9211-P33-3-IRE

# AGAT Laboratories

CALGARY — EDMONTON — GRANDE PRAIRIE

## HYDROCARBON LIQUID ANALYSIS

CALGARY COPY

| CONTAINER IDENTIFICATION | LABORATORY NUMBER |
|---|---|
| C & G 3624 | CG1741A |

OPERATOR NAME: PARAMOUNT RESOURCES LTD. *****

| UNIQUE WELL IDENTIFIER | WELL NAME | ELEVATIONS KB m | GRD m |
|---|---|---|---|
| | PARAMOUNT et al CAMERON C-50 | 692.69 | 688.39 |

| FIELD OR AREA | POOL OR ZONE | NAME OF SAMPLER | COMPANY |
|---|---|---|---|
| CAMERON | SULPHUR POINT | | NORTHLAND |

| TEST TYPE | NO | TEST RECOVERY |
|---|---|---|
| | | |

TEST INTERVAL OR PERFS: 1360.0-1362.0 mKB

SAMPLING POINT: SEPARATOR

* Bubble Point

| | SEPARATOR | TREATER | RESERVOIR | SOURCE | SAMPLED | RECEIVED |
|---|---|---|---|---|---|---|
| GAUGE PRESSURE kPa | 2440 | | | 2440 | | 2100* |
| TEMPERATURE °C | 40 | | | 40 | | 24* |

| DATE SAMPLED (Y-M-D) | DATE RECEIVED (Y-M-D) | DATE REPORTED (Y-M-D) | ANALYST | OTHER INFORMATION |
|---|---|---|---|---|
| 91-02-18 | 91-02-26 | 91-03-08 | SK | 60 10'N 117 30'W |

| COMP | MOLE FRACTION | MASS FRACTION | VOLUME FRACTION |
|---|---|---|---|
| $N_2$ | 0.0008 | 0.0002 | 0.0002 |
| $CO_2$ | 0.0113 | 0.0038 | 0.0036 |
| $H_2S$ | 0.0079 | 0.0020 | 0.0020 |
| $C_1$ | 0.0949 | 0.0115 | 0.0300 |
| $C_2$ | 0.0070 | 0.0016 | 0.0035 |
| $C_3$ | 0.0096 | 0.0032 | 0.0049 |
| $IC_4$ | 0.0032 | 0.0014 | 0.0019 |
| $NC_4$ | 0.0085 | 0.0037 | 0.0050 |
| $IC_5$ | 0.0065 | 0.0035 | 0.0044 |
| $NC_5$ | 0.0074 | 0.0041 | 0.0050 |
| $C_6$ | 0.0180 | 0.0117 | 0.0137 |
| $C_{7+}$ | 0.8249 | 0.9533 | 0.9258 |
| $C_8$ | | | |
| $C_9$ | | | |
| $C_{10}$ | | | |
| $C_{11}$ | | | |
| $C_{12+}$ | | | |
| TOTAL | 1.0000 | 1.0000 | 1.0000 |

### OBSERVED PROPERTIES OF $C_{7+}$ RESIDUE (15/15° C)

| DENSITY | RELATIVE DENSITY | API @ 15.5° C |
|---|---|---|
| 803.8 kg/m³ | 0.8045 | 44.2 |

RELATIVE MOLECULAR MASS: 152.6

### CALCULATED PROPERTIES OF TOTAL SAMPLE (15/15° C)

| DENSITY | RELATIVE DENSITY | API @ 15.5° C |
|---|---|---|
| 781.2 kg/m³ | 0.7819 | 49.3 |

RELATIVE MOLECULAR MASS: 132.1

REMARKS:

File No. : CG1741A
Company : PARAMOUNT RESOURCES LTD.
Well No. :

## PROPERTIES OF C6+ FRACTION

| BOILING POINT RANGE (C) | COMPONENT | MOLE FRACTION | MASS FRACTION | VOLUME FRACTION |
|---|---|---|---|---|
| 36.1- 68.9 | HEXANES----------C6 | 0.0175 | 0.0114 | 0.0134 |
| 68.9- 98.3 | HEPTANES----------C7 | 0.0298 | 0.0220 | 0.0234 |
| 98.3-125.6 | OCTANES----------C8 | 0.0537 | 0.0451 | 0.0468 |
| 125.6-150.6 | NONANES----------C9 | 0.0523 | 0.0493 | 0.0501 |
| 150.6-173.9 | DECANES----------C10 | 0.0908 | 0.0951 | 0.0949 |
| 173.9-196.1 | UNDECANES----------C11 | 0.1285 | 0.1475 | 0.1453 |
| 196.1-215.0 | DODECANES----------C12 | 0.1260 | 0.1577 | 0.1538 |
| 215.0-235.0 | TRIDECANES----------C13 | 0.1235 | 0.1675 | 0.1613 |
| 235.0-252.2 | TETRADECANES----------C14 | 0.0701 | 0.1023 | 0.0982 |
| 252.2-270.6 | PENTADECANES----------C15 | 0.0324 | 0.0506 | 0.0480 |
| 270.6-287.8 | HEXADECANES----------C16 | 0.0179 | 0.0299 | 0.0282 |
| 287.8-302.8 | HEPTADECANES----------C17 | 0.0070 | 0.0124 | 0.0116 |
| 302.8-317.2 | OCTADECANES----------C18 | 0.0023 | 0.0044 | 0.0041 |
| 317.2-330.0 | NONADECANES----------C19 | 0.0003 | 0.0006 | 0.0006 |
| 330.0-344.4 | EICOSANES----------C20 | 0.0001 | 0.0002 | 0.0002 |
| 344.4-357.2 | HENEICOSANES----------C21 | 0.0001 | 0.0001 | 0.0001 |
| 357.2-369.4 | DOCOSANES----------C22 | 0.0000 | 0.0000 | 0.0000 |
| 369.4-380.0 | TRICOSANES----------C23 | 0.0000 | 0.0000 | 0.0000 |
| 380.0-391.1 | TETRACOSANES----------C24 | 0.0000 | 0.0000 | 0.0000 |
| 391.1-401.7 | PENTACOSANES----------C25 | 0.0000 | 0.0000 | 0.0000 |
| 401.7-412.2 | HEXACOSANES----------C26 | 0.0000 | 0.0000 | 0.0000 |
| 412.2-422.2 | HEPTACOSANES----------C27 | 0.0000 | 0.0000 | 0.0000 |
| 422.2-431.7 | OCTACOSANES----------C28 | 0.0000 | 0.0000 | 0.0000 |
| 431.7-441.1 | NONACOSANES----------C29 | 0.0000 | 0.0000 | 0.0000 |
| 441.1 PLUS | TRIACONTANES PLUS-------C30+ | 0.0000 | 0.0000 | 0.0000 |

### AROMATICS

| | | | | |
|---|---|---|---|---|
| 80.0 | BENZENES----------C6 | 0.0016 | 0.0010 | 0.0008 |
| 110.6 | TOLUENE----------C7 | 0.0111 | 0.0075 | 0.0063 |
| 136.2 | ETHYLBENZENE----------C8 | 0.0055 | 0.0043 | 0.0036 |
| 138.4-144.4 | XYLENES----------C8 | 0.0345 | 0.0268 | 0.0227 |
| 168.9 | 1,2,4 TRIMETHYLBENZENE--C9 | 0.0185 | 0.0163 | 0.0136 |

### NAPHTHENES

| | | | | |
|---|---|---|---|---|
| 48.9 | CYCLOPENTANE----------CC5 | 0.0005 | 0.0003 | 0.0003 |
| 72.2 | METHYLCYCLOPENTANE------MCC5 | 0.0036 | 0.0022 | 0.0022 |
| 81.1 | CYCLOHEXANE----------4CC6 | 0.0040 | 0.0024 | 0.0023 |
| 101.1 | METHYLCYCLOHEXANE-------MCC6 | 0.0113 | 0.0081 | 0.0077 |

The above hexanes plus values are based upon a measured mass fraction and a calculated mole fraction, and assume a total hydrocarbon recovery from the chromatographic system.