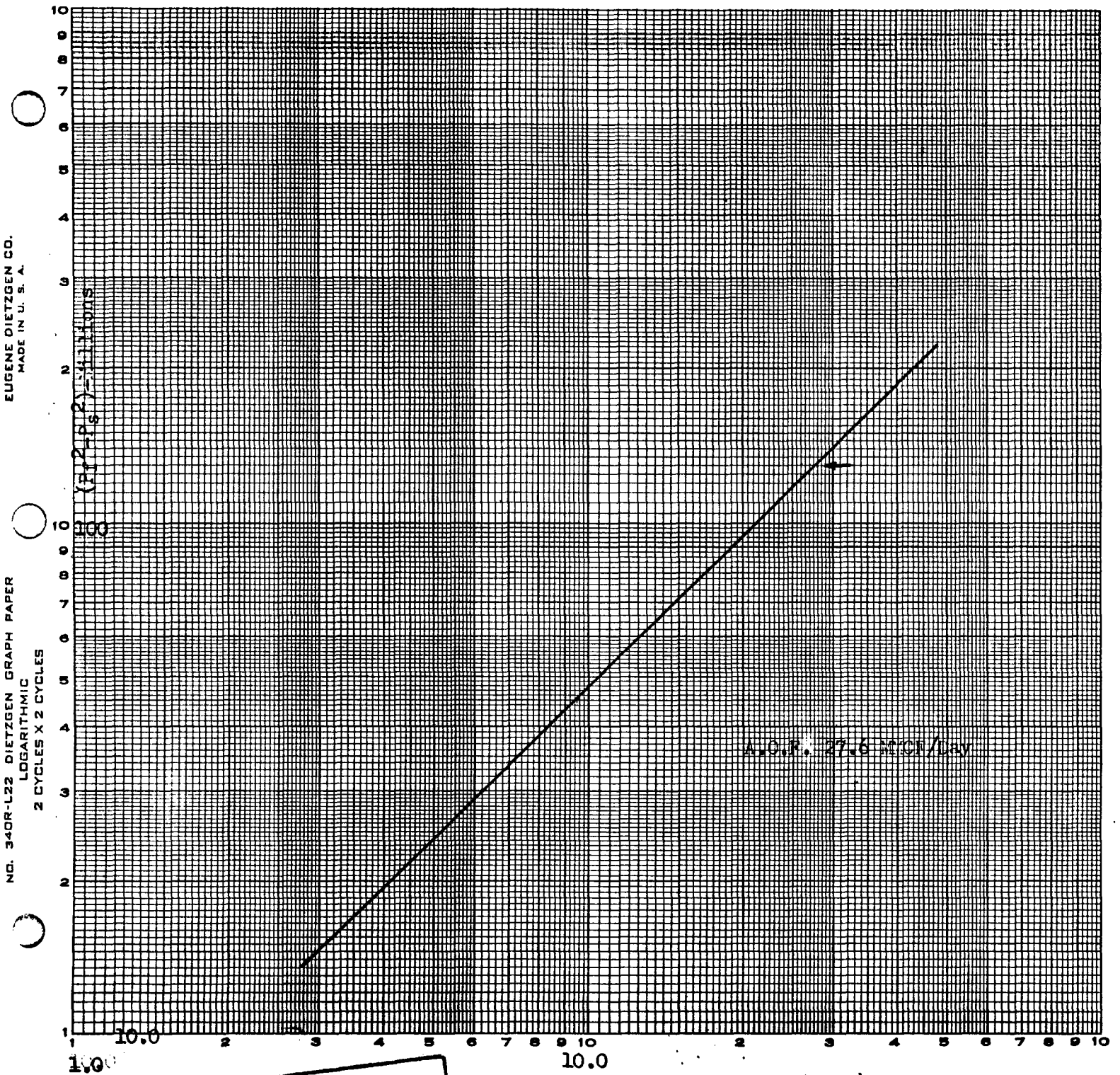


$$Pf^2 = 131.0 \times 10^4$$

$$Ps^2 = 54.3 \times 10^4$$

measured flow rate -  
7.6 MM/day



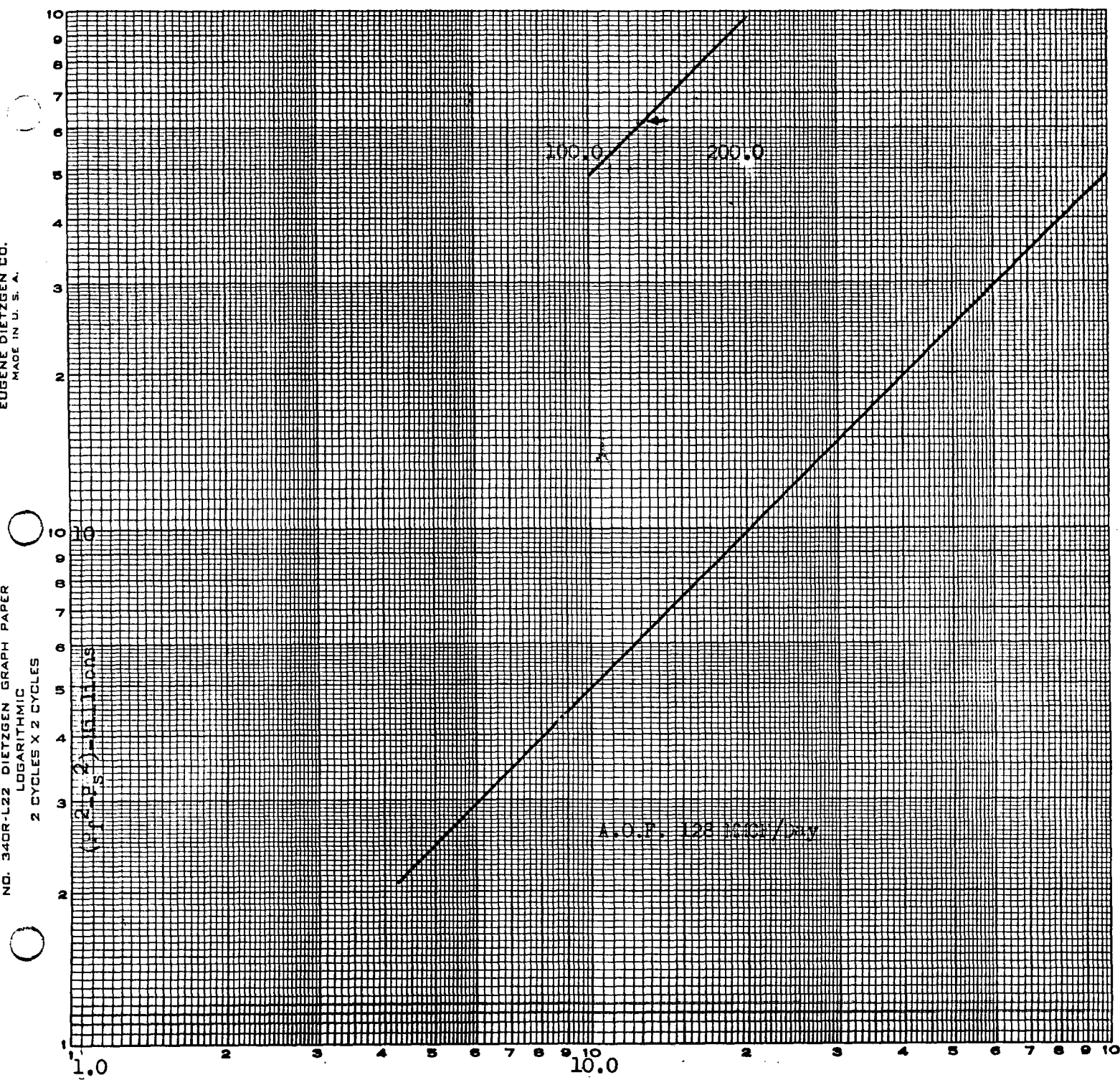
BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 3A  
CASE NO. 3158-3159

Q - MMCF Per Day

Red Hills  
Wolfcamp

11/24/64

$K = 61.55 \times 10^6$   
 $P = 57.25 \times 10^6 \times 8.8 \text{ MM} / \text{day}$



BEFORE EXAMINER NUTTER  
 OIL CONSERVATION COMMISSION  
 EXHIBIT NO. 313  
 CASE NO. 3158-3159

0 - MCF Per Day

Red Hills  
 Pennsylvanian

11/24/60



Fractional Distillation Analysis Results Summary

Petroleum Analytical Laboratory Service, Inc.

P. O. Box 388

Phone EM 6-2866

ODESSA, TEXAS

No. \_\_\_\_\_  
Run No. **7697**  
DATE OF RUN **10-20-64**  
Date Secured **10-20-64**

Flow rate 8.8 MMCF  
A Sample of **GAS, FROM RED HILLS UNIT #1, PENN GAS, 14607-14788 TEST SEP.**  
Secured from **Pure Oil Company**  
At **Midland, Texas** Secured by **C.E. Speight**  
Time **11:30AM** Date **10-19-64**  
Sampling conditions Press. **175psi on container.**  
Temp. \_\_\_\_\_

FRACTIONAL DISTILLATION

Percentage Composition

| MOL%               | LIQ.%                        |
|--------------------|------------------------------|
| Carbon Dioxide.... | <b>0.80</b>                  |
| Air.....           |                              |
| Nitrogen.....      | <b>0.72</b>                  |
| Oxygen.....        |                              |
| Hydrogen sulf..... | <b>sweet to lead acetate</b> |
| Hydrogen.....      |                              |
| Methane.....       | <b>97.66</b>                 |
| Ethane.....        | <b>0.50</b>                  |
| Propane.....       | <b>0.23</b>                  |
| Butanes.....       |                              |
| Iso-Butane.....    | <b>0.04</b>                  |
| N-Butane.....      | <b>0.05</b>                  |
| Pentanes.....      |                              |
| Iso-Pentane.....   |                              |
| N-Pentane.....     |                              |
| Hexanes.....       |                              |
| Heptanes.....      |                              |
| TOTAL.....         | <b>100.00%</b>               |

Calc. Sp. Gr. — **.572**  
Calc. A.P.I. — \_\_\_\_\_  
Calc. Vapor Press. — \_\_\_\_\_ Lb./Sq. In.  
Sp. Gr. \_\_\_\_\_  
Mol. Wt. \_\_\_\_\_

Liquid Content

| Method                                 | G.P.M.       |
|----------------------------------------|--------------|
| Based on Analysis (Butanes)            | <b>0.029</b> |
| Based on Analysis (Pentanes & Heavier) | <b>-</b>     |
| Based on Analysis (Propanes)           | <b>0.063</b> |
| Based on Analysis (Ethane)             |              |

Heating Value  
British Thermal Units Per  
Cu. Ft.  
at 14.65 p.s.i.  
at 60 °F

| Method                 | Gal. | Dry Basis   | Wet Basis  |
|------------------------|------|-------------|------------|
| Based on % Composition |      | <b>1003</b> | <b>985</b> |

Run by **H. Berry** Checked by **T.M. Simpson** Approved by \_\_\_\_\_

Additional Data and Remarks

**BEFORE EXAMINER NUTTER**  
**OIL CONSERVATION COMMISSION**  
**EXHIBIT NO. 54**  
**CASE NO. 3158-3158**

For 50 11/24/64

11/24/64



Fractional Distillation Analysis Results Summary

Petroleum Analytical Laboratory Service, Inc.

P. O. Box 388

Phone EM 6-2866

ODESSA, TEXAS

No. \_\_\_\_\_  
Run No. **7688**  
DATE OF RUN **10-21-64**  
Date Secured **10-20-64**

A Sample of **PENN LIQUID, FROM RED HILLS UNIT #1, 14607-14788 TEST SEP.**  
Secured from **Pure Oil Company**  
At **Midland, Texas** Secured by **C.E. Speight**  
Time **9:30AM** Date **10-19-64**  
Sampling conditions Press. **115psi on container**  
Temp. **100°F**

FRACTIONAL DISTILLATION

Percentage Composition

|                     | MOL%    | LIQ.%   |
|---------------------|---------|---------|
| Carbon Dioxide..... |         |         |
| Air.....            |         |         |
| Nitrogen.....       |         |         |
| Oxygen.....         |         |         |
| Hydrogen sulf.....  |         |         |
| Hydrogen.....       |         |         |
| Methane.....        | 1.17    | 0.32    |
| Ethane.....         | 0.48    | 0.20    |
| Propane.....        | 0.44    | 0.19    |
| Butanes.....        |         |         |
| Iso-Butane.....     | 0.10    | 0.05    |
| N-Butane.....       | 0.44    | 0.22    |
| Pentanes.....       |         |         |
| Iso-Pentane.....    | 0.77    | 0.44    |
| N-Pentane.....      | 0.52    | 0.31    |
| Hexanes.....        | 3.26    | 2.09    |
| Heptanes.....       | 92.82   | 96.18   |
| TOTAL.....          | 100.00% | 100.00% |

Calc. Sp. Gr. \_\_\_\_\_  
Calc. A.P.I. \_\_\_\_\_  
Calc. Vapor Press. \_\_\_\_\_ Lb./Sq. In.  
Sp. Gr. **of C<sub>7</sub>+ .7995**  
Mol. Wt. **of C<sub>7</sub>+ 166.7**

Liquid Content

| Method                                 | G.P.M. |
|----------------------------------------|--------|
| Based on Analysis (Butanes)            |        |
| Based on Analysis (Pentanes & Heavier) |        |
| Based on Analysis (Propanes)           |        |
| Based on Analysis (Ethane)             |        |

Heating Value  
British Thermal Units Per  
Cu. Ft.  
at 14.65 p.s.i.  
at 60 °F

| Method                 | Gal. | Dry Basis | Wet Basis |
|------------------------|------|-----------|-----------|
| Based on % Composition |      |           |           |

Run by **H. Berry** Checked by **T.M. Simpson** Approved by \_\_\_\_\_

Additional Data and Remarks

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. **5B**  
CASE NO. **3158-3159**

11/24/64



## Fractional Distillation Analysis Results Summary

## Petroleum Analytical Laboratory Service, Inc.

P. O. Box 388

Phone EM 6-2866

ODESSA, TEXAS

No. \_\_\_\_\_  
Run No. **7754**  
DATE OF RUN **11-6-64**  
Date Secured **11-4-64**

## RED HILLS UNIT #1

A Sample of **SEPARATOR OFF GAS, HIGH STAGE, FLOW RATE 9.4 MMCF, WOLFCAMP**Secured from **The Pure Oil Company****13,659-13,667**At **Midland, Texas**Secured by **L.L. Harmon**Time **2:00PM**Date **11-3-64**Sampling conditions Press. **1000psi**Temp. **72°F**

## FRACTIONAL DISTILLATION

## Percentage Composition

|                | MOL%                  | LIQ.% |
|----------------|-----------------------|-------|
| Carbon Dioxide | 0.20                  |       |
| Air            |                       |       |
| Nitrogen       | 0.55                  |       |
| Oxygen         |                       |       |
| Hydrogen sulf. | sweet to lead acetate |       |
| Hydrogen       |                       |       |
| Methane        | 87.31                 |       |
| Ethane         | 7.88                  |       |
| Propane        | 2.53                  |       |
| Butanes        |                       |       |
| Iso-Butane     | 0.44                  |       |
| N-Butane       | 0.61                  |       |
| Pentanes       |                       |       |
| Iso-Pentane    | 0.18                  |       |
| N-Pentane      | 0.13                  |       |
| Hexanes        | 0.17                  |       |
| Heptanes       |                       |       |
| TOTAL          | 100.00%               |       |

Calc. Sp. Gr. **.648**  
Calc. A.P.I. \_\_\_\_\_  
Calc. Vapor Press. \_\_\_\_\_ Lb./Sq. In.  
Sp. Gr. \_\_\_\_\_  
Mol. Wt. \_\_\_\_\_

## Liquid Content

| Method                                 | G.P.M. |
|----------------------------------------|--------|
| Based on Analysis (Butanes)            | 0.335  |
| Based on Analysis (Pentanes & Heavier) | 0.191  |
| Based on Analysis (Propanes)           | 0.694  |
| Based on Analysis (Ethane)             |        |

Heating Value  
British Thermal Units Per  
Cu. Ft.  
at 14.65 p.s.i.  
at 60 °F

| Method                 | Gal. | Dry Basis | Wet Basis |
|------------------------|------|-----------|-----------|
| Based on % Composition |      | 1141      | 1121      |

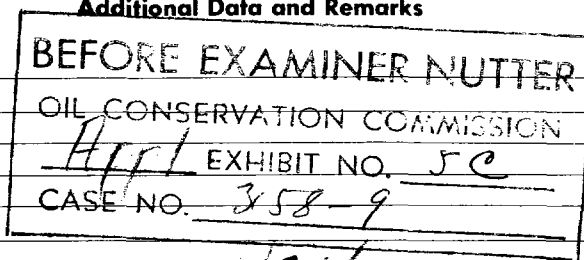
Run by **Simpson & Berry**

Checked by \_\_\_\_\_

Approved by *J. M. Simpson*

## Additional Data and Remarks

H<sub>2</sub>S .004  
RSH .004  
RSR .001  
RSSR .001  
Total .006  
.010





Fractional Distillation Analysis Results Summary

Petroleum Analytical Laboratory Service, Inc.

P. O. Box 388

Phone EM 6-2866

ODESSA, TEXAS

No. ....

Run No. **7755**

DATE OF RUN **11/5/64**

Date Secured **11/4/64**

**RED HILL UNIT. #1 13,622-13,643**

A Sample of **#1 LIQUID LOWER WOLFCAMP 13,659-13667 24.9 BBL/MMCF. Taken 11/3/64**

Secured from **The Pure Oil Company**

At **Midland, Texas**

Secured by **L.L. H & SJB**

Time ~~000000~~ **2:00PM** Date **11/3/64**

Sampling conditions Press. **1025 #**

Temp. **76°F Atmos. 69°F.**

FRACTIONAL DISTILLATION

Percentage Composition

|                    | MOL%          | LIQ.%         |
|--------------------|---------------|---------------|
| Carbon Dioxide.... |               |               |
| Air.....           |               |               |
| Nitrogen.....      |               |               |
| Oxygen.....        |               |               |
| Hydrogen sulf..... |               |               |
| Hydrogen.....      |               |               |
| Methane.....       | <b>11.39</b>  | <b>5.04</b>   |
| Ethane.....        | <b>11.09</b>  | <b>7.36</b>   |
| Propane.....       | <b>11.11</b>  | <b>7.96</b>   |
| Butanes.....       |               |               |
| Iso-Butane.....    | <b>4.91</b>   | <b>4.18</b>   |
| N-Butane.....      | <b>7.38</b>   | <b>6.06</b>   |
| Pentanes.....      |               |               |
| Iso-Pentane.....   | <b>5.00</b>   | <b>4.76</b>   |
| N-Pentane.....     | <b>4.88</b>   | <b>4.60</b>   |
| Hexanes.....       | <b>10.56</b>  | <b>11.29</b>  |
| Heptanes.....      | <b>11.99</b>  | <b>14.42</b>  |
| <b>OCTANES +</b>   | <b>21.69</b>  | <b>34.33</b>  |
| TOTAL.....         | <b>100.00</b> | <b>100.00</b> |

Calc. Sp. Gr. ....  
Calc. A.P.I. ....  
Calc. Vapor Press. .... Lb./Sq. In.  
Sp. Gr. **C-8+ .7689**  
Mol. Wt. **C-8+ 147.2**

Liquid Content

| Method                                 | G.P.M. |
|----------------------------------------|--------|
| Based on Analysis (Butanes)            |        |
| Based on Analysis (Pentanes & Heavier) |        |
| Based on Analysis (Propanes)           |        |
| Based on Analysis (Ethane)             |        |

Heating Value  
British Thermal Units Per  
Cu. Ft.  
at 14.65 p.s.i.  
at 60 °F

Method Gal. Dry Basis Wet Basis

Based on % Composition

Run by **Simpson & Berry**

Checked by .....

Approved by *[Signature]*

Additional Data and Remarks

BEFORE LEADNER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. **5d**  
CASE NO. **3158-9**  
*11-11-64*