



ENTERPRISE PRODUCTS PARTNERS L.P.  
ENTERPRISE PRODUCTS HOLDINGS LLC  
(General Partner)

ENTERPRISE PRODUCTS OPERATING LLC

7015 1520 0002 7267 0373  
Return Receipt Requested

**Federal Minor NSR Permit Coordinator**  
U.S. EPA, Region 6  
1445 Ross Ave., Suite 1200  
Dallas, TX 75202

**Re: Enterprise Field Services, LLC**  
**Lindrith Compressor Station**  
**Lindrith, Rio Arriba County, New Mexico**  
**Minor Modification of Permit Number R6NM-03-R1**

Dear Sir or Madam:

Enterprise Field Services, LLC (Enterprise) is submitting this application for a minor permit modification to Permit Number R6NM-03-R1 which was issued on November 4, 2015.

#### **AIR EMISSIONS IMPACT**

The change proposed in this application involves increasing the following limits within the current air permit:

|                          | <u>Page</u> | <u>Current Limit</u> | <u>Proposed Limit</u> |
|--------------------------|-------------|----------------------|-----------------------|
| TBATTERY                 | 3           | 37.39 tons/year      | 102.63 tons/year      |
| TLOADING                 | 3           | 2.23 tons/year       | 4.98 tons/year        |
| MSS                      | 3           | 25.00 tons/year      | 30.00 tons/year       |
| Condensate<br>Throughput | 7           | 20,000 barrels/year  | 60,000 barrels/year   |

The increase of emissions is explained in detail in the attached calculation spreadsheets. The activities which generate these VOC emissions are the storage of condensate and loading of trucks to remove the condensate to off-site destinations.

#### **REGULATIONS IMPACT**

This application has been prepared in accordance with EPA guidance. The current permit, page 18, paragraph 5.9, lists the limitations of the minor modification procedure as follows:

- 5.9.1.1 Do not violate any applicable requirement. **This application does not.**
- 5.9.1.2 Do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit. **This application does not.**

- 5.9.1.3 Do not require or change a case-by-case determination of an emission limitation or standard, or a source-specific determination for temporary sources of ambient impacts, or visibility, or increment analysis. **This application does not.**
- 5.9.1.4 Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement to which the source would otherwise be subject. **This application does not.**

If you should have questions or need additional information regarding this application, please contact Robert Havalda at 713-381-6698 or by email at [rmhavalda@eprod.com](mailto:rmhavalda@eprod.com) or Brad Cooley at 713-381-5828.

Sincerely,



Robert Havalda  
Senior Environmental Engineer



Bradley Cooley  
Senior Manager, Environmental Permitting

/bjm

Attachments

EPA Administrative Permit Amendment Request (Form AMEND)  
Process Flow Diagram  
Detailed Emission Calculations  
HYSYS Flash Analysis  
TANKS 4.09d Output  
Site Gas Analysis

cc:

Mr. Jim Lieb – Enterprise Products Operating

Tribal Environmental Contact – Jicarilla Apache  
Attn: Ms. Bonnie Braganza P.E.  
U.S. EPA, Region 6  
1445 Ross Ave., Suite 1200  
Dallas, TX 75202

Mr. Cordell Tecube  
Environmental Protection Office  
Jicarilla Apache Tribe  
P.O. Box 507  
Dulce, New Mexico 87528

**Enterprise Field Services LLC  
Lindrith Compressor Station  
Rio Arriba County, New Mexico**

**Minor Permit Modification  
Permit No. R6NM-03-R1**

**MARCH 2017**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
FEDERAL MINOR NEW SOURCE REVIEW PROGRAM IN INDIAN  
COUNTRY**

**Administrative Permit Amendment Request  
(Form AMEND)**

**Please check box to show how you are using this form**

- ☐ **Correction to a Typographical Error**  
☐ **Incorporation of More Frequent Monitoring or Reporting**  
☒ **Increase in Allowable Emissions (SEE INSTRUCTIONS!)**  
☐ **Other**

Use of this information request form is voluntary and not yet approved by the Office of Management and Budget. The following is a check list of the type of information that Region 6 will use to process information on your proposed project. While submittal of this form is not required, it does offer details on the information we will use to complete your requested approval and providing the information requested may help expedite the process. Use of application forms for this program is currently under Office of Management and Budget review and these information request forms will be replaced/updated after that review is completed.

**Please submit information to following two entities:**

Federal Minor NSR Permit  
Coordinator  
U.S. EPA, Region 6  
1445 Ross Ave., suite 1200  
6MM-AP  
Dallas, TX 75202  
[R6airpermits@epa.gov](mailto:R6airpermits@epa.gov)

For more information, visit:  
<http://www2.epa.gov/caa-permitting/caa-permitting-epas-south-central-region>

The Tribal Environmental Contact for the specific reservation:

If you need assistance in identifying the appropriate Tribal Environmental Contact and address, please contact:

[R6airpermits@epa.gov](mailto:R6airpermits@epa.gov)

**A. COMPANY INFORMATION**

|                                                                                                                             |                                                   |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| <b>Company Name</b> (Who owns this facility?)<br><b>Enterprise Field Services LLC</b>                                       |                                                   |
| <b>Company Contact</b> (Who is the <u>primary</u> contact at the company that owns this facility?)<br><b>Robert Havalda</b> | <b>Title</b><br><b>Sr. Environmental Engineer</b> |
| <b>Mailing Address</b><br><b>P.O. Box 4324, Houston TX 77210-4324</b>                                                       |                                                   |
| <b>Email Address</b><br><a href="mailto:rmhavalda@eprod.com">rmhavalda@eprod.com</a>                                        |                                                   |
| <b>Telephone Number</b><br><b>713-381-6698</b>                                                                              | <b>Facsimile Number</b><br><b>713-381-6811</b>    |

## B. FACILITY INFORMATION

Facility Name on the Permit to Be Amended

**Lindrith Compressor Station**

Minor Source Permit To Construct Number Not Applicable

Date of Most Recent Permit Action (this should be the same permit to which you are requesting the amendment)

**November 4, 2015 (Permit Number R6NM-03-R1)**

## C. DESCRIPTION OF THE PROPOSED AMENDMENT

Provide a narrative description of the requested amendment to the permit and the following:

1. Why the proposed change can be made through this form. (See instructions).

**Enterprise Field Services, LLC (Enterprise) is proposing to increase the allowable emission rate for the following emissions units:**

1. **Increase the annual throughput for condensate tank battery (Unit ID: TBATTERY) from 20,000 barrels per year (bbl/yr) to 60,000 bbls/yr (TBATTERY consists of eight 454-bbl fixed roof storage tanks);**
2. **Increase truck loading (Unit ID: TLOAD), emissions from 20,000 to 60,000 bbl/yr to accommodate the increased throughput from TBATTERY; and**
3. **Increase Maintenance, Startup, and Shutdown (Unit ID: MSS) emissions to accommodate the increase in the natural gas VOC content.**

**The proposed change in gas composition will add 72.98 TPY of VOCs to the facility. This facility is currently and will remain a minor NSR source.**

2. Information presented in enough detail to document how the facility is currently operating and how it is proposed to operate. A narrative description of all of the facility processes along with a process flow diagram to enable EPA to understand the effect the proposed change has on emission unit or (pollutant generating activity).

**The Lindrith Compressor Station is a natural gas compression and transmission facility that receives natural gas from a gathering system and compresses that gas for transmission via pipeline. The emissions units at the facility consists of three reciprocating internal combustion engines (RICE) that drive the compression units (Unit IDs: A-01, A-02, and A-03), the emergency RICE generator (Unit ID: EMERGEN), emissions from engine starts, compressor blowdowns, vessel and piping blowdowns and pipeline pigging activities, including the pipeline pigging location (Unit ID: MSS), fugitive emissions from valves, flanges, compressors, pumps, etc. (Unit ID: FUGVOC), eight 454-bbl fixed roof condensate storage tanks (Unit ID TBATTERY), and condensate truck loading (Unit ID TLOAD). There are no physical changes to the emission units in this permitting action. A process flow diagram is included in the attachments.**

- Emissions calculations and all supporting data necessary to establish the proposed post-change allowable emission limits. The requested information must be provided for each emissions unit (or pollutant-generating activity).

**Attachment 2 contains emissions calculations tables and supporting documentation for each change requested.**

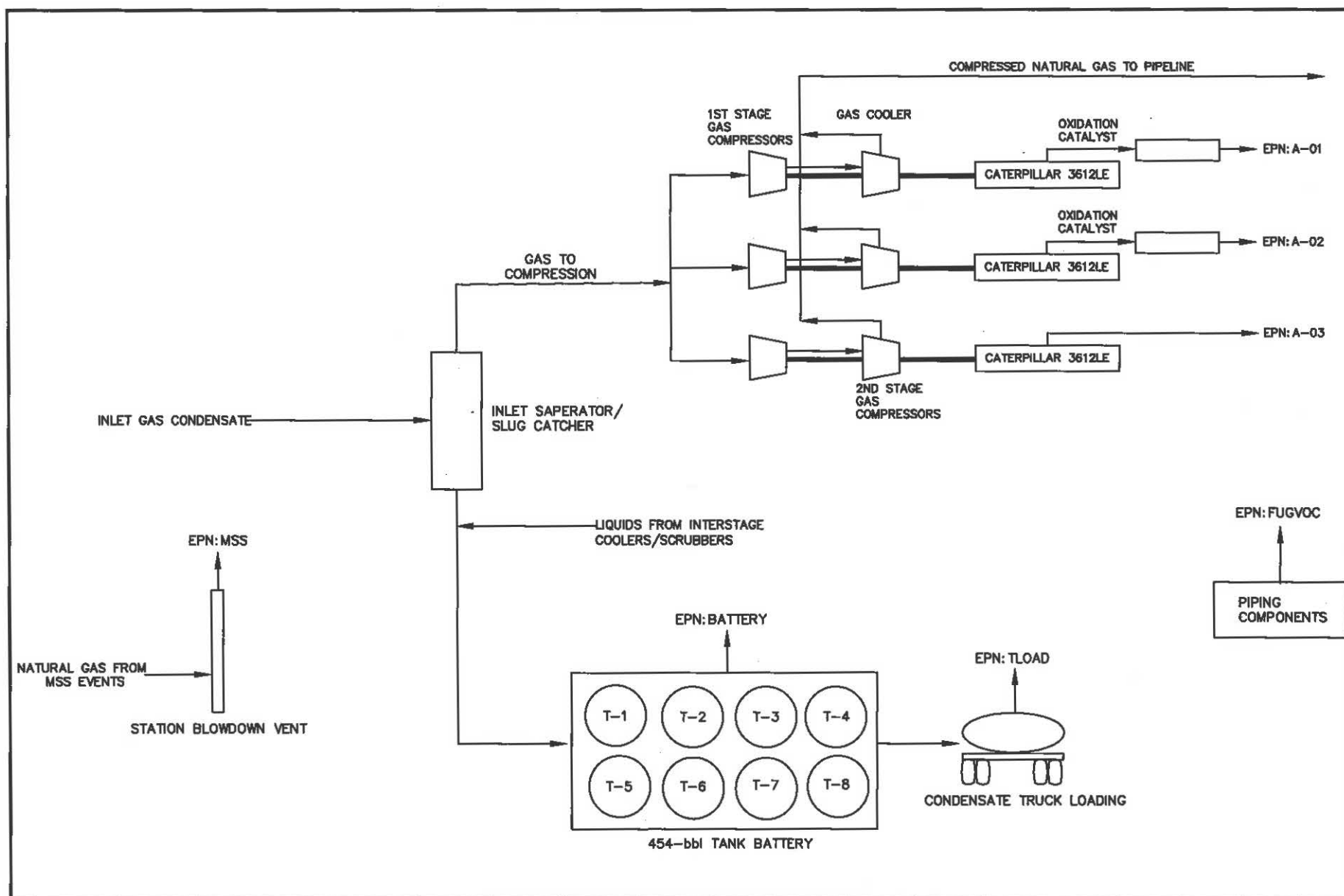
- The proposed changes to be made to specific terms and conditions of the permit. A redline/strike out version of the permit may be used for this purpose.

**Enterprise is proposing the following changes to the specific terms and conditions of the permit:**

|                              | <u>Page</u> | <u>Current Limit</u>       | <u>Proposed Limit</u>      |
|------------------------------|-------------|----------------------------|----------------------------|
| <b>TBATTERY</b>              | <b>3</b>    | <b>37.39 tons/year</b>     | <b>102.63 tons/year</b>    |
| <b>TLOADING</b>              | <b>3</b>    | <b>2.23 tons/year</b>      | <b>4.98 tons/year</b>      |
| <b>MSS</b>                   | <b>3</b>    | <b>25.00 tons/year</b>     | <b>30.00 tons/year</b>     |
| <b>Condensate Throughput</b> | <b>7</b>    | <b>20,000 barrels/year</b> | <b>60,000 barrels/year</b> |

- The following table with Facility-wide Emission Estimates:

| <b>Pollutant</b>                   | <b>Pre-Change Allowable Emissions (tpy)</b> | <b>Post Change Allowable Emissions (tpy)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------|---------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PM</b>                          | <b>2.91</b>                                 | <b>2.91</b>                                  | PM - Particulate Matter<br>PM <sub>10</sub> - Particulate Matter less than 10 microns in size<br>PM <sub>2.5</sub> - Particulate Matter less than 2.5 microns in size<br>SO <sub>2</sub> - Sulfur Oxides<br>NO <sub>x</sub> - Nitrogen Oxides<br>CO - Carbon Monoxide<br>VOC - Volatile Organic Compound<br>Pb - Lead and lead compounds<br>Fluorides - Gaseous and particulates<br>H <sub>2</sub> SO <sub>4</sub> - Sulfuric Acid Mist<br>H <sub>2</sub> S - Hydrogen Sulfide<br>TRS - Total Reduced Sulfur<br>RSC - Reduced Sulfur Compounds |
| <b>PM<sub>10</sub></b>             | <b>2.91</b>                                 | <b>2.91</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>PM<sub>2.5</sub></b>            | <b>2.91</b>                                 | <b>2.91</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>SO<sub>2</sub></b>              | <b>4.26</b>                                 | <b>4.26</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>NO<sub>x</sub></b>              | <b>66.29</b>                                | <b>66.29</b>                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>CO</b>                          | <b>102.57</b>                               | <b>102.57</b>                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>VOC</b>                         | <b>138.36</b>                               | <b>211.34</b>                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Pb</b>                          | <b>0</b>                                    | <b>0</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Fluorides</b>                   | <b>N/A</b>                                  | <b>N/A</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>H<sub>2</sub>SO<sub>4</sub></b> | <b>N/A</b>                                  | <b>N/A</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>H<sub>2</sub>S</b>              | <b>N/A</b>                                  | <b>N/A</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>TRS</b>                         | <b>N/A</b>                                  | <b>N/A</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>RSC</b>                         | <b>N/A</b>                                  | <b>N/A</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



PROCESS FLOW DIAGRAM  
LINDRITH COMPRESSOR STATION  
ENTERPRISE FIELD SERVICES, LLC  
36.31170, -107.08664  
LINDRITH, NEW MEXICO

|             |     |      |         |
|-------------|-----|------|---------|
| Designed By | WY  | Date | 6/09/16 |
| Drawn By    | WY  | Date | 6/09/16 |
| Checked By  | LDC | Date | 6/10/16 |
| Approved By | LDC | Date | 6/10/16 |

|             |                 |
|-------------|-----------------|
| PROJECT NO. | FLOWDIAGRAM.DWG |
| Figure No.  | 1               |
| Sheet       | 1 of 1          |

**Table B-1****Project Emissions Summary (Criteria Pollutants) from Increased Condensate Throughput  
Lindrith Compressor Station  
Enterprise Field Services LLC**

| ID                                         | Emissions Source | Description                    | VOC   | HAPs | Condensate Throughput |
|--------------------------------------------|------------------|--------------------------------|-------|------|-----------------------|
|                                            |                  |                                | tpy   | tpy  | Bbl/yr                |
| Limits In Current Permit Number R6NM-03-R1 |                  |                                |       |      |                       |
| TBATTERY                                   | Tanks            | Condensate Storage             | 37.39 | 1.07 | 20,000                |
| TLOAD                                      | Truck Loading    | Truck Loading                  | 2.23  | 0.07 | 20,000                |
| MSS                                        | MSS              | Maintenance, Startup, Shutdown | 25.00 | 0.64 | n/a                   |
| Total                                      |                  |                                | 64.62 | 1.78 |                       |

|                        |               |                                |        |      |        |
|------------------------|---------------|--------------------------------|--------|------|--------|
| Proposed Permit Limits |               |                                |        |      |        |
| TBATTERY               | Tanks         | Condensate Storage             | 102.63 | 1.32 | 60,000 |
| TLOAD                  | Truck Loading | Truck Loading                  | 4.98   | 0.14 | 60,000 |
| MSS                    | MSS           | Maintenance, Startup, Shutdown | 29.98  | 0.59 | n/a    |
| Total                  |               |                                | 137.59 | 2.05 |        |

**Table B-2**

**Tank Emissions from Increased Condensate Throughput  
Lindrith Compressor Station  
Enterprise Field Services LLC**

| ID | Material Stored | Tank Capacity (Gallons) | No. of Turnovers per year | VOC Annual Emissions Rates   |                           |                       |               |
|----|-----------------|-------------------------|---------------------------|------------------------------|---------------------------|-----------------------|---------------|
|    |                 |                         |                           | TANKS 4.0 Total VOC (lbs/yr) | TANKS 4.0 Total VOC (tpy) | Flash Emissions (tpy) | Overall (tpy) |
| T1 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
| T2 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
| T3 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
| T4 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
| T5 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
| T6 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
| T7 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
| T8 | Condensate      | 18,900                  | 16.67                     | 4,210.56                     | 2.11                      | 10.72                 | 12.83         |
|    | <b>Total</b>    | <b>151,200</b>          |                           | <b>33,684.48</b>             | <b>16.84</b>              | <b>85.79</b>          | <b>102.63</b> |

- (1) See TANKS 4.0 Report Results
- (2) Gasoline RVP 7 properties are used to estimate condensate emissions.
- (3) See HYSIS Flash Analysis. Flash emissions = Condensate Throughput x (VOC Mass Flow, lb/hr x 24 hr / Std. Ideal Liq. Vol. Flow, bbl/day)
- (4) Speciation method below is the same as used for the renewal application for current Permit Number R6NM-03-R1
- (5) Refer to "Lindrith Compressor Station\_Winter Case 3.hsc" analysis dated 7/28/2016

**Speciated Emissions Based on Aspen Analysis of vapor phase (normalized by deleting all non-voc compounds)**

| Compound           | Weight %     | tons/year   |
|--------------------|--------------|-------------|
| Non HAPs           | 98.7180      | 101.31      |
| n-Hexane           | 1.2720       | 1.31        |
| Benzene            | 0.0050       | 0.01        |
| Toluene            | 0.0030       | 0.00        |
| Ethylbenzene       | 0.0010       | 0.00        |
| Xylenes            | 0.0010       | 0.00        |
| <b>HAPs Total:</b> | <b>1.28%</b> | <b>1.32</b> |

**Table B-3**  
**Truck Loading Emissions from Increased Condensate Throughput**  
**Lindrith Compressor Station**  
**Enterprise Field Services LLC**

**Basis**

Emissions calculated based on loading loss factors from EPA's AP-42, Table 5.2-1, Section 5.2, June, 2008.

VP based on maximum expected liquid temperature for the short-term and annual average liquid temperature for the annual basis.

| Product    | Loading Type | MW    | Short-Term<br>Max VP | Annual<br>Average VP | Saturation<br>Factor, S | Short-Term Loading<br>Loss Factor |             | Annual Loading Loss<br>Factor |             | Throughput     |                  | lb/hr        | tpy         |
|------------|--------------|-------|----------------------|----------------------|-------------------------|-----------------------------------|-------------|-------------------------------|-------------|----------------|------------------|--------------|-------------|
|            |              |       |                      |                      |                         |                                   |             |                               |             | (gal/hr)       | (gal/yr)         |              |             |
| Condensate | Submerged    | 68.00 | 5.24                 | 4.04                 | 0.6                     | 4.8398                            | lb/1000 gal | 3.9496                        | lb/1000 gal | 18,000         | 2,520,000        | 87.12        | 4.98        |
|            |              |       |                      |                      |                         |                                   |             |                               |             | <b>Totals:</b> | <b>2,520,000</b> | <b>87.12</b> | <b>4.98</b> |

**Notes:**

Emissions are based on the loading losses equation from EPA's AP-42, Section 2, 5th Edition, June, 2008, Equation 1:  $L = 12.46 \times S \times P \times M / T$

L = Loading Losses, lb/1000 gallons

S = Saturation Factor, see Table 5.2-1 in AP-42, Section 5.2.

P = True vapor pressure, psia

M = Molecular weight of vapors, lb/lb-mol

T = Temperature of bulk liquid loaded, R (F + 46) -5.24

**Speciated Emissions Based on Aspen Analysis of vapor phase (normalized by deleting all non-voc compounds)**

| Compound           | Weight %      | lb/hr        | tons/year   |
|--------------------|---------------|--------------|-------------|
| Non HAPs           | 97.1343       | 84.62        | 4.83        |
| n-Hexane           | 2.2491        | 1.96         | 0.11        |
| Benzene            | 0.3333        | 0.29         | 0.02        |
| Toluene            | 0.2833        | 0.25         | 0.01        |
| Ethylbenzene       | 0.0000        | 0.00         | 0.00        |
| Xylenes            | 0.0000        | 0.00         | 0.00        |
| <b>Total:</b>      | <b>100.00</b> |              |             |
| <b>VOC Total:</b>  | <b>100.00</b> | <b>87.12</b> | <b>4.98</b> |
| <b>HAPs Total:</b> | <b>2.87</b>   | <b>2.50</b>  | <b>0.14</b> |

- 1) Speciation method is the same as used for the renewal application for current Permit Number R6NM-03-R1
- 2) All non-HAPs assumed VOC.
- 3) Used Gasoline RVP 7 properties for condensate loading emissions.
- 4) See attached TANKS 4.0.9d monthly runs for short term max vapor pressure values, and annual runs for average vapor pressure.

**Table B-4**  
**Maintenance, Startup & Shutdown (MSS) Emissions, ID MSS**  
**Emissions from Scheduled/Routine & Predictable Events**  
**Lindrith Compressor Station**  
**Enterprise Field Services LLC**

| Event Description                          | Volume Per Event (MCF) | Events per hour | Events per year | Hourly Volume (MCF) | Annual Volume (MMCF) | Material Vented | Standard scf/lbmol | Total lbmol/hr | Total lbmol/yr |
|--------------------------------------------|------------------------|-----------------|-----------------|---------------------|----------------------|-----------------|--------------------|----------------|----------------|
| Blowdowns                                  | 9.88                   | 1               | 300             | 9.88                | 2.96                 | Nat. Gas        | 379.482            | 26.04          | 7,810.65       |
| Planned maintenance and emergency shutdown | 13.75                  | 1               | 15              | 13.75               | 0.21                 | Nat. Gas        | 379.482            | 36.23          | 543.50         |
| Compressor Engine Startup                  | 1.61                   | 1               | 512             | 1.61                | 0.82                 | Nat. Gas        | 379.482            | 4.23           | 2,166.83       |
| <b>Total</b>                               |                        |                 |                 |                     | <b>3.99</b>          |                 |                    |                |                |

| Compound          | Dry Basis Mole % | MW               | lb/lb-mol    | lb/hr         | tons/yr      |
|-------------------|------------------|------------------|--------------|---------------|--------------|
| CO <sub>2</sub>   | 0.4520           | 44.01            | 0.20         | 13.23         | 1.05         |
| N <sub>2</sub>    | 1.6971           | 28.01            | 0.48         | 31.62         | 2.50         |
| Methane           | 75.2957          | 16.04            | 12.08        | 803.31        | 63.55        |
| Ethane            | 11.6789          | 30.07            | 3.51         | 233.54        | 18.47        |
| Propane           | 6.5968           | 44.10            | 2.91         | 193.45        | 15.30        |
| i-butane          | 0.8947           | 58.12            | 0.52         | 34.58         | 2.74         |
| n-butane          | 1.8481           | 58.12            | 1.07         | 71.43         | 5.65         |
| i-pentane         | 0.4973           | 72.15            | 0.36         | 23.86         | 1.89         |
| n-pentane         | 0.4323           | 72.15            | 0.31         | 20.74         | 1.64         |
| n-Hexane          | 0.1013           | 86.18            | 0.09         | 5.81          | 0.46         |
| Benzene           | 0.0133           | 78.11            | 0.01         | 0.69          | 0.05         |
| Toluene           | 0.0108           | 92.14            | 0.01         | 0.66          | 0.05         |
| Ethylbenzene      | 0.0006           | 106.17           | 0.00         | 0.04          | 0.00         |
| Xylenes           | 0.0035           | 106.17           | 0.00         | 0.25          | 0.02         |
| C6 <sup>+</sup>   | 0.4801           | 86.117           | 0.41         | 27.49         | 2.17         |
| <b>Total:</b>     | <b>100.00</b>    | <b>Avg. MW =</b> | <b>21.97</b> |               |              |
| <b>VOC Total:</b> |                  |                  |              | <b>379.01</b> | <b>29.98</b> |
| <b>HAP Total:</b> |                  |                  |              | <b>7.45</b>   | <b>0.59</b>  |

1) See attached extended natural gas analysis dated March 9, 2016.

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

|                      |                                     |
|----------------------|-------------------------------------|
| User Identification: | Enterprise - Lindrith 450-bbl VFR   |
| City:                | Rio Arriba County                   |
| State:               | New Mexico                          |
| Company:             | Enterprise Products                 |
| Type of Tank:        | Vertical Fixed Roof Tank            |
| Description:         | 450 bbl Condensate (Gasoline RVP 7) |

**Tank Dimensions**

|                          |            |
|--------------------------|------------|
| Shell Height (ft):       | 20.00      |
| Diameter (ft):           | 12.75      |
| Liquid Height (ft):      | 20.00      |
| Avg. Liquid Height (ft): | 8.00       |
| Volume (gallons):        | 18,900.00  |
| Turnovers:               | 16.67      |
| Net Throughput(gal/yr):  | 315,063.00 |
| Is Tank Heated (y/n):    | N          |

**Paint Characteristics**

|                    |             |
|--------------------|-------------|
| Shell Color/Shade: | Gray/Medium |
| Shell Condition:   | Good        |
| Roof Color/Shade:  | Gray/Medium |
| Roof Condition:    | Good        |

**Roof Characteristics**

|                           |      |
|---------------------------|------|
| Type:                     | Cone |
| Height (ft)               | 0.00 |
| Slope (ft/ft) (Cone Roof) | 0.06 |

**Breather Vent Settings**

|                          |      |
|--------------------------|------|
| Vacuum Settings (psig):  | 0.00 |
| Pressure Settings (psig) | 0.00 |

Meteorological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**Enterprise - Lindrith 450-bbl VFR - Vertical Fixed Roof Tank**  
**Rio Arriba County , New Mexico**

| Mixture/Component              | Month | Daily Liquid Surf.<br>Temperature (deg F) |       |       | Liquid<br>Bulk<br>Temp<br>(deg F) | Vapor Pressure (psia) |        |        | Vapor<br>Mol.<br>Weight | Liquid<br>Mass<br>Fract. | Vapor<br>Mass<br>Fract. | Mol.<br>Weight | Basis for Vapor Pressure<br>Calculations  |
|--------------------------------|-------|-------------------------------------------|-------|-------|-----------------------------------|-----------------------|--------|--------|-------------------------|--------------------------|-------------------------|----------------|-------------------------------------------|
|                                |       | Avg.                                      | Min.  | Max.  |                                   | Avg.                  | Min.   | Max.   |                         |                          |                         |                |                                           |
| Natural Gas Condensate (RVP 7) | All   | 67.36                                     | 53.93 | 80.79 | 59.23                             | 5.2095                | 4.0863 | 6.5818 | 50.0000                 |                          |                         | 207.00         |                                           |
| 1,2,4-Trimethylbenzene         |       |                                           |       |       |                                   | 0.0273                | 0.0160 | 0.0451 | 120.1800                | 0.0033                   | 0.0001                  | 120.19         | Option 2: A=7.04383, B=1573.287, C=208.56 |
| Benzene                        |       |                                           |       |       |                                   | 1.4274                | 0.9846 | 2.0237 | 78.1100                 | 0.0060                   | 0.0008                  | 78.11          | Option 2: A=6.905, B=1211.033, C=220.79   |
| Ethylbenzene                   |       |                                           |       |       |                                   | 0.1396                | 0.0876 | 0.2182 | 106.1700                | 0.0040                   | 0.0004                  | 106.17         | Option 2: A=6.975, B=1424.255, C=213.21   |
| Hexane (-n)                    |       |                                           |       |       |                                   | 2.3100                | 1.6303 | 3.2059 | 86.1700                 | 0.0040                   | 0.0073                  | 86.17          | Option 2: A=6.876, B=1171.17, C=224.41    |
| Isooctane                      |       |                                           |       |       |                                   | 0.7608                | 0.4620 | 1.1167 | 114.2200                | 0.0010                   | 0.0006                  | 114.22         | Option 1: VP00 = .58 VP70 = .812          |
| Isopropyl benzene              |       |                                           |       |       |                                   | 0.0670                | 0.0406 | 0.1072 | 120.2000                | 0.0010                   | 0.0001                  | 120.20         | Option 2: A=6.963, B=1460.793, C=207.78   |
| Toluene                        |       |                                           |       |       |                                   | 0.4136                | 0.2726 | 0.6120 | 92.1300                 | 0.0100                   | 0.0033                  | 92.13          | Option 2: A=6.954, B=1344.8, C=216.48     |
| Unidentified Components        |       |                                           |       |       |                                   | 5.6730                | 5.6439 | 5.6446 | 49.5799                 | 0.9567                   | 0.9901                  | 218.17         |                                           |
| Xylene (-m)                    |       |                                           |       |       |                                   | 0.1165                | 0.0728 | 0.1813 | 106.1700                | 0.0140                   | 0.0013                  | 106.17         | Option 2: A=7.009, B=1462.266, C=215.11   |

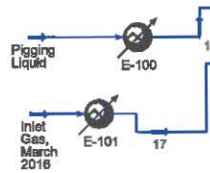
**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**Enterprise - Lindrith 450-bbl VFR - Vertical Fixed Roof Tank**  
**Rio Ariba County , New Mexico**

| Components                     | Losses(lbs)  |                |                 |
|--------------------------------|--------------|----------------|-----------------|
|                                | Working Loss | Breathing Loss | Total Emissions |
| Benzene                        | 9.97         | 18.68          | 28.66           |
| Isooctane                      | 0.87         | 1.64           | 2.51            |
| Toluene                        | 4.82         | 9.02           | 13.84           |
| Ethylbenzene                   | 0.65         | 1.22           | 1.87            |
| Unidentified Components        | 1,436.31     | 2,690.47       | 4,126.78        |
| Natural Gas Condensate (RVP 7) | 1,465.46     | 2,745.10       | 4,210.56        |
| Xylene (-m)                    | 1.90         | 3.56           | 5.46            |
| Isopropyl benzene              | 0.08         | 0.15           | 0.22            |
| 1,2,4-Trimethylbenzene         | 0.10         | 0.20           | 0.30            |
| Hexane (-n)                    | 10.76        | 20.16          | 30.92           |

| Pigging Liquid         |       |            |
|------------------------|-------|------------|
| Temperature            | 75.00 | F          |
| Pressure               | 60.00 | psig       |
| Std Ideal Liq Vol Flow | 77.00 | barrel/day |



| Station Inlet |       |        |
|---------------|-------|--------|
| Temperature   | 38.66 | F      |
| Pressure      | 60.00 | psig   |
| Molar Flow    | 65.18 | MMSCFD |

| 4                      |       |            |
|------------------------|-------|------------|
| Temperature            | 38.66 | F          |
| Pressure               | 60.00 | psig       |
| Std Ideal Liq Vol Flow | 154.0 | barrel/day |

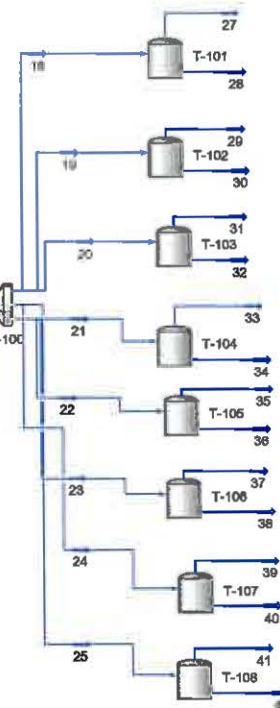
| 7                      |        |            |
|------------------------|--------|------------|
| Temperature            | 38.66  | F          |
| Pressure               | 60.00  | psig       |
| Std Ideal Liq Vol Flow | 0.0000 | barrel/day |

| 11          |       |        |
|-------------|-------|--------|
| Temperature | 58.00 | F      |
| Pressure    | 131.2 | psig   |
| Molar Flow  | 65.01 | MMSCFD |

| 13          |       |        |
|-------------|-------|--------|
| Temperature | 68.00 | F      |
| Pressure    | 250.0 | psig   |
| Molar Flow  | 65.01 | MMSCFD |

| Flow to Storage                                   |        |            |
|---------------------------------------------------|--------|------------|
| Mass Flow                                         | 1685   | lb/hr      |
| Temperature                                       | 34.38  | F          |
| Pressure                                          | 0.0000 | psig       |
| Phase - Mass Flow (Vapour Phase)                  | 32.48  | lb/hr      |
| Phase Std Ideal Liq Vol Flow (Mixed Liquid Phase) | 163.5  | barrel/day |

| VOC Vented |       |
|------------|-------|
| 19.48      | lb/hr |



|                                                                                   |  |                                       |              |                                                          |               |
|-----------------------------------------------------------------------------------|--|---------------------------------------|--------------|----------------------------------------------------------|---------------|
|  |  | ENTERPRISE PRODUCTS OPER              |              | Case Name: Lindrith Compressor Station_Winter Case 3.hsc |               |
|                                                                                   |  | Bedford, MA                           |              | Unit Set: NewUser1                                       |               |
|                                                                                   |  | USA                                   |              | Date/Time: Thu Jul 28 15:10:52 2016                      |               |
| <b>Material Stream: Flow to Storage</b>                                           |  |                                       |              | Fluid Package:                                           | Basis-1       |
|                                                                                   |  |                                       |              | Property Package:                                        | Peng-Robinson |
| <b>CONDITIONS</b>                                                                 |  |                                       |              |                                                          |               |
|                                                                                   |  | Overall                               | Vapour Phase | Liquid Phase                                             | Aqueous Phase |
| Vapour / Phase Fraction                                                           |  | 0.0517                                | 0.0517       | 0.9109                                                   | 0.0373        |
| Temperature: (F)                                                                  |  | 34.38                                 | 34.38        | 34.38                                                    | 34.38         |
| Pressure: (psig)                                                                  |  | 0.0000                                | 0.0000       | 0.0000                                                   | 0.0000        |
| Molar Flow (MMSCFD)                                                               |  | 0.1701                                | 8.800e-003   | 0.1549                                                   | 6.352e-003    |
| Mass Flow (lb/hr)                                                                 |  | 1686                                  | 32.48        | 1641                                                     | 12.56         |
| Std Ideal Liq Vol Flow (barrel/day)                                               |  | 168.6                                 | 5.076        | 162.7                                                    | 0.8621        |
| Molar Enthalpy (Btu/lbmole)                                                       |  | -8.863e+004                           | -4.197e+004  | -8.984e+004                                              | -1.238e+005   |
| Molar Entropy (Btu/lbmole-F)                                                      |  | 18.16                                 | 43.58        | 16.99                                                    | 11.29         |
| Heat Flow (Btu/hr)                                                                |  | -1.655e+006                           | -4.056e+004  | -1.529e+006                                              | -8.638e+004   |
| Liq Vol Flow @Std Cond (barrel/day)                                               |  | 165.7 *                               | 5.904        | 160.7                                                    | 0.8478        |
| <b>PROPERTIES</b>                                                                 |  |                                       |              |                                                          |               |
|                                                                                   |  | Overall                               | Vapour Phase | Liquid Phase                                             | Aqueous Phase |
| Molecular Weight                                                                  |  | 90.27                                 | 33.62        | 96.45                                                    | 18.02         |
| Molar Density (lbmole/ft3)                                                        |  | 4.895e-002                            | 2.806e-003   | 0.4603                                                   | 3.552         |
| Mass Density (lb/ft3)                                                             |  | 4.419                                 | 9.432e-002   | 44.39                                                    | 63.98         |
| Act. Volume Flow (barrel/day)                                                     |  | 1631                                  | 1472         | 158.0                                                    | 0.8395        |
| Mass Enthalpy (Btu/lb)                                                            |  | -981.9                                | -1249        | -931.5                                                   | -6874         |
| Mass Entropy (Btu/lb-F)                                                           |  | 0.2011                                | 1.296        | 0.1762                                                   | 0.6267        |
| Heat Capacity (Btu/lbmole-F)                                                      |  | 42.67                                 | 13.68        | 45.31                                                    | 18.61         |
| Mass Heat Capacity (Btu/lb-R)                                                     |  | 0.4727                                | 0.4070       | 0.4698                                                   | 1.033         |
| LHV Molar Basis (Std) (Btu/lbmole)                                                |  | 1.723e+006                            | 6.704e+005   | 1.853e+006                                               | 1.425e-004    |
| HHV Molar Basis (Std) (Btu/lbmole)                                                |  | 1.847e+006                            | 7.270e+005   | 1.986e+006                                               | 1.763e+004    |
| HHV Mass Basis (Std) (Btu/lb)                                                     |  | 2.046e+004                            | 2.163e+004   | 2.059e+004                                               | 978.7         |
| CO2 Loading                                                                       |  | —                                     | —            | —                                                        | —             |
| CO2 App ML Con (lbmole/ft3)                                                       |  | —                                     | —            | 4.882e-005                                               | 1.804e-005    |
| CO2 App WT Con (lbmol/lb)                                                         |  | —                                     | —            | 1.100e-006                                               | 2.820e-007    |
| LHV Mass Basis (Std) (Btu/lb)                                                     |  | 1.909e+004                            | 1.994e+004   | 1.922e+004                                               | 7.909e-006    |
| Phase Fraction [Vol. Basis]                                                       |  | 3.011e-002                            | 3.011e-002   | 0.9648                                                   | 5.113e-003    |
| Phase Fraction [Mass Basis]                                                       |  | 1.927e-002                            | 1.927e-002   | 0.9733                                                   | 7.453e-003    |
| Phase Fraction [Act. Vol. Basis]                                                  |  | 0.9026                                | 0.9026       | 9.688e-002                                               | 5.147e-004    |
| Mass Exergy (Btu/lb)                                                              |  | 1.046                                 | —            | —                                                        | —             |
| Partial Pressure of CO2 (psig)                                                    |  | -14.62                                | —            | —                                                        | —             |
| Cost Based on Flow (Cost/s)                                                       |  | 0.0000                                | 0.0000       | 0.0000                                                   | 0.0000        |
| Act. Gas Flow (ACFM)                                                              |  | 5.740                                 | 5.740        | —                                                        | —             |
| Avg. Liq. Density (lbmole/ft3)                                                    |  | 0.4735                                | 0.8137       | 0.4471                                                   | 3.458         |
| Specific Heat (Btu/lbmole-F)                                                      |  | 42.67                                 | 13.68        | 45.31                                                    | 18.61         |
| Std. Gas Flow (MMSCFD)                                                            |  | 0.1698                                | 8.783e-003   | 0.1547                                                   | 6.340e-003    |
| Std. Ideal Liq. Mass Density (lb/ft3)                                             |  | 42.75                                 | 27.36        | 43.12                                                    | 62.30         |
| Act. Liq. Flow (USGPM)                                                            |  | 4.633                                 | —            | 4.609                                                    | 2.448e-002    |
| Z Factor                                                                          |  | —                                     | 0.9879       | 6.022e-003                                               | 7.805e-004    |
| Watson K                                                                          |  | 12.60                                 | 15.93        | 12.56                                                    | 8.510         |
| User Property                                                                     |  | —                                     | —            | —                                                        | —             |
| Partial Pressure of H2S (psig)                                                    |  | -14.70                                | —            | —                                                        | —             |
| Cp/(Cp - R)                                                                       |  | 1.049                                 | 1.170        | 1.046                                                    | 1.119         |
| Cp/Cv                                                                             |  | 1.003                                 | 1.178        | 1.046                                                    | 1.129         |
| Heat of Vap. (Btu/lbmole)                                                         |  | 2.960e+004                            | —            | —                                                        | —             |
| Kinematic Viscosity (cSt)                                                         |  | —                                     | 5.904        | 0.7928                                                   | 1.640         |
| Liq. Mass Density (Std. Cond) (lb/ft3)                                            |  | 43.49                                 | 23.52        | 43.64                                                    | 63.35         |
| Liq. Vol. Flow (Std. Cond) (barrel/day)                                           |  | 165.7                                 | 5.904        | 160.7                                                    | 0.8478        |
| Liquid Fraction                                                                   |  | 0.9483                                | 0.0000       | 1.000                                                    | 1.000         |
| Aspen Technology Inc.                                                             |  | Aspen HYSYS Version 8.8 (34.0.0.8909) |              |                                                          | Page 1 of 5   |



ENTERPRISE PRODUCTS OPER  
Bedford, MA  
USA

Case Name: Lindrth Compressor Station\_Winter Case 3.hsc  
Unit Set: NewUser1  
Date/Time: Thu Jul 28 15:10:52 2016

## Material Stream: Flow to Storage (continued)

Fluid Package: Basis-1  
Property Package: Peng-Robinson

### PROPERTIES

|    |                                               | Overall | Vapour Phase | Liquid Phase | Aqueous Phase |
|----|-----------------------------------------------|---------|--------------|--------------|---------------|
| 12 | Molar Volume (ft <sup>3</sup> /lbmole)        | 20.43   | 356.4        | 2.173        | 0.2816        |
| 13 | Mass Heat of Vap. (Btu/lb)                    | 327.9   | —            | —            | —             |
| 14 | Phase Fraction [Molar Basis]                  | 0.0517  | 0.0517       | 0.9109       | 0.0373        |
| 15 | Surface Tension (dyne/cm)                     | —       | —            | 21.26        | 76.17         |
| 16 | Thermal Conductivity (Btu/hr-ft-F)            | —       | 1.159e-002   | 7.144e-002   | 0.3300        |
| 17 | Viscosity (cP)                                | —       | 8.920e-003   | 0.5637       | 1.681         |
| 18 | Cv (Semi-Ideal) (Btu/lbmole-F)                | 40.69   | 11.70        | 43.32        | 16.62         |
| 19 | Mass Cv (Semi-Ideal) (Btu/lb-R)               | 0.4507  | 0.3480       | 0.4492       | 0.9226        |
| 20 | Cv (Btu/lbmole-F)                             | 42.56   | 11.61        | 43.32        | 16.48         |
| 21 | Mass Cv (Btu/lb-R)                            | 0.4715  | 0.3454       | 0.4492       | 0.9147        |
| 22 | Cv (Ent. Method) (Btu/lbmole-F)               | —       | —            | —            | 15.79         |
| 23 | Mass Cv (Ent. Method) (Btu/lb-R)              | —       | —            | —            | 0.8764        |
| 24 | Cp/Cv (Ent. Method)                           | —       | —            | —            | 1.178         |
| 25 | Reid VP at 37.8 C (psig)                      | 21.48   | 723.9        | 4.190        | -13.50        |
| 26 | True VP at 37.8 C (psig)                      | 87.06   | 1223         | 14.82        | -13.50        |
| 27 | Liq. Vol. Flow - Sum(Std. Cond.) (barrel/day) | 167.5   | 5.904        | 160.7        | 0.8478        |
| 28 | Viscosity Index                               | -0.6055 | —            | —            | —             |

### COMPOSITION

#### Overall Phase

Vapour Fraction 0.0517

| COMPONENTS | MOLAR FLOW (lbmole/hr) | MOLE FRACTION | MASS FLOW (lb/hr) | MASS FRACTION | LIQUID VOLUME FLOW (barrel/day) | LIQUID VOLUME FRACTION |
|------------|------------------------|---------------|-------------------|---------------|---------------------------------|------------------------|
| 35         | CO2                    | 0.0071        | 0.0004            | 0.3113        | 0.0002                          | 0.0002                 |
| 36         | H2S                    | 0.0000        | 0.0000            | 0.0000        | 0.0000                          | 0.0000                 |
| 37         | Nitrogen               | 0.0023        | 0.0001            | 0.0647        | 0.0000                          | 0.0000                 |
| 38         | Oxygen                 | 0.0000        | 0.0000            | 0.0011        | 0.0000                          | 0.0000                 |
| 39         | Methane                | 0.3900        | 0.0209            | 6.2572        | 0.0037                          | 0.0085                 |
| 40         | Ethane                 | 0.4154        | 0.0222            | 12.4903       | 0.0074                          | 0.0143                 |
| 41         | Propane                | 0.9795        | 0.0524            | 43.1918       | 0.0256                          | 0.0346                 |
| 42         | i-Butane               | 0.3788        | 0.0203            | 22.0181       | 0.0131                          | 0.0159                 |
| 43         | n-Butane               | 1.1583        | 0.0620            | 67.3275       | 0.0399                          | 0.0469                 |
| 44         | i-Pentane              | 0.8590        | 0.0460            | 61.9742       | 0.0368                          | 0.0404                 |
| 45         | n-Pentane              | 1.0401        | 0.0557            | 75.0420       | 0.0445                          | 0.0484                 |
| 46         | Cyclopentane           | 0.0887        | 0.0048            | 6.2241        | 0.0037                          | 0.0034                 |
| 47         | n-Hexane               | 2.7841        | 0.1491            | 239.9238      | 0.1423                          | 0.1470                 |
| 48         | Cyclohexane            | 0.3987        | 0.0213            | 33.5562       | 0.0199                          | 0.0174                 |
| 49         | n-Heptane              | 2.2957        | 0.1229            | 230.0423      | 0.1364                          | 0.1360                 |
| 50         | Mycyclohexane          | 0.9336        | 0.0500            | 91.6710       | 0.0544                          | 0.0482                 |
| 51         | 224-Mpentane           | 0.0015        | 0.0001            | 0.1716        | 0.0001                          | 0.0001                 |
| 52         | Benzene                | 0.1185        | 0.0063            | 9.2534        | 0.0055                          | 0.0043                 |
| 53         | Toluene                | 0.3179        | 0.0170            | 29.2874       | 0.0174                          | 0.0137                 |
| 54         | E-Benzene              | 0.0461        | 0.0025            | 4.8969        | 0.0029                          | 0.0023                 |
| 55         | p-Xylene               | 0.2950        | 0.0158            | 31.3206       | 0.0186                          | 0.0147                 |
| 56         | n-Octane               | 2.2371        | 0.1198            | 255.5483      | 0.1516                          | 0.1471                 |
| 57         | H2O                    | 0.7060        | 0.0378            | 12.7183       | 0.0075                          | 0.0052                 |
| 58         | n-Nonane               | 0.4291        | 0.0230            | 55.0392       | 0.0326                          | 0.0310                 |
| 59         | n-Decane               | 2.7947        | 0.1496            | 397.6499      | 0.2359                          | 0.2204                 |
| 60         | Total                  | 18.6772       | 1.0000            | 1685.9812     | 1.0000                          | 168.5966               |



ENTERPRISE PRODUCTS OPER  
Bedford, MA  
USA

Case Name: Lindrith Compressor Station\_Winter Case 3.hsc

Unit Set: NewUser1

Date/Time: Thu Jul 28 15:10:52 2016

## Material Stream: Flow to Storage (continued)

Fluid Package: Basis-1

Property Package: Peng-Robinson

### COMPOSITION

#### Vapour Phase

Phase Fraction 5.173e-002

| COMPONENTS    | MOLAR FLOW<br>(lbmole/hr) | MOLE FRACTION | MASS FLOW<br>(lb/hr) | MASS FRACTION | LIQUID VOLUME<br>FLOW (barrel/day) | LIQUID VOLUME<br>FRACTION |
|---------------|---------------------------|---------------|----------------------|---------------|------------------------------------|---------------------------|
| CO2           | 0.0053                    | 0.0054        | 0.2317               | 0.0071        | 0.0192                             | 0.0038                    |
| H2S           | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Nitrogen      | 0.0022                    | 0.0023        | 0.0630               | 0.0019        | 0.0053                             | 0.0011                    |
| Oxygen        | 0.0000                    | 0.0000        | 0.0011               | 0.0000        | 0.0001                             | 0.0000                    |
| Methane       | 0.3521                    | 0.3644        | 5.6485               | 0.1739        | 1.2918                             | 0.2545                    |
| Ethane        | 0.2309                    | 0.2389        | 6.9418               | 0.2137        | 1.3364                             | 0.2633                    |
| Propane       | 0.2160                    | 0.2235        | 9.5235               | 0.2932        | 1.2870                             | 0.2536                    |
| i-Butane      | 0.0328                    | 0.0340        | 1.9076               | 0.0587        | 0.2324                             | 0.0458                    |
| n-Butane      | 0.0687                    | 0.0711        | 3.9943               | 0.1230        | 0.4689                             | 0.0924                    |
| i-Pentane     | 0.0183                    | 0.0189        | 1.3201               | 0.0406        | 0.1450                             | 0.0286                    |
| n-Pentane     | 0.0157                    | 0.0162        | 1.1313               | 0.0348        | 0.1230                             | 0.0242                    |
| Cyclopentane  | 0.0010                    | 0.0010        | 0.0681               | 0.0021        | 0.0082                             | 0.0012                    |
| n-Hexane      | 0.0108                    | 0.0112        | 0.9292               | 0.0286        | 0.0960                             | 0.0189                    |
| Cyclohexane   | 0.0012                    | 0.0013        | 0.1018               | 0.0031        | 0.0089                             | 0.0018                    |
| n-Heptane     | 0.0024                    | 0.0025        | 0.2391               | 0.0074        | 0.0238                             | 0.0047                    |
| Mecyclohexane | 0.0012                    | 0.0012        | 0.1144               | 0.0035        | 0.0101                             | 0.0020                    |
| 224-Mpentane  | 0.0000                    | 0.0000        | 0.0002               | 0.0000        | 0.0000                             | 0.0000                    |
| Benzene       | 0.0004                    | 0.0005        | 0.0346               | 0.0011        | 0.0027                             | 0.0005                    |
| Toluene       | 0.0003                    | 0.0003        | 0.0277               | 0.0009        | 0.0022                             | 0.0004                    |
| E-Benzene     | 0.0000                    | 0.0000        | 0.0012               | 0.0000        | 0.0001                             | 0.0000                    |
| p-Xylene      | 0.0001                    | 0.0001        | 0.0065               | 0.0002        | 0.0005                             | 0.0001                    |
| n-Octane      | 0.0006                    | 0.0006        | 0.0716               | 0.0022        | 0.0070                             | 0.0014                    |
| H2O           | 0.0062                    | 0.0084        | 0.1121               | 0.0035        | 0.0077                             | 0.0015                    |
| n-Nonane      | 0.0000                    | 0.0000        | 0.0044               | 0.0001        | 0.0004                             | 0.0001                    |
| n-Decane      | 0.0001                    | 0.0001        | 0.0094               | 0.0003        | 0.0009                             | 0.0002                    |
| Total         | 0.9663                    | 1.0000        | 32.4832              | 1.0000        | 5.0758                             | 1.0000                    |

#### Liquid Phase

Phase Fraction 0.9109

| COMPONENTS    | MOLAR FLOW<br>(lbmole/hr) | MOLE FRACTION | MASS FLOW<br>(lb/hr) | MASS FRACTION | LIQUID VOLUME<br>FLOW (barrel/day) | LIQUID VOLUME<br>FRACTION |
|---------------|---------------------------|---------------|----------------------|---------------|------------------------------------|---------------------------|
| CO2           | 0.0018                    | 0.0001        | 0.0794               | 0.0000        | 0.0066                             | 0.0000                    |
| H2S           | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Nitrogen      | 0.0001                    | 0.0000        | 0.0017               | 0.0000        | 0.0001                             | 0.0000                    |
| Oxygen        | 0.0000                    | 0.0000        | 0.0001               | 0.0000        | 0.0000                             | 0.0000                    |
| Methane       | 0.0379                    | 0.0022        | 0.6087               | 0.0004        | 0.1392                             | 0.0009                    |
| Ethane        | 0.1845                    | 0.0108        | 5.5484               | 0.0034        | 1.0681                             | 0.0066                    |
| Propane       | 0.7635                    | 0.0449        | 33.6684              | 0.0205        | 4.5500                             | 0.0280                    |
| i-Butane      | 0.3460                    | 0.0203        | 20.1105              | 0.0123        | 2.4504                             | 0.0151                    |
| n-Butane      | 1.0896                    | 0.0640        | 63.3332              | 0.0386        | 7.4356                             | 0.0457                    |
| i-Pentane     | 0.8407                    | 0.0494        | 60.6541              | 0.0370        | 6.6617                             | 0.0410                    |
| n-Pentane     | 1.0244                    | 0.0602        | 73.9107              | 0.0450        | 8.0366                             | 0.0494                    |
| Cyclopentane  | 0.0878                    | 0.0052        | 6.1559               | 0.0038        | 0.5629                             | 0.0035                    |
| n-Hexane      | 2.7733                    | 0.1630        | 238.9946             | 0.1456        | 24.6952                            | 0.1518                    |
| Cyclohexane   | 0.3975                    | 0.0234        | 33.4544              | 0.0204        | 2.9300                             | 0.0180                    |
| n-Heptane     | 2.2933                    | 0.1348        | 229.8032             | 0.1400        | 22.9105                            | 0.1409                    |
| Mecyclohexane | 0.9325                    | 0.0548        | 91.5566              | 0.0558        | 8.1162                             | 0.0499                    |
| 224-Mpentane  | 0.0015                    | 0.0001        | 0.1714               | 0.0001        | 0.0169                             | 0.0001                    |
| Benzene       | 0.1180                    | 0.0069        | 9.2188               | 0.0056        | 0.7155                             | 0.0044                    |



ENTERPRISE PRODUCTS OPER  
Bedford, MA  
USA

Case Name: Lindrith Compressor Station\_Winter Case 3.hsc  
Unit Set: NewUser1  
Date/Time: Thu Jul 28 15:10:52 2016

## Material Stream: Flow to Storage (continued)

Fluid Package: Basis-1  
Property Package: Peng-Robinson

### COMPOSITION

#### Liquid Phase (continued)

Phase Fraction 0.9109

| COMPONENTS | MOLAR FLOW<br>(lbmole/hr) | MOLE FRACTION | MASS FLOW<br>(lb/hr) | MASS FRACTION | LIQUID VOLUME<br>FLOW (barrel/day) | LIQUID VOLUME<br>FRACTION |
|------------|---------------------------|---------------|----------------------|---------------|------------------------------------|---------------------------|
| Toluene    | 0.3176                    | 0.0187        | 29.2598              | 0.0178        | 2.3028                             | 0.0142                    |
| E-Benzene  | 0.0461                    | 0.0027        | 4.8957               | 0.0030        | 0.3853                             | 0.0024                    |
| p-Xylene   | 0.2950                    | 0.0173        | 31.3142              | 0.0191        | 2.4810                             | 0.0153                    |
| n-Octane   | 2.2365                    | 0.1315        | 255.4767             | 0.1557        | 24.7998                            | 0.1525                    |
| H2O        | 0.0023                    | 0.0001        | 0.0414               | 0.0000        | 0.0028                             | 0.0000                    |
| n-Nonane   | 0.4291                    | 0.0252        | 55.0348              | 0.0335        | 5.2321                             | 0.0322                    |
| n-Decane   | 2.7947                    | 0.1643        | 397.6405             | 0.2423        | 37.1595                            | 0.2285                    |
| Total      | 17.0135                   | 1.0000        | 1640.9331            | 1.0000        | 162.6587                           | 1.0000                    |

#### Aqueous Phase

Phase Fraction 3.734e-002

| COMPONENTS    | MOLAR FLOW<br>(lbmole/hr) | MOLE FRACTION | MASS FLOW<br>(lb/hr) | MASS FRACTION | LIQUID VOLUME<br>FLOW (barrel/day) | LIQUID VOLUME<br>FRACTION |
|---------------|---------------------------|---------------|----------------------|---------------|------------------------------------|---------------------------|
| CO2           | 0.0000                    | 0.0000        | 0.0002               | 0.0000        | 0.0000                             | 0.0000                    |
| H2S           | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Nitrogen      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Oxygen        | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Methane       | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Ethane        | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Propane       | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| i-Butane      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| n-Butane      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| i-Pentane     | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| n-Pentane     | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Cyclopentane  | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| n-Hexane      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Cyclohexane   | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| n-Heptane     | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Mycyclohexane | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| 224-Mpentane  | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Benzene       | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Toluene       | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| E-Benzene     | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| p-Xylene      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| n-Octane      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| H2O           | 0.6975                    | 1.0000        | 12.5648              | 1.0000        | 0.8621                             | 1.0000                    |
| n-Nonane      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| n-Decane      | 0.0000                    | 0.0000        | 0.0000               | 0.0000        | 0.0000                             | 0.0000                    |
| Total         | 0.6975                    | 1.0000        | 12.5649              | 1.0000        | 0.8621                             | 1.0000                    |

### K VALUE

| COMPONENTS | MIXED | LIGHT | HEAVY      |
|------------|-------|-------|------------|
| CO2        | 53.38 | 51.38 | 1073       |
| H2S        | —     | —     | —          |
| Nitrogen   | 680.5 | 654.1 | 4.798e+004 |
| Oxygen     | 274.9 | 264.1 | 5.985e+005 |
| Methane    | 170.1 | 163.4 | 8.934e+008 |
| Ethane     | 22.93 | 22.03 | 8.494e+010 |
| Propane    | 5.185 | 4.981 | 2.835e+013 |



ENTERPRISE PRODUCTS OPER  
Bedford, MA  
USA

Case Name: Lindrith Compressor Station\_Winter Case 3.hsc

Unit Set: NewUser1

Date/Time: Thu Jul 28 15:10:52 2016

## Material Stream: Flow to Storage (continued)

Fluid Package: Basis-1

Property Package: Peng-Robinson

### K VALUE

| COMPONENTS    | MIXED      | LIGHT      | HEAVY      |
|---------------|------------|------------|------------|
| i-Butane      | 1.739      | 1.670      | 3.492e+016 |
| n-Butane      | 1.156      | 1.110      | 1.898e+018 |
| i-Pentane     | 0.3989     | 0.3832     | 3.467e+019 |
| n-Pentane     | 0.2806     | 0.2695     | 2.856e+019 |
| Cyclopentane  | 0.2029     | 0.1949     | 2.072e+015 |
| n-Hexane      | 7.126e-002 | 6.846e-002 | 7.119e+022 |
| Cyclohexane   | 5.578e-002 | 5.359e-002 | 8.814e+017 |
| n-Heptane     | 1.907e-002 | 1.832e-002 | 3.108e+026 |
| Mecyclohexane | 2.290e-002 | 2.200e-002 | 4.311e+021 |
| 224-Mpentane  | 2.109e-002 | 2.026e-002 | —          |
| Benzene       | 6.886e-002 | 6.614e-002 | 4.709e+014 |
| Toluene       | 1.733e-002 | 1.664e-002 | 2.036e+018 |
| E-Benzene     | 4.553e-003 | 4.373e-003 | 3.354e+021 |
| p-Xylene      | 3.788e-003 | 3.638e-003 | 1.123e+022 |
| n-Octane      | 5.139e-003 | 4.936e-003 | —          |
| H2O           | 0.1630     | 47.72      | 6.442e-003 |
| n-Nonane      | 1.459e-003 | 1.402e-003 | —          |
| n-Decane      | 4.344e-004 | 4.173e-004 | —          |

# Inlet Gas Analysis

**Meter Number:** —  
**Meter Name:** SJ Lindrith Inlet 3-9-16  
**Location:** Lindrith CS  
**Sample Date:** 3/9/2016  
**File name** SJ LINDRITH INLET 3-9-16\_1.D

**Flow Pressure:** 51  
**Flow Temp:** 49  
**H2O, Lb/MMCF:** —  
**H2S, ppmol:** —  
**Type:** Spot  
**Pulled by:** Blaine Ellis

| Component              | Mol%            | Wt%             | LV%             |
|------------------------|-----------------|-----------------|-----------------|
| Carbon Dioxide         | 0.4520          | 0.9050          | 0.3971          |
| Hydrogen Sulfide       | 0.0000          | 0.0000          | 0.0000          |
| Nitrogen               | 1.6971          | 2.1630          | 0.9612          |
| Oxygen                 | 0.0110          | 0.0160          | 0.0050          |
| Methane                | 75.2957         | 54.9594         | 65.7186         |
| Ethane                 | 11.6789         | 15.9780         | 16.0803         |
| Propane                | 6.5968          | 13.2352         | 9.3568          |
| Isobutane              | 0.8947          | 2.3660          | 1.5073          |
| n-Butane               | 1.8481          | 4.8872          | 2.9996          |
| Isopentane             | 0.4973          | 1.6325          | 0.9363          |
| n-Pentane              | 0.4323          | 1.4189          | 0.8067          |
| Cyclopentane           | 0.0272          | 0.0867          | 0.0414          |
| n-Hexane               | 0.1013          | 0.3973          | 0.2145          |
| Cyclohexane            | 0.0388          | 0.1487          | 0.0680          |
| Other Hexanes          | 0.2320          | 0.9040          | 0.4737          |
| Heptanes               | 0.0876          | 0.3972          | 0.2022          |
| Methylcyclohexane      | 0.0455          | 0.2031          | 0.0940          |
| 2,2,4 Trimethylpentane | 0.0000          | 0.0000          | 0.0000          |
| Benzene                | 0.0133          | 0.0472          | 0.0191          |
| Toluene                | 0.0108          | 0.0451          | 0.0185          |
| Ethylbenzene           | 0.0006          | 0.0028          | 0.0012          |
| Xylenes                | 0.0035          | 0.0170          | 0.0070          |
| C8+ Heavies            | 0.0356          | 0.1897          | 0.0913          |
| <b>Total</b>           | <b>100.0000</b> | <b>100.0000</b> | <b>100.0000</b> |



# Certificate of Analysis

Number: 1030-15080180-001A

Houston Laboratories  
8820 Interchange Drive  
Houston, TX 77054  
Phone 713-660-0901

Gary Turner  
Enterprise Products  
614 Reilly Ave  
Farmington, NM 87401

Aug. 11, 2015

Station Name: Lindrith Compressor  
Sample Point: Pigging Liquids into Plant  
Cylinder No: 8963  
Analyzed: 08/06/2015 17:15:20

Sampled By: GT  
Sample Of: Liquid Spot  
Sample Date: 07/28/2015 11:45  
Sample Conditions: 50 psig, @ 75 °F  
Method: GPA 2103M

## Analytical Data

| Components             | Mol. %  | MW      | Wt. %   | Sp. Gravity | L.V. %  |
|------------------------|---------|---------|---------|-------------|---------|
| Nitrogen               | 0.012   | 28.013  | 0.002   | 0.807       | 0.002   |
| Methane                | 1.524   | 16.043  | 0.149   | 0.300       | 0.400   |
| Carbon Dioxide         | 0.026   | 44.010  | 0.007   | 0.817       | 0.007   |
| Ethane                 | 1.823   | 30.069  | 0.334   | 0.356       | 0.755   |
| Propane                | 3.989   | 44.096  | 1.072   | 0.507       | 1.703   |
| Iso-Butane             | 1.253   | 58.122  | 0.444   | 0.563       | 0.635   |
| n-Butane               | 4.181   | 58.122  | 1.481   | 0.584       | 2.043   |
| Iso-Pentane            | 2.625   | 72.149  | 1.154   | 0.625       | 1.487   |
| n-Pentane              | 3.116   | 72.149  | 1.370   | 0.631       | 1.750   |
| i-Hexanes              | 1.718   | 85.084  | 0.891   | 0.668       | 1.075   |
| n-Hexane               | 2.422   | 86.175  | 1.272   | 0.664       | 1.544   |
| 2,2,4-Trimethylpentane | 0.070   | 114.231 | 0.049   | 0.697       | 0.057   |
| Benzene                | 0.464   | 78.114  | 0.221   | 0.885       | 0.201   |
| Heptanes               | 11.984  | 94.444  | 6.897   | 0.722       | 7.692   |
| Toluene                | 1.991   | 92.141  | 1.118   | 0.872       | 1.033   |
| Octanes                | 12.970  | 107.994 | 8.537   | 0.740       | 9.293   |
| Ethylbenzene           | 0.351   | 106.167 | 0.227   | 0.872       | 0.210   |
| Xylenes                | 2.241   | 106.167 | 1.450   | 0.872       | 1.341   |
| Nonanes                | 6.842   | 125.606 | 5.240   | 0.749       | 5.634   |
| Decanes Plus           | 40.398  | 276.586 | 68.085  | 0.869       | 63.138  |
|                        | 100.000 |         | 100.000 |             | 100.000 |

### Physical Properties

|                                        | Total   | C10+    |
|----------------------------------------|---------|---------|
| Specific Gravity at 60°F               | 0.8058  | 0.8689  |
| API Gravity at 60°F                    | 44.110  | 31.350  |
| Molecular Weight                       | 164.088 | 276.586 |
| Pounds per Gallon (in Vacuum)          | 6.718   | 7.244   |
| Pounds per Gallon (in Air)             | 6.710   | 7.236   |
| Cu. Ft. Vapor per Gallon @ 14.696 psia | 15.536  | 9.939   |

Hydrocarbon Laboratory Manager

### Quality Assurance:

The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



## Certificate of Analysis

Number: 1030-15080180-001A

Houston Laboratories  
8820 Interchange Drive  
Houston, TX 77054  
Phone 713-660-0901

Gary Turner  
Enterprise Products  
614 Reilly Ave  
Farmington, NM 87401

Aug. 11, 2015

Station Name: Lindrith Compressor  
Sample Point: Pigging Liquids into Plant  
Cylinder No: 8963

Sampled By: GT  
Sample Of: Liquid Spot  
Sample Date: 07/28/2015 11:45  
Sample Conditions: 50 psig, @ 75 °F

### Analytical Data

| Test                | Method      | Result  | Units         | Detection Limit | Lab Tech. | Analysis Date |
|---------------------|-------------|---------|---------------|-----------------|-----------|---------------|
| Shrinkage Factor    | Proprietary | 0.9715  |               |                 | JB        | 08/07/2015    |
| Flash Factor        | Proprietary | 35.7893 | Cu.Ft./STBbl. |                 | JB        | 08/07/2015    |
| Color Visual        | Proprietary | Crude   |               |                 | JB        | 08/07/2015    |
| API Gravity @ 60° F | ASTM D-4052 | 40.46   | "             |                 | LC        | 08/10/2015    |

Hydrocarbon Laboratory Manager

Quality Assurance:

The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.