9111-C80-3-1

INTERNATIONAL DRILLING FLUIDS CORPORATION
#300, 300 - 5th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 3C4
TELEPHONE: (403) 266-0722
FAX: (403) 237-8331



# WELL SUMMARY

# FOR

# COLUMBIA GAS DEVELOPMENT OF CANADA

# COLUMBIA et al KOTANEELEE YT-I-48

# WELL SUMMARY

# FOR

# COLUMBIA GAS DEVELOPMENT OF CANADA

# COLUMBIA et al KOTANEELEE YT-I-48

CONTENTS



PREPARED BY


INTERNATIONAL DRILLING FLUIDS

TECHNICAL SERVICES DEPARTMENT


JULY 1991

**COLUMBIA GAS DEVELOPMENT OF CANADA**

**COLUMBIA et al KOTANEELEE YT-I-48**

**WELL DATA**

| | |
|---|---|
| **RIG:** | KENTING HI-TOWER #07 |
| **DATE SPUDDED:** | RE-ENTRY APRIL 29, 1991 |
| **DATE RIG RELEASED:** | JUNE 24, 1991 |
| **TOTAL DEPTH:** | 3915m |
| **TOTAL DAYS:** | 58 |

| CASING | DEPTH | FLUID TYPE | DAYS | INTERVAL COST PROGRAMMED | ACTUAL |
|---|---|---|---|---|---|
| 178mm (Liner) | 3273m | Gel/Chemical/Wtd | 26 | $ 12,040.00 | $ 27,242.50 |
| 127mm | 3915m | Polymer/Wtd | 32 | 70,340.00 | 117,875.80 |
| | | **WELL TOTAL** | | **$ 82,380.00** | **$ 145,118.30** |

**OPERATOR REPRESENTATIVE:** Mr. Harold Rugg
Mr. Bob Toole
Mr. Neil Bliss

**CONTRACTOR REPRESENTATIVE:** Mr. Jim Signer
Mr. Phil Bosomworth

**IDF ENGINEER:** Mr. Rick Reinhart
Mr. Jim Wieler

**All costs based on field estimates and at published book price.**

**COLUMBIA GAS DEVELOPMENT OF CANADA**

**COLUMBIA et al KOTANEELEE YT-I-48**

**MATERIAL CONSUMPTION BY INTERVAL**

**HOLE SIZE:** **178mm CASING**

**FLUID TYPE:** **GEL/CHEMICAL/WTD**

| PRODUCT | UNIT SIZE | QUANTITY | UNIT PRICE | TOTAL COST |
|---|---|---|---|---|
| Gel | 100lb | 390 | $ 10.00 | $ 3,900.00 |
| Barite | 40kg | 1629 | 12.50 | 20,362.00 |
| Caustic Soda | 50lb | 30 | 30.00 | 900.00 |
| Soda Ash | 40kg | 12 | 20.00 | 240.00 |
| Sulban | 19kg | 6 | 250.00 | 1,500.00 |
| Sodium Bicarbonate | 100lb | 5 | 40.00 | 140.00 |
| Sawdust | sacks | 28 | 5.00 | 137.20 |

**INTERVAL TOTAL** **$ 27,242.50**

## COLUMBIA GAS DEVELOPMENT OF CANADA

## COLUMBIA et al KOTANEELEE YT-I-48

**MATERIAL CONSUMPTION BY INTERVAL**

**HOLE SIZE:** **152mm**

**FLUID TYPE:** **POLYMER/WTD**

| PRODUCT | UNIT SIZE | QUANTITY | UNIT PRICE | TOTAL COST |
|---|---|---|---|---|
| Barite | 40kg | 2260 | $ 12.50 | $ 28,250.00 |
| Caustic Soda | 50lb | 44 | 30.00 | 1,320.00 |
| Soda Ash | 40kg | 28 | 20.00 | 560.00 |
| Sulban | 19kg | 14 | 250.00 | 3,500.00 |
| Lime | 25kg | 20 | 8.58 | 171.60 |
| Sawdust | sacks | 160 | 5.00 | 800.00 |
| Kwikseal | 40lb | 75 | 26.00 | 1,950.00 |
| **IDF-FLR** | 50lb | 45 | 160.00 | 7,200.00 |
| Drispac S. Lo | 50lb | 56 | 162.40 | 9,094.40 |
| ASP-721 | 20L | 56 | 135.00 | 7,560.00 |
| **IDVIS D** | 25kg | 40 | 420.00 | 16,800.00 |
| PTS-200 | 20L | 69 | 260.00 | 17,940.00 |
| X-Cide | 6lb | 40 | 140.00 | 5,600.00 |
| Sodium Sulfite | 50lb | 30 | 49.00 | 1,470.70 |
| Defoamer | 20L | 19 | 150.00 | 2,850.00 |
| Flo Plex | 50lb | 21 | 125.00 | 2,625.00 |
| Glass Beads | 50lb | 36 | 80.00 | 2,880.00 |
| **IDF FCL** | 25kg | 10 | 32.00 | 320.00 |
| Visplex | 25kg | 1 | 225.00 | 225.00 |
| Celloflake | 25lb | 40 | 23.10 | 924.00 |
| Mica | 25kg | 20 | 15.89 | 317.80 |
| DFLC | 25lb | 31 | 178.00 | 5,518.00 |
| | | **INTERVAL TOTAL** | | **$ 117,875.80** |

**COLUMBIA GAS DEVELOPMENT OF CANADA**

**COLUMBIA et al KOTANEELEE YT-I-48**

## MATERIAL CONSUMPTION BY INTERVAL

## TOTALS FOR WELL

| PRODUCT | UNIT SIZE | QUANTITY | UNIT PRICE | TOTAL COST |
|---|---|---|---|---|
| Mica | 25kg | 20 | $ 15.89 | $ 317.80 |
| Gel | 100lb | 390 | 10.00 | 3,900.00 |
| Barite | 40kg | 3889 | 12.50 | 48,612.50 |
| Caustic Soda | 50lb | 74 | 30.00 | 2,220.00 |
| Soda Ash | 40kg | 40 | 20.00 | 800.00 |
| Sulban | 19kg | 20 | 250.00 | 5,000.00 |
| Sodium Bicarbonate | 100lb | 5 | 40.00 | 200.00 |
| Sawdust | sacks | 188 | 5.00 | 940.00 |
| Lime | 25kg | 20 | 8.58 | 171.60 |
| Kwikseal | 40lb | 56 | 26.00 | 1,950.00 |
| **IDF-FLR** | 50lb | 45 | 160.00 | 7,200.00 |
| Drispac | 50lb | 56 | 162.40 | 9,094.40 |
| ASP-721 | 20L | 56 | 135.00 | 7,560.00 |
| **IDVIS D** | 25kg | 40 | 420.00 | 16,800.00 |
| PTS-200 | 20L | 69 | 260.00 | 17,940.00 |
| **IDF FCL** | 25kg | 10 | 32.00 | 320.00 |
| X-Cide | 6lb | 40 | 140.00 | 5,600.00 |
| Sodium Sulfite | 50lb | 30 | 49.00 | 1,470.00 |
| Defoamer | 20L | 19 | 150.00 | 2,850.00 |
| Glass Beads | 50lb | 36 | 80.00 | 2,880.00 |
| Visplex | 25kg | 1 | 225.00 | 225.00 |
| Flo Plex | 50lb | 21 | 125.00 | 2,625.00 |
| Celloflake | 25lb | 40 | 23.10 | 924.00 |
| DFLC | 25lb | 31 | 178.00 | 5,518.00 |

**WELL TOTAL** **$ 145,118.30**

**COLUMBIA GAS DEVELOPMENT OF CANADA**

**COLUMBIA et al KOTANEELEE YT-I-48**

## DISCUSSION BY INTERVALS

**HOLE SIZE:** **178mm CASING**

**MUD TYPE:** **GEL/CHEMICAL (Weighted)**

Mixed 90m³ of kill mud at 1200kg/m³. Displaced the hole to mud and built volume increasing the yeild point to a level high enough to suspend the Barite. The possibility of $H_2S$ required raising and controlling the pH at 11.0 with Caustic Soda. Also pre-treated with 1.6kg/m³ of Sulban ($H_2S$ Scavenger). Mixed a Barite pill prior to each trip (45 sacks) which continued to increase the density. Controlled the density at 1200kg/m³ with water dilution at 20/L min. when circulating. Due to the high bottom hole temperature of approximately 350°F the viscosity at the shaker was 20 to 40 sec/L higher than at the suction. Set a bridge plug at 3331 metres. Whipstock packer at 3277 metres, logged and ran in with mill. Milled a window in the 178mm casing. Kicked off and drilled 152mm hole to 3290 metres.

**HOLE SIZE:** **152mm**

**MUD TYPE:** **POLYMER (Weighted)**

Pre-mixed a weighted Polymer system on May 25, 1991. Displaced the hole over to the Polymer system and built volume and condition the mud. Drilled ahead, mixing 1 jug of X-Cide and 3 pails PTS-200 daily to prevent the Polymers from breaking down due to the high bottom hole temperature (350°F+). Maintained the viscosity at 35-45 s/L using **IDVIS D** and ASP-721. Controlled pH at 10.5 using Caustic Soda. The Yield point was 10 (Pa) until 3435 metres and then started to climb to 14. Increased $H_2O$ additions and added 27 sacks **IDF FCL** to lower the yield point. ASP-721 additions were stopped on June 8th at 3530 metres and resumed on June 17th at 3680. The fluid loss climbed from 10mL to 37mL. Used Drispac S. Lo and **IDF-FLR** to control the filtrate. Fluid loss was very unstable until additions of Flo Plex (3.7kg/m³) at 3800 metres. Fluid loss dropped below 8mL.

While drilling from 3784 metres - 3822 metres, the hole took approximately 8m³ fluid. Prior to a trip out with Bit #17, a 14m³ L.C.M. pill was spotted in the annulus. No further losses were encountered while drilling. TD was 3915 metres. Logged and ran 127mm liner. Lost approximately 21m³ while running liner. Pumped L.C.M. and by passed shaker screens while circulating prior to cementing.

COLUMBIA GAS DEVELOPMENT OF CANADA

COLUMBIA et al KOTANEELEE YT-I-48

## CONCLUSIONS AND RECOMMENDATIONS

**HOLE SIZE:** **178mm CASING**

**MUD TYPE:** **GEL/CHEMICAL (Weighted)**

Pre-mixed a weighted Gel system prior to drilling out the bridge plug. The density was raised to 1200kg/m$^3$ due to expected gas pressures. Maintained the pH at 10.5-11.0 and pre-treated with .6kg/m$^3$ Sulban due to the possibility of $H_2S$. This mud system was used to cut a window in the casing at 3273 metres with no problems.

**HOLE SIZE:** **152mm**

**MUD TYPE:** **POLYMER**

Pre-mixed and displaced the hole with a weighted Polymer system after the window was cut in the casing. The Polymer system was used to prevent any damage to the producing formation. The density was controlled in the 1180-1210kg/m$^3$ range due to the possibility of high formation pressures. The hole was directionally drilled to stay away from the old hole. Fished for cones at 3664 metres and 3695 metres. The hole was in good shape and no problems were encountered other then the difficulty keeping the fluid loss down. Flo Plex was added to lower fluid loss below 12mL and no further problems were reported.

## COLUMBIA GAS DEVELOPMENT OF CANADA

## COLUMBIA et al KOTANEELEE YT-I-48

### PROGRAMMED PRODUCT COST DISCUSSION

| | |
|---|---|
| **Programmed Product Cost** | **$ 82,380.00** |
| **Actual Cost** | **$ 145,118.30** |

### PRODUCT COST SUMMARY vs PROGRAMMED COST

| Product | Programmed Usage | Actual Usage | Cost Difference | Reason For Use |
|---|---|---|---|---|
| Bentonite | 200 | 390 | $ 1,900.00 | viscosity |
| Barite | 1800 | 3889 | 26,112.50 | density |
| Bicarbonate | 50 | 5 | (1,800.00) | cement contamination |
| Caustic Soda | 42 | 74 | 960.00 | pH control |
| **IDBOND** (ASP 721) | 50 | 56 | 810.00 | shale control |
| **IDF FCL** | 40 | 10 | (960.00) | thinner |
| Soda Ash | 5 | 40 | 700.00 | water hardness control |
| X-Cide 207 | 20 | 40 | 2,800.00 | Biocide |
| **IDF-FLR** (Drispac) | 60 | 101 | 6,560.00 | fluid loss |
| DFLC | 30 | 31 | 178.00 | thinner |
| **IDVIS D** | 25 | 40 | 6,300.00 | viscosity |
| PTS 200 | 80 | 69 | (2,860.00) | temperature stability |
| Mica | -- | 20 | 317.80 | LCM |
| Sulban | -- | 20 | 5,000.00 | $H_2S$ Scavenger |
| Sawdust | -- | 188 | 940.00 | LCM |
| Lime | -- | 20 | 171.60 | camp use |
| Kwik-Seal | -- | 56 | 1,950.00 | LCM |
| Sodium Sulphite | -- | 30 | 1,470.00 | polymer stability |
| **DEFOAMER** | -- | 19 | 2,850.00 | gas entrapment |
| Glass Beads | -- | 36 | 2,880.00 | torque reducer |
| **VISPLEX** | -- | 1 | 225.00 | viscosity |
| **FLOPLEX** | -- | 21 | 2,625.00 | fluid loss |
| Celloflake | -- | 40 | 924.00 | LCM |

**COLUMBIA GAS DEVELOPMENT OF CANADA**

**COLUMBIA et al KOTANEELEE YT-I-48**

## PRODUCT USE DISCUSSION

### WORKOVER

The product cost for the workover section of the re-entry was $15,000.00 over our estimated program cost. This overrun was due to the time spent on this section (estimated 4 days, actual 26 days) and the Barite used for trip pills during this time ($12,000.00). Extra Bentonite, Caustic Soda and four pails of Sulban accounted for the balance of the cost in excess of the estimate.

### RE-DRILL

The re-drill section of the project was accomplished within the programmed time frame, but the product cost was $47,500.00 above the programmed estimate. Barite use was again the biggest reason as about $14,000.00 over the programmed estimate was used. Trip pills and lost circulation accounted for the use. The centrifuge was used to reduce the density as it climbed above levels required for pressure control due to the many trip pills used.

Fluid loss control was the only drilling fluid problem experienced on this well. The programmed combination of **IDF-FLR**, Drispac, PTS 200 and Sodium Sulphite could not stabilize the fluid loss once bottom hole temperatures climbed to the expected high levels. **FLOPLEX** was brought to location and used to stabilize the fluid loss. Fluid loss control contributed to $7,800.00 of the cost over programmed estimate.

Lost circulation while drilling and running liner accounted for $4,200.00 of lost circulation material and losses of $7,200.00 of mud. The mud was on standby in a premix tank on location, but the cost to build the additional volume had not been included in our estimate.

Glass Beads were used to reduce torque between the casing and drillstring when kicking off ($2,880.00). Scavenger to control hydrogen sulphide ($5,000.00), Biocide to ensure bacteria did not become a problem ($2,800.00 above estimate) and **DEFOAMER** to reduce gas entrapment ($2,850.00) accounted for the balance of the cost over programmed estimate.

## COLUMBIA GAS DEVELOPMENT OF CANADA

## COLUMBIA et al KOTANEELEE YT-I-48

### FUTURE AREA WELLS or RE-ENTRIES

### PROGRAM RECOMMENDATIONS

1. The Polymer system is the best system to use on main hole or on a re-entry section in this area. It provides shale stability if these sections are in open hole, does not flocculate due to the high bottom hole temperatures and provides even cleaning ability through the different annular sizes. In addition, it appears that no formation damage was done as the well cleaned up and is producing as expected.

2. Programs for fluid loss control in the area will have to include product equivalent to **FLOPLEX** in the Polymer system. Conventional fluid loss polymers along with polymer stabilizers could not control the fluid loss adequately.

3. The balance between losses or gains from the producing formation appear to be very close, whole mud loss occurred both drilling and when running the casing. Although the losses were not severe on this well potential for serious problems exist and should be planned for. High mud weight to fight pressure may contribute to losses that would cause a serious well control problem.

4. Use a storage shed for mud products on location. Product bags were on location for over three (3) months and the shrink wrap started to break down. Product loss could have been a greater problem if the weather turned worse.

## COLUMBIA GAS DEVELOPMENT OF CANADA

## COLUMBIA et al KOTANEELEE YT-I-48

### MATERIAL SUPPLY RECORD

| PRODUCT | RECEIVED | RETURNED | USED | COST | TOTAL |
|---|---|---|---|---|---|
| Mica | 20 | 0 | 20 | $ 15.89 | $ 317.80 |
| Gel | 665 | 275 | 390 | 10.00 | 3,900.00 |
| Caustic Soda | 210 | 136 | 74 | 30.00 | 2,220.00 |
| Barite | 6196 | 2307 | 3889 | 12.50 | 48,612.50 |
| Soda Ash | 40 | 0 | 40 | 20.00 | 800.00 |
| Sulban | 100 | 80 | 20 | 250.00 | 5,000.00 |
| Lime | 20 | 0 | 20 | 8.58 | 171.60 |
| Sodium Bicarbonate | 60 | 55 | 5 | 40.00 | 200.00 |
| Sawdust | 288 | 100 | 188 | 4.90 | 940.00 |
| **IDF-FLR** | 80 | 35 | 45 | 160.00 | 7,200.00 |
| Drispac S. Lo | 80 | 24 | 56 | 162.40 | 9,094.40 |
| ASP-721 | 80 | 24 | 56 | 135.00 | 7,560.00 |
| **IDVIS D** | 80 | 40 | 40 | 420.00 | 16,800.00 |
| PTS-200 | 158 | 89 | 69 | 260.00 | 17,940.00 |
| **IDF FCL** | 60 | 50 | 10 | 32.00 | 320.00 |
| X-Cide | 42 | 2 | 40 | 140.00 | 5,600.00 |
| Sodium Sulfite | 30 | 0 | 30 | 49.00 | 1,470.00 |
| Kwikseal | 150 | 75 | 75 | 26.00 | 1,950.00 |
| Defoamer | 20 | 1 | 19 | 150.00 | 2,850.00 |
| Visplex | 10 | 9 | 1 | 225.00 | 225.00 |
| Celloflake | 40 | 0 | 40 | 23.10 | 924.00 |
| Glass Beads | 64 | 28 | 36 | 80.00 | 2,880.00 |
| Flo Plex | 56 | 35 | 21 | 125.00 | 2,625.00 |
| DFLC | 35 | 4 | 31 | 178.00 | 5,518.00 |

| | |
|---|---|
| **MATERIAL COST** | **$ 145,118.30** |
| **ENGINEER COST** | **$ 21,375.00** |
| **SHRINKWRAPS** | **$ 3,060.00** |
| **FREIGHT** | **$ 30,852.50** |
| **PALLETS** | **$ 3,084.00** |
| **LOADING & UNLOADING** | **$ 693.54** |
| **POLY TARP** | **$ 150.00** |
| **FREIGHT ADJUSTMENT** | **$ 2,831.81** |
| **G.S.T.** | **$ 14,791.80** |
| **TOTAL COST** | **$ 221,930.25** |

**International Drilling Fluids Corporation**

# DAILY PRODUCT COST & LOCATION INVENTORY SUMMARY

REPORT NO. #01

WELL YT-I-48 OPERATOR COLGAS KOTANEELEE STOCK POINT FT. ST. JOHN

| | | DATE / DEPTH | | | DATE / DEPTH | | | DATE / DEPTH | | | DATE / DEPTH | | | DATE / DEPTH | | | DATE / DEPTH | | | DATE / DEPTH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | APR-29-1991 | | | | | | | | | | | | | | | | | | | | | |
| | | # | | | # | | | # | | | # | | | # | | | # | | | # | | | |
| PRODUCT | UNIT KG | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | BALANCE FORWARD |
| GEL | 45 | 665 | | # | 10.00 | | | | | | | | | | | | | | | | | | |
| BARITE | 40 | 6196 | | # | 12.50 | | | | | | | | | | | | | | | | | | |
| CAUSTIC | 23 | 210 | | # | 30.00 | | | | | | | | | | | | | | | | | | |
| SODA ASH | 40 | 40 | | # | 20.00 | | | | | | | | | | | | | | | | | | |
| SOLTAN | 19 | 100 | | # | 210.00 | | | | | | | | | | | | | | | | | | |
| LIME | 25 | 20 | | # | 8.60 | | | | | | | | | | | | | | | | | | |
| BI-CARB | 45 | 60 | | # | 40.00 | | | | | | | | | | | | | | | | | | |
| SAWDUST | 18 | 288 | | # | 4.90 | | | | | | | | | | | | | | | | | | |
| F.C.L. | 23 | 60 | | # | 32.00 | | | | | | | | | | | | | | | | | | |
| F.L.R.REG. | 23 | 80 | | # | 160.00 | | | | | | | | | | | | | | | | | | |
| DRISP. LO | 23 | 80 | | # | 162.40 | | | | | | | | | | | | | | | | | | |
| ASP. 771 | 20/L | 80 | | # | 100.00 | | | | | | | | | | | | | | | | | | |
| POLY TEMP | 25 | 50 | | # | 559.30 | | | | | | | | | | | | | | | | | | |
| I.D.C/S-D | 25 | 80 | | # | 420.00 | | | | | | | | | | | | | | | | | | |
| PTS-200 | 20/L | 158 | | # | 260.00 | | | | | | | | | | | | | | | | | | |
| DFCL | 25 | 30 | | # | 178.00 | | | | | | | | | | | | | | | | | | |
| X-CIDE | 6 LB | 42 | | # | 140.00 | | | | | | | | | | | | | | | | | | |
| NA+ SULFITE | 50# | 30 | | # | 49.170 | | | | | | | | | | | | | | | | | | |
| K SEAL-M | 18 | 150 | | # | 23.80 | | | | | | | | | | | | | | | | | | |
| DEFOAMER | 20/L | 20 | | # | 136.50 | | | | | | | | | | | | | | | | | | |
| DAILY MUD COST | | | | | | | | | | | | | | | | | | | | | | | |
| ENGINEERING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TRUCKING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DAILY COST | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL COST | | | | | | | | | | | | | | | | | | | | | | | |

**International Drilling Fluids Corporation**

# DAILY PRODUCT COST & LOCATION INVENTORY SUMMARY

REPORT NO: 1A.

WELL YT-I-48 OPERATOR COLGAS KOTANEELEE STOCK POINT FT. ST. JOHN

| PRODUCT | UNIT KG | DATE APR-29-91 DEPTH # ON HAND | REC'D | USED | DATE DEPTH # ON HAND | REC'D | USED | DATE DEPTH # ON HAND | REC'D | USED | DATE DEPTH # ON HAND | REC'D | USED | DATE DEPTH # ON HAND | REC'D | USED | DATE DEPTH # ON HAND | REC'D | USED | DATE DEPTH # ON HAND | REC'D | USED | BALANCE FORWARD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L.D. FREE | 20 3/L | 4 | | $ | 890.40 | | | | | | | | | | | | | | | | | |
| DISPLEX | 25 | 10 | | $ | 250.00 | | | | | | | | | | | | | | | | | |
| CACO3 GRIT | 25 | 112 | | $ | 5.90 | | | | | | | | | | | | | | | | | |
| CELLOFLAKE | 11 | 40 | | $ | 23.10 | | | | | | | | | | | | | | | | | |
| MICA-COARSE | 25 | 20 | | $ | 17.50 | | | | | | | | | | | | | | | | | |
| WALNUT-C | 23 | 20 | | $ | 20.30 | | | | | | | | | | | | | | | | | |
| PALLETS | - | 187 | | $ | 15.00 | | | | | | | | | | | | | | | | | |
| GLASS BEADS (MAY 31 JUNE 2) | | 64 | | $ | 80.00 | | | | | | | | | | | | | | | | | |
| FLOFLEX | 50lb | 56 | | $ | 125.00 | | | | | | | | | | | | | | | | | |
| DAILY MUD COST | | | | | | | | | | | | | | | | | | | | | | |
| ENGINEERING COST | | | | | | | | | | | | | | | | | | | | | | |
| TRUCKING COST | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DAILY COST | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL COST | | | | | | | | | | | | | | | | | | | | | | |

**International Drilling Fluids Corporation**

# DAILY PRODUCT COST & LOCATION INVENTORY SUMMARY

REPORT NO. 2

WELL ETAL KOTANEELEE OPERATOR COLUMBIA GAS STOCK POINT JUNE-16-1991

@ 20:00 HRS.

| | | DATE DELIVERED DEPTH # | | | DATE DEPTH # | | | DATE DEPTH # | | | DATE USED DEPTH # | | | DATE DEPTH # | | | DATE DEPTH # | | | DATE MAT. ON LOCATION DEPTH # | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRODUCT | UNIT KG | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | BALANCE FORWARD |
| GEL | | 665 | | | | | | | | | 355 | | | | | | | | | | | | 310 |
| BARITE | | 6196 | | | | | | | | | 3585 | | | | | | | | | | | | 2611 |
| CAUSTIC | | 210 | | | | | | | | | 30 | | | | | | | | | | | | 180 |
| SODA ASH | | 40 | | | | | | | | | 16 | | | | | | | | | | | | 24 |
| SOLDAN | | 100 | | | | | | | | | 14 | | | | | | | | | | | | 86 |
| BI-CARB | | 60 | | | | | | | | | 5 | | | | | | | | | | | | 55 |
| F.L.R. | | 80 | | | | | | | | | 19 | | | | | | | | | | | | 61 |
| ASP. 721 | | 80 | | | | | | | | | 26 | | | | | | | | | | | | 54 |
| I.D. OIS-D | | 80 | | | | | | | | | 33 | | | | | | | | | | | | 47 |
| PTS-200 | | 64 | | | | | | | | | 39 | | | | | | | | | | | | 25 |
| X-CIDE | | 42 | | | | | | | | | 22 | | | | | | | | | | | | 20 |
| SULPHITE | | 30 | | | | | | | | | 17 | | | | | | | | | | | | 13 |
| DEFOAM | | 20 | | | | | | | | | 11 | | | | | | | | | | | | 9 |
| SAWDUST | | 288 | | | | | | | | | 88 | | | | | | | | | | | | 200 |
| DRISPAC-LO | | 80 | | | | | | | | | 48 | | | | | | | | | | | | 36 |
| LIME | | 20 | | | | | | | | | 4 | | | | | | | | | | | | 16 |
| DFLC | | 30 | | | | | | | | | 27 | | | | | | | | | | | | 3 |
| BEADS | | 64 | | | | | | | | | 25 | | | | | | | | | | | | 39 |
| F.C.L. | | 60 | | | | | | | | | - | | | | | | | | | | | | 60 |
| POLY TEMP | | 50 | | | | | | | | | - | | | | | | | | | | | | 50 |
| DAILY MUD COST | | | | | | | | | | | | | | | | | | | | | | | |
| ENGINEERING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TRUCKING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DAILY COST | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL COST | | | | | | | | | | | | | | | | | | | | | | | |

**International Drilling Fluids Corporation** DAILY PRODUCT COST & LOCATION INVENTORY SUMMARY REPORT NO.

WELL ETAL KOTANEELEE OPERATOR COLUMBIA GAS STOCK POINT JANE-16-20-COHDS.

| PRODUCT | UNIT KG | DATE DELIVERED / # / ON HAND | REC'D | USED | DEPTH / # / ON HAND | REC'D | USED | DEPTH / # / ON HAND | REC'D | USED | DATE USED / DEPTH / # / ON HAND | REC'D | USED | DEPTH / # / ON HAND | REC'D | USED | DEPTH MAT. ON LOCATION / # / ON HAND | REC'D | USED | DEPTH / # / ON HAND | REC'D | USED | BALANCE FORWARD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K-SEAL-M | | 150 | | | | | | | | | - | | | | | | | | | | | | 150 |
| I.D. FREE | | 4 | | | | | | | | | - | | | | | | | | | | | | 4 |
| VISPLEX | | 25 | | | | | | | | | - | | | | | | | | | | | | 25 |
| CACO3 GRIT | | 112 | | | | | | | | | - | | | | | | | | | | | | 112 |
| CELLOFLAKE | | 40 | | | | | | | | | - | | | | | | | | | | | | 40 |
| MICA COARSE | | 20 | | | | | | | | | - | | | | | | | | | | | | 20 |
| WALNUT-C. | | 20 | | | | | | | | | - | | | | | | | | | | | | 20 |
| PALLETS | | 187 | | | | | | | | | ? | | | | | | | | | | | | 187 |
| SH. WRPS | | 187 | | | | | | | | | ? | | | | | | | | | | | | 187 |
| | | | | | | | | | | | | | | | | | | | | | | | |
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| DAILY MUD COST | | | | | | | | | | | | | | | | | | | | | | | |
| ENGINEERING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TRUCKING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DAILY COST | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL COST | | | | | | | | | | | | | | | | | | | | | | | |

**International Drilling Fluids Corporation** — DAILY PRODUCT COST & LOCATION INVENTORY SUMMARY — REPORT NO. 3

WELL COLGAS et al KOTANELEE OPERATOR COLUMBIA GAS DEVEL. STOCK POINT FT. ST. JOHN

| PRODUCT | UNIT KG | DATE 06-17 DEPTH 3685 # | | | DATE 06-18 DEPTH 3695 # | | | DATE 06-19 DEPTH 3733 # | | | DATE 06-20 DEPTH 3772 # | | | DATE 06-21 DEPTH 3790 # | | | DATE 06-22 DEPTH 3820 # | | | DATE 06-23 DEPTH 3887 # | | | BALANCE FORWARD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | |
| GEL | | 310 | | 8 | 310 | | | 310 | | | 310 | | | 310 | | | 310 | | | 310 | | | 310 |
| BARITE | | 2611 | | 35 | 2576 | | 73 | 2503 | | 35 | 2468 | | | 2468 | | 35 | 2433 | | 35 | 2398 | | 10 | 2388 |
| CAUSTIC | | 180 | | | 180 | | | 180 | | | 180 | | | 180 | | 2 | 178 | | | 178 | | 5 | 173 |
| SODA ASH | | 24 | | | 24 | | | 24 | | | 24 | | | 24 | | | 24 | | | 24 | | 6 | 18 |
| SULBAN | | 86 | | | 86 | | | 86 | | | 86 | | | 86 | | | 86 | | | 86 | | 4 | 82 |
| BICARB. | | 55 | | | 55 | | | 55 | | | 55 | | | 55 | | | 55 | | | 55 | | | 55 |
| F.L.R. | | 61 | | 1 | 60 | | 5 | 55 | | 6 | 49 | | | 49 | | 5 | 44 | | 6 | 38 | | 3 | 35 |
| A.S.P. 721 | | 54 | | 3 | 51 | | 4 | 47 | | 10 | 37 | | 3 | 34 | | 2 | 32 | | 7 | 25 | | | 25 |
| IDVIS D | | 47 | | | 47 | | | 47 | | 2 | 45 | | | 45 | | | 45 | | | 45 | | | 45 |
| PTS-200 | | 119 | | | 119 | | | 119 | | 4 | 115 | | | 115 | | 3 | 112 | | | 112 | | | 112 |
| X-CIDE | | 20 | | 3 | 17 | | | 17 | | 2 | 15 | | 1 | 14 | | | 14 | | 1 | 13 | | 1 | 12 |
| SULFITE | | 13 | | | 13 | | | 13 | | 1 | 12 | | 1 | 11 | | | 11 | | 1 | 10 | | 1 | 9 |
| DEFOAMER | | 9 | | | 9 | | 1 | 8 | | | 8 | | | 8 | | | 8 | | | 8 | | 2 | 6 |
| SAWDUST | | 200 | | | 200 | | | 200 | | | 200 | | | 200 | | | 200 | | 70 | 130 | | | 130 |
| DRISPAC LO | | 32 | | | 32 | | | 32 | | | 32 | | 5 | 27 | | | 27 | | | 27 | | | |
| LIME | | 16 | | | 16 | | | 16 | | | 16 | | | 16 | | | 16 | | | 16 | | | 16 |
| DFCL | | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | | 3 |
| BEADS | | 39 | | | 39 | | | 39 | | | 39 | | | 39 | | | 39 | | | 39 | | 7 | 32 |
| FCL | | 60 | | | 60 | | | 60 | | | 60 | | | 60 | | | 60 | | | 60 | | | 60 |
| POLYTEMP | | 50 | | | 50 | | | 50 | | | 50 | | | 50 | | | 50 | | | 50 | | | 50 |
| DAILY MUD COST | | | | | | | | | | | | | | | | | | | | | | | |
| ENGINEERING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TRUCKING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DAILY COST | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL COST | | | | | | | | | | | | | | | | | | | | | | | |

**International Drilling Fluids Corporation** DAILY PRODUCT COST & LOCATION INVENTORY SUMMARY REPORT NO. 3

WELL COLGAS #1 KOTANELEE OPERATOR COLUMBIA GAS DEVEL. STOCK POINT FT. ST. JOHN

| | | DATE 06-24 DEPTH 3915 | | | DATE 06-25 DEPTH 3915 | | | DATE 06-26/27 DEPTH 3915 | | | DATE DEPTH | | | DATE DEPTH | | | DATE DEPTH | | | DATE DEPTH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | # | | | # | | | # | | | # | | | # | | | # | | | # | | | |
| PRODUCT | UNIT KG | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | BALANCE FORWARD |
| GEL | | 310 | | | 310 | | | 310 | | 10 | 300 | | | | | | | | | | | | |
| BARITE | | 2388 | | 35 | 2353 | | 35 | 2318 | | 10 | 2308 | | | | | | | | | | | | |
| CAUSTIC | | 173 | | 6 | 167 | | 1 | 166 | | | 166 | | | | | | | | | | | | |
| SODA ASH | | 18 | | | 18 | | | 18 | | | 18 | | | | | | | | | | | | |
| SULFAN | | 82 | | | 82 | | | 82 | | | 82 | | | | | | | | | | | | |
| BICARB. | | 55 | | | 55 | | | 55 | | | 55 | | | | | | | | | | | | |
| FLR | | 35 | | | 35 | | | 35 | | | 35 | | | | | | | | | | | | |
| ASP-721 | | 25 | | 4 | 21 | | | 21 | | | 21 | | | | | | | | | | | | |
| IDIS D | | 45 | | 5 | 40 | | | 40 | | | 40 | | | | | | | | | | | | |
| ATS-200 | | 112 | | 8 | 102 | | 8 | 96 | | 5 | 91 | | | | | | | | | | | | |
| X-CIDE | | 12 | | # | 12 | | 2 | 10 | | 3 | 7 | | | | | | | | | | | | |
| SULFITE | | 9 | | | 9 | | | 9 | | | 9 | | | | | | | | | | | | |
| DEFOAMER | | 6 | | | 6 | | | 6 | | 1 | 5 | | | | | | | | | | | | |
| SAWDUST | | 130 | | | 130 | | | 130 | | 30 | 100 | | | | | | | | | | | | |
| DRISPAC LO | | 27 | | 8 | 19 | | | 19 | | | 19 | | | | | | | | | | | | |
| LIME | | 16 | | 5 | 11 | | | 11 | | | 11 | | | | | | | | | | | | |
| DFCL | | 3 | | | 3 | | | 3 | | | 3 | | | | | | | | | | | | |
| BEADS | | 32 | | | 32 | | | 32 | | | 32 | | | | | | | | | | | | |
| FCL | | 60 | | | 60 | | | 60 | | | 60 | | | | | | | | | | | | |
| POLYTEMP | | 50 | | | 50 | | | 50 | | | 50 | | | | | | | | | | | | |
| DAILY MUD COST | | | | | | | | | | | | | | | | | | | | | | | |
| ENGINEERING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TRUCKING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DAILY COST | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL COST | | | | | | | | | | | | | | | | | | | | | | | |

**International Drilling Fluids Corporation** DAILY PRODUCT COST & LOCATION INVENTORY SUMMARY REPORT NO. 3

WELL COLGAS et al KOTANELEE OPERATOR COLUMBIA GAS STOCK POINT FT. ST. JOHN

| PRODUCT | UNIT KG | DATE 06-18 DEPTH 3695 # | | | DATE 06-22 DEPTH 3870 # | | | DATE 06/26/27 DEPTH 3915 # | | | DATE DEPTH # | | | DATE DEPTH # | | | DATE DEPTH # | | | DATE DEPTH # | | | BALANCE FORWARD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | ON HAND | REC'D | USED | |
| K. SEAL | | 150 | | 50 | 100 | | | 100 | | 11 | 89 | | | | | | | | | | | | |
| F. FREE | | 4 | | | 4 | | | 4 | | | 4 | | | | | | | | | | | | |
| VISPLEX | | 10 | | | 10 | | | 10 | | 2 | 8 | | | | | | | | | | | | |
| Ca Co | | 112 | | 10 | 102 | | | 102 | | | 102 | | | | | | | | | | | | |
| CELLOFLAKE | | 40 | | 20 | 20 | | | 20 | | 8 | 12 | | | | | | | | | | | | |
| MICA | | 20 | | 20 | — | | | — | | | — | | | | | | | | | | | | |
| WALNUT | | 20 | | | 20 | | | 20 | | | 20 | | | | | | | | | | | | |
| PALLETS | | 187 | | | | | | | | | | | | | | | | | | | | | |
| FLOPLEX | | | 56 | | 56 | | 22 | 34 | | | 34 | | | | | | | | | | | | |
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| DAILY MUD COST | | | | | | | | | | | | | | | | | | | | | | | |
| ENGINEERING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TRUCKING COST | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DAILY COST | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL COST | | | | | | | | | | | | | | | | | | | | | | | |

(1)

# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME COLUMBIA ET AL AREA KOTANELEE

STOCK POINT FT ST JOHN Contractor KENTING #7

MUD SYSTEM WEIGHTED GEL CAUSTIC - SOLTEX ENGINEERS RICK REINHART

| Day No. | DATE 1991 | DEPTH M | MUD PROPERTIES: WEIGHT ppg | VISCOSITY: sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL: 0 | GEL: 10 | FLUID LOSS 30 Min cc's | CAKE mm | H.T.H.P. cc's | pH | Filtrate Analysis: Cl ppm | Filtrate Analysis: $Ca^{++}$ ppm | Filtrate Analysis: PI | RETORT: % OIL | RETORT: % SOLIDS | % SAND | BENTONITE kg/m³ | $H_2S$ - MG/L | SOLTEX kg/m³ | 'N' | 'K' | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 03-05 | 3545 | 1210 | 49 | 24 | 19 | 5 | 3 | 6 | 11.5 | 1.5 | - | 10.5 | 350 | 30 | .3 | - | .078 | NO | 50 | 0 | | | | ARR-30 NIPPLE UP. |
| | 03-05 | 3545 | 1190 | 44 | 24 | 20 | 4.5 | 2 | 3 | 14 | 2.0 | - | 11.0 | 800 | 20 | .8 | - | .07 | NO | 50 | 0 | | | | MAY-01 PRESSURE TEST. |
| | | | | | | | | | | | | | | | | | | | | | | | | | MAY-02 PRESS. TEST. |
| 7 | 05-05 | 3556 | 1205 | 47 | 28 | 25 | 3.5 | 1 | 2 | 9.0 | 1.5 | - | 10.7 | 600 | 20 | .8 | - | .078 | NO | 65 | 0 | | | | MIX KILL MUD TO |
| | 05-05 | 3734 | 1200 | 60 | 33 | 26 | 7.5 | 2 | 3 | 10.0 | 1.5 | - | 10.7 | 700 | 20 | .9 | - | .075 | .002 | 90 | 0 | .6 | | | 1200 KG/M³. VISCOSITY |
| | | | | | | | | | | | | | | | | | | | | | | | | | @ 48 SEC/L (90M³) |
| 8 | 06-05 | 3735 | 1195 | 80 | 42 | 30 | 12 | 2 | 4 | 10.5 | 1.5 | - | 10.5 | 800 | 30 | .7 | - | .073 | .002 | 80 | 0 | .6 | | | MAY-03 FINISH MIXING |
| | | | | | | | | | | | | | | | | | | | | | | | | | KILL MUD. CIRCULATE |
| 9 | 07-05 | 3735 | 1210 | 65 | 34 | 29 | 5 | 2 | 7 | 10 | 1.5 | - | 10.7 | 800 | 30 | .9 | - | .078 | .002 | 75 | 0 | .5 | | | TUBING AND DISPLACE |
| | | | | | | | | | | | | | | | | | | | | | | | | | HOLE W/ KILL MUD. |
| 11 | 09-05 | 3515 | 1200 | 68 | 32 | 27 | 5.5 | SR | 4 | 10 | 1.5 | - | 10.5 | 850 | 40 | .8 | - | .075 | .002 | 75 | 0 | .5 | | | LAY DOWN TUBING. |
| | | | | | | | | | | | | | | | | | | | | | | | | | MAY-04 LAY DOWN |
| | | | | | | | | | | | | | | | | | | | | | | | | | TUBING, MAKE UP AND |
| | | | | | | | | | | | | | | | | | | | | | | | | | RUN IN W/ MILL. |

REMARKS: — MAY-05 CIRCULATE AND MILL OUT BRIAGE PLUG. CIRC. OUT AIR. (NO GAS) WASH PACKER TO BOTTOM. CIRC BOTTOMS UP. NO GAS. RAISED PH TO 11.0 + PRE-MIXED 5 KG SOLTEX MAY-06 HOIST MILL. RUN IN WITH OVERSHOT. WORK OVER SHOT @ 3515 M. WOULD NOT GO PAST WHERE CASING PARTED. HOIST OVER SHOT.

MAY-07 RUN IN WITH SPEAR AND LATCH ONTO FISH. CHAIN OUT + RECOVER TAIL PIPE.

MAY-08 RUN IN W/ TAPERED MILL. WORK OFF EDGES ON BOTTOM PART OF CASING WHERE IT PARTED @ 3515 METERS. HOIST MILL AND RUN IN W/ WASH OVER PIPE IT REQUIRES 35 TO 40 SXS BARITE FOR PILLS PRIOR TO TRIPPING.

# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME COLUMBIA ET AL AREA KOTANELEE

STOCK POINT ET. ST. JOHN. Contractor KENTWOOD

MUD SYSTEM WEIGHTED GEL-CAUSTIC-SULDAN. ENGINEERS RICK REINHART

| Day No. | DATE 1991 | DEPTH M | MUD PROPERTIES: WEIGHT ppg | VISCOSITY: sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL: 0/10 | FLUID LOSS 30 Min cc's | CAKE mm | H.T.H.P. cc's | pH | Filtrate Analysis: Cl ppm | Ca++ ppm | PI | RETORT: % OIL | % SOLIDS | % SAND | BENTONITE kg/m³ | H2S mg/L | Sol DA2 kg/m³ | 'N' | 'K' | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 10-05 | 3515 | 1190 | 65 | 31 | 25 | 6.5 | 2/5 | 10.5 | 1.5 | - | 10.5 | 800 | 40 | 1.0 | - | .07 | .002 | 70 | 0 | .4 | | | MAY-09 WORK WASHPIPE @3515 M. WHERE CASING |
| 13 | 11-05 | 3740 | 1220 | 90 | 45 | 33 | 12 | 2/6 | 10.5 | 1.8 | - | 10.7 | 700 | 40 | .9 | - | .075 | .002 | 65 | 0 | .4 | | | PARTED. MILL ON CASING. |
| 14 | 12-05 | 3740 | 1195 | 120 | 57 | 40 | 17 | 3/6 | 11.5 | 1.8 | - | 10.7 | 800 | 40 | 1.1 | - | .075 | .002 | 75 | 0 | .4 | | | HOIST WASH PIPE. RUN |
| 14 | 12-05 | 3740 | 1215 | 135 | 52 | 38 | 14 | 3/6 | 12 | 1.8 | - | 10.7 | 800 | 40 | 1.1 | - | .08 | .002 | 70 | 0 | .4 | | | IN W/ TAPERED MILL |
| | | | | | | | | | | | | | | | | | | | | | | | | WORK OFF EDGES ON |
| 14 | 12-05 | 3740 | 1215 | 135 | 52 | 38 | 14 | 3/6 | 12 | 1.8 | - | 10.7 | 800 | 40 | 1.1 | - | .08 | .002 | 70 | 0 | .4 | | | CASING @ 3515 M. |
| | | | | | | | | | | | | | | | | | | | | | | | | MAY-10 MILL CASING. |
| 15 | 13-05 | 3740 | 1197 | 56 | 30 | 26 | 4 | 1/3 | 11.5 | 1.8 | - | 10.7 | 800 | 30 | 1.1 | - | .07 | .002 | 68 | 0 | .3 | | | CLEAN TO TOP OF FISH. |
| 16 | 14-05 | 3740 | 1190 | 55 | 30 | 25 | 5 | 1/3 | 11.0 | 1.8 | - | 11.0 | 800 | 30 | 1.2 | - | .07 | .002 | 70 | 0 | .3 | | | HOIST MILL AND RUN IN |
| | | | | | | | | | | | | | | | | | | | | | | | | WITH WASH PIPE. |
| | | | | | | | | | | | | | | | | | | | | | | | | MAY-11 RUN IN W/ WASH |
| 17 | 15-05 | 3300 | 1190 | 58 | 28 | 23 | 5 | 2/6 | 14 | 2.0 | - | 11.0 | 800 | 20 | 1.2 | - | .07 | .002 | 75 | 0 | .3 | | | PIPE WASH OVER FISH |
| | | | | | | | | | | | | | | | | | | | | | | | | @ 3735 METERS. |

REMARKS: - TRIP OUT WASH PIPE. MAKE UP NEW MILL. RUN IN W/ WASH PIPE #2.
MAY-12 WASH OVER FISH. HOIST WASH PIPE. RUN IN W/ FLAT BOTTOM MILL + MILL FISH.
GETTING SHALE SAMPLES. COULD BE MILLING OUT THIS SIDE OF THE CASING.
MAY-13 CIRCULATE ON BOTTOM W/ MILL. WAIT ON ORDERS.
MAY-14 W.O.O. TRIP OUT AND RUN IN OPEN ENDED. PRE-TREAT W/ 5 DI-CARB.
MAY-15 RUN CEMENT PLUG @ 3250 TO 3300 M. CIRC. OUT CONTAMINATED CEMENT.
SQUEEZE PLUG.

(3)

# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME Columbia et al Kutaneelee AREA Y-J-E-48

STOCK POINT Ft. St. John Contractor Kenting #7

MUD SYSTEM WT. GEL CAUSTIC ENGINEERS JIM WELLER

| Day No. | DATE 1991 | DEPTH M | MUD PROPERTIES: WEIGHT ppg | VISCOSITY: sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL: 0/10 | Filtrate Analysis: FLUID LOSS 30 Min cc's | CAKE mm | RETORT: H.T.H.P. cc's | pH | Cl ppm | Ca ++ ppm | PI | % OIL | % SOLIDS | % SAND | BENTONITE kg/m³ | POTASH kg/m³ | ID BOND kg/m³ | 'N' | 'K' | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | 05-16 | 3300 | 1190 | 56 | 25 | 20 | 5 | 2/6 | 10.5 | 2.0 | — | 10.7 | 750 | TR | 1.4 | — | .07 | .001 | 70 | | | | | PRESSURE TEST CEMENT |
| 19 | 05-17 | 3274 | 1185 | 48 | 26 | 22 | 4 | 1/2 | 12.4 | 2.0 | | 10.5 | 750 | TR | 1.4 | | .07 | TR. | 66 | | | | | LOGGING & RAN IN TO MILL |
| 20 | 05-18 | 3274 | 1190 | 62 | 36 | 28 | 8 | 2/3 | 12.6 | 2.0 | | 11.0 | 750 | TR | 1.4 | | .07 | TR. | 70 | | | | | C.I.R. |
| 21 | 05-19 | 3274 | 1195 | 62 | 39 | 30 | 9 | 2/3 | 12.6 | 2.0 | | 11.0 | 750 | TR | 1.3 | | .07 | TR. | 70 | | | | | MILLING WINDOW |
| 22 | 05-20 | 3276 | 1190 | 53 | 35 | 28 | 7 | 1/3 | 13.0 | 2.0 | | 11.0 | 750 | TR | 1.3 | | .07 | TR. | 70 | | | | | MILLING |
| 23 | 05-21 | 3277 | 1190 | 53 | 35 | 28 | 7 | 1/3 | 13.0 | 2.0 | | 11.0 | 750 | TR | 1.3 | | .07 | .001 | 70 | | | | | " |
| 24 | 05-22 | 3277 | 1195 | 53 | 35 | 28 | 7 | 1/3 | 12.8 | 2.0 | | 10.5 | 700 | TR | 1.2 | | .075 | .001 | 70 | | | | | " |
| 25 | 05-23 | 3279 | 1205 | 57 | 41 | 32 | 9 | 2/3 | 12.0 | 2.0 | | 11.0 | 650 | TR | 1.1 | | .08 | .002 | 75 | | | | | " |
| 26 | 05-24 | 3290 | 1210 | 60 | 44 | 34 | 10 | 2/3 | 12.4 | 2.0 | | 10.5 | 600 | TR | 1.0 | | .085 | TR. | 75 | | | | | DRLG 152 mm HOLE. DISPLACED |
| 27 | 05-25 | 3308 | 1185 | 40 | 16 | 10 | 6 | 2/3 | 11.0 | .05 | | 10.0 | 150 | TR. | 1.50 | | .045 | .001 | — | | .50 | | | HOLE TO A POLYMER SYSTEM |
| 28 | 05-26 | 3334 | 1190 | 39 | 20 | 10 | 10 | 2/3 | 8.0 | .05 | | 10.0 | 150 | TR | .40 | | .06 | .002 | - | | .75 | | | DRLG 152 mm HOLE. |
| 29 | 05-27 | 3354 | 1190 | 37 | 20 | 10 | 10 | 2/3 | 8.0 | .05 | | 10.5 | 150 | TR. | .45 | | .07 | .003 | — | | 1.1 | | | " " " |
| 30 | 05-28 | 3400 | 1185 | 37 | 20 | 10 | 10 | 2/3 | 8.0 | .05 | | 10.5 | 150 | TR | .45 | | .065 | .003 | — | | 1.2 | | | DRLG. 152 mm HOLE |

REMARKS: — 05-16 PRESSURE TEST 05-17/18 SET BRIDGE PLUG AT 3331 m SET WHIPSTOCK PACKER AT 3277 m LOGGED & RAN IN WITH MILL. AFTER MILLING WAS COMPLETED, DRILLED 152 mm HOLE TO 3290 m, AND THE HOLE WAS DISPLACED TO A WT. POLYMER SYSTEM. DENSITY 1180 - 1200 kg/m³. THE YIELD PT WAS RAISED TO 8-10 (Pa) USING IDVIS D + ASP-721. VIS - 35-40 s/L. PH - 10-10.5. FLUIDLOSS BELOW 15 ml.

I.D.F.C.-012

(4)

# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME CAMACIA ET AL AREA/STANFELLER

STOCK POINT FT ST JOHN Contractor KENTING #07

MUD SYSTEM WEIGHTED POLYMER SYSTEM. ENGINEERS RICK REINHART.

| Day No. | DATE 1991 | DEPTH M | MUD PROPERTIES: WEIGHT ppg | VISCOSITY: sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL: 0/10 | FLUID LOSS 30 Min cc's | CAKE mm | H.T.H.P. cc's | pH | Filtrate Analysis: Cl ppm | Ca++ ppm | PI | RETORT: % OIL | % SOLIDS | % SAND | BENTONITE kg/m³ | POTASH kg/m³ | ID BOND kg/m³ | H2S in mg/L | SULPHITE's "K" | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | 05-29 | 3405' | 1180 | 38 | 20 | 10 | 10 | 3/4 | 9.0 | .05 | - | 10.5 | 200 | 20 | .5 | TRC | .065 | .001 | 10 | - | .6 | 0 | 190 | MAY-29 RUN IN W/BIT #3 CLEAN 18 M. TO BOTTOM. |
| 32 | 05-30 | 3414 | 1178 | 39 | 21 | 11 | 10.5 | 3/4 | 9.0 | .05 | - | 10 | 200 | 20 | .4 | TRC | .065 | .001 | 10 | - | .5 | 0 | 190 | DRILL TO 3414 M. RIG UP WIRE LINE. |
| 33 | 05-31 | 3420 | 1185 | 38 | 22 | 11 | 11 | 3/4 | 15 | .15 | - | 10 | 200 | 20 | .4 | NO | .07 | .001 | 10 | - | .5 | 0 | 180 | MAY-30 RUN IN WITH |
| | 05-31 | 3425 | 1180 | 38 | 22 | 12 | 10 | 2.5/3 | 9.6 | .1 | - | 10.3 | 200 | 20 | .6 | NO | .068 | .0015 | 8 | - | .6 | 0 | 175 | STEARING TOOL. RUN SINGLE SHOT SURVEYS |
| 34 | 06-01 | 3435 | 1187 | 43 | 29 | 15 | 14 | 3/5 | 9.0 | .1 | - | 10.3 | 200 | 20 | .6 | NO | .073 | .001 | 9 | - | .8 | 0 | 160 | HOIST BIT FOR JARS. RUN IN BIT RR #2. |
| 36 | 06-03 | 3451 | 1195 | 41 | 26 | 15 | 11 | 2/3 | 9.5 | .1 | - | 10.5 | 200 | 20 | .9 | NO | .075 | .001 | 10 | - | .7 | 0 | 180 | MAY-31 RUN IN STEARING TOOL, TURN TOOL FACE |
| 37 | 06-04 | 3459 | 1190 | 41 | 26.5 | 15 | 11.5 | 2/3 | 14 | .5 | - | 10 | 200 | 20 | .17 | NO | .072 | .001 | 11 | - | .6 | 1 | 150 | DRILL AHEAD + COND. MUD. HOIST BIT RR #2. |
| 38 | 06-05 | 3468 | 1180 | 41 | 26 | 15 | 11 | 2/2.5 | 10.5 | 1 | - | 14.5 | 200 | 20 | .8 | NO | .068 | .001 | 10 | - | .5 | - | 135 | |

REMARKS: JUNE-01 RUN IN BIT #3 DRILL W/ STEARING TOOL, MIX GLASS BEADS TO REDUCE DRAG. JUNE-02 HOIST BIT #3. RUN IN BIT #4. REAM @ 3435-3440 M. RUN WATER TO LOWER YELD POINT. JUNE-03 HOIST BIT #4. (SOME IRON IN HOLE) RUN IN BIT #5 W/ JUNK SUB. MIXED GRAPHITE TO REDUC DRAG. REAM FROM 3417 TO 3455 M. HARD REAMING @ 3417 TO 3426 M JUNE-04 HOIST BIT #5 RUN IN BIT #6 (STRATA) MIXING 4 PTS-200 PRIOR TO TRIPS. DUE TO MUD GOING BAD ON BOTTOMS UP!

I.D.F.C.-012

# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME COLUMBIA ET AL AREA KOTANELEE

STOCK POINT FT. ST. JOHN Contractor KENTING #07

MUD SYSTEM WEIGHTED POLYMER SYSTEM. ENGINEERS RICK REINHART

| Day No. | DATE | DEPTH | MUD PROPERTIES: WEIGHT ppg | VISCOSITY: sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL: 0 / 10 | FLUID LOSS 30 Min cc's | CAKE mm | H.T.H.P. cc's | pH | Filtrate Analysis: Cl ppm | Ca ppm | PI | RETORT: % OIL | % SOLIDS | % SAND | BENTONITE kg/m³ | POTASH kg/m³ | ID BOND kg/m³ | H2S/MG/L | SULPHITES | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1991 M | | | | | | | | | | | | | | | | | | | | | | |
| 38 | 06-05 | 3481 | 1175 | 41 | 26 | 15 | 11 | 2 / 2.5 | 12.0 | 1.0 | - | 10.5 | 250 | 20 | .85 | - | .065 | .001 | 10 | | .5 | 0 | 120 | JUNE-05 DRILL AHEAD. |
| | 06-05 | 3492 | 1175 | 41 | 25 | 15 | 10 | 2 / 2.5 | 10.5 | 1.0 | - | 10.5 | 250 | 20 | .9 | - | .065 | .001 | 10 | | .6 | 0 | 120 | CONDITION MUD. |
| | | | | | | | | | | | | | | | | | | | | | | | | JUNE-06 DRILL W/MUD |
| 39 | 06-06 | 3494 | 1180 | 42 | 26 | 15 | 11 | 2 / 3 | 12.0 | 1.0 | - | 10.5 | 250 | 20 | .85 | - | .068 | .001 | 11 | | .7 | 0 | 120 | MOTOR, TO 3495 M. |
| | | 3495 | 1180 | 42 | 27 | 16 | 11 | 2 / 2.5 | 11.5 | 1.0 | - | 10.5 | 350 | 25 | .85 | - | .068 | .002 | 11 | | .8 | 0 | 150 | CONDITION MUD, WORK |
| | | | | | | | | | | | | | | | | | | | | | | | | ON FLUID LOSS. MIXING |
| 40 | 06-07 | 3497 | 1180 | 45 | 32 | 20 | 12.5 | 2.5 / 3 | 15.5 | 1.5 | - | 10.5 | 250 | 20 | .9 | - | .068 | .002 | 10 | | .8 | 0 | 160 | DRISPAC. LOWS. FILTER |
| | 06-07 | 3510 | 1180 | 43 | 28.5 | 18 | 11.5 | 2 / 3 | 13 | 1.5 | - | 10.5 | 250 | 20 | 1.0 | - | .068 | .002 | 10 | | .8 | 0 | 150 | CAKE IS MUCH FIRMER, |
| | 06-07 | 3524 | 1175 | 43 | 29 | 18 | 11 | 2 / 3 | 12 | 1.0 | - | 10.5 | 250 | 20 | .85 | - | .066 | .015 | 10 | | .8 | 0 | 150 | NOT JUST SOLIDS. |
| | | | | | | | | | | | | | | | | | | | | | | | | HOIST BIT #6 FOR |
| 41 | 06-08 | 3544 | 1175 | 42 | 27 | 17 | 10 | 2 / 2.5 | 12.5 | .5 | | 10.5 | 250 | 20 | .85 | - | .066 | .001 | 10 | | .7 | 0 | 130 | NEW MUD MOTOR. |
| | | | | | | | | | | | | | | | | | | | | | | | | MIXING DRISPAC-LOW. |
| 42 | 06-09 | 3552 | 1175 | 45 | 30 | 19 | 11 | 2 / 3 | 13 | 1.0 | - | 11.0 | 300 | 30 | 1.3 | - | .065 | .001 | 10 | | .7 | 0 | 165 | FLUID LOSS IS STAYING |
| | | | | | | | | | | | | | | | | | | | | | | | | @ 12 TO 13 CM³ |

REMARKS: JUNE-07 RUN IN BIT #7. GAS ON BOTTOMS UP IS @ 9,000 UNITS+ AFTER TRIP. THE VISCOSITY IS UP TO 45 SEC/L YEILD @ 12.5 PA. FLUID LOSS @ 15.5 CM³. THESE UNSTABLE PROPERTIES ARE LIKELY DUE TO EXTRA ADDITIONS OF ASP. 721. STOP ASP. 721. MIXING D.F.C.L. @ 5 KG/M³. AFTER MIXING DFCL. RUN WATER @ 20 L/MIN. JUNE-08 DRILL AHEAD W/ STEARING TOOL @ 2½ M/HR. HOIST BIT # 7 @ 3550 M. JUNE-09 RUN IN BIT # 8 W/ STABILIZERS. REAM FROM 3470 TO 3550 METERS. MIXED 3 BAGS OF DRISPAC-LOWIS. THIS RAISED THE VISCOSITY FROM 43 TO 46 SEC/L + ALSO RAISED THE FLUID LOSS. LIKELY DUE TO THE HIGH CONCENTRATION OF POLYMERS.

D.F.C.-012 CONTINUE TO RUN WATER AS THE MUD IS DEHYDRATED. DUE TO THE HIGH CONC. OF POLYMERS.

# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME COLUMBIA ET AL AREA KOTANEELEE

STOCK POINT ET ST JOHN Contractor KENTING #07

MUD SYSTEM WEIGHTED POLYMER ENGINEERS RICK REINHART

| Day No. | DATE 1991 | DEPTH m | MUD PROPERTIES: WEIGHT g/cc | VISCOSITY sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL 0/10 | FLUID LOSS 30 Min cc's | CAKE mm | H.T.H.P. cc's | pH | Filtrate Analysis Cl ppm | Ca ppm | PI | RETORT % OIL | % SOLIDS | % SAND | BENTONITE kg/m³ | POTASH kg/m³ | ID BOND kg/m³ | H2S - MG/L N | SULPHITES K | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | 06-09 | 3559 | 1180 | 43 | 28 | 18 | 10 | 2/2.5 | 15 | 1.0 | - | 10.7 | 250 | 30 | 1.1 | - | .07 | .001 | 10 | | .7 | 0 | 170 | JUNE-09 STOP ADDITION' |
| | | | | | | | | | | | | | | | | | | | | | | | | OF ASP.721 AND DRISPAC |
| 43 | 06-10 | 3580 | 1190 | 42 | 26 | 17 | 9 | 1.5/2 | 16 | 1.0 | - | 10.7 | 300 | 30 | 1.0 | - | .075 | .005 | 10 | | .7 | 0 | 150 | UNTIL RHEOLOGY COMES |
| | 06-10 | 3587 | 1195 | 42 | 27 | 18 | 9 | 1.5/2 | 15.5 | 1.0 | | 10.7 | 300 | 40 | 1.0 | - | .078 | .005 | 10 | | .7 | 0 | 150 | BACK INTO LINE. THE |
| | | | | | | | | | | | | | | | | | | | | | | | | PH IS UP TO 11.0 DUE |
| 44 | 06-11 | 3598 | 1195 | 44 | 28 | 19 | 9 | 1.5/2 | 15.2 | .5 | - | 10.5 | 300 | 60 | .9 | - | .075 | .005 | 10 | - | .6 | 0 | 130 | TO ADDITIONS OF PTS- |
| | 06-11 | 3609 | 1190 | 42 | 24 | 17 | 7.5 | 1.5/2 | 16.5 | 1.0 | | 10.5 | 300 | 50 | .9 | - | .075 | .002 | 10 | - | .6 | 0 | 130 | 200. DUE TO LOWER |
| | | | | | | | | | | | | | | | | | | | | | | | | BOTTOM HOLE TEMP. |
| 45 | 06-12 | 3623 | 1185 | 43 | 26 | 18 | 8 | 1.5/2 | 16 | .8 | | 10.3 | 300 | 80 | .8 | - | .073 | .002 | 10 | - | .6 | 0 | 100 | THAN EXPECTED. THERE |
| | 06-12 | 3630 | 1195 | 44 | 29.5 | 19 | 8.5 | 1.5/2 | 15.8 | .5 | | 10.5 | 300 | 80 | .85 | - | .08 | .002 | 10 | - | .6 | 0 | 100 | IS A GOOD CONCENTRATION |
| | | | | | | | | | | | | | | | | | | | | | | | | OF PTS-200 IN THE |
| | | | | | | | | | | | | | | | | | | | | | | | | MUD SYSTEM. WILL |
| | | | | | | | | | | | | | | | | | | | | | | | | INCREASE ADDITIONS |
| | | | | | | | | | | | | | | | | | | | | | | | | OF X-CIDE 207 TO |

REMARKS: -PREVENT BACTERIA IN THE MUD. AS YOU CAN SMELL THE MUD ON BOTTOMS UP AFTER TRIPPING. AFTER THE T.D. THERE WAS A LARGE AMOUNT OF GAS TO SURFACE RAISING MUD DENSITY TO 1190 KG/M³ FROM 1175 KG/M³. WILL START TO CONTROL THE FLUID LOSS + RHEOLOGY W/ DFCL AS REQ'D.

JUNE-10 DRILL TO APP. 3592M. HOIST BIT #8

JUNE-11 RUN IN BIT #9. CONDITION MUD. YELD POINT IS DOWN TO 7.5 PA. MUD IS IN GOOD CONDITION.

JUNE-12 KEEP MUD DENSITY @ 1190 KG/M³ FLUID LOSS BELOW 16 CM³. YELD POINT @ 8-10 PA.

DRILL TO 3630 METERS MIX PTS-200 + X-CIDE. HOIST BIT #9 AND PRESSURE TEST.

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# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME COLUMBIA ET AL AREA KOTANELEE

STOCK POINT FT ST JOHN Contractor KENTINE #07

MUD SYSTEM WEIGHTED POLYMER ENGINEERS RICK REINHART

| Day No. | DATE 1991 | DEPTH M | WEIGHT ppg | VISCOSITY sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL 0 | GEL 10 | FLUID LOSS 30 Min cc's | CAKE mm | H.T.H.P. cc's | pH | Filtrate Analysis Cl ppm | Filtrate Analysis Ca++ ppm | Filtrate Analysis Pf | RETORT % OIL | RETORT % SOLIDS | RETORT % SAND | BENTONITE kg/m³ | POTASH kg/m³ as KMITES | ID BOND kg/m³ TOTAL Polymers | 'N' HLS/MG/L | 'K' SOLIDAD | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | 06-13 | 3636 | 1200 | 45 | 30 | 21 | 9 | 1.5 | 2 | 20 | 1.0 | - | 10.5 | 300 | 100 | 1.0 | TRC | .083 | .002 | 10 | 125 | 4.5 | 0 | 0 | JUNE-13 PRESSURE TEST. RUN IN BIT #10 |
| 47 | 06-14 | 3654 | 1205 | 43 | 27 | 20 | 7.5 | 1.5 | 2 | 17 | 1.2 | - | 10.5 | 300 | 80 | 1.3 | TRC | .085 | .002 | 10 | 125 | 4.8 | 5 | 1.4 | (SHALE H2S) 600 DTMS. OP |
| | 06-14 | 3565 | 1210 | 44 | 28 | 20 | 8 | 1.5 | 2 | 18 | 1.0 | - | 10.5 | 300 | 40 | 1.8 | TRC | .09 | .002 | 10 | 100 | 5.0 | 0 | 1.4 | MIX 1.4 1661/M³ SOLDAN. |
| | | | | | | | | | | | | | | | | | | | | | | | | | FLUID LOSS WENT OP TO |
| 48 | 06-15 | 3664 | 1215 | 44 | 29 | 21 | 8 | 1.5 | 2 | 18.5 | 1.2 | - | 10.5 | 300 | 50 | 1.6 | TRC | .093 | .002 | 10 | 120 | 5.0 | 0 | 1.4 | 20 CM³. TREAT OUT 180 |
| | 06-15 | 3667 | 1215 | 43 | 225 | 22 | 7.5 | 1.5 | 2 | 22 | 1.0 | - | 10.5 | 300 | 60 | 1.5 | TRC | .093 | .002 | 10 | 130 | 5.0 | 0 | 1.4 | MG/L. CALCIUM W/SODA ASH |
| | | | | | | | | | | | | | | | | | | | | | | | | | (PRE-MIX L.C.M. MUD TO |
| 49 | 06-16 | 3672 | 1200 | 43 | 225 | 20 | 12.5 | 1.5 | 2 | 26 | 1.0 | - | 10.5 | 350 | 40 | 1.5 | TRC | .085 | .002 | 12 | 130 | 4.5 | 0 | 1.2 | PRE-MIX TANK.) VISCOSITY |
| | | | | | | | | | | | | | | | | | | | | | | | | | 50 SEC/L. W/L.D. 015-D |
| 50 | 06-17 | 3681 | 1190 | 45 | 29 | 22 | 7 | 1.5 | 2 | 28 | 1.2 | - | 10.5 | 350 | 40 | 1.5 | TRC | .075 | .002 | 12 | 130 | 5.0 | 0 | 1.2 | + FLR. REG. ADD 1.5 M³ |
| | 06-17 | 3685 | 1125 | 43 | 26 | 20 | 6 | 1.5 | 2 | 33 | 1.5 | - | 10.5 | 400 | 40 | 1.5 | - | .08 | .002 | 15 | 130 | 6.0 | 0 | 1.0 | ERod ACTIVE SYSTEM |
| | | | | | | | | | | | | | | | | | | | | | | | | | TO LOWER MAIN TANK |
| | | | | | | | | | | | | | | | | | | | | | | | | | VOLUME |

REMARKS: JUNE 14 RAISE MUD DENSITY IN PRE-MIX TANK TO 1210 KG/M³. HOIST BIT #10 @ 3664 METERS. LOST 3 CONES. RUN IN + MILL ON CONES. HOIST MILL.
JUNE-15 RUN IN BIT #11. CLEAN TO BTM. WORK JUNK SUB. HOIST BIT #11 @ 3667M. THE FLUID LOSS IS STILL CLIMBING, LIKELY DUE TO ASP-721 USED UP. HIGH FLUID LOSS MAY BE NORMAL FOR THIS SYSTEM. WHEN MIXING PTS-200 COATING POLYMERS. FILTER CAKE IS FIRM.
JUNE-16 RUN IN BIT #12 DRILL TO 3672M. REAM + WORK STABILIZER. HOIST BIT #12 RUN IN BIT #13
JUNE-17 CONDITION MUD. HOIST BIT @ 3681M. RUN IN W/ BIT #14. REAM 10M. TO BTM. MIXING ASP-721 TO LOWER FLUID LOSS.

I.D.F.C.-012

# International Drilling Fluids Corporation

Drilling Mud Properties Record

WELL NAME COLUMBIA ET AL AREA KOTANELEE

STOCK POINT FT. ST. JOHN Contractor KENTING #7

MUD SYSTEM WEIGHTED POLYMER ENGINEERS RICK REINHART / JIM WIELER

| Day No. | DATE 1991 | DEPTH M | MUD PROPERTIES: WEIGHT ppg | VISCOSITY: sec/L | A.V. cps | P.V. cps | Y.P. Pa | GEL: 0 | GEL: 10 | FLUID LOSS 30 Min cc's | CAKE mm | H.T.H.P. cc's | pH | Filtrate Analysis: Cl ppm | Ca ppm | PI | RETORT: % OIL | % SOLIDS | % SAND | BENTONITE kg/m³ | POTASH kg/m³ SULPHITES | ID BOND kg/m³ TOTAL BICARB | H2S (mg/L) IN | H2S (mg/L) OUT | OPERATION REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 06-18 | 3693 | 1190 | 40 | 23.5 | 19 | 4.5 | 1 | 1.5 | 37 | 1.5 | - | 10.5 | 4000 | 40 | 1.5 | - | .078 | .002 | 15 | 130 | 6 | 0 | 1.0 | JUNE-18 DRILL TO 3695 |
| " | | 3695 | 1195 | 41 | 24 | 19 | 5 | 1 | 1.5 | 35 | 1.5 | Sof | 10.5 | 3500 | 40 | 1.5 | - | .08 | .002 | 15 | 130 | 7 | 0 | 1.0 | HOIST BIT #15. LOST |
| " | | 3695 | 1193 | 43 | 25.5 | 20 | 5.5 | 1 | 1.5 | 20 | .8 | - | 10.3 | 3500 | 30 | 1.4 | - | .08 | .002 | 13 | 100 | 7.5 | 0 | 1.0 | CONES ON BOTTOM. |
| 52 | 06-19 | 3705 | 1200 | 43 | 24 | 19 | 5 | 1 | 1.5 | 25 | 1.0 | - | 10.3 | 350 | 30 | 1.4 | - | .085 | .002 | 14 | 110 | 7.5 | - | 1.0 | RUN IN W/ MAGNET |
| " | 06-19 | 3733 | 1195 | 43 | 26 | 20 | 6 | 1 | 1.5 | 15.0 | .8 | - | 10.5 | 350 | TR. | 1.4 | - | .085 | .003 | — | 100 | 9.0 | NEG. | — | WORK MAGNET + HOIST. |
| 53 | 06-20 | 3772 | 1210 | 43 | 26 | 20 | 6 | 1 | 2 | 19.4 | .8 | | 10.5 | 350 | TR. | 1.4 | | .09 | .004 | — | 110 | 9.5 | +1 | — | THE FLUID LOSS IS |
| 54 | 06-21 | 3790 | 1210 | 44 | 30 | 24 | 6 | 1 | 2 | 24.0 | .8 | | 10.5 | 350 | TR. | 1.3 | | .09 | .004 | | 115 | 9.5 | " | — | STARTING TO COME |
| | 06-21 | 3802 | 1175 | 44 | 30 | 24 | 6 | 1 | 2 | 17.0 | .8 | | 11.0 | 350 | TR. | 1.5 | | .08 | .003 | | 120 | 9.5 | " | | DOWN AND FILTER CAKE |
| 55 | 06-22 | 3843 | 1195 | 46 | 28 | 22 | 6 | 1 | 2 | 7.6 | .5 | | 10.5 | 350 | TR | 1.4 | | .08 | 003 | | 130 | 10 | " | | IS TIGHT. DUE TO |
| 56 | 06-23 | 3850 | 1205 | 46 | 30 | 24 | 6 | 1 | 2 | 7.0 | .5 | | 10.5 | 350 | TR. | 1.4 | | .08 | 004 | | 120 | 9.5 | " | | ADDITIONS OF ASP. 707 |
| 57 | 06-24 | 3915 | 1205 | 44 | 26 | 20 | 6 | 1 | 2 | 6.6 | .5 | | 10.5 | 350 | TR. | 1.5 | | .08 | .004 | | 120 | 10.0 | " | | FLUID LOSS DROPPED FROM |
| 58 | 06-25 | 3915 | 1210 | 46 | 29 | 22 | 7 | 1 | 2 | 7.6 | .5 | | 11.0 | 350 | TR. | 1.8 | | .08 | 002 | | 120 | 10.0 | " | | 24 ml TO BELOW 8ml AFT |
| 59 | 06-26/27 | 3915 | 1210 | 46 | 25 | 20 | 5 | 1 | 2 | 11.0 | .8 | | 11.0 | 350 | TR. | 1.8 | | .08 | / | | 120 | 9.0 | " | | 1.3 lb/BBL. FLO PLEX WAS ADDED |
| | | | | | | | | | | | | | | | | | | | | | | | | | TO SYSTEM. |

REMARKS: — LOST APPROX. 8 m³ FLUID TO HOLE WHILE DRLG. FROM 3784 - 3802 M. PRIOR TO TRIP OUT FOR BIT #17. A 14 m³ L.C.M. PILL WAS SPOTTED IN ANNULUS NO FURTHUR LOSSES WERE ENCOUNTERED. DRILLED 152 mm HOLE TO 3915 m (T.D.) & LOGGED. RAN 127 mm LINER TO 3915 m. LOST APPROX. 21 m³ MUD TO HOLE WHILE RUNNING LINER. PUMPED L.C.M. & BYPASSED SHAKER WHILE C.&R PRIOR TO CEMENTING.

D.F.C.-012

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible] 07, 1991
REPORT No. #01
SPUD DATE RE-E.T.D.

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR [illegible]
REPORT FOR Mr. [illegible] REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 1 [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. [illegible] |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. |
| DRILL COLLARS mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. 50 | PUMP PRESS. |
| OTHER | OTHER | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. | kg/m³ | MUD WT. 1150 | kg/m³ |
| HOLE COND. | UNDERFLOW WT. | kg/m³ | VISCOSITY [illegible] | s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE | cm³/30 min. |
| CURRENT OP. [illegible] | UNDERFLOW RATE | m³/min. | pH [illegible] | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐ [illegible]

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 01:00 | | |
| PRESENT DEPTH (m) | [illegible] | | |
| FLOWLINE TEMPERATURE (°C) | | | |
| DENSITY (kg/m³) | 1710 | | |
| FUNNEL VISCOSITY (s/L) | 49 | | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | |
| PLASTIC VISCOSITY (mPa.s) | 19 | | |
| YIELD POINT (Pa) | 5 | | |
| GELS 0/10 min. (Pa) | [illegible] | | |
| pH STRIP ☐ METER ☐ | [illegible] | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 11.5 | | |
| FILTER CAKE (mm) | 1 [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | [illegible] | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | – | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | | | |
| ELECTRICAL STABILITY (V) | – | | |
| OIL/WATER RATIO | – | | |
| $CaCl_2$ w/w% | – | | |
| "n"/"k" [illegible] | [illegible] | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | | VOL. BUILT | [illegible] |
| CUM. COST | | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

[illegible]

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE PHONE [illegible] MOBILE # [illegible]

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE
REPORT No.
SPUD DATE

WELL NAME LOCATION
OPERATOR CONTRACTOR
REPORT FOR Mr. REPORT FOR Mr.

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # | COND. | TANKS | PUMP SIZE | OPPOSITE D.P. |
| DRILL PIPE mm | SURFACE | HOLE | m³/STK. | OPPOSITE D.C. |
| DRILL COLLARS mm | INTER. | TOTAL | S.P.M. | PUMP PRESS. |
| OTHER | OTHER | STANDBY | m³/min. | CIRC. TIME |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE | FLOWLINE WT. | kg/m³ | MUD WT. kg/m³ |
| HOLE COND. | UNDERFLOW WT. | kg/m³ | VISCOSITY s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE cm³/30 min. |
| CURRENT OP. | UNDERFLOW RATE | m³/min. | pH |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| TIME SAMPLE TAKEN | | | | | | | | | |
| PRESENT DEPTH (m) | | | | | | | | | |
| FLOWLINE TEMPERATURE (°C) | | | | | | | | | |
| DENSITY (kg/m³) | | | | | | | | | |
| FUNNEL VISCOSITY (s/L) | | | | | | | | | |
| APPARENT VISCOSITY (mPa.s) | | | | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | | | | | | | | | |
| YIELD POINT (Pa) | | | | | | | | | |
| GELS 0/10 min. (Pa) | | | | | | | | | |
| pH STRIP ☐-METER ☐ | | | | | | | | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | | | | | | | | | |
| FILTER CAKE (mm) | | | | | | | | | |
| ALK ☐. (PF/MF) ☐ (PM/LIME) | | | | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | | | | | | | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | | | | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | | | | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | | | | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | | | | PREVIOUS COST | | STARTING VOLUME | | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | | | | DAILY COST | | VOL. BUILT | | | |
| ELECTRICAL STABILITY (V) | | | | CUM. COST | | VOL. LOST on SURFACE | | | |
| OIL/WATER RATIO | | | | CUM. ENG. COST | | VOL. LOST SUB SURFACE | | | |
| $CaCl_2$ w/w% | | | | | | END VOLUME | | | |
| "n"/"k" | | | | | | CUM. VOL. BUILT | | | |

COMMENTS:

STOCK POINT I.D.F. ENGINEER
PHONE PHONE MOBILE #

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE 06 OCT 1991
REPORT No. 3
SPUD DATE 30 SEP 91

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR [illegible]
REPORT FOR Mr. [illegible] REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 140 / [illegible] | COND. | TANKS 60 m³ | PUMP SIZE 114 x 406 | OPPOSITE D.P. [illegible] |
| DRILL PIPE 89 [illegible] mm | SURFACE | HOLE 60 m³ | m³/STK. 0132 | OPPOSITE D.C. [illegible] |
| DRILL COLLARS 114 mm | INTER./TIE BACK | TOTAL 120 m³ | S.P.M. 50 | PUMP PRESS. |
| OTHER | OTHER | STANDBY | m³/min. 1.9 | CIRC. TIME 1170 |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE GEL CHEM | FLOWLINE WT. | kg/m³ | MUD WT. 1150 - 1200 kg/m³ |
| HOLE COND. FAIR TO GOOD | UNDERFLOW WT. | kg/m³ | VISCOSITY 50 - 55 s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE - cm³/30 min. |
| CURRENT OP. DRLG. PROPER | UNDERFLOW RATE | m³/min. | pH 10.5 - 11.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☒ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 06:30 | | |
| PRESENT DEPTH (m) | 2551 | | |
| FLOWLINE TEMPERATURE (°C) | 23°C | | |
| DENSITY (kg/m³) | 1265 | | |
| FUNNEL VISCOSITY (s/L) | 42 | | |
| APPARENT VISCOSITY (mPa.s) | 32.5 | | |
| PLASTIC VISCOSITY (mPa.s) | 25 | | |
| YIELD POINT (Pa) | 7.5 | | |
| GELS 0/10 min. (Pa) | 1/- | | |
| pH STRIP ☐ METER ☐ | 10.5 | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 9.0 | | |
| FILTER CAKE (mm) | 1 [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 0.1 / 0.4 | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | 320 | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 600 | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | NIL | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | 17.3 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | 0/77 | | |
| MBT (Kg/m³) ☐ -/% ☐ OIL RET ☐ | 45 | | |
| ELECTRICAL STABILITY (V) | - | | |
| OIL/WATER RATIO | - | | |
| $CaCl_2$ w/w% | - | | |
| "n"/"k" [illegible] | [illegible] | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| GEL | 395 | | 25 | 370 | 350.00 |
| BARITE | 4608 | | 319 | 4289 | 7981.70 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 10 [illegible] | STARTING VOLUME | |
| DAILY COST | 8331.70 | VOL. BUILT | 120.0 m³ |
| CUM. COST | 18 [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 11 [illegible] | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

[illegible]

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE PHONE [illegible] MOBILE #

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible]
REPORT No. [illegible]
SPUD DATE [illegible]

WELL NAME [illegible]
LOCATION [illegible]

| | | | |
|---|---|---|---|
| OPERATOR [illegible] | | CONTRACTOR [illegible] | |
| REPORT FOR Mr. [illegible] | | REPORT FOR Mr. [illegible] | |

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. 55 |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. 100 |
| DRILL COLLARS [illegible] mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. [illegible] | PUMP PRESS. |
| OTHER | OTHER | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. [illegible] | [illegible] kg/m³ | MUD WT. [illegible] kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. [illegible] | [illegible] kg/m³ | VISCOSITY 60 [illegible] s/L |
| DEVIATION [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE [illegible] cm³/30 min. |
| CURRENT OP. [illegible] | UNDERFLOW RATE | m³/min. | pH [illegible] |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | |
| PRESENT DEPTH (m) | [illegible] | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | | |
| DENSITY (kg/m³) | [illegible] | | |
| FUNNEL VISCOSITY (s/L) | 60 | | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | |
| YIELD POINT (Pa) | [illegible] | | |
| GELS 0/10 min. (Pa) | [illegible] | | |
| pH STRIP ☐ METER ☐ | [illegible] | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | |
| FILTER CAKE (mm) | [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | [illegible] | | |
| SAND CONTENT (%) ☐ (∅) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (∅) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (∅) ☐ | [illegible] | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | [illegible] | | |
| ELECTRICAL STABILITY (V) | – | | |
| OIL/WATER RATIO [illegible] | [illegible] | | |
| CaCl₂ w/w% [illegible] | [illegible] | | |
| "n"/"k" [illegible] | [illegible] | | |

| MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|
| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| [illegible] | [illegible] | | 55 | [illegible] | [illegible] |
| [illegible] | [illegible] | | 4 | 178 | [illegible] |
| [illegible] | 100 | | 4 | 96 | 840.00 |
| → [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | [illegible] |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | [illegible] |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | [illegible] |
| | | END VOLUME | [illegible] |
| | | CUM. VOL. BUILT | |

COMMENTS: [illegible]

[illegible]

[illegible]

[illegible]

STOCK POINT [illegible]
I.D.F. ENGINEER [illegible]
PHONE
PHONE [illegible] MOBILE # [illegible]

I.D.F.C.-015 (2)

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible]
REPORT No. [illegible]
SPUD DATE [illegible]

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR [illegible]
REPORT FOR Mr. [illegible] REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. [illegible] |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. [illegible] |
| DRILL COLLARS [illegible] mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. [illegible] | PUMP PRESS. [illegible] |
| OTHER | OTHER | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. | kg/m³ | MUD WT. [illegible] | kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. | kg/m³ | VISCOSITY [illegible] | s/L |
| DEVIATION [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE [illegible] | cm³/30 min. |
| CURRENT OP. [illegible] | UNDERFLOW RATE | m³/min. | pH [illegible] | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | |
| PRESENT DEPTH (m) | [illegible] | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | | |
| DENSITY (kg/m³) | [illegible] | | |
| FUNNEL VISCOSITY (s/L) | [illegible] | | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | |
| YIELD POINT (Pa) | [illegible] | | |
| GELS 0/10 min. (Pa) | [illegible] | | |
| pH STRIP ☑ METER ☐ | [illegible] | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | |
| FILTER CAKE (mm) | [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | [illegible] | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | [illegible] | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | [illegible] | | |
| ELECTRICAL STABILITY (V) | [illegible] | | |
| OIL/WATER RATIO [illegible] | [illegible] | | |
| $CaCl_2$ w/w% [illegible] | [illegible] | | |
| "n"/"k" [illegible] | [illegible] | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | [illegible] |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | [illegible] |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: [illegible]

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE PHONE [illegible] MOBILE # [illegible]

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible]
REPORT No. [illegible]
SPUD DATE [illegible]

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR [illegible]
REPORT FOR Mr. [illegible] REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. [illegible] |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. [illegible] |
| DRILL COLLARS [illegible] mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. [illegible] | PUMP PRESS. [illegible] |
| OTHER | OTHER [illegible] | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. | kg/m³ | MUD WT. [illegible] | kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. | kg/m³ | VISCOSITY [illegible] | s/L |
| DEVIATION [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE [illegible] | cm³/30 min. |
| CURRENT OP. [illegible] | UNDERFLOW RATE | m³/min. | pH [illegible] | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ [illegible] | MUD PROPERTIES [illegible] | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | [illegible] | [illegible] | [illegible] | [illegible] | | | [illegible] | | [illegible] |
| FLOWLINE TEMPERATURE (°C) | [illegible] | | [illegible] | | | | | | |
| DENSITY (kg/m³) | [illegible] | | [illegible] | | | | | | |
| FUNNEL VISCOSITY (s/L) | [illegible] | | [illegible] | | | | | | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | | | | | | | |
| YIELD POINT (Pa) [illegible] | [illegible] | | | | | | | | |
| GELS 0/10 min. (Pa) | [illegible] | | | | | | | | |
| pH STRIP ☐ METER ☐ | [illegible] | | [illegible] | | | | | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | | | | | | | |
| FILTER CAKE (mm) | [illegible] | | | | | | | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | | | | | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | [illegible] | | | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | [illegible] | | | PREVIOUS COST | [illegible] | STARTING VOLUME | | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | [illegible] | | | DAILY COST | [illegible] | VOL. BUILT | [illegible] | | |
| ELECTRICAL STABILITY (V) | | | | CUM. COST | [illegible] | VOL. LOST on SURFACE | | | |
| OIL/WATER RATIO [illegible] | [illegible] | | | CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | | | |
| $CaCl_2$ w/w% [illegible] | [illegible] | | | | | END VOLUME | | | |
| "n"/"k" [illegible] | [illegible] | | | | | CUM. VOL. BUILT | | | |

COMMENTS: [illegible]

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE [illegible] PHONE [illegible] MOBILE # [illegible]

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible]
REPORT No. [illegible]
SPUD DATE [illegible]

WELL NAME [illegible]
LOCATION [illegible]

| | | | |
|---|---|---|---|
| OPERATOR | [illegible] | CONTRACTOR | [illegible] |
| REPORT FOR Mr. | [illegible] | REPORT FOR Mr. | [illegible] |

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | [illegible] | COND. | | TANKS | [illegible] | PUMP SIZE | [illegible] | OPPOSITE D.P. | [illegible] |
| DRILL PIPE | [illegible] mm | SURFACE | | HOLE | 60 | m³/STK. | [illegible] | OPPOSITE D.C. | [illegible] |
| DRILL COLLARS | [illegible] mm | INTER. | [illegible] | TOTAL | [illegible] | S.P.M. | [illegible] | PUMP PRESS. | 10,000 |
| OTHER | | OTHER | | STANDBY | | m³/min. | [illegible] | CIRC. TIME | [illegible] |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | [illegible] | FLOWLINE WT. | [illegible] kg/m³ | MUD WT. | [illegible] kg/m³ |
| HOLE COND. | [illegible] | UNDERFLOW WT. | kg/m³ | VISCOSITY | [illegible] s/L |
| DEVIATION | [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE | [illegible] cm³/30 min. |
| CURRENT OP. | [illegible] | UNDERFLOW RATE | m³/min. | pH | [illegible] |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ [illegible] | MUD PROPERTIES | | [illegible] | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 04:00 | | 04:00 | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 2515 | | 2515 | [illegible] | [illegible] | | | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | | [illegible] | [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| DENSITY (kg/m³) | 1200 | | 1195 | | | | | | |
| FUNNEL VISCOSITY (s/L) | 68 | | 75 | | | | | | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | | | | | | | |
| YIELD POINT (Pa) [illegible] | [illegible] | | | | | | | | |
| GELS 0/10 min. (Pa) | [illegible] | | | | | | | | |
| pH STRIP ☐ METER ☐ | 10.5 | | 10 | | | | | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | | | | | | | |
| FILTER CAKE (mm) | [illegible] | | | | | | | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | 40 | | | | | | | | |
| SAL. ☐ NACl ☐ CL ☐ (mg/L) | [illegible] | | | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | [illegible] | | | PREVIOUS COST | [illegible] | STARTING VOLUME | | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | [illegible] | | | DAILY COST | [illegible] | VOL. BUILT | | | |
| ELECTRICAL STABILITY (V) | — | | | CUM. COST | [illegible] | VOL. LOST on SURFACE | [illegible] | | |
| OIL/WATER RATIO [illegible] | 0 | | | CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | [illegible] | | |
| CaCl₂ w/w% [illegible] | [illegible] | | | | | END VOLUME | | | |
| "n"/"k" [illegible] | [illegible] | | | | | CUM. VOL. BUILT | | | |

COMMENTS: [illegible]

[illegible]

[illegible]

[illegible]

| | | | |
|---|---|---|---|
| STOCK POINT | [illegible] | I.D.F. ENGINEER | [illegible] |
| PHONE | | PHONE | [illegible] MOBILE # [illegible] |

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible]
REPORT No. [illegible]
SPUD DATE [illegible]

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR [illegible]
REPORT FOR Mr. REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. [illegible] |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. [illegible] |
| DRILL COLLARS [illegible] mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. [illegible] | PUMP PRESS. [illegible] |
| OTHER | OTHER | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. [illegible] kg/m³ | MUD WT. [illegible] kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. kg/m³ | VISCOSITY [illegible] s/L |
| DEVIATION [illegible] | OVERFLOW WT. kg/m³ | FILTRATE [illegible] cm³/30 min. |
| CURRENT OP. [illegible] | UNDERFLOW RATE m³/min. | pH [illegible] |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | |
| PRESENT DEPTH (m) | [illegible] | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | | |
| DENSITY (kg/m³) | [illegible] | | |
| FUNNEL VISCOSITY (s/L) | [illegible] | | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | |
| YIELD POINT (Pa) | [illegible] | | |
| GELS 0/10 min. (Pa) | [illegible] | | |
| pH STRIP ☐-METER ☐ | [illegible] | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | |
| FILTER CAKE (mm) | [illegible] | | |
| ALK ☐- (PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | [illegible] | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | [illegible] | | |
| MBT (Kg/m³) ☐- /% ☐ OIL RET ☐ | [illegible] | | |
| ELECTRICAL STABILITY (V) | [illegible] | | |
| OIL/WATER RATIO | [illegible] | | |
| $CaCl_2$ w/w% | [illegible] | | |
| "n"/"k" | [illegible] | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | [illegible] |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

[illegible]

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE PHONE [illegible] MOBILE # [illegible]

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible] 11, 1991
REPORT No. [illegible]
SPUD DATE [illegible] 91

| | | | |
|---|---|---|---|
| WELL NAME [illegible] | | LOCATION [illegible] | |
| OPERATOR [illegible] | | CONTRACTOR [illegible] | |
| REPORT FOR Mr. [illegible] | | REPORT FOR Mr. [illegible] | |

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR.VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. 45 |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. [illegible] |
| DRILL COLLARS [illegible] mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. [illegible] | PUMP PRESS. [illegible] |
| OTHER | OTHER | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. [illegible] | [illegible] kg/m³ | MUD WT. [illegible] kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. | kg/m³ | VISCOSITY [illegible] s/L |
| DEVIATION [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE [illegible] cm³/30 min. |
| CURRENT OP. [illegible] | UNDERFLOW RATE | m³/min. | pH [illegible] |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | |
| PRESENT DEPTH (m) | [illegible] | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | | |
| DENSITY (kg/m³) | [illegible] | | |
| FUNNEL VISCOSITY (s/L) | [illegible] | | |
| APPARENT VISCOSITY (mPa.s) | 45 | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | |
| YIELD POINT (Pa) | [illegible] | | |
| GELS 0/10 min. (Pa) | [illegible] | | |
| pH STRIP ☐ METER ☐ | [illegible] | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | |
| FILTER CAKE (mm) | [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | [illegible] | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | [illegible] | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | [illegible] | | |
| ELECTRICAL STABILITY (V) | - | | |
| OIL/WATER RATIO [illegible] | [illegible] | | |
| CaCl₂ w/w% [illegible] | [illegible] | | |
| "n"/"k" [illegible] | [illegible] | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| [illegible] | 509 | | 17 | [illegible] | [illegible] |
| [illegible] | 194 | | [illegible] | [illegible] | [illegible] |
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|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | [illegible] |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | [illegible] |
| | | END VOLUME | [illegible] |
| | | CUM. VOL. BUILT | |

COMMENTS:

[illegible]

[illegible]

[illegible]

[illegible]

STOCK POINT [illegible]
I.D.F. ENGINEER [illegible]
PHONE
PHONE [illegible] MOBILE # [illegible]

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE
REPORT No.
SPUD DATE

WELL NAME LOCATION

OPERATOR CONTRACTOR

REPORT FOR Mr. REPORT FOR Mr.

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # | COND. | TANKS | PUMP SIZE | OPPOSITE D.P. |
| DRILL PIPE mm | SURFACE | HOLE | m³/STK. | OPPOSITE D.C. |
| DRILL COLLARS mm | INTER. | TOTAL | S.P.M. | PUMP PRESS. |
| OTHER | OTHER | STANDBY | m³/min. | CIRC. TIME |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE | FLOWLINE WT. | kg/m³ | MUD WT. | kg/m³ |
| HOLE COND. | UNDERFLOW WT. | kg/m³ | VISCOSITY | s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE | cm³/30 min. |
| CURRENT OP. | UNDERFLOW RATE | m³/min. | pH | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐ MUD PROPERTIES

| | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | | | |
| PRESENT DEPTH (m) | | | |
| FLOWLINE TEMPERATURE (°C) | | | |
| DENSITY (kg/m³) | | | |
| FUNNEL VISCOSITY (s/L) | | | |
| APPARENT VISCOSITY (mPa.s) | | | |
| PLASTIC VISCOSITY (mPa.s) | | | |
| YIELD POINT (Pa) | | | |
| GELS 0/10 min. (Pa) | | | |
| pH STRIP ☐ METER ☐ | | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | | | |
| FILTER CAKE (mm) | | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | | | |
| SAL. ☑ NACl ☐ CL ☐ (mg/L) | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | | | |
| ELECTRICAL STABILITY (V) | | | |
| OIL/WATER RATIO | | | |
| $CaCl_2$ w/w% | | | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | | STARTING VOLUME | |
| DAILY COST | | VOL. BUILT | |
| CUM. COST | | VOL. LOST on SURFACE | |
| CUM. ENG. COST | | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

STOCK POINT I.D.F. ENGINEER

PHONE PHONE MOBILE #

# International Drilling Fluids Corporation

## DRILLING FLUID REPORT

DATE
REPORT No.
SPUD DATE

WELL NAME LOCATION
OPERATOR CONTRACTOR
REPORT FOR Mr. REPORT FOR Mr.

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # | COND. | TANKS | PUMP SIZE | OPPOSITE D.P. |
| DRILL PIPE mm | SURFACE | HOLE | m³/STK. | OPPOSITE D.C. |
| DRILL COLLARS mm | INTER. | TOTAL | S.P.M. | PUMP PRESS. |
| OTHER | OTHER | STANDBY | m³/min. | CIRC. TIME |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE | FLOWLINE WT. | kg/m³ | MUD WT. kg/m³ |
| HOLE COND. | UNDERFLOW WT. | kg/m³ | VISCOSITY s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE cm³/30 min. |
| CURRENT OP. | UNDERFLOW RATE | m³/min. | pH |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | | | |
| PRESENT DEPTH (m) | | | |
| FLOWLINE TEMPERATURE (°C) | | | |
| DENSITY (kg/m³) | | | |
| FUNNEL VISCOSITY (s/L) | | | |
| APPARENT VISCOSITY (mPa.s) | | | |
| PLASTIC VISCOSITY (mPa.s) | | | |
| YIELD POINT (Pa) | | | |
| GELS 0/10 min. (Pa) | | | |
| pH STRIP ☐ METER ☐ | | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | | | |
| FILTER CAKE (mm) | | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | | | |
| MBT (Kg/m³) ☐ -/% ☐ OIL RET ☐ | | | |
| ELECTRICAL STABILITY (V) | | | |
| OIL/WATER RATIO | | | |
| $CaCl_2$ w/w% | | | |
| "n"/"k" | | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | | STARTING VOLUME | |
| DAILY COST | | VOL. BUILT | |
| CUM. COST | | VOL. LOST on SURFACE | |
| CUM. ENG. COST | | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

THANK YOU

STOCK POINT I.D.F. ENGINEER

PHONE PHONE MOBILE #

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible] 13, 1991
REPORT No # 11
SPUD DATE APR. 29. 91

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR KENTING #07
REPORT FOR Mr. [illegible] REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. 49 |
| DRILL PIPE 89 mm | SURFACE | HOLE [illegible] | m³/STK. .0125 | OPPOSITE D.C. 95 |
| DRILL COLLARS / [illegible] mm | INTER/[illegible] | TOTAL [illegible] | S.P.M. 47 | PUMP PRESS. [illegible] |
| OTHER | OTHER | STANDBY | m³/min. .594 | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. [illegible] | kg/m³ | MUD WT. [illegible] | kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. [illegible] 1045 | kg/m³ | VISCOSITY [illegible] | s/L |
| DEVIATION [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE [illegible] | cm³/30 min. |
| CURRENT OP. | UNDERFLOW RATE | m³/min. | pH [illegible] | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ [illegible] | MUD PROPERTIES [illegible] | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | |
| PRESENT DEPTH (m) | 3046. | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | 47°c | |
| DENSITY (kg/m³) | 1167 | 1197 | |
| FUNNEL VISCOSITY (s/L) | 54 | 125 | |
| APPARENT VISCOSITY (mPa.s) | 36 | | |
| PLASTIC VISCOSITY (mPa.s) | 26 | | |
| YIELD POINT (Pa) | 4 | | |
| GELS 0/10 min. (Pa) | 1/3 | | |
| pH STRIP ☐ METER ☐ | [illegible] | 10.5 | |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | |
| FILTER CAKE (mm) | 1.5 [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | 20 | | |
| SAL. ☐ NACl ☐ CL ☐ (mg/L) | 500 | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | 9/2 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | 12 | | |
| ELECTRICAL STABILITY (V) | - | | |
| OIL/WATER RATIO [illegible] | 0 | | |
| $CaCl_2$ w/w% [illegible] | 2 | | |
| "n"/"k" [illegible] | [illegible] | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| CEL | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | 19 | 19- | [illegible] |
| [illegible] | 10C | | 4 | 96 | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| BARITE | [illegible] | | [illegible] | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | |
| [illegible] | [illegible] | END VOLUME | |
| [illegible] | [illegible] | CUM. VOL. BUILT | |

COMMENTS:

KEEP A CLOSE WATCH ON CA++ CONTENT

ONCE CORING IS COMPLETED

RAISE PH TO 11.0 AT TD WITH KOH

THANKS

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE PHONE [illegible] MOBILE # [illegible]

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible]
REPORT No. [illegible]
SPUD DATE [illegible]

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR [illegible]
REPORT FOR Mr. [illegible] REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. [illegible] |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. [illegible] |
| DRILL COLLARS [illegible] mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. [illegible] | PUMP PRESS. [illegible] |
| OTHER | OTHER | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. [illegible] kg/m³ | MUD WT. [illegible] kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. [illegible] kg/m³ | VISCOSITY [illegible] s/L |
| DEVIATION [illegible] | OVERFLOW WT. kg/m³ | FILTRATE [illegible] cm³/30 min. |
| CURRENT OP. | UNDERFLOW RATE m³/min. | pH [illegible] |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐ [illegible] MUD PROPERTIES [illegible]

| | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | |
| PRESENT DEPTH (m) | [illegible] | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | [illegible] | |
| DENSITY (kg/m³) | [illegible] | [illegible] | |
| FUNNEL VISCOSITY (s/L) | [illegible] | [illegible] | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | |
| YIELD POINT (Pa) | [illegible] | | |
| GELS 0/10 min. (Pa) | [illegible] | | |
| pH STRIP ☐-METER ☐ | [illegible] | | |
| FILTRATE ☐-API ☐ HT HP (cm³) | [illegible] | | |
| FILTER CAKE (mm) | [illegible] | | |
| ALK ☐-(PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐-(mg/L) | [illegible] | | |
| SAL. ☐ NACI ☐ CL ☐-(mg/L) | [illegible] | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | [illegible] | | |
| MBT (Kg/m³) ☐-/% ☐ OIL RET ☐ | [illegible] | | |
| ELECTRICAL STABILITY (V) | [illegible] | | |
| OIL/WATER RATIO [illegible] | [illegible] | | |
| $CaCl_2$ w/w% [illegible] | [illegible] | | |
| "n"/"k" [illegible] | [illegible] | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

[illegible]

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE PHONE [illegible] MOBILE #

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible]
REPORT No. [illegible]
SPUD DATE [illegible]

WELL NAME [illegible] LOCATION [illegible]
OPERATOR [illegible] CONTRACTOR [illegible]
REPORT FOR Mr. [illegible] REPORT FOR Mr. [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # [illegible] | COND. | TANKS [illegible] | PUMP SIZE [illegible] | OPPOSITE D.P. [illegible] |
| DRILL PIPE [illegible] mm | SURFACE | HOLE [illegible] | m³/STK. [illegible] | OPPOSITE D.C. [illegible] |
| DRILL COLLARS [illegible] mm | INTER. [illegible] | TOTAL [illegible] | S.P.M. [illegible] | PUMP PRESS. [illegible] |
| OTHER | OTHER | STANDBY | m³/min. [illegible] | CIRC. TIME [illegible] |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE [illegible] | FLOWLINE WT. [illegible] | kg/m³ | MUD WT. [illegible] kg/m³ |
| HOLE COND. [illegible] | UNDERFLOW WT. [illegible] | kg/m³ | VISCOSITY [illegible] s/L |
| DEVIATION [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE [illegible] cm³/30 min. |
| CURRENT OP. [illegible] | UNDERFLOW RATE | m³/min. | pH [illegible] |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐ [illegible]

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 16:00 | | |
| PRESENT DEPTH (m) | 2200 | | |
| FLOWLINE TEMPERATURE (°C) | 47°C | | 45°C |
| DENSITY (kg/m³) | 1190 | | |
| FUNNEL VISCOSITY (s/L) | 58 | | |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | |
| PLASTIC VISCOSITY (mPa.s) | 22 | | |
| YIELD POINT (Pa) | [illegible] | | |
| GELS 0/10 min. (Pa) | 7/16 | | |
| pH STRIP ☐ METER ☐ | 11.0 | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 14.0 | | |
| FILTER CAKE (mm) | [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 1.2/1.1 | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | |
| SAL. ☐ NACl ☐ CL ☐ (mg/L) | 500 | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | 93 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | [illegible] | | |
| ELECTRICAL STABILITY (V) | - | | |
| OIL/WATER RATIO [illegible] | [illegible] | | |
| $CaCl_2$ w/w% [illegible] | 3 | | |
| "n"/"k" [illegible] | [illegible] | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | [illegible] | | 25 | [illegible] | [illegible] |
| BIOPOL | 10 | | 5 | 5 | 300.00 |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |
| [illegible] | | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | [illegible] |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: [illegible]

STOCK POINT [illegible] I.D.F. ENGINEER [illegible]
PHONE [illegible] PHONE [illegible] MOBILE # [illegible]

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE [illegible] 11 1991
REPORT No. [illegible]
SPUD DATE [illegible]

| | | | |
|---|---|---|---|
| WELL NAME | [illegible] | LOCATION | [illegible] |
| OPERATOR | [illegible] | CONTRACTOR | [illegible] |
| REPORT FOR Mr. | [illegible] | REPORT FOR Mr. | [illegible] |

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | [illegible] | COND. | | TANKS | [illegible] | PUMP SIZE | [illegible] | OPPOSITE D.P. | [illegible] |
| DRILL PIPE | [illegible] mm | SURFACE | | HOLE | [illegible] | m³/STK. | [illegible] | OPPOSITE D.C. | 91 |
| DRILL COLLARS | [illegible] mm | INTER. | [illegible] | TOTAL | [illegible] | S.P.M. | [illegible] | PUMP PRESS. | [illegible] |
| OTHER | | OTHER | | STANDBY | | m³/min. | [illegible] | CIRC. TIME | [illegible] |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | [illegible] | FLOWLINE WT. [illegible] | [illegible] kg/m³ | MUD WT. | [illegible] kg/m³ |
| HOLE COND. | [illegible] | UNDERFLOW WT. [illegible] | [illegible] kg/m³ | VISCOSITY | [illegible] s/L |
| DEVIATION | [illegible] | OVERFLOW WT. | kg/m³ | FILTRATE | [illegible] cm³/30 min. |
| CURRENT OP. | [illegible] | UNDERFLOW RATE | m³/min. | pH | [illegible] |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ [illegible] | MUD PROPERTIES | [illegible] | |
|---|---|---|---|
| TIME SAMPLE TAKEN | [illegible] | | |
| PRESENT DEPTH (m) | [illegible] | | |
| FLOWLINE TEMPERATURE (°C) | [illegible] | | [illegible] |
| DENSITY (kg/m³) | 1190 | | 1190 |
| FUNNEL VISCOSITY (s/L) | 56 | | 90 |
| APPARENT VISCOSITY (mPa.s) | [illegible] | | |
| PLASTIC VISCOSITY (mPa.s) | [illegible] | | |
| YIELD POINT (Pa) | 5 | | |
| GELS 0/10 min. (Pa) | [illegible] | | |
| pH STRIP ☐ METER ☐ | [illegible] | | 10.5 |
| FILTRATE ☐ API ☐ HT HP (cm³) | [illegible] | | |
| FILTER CAKE (mm) | [illegible] | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | [illegible] | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | [illegible] | | |
| SAL. ☐ NACl ☐ CL ☐ (mg/L) | [illegible] | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | [illegible] | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | [illegible] | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | [illegible] | | |
| ELECTRICAL STABILITY (V) | – | | |
| OIL/WATER RATIO [illegible] | 0 | | |
| CaCl₂ w/w% [illegible] | [illegible] | | |
| "n"/"k" [illegible] | [illegible] | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 4943 | | [illegible] | [illegible] | [illegible] |

| | | | |
|---|---|---|---|
| PREVIOUS COST | [illegible] | STARTING VOLUME | |
| DAILY COST | [illegible] | VOL. BUILT | |
| CUM. COST | [illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | [illegible] | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

[illegible]

[illegible]

THANKS

STOCK POINT FT. ST. JOHN
I.D.F. ENGINEER [illegible]
PHONE
PHONE [illegible] MOBILE # [illegible]

I.D.F.C.-015 (2)

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE 91-05-17
REPORT No. 15
SPUD DATE 91-04-29

| | | | |
|---|---|---|---|
| WELL NAME | COLUMBIA et al KATZNELSON | LOCATION | W-T-J-LSD |
| OPERATOR | COLUMBIA GAS DEVELOPMENT | CONTRACTOR | KENTING #7 |
| REPORT FOR Mr. | HAROLD ROSS / JOE TOOLE | REPORT FOR Mr. | PAUL SMYLIE/TIM |

| ASSEMBLY | | CASING | | MUD Vol. (m³) | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 311 / 5 | COND. | | TANKS | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 45 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | m³/STK. | 0.158 | OPPOSITE D.C. | 78 |
| DRILL COLLARS | 120 mm | INTER. | 177.8 / 23# | TOTAL | S.P.M. | 45 | PUMP PRESS. | |
| OTHER | | OTHER | | STANDBY | m³/min. | 5.7 | CIRC. TIME | 320 |

| HOLE DATA | | DESANDER/DESTILTER | | | DRILLING FLUID SPECIFICATIONS | | |
|---|---|---|---|---|---|---|---|
| MUD TYPE | GEL CAUSTIC | FLOWLINE WT. | | kg/m³ | MUD WT. | 1190 | kg/m³ |
| HOLE COND. | | UNDERFLOW WT. | | kg/m³ | VISCOSITY | 50-55 | s/L |
| DEVIATION | | OVERFLOW WT. | | kg/m³ | FILTRATE | 10-12 | cm³/30 min. |
| CURRENT OP. | | UNDERFLOW RATE | | m³/min. | pH | 10.5 | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☑ | MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 23:00 | | | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | | | | | | | | | |
| FLOWLINE TEMPERATURE (°C) | -- | | | | | | | | |
| DENSITY (kg/m³) | 1195 | | | | | | | | |
| FUNNEL VISCOSITY (s/L) | 49 | | | | | | | | |
| APPARENT VISCOSITY (mPa.s) | 27 | | | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | 22 | | | | | | | | |
| YIELD POINT (Pa) | 4 | | | | | | | | |
| GELS 0/10 min. (Pa) | 1/2 | | | | | | | | |
| pH STRIP ☐ METER ☐ | 10.5 | | | | | | | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 12.4 | | | | | | | | |
| FILTER CAKE (mm) | 2.0 | | | | | | | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 1.4/3.2 | | | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | 72. | | | | | | | | |
| SAL. ☐ NACl ☐ CL ☐ (mg/L) | 750 | | | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | TR. | | | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | 27 | | | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | 73 | | | PREVIOUS COST | 21,554 | STARTING VOLUME | | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | 65 | | | DAILY COST | | VOL. BUILT | | | |
| ELECTRICAL STABILITY (V) | | | | CUM. COST | | VOL. LOST on SURFACE | | | |
| OIL/WATER RATIO | 73:27 | NEG. | | CUM. ENG. COST | 6000 | VOL. LOST SUB SURFACE | | | |
| $CaCl_2$ w/w% | | | | | | END VOLUME | | | |
| "n"/"k" | | | | | | CUM. VOL. BUILT | | | |

COMMENTS:

CONTROL WEIGHT AT 1190 Kg/m³ W/BARITE.

MAINTAIN PH AT 10.5 USING CAUSTIC.

ADD DEFOAM AS REQ. FOR P.V.

KEEP VIS. AT 50-55 SEC. USING GEL.

TANKS

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER TIM WILLER

PHONE 785-4422 PHONE ON LOCATION MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-05-18
REPORT No. 16
SPUD DATE 91-04-29

WELL NAME COLUMBIA et al KOTANEELEE LOCATION Y-J-I-48
OPERATOR COLUMBIA GAS DEVEL. CONTRACTOR KENTING #7
REPORT FOR Mr. BOB TOOLE REPORT FOR Mr. PHIL BOS-MURDITH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | / 152 | COND. | | TANKS | 70 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | |
| DRILL PIPE | 99 mm | SURFACE | | HOLE | 52 | m³/STK. | .0118 | OPPOSITE D.C. | |
| DRILL COLLARS | 120 mm | INTER | 177.8 | TOTAL | 122 | S.P.M. | 37 | PUMP PRESS. | |
| OTHER | | OTHER | | STANDBY | | m³/min. | .436 | CIRC. TIME | 280 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | GEL CAUSTIC | FLOWLINE WT. | kg/m³ | MUD WT. | 1190 kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | kg/m³ | VISCOSITY | 50-55 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | ~12 cm³/30 min. |
| CURRENT OP. | C.R. | UNDERFLOW RATE | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 15:00 | | |
| PRESENT DEPTH (m) | 3274 | | |
| FLOWLINE TEMPERATURE (°C) | 30 | | |
| DENSITY (kg/m³) | 1190 | | |
| FUNNEL VISCOSITY (s/L) | 62 | | |
| APPARENT VISCOSITY (mPa.s) | 36 | | |
| PLASTIC VISCOSITY (mPa.s) | 28 | | |
| YIELD POINT (Pa) | 8 | | |
| GELS 0/10 min. (Pa) | 3/3 | | |
| pH STRIP ☑ METER ☐ | 11.0 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 12.6 | | |
| FILTER CAKE (mm) | 2.0 | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 1.4/2.3 | | |
| TOTAL HARDNESS ☑ Ca ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 750 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | TR. | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | 3.07 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .93 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 70 | | |
| ELECTRICAL STABILITY (V) | — | | |
| OIL/WATER RATIO | H₂S | NEG. | |
| CaCl₂ w/w% | | | |
| "n"/"k" | | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | | | 35 | | 438 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 21,554 | STARTING VOLUME | |
| DAILY COST | 438 | VOL. BUILT | |
| CUM. COST | 21,992 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 6375 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: SET BRIDGE PLUG AT 3331 m
SET WHIPSTOCK PACKER - 3277 m
LOGGED - RAN IN TO MILL.

1) HOLD DENSITY AT 1190 kg/m³ WITH BARITE.
2) PH AT 10.5 WITH CAUSTIC.
3) KEEP V.S. AT 50-55 S/L USING GEL.
4) RUN 20 LITRES H₂O PER MIN.

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER JIM WIELER
PHONE 785-4227 PHONE/LOCATION MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-05-19
REPORT No. 17
SPUD DATE 91-04-27

WELL NAME COLUMBIA ET AL KOTANELEE  LOCATION 4-J-I-48
OPERATOR COLUMBIA GAS DEVEL.  CONTRACTOR KENTING #7
REPORT FOR Mr. ROD TOOLE  REPORT FOR Mr. PHIL ROSMILLER

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. |
|---|---|---|---|---|---|---|---|
| BIT SIZE / # | / | COND. | TANKS | 75 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 52 | m³/STK. | .0118 | OPPOSITE D.C. |
| DRILL COLLARS | 120 mm | INTER. 177.8 | TOTAL | 127 | S.P.M. | 52 | PUMP PRESS. 8MPA UP 10 |
| OTHER | | OTHER | STANDBY | | m³/min. | .59 | CIRC. TIME 215 ± |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | GEL CAUSTIC | FLOWLINE WT. | kg/m³ | MUD WT. | 1190 kg/m³ |
| HOLE COND. | CASED | UNDERFLOW WT. | kg/m³ | VISCOSITY | 50-60 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 12 cm³/30 min. |
| CURRENT OP. | MILL | UNDERFLOW RATE | m³/min. | pH | 11.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 05:00 | | 23:30 |
| PRESENT DEPTH (m) | 3274 | | 3274 |
| FLOWLINE TEMPERATURE (°C) | 35 | | 37 |
| DENSITY (kg/m³) | 1195 | | 1190 |
| FUNNEL VISCOSITY (s/L) | 60 | | 53 |
| APPARENT VISCOSITY (mPa.s) | 39 | | 35 |
| PLASTIC VISCOSITY (mPa.s) | 30 | | 28 |
| YIELD POINT (Pa) | 9 | | 7 |
| GELS 0/10 min. (Pa) | 2/3 | | 1/3 |
| pH STRIP ☑ METER ☐ | 11.0 | | 11.0 |
| FILTRATE ☐ API ☐ HT HP (cm³) | 12.6 | | 12.0 |
| FILTER CAKE (mm) | 2.0 | | 2.0 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.3/2.3 | | 1.3/2.4 |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | TR. | | TR. |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 750 | | 750 |
| SAND CONTENT (%) ☐ (Ø) ☑ | TR. | | TR. |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .07 | | .07 |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .93 | | 93 |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 70 | | 70 |
| ELECTRICAL STABILITY (V) | — | | - |
| OIL/WATER RATIO $H_2S$ | NEG. | | NEG. |
| $CaCl_2$ w/w% | | | |
| "n"/"k" | | | |

| MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|
| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| BARITE | | | 70 | | 875 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 21,792 | STARTING VOLUME | |
| DAILY COST | 875 | VOL. BUILT | |
| CUM. COST | 22,867 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 6750 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: MILLING WINDOW

CONTROL DENSITY AT 1190 kg/m³ USING BARITE.

KEEP PH AT 11.0 WITH CAUSTIC.

HOLD VIS. AT 55-60 S/L W/ GEL.

NOTE: IF WE GO OUT RUN WATER.

STOCK POINT FT. ST. JOHN  I.D.F. ENGINEER JIM WILLER

PHONE 785-4222  PHONE ON LOCATION  MOBILE #

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-05-20
REPORT No. 18
SPUD DATE 91-05-29

WELL NAME COLUMBIA et al KOTANELEE | LOCATION Y-J-I-48
OPERATOR COLUMBIA GAS DEVEL. | CONTRACTOR KENTING #7
REPORT FOR Mr. BOB TOOLE | REPORT FOR Mr. PHIL BOSOMWORTH

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|---|---|
| BIT SIZE / # | / 152 | COND. | TANKS | 70 | PUMP SIZE 114 x 406 | OPPOSITE D.P. |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 52 | m³/STK. .0118 | OPPOSITE D.C. |
| DRILL COLLARS | 120 mm | INTER. 177.8/3274 | TOTAL | 122 | S.P.M. 90 | PUMP PRESS. |
| OTHER | | OTHER | STANDBY | | m³/min. .473 | CIRC. TIME |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | WT. GEL/CAUSTIC | FLOWLINE WT. | kg/m³ | MUD WT. | 1190 kg/m³ |
| HOLE COND. | CASED | UNDERFLOW WT. | kg/m³ | VISCOSITY | 50-55 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 12 cm³/30 min. |
| CURRENT OP. | MILLING | UNDERFLOW RATE | m³/min. | pH | 10.5-11.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 03:30 | | |
| PRESENT DEPTH (m) | 3276 | | |
| FLOWLINE TEMPERATURE (°C) | 38 | | |
| DENSITY (kg/m³) | 1190 | | |
| FUNNEL VISCOSITY (s/L) | 53 | | |
| APPARENT VISCOSITY (mPa.s) | 35 | | |
| PLASTIC VISCOSITY (mPa.s) | 28 | | |
| YIELD POINT (Pa) | 7 | | |
| GELS 0/10 min. (Pa) | 1\|3 | | |
| pH STRIP ☑ METER ☐ | 11.0 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 12.0 | | |
| FILTER CAKE (mm) | 2.0 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.3\|2.4 | | |
| TOTAL HARDNESS ☑ Ca. ☐ (mg/L) | tr. | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 750 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .001 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .07 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .93 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 70 | | |
| ELECTRICAL STABILITY (V) | | | |
| OIL/WATER RATIO 4\|96 | NEG. | | |
| $CaCl_2$ w/w% | | | |
| "n"/"k" | | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 22,867 | STARTING VOLUME | |
| DAILY COST | -- | VOL. BUILT | |
| CUM. COST | 22,867 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 7125 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: MILLING

1) CONTROL DENSITY AT 1190 kg/m³ WITH BARITE.
2) PH AT 11.0 USING CAUSTIC.
3) HOLD VIS AT 50-55 s/L WIGEL.
4) NOTE: IF VIS. CLIMBS RUN $H_2O$

STOCK POINT FT. ST. JOHN OKS | I.D.F. ENGINEER JIM WIGLER
PHONE 785-4222 | PHONE ON LOCATION | MOBILE #

# IDF
INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE 91-05-21
REPORT No. 19
SPUD DATE 91-04-29

WELL NAME COLUMBIA et al KOTANELEE | LOCATION Y-J-I-48
OPERATOR COLUMBIA GAS DEVEL. | CONTRACTOR KENTING H.T. #7
REPORT FOR Mr. KAE TODLE | REPORT FOR Mr. PHIL BOSWORTH

| ASSEMBLY | | CASING | MUD VOL. (m³) | | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|---|---|
| BIT SIZE / # | / | COND. | TANKS 70 | | PUMP SIZE 14 x 406 | OPPOSITE D.P. |
| DRILL PIPE 89 | mm | SURFACE | HOLE 52 | | m³/STK. .018 | OPPOSITE D.C. |
| DRILL COLLARS 120 | mm | INTER. 1700/3274 | TOTAL 122 | | S.P.M. 40 | PUMP PRESS. MAX. = 110 |
| OTHER | | OTHER | STANDBY | | m³/min. .472 | CIRC. TIME 260 |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE WT. GEL/CAUSTIC | FLOWLINE WT. | kg/m³ | MUD WT. 1190 | kg/m³ |
| HOLE COND. | UNDERFLOW WT. | kg/m³ | VISCOSITY 50-55 | s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE 12 | cm³/30 min. |
| CURRENT OP. MILLING | UNDERFLOW RATE | m³/min. | pH 10.5-11.0 | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐

| MUD PROPERTIES | | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 02:30 | | | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 3277 | | | BARITE | | | 35 | | 438 |
| FLOWLINE TEMPERATURE (°C) | 37 | | | | | | | | |
| DENSITY (kg/m³) | 1190 | | | | | | | | |
| FUNNEL VISCOSITY (s/L) | 53 | | | | | | | | |
| APPARENT VISCOSITY (mPa.s) | 35 | | | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | 28 | | | | | | | | |
| YIELD POINT (Pa) | 7 | | | | | | | | |
| GELS 0/10 min. (Pa) | 1\|3 | | | | | | | | |
| pH STRIP ☐ METER ☐ | 11.0 | | | | | | | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 13.0 | | | | | | | | |
| FILTER CAKE (mm) | 2.0 | | | | | | | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 1.3\|2.3 | | | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | TR. | | | | | | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 750 | | | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | .001 | | | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | 3.7 | | | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | 93 | | | PREVIOUS COST | 22,867 | | STARTING VOLUME | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | 70 | | | DAILY COST | 138 | | VOL. BUILT | | |
| ELECTRICAL STABILITY (V) | — | | | CUM. COST | 23,705 | | VOL. LOST on SURFACE | | |
| OIL/WATER RATIO $H_2S$ | NEG. | | | CUM. ENG. COST | 7500 | | VOL. LOST SUB SURFACE | | |
| $CaCl_2$ w/w% | | | | | | | END VOLUME | | |
| "n"/"k" | | | | | | | CUM. VOL. BUILT | | |

COMMENTS: MILLING.

1) CONTROL DENSITY AT 1190 kg/m³ USING BARITE.
2) KEEP PH AT 11.0 WITH CAUSTIC.
3) HOLD VIS. AT 50-60 S/L USING GEL.
4) IF VIS. CLIMBS OVER 60 S/L RUN $H_2O$

STOCK POINT FT. ST. JOHN | I.D.F. ENGINEER JIM WEILER
PHONE 785-4222 | PHONE ON LOCATION | MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-05-22
REPORT No. 20
SPUD DATE 91-04-29

WELL NAME COLUMBIA et al KOTANELEE — LOCATION Y J I - 48
OPERATOR COLUMBIA GAS DEVEL. — CONTRACTOR KENTING HI-TOWER #7
REPORT FOR Mr. BOB TOOLE — REPORT FOR Mr. PHIL BOSOMWORTH

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | / | COND. | TANKS | 70 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 40 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 52 | m³/STK. | 0118 | OPPOSITE D.C. | |
| DRILL COLLARS | 120 mm | INTER 178/3274 | TOTAL | 122 | S.P.M. | 43 | PUMP PRESS. | 10,000 |
| OTHER | | OTHER | STANDBY | | m³/min. | .507 | CIRC. TIME | 240 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | WT. GEL/CAUSTIC | FLOWLINE WT. | kg/m³ | MUD WT. | 1190 kg/m³ |
| HOLE COND. | CASED | UNDERFLOW WT. | kg/m³ | VISCOSITY | 50-55 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 12 cm³/30 min. |
| CURRENT OP. | MILLING | UNDERFLOW RATE | m³/min. | pH | 10.5-11.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☒ PIT ☐

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 09:30 | | |
| PRESENT DEPTH (m) | 3277 | | |
| FLOWLINE TEMPERATURE (°C) | 37 | | |
| DENSITY (kg/m³) | 1195 | | |
| FUNNEL VISCOSITY (s/L) | 53 | | |
| APPARENT VISCOSITY (mPa.s) | 35 | | |
| PLASTIC VISCOSITY (mPa.s) | 28 | | |
| YIELD POINT (Pa) | 7 | | |
| GELS 0/10 min. (Pa) | 1/3 | | |
| pH STRIP ☐ METER ☐ | 10.5 | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 12.8 | | |
| FILTER CAKE (mm) | 2.0 | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 1.0/2.0 | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 700 | | |
| SAND CONTENT (%) ☐ (⌀) ☐ | .001 | | |
| SOLIDS CONTENT (%) ☐ (⌀) ☐ | 6.75 | | |
| OIL/WATER CONT. (%) ☐ (⌀) ☐ | 9/85 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | 70 | | |
| ELECTRICAL STABILITY (V) | — | | |
| OIL/WATER RATIO $H_2S$ | N.G. | | |
| $CaCl_2$ w/w% | | | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | | | 70 | | 875 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 23,305 | STARTING VOLUME | |
| DAILY COST | 875 | VOL. BUILT | |
| CUM. COST | 24,180 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 7875 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: MILLING BDMS. UP 100 M.M.

1) HOLD DENSITY AT 1190 Kg/m³ WITH BARITE.
2) KEEP PH AT 10.5-11.0 USING CAUSTIC.
3) CONTROL V.I.S. AT 50-55 S/L W/ GEL.
NOTE: IF V.I.S. CLIMBS OVER 60 S/L RUN $H_2O$.

STOCK POINT ST. JOHN — I.D.F. ENGINEER JIM WELER
PHONE 785-4425 — PHONE ON LOCATION — MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-05-23
REPORT No. 21
SPUD DATE 91-04-29

WELL NAME COLUMBIA et al KOTANEELEE LOCATION YJI-48
OPERATOR COLUMBIA GAS DEVEL. CONTRACTOR KENTING HI-TOWER #7
REPORT FOR Mr. BOB TOOLE REPORT FOR Mr. PHIL BOSOMWORTH

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | / | COND. | TANKS | 75 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 44 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 52 | m³/STK. | .0118 | OPPOSITE D.C. | |
| DRILL COLLARS | 120 mm | INTER. 178 / 3274 | TOTAL | 127 | S.P.M. | 45 | PUMP PRESS. | 10,000 |
| OTHER | | OTHER | STANDBY | | m³/min. | .531 | CIRC. TIME | 240 |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | WT. GEL CAUSTIC | FLOWLINE WT. | kg/m³ | MUD WT. | 1190 kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | kg/m³ | VISCOSITY | 50-55 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 12 cm³/30 min. |
| CURRENT OP. | MILLING | UNDERFLOW RATE | m³/min. | pH | 10.5-11.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 07:00 | | |
| PRESENT DEPTH (m) | 3279 | | |
| FLOWLINE TEMPERATURE (°C) | 38 | | |
| DENSITY (kg/m³) | 1205 | | |
| FUNNEL VISCOSITY (s/L) | 57 | | |
| APPARENT VISCOSITY (mPa.s) | 41 | | |
| PLASTIC VISCOSITY (mPa.s) | 32 | | |
| YIELD POINT (Pa) | 9 | | |
| GELS 0/10 min. (Pa) | 2/3 | | |
| pH STRIP ☑ METER ☐ | 11.0 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 12.0 | | |
| FILTER CAKE (mm) | 2.0 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.1/2.3 | | |
| TOTAL HARDNESS ☑ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ Cl ☑ (mg/L) | 650 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .00 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .08 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .92 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 75 | | |
| ELECTRICAL STABILITY (V) | — | | |
| OIL/WATER RATIO | H₂S NEG. | | |
| $CaCl_2$ w/w% | | | |
| "n"/"k" | | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | | | 70 | | 875 |
| GEL | | | 25 | | 250 |
| CAUSTIC | | | 1 | | 30 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 24,180 | STARTING VOLUME | |
| DAILY COST | 1155 | VOL. BUILT | |
| CUM. COST | 25,335 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 8,250 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: MILLING. BITS. UP - 1900 M.M.

1) CONTROL DENSITY AT 1190 Kg/m³ USING BARITE.
2) KEEP PH AT 10.5-11.0 WITH CAUSTIC.
3) HOLD VIS. AT 50-55 S/L W/GEL.
4) RUN 15 LITRES H₂O PER MIN. IF VIS. OVER 60 S/L.

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER JIM WIELER
PHONE 785-4227 PHONE ON LOCATION MOBILE #

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE 91-05-24
REPORT No. 22
SPUD DATE 91-04-29

WELL NAME COLUMBIA 3d-1 KOTAN-FEE LOCATION N.T.C-48
OPERATOR COLUMBIA GAS DEVEL. CONTRACTOR KENTING - N.T #7
REPORT FOR Mr. DAVE TOOLE REPORT FOR Mr. PAUL - CHRISTIE

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 14R / 152 | COND. | TANKS | PUMP SIZE 7" x 12" | OPPOSITE D.P. |
| DRILL PIPE 89 mm | SURFACE | HOLE | m³/STK. 0.018 | OPPOSITE D.C. |
| DRILL COLLARS 120 mm | INTER. 178/3274 | TOTAL | S.P.M. | PUMP PRESS. |
| OTHER | OTHER | STANDBY | m³/min. | CIRC. TIME |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE LIT Polymer | FLOWLINE WT. | kg/m³ | MUD WT. 1190 | kg/m³ |
| HOLE COND. | UNDERFLOW WT. | kg/m³ | VISCOSITY 45-50 | s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE <10 | cm³/30 min. |
| CURRENT OP. R.I.C. | UNDERFLOW RATE | m³/min. | pH 10. | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐-PIT ☐ | MUD PROPERTIES (AE-25) | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 16:30 | 19/05/91 | 04:30 | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 3290 | | 3290 | BARITE | | | 25 | | 300 |
| FLOWLINE TEMPERATURE (°C) | 37 | | — | GEL | | | 10 | | 190 |
| DENSITY (kg/m³) | 1210 | | 1010 | | | | | | |
| FUNNEL VISCOSITY (s/L) | 60 | | 42 | | | | | | |
| APPARENT VISCOSITY (mPa.s) | 44 | | 24 | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | 30 | | 8 | | | | | | |
| YIELD POINT (Pa) | 14 | | 6 | | | | | | |
| GELS 0/10 min. (Pa) | 3/7 | | 1/3 | | | | | | |
| pH STRIP ☐-METER ☐ | 10.5 | | 10.0 | | | | | | |
| FILTRATE ☐-API ☐ HT HP (cm³) | 13.4 | | 10.0 | | | | | | |
| FILTER CAKE (mm) | 2.0 | | .05 | | | | | | |
| ALK ☐-(PF/MF) ☐ (PM/LIME) | 1.0/2.1 | | .55/.85 | | | | | | |
| TOTAL HARDNESS ☐-Ca. ☐ (mg/L) | 40 | | — | | | | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 600 | | 300 | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | TR. | | — | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | 8.8 | | — | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | 9.5 | | — | PREVIOUS COST | $ 23,2 | | STARTING VOLUME | | |
| MBT (Kg/m³) ☐-/% ☐ OIL RET ☐ | 25 | | — | DAILY COST | 400 | | VOL. BUILT | | |
| ELECTRICAL STABILITY (V) | 1 | | — | CUM. COST | $ 77 | | VOL. LOST on SURFACE | | |
| OIL/WATER RATIO N.C. | N.C. | | — | CUM. ENG. COST | $ 1,25 | | VOL. LOST SUB SURFACE | | |
| $CaCl_2$ w/w% | | | | | | | END VOLUME | | |
| "n"/"k" | | | | | | | CUM. VOL. BUILT | | |

COMMENTS: DRILLED 152 mm HOLE TO 3290 m.
END LEAK OFF TEST. DUMPED TANKS TO MIX PACKER SYSTEM.
ADD 2 SX. SAPP MIX + MIX TOOLS AT 15 MIN. SX TO OBTAIN VIS @ 45-50 SEC.
ADD 3 SACKS LOSTOP AT 30 MIN. INTV.
MIX PACKER TO PUMP DOWN T. 1300 kg/m³ 15 MIN.

STOCK POINT ST. ST. JOHN D.F. ENGINEER TIM LOCATION
PHONE 725-4322 PHONE LOCATION MOBILE #

**International Drilling Fluids Corporation**

# DRILLING FLUID REPORT

DATE 91-05-25
REPORT No. 22
SPUD DATE 91-04-29

WELL NAME COLUMBIA ET AL KOTAKEELEE LOCATION 4-T-52
OPERATOR COLUMBIA GAS DEVEL. CONTRACTOR KENTEC H.T. #7
REPORT FOR Mr. BOB TOOLE REPORT FOR Mr. PAUL [illegible]

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 8½ / 1C2 | COND. | | TANKS | 50 | PUMP SIZE | 6½ x 12 | OPPOSITE D.P. | 43 |
| DRILL PIPE | 89 mm | SURFACE | 194 @ 274 | HOLE | 45 | m³/STK. | .011 | OPPOSITE D.C. | 1/F: 80 |
| DRILL COLLARS | 120 mm | INTER. | | TOTAL | 95 | S.P.M. | 50 | PUMP PRESS. | 10,000 |
| OTHER | | OTHER | | STANDBY | | m³/min. | 59 | CIRC. TIME | 165 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | 1190 - 1200 kg/m³ |
| HOLE COND. | | UNDERFLOW WT. | kg/m³ | VISCOSITY | 45 - 50 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | <10 cm³/30 min. |
| CURRENT OP. | DRLG. | UNDERFLOW RATE | m³/min. | pH | 10 - 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| TIME SAMPLE TAKEN | 23:00 | | | | | | | | |
| PRESENT DEPTH (m) | 3309 | | | BARITE | 4560 | | 200 | 3866 | 8750 |
| FLOWLINE TEMPERATURE (°C) | 22 | | | GEL | 305 | | | 305 | |
| DENSITY (kg/m³) | 1185 | | | CAUSTIC | 190 | | 3 | 187 | 90 |
| FUNNEL VISCOSITY (s/L) | 40 | | | BICARB | 55 | | | 55 | |
| APPARENT VISCOSITY (mPa.s) | 16 | | | BARKIT | 260 | | 10 | 250 | 49 |
| PLASTIC VISCOSITY (mPa.s) | 10 | | | SULFAN | 96 | | | 96 | |
| YIELD POINT (Pa) | 6 | | | SODA ASH | 36 | | 2 | 34 | 78 |
| GELS 0/10 min. (Pa) | 2\|2 | | | XCAD | 42 | | 2 | 40 | 380 |
| pH STRIP ☐ METER ☐ | 10.0 | | | RED. 721 | 80 | | 8 | 72 | 800 |
| FILTRATE ☐ API ☐ HT HP (cm³) | 11.0 | | | SOD. SULF | 30 | | | 30 | |
| FILTER CAKE (mm) | .05 | | | ELR | 80 | | 4 | 76 | 128 |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | .60/.80 | | | IDVIS | 80 | | 13 | 67 | 5460 |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | Tr. | | | | | | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 150 | | | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | .05 | | | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | 8.5 | | | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | 91/5 | | | PREVIOUS COST | 25,735 | | STARTING VOLUME | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | | DAILY COST | 15,135 | | VOL. BUILT | | |
| ELECTRICAL STABILITY (V) | | | | CUM. COST | 41,370 | | VOL. LOST on SURFACE | | |
| OIL/WATER RATIO | 11/5 | NEG. | | CUM. ENG. COST | 3000 | | VOL. LOST SUB SURFACE | | |
| $CaCl_2$ w/w% | SALTMUD | .50 | | | | | END VOLUME | | |
| "n"/"k" | | | | | | | CUM. VOL. BUILT | | |

COMMENTS: DRLD 152 m OF HOLE DISPLACED HOLE TO SALTMUD SYSTEM AT 3309 m.

CONTROL DENSITY AT 1180 kg/m³ USING BARITE. (2 - 3 MT/SK.)

R.O.P. 14 AT 1.5 WOB CAUTIOUS. (2 hr. CIR.)

HOLD W.C. AT 40-45 sL USING CAUS. & RSP-721 + ELR.
IF W.C. DROPS BELOW 40 sL ADD 5 SK. IDVIS &
ADD 2-3 PAIL RSP-721 EVERY 12 HRS.
CONTROL FLUID LOSS AROUND 10 c.c WITH ELR. 4 SK/CIR.

RIG 10-15 HRS 4 DAYS MORE.

STOCK POINT ST. JOHN I.D.F. ENGINEER TIM WHELER
PHONE 722-4032 PHONE 281-1040 MOBILE #

# IDF
INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE 91-05-26
REPORT No. 24
SPUD DATE 91-04-29

WELL NAME COLUMBIA et al KOTANEELEE | LOCATION V.T. I-48
OPERATOR COLUMBIA GAS DEVEL. | CONTRACTOR KENTING H.T. #7
REPORT FOR Mr. ROB TOOLE | REPORT FOR Mr. PHIL ROSWORTH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | / 15½ | COND. | | TANKS | 64 | PUMP SIZE | 11¾ x 406 | OPPOSITE D.P. | 49 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 46 | m³/STK. | .0118 | OPPOSITE D.C. | VP=75 |
| DRILL COLLARS | 120 mm | INTER/TR/3217 | | TOTAL | 110 | S.P.M. | | PUMP PRESS. | 10,000 |
| OTHER | | OTHER | | STANDBY | | m³/min. | .59 | CIRC. TIME | 180± |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | 1150 - 1180 kg/m³ |
| HOLE COND. | ok. | UNDERFLOW WT. | kg/m³ | VISCOSITY | 36 - 45 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | <12 cm³/30 min. |
| CURRENT OP. | DRLG. | UNDERFLOW RATE | m³/min. | pH | 10 - 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☑ PIT ☐

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 14:30 | | |
| PRESENT DEPTH (m) | 3398 | | |
| FLOWLINE TEMPERATURE (°C) | 44 | | |
| DENSITY (kg/m³) | 1190 | | |
| FUNNEL VISCOSITY (s/L) | 39 | | |
| APPARENT VISCOSITY (mPa.s) | 20 | | |
| PLASTIC VISCOSITY (mPa.s) | 10 | | |
| YIELD POINT (Pa) | 10 | | |
| GELS 0/10 min (Pa) | 2/3 | | |
| pH STRIP ☑ METER ☐ | 10.0 | | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 8.0 | | |
| FILTER CAKE (mm) | .05 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .40/.70 | | |
| TOTAL HARDNESS ☑ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 150 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .002 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .06 | | |
| ~~OIL~~/WATER CONT. (%) ☐ (Ø) ☑ | .94 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | | |
| ~~OIL~~/WATER RATIO ASP-721 TOP POLYMER | .75 | | |
| $CaCl_2$ w/w% | — | | |
| "n"/"K" | — | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 3868 | | 205 | 3663 | 2562 |
| GEL | 305 | | | 305 | |
| CAUSTIC | 187 | | | 187 | |
| DUST | 250 | | | 250 | |
| ASP-721 | 72 | | 3 | 69 | 300 |
| XC-DE | 40 | | | 40 | |
| FLR | 76 | | 4 | 72 | |
| EDVIS D | 67 | | 11 | 56 | 4620 |
| SOD. SUL. | 30 | | 2 | 28 | 100 |
| DEFOAMER | 20 | | 2 | 18 | 213 |
| PTS-200 | 64 | | 1 | 63 | 2100 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 41,370 | STARTING VOLUME | |
| DAILY COST | 8115 | VOL. BUILT | |
| CUM. COST | 49,485 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 9375 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: DRLG 152 mm HOLE.

1) ALLOW DENSITY TO DROP BACK TO 1150 kg/m³.
2) KEEP PH AT 10-10.5 USING CAUSTIC. 2 SX. 1 CIR.
3) CONTROL VIS. AT 36-42 S/L WITH EDVIS + ASP-721. ADD 2 PAILS ASP-721 EVERY 12 HRS. WHILE DRLG. ADD SLOWLY.
4) RUN 10-15 LITRES $H_2O$ PER MIN.
5) MIX 2 SX. SOD. SULFITE DAILY. ADD TO $H_2O$ IN CHEM. BBL + TOP W/ DIESEL.

STOCK POINT FT. ST. JOHN | I.D.F. ENGINEER TIM WIELER
PHONE 785-4332 | PHONE ON LOCATION | MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-05-27
REPORT No. 25
SPUD DATE 91-04-29

WELL NAME COLUMBIA et al KOTAKNEELEE — LOCATION Y.T. I-48
OPERATOR COLUMBIA GAS DEVEL. — CONTRACTOR KENTING H.T. #7
REPORT FOR Mr. PAT TOOLE — REPORT FOR Mr. PHIL FOSOM WORTH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 152 | COND. | | TANKS | 70 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | 178/3273 | HOLE | 47 | m³/STK. | .0118 | OPPOSITE D.C. | DRMC. 75 ± |
| DRILL COLLARS | 120 mm | INTER. | | TOTAL | 117 | S.P.M. | 53 | PUMP PRESS. | 11,000 |
| OTHER | | OTHER | | STANDBY | | m³/min. | .62 | CIRC. TIME | 195 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | 1180 kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | kg/m³ | VISCOSITY | 35-40 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 12 cm³/30 min. |
| CURRENT OP. | DRLG. | UNDERFLOW RATE | m³/min. | pH | 10-10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 23:30 | | |
| PRESENT DEPTH (m) | 3354 | | |
| FLOWLINE TEMPERATURE (°C) | 44 | | |
| DENSITY (kg/m³) | 1190 | | |
| FUNNEL VISCOSITY (s/L) | 37 | | |
| APPARENT VISCOSITY (mPa.s) | 20 | | |
| PLASTIC VISCOSITY (mPa.s) | 10 | | |
| YIELD POINT (Pa) | 10 | | |
| GELS 0/10 min. (Pa) | 2/3 | | |
| pH STRIP ☑ METER ☐ | 10.5 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 8.0 | | |
| FILTER CAKE (mm) | .05 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .45/1.95 | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 150 | | |
| SAND CONTENT (%) ☐ (☑ ☐) | .003 | | |
| SOLIDS CONTENT (%) ☐ (☑ ☐) | .07 | | |
| ~~OIL~~/WATER CONT. (%) ☐ (☑ ☐) | .93 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | | |
| OIL/WATER RATIO | — | | |
| $CaCl_2$ w/w% ASP POLYMER | 1.1 | | |
| "n"/"k" | | | |

| MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|
| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| BARITE | 3663 | | | 3663 | |
| CAUSTIC | 187 | | 2 | 185 | 60 |
| ASP 721 | 69 | | 1 | 68 | 100 |
| SOD. SUL. | 28 | | 2 | 26 | 100 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 49,485 | STARTING VOLUME | |
| DAILY COST | 260 | VOL. BUILT | |
| CUM. COST | 49,745 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 9750 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: DRLG. 152 mm HOLE.

CONTROL DENSITY AT 1180 Kg/m³.

KEEP PH AT 10-10.5 USING CAUSTIC. 2 SX./CIR.

MAINTAIN VIS. AT 35-40 S/L WITH IDVIS + ASP-721. ADD 2 PAILS ASP-721 EVERY 12 HRS.

ADD 1 SX. SOD. SULFITE DAILY. ADD TO $H_2O$ IN CHEM. BBL @ TOP W/DIESEL.

RUN 5-6 LITRES $H_2O$ PER MIN.

STOCK POINT FT. ST. JOHN — I.D.F. ENGINEER JIM WIEGER
PHONE 785-4220 — PHONE ON LOCATION — MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-05-28
REPORT No. 26
SPUD DATE 91-04-29

WELL NAME COLUMBIA et al KOTANEELEE | LOCATION Y.T. - I - 48
OPERATOR COLUMBIA GAS DEVEL. | CONTRACTOR KENTING H.T. #7
REPORT FOR Mr. BOB TOOLE | REPORT FOR Mr. PHIL BOSMWORTH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 152 | COND. | | TANKS | 72 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 48 | m³/STK. | .0118 | OPPOSITE D.C. | 80 |
| DRILL COLLARS | 120 mm | INTER | 178/3273 | TOTAL | 120 | S.P.M. | 53 | PUMP PRESS. | 12,100 |
| OTHER | | OTHER | | STANDBY | | m³/min. | .63 | CIRC. TIME | 185 |

| HOLE DATA | | DESANDER/DESILTER | | | DRILLING FLUID SPECIFICATIONS | | |
|---|---|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT. | | kg/m³ | MUD WT. | 1180 | kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | | kg/m³ | VISCOSITY | 35-40 | s/L |
| DEVIATION | | OVERFLOW WT. | | kg/m³ | FILTRATE | <12 | cm³/30 min. |
| CURRENT OP. | DRLG. | UNDERFLOW RATE | | m³/min. | pH | 10-10.5 | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| TIME SAMPLE TAKEN | 23:30 | | | | | | | | |
| PRESENT DEPTH (m) | 3400 | | | ASP-721 | 68 | | 3 | 65 | 300 |
| FLOWLINE TEMPERATURE (°C) | 45 | | | SOD. SUL. | 26 | | 1 | 25 | 50 |
| DENSITY (kg/m³) | 1185 | | | XCIDE | 40 | | 1 | 39 | 140 |
| FUNNEL VISCOSITY (s/L) | 37 | | | BTS-200 | 63 | | 2 | 61 | 520 |
| APPARENT VISCOSITY (mPa.s) | 20 | | | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | 10 | | | | | | | | |
| YIELD POINT (Pa) | 10 | | | | | | | | |
| GELS 0/10 min. (Pa) | 2/3 | | | | | | | | |
| pH STRIP ☑ METER ☐ | 10.5 | | | | | | | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 8.0 | | | | | | | | |
| FILTER CAKE (mm) | .05 | | | | | | | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .45/1.1 | | | | | | | | |
| TOTAL HARDNESS ☑ Ca. ☐ (mg/L) | TR. | | | | | | | | |
| SAL. ☐ NACl ☐ Cl ☑ (mg/L) | 150 | | | | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .003 | | | | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .065 | | | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .935 | | | | | | | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | | | | | | | |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | | | | | | | | |
| OIL/WATER RATIO ASP-721 | 1.2 | | | | | | | | |
| $CaCl_2$ w/w% 600/300 | 40/30 | | | | | | | | |
| "n"/"k" | | | | | | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 47,745 | STARTING VOLUME | |
| DAILY COST | 1010 | VOL. BUILT | |
| CUM. COST | 58,755 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 10,125 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: DRLG. 152 mm HOLE.

1) HOLD DENSITY IN THE 1180 Kg/m3 RANGE.

2) KEEP PH AT 10-10.5 USING CAUSTIC. 2 sx/cir.

3) MAINTAIN V.I. AT 35-40 S/L WITH IDIIS + ASP-721. ADD 1-2 ASP-721 EVERY 12 HRS.

4) ADD 1 sx. SOD. SULFITE + 1 GAL XCIDE DAILY.

5) RUN 5-6 LITRES $H_2O$ PER MIN.

STOCK POINT FT. ST. JOHN (BK) | I.D.F. ENGINEER JIM WHELEN
PHONE 785-4322 | PHONE ON LOCATION | MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE MAY. 29.91
REPORT No. # 27
SPUD DATE APR. 29.91

WELL NAME COLUMBIA ET AL KOTANEFFEE LOCATION VT. I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING H.T. #07
REPORT FOR Mr. POP TOOLE REPORT FOR Mr. TIM SIGNER

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 7.15" mm | COND. | TANKS 72 m³ | PUMP SIZE 177x406 | OPPOSITE D.P. 56 |
| DRILL PIPE 89 mm | SURFACE | HOLE 52 m³ | m³/STK. .0167 | OPPOSITE D.C. 98 |
| DRILL COLLARS 170 mm | INTER 178@3777 | TOTAL 125 m³ | S.P.M. 40 | PUMP PRESS 12,000 |
| OTHER ENG. 207 m. | OTHER | STANDBY | m³/min. .668 | CIRC. TIME 190 |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE WT. POLYMER | FLOWLINE WT. A.....001 - 29 m³ kg/m³ | MUD WT. 1180 kg/m³ |
| HOLE COND. CLEAN 18 m. | UNDERFLOW WT. T.U. CP = 60 MIN kg/m³ | VISCOSITY 35-40 s/L |
| DEVIATION TO ET-9. | OVERFLOW WT. kg/m³ | FILTRATE CF 10 cm³/30 min. |
| CURRENT OP DRILLING. | UNDERFLOW RATE m³/min. | pH 10.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☑ SUCTION MUD PROPERTIES SHAKER

| | | |
|---|---|---|
| TIME SAMPLE TAKEN | 15:00 | 15:00 |
| PRESENT DEPTH (m) | 2405 | 2405 |
| FLOWLINE TEMPERATURE (°C) | 24°C | 25°C |
| DENSITY (kg/m³) | 1190 | 1185 |
| FUNNEL VISCOSITY (s/L) | 38 | 41 |
| APPARENT VISCOSITY (mPa.s) | 20 | |
| PLASTIC VISCOSITY (mPa.s) | 10 | |
| YIELD POINT (Pa) | 10 | |
| GELS 0/10 min. (Pa) | 2/4 | |
| pH STRIP ☑ METER ☐ | 10.5 | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 9.0 | |
| FILTER CAKE (mm) | .05 SOFT. | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .5/1.8 | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 300 | |
| SAND CONTENT (%) ☑ (Ø) ☑ | .001 | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .065 | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .975 | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | |
| ELECTRICAL STABILITY (V) HI: | 0 | |
| OIL/WATER RATIO SP. 771 | .6 KG/m³ | |
| $CaCl_2$ w/w% SULFITES | 190 | |
| "n"/"k" LOW/LOW | 40/30 | |

MAINTAIN AS PREVIOUS

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| CARITE | 2463 | | 25 | 2438 | 217.50 |
| ASP-771 | 65 | | 1 | 64 | 100.00 |
| X-CIDF | 39 | | 1 | 38 | 140.00 |
| SULFITE | 25 | | 1 | 24 | 49.70 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 50,755 | STARTING VOLUME | |
| DAILY COST | 203.79 | VOL. BUILT | |
| CUM. COST | 51,252 | VOL. LOST on SURFACE | 1-1/5 |
| CUM. ENG. COST | 10,500 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: MAINTAIN SYSTEM AS FOLLOWS:

1. DENSITY = 1180 KG/m³ NOT BELOW 1170 KG/m³.

2. VISCOSITY = 35-40 SEC/L NOT BELOW 35 SEC/L IF REQ'D. MIX = EACH 10 BBLS = 100 L W.V. EACH.

3. PH = 10.0 - 10.5 CAUSTIC SODA = EACH 2 DAYS A CIRC. WHEN REQ'D.

4. SLOWLY ADD 1-2 PAILS ASP-771 EACH 12 HRS WHEN DRILLING SHALE.

5. MIX 1 JUG X-CIDF DAILY + EACH 2 DAYS MIX 1 SACK SULPHITE

6. ADD WATER = 5-6 LITRES/MIN WHEN CIRCULATING.

STOCK POINT FT. ST JOHN I.D.F. ENGINEER RICK KRUHART
PHONE 785-4777 PHONE FAR ROOM 0 MOBILE #1

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE AUG. 30. 1991
REPORT No. # 25
SPUD DATE APR. 29. 91

WELL NAME COLUMBIA HAMILTON LEE — LOCATION 47 - I - 19
OPERATOR COLUMBIA GAS DEVELOPMENT — CONTRACTOR KEITH H.T. MCC
REPORT FOR Mr. PAT TOOLE — REPORT FOR Mr. JIM TICHER

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 311 mm | COND. | | TANKS | 73 | PUMP SIZE | 177 x 406 | OPPOSITE D.P. | 54 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 57 m³ | m³/STK. | .0167 | OPPOSITE D.C. | 98 |
| DRILL COLLARS | 170 mm | INTER/ | 244.5 #73 | TOTAL | 135 | S.P.M. | 110 | PUMP PRESS. | 17,000 |
| OTHER | PHA 2024 | OTHER | | STANDBY | | m³/min. | 1.68 | CIRC. TIME | 190 |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE LT. POLYMER | FLOWLINE WT. AVG. 1.01 - 39 kg/m³ | MUD WT. 1190 kg/m³ |
| HOLE COND. GOOD | UNDERFLOW WT. T.I. 1.04 - 60 kg/m³ | VISCOSITY 35-40 s/L |
| DEVIATION 14° @ 3797 M. | OVERFLOW WT. kg/m³ | FILTRATE 10 cc's cm³/30 min. |
| CURRENT OP. WAIT FOR TRIP | UNDERFLOW RATE m³/min. | pH 10.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☒PIT ☐ SHAKER

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 11:00 | | |
| PRESENT DEPTH (m) | 3414 | | |
| FLOWLINE TEMPERATURE (°C) | 25 cc | | |
| DENSITY (kg/m³) | 1178 | | |
| FUNNEL VISCOSITY (s/L) | 39 | | |
| APPARENT VISCOSITY (mPa.s) | 21.5 | | |
| PLASTIC VISCOSITY (mPa.s) | 11 | | |
| YIELD POINT (Pa) | 10.5 | | |
| GELS 0/10 min. (Pa) | 3/4 | | |
| pH STRIP ☒ METER ☐ | 10.0 | | |
| FILTRATE ☒API ☐ HT HP (cm³) | 8.0 | | |
| FILTER CAKE (mm) | .05 SCFT | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | .41.6 | | |
| TOTAL HARDNESS ☐ Ca. ☒(mg/L) | 240 | | |
| SAL. ☐ NACI ☐ CL ☒(mg/L) | 700 | | |
| SAND CONTENT (%) ☐ (Ø) ☒ | .001 | (READINGS) | |
| SOLIDS CONTENT (%) ☐ (Ø) ☒ | .045 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☒ | .935 | | |
| MBT (Kg/m³) ☒ /% ☐ OIL RET ☐ | 10 | | |
| ELECTRICAL STABILITY (V) HT | 0 | | |
| OIL/WATER RATIO A.P. 231 | .5 | | |
| $CaCl_2$ w/w% WHITES | 190 | | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 7628 | | 35 | 7612 | 217.50 |
| PTS-200 | 61 | | 3 | 58 | 780.00 |
| EFFOAM | 18 | | 1 | 17 | 134.50 |
| Lost: 42 | | Pac: 37 | | Lost: 37 | |
| Lost: 19 - 60 = 4 | | SD: 3 | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 51,257 | STARTING VOLUME | |
| DAILY COST | 12,239 | VOL. BUILT | 1 HOLE VOL |
| CUM. COST | 63,581 | VOL. LOST on SURFACE | 7 |
| CUM. ENG. COST | 10,895 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1 MUD DENSITY = 1170 - 1190 KG/M³. NET FLOW = 1170 KG/M³
2 VISCOSITY = 35-40 SEC/L. NET FLOW = 35 SEC/L.
3 PH = 10 W/ CAUSTIC SODA = 2 LBS/BBL. CHEM. APPL.
4 SLOWLY ADDED 1 PAIL OF ASP-720 FLUID 3 HOURS.
5 MIX 1 JUG OF X-CIDE 102 CHEM. EVERY 190 M. DRILL.
6 EVERY TOUR DAY MIX IN 1 BAG OF SODIUM SULPHITE.
7 PUMP WATER & SWEEPS WHEN CIRCULATING.
8 PRIOR TO TRIPPING ISOLATE SUCTION TANK. MIX IN
2 PAILS OF PTS-700. PUMP THIS DOWN THE HOLE AND
DISPLACE IT WITH MUD. LET SIT 15 MINUTES. THEN
PULL PIPE.

STOCK POINT FT. ST. JOHN — I.D.F. ENGINEER RICK REINHART
PHONE 785-4733 — PHONE FAR ROCK OUT MOBILE # 1,

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE APR. 31 · 1996
REPORT No. # 29
SPUD DATE APR. 29.91

WELL NAME COLUMBIA ET AL KOTAKFELEE LOCATION Y.T. I - 48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING #07
REPORT FOR Mr. PAT TOOLE REPORT FOR Mr.

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE | 311.15 mm | COND. | | TANKS | 72 m³ | PUMP SIZE | 7" x 4½" | OPPOSITE D.P. | 57 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 52 m³ | m³/STK. | .0167 | OPPOSITE D.C. | 100 |
| DRILL COLLARS | 120 mm | INTER | 177.8 mm | TOTAL | 124 m³ | S.P.M. | 41 | PUMP PRESS. | 14,500 |
| OTHER | TIW 191 I.D. | OTHER | | STANDBY | | m³/min. | .6847 | CIRC. TIME | 180 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | GEL POLYMER | FLOWLINE WT. | 79 m³ kg/m³ | MUD WT. | 1180 kg/m³ |
| HOLE COND. | | UNDERFLOW WT. | kg/m³ | VISCOSITY | 35.40 s/L |
| DEVIATION | MAX. OF TOOL FACE | OVERFLOW WT. | kg/m³ | FILTRATE | 6.10 cm³/30 min. |
| CURRENT OP. | DRILL AHEAD | UNDERFLOW RATE | m³/min. | pH | 10.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☑ PIT ☐ SHAKER

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 10:00 | | |
| PRESENT DEPTH (m) | 2470 | | |
| FLOWLINE TEMPERATURE (°C) | 43°C | | |
| DENSITY (kg/m³) | 1185 | | |
| FUNNEL VISCOSITY (s/L) | 38 | | |
| APPARENT VISCOSITY (mPa.s) | 27 | | |
| PLASTIC VISCOSITY (mPa.s) | 11 | | |
| YIELD POINT (Pa) | 11 | | |
| GELS 0/10 min. (Pa) | 2/4 | | |
| pH STRIP ☑ METER ☐ | 10 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 15 | | |
| FILTER CAKE (mm) | .15 GOOD | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1/1.6 | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | 20 | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 200 | | |
| SAND CONTENT (%) ☑ (Ø) ☐ | .001 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .07 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .93 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | |
| ELECTRICAL STABILITY (V) | 0 | | |
| OIL/WATER RATIO: | 180 | | |
| $CaCl_2$ w/w% | ASP 771 .5 KG/M³ | | |
| "n"/"k" | | | |

INVENTORY MATERIALS INVENTORY & COST 16:00 HRS

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| GEL | 465 | | 255 | 210 | 2550.00 |
| BARITE | 6196 | | 2583 | 3613 | 33,787.50 |
| CAUSTIC | 710 | (7) | 79 | 181 | 870.00 |
| SODA ASH | 40 | | 5 | 35 | 100.00 |
| SULFAN | 100 | | 4 | 96 | 240.00 |
| DI-CARB | 60 | | 5 | 55 | 200.00 |
| FIR-LO | 80 | (3) | 7 | 73 | 1170.00 |
| ASP-771 | 80 | | 15 | 65 | 1500.00 |
| IRON-D | 80 | | 28 | 52 | 1176.00 |
| PTS-200 | 64 | | 8 | 56 | 2080.00 |
| X-CIDE | 43 | (1) | 35 | 7 | 980.00 |
| MP-SULFIT | 30 | | 6 | 24 | 798.75 |
| DEFOAM | 20 | | 3 | 17 | 409.50 |
| SAND/WT | 788 | (12) | 50 | 738 | 345.00 |
| BOOR = | 44 | BOOR = | 27 | BOOR = | 38 |
| 100 = | 30 | AR = | 4 | = | 3 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 52,586.00 | STARTING VOLUME | |
| DAILY COST | 3654.00 | VOL. BUILT | 114 |
| CUM. COST | 56,240.00 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 11,250.00 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

1 MIX 4 BAGS OF FLR-X-100 45 MIN. / BAG.

2 HWA 10 GAL CAUSTIC SODA AS REQ'D.

3 SLOWLY ADD 1 PAIL OF ASP 771 EVERY 8 HOURS.

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER DICK REIMHART
PHONE 787-4777 PHONE FOR LOCAL MOBILE # AS ABOVE

# IDF
INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE MAY. 31. 1991
REPORT No. # 79A
SPUD DATE APR - 29. 91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT. I - 48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING #07
REPORT FOR Mr. PAT TOOLE REPORT FOR Mr. JIM SIGNER

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE | 1/8 - 15/16 mm | COND. | TANKS | 70 M³ | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 59 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 57 M³ | m³/STK. | .0115 | OPPOSITE D.C. | 107 |
| DRILL COLLARS | 120 mm | INTER 178 - 2773 | TOTAL | 127 M³ | S.P.M. | 60 | PUMP PRESS | 12,400 |
| OTHER | CHA - 196 | OTHER | STANDBY | | m³/min. | .708 | CIRC. TIME | 175-180 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | T. POLYMER | FLOWLINE WT. | 1229 kg/m³ | MUD WT. | 1180 kg/m³ |
| HOLE COND | HOLE WASHED A.T. | UNDERFLOW WT. | CT. UP - 55 kg/m³ | VISCOSITY | 37:41 s/L |
| DEVIATION | MIX LEADS | OVERFLOW WT. | kg/m³ | FILTRATE | 6.0 cm³/30 min. |
| CURRENT OP. | DRILLING. | UNDERFLOW RATE | m³/min. | pH | 10.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐ SHAKER

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 19:30 | | |
| PRESENT DEPTH (m) | 2425 | | |
| FLOWLINE TEMPERATURE (°C) | 47°C | | |
| DENSITY (kg/m³) | 1180 | | |
| FUNNEL VISCOSITY (s/L) | 38 | | |
| APPARENT VISCOSITY (mPa.s) | 37 | | |
| PLASTIC VISCOSITY (mPa.s) | 12 | | |
| YIELD POINT (Pa) | 10 | | |
| GELS 0/10 min. (Pa) | 2.5/7 | | |
| pH STRIP ☐ METER ☐ | 10.7 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 9.6 | | |
| FILTER CAKE (mm) | .1 FAIR! | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.9 | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 200 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .015 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .068 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .932 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 8 | | |
| ELECTRICAL STABILITY (V) HTHP | 0 | | |
| OIL/WATER RATIO ASP 771 | .6 | | |
| $CaCl_2$ w/w% SULPHITE | 175 | | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 2648 | | 35 | 2613 | 437.50 |
| CAUSTIC | 184 | | 2 | 182 | 60.00 |
| ASP 771 | 65 | | 3 | 62 | 300.00 |
| SOFA ASH | 36 | | 1 | 35 | 20.00 |
| I.D. OIS-D | 56 | | 4 | 52 | 1680.00 |
| PTS-700 | 58 | | 2 | 56 | 570.00 |
| X-CIDE | 38 | | 3 | 35 | 420.00 |
| FIB-LO | 72 | | 3 | 69 | 480.00 |
| DISP-LO | 80 | | 1 | 79 | 167.40 |
| SAWDUST | 260 | | 32 | 228 | 107.80 |
| | | | | | |
| BEADS 150.00 | | | | | |
| GRAPHITE - ASP 150.00 | | | | | |
| | | | | | |
| PL = 2 | LR = 4 | KCR = 18 | | | |
| FCD = 25 | FCC R = 32 | KCC R = 44 | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 52,824. | STARTING VOLUME | |
| DAILY COST | 4182.20 | VOL. BUILT | |
| CUM. COST | 57,017. | VOL. LOST on SURFACE | THANKS |
| CUM. ENG. COST | 11,750. | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: AS SOON AS THE GLASS BEADS GET HERE! MIX 10 BAGS AT 18 MINUTES A BAG. ALSO MIX 2 BAGS OF DISPAC-LO @ 90 MIN./BAG. AND MIX 2 BAGS I.D. OIS-L @ 90 MIN./BAG.
- MIX 2 PAILS OF ASP 771 @ 4 HOURS A PAIL. THEN 1 PAIL EVERY 8 HRS.
- FH @ 10 W/ 1 BAG CAUSTIC SODA OVER 1 CIRC. OR AS REQ'D.
- MIX 1 JUG X-CIDE ONCE A DAY!
- MIX 1 BAG SODIUM SULPHITE EVERY TWO DAYS.
- PRIOR TO TRIPPING ISOLATE SUCTION TANK. MIX 2 PAILS OF PTS-700 @ 5 MIN/PAIL + PUMP DOWN THE HOLE AND DISPLACE W/ MUD FOR 15 MINUTES.
- WHEN MIXING PILL TO PILL TANK ADD 1/2 - 1/3 PAIL OF DEFOAMER PRIOR TO MIXING BARITE.
- MUD DENSITY @ 1180 KG/M³. HOLE GOOD AROUND ALL THE TIME!

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4722 PHONE 262-0004 MOBILE SAME.

# IDF
INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE JUNE-01 1991
REPORT No. #20
SPUD DATE APR-29-91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT-T-48
OPERATOR COLUMBIA GAS EXPLORATION CONTRACTOR KENTING H.T. #07
REPORT FOR Mr. PAT TOOLE REPORT FOR Mr. JIM SIGNER

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 2.15 7 1/4 | COND. | TANKS | 69.1 | PUMP SIZE | 14 X 406 | OPPOSITE D.P. | 45 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 52.5 | m³/STK. | .0118 | OPPOSITE D.C. | 78 |
| DRILL COLLARS | 170 mm | INTER | TOTAL | 121.5 | S.P.M. | 45 | PUMP PRESS. | 10,000 |
| OTHER | THAW 195 | OTHER | STANDBY | | m³/min. | .531 | CIRC. TIME | 220 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | L.T. POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | 1180-1185 kg/m³ |
| HOLE COND. | | UNDERFLOW WT. | kg/m³ | VISCOSITY | 38.4/C s/L |
| DEVIATION | 1 DEG @ 1/STAR | OVERFLOW WT. | kg/m³ | FILTRATE | 4.0 cm³/30 min. |
| CURRENT OP. | TOOH | UNDERFLOW RATE | m³/min. | pH | 10.0 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐ SHAKER

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 19:00 | | |
| PRESENT DEPTH (m) | 2435 | | |
| FLOWLINE TEMPERATURE (°C) | 40°C | | |
| DENSITY (kg/m³) | 1187 | | |
| FUNNEL VISCOSITY (s/L) | 42 | | |
| APPARENT VISCOSITY (mPa.s) | 29 | | |
| PLASTIC VISCOSITY (mPa.s) | 15 | | |
| YIELD POINT (Pa) | 14 | | |
| GELS 0/10 min. (Pa) | 3/5 | | |
| pH STRIP ☑ METER ☐ | 10.2 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 9.0 | | |
| FILTER CAKE (mm) | 1 GOOD | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .6/1.9 | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 70 | | |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 750 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .001 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .073 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .977 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 9 | | |
| ELECTRICAL STABILITY (V) H2S | 0 | | |
| OIL/WATER RATIO ASP 771 | .8 | | |
| $CaCl_2$ w/w% SULPHITE | 1.0 | | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| GEL | 210 | | 1 | 209 | 10.00 |
| BARITE | 2613 | | 25 | 2588 | 1312.50 |
| CAUSTIC | 182 | | 1 | 181 | 20.00 |
| ASP 771 | 67 | | 2 | 59 | 200.00 |
| X-CIDE | 25 | | 1 | 24 | 140.00 |
| DISPERSE | 79 | | 2 | 77 | 324.80 |
| IL CIS-D | 57 | | 2 | 50 | 840.00 |
| DEFOAM | 17 | | 1 | 16 | 136.50 |
| PTS-200 | 56 | | 2 | 52 | 780.00 |
| BEADS | | | 10 | | 800.00 |
| | | | | | |
| 2R=4 | 6R=6 | | 100R=36 | | |
| 300R=35 | 200=42 | | 6 RPM=58 | | |
| | | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 57,017.56 | STARTING VOLUME | |
| DAILY COST | 2672.80 | VOL. BUILT | 7 HAULS |
| CUM. COST | 60,686.36 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 12,775.00 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1 DENSITY = 1180-1190 KG/M³. HOLE WELL GOOD (EXCEPT SHALES)
2 RUN WATER + 5 LITRES/BBL FOR 1 CIRC. FOR 12 HOURS.
3 VISCOSITY = 38-40 SEC/L.
4 ADD 10 GAL CAUSTIC SODA OVER 1 FULL CIRC. WHEN REQ'D
5 SLOWLY ADD 1 PAIL OF ASP 771 EVERY 2 HOURS.
6 MIX 1 JOG OF X-CIDE ONCE A DAY.
7 MIX 1 BAG OF SULPHITE EVERY TWO DAYS.
8 PRIOR TO TRIPPING: ISOLATE SUCTION TANK, MIX 2 PAILS OF PTS-200 + 5 GAL PAIL DUMP DOWN HOLE + DISPLACE W/ MUD FOR 15 MINUTES.
9 WHEN MIXING MUD IN PILL TANK ADD ½ TO ½ PAIL OF DEFOAMER PRIOR TO MIXING BARITE

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4722 PHONE FAR DECL OR MOBILE #1

# IDF
INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE JUNE-07-1991
REPORT No. #31
SPUD DATE APR-29-91

WELL NAME COLUMBIA ET AL KOTANEELEE | LOCATION YT-I-18
OPERATOR COLUMBIA GAS DEVELOPMENT | CONTRACTOR KENTING H.T. #07
REPORT FOR Mr. POP TOOLE | REPORT FOR Mr. JIM SIGNER

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / #4-15 7/8 mm | COND. | TANKS 69 m³ | PUMP SIZE 114x406 | OPPOSITE D.P. 50 |
| DRILL PIPE 89 mm | SURFACE | HOLE 53 m³ | m³/STK. .0118 | OPPOSITE D.C. 86 |
| DRILL COLLARS 120 mm | INTER 178.2773 | TOTAL 122 m³ | S.P.M. 50 | PUMP PRESS. 9,000 |
| OTHER TNA-195 | OTHER | STANDBY | m³/min. .59 | CIRC. TIME 210 |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE GEL POLYMER | FLOWLINE WT. (A) [illegible] 40 m³ kg/m³ | | MUD WT. 1180-1185 kg/m³ |
| HOLE COND. | UNDERFLOW WT. (C.T.) [illegible] 68 m³ kg/m³ | | VISCOSITY 38-40 s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE 4.0 cm³/30 min. |
| CURRENT OP. DRILLING | UNDERFLOW RATE | m³/min. | pH 10.0 |

EQUIPMENT: ☐ DEGASSER ☑ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐ SHAKER

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 04:00 | 06:00 | 20:00 |
| PRESENT DEPTH (m) | 2451 | 2454 | 2444 |
| FLOWLINE TEMPERATURE (°C) | 42°C | | 39°C |
| DENSITY (kg/m³) | 1195 | 1195 | 1195 |
| FUNNEL VISCOSITY (s/L) | 41 | 41 | 42 |
| APPARENT VISCOSITY (mPa.s) | 26.5 | 26 | (28) GIAS |
| PLASTIC VISCOSITY (mPa.s) | 15 | 15 | 15 |
| YIELD POINT (Pa) | 11.5 | 11 | 13.5 |
| GELS 0/10 min. (Pa) | 2+2.5 | 2/3 | 3/4 |
| pH STRIP ☑ METER ☐ | 10.5 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 9.2 | | |
| FILTER CAKE (mm) | .1 Good! | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .9/1.4 | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 70 | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 250 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .001 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .075 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .925 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | |
| ELECTRICAL STABILITY (V) HI: 5 | 0 | | |
| OIL/WATER RATIO SP. 721 | .7 | | |
| $CaCl_2$ w/w% SULPHITES | 180 | | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 2588 | | 30 | 2558 | 375.00 |
| PTS-700 | 53 | | 3 | 50 | 780.00 |
| SULPHITE | 24 | | 1 | 23 | 49.70 |
| DEFOAM | 16 | | 1 | 15 | 136.50 |
| CAUSTIC SODA | 45 | | 10 | 45 | 800.00 |

3R=3 6R=5 100R=24
200R=32 300R=37 600R=52

3R=3 6R=5 100R=23
300R=32 300R=38 100R=53

| | | | |
|---|---|---|---|
| PREVIOUS COST | 40,686.40 | STARTING VOLUME | |
| DAILY COST | 2141.20 | VOL. BUILT | THA-115 |
| CUM. COST | 42,827.60 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 12,750.00 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: DENSITY 1180-1190 KG/M³. MUD WT. CUTS. EXCEPT THICKEN TANK.
FRESH WATER - 5 LITRES/MIN FOR 1 CIRC. EVERY 12 HOURS.
VISCOSITY 38 TO 40 SEC/L.
PH - 10 w/ CAUSTIC SODA OVER 1 FULL CIRC. WHEN NEED.
SLOWLY BUILD TO 1 PAIL OF ASP. 721 EVERY 12 HOURS.
MIX 1 JUG OF X-CIDE ONCE A DAY.
PRIOR TO TRIPPING: ISOLATE SUCTION TANK, MIX 3 PAILS OF PTS-700 & 5 MIN. PAIL PUMP DOWN HOLE & DISPLACE W/ MUD FOR 15 MINUTES.
WHEN MIXING PILL IN PILL TANK, ADD ½ PAIL OF DEFOAMER PRIOR TO MIXING BARITE.

STOCK POINT FT. ST. JOHN | I.D.F. ENGINEER RICK REINHART
PHONE 785-4777 | PHONE FAR Road 0 MOBILE IDF #1

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE-04-1991
REPORT No. # 22
SPUD DATE APR-29-91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT-I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING H.T. 07
REPORT FOR Mr. BOB TOOLE REPORT FOR Mr. JIM SIGNER

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 5-152 mm | COND. | TANKS | 75 M³ | PUMP SIZE | 11/4 x 4 1/2 | OPPOSITE D.P. | 54.5 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 53 M³ | m³/STK. | .0118 | OPPOSITE D.C. | 100 |
| DRILL COLLARS | 120 mm | INTER/178-273 | TOTAL | 128 M³ | S.P.M. | 55 | PUMP PRESS. | 5500 |
| OTHER | | OTHER | STANDBY | | m³/min. | .649 | CIRC. TIME | 200 |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE GEL. POLYMER | FLOWLINE WT. | 40 kg/m³ | MUD WT. | 1180-1190 kg/m³ |
| HOLE COND. HARD REAMING | UNDERFLOW WT. | 62 kg/m³ | VISCOSITY | 38-40 s/L |
| DEVIATION @ 2417-2476 M. | OVERFLOW WT. | kg/m³ | FILTRATE | 4.10 cm³/30 min. |
| CURRENT OP. DRILLING. | UNDERFLOW RATE | m³/min. | pH | 10.0-10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐

| MUD PROPERTIES | |
|---|---|
| TIME SAMPLE TAKEN | 02:30 |
| PRESENT DEPTH (m) | 2459 |
| FLOWLINE TEMPERATURE (°C) | 42°C |
| DENSITY (kg/m³) | 1190 |
| FUNNEL VISCOSITY (s/L) | 41 |
| APPARENT VISCOSITY (mPa.s) | 26.5 |
| PLASTIC VISCOSITY (mPa.s) | 15 |
| YIELD POINT (Pa) | 11.5 |
| GELS 0/10 min. (Pa) | 2/3 |
| pH STRIP ☑ METER ☐ | 10.2 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 14.0 |
| FILTER CAKE (mm) | .5 FAIR |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .7/1.9 |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | 20 |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 250 |
| SAND CONTENT (%) ☐ (Ø) ☑ | .001 |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .077 |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .928 |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 11 |
| ELECTRICAL STABILITY (V) HI: (MGEL) on ETHYL UP! | |
| OIL/WATER RATIO SP 701 | .6 |
| $CaCl_2$ w/w% SULPHITES | 150 |
| "n"/"k" | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 2558 | | 30 | 2528 | 375.00 |
| AS-200 | 50 | | 3 | 47 | 780.00 |
| X-CIDE | 24 | | 1 | 23 | 140.00 |
| DEFOAM | 15 | | 1 | 14 | 136.50 |

3R=3 6R=5 100R=23
200R=31 300R=38 600R=52

| | | | |
|---|---|---|---|
| PREVIOUS COST | 6,378.50 | STARTING VOLUME | |
| DAILY COST | 1421.50 | VOL. BUILT | 7 M³ |
| CUM. COST | 6,759.50 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 13,125.50 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1. DENSITY @ 1180-1190 KG/M³. MOVE GUNS EXCEPT SHAKER TANK
2. RUN WATER @ 20 LITRES/MIN. D.O.T.IL VISCOSITY TO DEVIATE 40
3. VISCOSITY = 37-39 SEC/L.
4. PH 10.5 W/ CAUSTIC SODA & 1 BAG A CIRC. WHEN BEG'N.
5. SLOWLY RUN IN 1 PAIL OF ASP-701 FOAM IN 12 HOLES.
1 MIX 1 JUG OF X-CIDE, ONCE A DAY.
6. PUMP TO MIXING PILL IN PILL TANK, MIX 1/2 PAIL + OF EFFERIES
7. PUMP TO DIFFERENCE ISOLATE (LAST TWO TANKS, MIX 2 PAILS
OF FTS-200 & MIX 1 PAIL TO EACH TANK (4 PAILS TOTAL)
PUMP-POUND HOLE FOR 20 MIN. + DISPLACE WITH FOR 10 MIN.
AS SOON AS YOU GET BACK ON BOTTOM W/ CIRC.
1. RUN WATER @ 20 M³/HR. MIX 2 BAGS OF DISPAC-LO
(5 M³) 1 BAG. MIX 1 BAG OF SODIUM SULPHITE!

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK HEINHAUT
PHONE 785-4272 PHONE FAR POOL OR MOBILE # F #1

**IDF**
**INTERNATIONAL DRILLING FLUIDS**

# DRILLING FLUID REPORT

DATE JUNE-05-91
REPORT No. # 33
SPUD DATE APR-29-91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT-I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING H.T. #07
REPORT FOR Mr. BOB TOOLE REPORT FOR Mr. J[illegible] SIGNER

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 6.152mm | COND. | TANKS 75 m³ | PUMP SIZE 114x406 | OPPOSITE D.P. 54.5 |
| DRILL PIPE 89 mm | SURFACE | HOLE 53 m³ | m³/STK. .0118 | OPPOSITE D.C. 100 |
| DRILL COLLARS 120 mm | INTER 178.2773 | TOTAL 128 m³ | S.P.M. 55 | PUMP PRESS. 12,500 |
| OTHER HWDP 193 | OTHER | STANDBY | m³/min. .649 | CIRC. TIME 200 |

| HOLE DATA | DESANDER/DESILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE LT. POLYMER | FLOWLINE WT [illegible] kg/m³ | MUD WT. 1180 kg/m³ |
| HOLE COND. (EX 15.8 JETS) | UNDERFLOW WT. [illegible] kg/m³ | VISCOSITY 38-40 s/L |
| DEVIATION | OVERFLOW WT. [illegible] 1040 (45 l/ kg/m³ | FILTRATE <10 cm³/30 min. |
| CURRENT OP. DRILLING | UNDERFLOW RATE [illegible] m³/min. | pH 10-10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 04:00 | | |
| PRESENT DEPTH (m) | 3468 | | |
| FLOWLINE TEMPERATURE (°C) | 42°C | | |
| DENSITY (kg/m³) | 1180 | | |
| FUNNEL VISCOSITY (s/L) | 41 | | |
| APPARENT VISCOSITY (mPa.s) | 26 | | |
| PLASTIC VISCOSITY (mPa.s) | 15 | | |
| YIELD POINT (Pa) | 11 | | |
| GELS 0/10 min. (Pa) | 3/3.5 | | |
| pH STRIP ☑ METER ☐ | 10.5 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 10.5 | | |
| FILTER CAKE (mm) | 1.0 GOOD! | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .8/1.1 | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 250 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .001 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .068 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .932 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | |
| ELECTRICAL STABILITY (V) H₂S | 0 | | |
| OIL/WATER RATIO ASP. 221 | .5 | | |
| CaCl₂ w/w% SULPHITES | 125 | | |
| "n"/"k" | | | |

| MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|
| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| BARITE | 2528 | | 30 | 2498 | 375.00 |
| FTS-200 | 47 | | 4 | 43 | 1040.00 |
| X-CIDE | 23 | | 1 | 22 | 140.00 |
| CAUSTIC | 181 | | 1 | 180 | 30.00 |
| DEFOAM | 14 | | 1 | 13 | 136.50 |

3R=3 6R=4 100R=23
200R=30 300R=37 600R=52

| | | | |
|---|---|---|---|
| PREVIOUS COST | 14,259.[illegible] | STARTING VOLUME | |
| DAILY COST | 1721.5[illegible] | VOL. BUILT | THANKS |
| CUM. COST | 15,980.58 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 12,500 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1) DENSITY = 1180 KG/M³: MOVE MUD CUTS EXCEPT IN SHAKER TANK
2) VISCOSITY = 38-40 SEC/L. [illegible] WATER AT 5 LITRES/MIN.
3) PH 10.5 [illegible] CAUSTIC SODA [illegible] CIRC. WHEN REQ'D.
4) SLOWLY BLEED IN 1 PAIL OF ASP-221 EVERY 12 HOURS.
5) MIX 1 JUG OF X-CIDE ONCE A DAY!
6) PRIOR TO MIXING PILLS IN PILL TANK, MIX ½ PAIL OF DEFOAMER.
7) PRIOR TO TRIPPING: ISOLATE LAST TWO TANKS, MIX 2 PAILS OF FTS-200 & 5 [illegible] EACH TANK. (4 PAILS TOTAL) PUMP DOWN HOLE FOR 30 MIN., & DISPLACE [illegible] FOR 10 MINUTES!

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4233 PHONE FAR [illegible] MOBILE #1

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE-05-91
REPORT No. #704
SPUD DATE APR-29-91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT-I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING H.T. #203
REPORT FOR Mr. ROB TOOLE - NEIL PLESS - JOHN A. REPORT FOR Mr JIM SIGNER

| ASSEMBLY | | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|---|
| BIT SIZE / # | 6.157/M.I | COND. | TANKS 25.5 | PUMP SIZE 114 x 406 | OPPOSITE D.P. 54.5 |
| DRILL PIPE | 89 mm | SURFACE | HOLE 52.5 | m³/STK. .0188 | OPPOSITE D.C. 100 |
| DRILL COLLARS | 170 mm | INTER/178@2772 | TOTAL 179.1 | S.P.M. 55 | PUMP PRESS. 11,000 |
| OTHER | CHA. 197.1 | OTHER | STANDBY | m³/min. .649 | CIRC. TIME 300 |

| HOLE DATA | DESANDER/DESILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE LOT. POLYMER | FLOWLINE WT. MIN. 1001 @ 40.5 MIN kg/m³ | MUD WT. 1175-1180 kg/m³ |
| HOLE COND. (7 x 15.9 JETS) | UNDERFLOW WT. CT. 1. C P. 65 MIN kg/m³ | VISCOSITY 38-40 s/L |
| DEVIATION 10 3/4° @ 2474 | OVERFLOW WT. kg/m³ | FILTRATE L10 cm³/30 min. |
| CURRENT OP. DRILLING. | UNDERFLOW RATE m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 22:30 | | 15:00 | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 2492 | | 2481 | DISPAC-10 | 77 | | 7 | 70 | 1176.80 |
| FLOWLINE TEMPERATURE (°C) | 46°C | | 47°C | SULPHITE | 23 | | 1 | 22 | 49.70 |
| DENSITY (kg/m³) | 1175 | | 1175 | ASP-771 | 59 | | 3 | 56 | 300.00 |
| FUNNEL VISCOSITY (s/L) | 41 | | 41 | X-CIDE | 23 | | 1 | 21 | 140.00 |
| APPARENT VISCOSITY (mPa.s) | 25 | | 24 | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | 15 | | 15 | | | | | | |
| YIELD POINT (Pa) | 10 | | 11 | | | | | | |
| GELS 0/10 min. (Pa) | 3/12.5 | | 3/12.5 | | | | | | |
| pH STRIP ☑ METER ☐ | 10.5 | | 10.5 | | | | | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 10.5 | | 12.0 | | | | | | |
| FILTER CAKE (mm) | 1.0 | | 1.0 | | | | | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .9/11.2 | | .85/11.2 | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | | 20 | | | | | | |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 250 | | 250 | PR=2 LR=2 100 Ø = 20 | | | | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .001 | | .001 | 300 Ø = 30 200 Ø = 25 ACOL = 50 | | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .065 | | .065 | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .935 | | .935 | PREVIOUS COST | 65,980.65 | STARTING VOLUME | | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | 10 | DAILY COST | 11,226.55 | VOL. BUILT | 7 TANKS | | |
| ELECTRICAL STABILITY (V) H.C | 0 | | 0 | CUM. COST | 77,207.20 | VOL. LOST on SURFACE | | | |
| OIL/WATER RATIO SP-771 | .6 | | .5 | CUM. ENG. COST | 13,500.00 | VOL. LOST SUB SURFACE | | | |
| $CaCl_2$ w/w% SULPHITES | 120 | | 120 | | | END VOLUME | | | |
| "n"/"k" | | | | | | CUM. VOL. BUILT | | | |

COMMENTS: 1. DENSITY @ 1180 KG/M³. MOVE MUD GUNS EXCEPT IN SHAKER TANK.
2. VISCOSITY @ 38-40 SEC/L. ADD WATER @ 5 L/MIN. ICIDE EVERY 12 HRS.
3. PH 10.5 W/ CAUSTIC SODA. TAG A CIRC. WHEN NEED.
4. SLOWLY BUILD 1 PAIL OF ASP-771 EVERY 12 HOURS.
5. MIX 1 JUG OF X-CIDE ONCE A DAY.
6. PRIOR TO MIXING PILLIN PILL TANK: MIX 1/2 PAIL + DEFOAMER.
7. PRIOR TO TRIPPING: ISOLATE LAST TWO TANKS: MIX 3 PAILS OF PTS-300 + 5 GAL/1 PAIL TO EACH TANK. (4 PAILS TOTAL)
PUMP DOWN HOLE FOR 30 MIN. AND DISPLACE W/ MUD FOR 10 MINUTES.
8. IF MUD DENSITY DROPS BELOW 1170 KG/M³ MIX 50 SXS BARITE AT 4 MINUTES/TAG.

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4772 PHONE FAR 800-0 MOBILE # 1

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE · 06 · 1991
REPORT No. # 25
SPUD DATE APR · 29 · 91

WELL NAME COLUMBIA FTAL KOTANELEE LOCATION YT · I · 48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTINE M.T. #07
REPORT FOR Mr. NEIL BLISS REPORT FOR Mr. JIM SIGNED

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 2 · 152mm. | COND. | TANKS | 77 m³ | PUMP SIZE | 14 x 46 | OPPOSITE D.P. 55 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 54 m³ | m³/STK. | .0118 | OPPOSITE D.C. 95 |
| DRILL COLLARS | 170 mm | INTER | 177.3773 | TOTAL | 131 m³ | S.P.M. | 55 | PUMP PRESS. 12,500 |
| OTHER | CHA · 194 m. | OTHER | | STANDBY | | m³/min. | .649 | CIRC. TIME 700 |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE GEL. POLYMER | FLOWLINE WT. | .041 m³ kg/m³ | MUD WT. 1175 - 1180 | kg/m³ |
| HOLE COND. | UNDERFLOW WT. | .065 m³ kg/m³ | VISCOSITY 38 - 40 | s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE 4.0 | cm³/30 min. |
| CURRENT OP. | DRILLING. | UNDERFLOW RATE | m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☒ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 16:30 | | 11:00 |
| PRESENT DEPTH (m) | 2495 | | 2494 |
| FLOWLINE TEMPERATURE (°C) | 45°c | | 45°c |
| DENSITY (kg/m³) | 1180 | | 1180 |
| FUNNEL VISCOSITY (s/L) | 42 | | 42 |
| APPARENT VISCOSITY (mPa.s) | 27 | | 26 |
| PLASTIC VISCOSITY (mPa.s) | 16 | | 15 |
| YIELD POINT (Pa) | 11 | | 11 |
| GELS 0/10 min. (Pa) | 2/3.5 | | 2/3 |
| pH STRIP ☒ METER ☐ | 10.5 | | 10.5 |
| FILTRATE ☒ API ☐ HT HP (cm³) | 11.5 | | 12.0 |
| FILTER CAKE (mm) | 1.0 TIGHT | | 1.0 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .85/1.3 | | .85/1.3 |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | | 20 |
| SAL. ☐ NACL ☐ CL ☒ (mg/L) | 250 | | 300 |
| SAND CONTENT (%) ☐ (Ø) ☒ | .002 | | .001 |
| SOLIDS CONTENT (%) ☐ (Ø) ☒ | .068 | | .068 |
| OIL/WATER CONT. (%) ☐ (Ø) ☒ | .932 | | .932 |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 11 | | 11 |
| ELECTRICAL STABILITY (V) | 0 | | 0 |
| OIL/WATER RATIO | .75 | | .7 |
| $CaCl_2$ w/w% WHITE | 150 | | 170 |
| "n"/"k" TOTAL POLYMER | 2.5 KG/m³ | | |

| MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|
| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| BARITE | 2498 | | 387 | 2111 | 4612.50 |
| ASP-721 | 56 | | 1 | 55 | 100.00 |
| X-CIDE | 31 | | 1 | 30 | 140.00 |
| SULPHITE | 22 | | 1 | 21 | 49.70 |
| PTS-200 | 43 | | 4 | 39 | 1040.00 |
| DEFOAM-IC | 70 | | 4 | 66 | 649.20 |
| GRAPHITE | - | | 2 | - | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 300R: 3 | 6R: 4 | 100R: 21 | | | |
| 200R: 31 | 300R: 38 | 600R: 54 | | | |
| | | | | | |
| PREVIOUS COST | 47,607.80 | STARTING VOLUME | | | 172.171 |
| DAILY COST | 2441.80 | VOL. BUILT | | | |
| CUM. COST | 50,048.80 | VOL. LOST on SURFACE | | | |
| CUM. ENG. COST | 13,875. | VOL. LOST SUB SURFACE | | | |
| | | END VOLUME | | | |
| | | CUM. VOL. BUILT | | | |

COMMENTS: 1 DENSITY = 1175 - 1180 KG/m³. MUD SYSTEM EXCEPT IN SHAKER TANK. IF DENSITY GOES BELOW 1170 KG/m³ MIX 50 SXS OF BARITE + 4 MINUTES A PAG.
2 VISCOSITY = 38-40 SEC/L. RUN WATER + SWEEP. 1 TIME EVERY 12 HRS.
3 PH = 10.5 WITH CAUSTIC SODA FLAKES. CIRC. WHEN REQ'D.
4 RUN 1 PAIL OF ASP-721 EVERY 12 HOURS.
5 MIX 1 JUG OF X-CIDE ONCE A DAY.
6 PRIOR TO MIXING PILL IN PILL TANK: MIX ½ PAIL DEFOAMER
7 PRIOR TO TRIPPING: ISOLATE LAST TWO TANKS: MIX 3 PAILS OF PTS-200 IN EACH TANK + 5 gal/PAIL. (4 PAILS TOTAL)
PUMP DOWN HOLE FOR 20 min. AT IMPACT WITH PUMP FOR 10 minutes.

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4777 PHONE FAR Room MOBILE # DE #1

**IDF**
**INTERNATIONAL DRILLING FLUIDS**

# DRILLING FLUID REPORT

DATE JUNE.07.91
REPORT No. #36
SPUD DATE APR.29.91

WELL NAME COLUMBIA ET AL KOTANEELEE
LOCATION YT. I-48

|  |  |  |  |
|---|---|---|---|
| OPERATOR | COLUMBIA GAS DEVELOPMENT | CONTRACTOR | KENTING H.T. #07 |
| REPORT FOR Mr. | NEIL BUSS | REPORT FOR Mr. | JIM SIGNER |

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 7-152mm | COND. | | TANKS | 77 m³ | PUMP SIZE | 122x406 | OPPOSITE D.P. | 56 |
| DRILL PIPE mm | 89 | SURFACE | | HOLE | 54 m³ | m³/STK. | .0167 | OPPOSITE D.C. | 98 |
| DRILL COLLARS mm | 120 | INTER | 178-2272 | TOTAL | 131 m³ | S.P.M. | 40 | PUMP PRESS. | 11,500 |
| OTHER | BHA · 194 m | OTHER | | STANDBY | | m³/min. | .668 | CIRC. TIME | 200 |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT kg/m³ | ANN. VOL. - 41 m³ | MUD WT. kg/m³ | 1175-1180 |
| HOLE COND. | GOOD! | UNDERFLOW WT kg/m³ | BTM. UP - 63 MIN | VISCOSITY s/L | 38-40 |
| DEVIATION | | OVERFLOW WT. kg/m³ | BOTTOM HOLE | FILTRATE cm³/30 min. | 10-12 |
| CURRENT OP. | DRILLING | UNDERFLOW RATE m³/min. | TEMP. 51°C ± | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 22:30 | 19:00 | 11:00 |
| PRESENT DEPTH (m) | 3574 | 3510 | 3497 |
| FLOWLINE TEMPERATURE (°C) | 43°C | 43°C | 41°C |
| DENSITY (kg/m³) | 1175 | 1180 | 1180 |
| FUNNEL VISCOSITY (s/L) | 43 | 43 | 45 |
| APPARENT VISCOSITY (mPa.s) | 29 | 29.5 | 32.5 |
| PLASTIC VISCOSITY (mPa.s) | 18 | 18 | 20 |
| YIELD POINT (Pa) | 11 | 11.5 | 12.5 |
| GELS 0/10 min. (Pa) | 2/3 | 2/3 | 2.5/3 |
| pH STRIP ☑ METER ☐ | 10.5 | 10.5 | 10.5 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 12.0 | 13 | 15.5 |
| FILTER CAKE (mm) | 1.0 TIGHT | 1.5 | 1.5 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .85/1.2 | 1.0/1.4 | .9/1.4 |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | 20 | 20 |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 750 | 250 | 250 |
| SAND CONTENT (%) ☐ (∅) ☑ | .0015 | .003 | .002 |
| SOLIDS CONTENT (%) ☐ (∅) ☑ | .066 | .068 | .068 |
| OIL/WATER CONT. (%) ☐ (∅) ☑ | .934 | .932 | .932 |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | 10 | 10 |
| ELECTRICAL STABILITY (V) N/C | 0 | 0 | 0 |
| OIL/WATER RATIO ASP. 731 | .8 | .8 | .8 |
| CaCl₂ w/w% SULPHITES | 150 | 150 | 160 |
| "n"/"k" TOTAL POLYMER | 3.0 | 3.0 | 3.0 |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| X-CIDE | 30 | | 1 | 29 | 140.00 |
| SULPHITE | 21 | | 1 | 20 | 49.70 |
| DFCL | 30 | | 12 | 18 | 2136.00 |
| DISPAC-LO | 66 | | 3 | 63 | 487.20 |
| GLASS | | | | | |
| BEADS | 45 | | 5 | 40 | 400.00 |

3R=3 6R=4 100R=22
200R=33 300R=40 600R=58

|  |  |  |  |
|---|---|---|---|
| PREVIOUS COST | 70,048.99 | STARTING VOLUME | |
| DAILY COST | 3212.90 | VOL. BUILT | THANKS |
| CUM. COST | 73,261.89 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 14,250 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1 DENSITY - 1175-1180 KG/M³, MOVE MUD GUN EXCEPT IN SHAKER TANK. IF DENSITY GOES DOWN 1170 KG/M³, MIX 50 SXS BARITE AT 4 MINUTES A BAG.
2 VISCOSITY - 38-40 SEC/L. ADD WATER - 5 LITRES/MIN.
3 PH - 10.5 W/ CAUSTIC SODA - 1 BAG A CIRC. WHEN REQ'D.
4 STOP ADDITIONS OF ASP. 731!
5 MIX 1 JUG X-CIDE AND 1 BAG NA SULPHITE ONCE A DAY!
6 PRIOR TO MIXING PILL IN PILL TANK, MIX ½ PAIL DEFOAMER!
7 PRIOR TO TRIPPING & CIRCULATE LAST TWO TANKS, MIX 3 PAILS OF FTS-200 IN EACH TANK - 5 MIN/PAIL. PUMP DOWN HOLE FOR 40 MINUTES AND THEN PUMP PILL.

|  |  |  |  |
|---|---|---|---|
| STOCK POINT | FT. ST. JOHN | I.D.F. ENGINEER | RICK REINHART |
| PHONE | 785-4333 | PHONE MOBILE # | FAR ROOM ONE #1 |

**INTERNATIONAL DRILLING FLUIDS**

# DRILLING FLUID REPORT

DATE JUNE-08-1991
REPORT No. #37
SPUD DATE APR-29-91

| | |
|---|---|
| WELL NAME COLUMBIA ET AL KOTANEELEE | LOCATION YT-I-48 |
| OPERATOR COLUMBIA GAS DEVELOPMENT | CONTRACTOR KENTING H.T. #07 |
| REPORT FOR Mr. NEIL PLISS | REPORT FOR Mr. JIM SIGNER |

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 7-152mm | COND. | TANKS 85m³ | PUMP SIZE 127x406 | OPPOSITE D.P. 50.5 |
| DRILL PIPE 89 mm | SURFACE | HOLE 55m³ | m³/STK. .0167 | OPPOSITE D.C. 88 |
| DRILL COLLARS 120 mm | INTER 178-2333 | TOTAL 140m³ | S.P.M. 36 | PUMP PRESS. 13,000 |
| OTHER CHAP 194m. | OTHER | STANDBY | m³/min. .6012 | CIRC. TIME 230 |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE ST. POLYMER | FLOWLINE WT ADD. VOL - 45m³ kg/m³ | MUD WT. 1175-1180 kg/m³ |
| HOLE COND. | UNDERFLOW WT CHM. UP - 34 m... kg/m³ | VISCOSITY 40 SEC/L s/L |
| DEVIATION 10 1/4° | OVERFLOW WT. CIRC. HOLE TEMP kg/m³ | FILTRATE 10-13 cm³/30 min. |
| CURRENT OP DRILLING | UNDERFLOW RATE BHT 315 °F m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 11:00 | | |
| PRESENT DEPTH (m) | 3544 | | |
| FLOWLINE TEMPERATURE (°C) | 42°C | | |
| DENSITY (kg/m³) | 1175 | | |
| FUNNEL VISCOSITY (s/L) | 47 | | |
| APPARENT VISCOSITY (mPa.s) | 27 | | |
| PLASTIC VISCOSITY (mPa.s) | 17 | | |
| YIELD POINT (Pa) | 10 | | |
| GELS 0/10 min. (Pa) | 3/7.5 | | |
| pH STRIP ☑ METER ☐ | 10.5 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 13.5 | | |
| FILTER CAKE (mm) | .5 TIGHT! | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .85/1.1 | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 350 | | |
| SAND CONTENT (%) ☐ (∅) ☑ | .001 | | |
| SOLIDS CONTENT (%) ☐ (∅) ☑ | .066 | | |
| OIL/WATER CONT. (%) ☐ (∅) ☑ | .934 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | |
| ELECTRICAL STABILITY (V) HDS | 0 | | |
| OIL/WATER RATIO ASP-221 | .7 | | |
| CaCl₂ w/w% SULPHITES | 120 | | |
| "n"/"K" TOTAL POLYMER | 3.5 KG/m³ | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 2461 | | 25 | 2436 | 427.50 |
| X-CIDE | 79 | | 1 | 78 | 140.00 |
| DEFOAM | 13 | | 1 | 12 | 136.50 |
| SULPHITE | 20 | | 1 | 19 | 49.70 |
| PTS-200 | 39 | | 4 | 35 | 1040.00 |

3R=3 6R=3 100R=20
300R=30 200R=27 600R=54

| | | | |
|---|---|---|---|
| PREVIOUS COST | 73,261.30 | STARTING VOLUME | |
| DAILY COST | 1803.70 | VOL. BUILT | THANKS |
| CUM. COST | 75,065. | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 14,625. | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

AS SOON AS YOU GET BACK ON BOTTOM W/ BIT #8!

1. RUN WATER @ 20 LITRES/MIN. FOR 1 CIRCULATION. THEN SLOW THE WATER DOWN TO 5 LITRES/MINUTE.

2. MIX 1 JUG OF X-CIDE, AND THEN 1 BAG OF SODIUM SULPHITE.

3. AFTER 1 FULL CIRCULATION, MIX 3 BAGS OF DRISPAC-LOW AT 30 MINUTES A BAG!

STOCK POINT FT. ST. JOHN
PHONE 785-4333
I.D.F. ENGINEER RICK REINHART
PHONE FAR ROOM OUTSIDE #1 MOBILE

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE 09 1991
REPORT No. # 28
SPUD DATE APR 29 91

WELL NAME COLUMBIA ETAL KOTAWEELEE LOCATION VT-I-48
OPERATOR COLUMBIA GAS DEFICIENT CONTRACTOR KENTING H.T. #07
REPORT FOR Mr. NEIL PLISS REPORT FOR Mr. JIM SIGNED

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 8.5 | COND. | TANKS | 80 m³ | PUMP SIZE | 177 x 406 | OPPOSITE D.P. | 60 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 55 m³ | m³/STK. | .016 7 | OPPOSITE D.C. | 105 |
| DRILL COLLARS | 120 mm | INTER | TOTAL | 135 m³ | S.P.M. | 42 | PUMP PRESS. | 10,000 |
| OTHER | FLEX | OTHER | STANDBY | | m³/min. | .7181 | CIRC. TIME | 190 |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE | GEL CHEM POLYMER | FLOWLINE WT. APP. OF 45 m³ kg/m³ | MUD WT. 1190 KG/M³ kg/m³ |
| HOLE COND. | | UNDERFLOW WT. DT. UP 65 m³ kg/m³ | VISCOSITY 40 SEC/L s/L |
| DEVIATION | | OVERFLOW WT. DT. HOLE TF kg/m³ | FILTRATE 10.17 cm³/30 min. |
| CURRENT OP | DRILLING | UNDERFLOW RATE 2150 L/M m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 20:00 | | 13:00 | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 3559 | | 3557 | BARITE | 424 | | 100 | 324 | 1750.00 |
| FLOWLINE TEMPERATURE (°C) | 44° | | 42° | SULPHITE | 19 | | 1 | 18 | 49.70 |
| DENSITY (kg/m³) | 1180 | | 1170 | DFCL | 18 | | 6 | 12 | 1068.00 |
| FUNNEL VISCOSITY (s/L) | 43 | | 45 | DUSPAC | 67 | | 7 | 60 | 487.20 |
| APPARENT VISCOSITY (mPa.s) | 28 | | 30 | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | 18 | | 19 | | | | | | |
| YIELD POINT (Pa) | 10 | | 11 | | | | | | |
| GELS 0/10 min. (Pa) | 3/7.5 | | 3/13 | | | | | | |
| pH STRIP ☑ METER ☐ | 10.7 | | 11.0 | | | | | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 15 | | 13.0 | | | | | | |
| FILTER CAKE (mm) | 1.0 FIRM. | | 1.0 | | | | | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.1/1.4 | | 1.3/2.1 | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | | 20 | | | | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 250 | | 200 | PR=3 | HD=4 | 100R=20 | | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | .001 | | .001 | 200R=30 | 300R=28 | 600R=56 | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .07 | | 6.5 | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .93 | | .935 | PREVIOUS COST | 75,065. | STARTING VOLUME | | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | 10 | DAILY COST | 854.90 | VOL. BUILT | 7HL | MIS | |
| ELECTRICAL STABILITY (V) | 0 | | 0 | CUM. COST | 77,920. | VOL. LOST on SURFACE | | | |
| OIL/WATER RATIO | .7 | | .7 | CUM. ENG. COST | 15,000. | VOL. LOST SUB SURFACE | | | |
| $CaCl_2$ w/w% | 170 | | 175 | | | END VOLUME | | | |
| "n"/"K" | 4 | #6/M² | 4 | | | CUM. VOL. BUILT | | | |

COMMENTS: DENSITY @ 1190 KG/M³ MOVE MUD CLEAN EXCEPT IN SHAKER TANK. IF INFINITY GOES BELOW 1185 KG/M³, MIX 5 SX BARITE AT 4 MINUTES PER BAG.
VISCOSITY @ 40 SEC/L AND WATER @ 5 LITRES/MIN.
PH @ 10.5 DO NOT ADD ANY MORE CAUSTIC FOR NOW.
4 STAT ADDITIONS OF A.P.I. 731 AND DUSPAC LO.
5 STAT ADDITIONS OF FT'S 200 FOR NOW.
MIX 1 JUG OF X-CIDE A DAY. ALSO ALL 1 JUG OF X-CIDE BACK TO TRIPPING.
ADD TO MIXING PILL IN PILL TANK, MIX ½ BAG OF DEFOAMER.

STOCK POINT FT. ST JOHN I.D.F. ENGINEER
PHONE 785-4727 PHONE MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE-10-1991
REPORT No. # 29
SPUD DATE APR-29-91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT-J-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING H.T. #07
REPORT FOR Mr. NEIL PLISS REPORT FOR Mr. JIM SIGNER

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 8.5 7/7M | COND. | TANKS 85.1 | PUMP SIZE 11/4 x 4 OK | OPPOSITE D.P. 50 |
| DRILL PIPE 89 mm | SURFACE | HOLE 55.5 | m³/STK. .0119 | OPPOSITE D.C. 86 |
| DRILL COLLARS 130 mm | INTER) 178-3775 | TOTAL 140.5 | S.P.M. 50 | PUMP PRESS. 7500 |
| OTHER FLA = 194.1. | OTHER | STANDBY | m³/min. .59 | CIRC. TIME 220 |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE GEL. POLYMER | FLOWLINE WT. 45.5 kg/m³ | MUD WT. 1190-1195 kg/m³ |
| HOLE COND. | UNDERFLOW WT. ET. UP = 80 MIN kg/m³ | VISCOSITY 41-43 s/L |
| DEVIATION 7 1/4 @ 3561 | OVERFLOW WT. ET. HOLE TEMP kg/m³ | FILTRATE FIRM CAKE cm³/30 min. |
| CURRENT OP DRILLING. | UNDERFLOW RATE 375 L/M - 107 L/M m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | ↓ MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 16:00 | | 09:30 | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 3587 | | 3580 | BARITE | 3226 | | 85 | 3141 | 1062.50 |
| FLOWLINE TEMPERATURE (°C) | 45 °C | | 44 °C | DFLC | 12 | | 7 | 5 | 1746.00 |
| DENSITY (kg/m³) | 1195 | | 1190 | X-CIDE | 28 | | 1 | 27 | 140.00 |
| FUNNEL VISCOSITY (s/L) | 43 | | 43 | DISPLO | 60 | | 3 | 57 | 487.20 |
| APPARENT VISCOSITY (mPa.s) | 27 | | 26 | | | | | | |
| PLASTIC VISCOSITY (mPa.s) | 15 | | 17 | | | | | | |
| YIELD POINT (Pa) | 9 | | 9 | | | | | | |
| GELS 0/10 min. (Pa) | 1.5/7 | | 1.5/7 | | | | | | |
| pH STRIP ☑ METER ☐ | 10.7 | | 10.7 | | | | | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 15.5 | | 16 | | | | | | |
| FILTER CAKE (mm) | 1.0 TIGHT | | 1.0 | | | | | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.0/1.3 | | 1.0/1.3 | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 40 | | 20 | | | | | | |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 200 | | 200 | PR=2 LR=2 100R=19 | | | | | |
| SAND CONTENT (%) ☑ (Ø) ☑ | .0015 | | .0015 | 200R=28 300R=24 600R=54 | | | | | |
| SOLIDS CONTENT (%) ☑ (Ø) ☑ | .078 | | .075 | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .922 | | .925 | PREVIOUS COST | 77,920. | | STARTING VOLUME | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | 10 | DAILY COST | 2935.20 | | VOL. BUILT | 1 HOLE | |
| ELECTRICAL STABILITY (V) HTS | 0 | | 0 | CUM. COST | 80,854. | | VOL. LOST on SURFACE | | |
| OIL/WATER RATIO S.P. 731 | .7 | | .7 | CUM. ENG. COST | 15,375. | | VOL. LOST SUB SURFACE | | |
| $CaCl_2$ w/w% SULPHITES | 150 | | 150 | | | | END VOLUME | | |
| "n"/"K" TOTAL POLYMER | 4.0 | KG/M³ | 4.0 | | | | CUM. VOL. BUILT | | |

COMMENTS: MUD DENSITY @ 1190-1195 KG/M³ IF DENSITY GOES
BELOW 1185 KG/M³ MIX 50 SXS BARITE = 1 MIX. 1 BAG. ✓
RAISE DENSITY TO 1220 KG/M³ PRIOR TO 3650 M. CHECK W/ ENG.
VISCOSITY @ 40-43 SEC/L LOW WATER 5 LITRES/MIN.
PH 10.5. DO NOT ADD CAUSTIC FOR NOW.
STOP ADDITION OF ASP 731.
ONCE A DAY MIX 1 JUG OF X-CIDE ALSO 1 X-CIDE PRIOR TO TRIP.
CONTROL FLUID LOSS @ 15-17 cm³ W/ 13 DISPAC-LO @ 75 MIN/BAG.
PRIOR TO MIXING PILL IN PILL TANK, MIX ½ PAIL DEFOAMER.

PRIOR TO TRIP IF YOU ARE GOING TO PRESSURE TEST.
MIX 4 PAILS OF PTS-200, ISOLATE LAST TWO TANKS, MIX 3 PAILS
IN EACH TANK. PUMP FOR 40 MINUTES THEN PUMP PILL.

STOCK POINT ET. ST. JOHN I.D.F. ENGINEER RICK KELHART
PHONE 785-4222 PHONE FAX ROOM MOBILE # LINE #1

**IDF**
**INTERNATIONAL DRILLING FLUIDS**

# DRILLING FLUID REPORT

DATE JUNE. 11. 1991
REPORT No. # 40
SPUD DATE APR. 29.91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT-I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING H.T. #07
REPORT FOR Mr. REPORT FOR Mr. JIM SIGNER

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 9. 152 MM | COND. | TANKS 85 m³ | PUMP SIZE 114 X 406 | OPPOSITE D.P. 50 |
| DRILL PIPE 89 mm | SURFACE | HOLE 56 m³ | m³/STK. .0118 | OPPOSITE D.C. 86 |
| DRILL COLLARS 120 mm | INTER. 178-3353 | TOTAL 141 m³ | S.P.M. 50 | PUMP PRESS. 9500 |
| OTHER BHA = 196 m. | OTHER | STANDBY | m³/min. .59 | CIRC. TIME 230 |

| HOLE DATA | DESANDER/DESILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE LT. POLYMER | FLOWLINE WT ANN. VOL. = 46 m³ kg/m³ | MUD WT. 1190-1195 kg/m³ |
| HOLE COND. GOOD | UNDERFLOW WT ETA. UP = 80 MIN kg/m³ | VISCOSITY 40-45 s/L |
| DEVIATION JETS - 3X10.3 | OVERFLOW WT ETA. HOLE TEMP kg/m³ | FILTRATE 15-17 cm³/30 min. |
| CURRENT OP. DRILLING | UNDERFLOW RATE E.T. = 225°F m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 21:00 | | 09:30 |
| PRESENT DEPTH (m) | 3609 | | 3598 |
| FLOWLINE TEMPERATURE (°C) | 44°C | | 40°C |
| DENSITY (kg/m³) | 1190 | | 1195 |
| FUNNEL VISCOSITY (s/L) | 42 | | 44 |
| APPARENT VISCOSITY (mPa.s) | 24.5 | | 28 |
| PLASTIC VISCOSITY (mPa.s) | 17 | | 19 |
| YIELD POINT (Pa) | 7.5 | | 9 |
| GELS 0/10 min. (Pa) | 1.5/2 | | 1.5/2 |
| pH STRIP ☑ METER ☐ | 10.5 | | 10.5 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 16.5 | | 15.3 |
| FILTER CAKE (mm) | 1.0 TIGHT | | .5 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .9/1.3 | | .9/1.3 |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 50 | | 60 |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 300 | | 300 |
| SAND CONTENT (%) ☐ (∅) ☑ | .003 | | .0015 |
| SOLIDS CONTENT (%) ☐ (∅) ☑ | .075 | (TRACE) | .075 |
| OIL/WATER CONT. (%) ☐ (∅) ☐ | .925 | (OIL) | .925 |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | 10 |
| ELECTRICAL STABILITY (V) H2S | 0 | | 0 |
| OIL/WATER RATIO ASP. 771 | .6 | | .6 |
| CaCl₂ w/w% SULPHITES | 120 | | 120 |
| "n"/"K" TOTAL POLYMER | 4.0 | KG/M³ | 4.0 |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| SULPHITE | 18 | | 1 | 17 | 49.70 |
| X-CIDE | 77 | | 1 | 76 | 140.00 |

3R = 1 6R = 3 100R = 16
300R = 32 200R = 27 600R = 49

| | | | |
|---|---|---|---|
| PREVIOUS COST | 80,856.19 | STARTING VOLUME | |
| DAILY COST | 189.70 | VOL. BUILT | TRANSITS |
| CUM. COST | 81,045.89 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 15,750 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1 MUD DENSITY = 1190-1195 KG/M³: IF DENSITY GOES BELOW 1185 KG/M³ MIX 50 SXS BARITE = 4 MIN/BAG.
2 VISCOSITY = 42-45 SEC/L. RUN WATER = 5 LITRES/MIN.
3 PH = 10.5: DO NOT ADD CAUSTIC FOR NOW!
4 STOP ADDITIONS OF ASP. 771
5 MIX 1 JUG OF X-CIDE ONCE A DAY!
6 CONTROL FLUID LOSS - 15-17 CM. W/ 3 DRISPAC-LO OVER 1 CIRC.
7 PRIOR TO MIXING PILL IN PILL TANK: MIX 1/2 PAIL DEFOAMER.

8 PRIOR TO TRIP: IF YOU ARE GOING TO PRESSURE TEST: MIX 4 PAILS OF PTS-200 + 1 JUG X-CIDE: ISOLATE LAST TWO TANKS, MIX 2 PAILS PTS 200 IN EACH TANK, MIX 1/4 JUG X-CIDE IN EACH TANK, PUMP FOR 40 MIN., THEN PUMP PILL!

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4222 PHONE EAR ROOM MOBILE # 1

**INTERNATIONAL DRILLING FLUIDS**

# DRILLING FLUID REPORT

DATE JUNE-17-1991
REPORT No. #41
SPUD DATE APR-29.91

WELL NAME COLUMBIA ET AL KOTANEELEE LOCATION YT-I-48

| | |
|---|---|
| OPERATOR COLUMBIA GAS DEVELOPMENT | CONTRACTOR KENTING H.T. #7 |
| REPORT FOR Mr. BOB TOOLE - NEIL BLISS | REPORT FOR Mr. PHIL BOSOMWORTH |

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m/min. |
|---|---|---|---|---|
| BIT SIZE / # 9. 152mm | COND. | TANKS 84 m³ | PUMP SIZE 114 x 406 | OPPOSITE D.P. 50 |
| DRILL PIPE 89 mm | SURFACE | HOLE 56 m³ | m³/STK. .0118 | OPPOSITE D.C. 86 |
| DRILL COLLARS 120 mm | INTER 178-2773 | TOTAL 140 m³ | S.P.M. 50 | PUMP PRESS. 9,000 |
| OTHER BHA - 196m. | OTHER | STANDBY | m³/min. .59 | CIRC. TIME 230 |

| HOLE DATA | DESANDER/DESTILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE WT. POLYMER | FLOWLINE WT ANN. VOL - 46m³ kg/m³ | MUD WT. 1190-1195 kg/m³ |
| HOLE COND. GOOD. | UNDERFLOW WT BT. 1. UP - 80 MIN kg/m³ | VISCOSITY 45 SEC/L. s/L |
| DEVIATION 8° @ 3610 m. | OVERFLOW WT. EST. B.H. TEMP - kg/m³ | FILTRATE 15-17 cm³/30 min. |
| CURRENT OP. DRILLING | UNDERFLOW RATE 225° F m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 14:00 | | 08:00 |
| PRESENT DEPTH (m) | 3620 | | 3673 |
| FLOWLINE TEMPERATURE (°C) | 42°C | | 41°C |
| DENSITY (kg/m³) | 1195 | | 1185 |
| FUNNEL VISCOSITY (s/L) | 44 | | 43 |
| APPARENT VISCOSITY (mPa.s) | 27.5 | | 26 |
| PLASTIC VISCOSITY (mPa.s) | 19 | | 18 |
| YIELD POINT (Pa) | 8.5 | | 8 |
| GELS 0/10 min. (Pa) | 1.5/2 | | 1.5/2 |
| pH STRIP ☑ METER ☐ | 10. | | 10.3 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 15.8 | | 16.0 |
| FILTER CAKE (mm) | .5 | | .8 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | .85/1.2 | | .8/1.3 |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 80 | | 80 |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 300 | | 300 |
| SAND CONTENT (%) ☐ (Ø) ☐ | .003 | | .002 |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .08 | | .073 |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .92 | | .927 |
| MBT (Kg/m³) ☑ % ☐ OIL RET ☐ | 10 | | 10 |
| ELECTRICAL STABILITY (V) H2S | 0 | | 0 |
| OIL/WATER RATIO ASP. 221 | .6 | | .6 |
| CaCl₂ w/w% SULPHITES | 100 | | 100 |
| "n"/"k" TOTAL POLYMER | 4.3 | | 4.3 |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 3741 | | 90 | 3651 | 1125.00 |
| DRISPAC | 57 | | 8 | 49 | 1299.20 |
| PTS-200 | 25 | | 4 | 21 | 1040.00 |
| X-CIDE | 26 | | 2 | 24 | 280.00 |

3R=1 6R=2 100R=17
300R=37 200R=24 600R=55

| | | | |
|---|---|---|---|
| PREVIOUS COST | 81,045.58 | STARTING VOLUME | |
| DAILY COST | 3744.20 | VOL. BUILT | THANKS |
| CUM. COST | 84,790.28 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 16,125.00 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

AS SOON AS YOU GET BACK ON BOTTOM W/ BIT #10
1) RUN WATER @ 10 LITTRES/MINUTE FOR 1 CIRCULATION!
2) RUN 1 BAG OF SODIUM SULPHITE OVER 1 CIRCULATION!

| | |
|---|---|
| STOCK POINT FT. ST. JOHN | I.D.F. ENGINEER RICK REINHART |
| PHONE 785-4222 | PHONE CAR ROOM OUTSIDE #1 MOBILE # |

# IDF

INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE JUNE 12. 1991
REPORT No. # 43
SPUD DATE APR. 29. 91

WELL NAME COLCAS FT A/ VICTAVEFIEF LOCATION VT-I-48
OPERATOR COLCAS FIA GAS DEVELOPMENT CONTRACTOR KEITHIG H.T. #7
REPORT FOR Mr. R.F. TOOLE - NEIL PLISS REPORT FOR Mr. PHIL [illegible]

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 10.15/7/8 | COND. | TANKS 70 M³ | PUMP SIZE 14 X 406 | OPPOSITE D.P. 53.5 |
| DRILL PIPE 99 mm | SURFACE | HOLE 56 M³ | m³/STK. .0115 | OPPOSITE D.C. 93 |
| DRILL COLLARS 120 mm | INTER 177.8 X 23.72 | TOTAL 126 M³ | S.P.M. 54 | PUMP PRESS. 11,000 |
| OTHER PVA - 200 M. | OTHER | STANDBY | m³/min. .6222 | CIRC. TIME 200 |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE L.T. POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. 1195-1200 kg/m³ |
| HOLE COND. GOOD | UNDERFLOW WT. | kg/m³ | VISCOSITY 45 SEC/L s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE 15-17 cm³/30 min. |
| CURRENT OP. DRILLING | UNDERFLOW RATE | m³/min. | pH 10.5 |

EQUIPMENT ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☑ PIT ☐

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | JUNE 14 05:00 | | 19:20 |
| PRESENT DEPTH (m) | 3654 | | 3636 |
| FLOWLINE TEMPERATURE (°C) | 41°C | | 38°C |
| DENSITY (kg/m³) | 1205 | | 1200 |
| FUNNEL VISCOSITY (s/L) | 47 | | 45 |
| APPARENT VISCOSITY (mPa.s) | 27.5 | | 30 |
| PLASTIC VISCOSITY (mPa.s) | 20 | | 21 |
| YIELD POINT (Pa) | 7.5 | | 9 |
| GELS 0/10 min. (Pa) | 1.5/2 | | 1.5/2 |
| pH STRIP ☑ METER ☐ | 10.5 | | 10.5 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 17 | | 20 |
| FILTER CAKE (mm) | 1.5 | | 1.0 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.2/1.7 | | 1.0/1.7 |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 80 | | 100 |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 300 | | 300 |
| SAND CONTENT (%) ☐ (Ø) ☑ | .002 | | .002 |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .085 | (OIL TRACE) | .083 |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .915 | | .917 |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | 10 |
| ELECTRICAL STABILITY (V) HTHP | (SHEEN) on FT. OF. | | |
| OIL/WATER RATIO CLEAN | 1.4 KG/M³. | | |
| $CaCl_2$ w/w% SULPHITE | 1.25 | | 1.25 |
| "n"/"k" TOTAL POLYMER | 4.8 | | 4.5 |

| MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|
| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| F.L.R. | 79 | | 4 | 75 | 640.00 |
| L.C. LIS | 50 | | 3 | 47 | 1760.00 |
| SULPHITE | 17 | | 1 | 16 | 49.70 |
| SODA ASH | 35 | | 1 | 34 | 20.00 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 84,790. | STARTING VOLUME | |
| DAILY COST | 1969.70 | VOL. BUILT | THANKS |
| CUM. COST | 86,759.70 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 16,500. | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1 MUD DENSITY = 1190-1195 KG/M³ : KEEP MOVING MUD GUNS!
IF DENSITY GET BELOW 1190 KG/M³ MIX 50 BARITE + 4 MIN EACH!
2 VISCOSITY = 45 SEC/L NO WATER + 5 LITRE/MIN. WHEN CIRC.
3 MIX 1 JUG OF X-CIDE ONCE A DAY MIX 1 SULPHITE A DAY!
4 HOLE ABE - MIX TANK 3/4 FULL, RAISE DENSITY TO 1270 KG/M³
MIX 200 TO 250 SX BARITE + ½ MINUTE A BAG!

5 MAIN SYSTEM MIX TONIGHT 10 PAILS OF SODA ASH + 30 min
PAIL + 2 BAGS SODA ASH + 2 BAGS OF DISPAC-LO.

6 KEEP VISCOSITY DOWN MIX + 55 SEC/L + 1 BAG F.L.R.
ONLY IF NEED. DO NOT ADD ANY WATER TO PRE-MIX.

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER KICK REINHART
PHONE 785-4577 PHONE FAX FROM OUT MOBILE # 1

**IDF**

**INTERNATIONAL DRILLING FLUIDS**

# DRILLING FLUID REPORT

DATE JUNE - 14 - 1991
REPORT No. # 43
SPUD DATE APR. 29 - 91

WELL NAME COLGAS ETAL KOTANEELEE
LOCATION YT - I - 48

| | |
|---|---|
| OPERATOR COLUMBIA GAS DEVELOPMENT | CONTRACTOR KENTING HT. 7 |
| REPORT FOR Mr. BOB TOOLE - NEIL BLISS | REPORT FOR Mr. PHIL COSCHWORTH |

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 10 - 155 mm | COND. | TANKS 70 m³ | PUMP SIZE 114 x 406 | OPPOSITE D.P. 50 |
| DRILL PIPE 89 mm | SURFACE | HOLE 57 m³ | m³/STK. .0118 | OPPOSITE D.C. 86 |
| DRILL COLLARS 120 mm | INTER 178 - 2273 | TOTAL 127 m³ | S.P.M. 50 | PUMP PRESS. 10,000 |
| OTHER BHA - 200 | OTHER | STANDBY | m³/min. .59 | CIRC. TIME 215 |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE LT. POLYMER | FLOWLINE WT B[illegible] OO[illegible] | ~ 46 m³ kg/m³ | MUD WT. 1205 - 1210 kg/m³ |
| HOLE COND. GOOD | UNDERFLOW WT BTM UP | = 78 MIN kg/m³ | VISCOSITY 45 s/L |
| DEVIATION | OVERFLOW WT. HOLE DRAG @ | kg/m³ | FILTRATE 15 - 18 cm³/30 min. |
| CURRENT OP HOIST BIT #10 | UNDERFLOW RATE 11,000 | m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ SHAKER | MUD PROPERTIES | | PRE-MIX |
|---|---|---|---|
| TIME SAMPLE TAKEN | 12:30 | | 12:30 |
| PRESENT DEPTH (m) | 3664 | | |
| FLOWLINE TEMPERATURE (°C) | 38°C | | |
| DENSITY (kg/m³) | 1210 | | 1210 |
| FUNNEL VISCOSITY (s/L) | 44 | | 51 |
| APPARENT VISCOSITY (mPa.s) | 28 | 24 | ~~28~~ |
| PLASTIC VISCOSITY (mPa.s) | 20 | 20 | ~~13.5~~ |
| YIELD POINT (Pa) | 8 | | 14.5 |
| GELS 0/10 min. (Pa) | 1.5/2 | | 3/4 |
| pH STRIP ☑ METER ☐ | 10.5 | | 10 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 18 | | 8.5 |
| FILTER CAKE (mm) | 1.0 TIGHT | | 1.0 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.8/2.3 | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 40 | | |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 300 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .003 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .09 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .91 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | |
| ELECTRICAL STABILITY (V) H2S | 0 | | |
| OIL/WATER RATIO SULFAN | 1.4 KG/m³ | | |
| CaCl₂ w/w% SULPHITES | 100 MG/L. | | |
| "n"/"k" TOTAL POLYMER | 5 KG/m³ | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 3151 | | 435 | 2716 | 5437.50 |
| F.L.R. | 65 | | 3 | 62 | 480.00 |
| DRISPAC | 49 | | 7 | 42 | 1136.80 |
| SODA ASH | 34 | | 6 | 28 | 120.00 |
| SULFAN | 96 | | 10 | 86 | 2100.00 |

3R = 1 6R = 2 100R = 17
200R = 27 300R = 36 600R = 56

| | | | |
|---|---|---|---|
| PREVIOUS COST | 86,759.56 | STARTING VOLUME | TANKS |
| DAILY COST | 9274.30 | VOL. BUILT | |
| CUM. COST | 96,034.[illegible] | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 16,875 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: 1 MUD DENSITY @ 1205 KG/m³. KEEP MUD GUNS MOVING!
IF DENSITY GOES BELOW 1200KG/m³: MIX 50 BARITE @ 4 MIN/BAG.

AS SOON AS YOU GET BACK ON BOTTOM W/ BIT #11!
1 RUN WATER @ 10 LITRES/MIN. FOR 1 CIRCULATION.
2 RUN IN 1X-CIDE OVER 1 FULL CIRC. THEN RUN 1 SULPHITE!
3 AFTER BOTTOMS UP: MIX 4 BAGS DRISPAC-LO @ 55 MIN/BAG.

4 KEEP VISCOSITY IN PRE-MIX @ 55 SEC/L. MIX 1/2 BAG OF
FLR-REG. AS REQ'D.

STOCK POINT FT. ST. JOHN
I.D.F. ENGINEER RICK REINHART
PHONE 785-4772
PHONE CAR ROOM OUTSIDE #1 MOBILE #

**IDF**
**INTERNATIONAL DRILLING FLUIDS**

# DRILLING FLUID REPORT

DATE JUNE-15-1991
REPORT No. # 44
SPUD DATE APR-29-91

| | |
|---|---|
| WELL NAME COLGAS ETAL KOTANEELEE | LOCATION V7-I-48 |
| OPERATOR COLUMBIA GAS DEVELOPMENT | CONTRACTOR KENTING HI-TOWER |
| REPORT FOR Mr. BOB TOOLE - NEIL BLISS | REPORT FOR Mr. PHIL BOSOMWORTH |

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 11-MILL | COND. | TANKS 73 | PUMP SIZE 114 X 406 | OPPOSITE D.P. 50 |
| DRILL PIPE 89 mm | SURFACE | HOLE 57 | m³/STK. .0118 | OPPOSITE D.C. 86 |
| DRILL COLLARS 130 mm | INTER 58-2333 | TOTAL 130 m³ | S.P.M. 50 | PUMP PRESS. 10.000 |
| OTHER CHAR 300 | OTHER | STANDBY | m³/min. .59 | CIRC. TIME 215 |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS |
|---|---|---|---|
| MUD TYPE LOT. POLYMER | FLOWLINE WT ACT. COL | ~ 46 m³ kg/m³ | MUD WT. 1205-1210 kg/m³ |
| HOLE COND. GOOD | UNDERFLOW WT CTRL. W | ~ 28 m³ kg/m³ | VISCOSITY 45 s/L |
| DEVIATION | OVERFLOW WT. PRE-MIX | ~ 55 m³ kg/m³ | FILTRATE 15-17 cm³/30 min. |
| CURRENT OP MILL ON CONES | UNDERFLOW RATE | m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 01:30 | | |
| PRESENT DEPTH (m) | 3664 | | |
| FLOWLINE TEMPERATURE (°C) | 27°C | | |
| DENSITY (kg/m³) | 1215 | | |
| FUNNEL VISCOSITY (s/L) | 44 | | |
| APPARENT VISCOSITY (mPa.s) | 29 | | |
| PLASTIC VISCOSITY (mPa.s) | 21 | | |
| YIELD POINT (Pa) | 8 | | |
| GELS 0/10 min. (Pa) | 1.5/7 | | |
| pH STRIP ☑ METER ☐ | 10.5 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 18.5 | | |
| FILTER CAKE (mm) | 1.3 FIRM. | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.6/7.0 | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 50 | | |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 200 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .003 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .093 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .907 | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 | | |
| ELECTRICAL STABILITY (V) H2S | 0 | | |
| OIL/WATER RATIO SULFAS | 1.4 KG/m³ | | |
| CaCl₂ w/w% SULPHITES | 120 | | |
| "n"/"K" TOTAL POLYMER | 5 KG/m³. | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| | | | | | |

3R=1 6R=3 100R=18
200R=28 300R=37 600R=58

| | | | |
|---|---|---|---|
| PREVIOUS COST | 96,034.80 | STARTING VOLUME | |
| DAILY COST | | VOL. BUILT | THANKS |
| CUM. COST | | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 17,750.00 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

AS SOON AS YOU GET BACK ON BOTTOM W/ BIT #11

1) RUN WATER @ 10 LITRES/MIN. FOR 1 CIRCULATION."

2) RUN IN 1 BAG OF SODIUM SULPHITE OVER 1 FULL CIRCULATION

3) AFTER BOTTOMS UP? MIX 4 BAGS OF DRISPAC-LOW @ 55 MINUTES/BAG.

4) KEEP VISCOSITY IN PRE-MIX ~ 55 SEC/L. MIX ½ BAG OF F.L.R. REGULAR IF REQ'D.

| | |
|---|---|
| STOCK POINT FT. ST. JOHN | I.D.F. ENGINEER KIRK REINHARDT |
| PHONE 785-4333 | PHONE FAR ROOM @ MOBILE [illegible] #1 |

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE-15-1991
REPORT No. #44A
SPUD DATE APR-29-91

WELL NAME COLGAS ET AL KOTAKIEELEE LOCATION 4T-I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING HI TOWER 7
REPORT FOR Mr. TOP TOOLE-NEIL PLISS REPORT FOR Mr. PHIL PASCHKOWSKI

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 11-15.2mm | COND. | | TANKS | 72.1 | PUMP SIZE | 14x406 | OPPOSITE D.P. | 50 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 57.1 | m³/STK. | .0018 | OPPOSITE D.C. | 86 |
| DRILL COLLARS | 170 mm | INTER | 78-2777 | TOTAL | 129.1 | S.P.M. | 50 | PUMP PRESS. | 9700 |
| OTHER | N/A | OTHER | | STANDBY | | m³/min. | .09 | CIRC. TIME | 215 |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE | W.T. POLYMER | FLOWLINE WT. | ANN. VOL. 46.1 kg/m³ | MUD WT. | 1205-1210 KG. kg/m³ |
| HOLE COND. | GOOD | UNDERFLOW WT. | ETM. U/F = 78 kg/m³ | VISCOSITY | 45 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 15-17 cm³/30 min. |
| CURRENT OP. | DRILLING | UNDERFLOW RATE | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES |
|---|---|
| TIME SAMPLE TAKEN | 19:00 |
| PRESENT DEPTH (m) | 2667 |
| FLOWLINE TEMPERATURE (°C) | 36 oC |
| DENSITY (kg/m³) | 1215 |
| FUNNEL VISCOSITY (s/L) | 43 |
| APPARENT VISCOSITY (mPa.s) | 29.5 |
| PLASTIC VISCOSITY (mPa.s) | 22 |
| YIELD POINT (Pa) | 7.5 |
| GELS 0/10 min. (Pa) | 1.5/2 |
| pH STRIP ☑ METER ☐ | 10.5 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 22 |
| FILTER CAKE (mm) | 1.0 TIGHT |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.5/1.9 |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 60 |
| SAL. ☐ NACL ☐ CL ☑ (mg/L) | 200 |
| SAND CONTENT (%) ☐ (Ø) ☑ | .002 |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .093 |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .907 |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 10 |
| ELECTRICAL STABILITY (V) | 0 |
| OIL/WATER RATIO | SEE COMMENTS | 1.4 KG/m³ |
| $CaCl_2$ w/w% | LIGNITE | 130 |
| "n"/"k" | TOTAL POLYMER | 5 KG/m³ |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 2716 | | 70 | 2646 | 875.00 |
| X-CIDE | 24 | | 2 | 22 | 280.00 |
| LIGNITE | 16 | | 2 | 14 | 99.40 |
| DISPAC | 42 | | 3 | 39 | 487.20 |
| FLR-REG | 62 | | 1 | 61 | 160.00 |

PR = 1 LD = 2 100 = 17
300 = 38 300 = 27 600 = 59

| | | | |
|---|---|---|---|
| PREVIOUS COST | 96,034. | STARTING VOLUME | |
| DAILY COST | 1901.60 | VOL. BUILT | TRIPS |
| CUM. COST | 97,935.60 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 17,750. | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

AS SOON AS YOU GET CIRCULATION W/ BIT #1!

1. RUN THE CENTRIFUGE FOR 1 FULL CIRCULATION!

2. MIX 5 BAGS DISPAC-LO AT 45 MINUTE A BAG!

3. MIX 1 JUG OF X-CIDE EVERY 1 FULL CIRCULATION!

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4777 PHONE FAX Rocky Mtn. MOBILE # F #1

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE-16-1991
REPORT No. # 45
SPUD DATE APR-29-91

WELL NAME COLGAS ET AL KOTANEELEE LOCATION 7-I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KEITING HI TOWER 7
REPORT FOR Mr. BOB TOOLE-NEIL PLISS REPORT FOR Mr. PHIL DESCHAMBAULT

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / #'s | 15.5 mm | COND. | TANKS | 72.0 | PUMP SIZE | 114x406 | OPPOSITE D.P. | 51.5 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 57.0 | m³/STK. | .0018 | OPPOSITE D.C. | 90 |
| DRILL COLLARS | 120 mm | INTER/PROD | TOTAL | 130.0 | S.P.M. | 52 | PUMP PRESS. | 9200 |
| OTHER | HWDP 700.1 | OTHER | STANDBY | | m³/min. | .0936 | CIRC. TIME | 210 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | GEL POLYMER | FLOWLINE WT. | 1215 TO 1200 kg/m³ | MUD WT. | 1700 kg/m³ |
| HOLE COND. | GOOD | UNDERFLOW WT. | 2730 kg/m³ | VISCOSITY | 45 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 6.2C cm³/30 min. |
| CURRENT OP | DRILLING | UNDERFLOW RATE | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☒ PIT ☐ SHAKER

| MUD PROPERTIES | | |
|---|---|---|
| TIME SAMPLE TAKEN | 10:00 | |
| PRESENT DEPTH (m) | ~~2888~~ 3677 | |
| FLOWLINE TEMPERATURE (°C) | 37.0C | |
| DENSITY (kg/m³) | 1700 | |
| FUNNEL VISCOSITY (s/L) | 42 | |
| APPARENT VISCOSITY (mPa.s) | ~~22.5~~ | 27.5 |
| PLASTIC VISCOSITY (mPa.s) | ~~15~~ | 20 |
| YIELD POINT (Pa) | ~~7.5~~ | 7.5 |
| GELS 0/10 min. (Pa) | 1.5/2 | |
| pH STRIP ☑ METER ☐ | 10.5 | |
| FILTRATE ☒ API ☐ HT HP (cm³) | 7.0 | |
| FILTER CAKE (mm) | 1.0 FIRM. | |
| ALK ☒ (PF/MF) ☐ (PM/LIME) | 1.5/11.9 | |
| TOTAL HARDNESS ☐ Ca. ☒ (mg/L) | 40 | |
| SAL. ☐ NACL ☐ CL ☒ (mg/L) | 700 | |
| SAND CONTENT (%) ☐ (Ø) ☒ | .002 | |
| SOLIDS CONTENT (%) ☐ (Ø) ☒ | .085 | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .915 | |
| MBT (Kg/m³) ☒ /% ☐ OIL RET ☐ | 17 | |
| ELECTRICAL STABILITY (V) | 0 | |
| OIL/WATER RATIO | 1.7 KCL | |
| $CaCl_2$ w/w% | 1.20 | |
| "n"/"k" | 4.5 | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 1146 | | 35 | 761 | 437.50 |
| DISPAC | 39 | | 5 | 34 | 817.00 |
| X-CIDE | 22 | | 1 | 21 | 140.00 |
| PTS-200 | 31 | | 4 | | 1040.00 |

1DR=1 1D=2 100R=15
200R=25 300R=35 600R=55

| | | | |
|---|---|---|---|
| PREVIOUS COST | 97,925.50 | STARTING VOLUME | |
| DAILY COST | 7439.50 | VOL. BUILT | THIS-115 |
| CUM. COST | 100,365 | VOL. LOST on SURFACE | 12 |
| CUM. ENG. COST | 17,675 | VOL. LOST SUB SURFACE | 1 |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS:

AT SOON AS YOU GET ON BOTTOM WIPE #12!

1 RUN WATER - 5 LITRES/MIN. FOR 1 CIRCULATION!

1 MIX 5 BAGS DISPAC-10 AT 45 MINUTES A BAG!

1 MIX 1 PAIL OF ASP-721 OVER 1 FULL CIRCULATION!

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4222 PHONE FOR DOWN CO MOBILE # F#1

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE-17-91
REPORT No. # 46
SPUD DATE APR-29-91

WELL NAME COLGAS ET AL KOTANEELEE LOCATION 7-T-118
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING HI-TOWER #7
REPORT FOR Mr. C.P. TICLE-NEIL PLISS REPORT FOR Mr PHIL [illegible]

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 12.25 / PDC | COND. | | TANKS | 73m³ | PUMP SIZE | 14x406 | OPPOSITE D.P. | 50 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 57m³ | m³/STK. | .0115 | OPPOSITE D.C. | 86 |
| DRILL COLLARS | 120 mm | INTER. | 139.7@3773 | TOTAL | 130.1m³ | S.P.M. | 50 | PUMP PRESS. | 9500 |
| OTHER | 5 HWDP 300m. | OTHER | | STANDBY | | m³/min. | .59 | CIRC. TIME | 215 |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | LT. POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | 1200 kg/m³ |
| HOLE COND. | GOOD | UNDERFLOW WT. | kg/m³ | VISCOSITY | 45 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | 4.2 cm³/30 min. |
| CURRENT OP | HOLE DRILLED | UNDERFLOW RATE | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☒ PIT ☐ SHAKER

| MUD PROPERTIES | |
|---|---|
| TIME SAMPLE TAKEN | 04:00 |
| PRESENT DEPTH (m) | 3681 |
| FLOWLINE TEMPERATURE (°C) | 35°C |
| DENSITY (kg/m³) | 1190 |
| FUNNEL VISCOSITY (s/L) | 45 |
| APPARENT VISCOSITY (mPa.s) | 29 |
| PLASTIC VISCOSITY (mPa.s) | 22 |
| YIELD POINT (Pa) | 7 |
| GELS 0/10 min. (Pa) | 1.5/2 |
| pH STRIP ☒ METER ☐ | 10.5 |
| FILTRATE ☒ API ☐ HT HP (cm³) | 28 |
| FILTER CAKE (mm) | 1.2 FINAL |
| ALK ☒ (PF/MF) ☐ (PM/LIME) | 1.5/11.9 |
| TOTAL HARDNESS ☐ Ca. ☒ (mg/L) | 40 |
| SAL. ☐ NACL ☐ CL ☒ (mg/L) | 250 |
| SAND CONTENT (%) ☐ (Ø) ☒ | .007 |
| SOLIDS CONTENT (%) ☐ (Ø) ☒ | .075 |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .925 |
| MBT (Kg/m³) ☒ /% ☐ OIL RET ☐ | 17 |
| ELECTRICAL STABILITY (V) | H2S 0 |
| OIL/WATER RATIO | SUCAN 1.7 |
| $CaCl_2$ w/w% | SULPHITE 120 |
| "n"/"K" | TOTAL RUNNER 5.0 KG/M³ |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| INVENTORY | JUNE-16 | | | 720 SACKS | |
| SODA ASH | 78 | | 4 | 74 | 80.00 |
| ASP-721 | 55 | | 1 | 54 | 100.00 |
| FTS-200 | 27 | | 2 | 25 | 520.00 |
| X-CIDE | 21 | | 1 | 20 | 140.00 |
| SULPHITE | 14 | | 1 | 13 | 49.70 |
| DEFOAM | 12 | | 3 | 9 | 409.50 |
| DRISPAC | 34 | | 2 | 32 | 274.80 |
| DFLC | 5 | | 2 | 3 | 256.00 |
| SALINOX | 225 | | 28 | 200 | 186.20 |
| LIME | 20 | | 4 | 16 | 24.40 |
| | | | | | |
| PD=1 AR=2 LCC=17 | | | | | |
| 300=27 200=24 600=58 | | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 100.365 | STARTING VOLUME | 1400 |
| DAILY COST | 2490.49 | VOL. BUILT | 1140 |
| CUM. COST | 102.855.49 | VOL. LOST on SURFACE | 200 |
| CUM. ENG. COST | 18.000 | VOL. LOST SUB SURFACE | 80 |
| | | END VOLUME | 1260 |
| | | CUM. VOL. BUILT | |

COMMENTS:

AS SOON AS YOU GET ON BOTTOM WITH BIT #14!

1 BBL WATER = 10 LITRES/MIN. FOR 1 CIRCULATION!

2 MIX 4 BAGS OF DRISPAC TO = 55 MIN/BAG!

3 MIX 1 = 1 PAIL OF ASP-721 OVER 1 FULL CIRCULATION!

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REMMERT
PHONE 785-4222 PHONE EAL RES - OMOTTLE # 1

# IDF
INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE JUNE-17-1991
REPORT No. # 46A
SPUD DATE APR-29-91

WELL NAME COLCAS ETAL KOTANEELEE LOCATION YT-I-48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING HI TOWER 7
REPORT FOR Mr. DOC TOOLE-NEIL ELLIS REPORT FOR Mr. HILL EDSON/LOATH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / #1 | 4-15/16" / #2 | COND. | | TANKS | 69.5 | PUMP SIZE | 14X406 | OPPOSITE D.P. | 51.5 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 57.5 | m³/STK. | .0118 | OPPOSITE D.C. | 90 |
| DRILL COLLARS | 120 mm | INTER | 178-3273 | TOTAL | 177.1 | S.P.M. | 57 | PUMP PRESS. | 9500 |
| OTHER | PIA-200M. | OTHER | | STANDBY | | m³/min. | .6736 | CIRC. TIME | 710 |

| HOLE DATA | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE | W.T. POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. 1190-1200 kg/m³ |
| HOLE COND. | GOOD | UNDERFLOW WT. | kg/m³ | VISCOSITY 45 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE cm³/30 min. |
| CURRENT OP. | DRILLING | UNDERFLOW RATE | m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☑ PIT ☐ | MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 04:00 | 01:00 | 20:00 | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 3695 | 3693 | 3685 | BARITE | 761 | | 35 | 2576 | 427.50 |
| FLOWLINE TEMPERATURE (°C) | 40°C | 40°C | 39°C | X-CIDE | 20 | | 3 | 17 | 420.00 |
| DENSITY (kg/m³) | 1195 | 1190 | 1195 | DRISPAC | 32 | | 8 | 24 | 1799.70 |
| FUNNEL VISCOSITY (s/L) | 41 | 40 | 43 | ASP.721 | 54 | | 3 | 51 | 300.00 |
| APPARENT VISCOSITY (mPa.s) | 74 | 73.5 | 76 | F.L.R | 61 | | 1 | 60 | 160.00 |
| PLASTIC VISCOSITY (mPa.s) | 19 | 19 | 20 | | | | | | |
| YIELD POINT (Pa) | 5 | 4.5 | 6 | | | | | | |
| GELS 0/10 min. (Pa) | 1/1.5 | 1/1.5 | 1.5/2 | | | | | | |
| pH STRIP ☑ METER ☐ | 10.5 | 10.5 | 10.5 | | | | | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 25 | 27 | 32 | | | | | | |
| FILTER CAKE (mm) | 1.5 SOFT | 1.5 | 1.5 | | | | | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.5/2.0 | 1.5/2.0 | 1.5/2.1 | | | | | | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 40 | 40 | 40 | | | | | | |
| SAL. ☐ NACI ☐ CL ☑ (mg/L) | 350 | 400 | 400 | 30:1 | 6P:1 | 100M=17 | | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .007 | .007 | .007 | 70CM=71 | 300M=79 | 600M=48 | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .078 | .078 | .08 | | | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .92 | .922 | .92 | PREVIOUS COST | 92,855. | STARTING VOLUME | | | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 15 | 15 | 15 | DAILY COST | 7616.70 | VOL. BUILT | 7 TRUCKS | | |
| ELECTRICAL STABILITY (V) H2S | 0 | 0 | 0 | CUM. COST | 105,472. | VOL. LOST on SURFACE | | | |
| OIL/WATER RATIO SULFAN | 1.0 | 1.0 | 1.0 | CUM. ENG. COST | 18,000. | VOL. LOST SUB SURFACE. | | | |
| $CaCl_2$ w/w% SULFITE | 130 | 130 | 130 | | | END VOLUME | | | |
| "n"/"K" TOTAL POLYMER | 7 KG/M³ | 6.5 | 6 KG/M³ | | | CUM. VOL. BUILT | | | |

COMMENTS:

AS SOON AS YOU GET BACK ON BOTTOM W/ BIT #15!

1) FINISH REAMING IN THE ASP.721 IN CHEM. FLUSH 20 min.

2) RUN IN THE LAST BAG OF F.L.R. REG. FLUSH 20 min.

3) RUN IN WATER AT 5 LITRES/MINUTE.

4) RUN IN 2 PAILS OF ASP.721 & 20 min. / PAIL

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4777 PHONE FAX (DOC) MOBILE #1 AE #1

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE JUNE 19. 1991
REPORT No. D 48
SPUD DATE APR. 29. 91

WELL NAME COLGAS ETAL KETTANEELEE LOCATION YT · I · 48
OPERATOR COLUMBIA GAS DEVELOPMENT CONTRACTOR KENTING HI TOWER 7
REPORT FOR Mr. BOB TOOLE - INFILPLISS REPORT FOR Mr. MIKE LOSCOMBE

| ASSEMBLY | CASING | MUD VOL. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # 8 15.12 Tan | COND. | TANKS 72 | PUMP SIZE 11/4 x 401 | OPPOSITE D.P. 51.5 |
| DRILL PIPE 89 mm | SURFACE | HOLE 58 | m³/STK. .0118 | OPPOSITE D.C. 90 |
| DRILL COLLARS 120 mm | INTER 2775-3773 | TOTAL 130 | S.P.M. 52 | PUMP PRESS. |
| OTHER LHA. 200 | OTHER | STANDBY | m³/min. .6136 | CIRC. TIME 210 |

| HOLE DATA | DESANDER/DESILTER | DRILLING FLUID SPECIFICATIONS |
|---|---|---|
| MUD TYPE GEL. POLYMER | FLOWLINE WT. A.V. 46.5 kg/m³ | MUD WT. 1190 - 1200 kg/m³ |
| HOLE COND. GOOD | UNDERFLOW WT. T.V. 76 kg/m³ | VISCOSITY 45 s/L |
| DEVIATION | OVERFLOW WT. kg/m³ | FILTRATE 4.5 cm³/30 min. |
| CURRENT OP. DRILLING | UNDERFLOW RATE m³/min. | pH 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐

| MUD PROPERTIES | | |
|---|---|---|
| TIME SAMPLE TAKEN | 08:00 | |
| PRESENT DEPTH (m) | 3705 | |
| FLOWLINE TEMPERATURE (°C) | 26°C | |
| DENSITY (kg/m³) | 1200 | |
| FUNNEL VISCOSITY (s/L) | 43 | |
| APPARENT VISCOSITY (mPa.s) | 34 | |
| PLASTIC VISCOSITY (mPa.s) | 19 | |
| YIELD POINT (Pa) | 5 | |
| GELS 0/10 min. (Pa) | 11/1.5 | |
| pH STRIP ☐ METER ☐ | 10.3 | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 25 | |
| FILTER CAKE (mm) | 1.0 F.R.M. | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.4/2.0 | |
| TOTAL HARDNESS ☐ Ca. ☑ (mg/L) | 20 | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 250 | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .007 | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .085 | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .915 | |
| MBT (Kg/m³) ☑ /% ☐ OIL RET ☐ | 14 | |
| ELECTRICAL STABILITY (V) HI 2 | 0 | MG/L. |
| OIL/WATER RATIO LIQUID | 1.0 | KG/m³ |
| $CaCl_2$ w/w% SULFATE | 110 | MG/L |
| "n"/"k" TOTAL POLYMER | 7.5 | KG/m³ |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| | | | | | |
| ZR - 1 | 6R - 1.5 | 100B - 17 | | | |
| 200B - 31 | 300B - 79 | 600B - 48 | | | |
| PREVIOUS COST | 109,783 | STARTING VOLUME | | | |
| DAILY COST | | VOL. BUILT | | 7.1A.1.1 | |
| CUM. COST | | VOL. LOST on SURFACE | | | |
| CUM. ENG. COST | 18,756 | VOL. LOST SUB SURFACE | | | |
| | | END VOLUME | | | |
| | | CUM. VOL. BUILT | | | |

COMMENTS:

1 RUN WATER - 5 LITRES/min.

2 AFTER MIXING THE NEXT 2 ASP. 373'S IF THE VISCOSITY IS 45 SEC/L OR LESS, MIX 2 MORE PAILS.

3 PRIOR TO NEXT TRIP: ISOLATE LAST TWO TANKS. MIX 4 PAILS OF PTS-200. 2 PAILS TO EACH TANK. DISPLACE FOR 40 MINUTES AND PUMP PILL.

STOCK POINT FT. ST. JOHN I.D.F. ENGINEER RICK REINHART
PHONE 785-4777 PHONE FAR Road MOBILE UNIT #1

# IDF

INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE 91-06-19
REPORT No. 49
SPUD DATE 91-04-29

WELL NAME COLCAS et al KOTAKEELEE — LOCATION YT-I-48
OPERATOR COLUMBIA GAS DEVELOP. — CONTRACTOR KENTING H.T. #7
REPORT FOR Mr. FOB TOOLE / NEIL BLISS — REPORT FOR Mr. PHIL BOSOMWORTH

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 15 / 152 | COND. | TANKS | 72 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 58 | m³/STK. | 0118 | OPPOSITE D.C. | 88 |
| DRILL COLLARS | 120 mm | INTER 178/3273 | TOTAL | 130 | S.P.M. | 50 | PUMP PRESS. | 9,000 |
| OTHER | | OTHER | STANDBY | | m³/min. | .6 | CIRC. TIME | 215 ± |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT. | BTMS UP = 80 kg/m³ | MUD WT. | 1190 - 1200 kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | kg/m³ | VISCOSITY | 40 - 45 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | ~15 cm³/30 min. |
| CURRENT OP. | CIR | UNDERFLOW RATE | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☐ PIT ☐

| MUD PROPERTIES | |
|---|---|
| TIME SAMPLE TAKEN | 22:30 |
| PRESENT DEPTH (m) | 3733 |
| FLOWLINE TEMPERATURE (°C) | 40 |
| DENSITY (kg/m³) | 1195 |
| FUNNEL VISCOSITY (s/L) | 43 |
| APPARENT VISCOSITY (mPa.s) | 26 |
| PLASTIC VISCOSITY (mPa.s) | 20 |
| YIELD POINT (Pa) | 6 |
| GELS 0/10 min. (Pa) | 1/1.5 |
| pH STRIP ☐ METER ☐ | 10.5 |
| FILTRATE ☐ API ☐ HT HP (cm³) | 15.0 |
| FILTER CAKE (mm) | .8 |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 1.4/5.0 |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | TR. |
| SAL. ☐ NACl ☐ Cl ☐ (mg/L) | 350 |
| SAND CONTENT (%) ☐ (Ø) ☐ | .003 |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | .085 |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .915 |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. |
| OIL/WATER RATIO SULFITE | 100 |
| $CaCl_2$ w/w% TOTAL POLYMER | 9. Kg/m³ |
| "n"/"k" | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BAR.TE | | | 35 | | 438 |
| ASP-721 | | | 10 | | 1000 |
| SOD. SUL. | | | 1 | | 50 |
| X.C.DE | | | 2 | | 280 |
| FLR | | | 6 | | 960 |
| PTS-200 | | | 4 | | 1040 |
| IDVIS | | | 2 | | 840 |
| K. SEAL | (FREIGHT) | | 10 | | 238 |
| 600/300 | 52/32 | | | | |
| 200/100 | 23/14 | | | | |
| 6/3 | 1.5/1 | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 109,782 | STARTING VOLUME | |
| DAILY COST | 4846 | VOL. BUILT | |
| CUM. COST | 114,628 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 1..25 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: DRILLED TO 3733 m + TRIP FOR BIT.

1) CONTROL DENSITY AT 1195 - 1200 kg/m³. RUN 5 LITRES $H_2O$ PER MIN.
2) KEEP PH AT 10.5 USING CAUSTIC.
3) MAINTAIN VIS. AT 40 - 45 s/L USING ASP-721 + FLR. ADD 3 ASP-721 EVERY 12 HRS.
4) ADD 1 X-CIDE + 1 Sx. SOD. SUL. DAILY.

STOCK POINT FT ST. JOHN — D.F. ENGINEER J.M WELLER
PHONE 785-4227 — PHONE ON LOCATION — MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91 · 06 · 20
REPORT No. 50
SPUD DATE 91 · 04 · 29

| | | | |
|---|---|---|---|
| WELL NAME | COLGAS et al KOTANELEE | LOCATION | YT I-48 |
| OPERATOR | COLUMBIA GAS DEVEL. | CONTRACTOR | KENTING H.T. #7 |
| REPORT FOR Mr. | BOB TOOLE / NEIL BLISS | REPORT FOR Mr. | PHIL ROSOMWORTH |

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 16 / 152 | COND. | | TANKS | 76 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 59 | m³/STK. | .0118 | OPPOSITE D.C. | 88 |
| DRILL COLLARS | 120 mm | INTER | 178 / 3273 | TOTAL | 135 | S.P.M. | 50 | PUMP PRESS. | 9,000 |
| OTHER | | OTHER | | STANDBY | | m³/min. | .6 | CIRC. TIME | 225 t |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | 1200 kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | kg/m³ | VISCOSITY | 40-45 s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | <15 cm³/30 min. |
| CURRENT OP. | DRLG. | UNDERFLOW RATE | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL ☑ PIT ☐

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 23:30 | | |
| PRESENT DEPTH (m) | 3772 | | |
| FLOWLINE TEMPERATURE (°C) | 42 | | |
| DENSITY (kg/m³) | 1210 | | |
| FUNNEL VISCOSITY (s/L) | 43 | | |
| APPARENT VISCOSITY (mPa.s) | 36 | | |
| PLASTIC VISCOSITY (mPa.s) | 20 | | |
| YIELD POINT (Pa) | 6 | | |
| GELS 0/10 min. (Pa) | 1/2 | | |
| pH STRIP ☑ METER ☐ | 10.5 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 19.4 | | |
| FILTER CAKE (mm) | .8 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.4/5.0 | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ CL ☐ (mg/L) | 350 | | |
| SAND CONTENT (%) ☐ (Ø) ☐ | .004 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☐ | .09 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .91 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | | |
| OIL/WATER RATIO SULFITE | 110 | | |
| $CaCl_2$ w/w% POLYMER | 9.5 Kg/m³ | | |
| "n"/"k" | | | |

| MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|
| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| DRISPAC | | | 5 | | 812 |
| X-CIDE | | | 1 | | 140 |
| ASP-721 | | | 3 | | 300 |
| SOD. SUL. | | | 1 | | 50 |
| 600 / 300 | 52 / 32 | | | | |
| 200 / 100 | 24 / 14 | | | | |
| 6 / 3 | 3 / 1 | | | | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 114,390 | STARTING VOLUME | |
| DAILY COST | 1302 | VOL. BUILT | |
| CUM. COST | 115692 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 19,500 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: DRLG. 152 mm HOLE.

1) KEEP VISCOSITY AT 40-45 s/L USING ASP-721 + FLR. 3 ASP-721 EVERY 12 HRS.
2) HOLD DENSITY AT 1200 Kg/m³. RUN 5 LITRES $H_2O$ PER MIN.
3) ADD 1 X-CIDE + 1 SX. SOD. SULFITE DAILY.
4) ADD 3 PTS. 200 PRIOR TO TRIP.

STOCK POINT FT. ST. JOHN — HRS — I.D.F. ENGINEER JIM WELLER

PHONE 785-4222 — PHONE ON LOCATION — MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-06-21
REPORT No. 51
SPUD DATE 91-04-29

WELL NAME COLGAS et al KOTANELEE — LOCATION YT F-48
OPERATOR COLUMBIA GAS DEVEL. — CONTRACTOR KENTING H.T. #7
REPORT FOR Mr. BOB TEALE / NEIL PLISS — REPORT FOR Mr. PHIL BOSOMWORTH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 17 / | COND. | | TANKS | 74 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 60 | m³/STK. | .0116 | OPPOSITE D.C. | 88 |
| DRILL COLLARS | 120 mm | INTER. | 178/3373 | TOTAL | 134 | S.P.M. | 50 | PUMP PRESS. | 9700 |
| OTHER | | OTHER | | STANDBY | | m³/min. | .6 | CIRC. TIME | 225± |

| HOLE DATA | | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | 1190-1200 kg/m³ |
| HOLE COND. | | UNDERFLOW WT. | kg/m³ | VISCOSITY | 40-45 s/L |
| DEVIATION | 7° @ 3767 N11°E | OVERFLOW WT. | kg/m³ | FILTRATE | < 15 cm³/30 min. |
| CURRENT OP. | DRLG. | UNDERFLOW RATE | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☑ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL ☑ PIT ☐ | (06-21) | MUD PROPERTIES | (06-22) |
|---|---|---|---|
| TIME SAMPLE TAKEN | 22:00 | | 02:00 |
| PRESENT DEPTH (m) | 3790 | | 3802 |
| FLOWLINE TEMPERATURE (°C) | 40 | | 41 |
| DENSITY (kg/m³) | 1210 | | 1195 |
| FUNNEL VISCOSITY (s/L) | 44 | | 44 |
| APPARENT VISCOSITY (mPa.s) | 30 | | 30 |
| PLASTIC VISCOSITY (mPa.s) | 24 | | 24 |
| YIELD POINT (Pa) | 6 | | 6 |
| GELS 0/10 min. (Pa) | 1/2 | | 1/2 |
| pH STRIP ☑ METER ☐ | 10.5 | | 11.0 |
| FILTRATE ☑ API ☐ HT HP (cm³) | 24 | | 17.0 |
| FILTER CAKE (mm) | .8 | | .8 |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.3/5.0 | | 1.5/5.5 |
| TOTAL HARDNESS ☑ Ca. ☐ (mg/L) | TR. | | TR. |
| SAL. ☐ NACl ☐ CL ☐ (mg/L) | 350 | | 350 |
| SAND CONTENT (%) ☐ (Ø) ☑ | .004 | | .003 |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .09 | | .08 |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .91 | | 92 |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | — |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | | NEG. |
| OIL/WATER RATIO SULFITE | 115 | | 120 |
| $CaCl_2$ w/w% POLYMER (kg/m³) | 9.5 | | 9.5 |
| "n"/"k" | | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| ASP-721 | | | 2 | | 200 |
| FLR | | | 5 | | 800 |
| PTS-200 | | | 3 | | 780 |
| BARITE | | | 35 | | 438 |
| CAUSTIC | | | 2 | | 60 |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 115,692 | STARTING VOLUME | |
| DAILY COST | 2278 | VOL. BUILT | |
| CUM. COST | 117,970 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 19,875 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: DRLG. 152 mm HOLE RAN CENTRIFUGE FOR 1 CIR.

1) MAINTAIN VIS. AT 40-45 S/L USING ASP-721 + FLR.
2) HOLD DENSITY AT 1190-1200 Kg/m³. RUN 5 LITRES $H_2O$ PER MIN.
3) ADD 1 XCIDE + 1 SX. SOD. SULFITE DAILY.
ADD 2 ASP-721 EVERY 12 HRS.
4) KEEP PH AT 10.5 USING CAUSTIC.
5)
6)

STOCK POINT FT. ST. JOHN — D.F. ENGINEER JIM WHELER
PHONE 785-4332 — PHONE ON LOCATION — MOBILE #

# IDF

INTERNATIONAL DRILLING FLUIDS

## DRILLING FLUID REPORT

DATE 91-06-22
REPORT No. 52
SPUD DATE 91-04-29

WELL NAME CALCAS et al KOTANELEE | LOCATION YT I 48
OPERATOR COLUMBIA GAS DEVEL. | CONTRACTOR KENTING H.T. # 7
REPORT FOR Mr. BOB TOOLE / NEIL BLISS | REPORT FOR Mr. PHIL BOSOMWORTH

| ASSEMBLY | | CASING | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 17 / 152 | COND. | TANKS | 72 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | HOLE | 61 | m³/STK. | .0118 | OPPOSITE D.C. | 88 |
| DRILL COLLARS | 180 mm | INTER 178 / 3273 | TOTAL | 133 | S.P.M. | 50 | PUMP PRESS. | 9600 |
| OTHER | | OTHER | STANDBY | | m³/min. | .6 | CIRC. TIME | 200 ± |

| HOLE DATA | | DESANDER/DESTILTER | | DRILLING FLUID SPECIFICATIONS | | |
|---|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT. | BARMS VR = 85 M.M kg/m³ | MUD WT. | 1190 - 1200 | kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | kg/m³ | VISCOSITY | 40 - 45 | s/L |
| DEVIATION | | OVERFLOW WT. | kg/m³ | FILTRATE | < 15 | cm³/30 min. |
| CURRENT OP. | CIR. | UNDERFLOW RATE | m³/min. | pH | 10.5 | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☑ PIT ☐

| MUD PROPERTIES | | | MATERIALS INVENTORY & COST | | | | | |
|---|---|---|---|---|---|---|---|---|
| TIME SAMPLE TAKEN | 09:00 | 19:00 | MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
| PRESENT DEPTH (m) | 3820 | 3843 | BARITE | 2468 | | 35 | 2433 | 438 |
| FLOWLINE TEMPERATURE (°C) | 42 | 43 | FLO PLEX | 56 | | 22 | 34 | 2750 |
| DENSITY (kg/m³) | 1195 | 1195 | FLR | 97 | | 6 | 88 | 960 |
| FUNNEL VISCOSITY (s/L) | 46 | 46 | XCIDE | 13 | | 1 | 14 | 140 |
| APPARENT VISCOSITY (mPa.s) | 28 | 28 | ASP. 721 | 32 | | 7 | 25 | 700 |
| PLASTIC VISCOSITY (mPa.s) | 22 | 22 | SOD. SULF. | 11 | | 1 | 10 | 50 |
| YIELD POINT (Pa) | 6 | 6 | SAWDUST | 200 | | 70 | 130 | 343 |
| GELS 0/10 min (Pa) | 1/2 | 1/2 | PTS. 200 | 18 | | | 18 | |
| pH STRIP ☑ METER ☐ | 10.5 | 10.5 | CAUST. C | 178 | | | 178 | |
| FILTRATE ☐ API ☐ HT HP (cm³) | 8.0 | 7.6 | | | | | | |
| FILTER CAKE (mm) | .5 | .5 | | | | | | |
| ALK ☐ (PF/MF) ☐ (PM/LIME) | 1.4/5.2 | 1.4/5.4 | | | | | | |
| TOTAL HARDNESS ☑ Ca ☐ (mg/L) | TR. | TR. | | | | | | |
| SAL. ☐ NACI ☐ CL ☐ (mg/L) | 350 | 350 | 600/300 | 56/34 | | | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .003 | .003 | 200/100 | 26/14 | | | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .08 | .08 | 6/3 | 3/2 | | | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☐ | .92 | .92 | PREVIOUS COST | 115,692 | STARTING VOLUME | | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | — | DAILY COST | 5381 | VOL. BUILT | | | |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | NEG | CUM. COST | 121,073 | VOL. LOST on SURFACE | | | |
| OIL/WATER RATIO SULFITE | 130 | 130 | CUM. ENG. COST | 19,875 | VOL. LOST SUB SURFACE | | | |
| $CaCl_2$ w/w% POLYMER | 10 | 10 | | | END VOLUME | | | |
| "n"/"k" | | | | | CUM. VOL. BUILT | | | |

COMMENTS: CIR. PRIOR TO TRIP FOR BIT #17 LOST 8 m³ FROM 3822-3784 m
PUMPED 14 m³ L.C.M. PILL PRIOR TO TRIP
1) CONTROL DENSITY AT 1190 - 1200 kg/m³. RUN 5 LITRES $H_2O$ PER MIN.
2) MAINTAIN PH AT 10.5 WITH CAUSTIC.
3) HOLD V.S. AT 40-45 S/L USING ASP. 721. ADD 3 PAILS EVERY 12 HRS.
4) ADD 1 SX. SOD. SULFITE + 1 XCIDE DAILY.
5) PRIOR TO TRIP OUT TO LOG, MIX 7 PAILS PTS. 200 + 2 XCIDE.

STOCK POINT FT. ST. JOHN | I.D.F. ENGINEER JIM WIELER
PHONE 785-4222 | PHONE ON LOCATION | MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-06-24
REPORT No. 54
SPUD DATE 91-04-29

WELL NAME COLGAS d 01 KOTANEELEE LOCATION YT · I 48
OPERATOR COLUMBIA GAS DEVEL. CONTRACTOR KENTING H.T. # 7
REPORT FOR Mr. JOE TOOLE / NEIL BLICK REPORT FOR Mr. PHIL GASOMILORTH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | 18 / 152 | COND. | | TANKS | 75 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 62 | m³/STK. | .0118 | OPPOSITE D.C. | 88 |
| DRILL COLLARS | 120 mm | INTER. | 178 / 3273 | TOTAL | 137 | S.P.M. | 50 | PUMP PRESS. | 9800 |
| OTHER | | OTHER | | STANDBY | | m³/min. | .6 | CIRC. TIME | 230± |

| HOLE DATA | | DESANDER/DESILTER | | | DRILLING FLUID SPECIFICATIONS | | |
|---|---|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT. | 600/700 | 52/32 kg/m³ | MUD WT. | 1190 - 1200 | kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT. | 1000/1100 | 24/14 kg/m³ | VISCOSITY | 40 - 45 | s/L |
| DEVIATION | 8° @ 3880 N34°W E | OVERFLOW WT. | 613 | 3/2 kg/m³ | FILTRATE | < 15 | cm³/30 min. |
| CURRENT OP. | CIR. | UNDERFLOW RATE | | m³/min. | pH | 10.5 | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

SAMPLE FROM FL. ☑ PIT ☐ OTH.

| MUD PROPERTIES | | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 15:30 | | |
| PRESENT DEPTH (m) | 3915 | | |
| FLOWLINE TEMPERATURE (°C) | 44 | | |
| DENSITY (kg/m³) | 1205 | | |
| FUNNEL VISCOSITY (s/L) | 44 | | |
| APPARENT VISCOSITY (mPa.s) | 26 | | |
| PLASTIC VISCOSITY (mPa.s) | 20 | | |
| YIELD POINT (Pa) | 6 | | |
| GELS 0/10 min. (Pa) | 1/2 | | |
| pH STRIP ☑ METER ☐ | 10.5 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 6.6 | | |
| FILTER CAKE (mm) | .5 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.5/5.5 | | |
| TOTAL HARDNESS ☐ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 350 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .004 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .08 | | |
| OIL/WATER CONT. (%) ☐ (Ø) ☑ | .92 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | |
| ELECTRICAL STABILITY (V) $H_2S$ | N.G. | | |
| OIL/WATER RATIO SULFITE | 120 | mg/L | |
| $CaCl_2$ w/w% POLYMER | 10 | Kg/m³ | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 2388 | | 35 | 2353 | 438 |
| FLR | 35 | | | 35 | |
| X-CIDE | 13 | | 1 | 12 | 140 |
| ASP. 721 | 25 | | 5 | 20 | 500 |
| SOD. SULF. | 9 | | | 9 | |
| SALINVERT | 130 | | | 130 | |
| IMS-200 | 18 | | 8 | 10 | 2080 |
| CAUSTIC | 173 | INV. BARGE | 6 | 167 | 180 |
| IDVIS D | 45 | | 5 | 40 | 2100 |
| SUREAN | 82 | | | 82 | |
| SOD. ASH | 18 | | | 18 | |
| LIME | 16 | " | 5 | 11 | 43 |
| DRISPAC | 27 | " | 8 | 19 | 1300 |
| DEFOAMER | 6 | | | 6 | |
| SAL | 310 | | | 310 | |
| POLYTEMP | 50 | | | 5 | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 123,809 | STARTING VOLUME | |
| DAILY COST | 6,781 | VOL. BUILT | |
| CUM. COST | 130,590 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 20,625 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: T.D. 3915 m C.K. PRIOR TO TRIP OUT TO LOG.

1) MAINTAIN PH AT 10.5 USING CAUSTIC.

2) CONTROL DENSITY AT 1190 - 1200 kg/m³. RUN 5 LOADS H₂O WHEN CIR.

3) VIS 40 - 45 S/L.

NOTE: PRIOR TO TRIP OUT TO RUN LINER MUD 8 TAILS IMS-200 → 1 GAL X-CIDE.

STOCK POINT R. ST. JOHN I.D.F. ENGINEER TIM WIELER
PHONE 785-4222 PHONE ON LOCATION MOBILE #

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-06-25
REPORT No. 55
SPUD DATE 91-04-29

WELL NAME COLGAS et al KOTANEFF LEF | LOCATION YT I-48
OPERATOR COLUMBIA GAS DEV'L. | CONTRACTOR KENTING H.T. #7
REPORT FOR Mr. BOB TOOLE | REPORT FOR Mr. PHIL POSMWORTH

| ASSEMBLY | | CASING | | MUD Vol. (m³) | | PUMP OUTPUT | | ANNULAR VEL. m./min. | |
|---|---|---|---|---|---|---|---|---|---|
| BIT SIZE / # | / 152 | COND. | | TANKS | 74 | PUMP SIZE | 114 x 406 | OPPOSITE D.P. | 51 |
| DRILL PIPE | 89 mm | SURFACE | | HOLE | 62 | m³/STK. | .0118 (.0167) | OPPOSITE D.C. | 88 |
| DRILL COLLARS | 120 mm | INTER | 178/3272 | TOTAL | 136 | S.P.M. | 50 | PUMP PRESS. | 10,000 |
| OTHER | | OTHER | | STANDBY | | m³/min. | .6 .6 | CIRC. TIME | 230 ± |

| HOLE DATA | | DESANDER/DESILTER | | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|---|---|
| MUD TYPE | WT. POLYMER | FLOWLINE WT. 600/300 | 58/36 | kg/m³ | MUD WT. | 1190 - 1200 kg/m³ |
| HOLE COND. | OK. | UNDERFLOW WT 200/100 | 27/16 | kg/m³ | VISCOSITY | 40 - 45 s/L |
| DEVIATION | | OVERFLOW WT. 613 | 312 | kg/m³ | FILTRATE | <15 cm³/30 min. |
| CURRENT OP. | C.I.R. | UNDERFLOW RATE | | m³/min. | pH | 10.5 |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☑ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL ☑ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 20:00 | | |
| PRESENT DEPTH (m) | 3915 | | |
| FLOWLINE TEMPERATURE (°C) | 41 | | |
| DENSITY (kg/m³) | 1210 | | |
| FUNNEL VISCOSITY (s/L) | 46 | | |
| APPARENT VISCOSITY (mPa.s) | 29 | | |
| PLASTIC VISCOSITY (mPa.s) | 22 | | |
| YIELD POINT (Pa) | 7 | | |
| GELS 0/10 min. (Pa) | 1/2 | | |
| pH STRIP ☑ METER ☐ | 11.0 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 7.6 | | |
| FILTER CAKE (mm) | .5 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.8/6.0 | | |
| TOTAL HARDNESS ☑ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 350 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | .002 | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .08 | | |
| ~~OIL~~/WATER CONT. (%) ☐ (Ø) ☑ | .92 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | | |
| OIL/WATER RATIO SULFITE | 120 | | |
| $CaCl_2$ w/w% POLYMER | 10 | | |
| "n"/"k" | | | |

MATERIALS INVENTORY & COST

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BARITE | 2353 | | 35 | 2318 | 438 |
| FLR | 35 | | | 35 | |
| XCIDE | 12 | | 2 | 10 | 280 |
| ASP. 221 | 20 | | | 20 | |
| SOD. SUL. | 9 | | | 9 | |
| SAWDUST | 130 | | | 130 | |
| M.S. 200 | 102 | | 8 | 96 | 2080 |
| CAUSTIC | 167 | | 1 | 166 | 30 |
| EDVS D | 40 | | | 40 | |
| SULFAN | 82 | | | 82 | |
| SODA ASH | 18 | | | 18 | |
| LIME | 11 | | | 11 | |
| BRISPAC | 19 | | | 19 | |
| DEFOAMER | 6 | | | 6 | |
| GEL | 310 | | | 310 | |
| POLYTEMP | 50 | | | 50 | |

| | | | |
|---|---|---|---|
| PREVIOUS COST | 129,290 | STARTING VOLUME | |
| DAILY COST | 2828 | VOL. BUILT | |
| CUM. COST | 132,118 | VOL. LOST on SURFACE | |
| CUM. ENG. COST | 21,000 | VOL. LOST SUB SURFACE | |
| | | END VOLUME | |
| | | CUM. VOL. BUILT | |

COMMENTS: T.D. 3915 m LOGGED. RAN CLEAN OUT TRIP TO RUN LINER.

STOCK POINT FT. ST. JOHN | I.D.F. ENGINEER JIM WIEGER
PHONE 785-4222 | PHONE ON LOCATION | MOBILE #

IDF

INTERNATIONAL DRILLING FLUIDS

# DRILLING FLUID REPORT

DATE 91-06-26/27
REPORT No. 56
SPUD DATE 91-04-29

| | | | |
|---|---|---|---|
| WELL NAME | COLCAS et al KOTANELEE | LOCATION | YT I-48 |
| OPERATOR | COLUMBIA GAS DEVEL. | CONTRACTOR | KENTING H.T. #7 |
| REPORT FOR Mr. | JOE TOOLE | REPORT FOR Mr. | PHIL FARNWORTH |

| ASSEMBLY | CASING | MUD Vol. (m³) | PUMP OUTPUT | ANNULAR VEL. m./min. |
|---|---|---|---|---|
| BIT SIZE / # / | COND. | TANKS | PUMP SIZE 114 x 406 | OPPOSITE D.P. |
| DRILL PIPE mm | SURFACE | HOLE | m³/STK. .0118 | OPPOSITE D.C. |
| DRILL COLLARS mm | INTER 178/3273 | TOTAL | S.P.M. | PUMP PRESS. |
| OTHER | OTHER 127/3915 | STANDBY | m³/min. | CIRC. TIME |

| HOLE DATA | DESANDER/DESILTER | | DRILLING FLUID SPECIFICATIONS | |
|---|---|---|---|---|
| MUD TYPE WT. POLYMER | FLOWLINE WT. | kg/m³ | MUD WT. | kg/m³ |
| HOLE COND. OK. | UNDERFLOW WT. | kg/m³ | VISCOSITY | s/L |
| DEVIATION | OVERFLOW WT. | kg/m³ | FILTRATE | cm³/30 min. |
| CURRENT OP. C.I.R. | UNDERFLOW RATE | m³/min. | pH | |

EQUIPMENT: ☐ DEGASSER ☐ DESILTER ☐ DESANDER ☐ CENTRIFUGE ☐ DOUBLE DECK OR HIGH SPEED SHAKER

| SAMPLE FROM FL. ☐ PIT ☐ | MUD PROPERTIES | | |
|---|---|---|---|
| TIME SAMPLE TAKEN | 09:30 | | |
| PRESENT DEPTH (m) | 3915 | | |
| FLOWLINE TEMPERATURE (°C) | 40 | | |
| DENSITY (kg/m³) | 1210 | | |
| FUNNEL VISCOSITY (s/L) | 46 | | |
| APPARENT VISCOSITY (mPa.s) | 25 | | |
| PLASTIC VISCOSITY (mPa.s) | 20 | | |
| YIELD POINT (Pa) | 5 | | |
| GELS 0/10 min. (Pa) | 1/2 | | |
| pH STRIP ☑ METER ☐ | 11.0 | | |
| FILTRATE ☑ API ☐ HT HP (cm³) | 11.0 | | |
| FILTER CAKE (mm) | .8 | | |
| ALK ☑ (PF/MF) ☐ (PM/LIME) | 1.8/6.4 | | |
| TOTAL HARDNESS ☑ Ca. ☐ (mg/L) | TR. | | |
| SAL. ☐ NACl ☐ CL ☑ (mg/L) | 350 | | |
| SAND CONTENT (%) ☐ (Ø) ☑ | — | | |
| SOLIDS CONTENT (%) ☐ (Ø) ☑ | .08 | | |
| ~~OIL~~/WATER CONT. (%) ☐ (Ø) ☑ | .92 | | |
| MBT (Kg/m³) ☐ /% ☐ OIL RET ☐ | — | | |
| ELECTRICAL STABILITY (V) $H_2S$ | NEG. | | |
| OIL/WATER RATIO SULFITE | 120 | | |
| $CaCl_2$ w/w% POLYMER | 9.0 | | |
| "n"/"k" | | | |

| MATERIALS | INITIAL | RECEIVED | USED | BALANCE | COST |
|---|---|---|---|---|---|
| BAR. DE | 2318 | | 10 | 2308 | 125 |
| FLR | 35 | | | 35 | |
| XCIDE | 10 | | 3 | 7 | 420 |
| ASP. 721 | 21 | | | 21 | |
| SOD. SUL. | 9 | | | 9 | |
| SAWDUST | 130 | | 30 | 100 | 147 |
| FTS. 200 | 96 | | 5 | 91 | 1300 |
| CAUST. C | 166 | | | 166 | |
| IDVIS D | 40 | | | 40 | |
| SULFAN | 82 | | | 82 | |
| SOD. ASH | 18 | | | 18 | |
| LIME | 11 | | | 11 | |
| BR. SHAK | 19 | | | 19 | |
| DEFOAMER | 6 | | 1 | 5 | 136 |
| GEL | 310 | | 10 | 300 | 100 |
| POLYTEMP | 50 | | | 50 | |
| PREVIOUS COST | 132 118 | | STARTING VOLUME | | |
| DAILY COST | 3172 | | VOL. BUILT | | |
| CUM. COST | 135,290 | | VOL. LOST on SURFACE | | |
| CUM. ENG. COST | 21,750 | | VOL. LOST SUB SURFACE | | |
| | | | END VOLUME | | |
| | | | CUM. VOL. BUILT | | |
| BICARB | 55 | | | 55 | |
| ~~PERSOL~~ | ~~12~~ | | | — | |
| DFCL | 3 | | | 3 | |
| BEADS | 32 | | | 32 | |
| FCL | 60 | | | 60 | |
| POLYTEMP | 50 | | | 50 | |
| K. SEAL | 100 | | 11 | 89 | 262 |
| IDFREE | 4 | | | 4 | |
| VISPLEX | 10 | | 2 | 8 | 500 |
| CaCO3 | 102 | | | 102 | |
| CELLOFLAKE | 20 | | 8 | 12 | 185 |
| WALNUT | 20 | | | 20 | |
| FLOPLEX | 34 | | | 34 | |

COMMENTS: RAN LINER (127 mm)
LOST APPROX. 21 m³ MUD TO HOLE WHILE RUNNING LINER. PUMPED L.C.M. & BYPASSED SHAKER WHILE C.I.R. PRIOR TO CEMENTING.

| | | | |
|---|---|---|---|
| STOCK POINT | FT. ST. JOHN | I.D.F. ENGINEER | JIM WHELER |
| PHONE | 785-4222 | PHONE ON LOCATION | MOBILE # |