---------------|---------------|---------|
| Gravity °API @ 60°F | D 287 | | Report |
| Octane (after 10% E Fuel ethanol per ASTM D4806) | | | |
| RON | D 2699 | | Report |
| MON | D 2700 | | Report |
| (R+M)/2 | | 87.0 | |
| Oxygen Content, wt % ^{1/} | D 4815 | | 0.05 |
| RVP, psi (E0 not blended) | D 5191 | | 5.70 |
| RVP, psi (E10 blend) | D 5191 | | 7.00 |
| Distillation, °F | D86 | | |
| E200 | | 25% | 65% |
| E300 | | 65% | 100% |
| End Point | | | 430 |
| Benzene, vol% | D 3606 | | 4.9 |
| Aromatics, vol% | D 5769/ D5580 | | 55 |
| Olefins, vol% | D 1319, D6650 | | 25 |
| Corrosion (Cu)3 hrs @ 122°F(50°C) | D 130 | | 1 |
| Corrosion (Ag) 3 hrs @122°F (50°C) | D 7667,7671 | | 1 |
| Mercaptan sulfur, wt.% ^{2/} | D 3227 | | 0.002 |
| Existent Gum, mg/100 ml | D 381 | | 4 |
| Oxidation stability, minutes | D 525 | 240 | |
| Phosphorous, gms/gal | D 3231 | | 0.003 |
| Lead, gms/gal | D 5059 | | 0.01 |
| Sulfur, ppm | D 5453, D2622 | | 80 |
| NACE | TM0172, D7548 | B+ | |
| Haze ^{3/} | D 4176 | | 2 |
| VOC Emission Performance Reduction, % | | -27.5 | |
| Color | | Undyed | |
| Odor | Olfactory | Non-Offensive | |

NZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited when shipped.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D 4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

NZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

- This product does not meet the requirements for summer reformulated gasoline. Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 87 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

O Grade Commercial Jet Fuel Specifications

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|--|------------|---------|---------|--------------------------|
| Gravity, °API | D287 | 37.5 | 50.5 | 37.0-51.0 |
| Total Acidity, mg KOH/g | D3242 | | 0.10 | |
| Freezing Point, °F | D2386 | | -40 | |
| Existent Gum, mg/100 ml | D381 | | 5 | 7 |
| Sulfur, ppm | D2622 | | 3,000 | |
| Mercaptan Sulfur, wt % ^{2/} | D3227 | | 0.003 | |
| Color, Saybolt | D156 | +16 | | +14 |
| Copper Corrosion | D130 | | 1 | |
| Water Separation Index | D3948 | 85 | | 75 |
| Aromatics, vol % | D1319 | | 25 | |
| Net Heat of Combustion, BTU/lb ^{3/} | D4809 | 18,400 | | |
| Flash Point, °F | D56, D93 | 108 | | 100 |
| Viscosity at -4 °F, cSt | D445 | | 8.0 | |
| Electrical Conductivity, pSm | D2624 | | Report | |
| Thermal Stability ^{4/ 5/} | D3241 | | | |
| Filter pressure drop, mm Hg | | | 25 | |
| Heater tube deposit rating | | | < 3 | |
| Distillation ^{6/} | D86, D2887 | | | |
| 10% Recovered, °F | | | 396 | 400 |
| 50% Recovered, °F | | | Report | |
| 90% Recovered, °F | | | Report | |
| Final Boiling Point, °F | | | 562 | 572 |
| Residue, vol % | | | 1.5 | |
| Loss, vol % | | | 1.5 | |
| Combustion | | | | |
| Smoke Point, mm | D1322 | 25.0 | | |
| Or | | | | |
| Smoke Point, mm | D1322 | 18.0 | | |
| And | | | | |
| Naphthalenes, vol % | D1840 | | 3.0 | |
| Particulate Matter, mg/L | D5452 | | Report | |

Q Grade Commercial Jet Fuel Specifications (continued)

Footnotes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Equation 2 in D3338 may be used as an alternate method.
- 4/ ASTM D3241 Thermal Stability test must be conducted at 275 °C for 2.5 hours at origin. Peacock or abnormal color deposits result in a failure and are not accepted.
- 5/ ASTM D3241 Thermal Stability test results for deliveries will be generated at a minimum test temperature of 260 °C
- 6/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- Antioxidants: Shipments may, but are not required to, contain a maximum of 8.4 pounds per 1,000 barrels (not including weight of solvent) of the following anti-oxidants:
 - N, N-diisopropylparaphenylene diamine.
 - 75% (min) of 2, 6-ditertiary-butyl phenol plus 25% (max) of tertiary and tritertiary butyl phenols.
 - 72% (min) 2, 4-dimethyl-6-tertiary-butyl phenol plus 28% (max) of monomethyl and dimethyl tertiary-butyl phenols.
 - 55% (min) 2, 4-dimethyl-6-tertiary-butyl phenol plus 45% (max) of mixed tertiary and ditertiary butyl phenols.
- Metal Deactivators: Shipments may, but are not required to, contain the following metal deactivators at a maximum of 2.0 mg/L (not including weight of solvent):
 - n, N-disalicylidene-1, 2-propane diamine.
 - No other additives are permitted.
- The carrier shall not be responsible for the concentration of additives in jet fuel deliveries at terminals.
- In accordance with 40 CFR 1090.1015(a) this fuel is designated as Jet fuel and may not be redesignated as ULSD without recertification.

V, V8, V66, VTX Grade 87.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum |
|--------------------------------------|---------------|---------|--------------|
| Gravity, ° API | D287 | | Report |
| Color | | | Undyed |
| Volatility ^{2/} | | | |
| RVP ^{6/8/} | D5191 | | |
| Distillation ^{9/} | D86 | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 |
| Copper Corrosion | D130 | | 1 |
| Silver Corrosion | D7667, 7671 | | 1 |
| Gum, Existent, mg/100 ml | D381 | | 4 |
| Oxidation Stability, minutes | D525 | 240 | |
| Phosphorus, g/gal | D3231 | | 0.003 |
| Lead, g/gal | D3237 | | 0.010 |
| Octane ^{9/} | | | |
| RON | D2699 | | Report |
| MON | D2700 | 82.0 | |
| (R+M)/2 | | 87.0 | |
| Sulfur, ppm ^{8/} | D2622 | | 80 |
| Oxygenates, vol% ^{7/} | D4815, D5599 | | 0.05 |
| Haze Rating ^{4/} | D4176 | | 2 |
| NACE Corrosion | TM0172, D7548 | B+ | |
| Odor ^{5/} | | | Nonoffensive |

V. V8, V66, VTX Grade 87.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

V1, VMS Grade 85.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|--------------------------------------|---------------|---------|---------|--------------------------|
| Gravity, ° API | D287 | | Report | |
| Color | | | Undyed | |
| RVP ^{6/8/} | D5191 | | | |
| Distillation ^{9/} | D86 | | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667,7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane ^{9/} | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | | Report | |
| (R+M)/2 | | 85.0 | | |
| Sulfur, ppm ^{8/} | D2622 | | 80 | |
| Oxygenates, vol % ^{7/} | D4815, 5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |

V1, VMS Grade 85.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any V1-grade product with a 7.8 psi 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

V2 Grade 87.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|--------------------------------------|---------------|---------|--------------|--------------------------|
| Gravity, ° API | D287 | | Report | |
| Color | | | Undyed | |
| Volatility ^{2/} | | | | |
| RVP ^{6/8/} | D5191 | | | |
| Distillation ^{9/} | D86 | | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667, 7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | 82.0 | | |
| (R+M)/2 | | 84.0 | | |
| Octane ^{9/} | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | 82.0 | | |
| (R+M)/2 | | 87.0 | | |
| Sulfur, ppm ^{8/} | D2622 | | 80 | |
| Oxygenates, vol% ^{7/} | D4815, D5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Odor ^{5/} | | | Nonoffensive | |

V2 Grade 87.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

V3, V3S Grade 86.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|--------------------------------------|---------------|---------|---------|--------------------------|
| Gravity, ° API | D287 | | Report | |
| Color | | | Undyed | |
| RVP ^{6/8/} | D5191 | | | |
| Distillation ^{9/} | D86 | | | |
| Benzene, vol % ^{9/} | D3606 | | 4.9 | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | 0.003 | |
| Copper Corrosion | D130 | | 1 | |
| Silver Corrosion | D7667,7671 | | 1 | |
| Gum, Existent, mg/100 ml | D381 | | 4 | 5 |
| Oxidation Stability, minutes | D525 | 240 | | |
| Phosphorus, g/gal | D3231 | | 0.003 | 0.005 |
| Lead, g/gal | D3237 | | 0.010 | 0.05 |
| Octane ^{9/} | | | | |
| RON | D2699 | | Report | |
| MON | D2700 | | Report | |
| (R+M)/2 | | 86.0 | | |
| Sulfur, ppm | D2622 | | 80 | |
| Oxygenates, vol % ^{7/} | D4815, 5599 | | 0.05 | |
| Haze Rating ^{4/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |

V3, V3S Grade 86.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °F max |
| October 1– February 15 | 45 °F max |
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

W Grade Natural Gasoline Specification

(Intended to be used as gasoline blend stock)

| Product Property | Method | Minimum | Maximum |
|--------------------------|--------------|----------|---------|
| Gravity, °API | D287 | 75.0 | 85.0 |
| Specific Gravity | D1657 | 0.654 | 0.685 |
| Reid Vapor Pressure, psi | D5191 | 12.0 | 15.0 |
| Distillation, | D86 | | |
| % Evaporated at 140 °F | | 25 | 85 |
| % Evaporated at 275 °F | | 90 | |
| Final Boiling Point, °F | | | 375 |
| Color | D156 | +25 | |
| Benzene, vol % | D5580, D3606 | | 1.5 |
| Doctor | D4952 | Negative | |
| Sulfur, ppm | D2622, D7039 | | 30 |
| Copper Corrosion | D130 | | 1 |
| Haze Rating | D4176 | | 2 |
| NACE Corrosion | TM0172 | B+ | |

Foot Notes:

Notes:

- W Grade shipments may not contain any additives.

W2 Grade Certified Ethanol Denaturant Specifications.
(Intended to be used to make Denatured Fuel Ethanol)

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|----------------------------------|---------------------------|----------|---------|--------------------------|
| Gravity, °API | D287 | 75.0 | 85.0 | |
| Reid Vapor Pressure, psi | D5191 | 12 | 14 | |
| Distillation, | D86 | | | |
| 90% Evaporated at Degree °F | | | 365 | |
| Final Boiling Point at Degree °F | | | 437 | |
| Color | D156 | +25 | | |
| Benzene, vol % | D5580/ D3606 | | 1.10 | |
| Doctor | D4952 | Negative | | |
| Sulfur, ppm | D5453/ D2622/ D7039 | | 120 | |
| Copper Corrosion | D130 | | 1 | |
| Haze Rating ^{2/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172 | B+ | | |

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

| | |
|----------------------------|-----------|
| February 16 – September 30 | 55 °Fmax |
| October 1 – February 15 | 45 °P max |

Notes:

- W2 Grade shipments may not contain any additives.
- W2 meets the requirements of certified ethanol denaturant as listed in 40 CFR 1090.275
- W2 shall be designated as certified ethanol denaturant as intended for blending with gasoline as specified in 40 CFR 1090.1010(e).

X1X Grade Ultra Low Sulfur Diesel Fuel for Export Specifications

(This fuel is for export from the United States only)

| Product Property | Method | Minimum | Maximum |
|-------------------------------------|---------------|---------|---------|
| Gravity, °API | D4052, 1298 | | Report |
| Distillation ^{3/} | D86, D2887 | | |
| Initial Boiling Point | | | Report |
| 10% Recovered, °F | | | 527 |
| 50% Recovered, °F | | | Report |
| 90% Recovered, °F | | 540 | 653 |
| End Point °F | | | Report |
| Flash Point, °F | D93 | | 135 |
| Pour Point, °F | D97 | | |
| March-October | | | +32 |
| November-February | | | +23 |
| Cloud Point, °F ^{4/} | D2500 | | Report |
| Cetane | | | |
| Cetane Number | D613 | 45 | |
| Or | | | |
| Cetane Index, A or B | D976, D4737 | 45 | |
| Sulfur, ppm | D2622 | | 12 |
| Copper Corrosion | D130 | | 1 |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.35 |
| Water and Sediment, vol% | D2709 | | 0.05 |
| Viscosity, cSt at 104 °F | D445 | 1.9 | 4.1 |
| Ash, wt % | D482 | | 0.01 |
| Color | D1500 | | 2.5 |
| Aromatics, vol % | D1319, D5186 | | 35 |
| Stability | | | |
| Thermal, % reflectance (W or Y) | D6468 (W) | 75 | |
| | D6468 (Y) | 82 | |
| Aging Period (Minutes) | D6468 | 90 | |
| Or | | | |
| Oxidation, mg/100 ml | D2274 | | 2.5 |
| Haze Rating ^{2/} | D4176 | | 2 |
| NACE Corrosion | TM0172, D7548 | B+ | |



X1X Grade Ultra Low Sulfur Diesel Fuel for Export Specifications (continued)

(This fuel is for export from the United States only)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1115(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1115(a)(2).
- 2/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 3/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.
- 4/ The maximum temperature must be less or equal to the minimum environmental temperature expected.

Notes:

- X1X complies with the ULSD standards of 40 CFR 1090.305.
- X1X is diesel fuel for export from the United States only per 40 CFR 1090.1105
- X1X is designated as ULSD in accordance with 40 CFR 1090.1115.
- X1X may not be co-mingled with any domestic diesel fuels

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

XB5 Grade#2 Ultra Low Sulfur Diesel Fuel with up to 5% Biodiesel Specifications

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|-------------------------------------|---------------|---------|---------|--------------------------|
| Gravity, °API | D287 | | Report | |
| Color | D1500 | | 2.5 | 3 |
| Distillation ^{4/} | D86, D2887 | | | |
| 50% Recovered, °F | | | Report | |
| 90% Recovered, °F | | 540 | 640 | |
| End Point °F | | | 700 | |
| Copper Corrosion | D130 | | 1 | |
| Cetane | | | | |
| Cetane Number | D613 | 40 | | |
| Or | | | | |
| Cetane Index, A or B | D4737 | 40 | | |
| Cetane Index ^{2/} | D976 | 40 | | |
| Flash Point, °F | D93 | 135 | | 130 |
| Stability | | | | |
| Thermal, % reflectance (W or Y) | D6468 (W) | 75 | | |
| | D6468 (Y) | 82 | | |
| Aging Period (Minutes) | D6468 | 90 | | |
| Or | | | | |
| Oxidation, mg/100 ml | D2274 | | 2.5 | |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.35 | |
| Cloud Point, °F | D2500 | | Report | N/A |
| Pour Point, °F | D97 | | Report | N/A |
| Viscosity, cSt at 104 °F | D445 | 1.9 | 4.1 | |
| Ash, wt % | D482 | | 0.01 | |
| Haze Rating ^{3/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Sulfur, ppm | D2622 | | 11 | |

XB5 Grade#2 Ultra Low Sulfur Diesel Fuel with up to 5% Biodiesel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- XB5 complies with the ULSD standards of 40 CFR 1090.305.
- XB5 is designated as ULSD in accordance with 40 CFR 1090.1115.
- XB5 may contain up to 5% biodiesel.

Additional Requirements:

Biodiesel: Injection of up to 5% biodiesel meeting the specification of ASTM D6751 may be injected into X grade outbound from the origin for shipments on the following line segments:

- East Houston to Hearne 20”

Dyes: X Grade shipments may not be dyed.

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications
Central, Rocky Mountain, and Southern Systems

Central System:

| Product Property ^{1/} | Method | Minimum | Maximum |
|-------------------------------------|---------------|---------|---------|
| Gravity, °API | D287 | | Report |
| Color | D1500 | | 2.5 |
| Distillation ^{4/} | D86, D2887 | | |
| 50% Recovered, °F | | | Report |
| 90% Recovered, °F | | 540 | 640 |
| End Point °F | | | 700 |
| Copper Corrosion | D130 | | 1 |
| Cetane | | | |
| Cetane Number | D613 | 40 | |
| Or | | | |
| Cetane Index, A or B | D4737 | 40 | |
| Cetane Index ^{2/} | D976 | 40 | |
| Flash Point, °F | D93 | 140 | |
| Stability | | | |
| Thermal, % reflectance (W or Y) | D6468 (W) | 75 | |
| | D6468 (Y) | 82 | |
| Aging Period (Minutes) | D6468 | 90 | |
| Or | | | |
| Oxidation, mg/100 ml | D2274 | | 2.5 |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.35 |
| Cloud Point, °F | D2500 | | |
| September-March | | | +15 |
| April-August | | | +20 |
| Pour Point, °F | D97 | | |
| September-March | | | +0 |
| April-August | | | +10 |
| Viscosity, cSt at 104 °F | D445 | 1.9 | 4.1 |
| Ash, wt % | D482 | | 0.01 |
| Haze Rating ^{3/} | D4176 | | 2 |
| NACE Corrosion | TM0172, D7548 | B+ | |
| Sulfur, ppm | D2622 | | 11 |

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications
Central, Rocky Mountain, and Southern Systems

Rocky Mountain System:

| Product Property ^{1/} | Method | Minimum | Maximum |
|-------------------------------------|---------------|---------|---------|
| Gravity, °API | D287 | | Report |
| Color | D1500 | | 2.5 |
| Distillation ^{4/} | D86, D2887 | | |
| 50% Recovered, °F | | | Report |
| 90% Recovered, °F | | 540 | 640 |
| End Point °F | | | 700 |
| Copper Corrosion | D130 | | 1 |
| Cetane | | | |
| Cetane Number | D613 | 40 | |
| Or | | | |
| Cetane Index, A or B | D4737 | 40 | |
| Cetane Index ^{2/} | D976 | 40 | |
| Flash Point, °F | D93 | 134 | |
| Stability | | | |
| Thermal, % reflectance (W or Y) | D6468 (W) | 75 | |
| | D6468 (Y) | 82 | |
| Aging Period (Minutes) | D6468 | 90 | |
| Or | | | |
| Oxidation, mg/100 ml | D2274 | | 2.5 |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.35 |
| Cloud Point, °F | D2500 | | |
| September-March | | | +15 |
| April-August | | | +20 |
| Pour Point, °F | D97 | | |
| September-March | | | +0 |
| April-August | | | +10 |
| Viscosity, cSt at 104 °F | D445 | 1.9 | 4.1 |
| Ash, wt % | D482 | | 0.01 |
| Haze Rating ^{3/} | D4176 | | 2 |
| NACE Corrosion | TM0172, D7548 | B+ | |
| Sulfur, ppm | D2622 | | 12 |

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications
Central, Rocky Mountain, and Southern Systems

Southern System:

| Product Property ^{1/} | Method | Minimum | Maximum |
|-------------------------------------|---------------|---------|---------|
| Gravity, °API | D287 | | Report |
| Color | D1500 | | 2.5 |
| Distillation ^{4/} | D86, D2887 | | |
| 50% Recovered, °F | | | Report |
| 90% Recovered, °F | | 540 | 640 |
| End Point °F | | | 700 |
| Copper Corrosion | D130 | | 1 |
| Cetane | | | |
| Cetane Number | D613 | 40 | |
| Or | | | |
| Cetane Index, A or B | D4737 | 40 | |
| Cetane Index ^{2/} | D976 | 40 | |
| Flash Point, °F | D93 | 135 | |
| Stability | | | |
| Thermal, % reflectance (W or Y) | D6468 (W) | 75 | |
| | D6468 (Y) | 82 | |
| Aging Period (Minutes) | D6468 | 90 | |
| Or | | | |
| Oxidation, mg/100 ml | D2274 | | 2.5 |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.35 |
| Cloud Point, °F | D2500 | | |
| October-February | | | +15 |
| March-August | | | +28 |
| September | | | +20 |
| Pour Point, °F | D97 | | Report |
| Viscosity, cSt at 104 °F | D445 | 1.9 | 4.1 |
| Ash, wt % | D482 | | 0.01 |
| Haze Rating ^{3/} | D4176 | | 2 |
| NACE Corrosion | TM0172, D7548 | B+ | |
| Sulfur, ppm | D2622 | | 11 |

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications
Central, Rocky Mountain, and Southern Systems (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 is used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- X, XHO, TB, and TC comply with the ULSD standards of 40 CFR 1090.305.
- X, TB, and TC are designated as ULSD in accordance with 40 CFR 1090.1115.
- XHO is designated as Certified NTFD in accordance with 40 CFR 1090.1115.
- The presence of biodiesel is prohibited at origin. Deliveries of X-Grade may contain up to 5% biodiesel at the Dubuque, IA terminal.
- X-Grade shipments may not be dyed.

XU Grade #2 Ultra Low Sulfur Diesel Fuel Specifications

Rocky Mountain System:

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|-------------------------------------|---------------|---------|---------|--------------------------|
| Gravity, °API | D287 | | Report | |
| Color | D1500 | | 2.5 | 3 |
| Distillation ^{4/} | D86, D2887 | | | |
| 50% Recovered, °F | | | Report | |
| 90% Recovered, °F | | 540 | 640 | |
| Copper Corrosion | D130 | | 1 | |
| Cetane | | | | |
| Cetane Number | D613 | 40 | | |
| Or | | | | |
| Cetane Index, A or B | D4737 | 40 | | |
| Cetane Index ^{2/} | D976 | 40 | | |
| Flash Point, °F | D93 | 134 | | 130 |
| Stability | | | | |
| Thermal, % reflectance (W or Y) | D6468 (W) | 75 | | |
| | D6468 (Y) | 82 | | |
| Aging Period (Minutes) | D6468 | 90 | | |
| Or | | | | |
| Oxidation, mg/100 ml | D2274 | | 2.5 | |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.35 | |
| Cloud Point, °F | D2500 | | | |
| October-March | | | +5 | |
| April-September | | | +20 | |
| Pour Point, °F | D97 | | | |
| October-March | | | -20 | |
| April-September | | | Report | |
| Viscosity, cSt at 104 °F | D445 | 1.9 | 4.1 | |
| Ash, wt % | D482 | | 0.01 | |
| Haze Rating ^{3/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM0172, D7548 | B+ | | |
| Sulfur, ppm | D2622 | | 12 | |

XU Grade Ultra Low Sulfur #2 Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- XU complies with the ULSD standards of 40 CFR 1090.305.
- XU is designated as ULSD in accordance with 40 CFR 1090.1115.

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

Y Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|-------------------------------------|--------------|---------|---------|--------------------------|
| Gravity, °API | D287 | 35.0 | | |
| Distillation ^{4/} | D86, D2887 | | | |
| 10% Recovered, °F | | | 419 | |
| 90% Recovered, °F | | | 550 | |
| Copper Corrosion | D130 | 1 | | |
| Cetane | | | | |
| Cetane Number | D613 | 40.0 | | |
| Or | | | | |
| Cetane Index, A or B | D4737 | 40.0 | | |
| Cetane Index ^{2/} | D976 | 40 | | |
| Flash Point, °F | D93 | 125 | 160 | 115 |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.15 | |
| Pour Point, °F | D97 | | -25 | |
| Viscosity at 104 °F, cSt | D445 | 1.3 | 2.1 | |
| Ash, wt % | D482 | | 0.01 | |
| Haze Rating ^{3/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM172, D7548 | B+ | | |
| Sulfur, ppm | D2622 | | 11 | |

Y Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- Y complies with the ULSD standards of 40 CFR 1090.305.
- Y is designated as ULSD in accordance with 40 CFR 1090.1115.

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

YM Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications

| Product Property | Method | Minimum | Maximum | Deliveries ^{1/} |
|-------------------------------------|--------------|---------|---------|--------------------------|
| Gravity, °API | D287 | 35.0 | | |
| Distillation ^{4/} | D86, D2887 | | | |
| 10% Recovered, °F | | | 419 | |
| 90% Recovered, °F | | | 550 | |
| Copper Corrosion | D130 | 1 | | |
| Cetane | | | | |
| Cetane Number | D613 | 40.0 | | |
| Or | | | | |
| Cetane Index, A or B | D4737 | 40.0 | | |
| Cetane Index ^{2/} | D976 | 40 | | |
| Flash Point, °F | D93 | 108 | 160 | 100 |
| Carbon Residue on 10% Bottoms, wt % | D524 | | 0.15 | |
| Pour Point, °F | D97 | -25 | | |
| Viscosity at 104 °F, cSt | D445 | 1.3 | 2.1 | |
| Ash, wt % | D482 | | 0.01 | |
| Haze Rating ^{3/} | D4176 | | 2 | 3 |
| NACE Corrosion | TM172, D7548 | B+ | | |
| Sulfur, ppm | D2622 | | 12 | |
| Mercaptan Sulfur, wt% ^{5/} | D3227 | | 0.0004 | |

YM Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.
- 5/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative

Notes:

- YM complies with the ULSD standards of 40 CFR 1090.305.
- YM is designated as ULSD in accordance with 40 CFR 1090.1115.

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

ZB Grade #2 Ultra Low Sulfur Biodiesel Fuel Specifications

(Intended to be use as a #2 ULSD Blend stock)

| Product Property | Method ^{2/} | Minimum | Maximum |
|--|------------------------------|---------|---------|
| Density, g/mL | D4052 | | Report |
| Filtration, Seconds | D7501 | | 125 |
| Flash Point, °C | D93 | 93 | |
| Alcohol Control (must meet one of the following) | | | |
| Flash Point, °C | D93 | 130 | |
| Methanol content, wt% | EN14110 | | 0.2 |
| Cloud Point, °F, max | D2500 | | |
| Summer (May 1 st – August 31 st) | | | 46 |
| Winter (September 1 st – April 30 th) | Central System ^{4/} | | 36 |
| Cloud Point, °F, max | D2500 | | |
| Summer (April 1 st – September 30 th) | | | 56 |
| Winter (October 1 st – March 31 st) | South System ^{5/} | | 36 |
| Carbon Residue on 100% Sample, wt % | D4530 | | 0.050 |
| Sulfur, ppm (mg/kg) | D5453 | | 15 |
| Stability ^{3/} | | | |
| Rancimat, (hrs.) | EN15751, EN14112 | 6 | |
| Copper Corrosion | D130 | | 1 |
| Cetane Number | D613 | 47 | |
| Distillation | | | |
| Atmospheric equivalent temperature 90% recovered, °F or Simulated Distillation, (Modified) | D1160, D2887 | | 680 |
| Viscosity at 104 °F, cSt | D445 | 1.9 | 6.0 |
| Sulfated Ash, wt % | D874 | | 0.020 |
| Free Glycerin, wt % | D6584 | | 0.020 |
| Monoglyceride, wt% | D6584 | | |
| Winter and Summer | Central System ^{4/} | | 0.400 |
| Summer (April 1 st – September 30 th) | | | 0.600 |
| Winter (October 1 st – March 31 st) | South System ^{5/} | | 0.400 |
| Total Glycerin, wt % | D6584 | | 0.240 |
| Acid Number, mg KOH/g | D664 | | 0.50 |
| Haze Rating @ 60 °F | D4176 | | 2 |
| Phosphorus content, wt% | D4951 | | 0.001 |

ZB Grade #2 Ultra Low Sulfur Biodiesel Fuel Specifications (continued)

| Product Property | Method ^{2/} | Minimum | Maximum |
|---|------------------------------|---------|---------|
| Calcium and Magnesium, combined, ppm (mg/g) | EN14538 | | |
| | Central System ^{4/} | | 5 |
| | South System ^{5/} | | 2 |
| Sodium & Potassium combined, ppm (mg/g) | EN14538 | | |
| | Central System ^{4/} | | 5 |
| | South System ^{5/} | | 3.5 |
| Total Contamination mg/kg ^{5/} | D7321 | | 15 |
| Water & Sediment, vol% | D2709 | | 0.050 |
| Total Water, ppm | D6304 | | 500 |
| Delivery Temperature | MMP | +50 | |
| Workmanship ^{1/} | MMP | | |

Foot Notes:

- 1/ **Workmanship:** At the time of acceptance, the finished fuel shall be visually free from undissolved water, sediment, or suspended matter and shall be clear and bright.
- 2/ Alternative methods found in ASTM D6751 are accepted
- 3/ **Additives:**
 - BioExtend 30
 - Eastman - Tenox 21
 - Kemin BF 320
 - NALCO EC 5609A
- 4/ **Central Locations:** Includes Aurora, Des Moines, Mason City, Marshall, Mankato, Rochester, Minneapolis, Wrenshall, Alexandria, Fargo, Grand Forks
- 5/ **South Locations:** Includes East Houston, Herne
- 6/ All fuel shall comply with 40 CFR Subpart M - Renewable Fuel Standard

Notes:

- ZB complies with the ULSD standards of 40 CFR 1090.305.
- ZB is designated as ULSD in accordance with 40 CFR 1090.1115.
- ZB meets or exceeds the requirements of ASTM D6751 as B100 or B99.