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MINES BRANCH DEPARTMENT OF MINES OTTAWA, CANADA

ANALYSES OF SAMPLES OF NATURAL GAS FROM ONTARIO IN 1932 AND 1933

by

P.V.Rosewarne and R.J.Offord

Memorandum Series No.63 July 1934.

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## MINES BRANCH

# DEPARTMENT OF MINES, OTTAWA, CANADA

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### ANALYSES OF SAMPLES OF NATURAL GAS FROM ONTARIO

#### IN 1932 AND 1933

by

P.V.Rosewarne and R.J.Offord

The Division of Fuels and Fuel Testing of the Mines Branch has continued to collect and examine samples of natural gas from different fields in Canada as part of a comprehensive survey of this important natural resource. During 1933 the analyses of 31 samples collected in southwestern Ontario during the fall of 1932 were completed, and 14 additional samples from the same area were collected and analyzed. The results obtained from the examination of all of the above samples are shown in Table I. <u>Discussion of Results of Analyses</u>.

All of the samples were examined by fractionation in the Podbielniak apparatus and by absorption and slow combustion in the Burrell apparatus. The results of these two methods of examination were combined to give a calculated composition of the samples as shown in Table L. It will be observed that except as indicated by two samples a comparatively uniform composition exists throughout the whole area. In sample No. 21 a considerable quantity of the higher hydrocarbons was found. However, on investigation it was learned that at the time this sample was taken the well had not been cleaned out and that several barrels of oil had accumulated at the bottom of the hole. Sample No.2 shows a large percentage of nitrogen present, but a second sample taken later from the same well had a normal amount of nitrogen. The reason for the excessive amount found in the first sample is not known.

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None of the samples examined showed an unusually large proportion of helium. Eight samples contained approximately 0.4%. No sample contained as much as 0.5%. The fields having the highest average were: Brant; Norfolk; and Haldimand. Acknowledgements:

Valuable assistance was received from the Department of Minos of Ontario, and from the various oil and gas companies operating in the field. R.B.Harknoss, Commissioner of Petroleum and Natural Gas for Ontario; B.D.Burn, Inspector of Natural Gas; Carl Lutz, Dominion Natural Gas Company; R.L.Bevan, and L.A.Coste, Union Natural Gas Company; E.P.Rowe, Prairio Gas and Oil Company; A.E.Beck, and Col. J.R.Mitchell, Petrol Oil and Gas Company, demserve special montion. To these and to all others who helped in the work, grateful acknowlodgement is made.

M.S.63

-2-

TABLE I. ANALYSES OF SAMPLES OF NATURAL GAS FROM ONTARIO IN 1932 AND 1933

| Sam-<br>ple<br>No. | Name and<br>Number of Well                                                                     | Date<br>sampled                                                            | Meth-<br>ane<br>%                                     | Eth-<br>ane<br>%                                      | Pro-<br>pane                                | But-<br>ane                            | Pen<br>tane<br>plus             | Car-<br>bon<br>Dio-<br>xide            | Oxy-<br>gen                            | Nit-<br>ro-<br>gen<br>%                 | Hel-<br>ium                                  | Specific<br>Gravity<br>(Air = 1)                   |
|--------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|---------------------------------------------|----------------------------------------|---------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------------------|
| 123456             | Marnum No.1<br>Petrol No.9<br>Petrol No.9<br>Petrol Oil & Gas*<br>Petrol No.56<br>Petrol No.32 | Oct.20/32<br>Oct.20/32<br>Oct.27/33<br>Oct.27/33<br>Oct.27/33<br>Oct.27/33 | BRANT<br>84.5<br>58.8<br>86.9<br>87.4<br>87.2<br>89.6 | FIEL<br>4.3<br>4.1<br>5.9<br>4.8<br>4.2<br>4.2<br>4.2 | D<br>1.6<br>1.3<br>1.9<br>1.6<br>1.3<br>1.2 | 0.5<br>0.5<br>0.7<br>0.5<br>0.5<br>0.5 | 0.3<br>0.3<br>0.2<br>0.1<br>0.4 | Nil<br>1.4<br>0.1<br>0.3<br>0.2<br>0.3 | 0.3<br>Nil<br>0.3<br>0.5<br>0.3<br>0.3 | 8.2<br>32.2<br>3.6<br>4.3<br>5.8<br>3.1 | 0.34<br>0.38<br>0.33<br>0.39<br>0.40<br>0.36 | 0.660<br>0.707<br>0.651<br>0.644<br>0.641<br>0.640 |
| 7<br>8<br>9<br>10  | Union Gas Co.No.6<br>Ellis No.49<br>McLaughlin No.59<br>Union Gas go.No.42                     | Oct.13/32<br>Nov. 3/33<br>Nov. 3/33<br>Nov. 3/33                           | DAWN 1<br>87.5<br>83.2<br>87.0<br>86.6                | FIELD<br>4.6<br>6.8<br>4.7<br>3.6                     | 2.0<br>2.7<br>1.9<br>1.8                    | 1.4<br>1.3<br>1.5<br>0.7               | 0.5<br>0.6<br>0.5<br>0.4        | Nil<br>Nil<br>0.2<br>0.2               | 0.2<br>C.6<br>0.3<br>0.5               | 3.6<br>4.6<br>3.7<br>5.8                | 0.20<br>0.18<br>0.19<br>0.35                 | 0.656<br>0.676<br>0.659<br>0.657                   |
| 11<br>12           | Ajax No.4<br>Raleigh No.1                                                                      | Oct.11/32<br>Nov. 1/33                                                     | DOVER<br>88.9<br>95.1                                 | FIELI<br>5.0<br>3.1                                   | )<br>1.7<br>0.5                             | 0.6                                    | 0.4                             | 0.5<br>Nil                             | 0•3<br>0•3                             | 2.4<br>0.3                              | 0.17<br>0.15                                 | 0.638<br>0.600                                     |
| 13<br>14           | Town of Aylmer*<br>Balcom Well, <b>;</b>                                                       | Oct.13/32<br>Oct.14/32                                                     | ELGII<br>89.1<br>91.2                                 | V FIE<br>4.1<br>4.0                                   | 1.4<br>1.6                                  | 0.6<br>0.7                             | 0.4<br>0.3                      | Nil<br>0.2                             | 0.3                                    | 3.8<br>1.5                              | 0.28<br>0.26                                 | 0.644<br>0.644                                     |
| 15                 | Wiper Well, <sup>9</sup>                                                                       | Oct.12/32                                                                  | 89.5                                                  | <u>EX FIF</u><br>4.0                                  | <u>LD</u><br>1.3                            | 0.5                                    | 0.4                             | Nil                                    | Nil                                    | 4.1                                     | 0.16                                         | 0.630                                              |

M. S. 63

-3-

TABLE I. ANALYSES OF SAMPLES OF NATURAL GAS FROM ONTARIO IN 1932 AND 1933 (Contid)

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| Sam-<br>ple<br>No.                                      | Name and<br>Number of Well                                                                                                                                                                                                                                                                                                                                                   | Date<br>Sampled                                                                                                                                                                                              | Meth-<br>ane<br>%                                                                                                                             | Eth-<br>ane<br>%                                                                        | Pro-<br>pane                                                                            | But-<br>ane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Pen-<br>tane<br>Plus                                                                                                       | Car-<br>bon<br>Dio-<br>xide                                              | Oxy-<br>gen<br>%                                                                                      | Nit-<br>ro-<br>gen                                                                                           | Hel→<br>ium<br>%                                                                                                     | Specific<br>Gravity<br>(Air = 1)                                                                                                                      |         |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                                                         |                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                              | HALDT                                                                                                                                         |                                                                                         | TET.D                                                                                   | . •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                            |                                                                          |                                                                                                       |                                                                                                              |                                                                                                                      |                                                                                                                                                       |         |
| 16<br>17<br>18<br>20<br>22<br>23<br>4<br>26<br>28<br>90 | City of Hamilton <sup>*</sup><br>Town of Simcoe <sup>*</sup><br>Lindsay No.2 <sup>‡</sup><br>North Shore Gas No.3<br>R.Everly Well <sup>‡</sup><br>Amity Gas Co. No.1<br>Brown No.1 <sup>©</sup><br>William Bates No.1 <sup>‡</sup><br>Hirs.L.Ricker No.1<br>Wm.Tomlinson Well<br>Wm.Tomlinson Well<br>Emerson Porritt<br>Albert Brinks<br>Glengrove No.1<br>Anson Tomlinson | Oct. 5/32<br>Oct.15/32<br>Oct.17/32<br>Oct.17/32<br>Oct.17/32<br>Oct.19/32<br>Oct.31/33<br>Oct.19/32<br>Oct.19/32<br>Oct.19/32<br>Oct.19/32<br>Oct.31/33<br>Oct.31/33<br>Oct.31/33<br>Oct.26/33<br>Oct.30/33 | RAIDI<br>83.3<br>82.6<br>83.7<br>89.2<br>84.2<br>87.4<br>83.3<br>86.6<br>87.3<br>93.2<br>84.8<br>87.2<br>84.8<br>87.3<br>93.2<br>84.8<br>87.3 | 7.0<br>6.5<br>6.5<br>7.6<br>5.7<br>6.0<br>7.8<br>4.4<br>5.9<br>6.0<br>6.0<br>6.0<br>6.0 | 2.4<br>2.2<br>2.2<br>2.5<br>2.3<br>9.0<br>1.7<br>2.3<br>1.7<br>1.9<br>0.7<br>2.2<br>9.0 | $\begin{array}{c} 0.6 \\ 0.7 \\ 0.7 \\ 0.7 \\ 2.8 \\ 0.4 \\ 0.4 \\ 0.5 \\ 0.4 \\ 0.5 \\ 0.6 \\ 0.5 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\ 0.6 \\$ | 0.2<br>0.3<br>0.3<br>0.2<br>1.4<br>0.2<br>0.4<br>0.2<br>0.4<br>0.2<br>0.3<br>0.1<br>0.2<br>0.4<br>0.2<br>0.4<br>0.2<br>0.2 | N11<br>N11<br>0.3<br>N11<br>N11<br>N11<br>N11<br>N11<br>N11<br>N11<br>N1 | Nil<br>0.5<br>0.3<br>0.4<br>0.3<br>0.3<br>0.3<br>0.3<br>0.2<br>0.1<br>0.6<br>0.4<br>Nil<br>0.3<br>0.1 | 6.2<br>7.2<br>5.7<br>4.6<br>7.0<br>6.1<br>7.0<br>6.1<br>7.8<br>9.2<br>2.2<br>3.9<br>5.2<br>3.2<br>3.2<br>3.2 | 0.26<br>0.28<br>0.25<br>0.30<br>0.21<br>0.28<br>0.27<br>0.28<br>0.27<br>0.39<br>0.34<br>0.39<br>0.88<br>0.30<br>0.31 | 0.670<br>0.676<br>0.664<br>0.672<br>0.664<br>0.695<br>0.642<br>0.665<br>0.659<br>0.659<br>0.659<br>0.659<br>0.659<br>0.659<br>0.659<br>0.659<br>0.659 |         |
| 31                                                      | Hornsberger No.1                                                                                                                                                                                                                                                                                                                                                             | Oct.31/33                                                                                                                                                                                                    | 84.4                                                                                                                                          | 6.6                                                                                     | 2.3                                                                                     | 0.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.5                                                                                                                        | 0.1                                                                      | 0.4                                                                                                   | 4.6                                                                                                          | 0.25                                                                                                                 | 0.656                                                                                                                                                 |         |
| 32<br>33<br>34                                          | Jennings No.3<br>Town of Grimsby*                                                                                                                                                                                                                                                                                                                                            | Oct.18/32<br>Oct.18/32                                                                                                                                                                                       | LINCO<br>84.0<br>83.7                                                                                                                         | <u>LN FII</u><br>7.0<br>7.1                                                             | <u>ELD</u><br>2.4<br>2.4                                                                | 0.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.3<br>0.4                                                                                                                 | Nil<br>Nil                                                               | 0.3                                                                                                   | 5.1<br>5.2                                                                                                   | 0.24                                                                                                                 | 0.672<br>0.675                                                                                                                                        |         |
| <b>8</b> 5                                              | Hilman No.1 O                                                                                                                                                                                                                                                                                                                                                                | Oct.13/32                                                                                                                                                                                                    | 89.9                                                                                                                                          | FIELI<br>3.7                                                                            | 2.0                                                                                     | 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.5                                                                                                                        | 0.2                                                                      | Nil                                                                                                   | 2.4                                                                                                          | 0.30                                                                                                                 | 0.648                                                                                                                                                 | m       |
| 36<br>37<br>38                                          | Buck Elevator Well<br>W.D.Boyd Well<br>Heemer No.1 0                                                                                                                                                                                                                                                                                                                         | Oct.15/33<br>Oct.15/32<br>Oct.15/32                                                                                                                                                                          | NORF<br>89.8<br>83.1<br>85.9                                                                                                                  | 0LK F<br>3.1<br>5.3<br>4.3                                                              | ELD<br>0.8<br>1.7<br>1.7                                                                | 0.3<br>0.5<br>0.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.2<br>0.2<br>0.5                                                                                                          | N11<br>0.3<br>N11                                                        | 0.4<br>0.3<br>0.3                                                                                     | 5.C<br>8.2<br>6.3                                                                                            | 0.39<br>0.41<br>0.27                                                                                                 | 0.626<br>0.658<br>0.649                                                                                                                               | M. S. 6 |

-4-

TABLE I. ANALYSES OF SAMPLES OF NATURAL GAS FROM ONTARIO IN 1932 AND 1933 (Concluded)

-5-

| Sam-<br>ple<br>No.                     | -<br>Name and<br>Number of Well                                                                                                     | Date<br>Sampled                                                                          | Meth-<br>ane<br>%                                    | Eth-<br>ane<br>%                              | Pro-<br>pane                                  | But-<br>ane<br>1                       | Pen-<br>tane<br>plus                                 | Car-<br>bon<br>Dio-<br>xide                   | 0xy-<br>gen                            | Nit-<br>ro-<br>gen                            | Hel-<br>ium                                          | Specific<br>Gravity<br>(Air = 1)                            |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|----------------------------------------|------------------------------------------------------|-----------------------------------------------|----------------------------------------|-----------------------------------------------|------------------------------------------------------|-------------------------------------------------------------|
|                                        |                                                                                                                                     |                                                                                          | TTBU                                                 | RY FT                                         | ETD.                                          |                                        |                                                      |                                               |                                        |                                               |                                                      |                                                             |
| 39<br>40<br>41<br>42<br>43<br>44<br>45 | Tilbury Field*<br>Union Gas Co.No.234<br>Shanks No.271<br>Union Gas Co. No.13<br>Olga No.4<br>Village of Glenwood*<br>Antaya No.1 9 | Oct. 8/32<br>Oct. 8/32<br>Oct. 8/32<br>Oct. 8/32<br>Oct. 12/32<br>Oct.12/32<br>Oct.12/32 | 88.3<br>90.7<br>88.0<br>86.7<br>85.2<br>87.1<br>87.7 | 4.5<br>4.3<br>4.4<br>5.0<br>6.5<br>4.4<br>5.1 | 1.5<br>1.4<br>1.2<br>1.9<br>2.3<br>1.5<br>1.9 | 0.6<br>0.5<br>0.8<br>0.9<br>0.6<br>0.8 | 0.4<br>0.2<br>0.3<br>0.5<br>0.5<br>0.5<br>0.2<br>0.4 | Nil<br>0.3<br>0.2<br>Nil<br>Nil<br>Nil<br>Nil | 0.2<br>0.3<br>0.3<br>0.6<br>0.2<br>0.2 | 4.3<br>2.1<br>4.9<br>4.6<br>3.8<br>5.8<br>3.8 | 0.17<br>0.18<br>0.19<br>0.23<br>0.19<br>0.16<br>0.11 | 0.637<br>0.638<br>0.640<br>0.658<br>0.655<br>0.640<br>0.640 |
| A ( '                                  | Post to Mall No 1                                                                                                                   | 0-+ 10/70                                                                                | WELLA                                                | ND FI                                         | ELD                                           | 0 6                                    | 0.0                                                  | רידא                                          | N7.2 7                                 | <b>A O</b>                                    | 0.96                                                 | 0 (50                                                       |
| 47                                     | Wown of Welland*                                                                                                                    | Oct.10/32<br>Oct.18/32                                                                   | 86.3                                                 | 7.3                                           | 1.9                                           | 0.6                                    | 0,4                                                  | Nil                                           | 0.3                                    | 3.0                                           | 0.20                                                 | 0.654                                                       |

\* Composite sample

‡ Dominion Gas Company

**0** Southern Ontario Gas Company

O Amity Gas Company

0 Acme Gas Company

M.S.63