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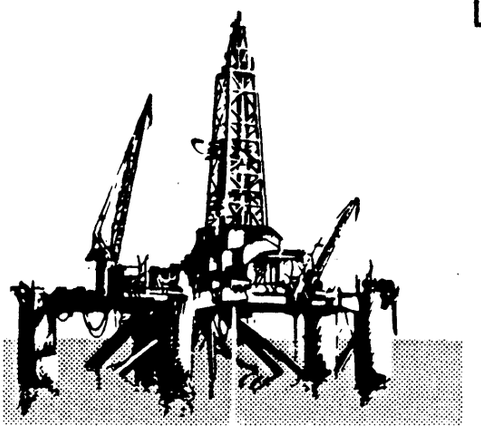

# END OF WELL REPORT

ESSO NORGE A.S.

WELL NUMBER: 7121/1-1

GEARHART

GEARHART GEODATA SERVICES LTD.

# DRILLING MUD DATA (WATER BASED)

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 1.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 10.10.85 | 11.10.85 | 12.10.85 | 13.10.85 | 14.10.85 | 15.10.85 | 16.10.85 | 17.10.85 | 18.10.85 | |
| | TIME | 0100 | 0100 | 0100 | 0100 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 406 | 421 | 430 | 431 | 432 | 453 | 454 | 457 | 521.5 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | |
| MG | MUD GRADIENT (psi/ft) | 0.4628 | 0.4628 | 0.4628 | 0.4628 | 0.4628 | 0.4628 | 0.4628 | 0.4628 | 0.4628 | |
| V | FUNNEL VISCOSITY (sec/qt) | 100+ | 100+ | 100+ | 100+ | 100+ | 100+ | 100+ | 100+ | 100+ | |
| PV | PLASTIC VISCOSITY (cps) | 6 | | | | | | | | | |
| YP | YIELD POINT (lb/100 sq ft) | 28 | | | | | | | | | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | / | / | / | / | / | / | / | / | / | / |
| pH | pH | 11.6 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | |
| F | FILTRATE (ml/30 min) | | | | | | | | | | |
| CK | CAKE THICKNESS (32nd in) | 4 | | | | | | | | | |
| pf | ALKALINITY pm | 1.0 | | | | | | | | | |
| S | ☐ ppm ☒ ppm SALT ☐ gpg CHLORIDE ☐ gpg | 1200 | | | | | | | | | |
| Ca | CALCIUM (% vol) | | | | | | | | | | |
| Sd | SAND CONTENT (% vol) | | | | | | | | | | |
| Sol | SOLIDS CONTENT (% vol) | 3 | | | | | | | | | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 2.

MUD TYPE SPUD MUD/ SEA WATER GEL MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 19.10.85 | 20.10.85 | 21.10.85 | 22.10.85 | 23.10.85 | 24.10.85 | 25.10.85 | 26.10.85 | 27.10.85 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 521.5 | 524.5 | 526.5 | 526.5 | 526.5 | 526.5 | 526.5 | 526.5 | 566 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | | 8.9 | 8.9 | 8.9 | |
| MG | MUD GRADIENT (psi/ft) | 0.4628 | 0.4628 | 0.4628 | 0.4628 | 0.4628 | | 0.4268 | 0.4628 | 0.4628 | |
| V | FUNNEL VISCOSITY (sec/qt) | 100+ | 100+ | 100+ | 100+ | 100+ | | 69 | 68 | 68 | |
| PV | PLASTIC VISCOSITY (cps) | | | | | | | 9 | 9 | 9 | |
| YP | YIELD POINT (lb/100 sq ft) | | | | | | | 46 | 46 | 46 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | / | / | / | / | / | / | / | / | / | / |
| pH | pH | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | | 10.1 | 10.1 | 10.1 | |
| F | FILTRATE (ml/30 min) | | | | | | | 26 | 26 | 26 | |
| CK | CAKE THICKNESS (32nd in) | | | | | | | 2 | 2 | 2 | |
| pf | ALKALINITY pm | | | | | | | 0.7 | 0.7 | 0.7 | |
| S | ☐ ppm ☒ ppm SALT ☐ gpg CHLORIDE ☐ gpg | | | | | | | 7000 | 7000 | 7000 | |
| Ca | CALCIUM (% vol) | | | | | | | | | | |
| Sd | SAND CONTENT (% vol) | | | | | | | 5 | 5 | 5 | |
| Sol | SOLIDS CONTENT (% vol) | | | | | | | | | | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 3.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | DATE | 28.10.85 | 29.10.85 | 30.10.85 | 31.10.85 | 1.11.85 | 2.10.85 | 3.11.85 | 4.11.85 | 5.11.86 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 753 | 916 | 916 | 916 | 916 | 916 | 916 | 596 | 755 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 8.9 | 8.9 | 9.0 | 9.0 | 9.0 | 9.5 | 8.9 | 8.9 | 9.0 | |
| MG | MUD GRADIENT (psi/ft) | 0.4628 | 0.4628 | 0.468 | 0.468 | 0.468 | 0.494 | 0.4628 | 0.4628 | 0.468 | |
| V | FUNNEL VISCOSITY (sec/qt) | 42 | 41 | 40 | 39 | 41 | 40 | 41 | 41 | 43 | |
| PV | PLASTIC VISCOSITY (cps) | 7 | 9 | 8 | 7 | 8 | 6 | 7 | 7 | 8 | |
| YP | YIELD POINT (lb/100 sq ft) | 33 | 26 | 24 | 18 | 21 | 20 | 23 | 23 | 21 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 7/26 | 5/22 | 5/19 | 4/16 | 6/18 | 5/14 | 6/14 | 6/14 | 5/12 | / |
| pH | pH | 9.5 | 9.6 | 9.2 | 9.0 | 9.5 | 9.0 | 9.0 | 9.5 | 9.5 | |
| F | FILTRATE (ml/30 min) | 25 | 27 | 28 | 27 | 31 | 29 | 30 | 29 | 30 | |
| CK | CAKE THICKNESS (32nd in) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| pf | ALKALINITY pm | 0.7 | 0.8 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.4 | 0.2 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 7800 | 8000 | 7000 | 7000 | 6100 | 4800 | 4600 | 4500 | 4300 | |
| Ca | CALCIUM ppm | 240 | 280 | 260 | 200 | | | | | | |
| Sd | SAND CONTENT (% vol) | | | | | | | | | | |
| Sol | SOLIDS CONTENT (% vol) | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 6 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 4.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | DATE | 6.11.85 | 7.11.85 | 8.11.85 | 9.11.85 | 10.11.85 | 11.11.85 | 12.11.85 | 13.11.85 | 21.11.85 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 0200 | 0200 | 2300 | 0200 | 0100 | 0300 | 0300 | 2200 | | |
| | DEPTH (ft) ☒ (m) | 910 | 916 | 593 | 914 | 914 | 916 | 916 | 916 | | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.1 | 10.2 | 9.0 | | |
| MG | MUD GRADIENT (psi/ft) | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.473 | 0.530 | 0.468 | | |
| V | FUNNEL VISCOSITY (sec/qt) | 45 | 44 | 41 | 44 | 44 | 38 | 44 | 44 | WELL SUSPENDED | |
| PV | PLASTIC VISCOSITY (cps) | 6 | 7 | 6 | 7 | 7 | 6 | 8 | 6 | | |
| YP | YIELD POINT (lb/100 sq ft) | 24 | 23 | 21 | 20 | 20 | 16 | 23 | 24 | | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 6 /15 | 6 /16 | 5 / 11 | 9 / 16 | 9 / 16 | 7 / 12 | 8 / 13 | 9/ 18 | | |
| pH | pH | 10.0 | 10.0 | 10.4 | 10.1 | 10.1 | 10.3 | 9.3 | 10.0 | | |
| F | FILTRATE (ml/30 min) | 30.0 | 28.4 | 28.6 | 31.0 | 31.0 | 31.4 | 28.7 | 29.4 | | |
| CK | CAKE THICKNESS (32nd in) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| pf | ALKALINITY pm | 0.4 | 0.5 | 0.6 | 0.3 | 0.3 | 0.4 | 0.15 | 0.4 | | |
| S | ☐ ppm ☒ ppm SALT ☐ gpg CHLORIDE ☐ gpg | 8900 | 11600 | 12200 | 15600 | 15600 | 17200 | 3800 | 2600 | | |
| Ca | CALCIUM ppm | | | | | | | | | | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | | |
| Sol | SOLIDS CONTENT (% vol) | 5 | 5 | 5 | 5 | 5 | 5 | 7 | 5 | | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

GEARHART GEODATA SERVICES LTD.

# DRILLING MUD DATA (WATER BASED)

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 5.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 21.3.86 | 22.3.86 | 23.3.86 | 24.3.86 | 25.3.86 | 26.3.86 | 27.3.86 | 28.3.86 | 29.3.86 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 916 | 922 | 936 | 1004 | 1121 | 1207 | 1207 | 1244 | 1358 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.0 | 9.0 | 9,1 | 9.5 | 9.5 | 9.5 | 9.5+ | 9.6 | 9.6+ | |
| MG | MUD GRADIENT (psi/ft) | 0.468 | 0.468 | 0.473 | 0.494 | 0.494 | 0.494 | 0.496 | 0.499 | 0.501 | |
| V | FUNNEL VISCOSITY (sec/qt) | 41 | 38 | 38 | 44 | 44 | 42 | 42 | 42 | 46 | |
| PV | PLASTIC VISCOSITY (cps) | 9 | 8 | 9 | 12 | 10 | 9 | 8 | 10 | 13 | |
| YP | YIELD POINT (lb/100 sq ft) | 19 | 21 | 23 | 21 | 19 | 21 | 20 | 13 | 16 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 2 /9 | 2 /8 | 3 / 9 | 3 / 13 | 3 / 9 | 3 / 10 | 3 / 8 | 3/ 7 | 3/ 7 | / |
| pH | pH | 10.8 | 10.7 | 10.9 | 10.8 | 10.2 | 10.4 | 10.5 | 10.3 | 9.9 | |
| F | FILTRATE (ml/30 min) | 21.0 | 18.0 | 21.0 | 20.0 | 22.0 | 23.0 | 23.0 | 16.0 | 9.5 | |
| CK | CAKE THICKNESS (32nd in) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.5 | 1 | |
| pf | ALKALINITY pm | 0.5 | 0.5 | 0.6 | 0.6 | 1.3 | 1.5 | 1.4 | 1.4 | | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 3600 | 4500 | 4000 | 5000 | 15000 | 18000 | 19000 | 18000 | 16000 | |
| Ca | CALCIUM ppm | 500 | 440 | 400 | 380 | 280 | 260 | 260 | 240 | 160 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 5 | 5 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

GEARHART GEODATA SERVICES LTD.

# DRILLING MUD DATA (WATER BASED)

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 6.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 30.3.86 | 31.3.86 | 1.4.86 | 2.4.86 | 3.4.86 | 4.4.86 | 5.4.86 | 6.4.86 | 7.4.86 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2300 | 2300 | 2400 | 2400 | 2200 | |
| | DEPTH (ft) ☒ (m) | 1423 | 1487 | 1576 | 1651 | 1672 | 1730 | 1782 | 1835 | 1900 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.6+ | 9.7 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | |
| MG | MUD GRADIENT (psi/ft) | 0.501 | 0.504 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | |
| V | FUNNEL VISCOSITY (sec/qt) | 44 | 47 | 42 | 44 | 44 | 48 | 47 | 47 | 48 | |
| PV | PLASTIC VISCOSITY (cps) | 14 | 14 | 9 | 10 | 10 | 14 | 12 | 12 | 11 | |
| YP | YIELD POINT (lb/100 sq ft) | 17 | 18 | 14 | 13 | 14 | 16 | 14 | 15 | 14 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 3/ 7 | 4/11 | 2 /7 | 3 /7 | 2 /7 | 3 /11 | 3 / 11 | 3/ 12 | 3 /12 | / |
| pH | pH | 9.5 | 9.7 | 10.1 | 9.8 | 9.7 | 10.0 | 10.2 | 10.1 | 10.4 | |
| F | FILTRATE (ml/30 min) | 10.5 | 12.0 | 11.5 | 12.0 | 11.8 | 9.8 | 11.2 | 10.8 | 10.8 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.8 | 0.8 | 1.1 | 0.8 | 0.8 | 0.8 | 0.65 | 0.75 | 0.7 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 17000 | 18000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | |
| Ca | CALCIUM ppm | 180 | 180 | 80 | 80 | 80 | 110 | 300 | 450 | 400 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

GEARHART GEODATA SERVICES LTD.

# DRILLING MUD DATA (WATER BASED)

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 7.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 8.4.86 | 9.4.86 | 10.4.86 | 11.4.86 | 12.4.86 | 13.4.86 | 14.4.86 | 15.4.86 | 16.4.86 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2200 | 2400 | 2400 | 2300 | 2300 | |
| | DEPTH (ft) ☒ (m) | 1942 | 1998 | 2055 | 2056 | 2107 | 2154 | 2154 | 987 | 1131 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | |
| MG | MUD GRADIENT (psi/ft) | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | |
| V | FUNNEL VISCOSITY (sec/qt) | 48 | 48 | 47 | 47 | 49 | 53 | 53 | 53 | 55 | |
| PV | PLASTIC VISCOSITY (cps) | 11 | 11 | 10 | 11 | 12 | 13 | 13 | 13 | 10 | |
| YP | YIELD POINT (lb/100 sq ft) | 14 | 14 | 14 | 15 | 18 | 19 | 18 | 18 | 17 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 3 /12 | 3/ 14 | 3/12 | 3/13 | 4/14 | 4/16 | 4/16 | 4 /16 | 4 /19 | / |
| pH | pH | 10.5 | 10.3 | 10.2 | 10.2 | 10.3 | 10.3 | 10.2 | 10.2 | 10.4 | |
| F | FILTRATE (ml/30 min) | 11.0 | 11.0 | 10.8 | 10.8 | 10.8 | 10.6 | 10.8 | 11.8 | 12.0 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.65 | 0.65 | 0.60 | 0.60 | 0.65 | 0.65 | 0.60 | 0.60 | 0.70 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 22000 | |
| Ca | CALCIUM ppm | 400 | 400 | 500 | 350 | 350 | 350 | 350 | 350 | 350 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 7.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | DATE | 8.4.86 | 9.4.86 | 10.4.86 | 11.4.86 | 12.4.86 | 13.4.86 | 14.4.86 | 15.4.86 | 16.4.86 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 2400 | 2400 | 2400 | 2400 | 2200 | 2400 | 2400 | 2300 | 2300 | |
| | DEPTH (ft) ☒ (m) | 1942 | 1998 | 2055 | 2056 | 2107 | 2154 | 2154 | 987 | 1131 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | |
| MG | MUD GRADIENT (psi/ft) | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | |
| V | FUNNEL VISCOSITY (sec/qt) | 48 | 48 | 47 | 47 | 49 | 53 | 53 | 53 | 55 | |
| PV | PLASTIC VISCOSITY (cps) | 11 | 11 | 10 | 11 | 12 | 13 | 13 | 13 | 10 | |
| YP | YIELD POINT (lb/100 sq ft) | 14 | 14 | 14 | 15 | 18 | 19 | 18 | 18 | 17 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 3 /12 | 3/ 14 | 3/12 | 3/13 | 4/14 | 4/16 | 4/16 | 4 /16 | 4 /19 | / |
| pH | pH | 10.5 | 10.3 | 10.2 | 10.2 | 10.3 | 10.3 | 10.2 | 10.2 | 10.4 | |
| F | FILTRATE (ml/30 min) | 11.0 | 11.0 | 10.8 | 10.8 | 10.8 | 10.6 | 10.8 | 11.8 | 12.0 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.65 | 0.65 | 0.60 | 0.60 | 0.65 | 0.65 | 0.60 | 0.60 | 0.70 | |
| S | ☐ ppm ☒ ppm SALT ☐ gpg CHLORIDE ☐ gpg | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 22000 | |
| Ca | CALCIUM ppm | 400 | 400 | 500 | 350 | 350 | 350 | 350 | 350 | 350 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

GEARHART

GEARHART GEODATA SERVICES LTD.

# DRILLING MUD DATA (WATER BASED)

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 8.

MUD TYPE SEAWATER GEL MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 17.4.86 | 18.4.86 | 19.4.86 | 20.4.86 | 21.4.86 | 22.4.86 | 23.4.86 | 24.4.86 | 25.4.86 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 1260 | 1279.5 | 1338 | 1515 | 1527 | 1619 | 1711 | 1773 | 1815 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.5 | 9.5 | 9.5 | 9.5 | 9.5+ | 9.5 | 9.5 | 9.5 | 9.5 | |
| MG | MUD GRADIENT (psi/ft) | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | |
| V | FUNNEL VISCOSITY (sec/qt) | 53 | 53 | 52 | 49 | 48 | 50 | 49 | 48 | 56 | |
| PV | PLASTIC VISCOSITY (cps) | 10 | 10 | 9 | 9 | 9 | 10 | 11 | 8 | 10 | |
| YP | YIELD POINT (lb/100 sq ft) | 18 | 17 | 19 | 19 | 20 | 21 | 21 | 22 | 21 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 4 /18 | 4 /17 | 4 / 20 | 4 / 19 | 5 / 19 | 5 / 21 | 5/ 19 | 5/ 22 | 5/ 22 | / |
| pH | pH | 10.2 | 10.3 | 10.7 | 10.1 | 10.5 | 10.5 | 10.7 | 10.1 | 10.2 | |
| F | FILTRATE (ml/30 min) | 13.0 | 12.5 | 12.5 | 13.0 | 11.0 | 11.0 | 10.5 | 12.0 | 12.5 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.65 | 0.65 | 0.75 | 0.65 | 0.75 | 0.75 | 0.8 | 0.7 | 0.7 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 22000 | 22000 | 22000 | 22000 | 22000 | 20000 | 19000 | 20000 | 20000 | |
| Ca | CALCIUM ppm | 320 | 320 | 300 | 340 | 340 | 300 | 280 | 280 | 280 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S. RIG ZAPATA UGLAND. WELL 7121/1-1 SHEET NO. 9.

MUD TYPE SEAWATER GEL. MUD CONTRACTOR PROMUD.

| | DATE | 26.4.86 | 27.4.86 | 27.4.86 | 28.4.86 | 29.4.86 | 30.4.86 | 1.5.86 | 2.5.86 | 3.5.86 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 2400 | 2400 | 2400 | 2300 | 2300 | 2300 | 2400 | 2330 | 1300 | |
| | DEPTH ☐ (ft) ☒ (m) | 1815 | 1815 | 1815 | 1818 | 1846 | 1886 | 1925 | 1960 | 1993 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5+ | 9.5+ | |
| MG | MUD GRADIENT (psi/ft) | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.496 | 0.496 | |
| V | FUNNEL VISCOSITY (sec/qt) | 56 | 56 | 56 | 52 | 46 | 44 | 43 | 42 | 49 | |
| PV | PLASTIC VISCOSITY (cps) | 10 | 10 | 10 | 8 | 8 | 8 | 8 | 10 | 10 | |
| YP | YIELD POINT (lb/100 sq ft) | 21 | 21 | 21 | 26 | 18 | 17 | 17 | 17 | 22 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 5 /22 | 5 / 22 | 5/ 22 | 6 / 31 | 4 / 19 | 3 / 16 | 4/ 19 | 3/ 17 | 4 /24 | / |
| pH | pH | 10.2 | 10.2 | 10.2 | 9.6 | 9.5 | 9.4 | 9.4 | 9.2 | 9.6 | |
| F | FILTRATE (ml/30 min) | 12.5 | 12.5 | 12.5 | 16 | 14 | 11.5 | 12.5 | 10 | 12 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1.5 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.7 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 | 0.5 | 0.45 | 0.6 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 20000 | 20000 | 20000 | 20000 | 20000 | 20000 | 21000 | 21000 | 21000 | |
| Ca | CALCIUM ppm | 280 | 280 | 280 | 360 | 240 | 220 | 200 | 180 | 160 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 8 | 6 | 6 | 7 | 6 | 6 | 6 | 6 | 7 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S. RIG ZAPATA UGLAND. WELL 7121/1-1. SHEET NO. 10.

MUD TYPE SEAWATER GEL. MUD CONTRACTOR PROMUD.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 5.5.86 | 6.5.86 | 7.5.86 | 8.5.86 | 9.5.86 | 10.5.86 | 11.5.86 | 12.5.86 | 13.5.86 | |
| | TIME | 1400 | 1400 | 0800 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 1993 | 1993 | 901 | 2115 | 2115 | 2115 | 2115 | 2153 | 2153 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.5+ | 9.5+ | 9.5 | 9.6 | 9.6 | 9.5 | 9.6 | 9.7 | 9.7 | |
| MG | MUD GRADIENT (psi/ft) | 0.496 | 0.497 | 0.494 | 0.499 | 0.499 | 0.494 | 0.499 | 0.504 | 0.504 | |
| V | FUNNEL VISCOSITY (sec/qt) | 49 | 49 | 46 | 47 | 58 | 49 | 47 | 43 | 45 | |
| PV | PLASTIC VISCOSITY (cps) | 10 | 10 | 9 | 9 | 12 | 9 | 8 | 7 | 8 | |
| YP | YIELD POINT (lb/100 sq ft) | 22 | 22 | 19 | 20 | 24 | 19 | 18 | 16 | 18 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 4 / 24 | 4/24 | 3 /18 | 3/18 | 4 /20 | 3/17 | 3 /17 | 2 /14 | 3/ 16 | / |
| pH | pH | 9.6 | 9.6 | 9.3 | 9.5 | 9.5 | 9.4 | 9.4 | 11.4 | 11.2 | |
| F | FILTRATE (ml/30 min) | 12 | 12 | 11.5 | 11.4 | 11.4 | 11.8 | 11.8 | 12 | 12 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.55 | 1. 2 | 0.6 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 21000 | 21000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | |
| Ca | CALCIUM ppm | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 140 | 160 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BA**

OPERATOR ESSO NORGE A/S. RIG ZAPATA UGLAND. WELL 7121/1-1. SHEET NO. 11.

MUD TYPE SEAWATER GEL. MUD CONTRACTOR PROMUD.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 14.5.86 | 15.5.86 | 16.5.86 | 17.5.86 | 18.5.86 | 19.5.86 | 20.5.86 | 21.5.86 | 22.5.86 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 2107 | 2120 | 2149 | 2175 | 2231 | 2236 | 2266 | 2350 | 2407 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | |
| MG | MUD GRADIENT (psi/ft) | 0.499 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | 0.494 | |
| V | FUNNEL VISCOSITY (sec/qt) | 50 | 52 | 50 | 49 | 54 | 52 | 48 | 52 | 50 | |
| PV | PLASTIC VISCOSITY (cps) | 9 | 10 | 7 | 8 | 10 | 10 | 9 | 14 | 14 | |
| YP | YIELD POINT (lb/100 sq ft) | 22 | 20 | 18 | 18 | 19 | 17 | 17 | 17 | 18 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 4/19 | 4/19 | 3/17 | 2/16 | 2/18 | 3/17 | 2/17 | 3/18 | 3/18 | / |
| pH | pH | 11.2 | 10.6 | 11.8 | 11.4 | 11.1 | 10.9 | 10.9 | 10.3 | 9.8 | |
| F | FILTRATE (ml/30 min) | 11.8 | 11.6 | 9.2 | 9.2 | 7.6 | 7.4 | 7.2 | 5.7 | 6.2 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.6 | 0.55 | 0.75 | 0.65 | 0.65 | 0.65 | 0.65 | 0.3 | 0.3 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | |
| Ca | CALCIUM ppm | 140 | 160 | 320 | 380 | 320 | 320 | 300 | 280 | 280 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 7 | 7 | 6 | 6 | 6 | 6 | 5.5 | 6 | 6 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S. RIG ZAPATA UGLAND. WELL 7121/1-1. SHEET NO. 12.

MUD TYPE SEAWATER GEL. MUD CONTRACTOR PROMUD.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 23.5.86 | 24.5.86 | 25.5.86 | 26.5.86 | 27.5.86 | 28.5.86 | 29.5.86 | 30.5.86 | 31.5.86 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 2518 | 2555 | 2620 | 2663 | 2721 | 2777 | 2804 | 2804 | 2804 | |
| MW | WEIGHT ☒ (lb/gal) (g/cc) | 9.5+ | 9.7 | 10.1 | 10.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | |
| MG | MUD GRADIENT (psi/ft) | 0.496 | 0.504 | 0.525 | 0.546 | 0.572 | 0.572 | 0.572 | 0.572 | 0.572 | |
| V | FUNNEL VISCOSITY (sec/qt) | 50 | 51 | 49 | 54 | 58 | 62 | 64 | 64 | 64 | |
| PV | PLASTIC VISCOSITY (cps) | 14 | 12 | 15 | 17 | 20 | 19 | 20 | 20 | 20 | |
| YP | YIELD POINT (lb/100 sq ft) | 15 | 16 | 13 | 15 | 21 | 22 | 26 | 26 | 26 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 5 /14 | 4 /14 | 2 / 11 | 3 / 11 | 5 / 18 | 7 / 22 | 10 / 23 | 10/ 23 | 10/ 23 | / |
| pH | pH | 10.7 | 9.6 | 10.2 | 9.3 | 10.3 | 9.7 | 9.8 | 9.8 | 9.8 | |
| F | FILTRATE (ml/30 min) | 7.6 | 8.0 | 6.8 | 6.0 | 5.8 | 5.8 | 6.4 | 6.4 | 6.4 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | |
| S | ☐ ppm ☒ ppm SALT ☐ gpg CHLORIDE ☐ gpg | 20000 | 20000 | 20000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | |
| Ca | CALCIUM ppm | 400 | 480 | 560 | 400 | 400 | 320 | 320 | 320 | 320 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 6.5 | 6 | 10 | 12 | 13 | 13 | 13 | 13 | 13 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S . RIG ZAPATA UGLAND. WELL 7121/1-1. SHEET NO. 13.

MUD TYPE SEAWATER GEL. MUD CONTRACTOR PROMUD.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 1.6.86 | 2.6.86 | 3.6.86 | 4.6.86 | 5.6.86 | 6.6.86 | 7.6.86 | 8.6.86 | 9.6.86 | |
| | TIME | 2300 | 2400 | 2400 | 2000 | 2400 | 2400 | 2300 | 2300 | 2300 | |
| | DEPTH ☐ (ft) ☒ (m) | 2804 | 2804 | 2804 | 2804 | 2817 | 2845 | 2900 | 2967 | 2998 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 11.4 | 11.4 | 9.6 | 10.4 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| MG | MUD GRADIENT (psi/ft) | 0.592 | 0.592 | 0.499 | 0.540 | 0.520 | 0.520 | 0.520 | 0.520 | 0.520 | |
| V | FUNNEL VISCOSITY (sec/qt) | 57 | 57 | 51 | 48 | 52 | 51 | 51 | 50 | 50 | |
| PV | PLASTIC VISCOSITY (cps) | 21 | 21 | 10 | 8 | 14 | 13 | 14 | 12 | 14 | |
| YP | YIELD POINT (lb/100 sq ft) | 18 | 18 | 14 | 12 | 15 | 14 | 14 | 14 | 14 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 11/19 | 11/19 | 5/11 | 3/9 | 3/11 | 3/8 | 3/10 | 3/9 | 3/10 | / |
| pH | pH | 9.6 | 9.6 | 9.3 | 9.1 | 11.1 | 11.2 | 11.0 | 10.8 | 10.7 | |
| F | FILTRATE (ml/30 min) | 6.8 | 6.8 | 9.0 | 10 | 7.2 | 7 | 6.2 | 6.2 | 5.8 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.1 | 0.1 | 0.1 | 0.06 | 1.7 | 1.6 | 1.5 | 1.4 | 1.4 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 22000 | 22000 | 22000 | 22000 | 20000 | 20000 | 20000 | 21000 | 21000 | |
| Ca | CALCIUM ppm | 320 | 320 | 380 | 340 | 300 | 320 | 300 | 280 | 260 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 14 | 14 | 10 | 9 | 9 | 8 | 8 | 8 | 8 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S. RIG ZAPATA UGLAND. WELL 7121/1-1 SHEET NO. 14.

MUD TYPE SEAWATER GEL. MUD CONTRACTOR PROMUD.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 10.6.86 | 11.6.86 | 12.6.86 | 13.6.86 | 14.6.86 | 15.6.86 | 16.6.86 | 17.6.86 | 18.6.86 | |
| | TIME | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | 1200 | |
| | DEPTH ☐ (ft) ☒ (m) | 3056 | 3117 | 3123 | 3140 | 3140 | 3140 | 3140 | 3140 | 3140 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.9 | |
| MG | MUD GRADIENT (psi/ft) | 0.520 | 0.520 | 0.520 | 0.520 | 0.520 | 0.520 | 0.520 | 0.520 | 0.515 | |
| V | FUNNEL VISCOSITY (sec/qt) | 51 | 51 | 52 | 50 | 50 | 50 | 50 | 50 | 47 | |
| PV | PLASTIC VISCOSITY (cps) | 13 | 13 | 15 | 12 | 12 | 12 | 12 | 12 | 10 | |
| YP | YIELD POINT (lb/100 sq ft) | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 3 / 9 | 3 /10 | 3 /11 | 3 /13 | 3/13 | 3/13 | 3/13 | 3 / 13 | 2 / 7 | / |
| pH | pH | 10.5 | 10.2 | 10.1 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.4 | |
| F | FILTRATE (ml/30 min) | 5.8 | 6.2 | 5.8 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 6.0 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 1.3 | 0.8 | 0.8 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | |
| S | ☒ ppm ☐ ppm SALT ☐ gpg CHLORIDE ☐ gpg | 21000 | 21000 | 22000 | 22000 | 21000 | 21000 | 21000 | 21000 | 21000 | |
| Ca | CALCIUM ppm | 260 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 220 | |
| Sd | SAND CONTENT (% vol) | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | Tr | |
| Sol | SOLIDS CONTENT (% vol) | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 15

MUD TYPE SEAWATER/GEL/POLYMER MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 19.6.86 | 20.6.86 | 21.6.86 | 22.6.86 | 23.6.86 | 24.6.86 | 25.6.86 | 26.6.86 | 27.6.86 | |
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2300 | 1800 | |
| | DEPTH ☐ (ft) ☒ (m) | 3140 | 3140 | 3140 | 3140 | 3140 | 3140 | 3140 | 3138 | 3138 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.8 | 9.8 | 9.8 | |
| MG | MUD GRADIENT (psi/ft) | 0.515 | 0.515 | 0.515 | 0.515 | 0.515 | 0.515 | 0.51 | 0.51 | 0.51 | |
| V | FUNNEL VISCOSITY (sec/qt) | 47 | 47 | 47 | 47 | 47 | 47 | 49 | 49 | 50 | |
| PV | PLASTIC VISCOSITY (cps) | 10 | 10 | 10 | 10 | 10 | 10 | 11 | 11 | 11 | |
| YP | YIELD POINT (lb/100 sq ft) | 13 | 13 | 13 | 13 | 13 | 13 | 14 | 14 | 15 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 2 / 7 | 2 / 7 | 2 / 7 | 2 / 7 | 2 / 7 | 2 / 7 | 3 / 10 | 2 / 8 | 2 / 10 | / |
| pH | pH | 9.3 | 9.3 | 9.3 | 9.3 | 9.2 | 9.2 | 12.0 | 11.5 | 11.2 | |
| F | FILTRATE (ml/30 min) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.8 | 6.0 | 6.0 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 3.0 | 0.4 | 0.3 | |
| S | ☐ ppm ☒ ppm SALT ☐ gpg CHLORIDE ☐ gpg | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | 21000 | |
| Ca | CALCIUM ppm | 220 | 220 | 220 | 220 | 220 | 200 | 480 | 460 | 440 | |
| Sd | SAND CONTENT (% vol) | tr | tr | tr | tr | tr | tr | tr | tr | tr | |
| Sol | SOLIDS CONTENT (% vol) | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 16

MUD TYPE SEAWATER/GEL/POLYMER MUD CONTRACTOR PROMUD

| | DATE | 28.6.86 | 29.6.86 | 30.6.86 | 1.7.86 | 2.7.86 | 3.7.86 | 4.7.86 | 5.7.86 | 6.7.86 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 2400 | 2400 | 0700 | 2400 | 2400 | 2300 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 3138.5 | 3139.5 | 3140 | 3181 | 3205 | 3250 | 3310 | 3370 | 3370 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 8.8 | |
| MG | MUD GRADIENT (psi/ft) | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.458 | |
| V | FUNNEL VISCOSITY (sec/qt) | 45 | 53 | 51 | 58 | 60 | 50 | 50 | 51 | 35 | |
| PV | PLASTIC VISCOSITY (cps) | 10 | 11 | 11 | 11 | 10 | 11 | 13 | 13 | 4 | |
| YP | YIELD POINT (lb/100 sq ft) | 13 | 16 | 14 | 15 | 16 | 15 | 15 | 15 | 6 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 2 / 7 | 2 / 9 | 2 / 8 | 2 / 9 | 2 / 8 | 2 / 8 | 2 / 11 | 2 / 11 | 2 / 4 | / |
| pH | pH | 11.0 | 11.8 | 11.5 | 11.0 | 11.0 | 10.9 | 10.5 | 9.9 | 8.0 | |
| F | FILTRATE (ml/30 min) | 6.2 | 6.2 | 6.2 | 5.6 | 5.8 | 5.6 | 5.4 | 5.4 | 20 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 3.0 | 0.25 | 0.22 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 21000 | 21000 | 21000 | 19000 | 19000 | 19000 | 17000 | 17000 | 21000 | |
| Ca | CALCIUM ppm | 280 | 340 | 320 | 300 | 300 | 300 | 300 | 300 | 240 | |
| Sd | SAND CONTENT (% vol) | tr | tr | tr | tr | 0.25 | 0.25 | 0.5 | 0.25 | 0 | |
| Sol | SOLIDS CONTENT (% vol) | 8 | 8 | 8 | 8 | 8 | 8 | 8.5 | 8 | 1 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A.S. RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 17

MUD TYPE GEL/SEAWATER/POLYMER MUD CONTRACTOR PROMUD

| | DATE | 7.7.86 | 8.7.86 | 9.7.86 | 10.7.86 | 11.7.86 | 12.7.86 | 13.7.86 | 14.7.86 | 15.7.86 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 2400 | 2400 | 2400 | 1900 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 3370 | 3371 | 3385 | 3386 | 3386 | 3386 | 3437 | 3460 | 3479 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | |
| MG | MUD GRADIENT (psi/ft) | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | |
| V | FUNNEL VISCOSITY (sec/qt) | 32 | 45 | 45 | 44 | 44 | 44 | 40 | 49 | 52 | |
| PV | PLASTIC VISCOSITY (cps) | 4 | 8 | 8 | 8 | 8 | 8 | 7 | 12 | 10 | |
| YP | YIELD POINT (lb/100 sq ft) | 6 | 11 | 12 | 11 | 10 | 10 | 11 | 14 | 13 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 2 /4 | 5 /4 | 5 / 4 | 4 / 11 | 3 / 9 | 3 / 9 | 3 / 10 | 3/ 7 | 2/ 5 | / |
| pH | pH | 8.0 | 9.5 | 9.5 | 8.6 | 8.3 | 8.3 | 12.4 | 12.0 | 11.5 | |
| F | FILTRATE (ml/30 min) | 12.0 | 10.0 | 10.0 | 13.0 | 14.0 | 14.0 | 17.0 | 11.0 | 8.0 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.1 | 0.15 | 0.15 | 0.1 | 0.1 | 0.1 | 2.2 | 2.0 | 1.7 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 21000 | 21000 | 21000 | 20000 | 20000 | 20000 | 20000 | 20000 | 20000 | |
| Ca | CALCIUM ppm | 220 | 220 | 220 | 240 | 240 | 240 | 780 | 620 | 560 | |
| Sd | SAND CONTENT (% vol) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | tr | tr | |
| Sol | SOLIDS CONTENT (% vol) | 1.5 | 1.5 | 1.5 | 2 | 2 | 2 | 2 | 3 | 3 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. **DRILLING MUD DATA (WATER BASED)**

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 18

MUD TYPE GEL/SEAWATER/POLYMER MUD CONTRACTOR PROMUD

| | DATE | 16.7.86 | 17.7.86 | 18.7.86 | 19.7.86 | 20.7.86 | 21.7.86 | 22.7.86 | 23.7.86 | 24.7.86 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 1100 | 2400 | 1200 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 3511 | 3513.7 | 3513.7 | 3513.7 | 3513.7 | 3513.7 | 3591 | 3631 | 3809 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.9 | 8.9 | 8.9 | |
| MG | MUD GRADIENT (psi/ft) | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.462 | 0.462 | 0.462 | |
| V | FUNNEL VISCOSITY (sec/qt) | 50 | 50 | 50 | 48 | 51 | 48 | 44 | 43 | 43 | |
| PV | PLASTIC VISCOSITY (cps) | 12 | 12 | 12 | 11 | 12 | 10 | 8 | 8 | 8 | |
| YP | YIELD POINT (lb/100 sq ft) | 14 | 15 | 15 | 13 | 15 | 12 | 9 | 9 | 9 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 2/5 | 2/4 | 2/4 | 2/4 | 2/5 | 2/4 | 2/3 | 2/3 | 1/3 | / |
| pH | pH | 11.4 | 11.0 | 11.0 | 10.7 | 10.5 | 10.5 | 9.9 | 9.5 | 9.6 | |
| F | FILTRATE (ml/30 min) | 6.5 | 6.0 | 6.0 | 6.5 | 6.0 | 7.0 | 7.0 | 8.0 | 9.0 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 1.9 | 1.7 | 1.7 | 1.4 | 1.3 | 1.1 | 0.9 | 0.6 | 0.6 | |
| S | ☐ ppm SALT ☐ gpg ☒ ppm CHLORIDE ☐ gpg | 20000 | 30000 | 20000 | 20000 | 20000 | 20000 | 21000 | 21000 | 21000 | |
| Ca | CALCIUM ppm | 540 | 520 | 520 | 460 | 460 | 420 | 360 | 340 | 320 | |
| Sd | SAND CONTENT (% vol) | tr | tr | tr | tr | tr | tr | tr | tr | tr | |
| Sol | SOLIDS CONTENT (% vol) | 3 | 3 | 3 | 3 | 3 | 3 | 2.5 | 2 | 2.5 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD.

# DRILLING MUD DATA (WATER BASED)

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 19

MUD TYPE GEL/SEAWATER/POLYMER MUD CONTRACTOR PROMUD

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DATE | 25.7.86 | 26.7.86 | 27.7.86 | 28.7.86 | 29.7.86 | 30.7.86 | 31.7.86 | 1.8.86 | 2.8.86 | |
| | TIME | 2300 | 2200 | 2400 | 2400 | 2400 | 2400 | 2400 | 1900 | 2400 | |
| | DEPTH ☐ (ft) ☒ (m) | 3924 | 4033 | 4033 | 4116 | 4238 | 4299 | 4331 | 4406 | 4456 | |
| MW | WEIGHT ☒ (lb/gal) ☐ (g/cc) | 8.9 | 8.9 | 9.1 | 9.0 | 9.0 | 9.1 | 9.1 | 9.1 | 9.1 | |
| MG | MUD GRADIENT (psi/ft) | 0.462 | 0.462 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | |
| V | FUNNEL VISCOSITY (sec/qt) | 45 | 45 | 41 | 47 | 47 | 46 | 45 | 43 | 41 | |
| PV | PLASTIC VISCOSITY (cps) | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 11 | |
| YP | YIELD POINT (lb/100 sq ft) | 13 | 15 | 10 | 14 | 14 | 15 | 15 | 14 | 15 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 2/5 | 2/5 | 1/3 | 2/4 | 2/5 | 2/5 | 2/6 | 2/5 | 2/5 | / |
| pH | pH | 9.5 | 10.0 | 9.7 | 9.5 | 9.4 | 9.4 | 9.5 | 9.3 | 9.2 | |
| F | FILTRATE (ml/30 min) | 8.0 | 10.0 | 11.0 | 11.0 | 11.0 | 12.0 | 10.0 | 10.0 | 10.0 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.6 | 0.7 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | |
| S | ☐ ppm ☒ ppm SALT ☐ gpg CHLORIDE ☐ gpg | 21000 | 20000 | 19000 | 19000 | 16000 | 16000 | 16000 | 17000 | 17000 | |
| Ca | CALCIUM ppm | 300 | 300 | 220 | 320 | 460 | 440 | 380 | 340 | 380 | |
| Sd | SAND CONTENT (% vol) | tr | tr | tr | tr | tr | tr | tr | tr | tr | |
| Sol | SOLIDS CONTENT (% vol) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |

**GEARHART** GEARHART GEODATA SERVICES LTD. DRILLING MUD DATA (WATER BASED)

OPERATOR ESSO NORGE A/S RIG ZAPATA UGLAND WELL 7121/1-1 SHEET NO. 20

MUD TYPE GEL/SEAWATER/POLYMER MUD CONTRACTOR PROMUD

| | DATE | 3/8/86 | 4/8/86 | 5/8/86 | 6/8/86 | 7/8/86 | 8/8/86 | 9/8/86 | 10/8/86 | 11/8/86 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TIME | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | |
| | DEPTH [ ] (ft) [x] (m) | 4469 | 4571 | 4651 | 4695 | 4720 | 4800 | 4887 | 4937 | 4998 | |
| MW | WEIGHT [x] (lb/gal) [ ] (g/cc) | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | |
| MG | MUD GRADIENT (psi/ft) | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | |
| V | FUNNEL VISCOSITY (sec/qt) | 40 | 43 | 43 | 42 | 42 | 43 | 42 | 45 | 45 | |
| PV | PLASTIC VISCOSITY (cps) | 11 | 11 | 12 | 11 | 11 | 12 | 12 | 13 | 12 | |
| YP | YIELD POINT (lb/100 sq ft) | 12 | 14 | 14 | 13 | 13 | 15 | 15 | 19 | 14 | |
| GEL | GEL STRENGTH (lb/100 sq ft) 10"/10' | 2/5 | 2/6 | 2/1 | 2/1 | 2/7 | 2/8 | 2/8 | 2/9 | 2/9 | / |
| pH | pH | 9.2 | 9.7 | 9.7 | 9.6 | 9.0 | 10.0 | 9.1 | 9.8 | 9.6 | |
| F | FILTRATE (ml/30 min) | 10.2 | 10.2 | 10.[illegible] | 10.0 | 9.8 | 9.8 | 10.0 | 10.2 | 10.4 | |
| CK | CAKE THICKNESS (32nd in) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| pf | ALKALINITY pm | 0.4 | 0.5 | 0.5 | 0.4 | 0.35 | 0.4 | 0.4 | 0.4 | 0.4 | |
| S | [ ] ppm [x] ppm SALT [ ] gpg CHLORIDE [ ] gpg | 17000 | 17000 | 17000 | 17000 | 18000 | 18000 | 18000 | 18000 | 18000 | |
| Ca | CALCIUM ppm | 420 | 580 | 520 | 480 | 440 | 360 | 380 | 400 | 400 | |
| Sd | SAND CONTENT (% vol) | tr | tr | tr | tr | tr | tr | tr | tr | tr | |
| Sol | SOLIDS CONTENT (% vol) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| O | OIL CONTENT (% vol) | | | | | | | | | | |
| | | | | | | | | | | | |