HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 7-28-79 Time 0600

Present Depth 18,295' Previous Depth 18,289' Footage 24 Hrs. 6

Formation(s) LISBURNE Top 17,125'

Present Activity: Working stuck drill pipe at 18,234'.

LITHOLOGIC DESCRIPTION

Interval Reported 18,280-18,295' Sampling Interval 10 ft. Sample Quality poor
Lag Time: 250 min. @ 18,295 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,280-18,295' | Sltst: a/a. | 34.0 - 43.0 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 8-9 Connection nil Trip - Peaks none

Mud: Wt. 15.8 Vis 60 W.L. 5.0 ph 11.0 cc Oil 0 % $Cl_2$ 1100 Temp. 120 °F. in 128 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist: DAVE FENEX

8/7

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 10-29-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE Top 17,125'

Present Activity: Attempting to free stuck drill pipe, circ S.F.T pill across bottom hole assembly at 1 bbl/hr.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.8 Vis 61 W.L. 5.0 ph 11.0 cc Oil - % $Cl_2$ 1000 Temp. _____ °F. in _____ °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 10-30-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE Top 17,125'

Present Activity: Attempting to run 2nd free point tool after first tool failed.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.9 Vis 58 W.L. 4.8 ph 10.7 cc Oil 0 % $Cl_2$ 1000 Temp. _____ °F. in _____ °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 10-31-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE (?) Top 17,125'

Present Activity: Fishing (see below)

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | RIH w/free point tool, found free point at 18,160'; POH; dropped free point tool down drill pipe; RIH with second free point tool, stopped at 17,729'; running string shot at report time to back off. | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Circulated bottoms up, 400 units ditch gas, 98°F. max temp.

Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.8 Vis 58 W.L. 4.8 ph 10.7 cc Oil - % $Cl_2$ 1000 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

8/7

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-1-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE (?) Top 17,125'

Present Activity: Fishing, backed off at 17,605', RIH w/fishing tools to attempt jarring fish loose.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Max gas on circulation 106 units.
Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.8 Vis 57 W.L. 5.0 ph 10.7 cc Oil _____ % $Cl_2$ 1000 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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8/78

HUSKY

OIL OPERATIONS, INC.
GEOLOGICAL SURVEY ONPRA

DAILY LITHOLOGICAL REPORT

WELL TUNALIK #1 Date 11-2-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE (?) Top 17,125'

Present Activity: Fishing, jarred fish loose, POH with fish at report time.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Lag Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

SHOW DESCRIPTION (Gas and/or Oil)

Gas on circulating bottoms up: 600 units at 17,605', 700 units at 18,295'

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.8 Vis 52 W.L. 5.0 ph 10.7 cc Oil - % $Cl_2$ 1000 Temp. _____ °F. in _____ °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| Geochem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-3-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE (?) Top 17,125'

Present Activity: Circ and cond hole for logs; stuck pipe at 18,265' and 15,061' while conditioning hole; worked loose both times.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip 850 @ 18,295' Peaks _____

Mud: Wt. 15.8 Vis 58 W.L 4.8 ph 11.2 cc Oil _____ % $Cl_2$ 1000 Temp. _____ °F. in _____ °F. out
Max temp on trip: 101°F. @ 18,295'

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-4-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE (?) Top 17,125'

Present Activity: Fishing for FDC/CNL/GR tool; RIH w/overshot at report time.

## LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | Ran: | |
| | DIL - 14,719-18,285' | |
| | FDC/CNL/GR - 15,454-18,278' (tool pulled off at 15,454' while logging up w/3000# pull-over line wt.) | |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.8 Vis 54 W.L. 4.8 ph 11.1 cc Oil _____ % $Cl_2$ 1000 Temp. _____ °F. in _____ °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-5-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE (?) Top 17,125'

Present Activity: Logging; recovered fish, continued logging run.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | Ran: | |
| | FDC/CNL/GR/CAL - 15,455-14,722' | |
| | BHC/GR - Logging at report time. | |
| | Tops: | |
| | Echooka Fm. - 16,890' | |
| | Lisburne Gp - 17,100' | |
| | Volcanics - 17,570' | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip 600 @ 18,295' Peaks _____

Mud: Wt. 15.9 Vis 55 W.L. 5.0 ph 10.7 cc Oil _____ % $Cl_2$ 1000 Temp. - °F. in - °F. out
Max temp on trip: 101°F. @ 18,295'

Data Unit:

| Depth | Shale Density | De Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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8/7

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-6-79 Time 0600

Present Depth 18,259' Previous Depth 18,259' Footage 24 Hrs. 0

Formation(s) LISBURNE/VOLCANICS Top 17,100' (log top) 17,563' (log top density)

Present Activity: Logging; running Temperature Log (HRT) at report time.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | Logs Run: (past 24 hrs.) | |
| | BHC/GR - 14,500-18,273' | |
| | HRT - Running at report time. | |
| | TOPS | |
| | Top Sadlerochit Gp. - 14,819' | |
| | Top Kavik Shale - 15,560' | |
| | Top Echooka Fm. - 16,890' | |
| | Top Lisburne Fm. - 17,100' | |
| | Top Volcanics - 17,563' (FDC) | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip 520 @ 18,295' Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % $Cl_2$ _____ Temp. _____ °F. in _____ °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-7-79 Time 0600

Present Depth 18,295' Previous Depth 18,295' Footage 24 Hrs. 0

Formation(s) LISBURNE/VOLCANICS Top 17,100'/17,563' (log tops)

Present Activity: Logging

## LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | Ran the following logs: | |
| | Run #1 HRT (High Resolution Temp) 100 - 15,485' | |
| | HDT (Dipmeter) 18,271 - 14,705' | |
| | Run #2 HRT (High Resolution Temp) 75 - 14,772' | |
| | Velocity Survey as follows: | |
| | 18,250' | |
| | 18,000' | |
| | 17,796' | |
| | 17,563' | |
| | 17,150' | |
| | 17,100' | |
| | 16,890' | |
| | 15,560' - shot twice - 1 good | |
| | (tool has failed twice; will repair and attempt one more | |
| | run to complete survey). | |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.9 Vis 58 W.L. 5.4 ph 10.9 cc Oil _____ % $Cl_2$ 1000 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

8/

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-8-79 Time 0600

Present Depth 18,331' Previous Depth 18,295' Footage 24 Hrs. 36

Formation(s) VOLCANICS Top 17,563' (log)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 18,295-18,320' Sampling Interval 10 ft. Sample Quality good
Lag Time: 213 min. @ 18,320 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | Completed logging run: | |
| | Velocity Survey Shots: | |
| | 14,690' - poor | |
| | 14,819' - fair | |
| | 14,965' - v. poor, unusable | |
| | 15,135' - good | |
| 18,295-18,320' | Basalt: lt gv green to med green, w/large angular - rounded chlorite blebs, feldspathic grdg to kaolinitic in pt; becomes tn, v. f. grn - slty, pred feldspathic; sil, v. hd, brittle, flky, rr hematite stn. | 9.4 - 19.5 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 28 Connection 52 @ 18,319' Trip 1250 @ 18,295' Peaks

Mud: Wt. 15.8 Vis 63 W.L. 5.8 ph 10.6 cc Oil % $Cl_2$ 1200 Temp. 96 °F. in 102 °F. out
Max temp on trip: 101°F.

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,300' | 2.61 | 1.06 | 15.20 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

8/7

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-9-79 Time 0600

Present Depth 18,348' Previous Depth 18,332' Footage 24 Hrs. 16'

Formation(s) LISBURNE; BASE VOLCANICS Top 17,100'; 18,328'

Present Activity: Tripping, install wear bushing.

## LITHOLOGIC DESCRIPTION

Interval Reported 18,320-18,345' Sampling Interval 5 ft. Sample Quality fair - good
Lag Time: 210 min. @ 18,345' ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,320-18,328' | Basalt: tn, feldspathic, a/a. | 15.0 - 19.5 |
| 18,328-18,345' | Sltst: blk, v. arg, micromica, blky, w. ind; grds to Sh: blk, subfis - plty, micromica, mod ind. | 35.0 |

## SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 20 Connection nil Trip - Peaks none

Mud: Wt. 15.8 Vis 50 W.L. 5.6 ph 10.6 cc Oil 0 % $Cl_2$ 1200 Temp. 104 °F. in 107 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,345' | 2.62 | 1.16 | 15.2 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

8/

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-10-79 Time 0600

Present Depth 18,394' Previous Depth 18,348' Footage 24 Hrs. 46

Formation(s) LISBURNE; VOLCANICS Top 17,100'; 17,563-18,328'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 18,345-18,385' Sampling Interval 5 ft. Sample Quality fair - good
Lag Time: 214 min. @ 18,390 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,345-18,355' | Ls: intracalcarenite - calcilutite, tn - dk gy brn, v. arg in pt, f. - med grn, w/tn calcilutitic - sparry calcite cmt, p. - mod ind, crinoid stems, some microfos and (?) spicules, rr calcite filled frac, rr dk Cht incls, nil - v. p. por. | 10.5 |
| 18,355-18,370' | Ls: a/a grdg to calcilutite, v.f. grn, w/abnt small blk incls of [redacted] blky, mod ind, nil por. | 19.5 |
| 18,370-18,385' | Ls: pred calcilutitic, dk gy brn, v.f. grn, v. arg, [redacted] w. ind, flky; [redacted]: blk, limey, blky, mod ind. | 26.0 |

## SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 20 Connection nil Trip 560 @ 18,348' Peaks none

Mud: Wt. 15.8 Vis 58 W.L. 5.9 ph 10.8 cc Oil 0 % $Cl_2$ 1200 Temp. 106 °F. in 110 °F. out
Max temp on trip: 110°F.

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,375' | 2.61 | 1.07 | 15.19 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Washed Ditch (USGS) | | | |
| Core Chem (canned) | | | |
| Other | No. | | |

DAVE FENEX

S/7

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-11-79 Time 0600

Present Depth 18,470' Previous Depth 18,394' Footage 24 Hrs. 76

Formation(s) LISBURNE; VOLCANICS Top 17,100'; 17,563-18,328'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 18,385-18,460' Sampling Interval 10 ft. Sample Quality good
Lag Time: 214 min. @ 18,460 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,385-18,422' | Ls: med - dk gy brn, calcilutitic, sdy in pt, v. arg, abnt small blk specks, dns, w. ind, nil por. | 20.0 - 28.0 |
| 18,422-18,460' | Ls: tn, biocalcarenitic - calcilutitic, w/microfos and crinoid stems, tn calcilutitic - sparry calcite cmt, p. - mod ind, w/blk specks, dns, nil por, w/tr Cht: smokey gy; w/intbdd Ls: med - dk gy brn, v. arg, sublithographic, v. w. ind, brittle, flky, occ calcite filled veins, nil por, NOSCF. | 10.7 - 19.0 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 16-18 Connection 22-28 Trip - Peaks none

Mud: Wt. 15.8 Vis 75 W.L. 6.1 ph 10.9 cc Oil - % $Cl_2$ 1200 Temp. 110 °F. in 130 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,450' | 2.57 | 1.14 | 15.16 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Logged DAVE FENEX

8/79

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-12-79 Time 0600

Present Depth 18,479' Previous Depth 18,470' Footage 24 Hrs. 9

Formation(s) LISBURNE; VOLCANICS Top 17,100'; 17,563-18,328'

Present Activity: Reaming to btm

LITHOLOGIC DESCRIPTION

Interval Reported 18,460-18,470' Sampling Interval 10 ft. Sample Quality good
Lag Time: 214 min. @ 18,479 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,460-18,470' | Ls: a/a. | 12.3 - 16.6 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background - Connection - Trip - Peaks none

Mud: Wt. 15.8 Vis 62 W.L. 6.1 ph 10.8 cc Oil - % $Cl_2$ 1200 Temp. 110 °F. in 132 °F. out
Max temp on trip: 132°F. @ 18,479

Data Unit:

| Depth | Shale Density | De Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE FENEX

S/7

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-13-79 Time 0600

Present Depth 18,582' Previous Depth 18,479' Footage 24 Hrs. 103

Formation(s) LISBURNE; VOLCAN CS Top 17,100'; 17,563-18,328'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 18,470-18,575' Sampling Interval 5 ft. Sample Quality good
Lag Time: 225 min. @ 18,550 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,470-18,492' | Ls: dk gy brn - blk, calcilutitic, sublithographic - cryptoxl, vitreous luster, hd, brittle, flkv; w/Ls calcilutitic, med gy - brn, mod w. ind, lumpy, w/scat blk feromag mntl, v.f. xl, rr slickensides. | 13.0 - 16.6 |
| 18,492-18,518' | Intbdd Ls, blk a/a and Ls med gy - brn a/a, mod well ind, (no apparent change in spls) | 7.2 - 10.8 |
| 18,518-18,550' | Intbdd Ls a/a. | 14.0 - 18.4 |
| 18,550-18,575' | Ls: calcilutite, cryptoxl to v.f. xl, med gy - brn a/a, grds to intrabiocalcarenite (v. crs grn fos Ls), v. crs grn, and calcilutitic w/clr sparry calcite cmt, mod w. ind, crinoidal and bryozoan debris; w/intbdd Ls, blk, calcilutitic, sub-lithographic a/a. | 7.4 - 10.0 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 18-20 Connection 22 @ 18,545' 48 @ 18,514' Trip 2500 @ 18,479' Peaks 25 @ 18,510'

Mud: Wt. 15.8 Vis 60 W.L. 6.2 ph 10.7 cc Oil - % $Cl_2$ 1200 Temp. 110 °F. in 114 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,500' | 2.70 | 1.04 | 15.15 |
| 18,550' | 2.69 | 1.16 | 15.17 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | 18,130-18,490' | 1 | Bx #60 |
| Cores | No. | | |

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-14-79 Time 0600

Present Depth 18,668' Previous Depth 18,582' Footage 24 Hrs. 86'

Formation(s) LISBURNE;VOLCANICS Top 17,100';17,563-18,328'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 18,575-18,655' Sampling Interval 5 ft. Sample Quality good
Lag Time: 225 min. @ 18,665 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,575-18,582' | Ls: a/a. | 10.0 |
| 18,582-18,612' | Ls: calcilutitic, dk brn, slty, arg, v.f. - f. xl, hd, blky; grds to Ls calcilutitic, med gy brn, rr fos frags, minute blk mnrl particles, sl chlky, in pt lumpy, w/abnt calc filled veins. | 21.0 - 25.4 |
| 18,612-18,655' | Ls: calcilutitic, dk brn - blk, sublithographic, vitreous luster, hd, brittle, subconchoidal frac, flky, calc filled veins; grds to Ls, calcilutitic, med gy - brn, v.f. xl, lumpy, chlky, sft, w/scat minute blk particles. | 6.8 - 16.4 |

## SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 25 Connection 36 @ 18,639'; 38 @ 18,605'; 38 @ 18,590' Trip Peaks 34 @ 18,650'; 28 @ 18,635'

Mud: Wt. 15.8 Vis 57 W.L. 6.4 ph 10.8 cc Oil - % $Cl_2$ 1200 Temp. 108 °F. in 112 °F. ou

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,600' | - | 1.19 | 15.14 |
| 18,650' | | 1.11 | 15.13 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | 18,300-18,580' | 1 | Bx #59 |
| Unwashed Ditch (USGS) | 18,300-18,580' | 1 | Bx #59 |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist DAVE PENEX

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-15-79 Time 0600

Present Depth 18,709' Previous Depth 18,668' Footage 24 Hrs. 41

Formation(s) LISBURNE Top 17,100'

Present Activity: Tripping (changing out stripper rubbers at report time)

## LITHOLOGIC DESCRIPTION

Interval Reported 18,655-18,685' Sampling Interval 5 ft. Sample Quality fair - good
Lag Time: 215 min. @ 18,700 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,655-18,685' | Ls: a/a. | 11.8 - 17.0 |

## SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 17 Connection - Trip - Peaks -

Mud: Wt. 15.8 Vis 52 W.L. 6.3 ph 10.7 cc Oil ____ % $Cl_2$ 1200 Temp. 118 °F. in 121 °F. out
Max temp on trip: 121°F. @ 18,70

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-16-79 Time 0600

Present Depth 18,757' Previous Depth 18,709' Footage 24 Hrs. 48

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 18,685-18,740' Sampling Interval 10 ft. Sample Quality good
Lag Time: 216 min. @ 18,745 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,685-18,710' | Ls: dk gy - blk, organic and carb, occ tn in pt, seams and veins of calc, blky to splintery frac, dns, sil, nil vis por. | 7.0 - 16.9 |
| 18,710-18,720' | Ls: becoming gy - dk gy w/some gy blk, less organic and carb than above; tr Cht, gy, trnsl, smokey. | 4.2 - 9.9 |
| 18,720-18,740' | Ls: mixed gy, dk gy, and gy blk, in pt organic and carb, becoming v. slty in pt, sil and dns. | 12.2 - 28.9 |
| | REQUEST: 1 clean blueline print DIL (265") Run 7 (14,719-18,265') | |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 20 Connection 28 @ 18,730' Trip 480 @ 18,709' Peaks -

Mud: Wt. 15.8 Vis 60 W.L. 6.6 ph 10.9 cc Oil - % $Cl_2$ 1200 Temp. 114 °F. in 118 °F. out
Max temp on trip: 120°F.

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,700' | - | 1.04 | 15.14 |
| 18,725' | | 1.03 | 15.14 |
| | | | |
| | | | |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

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U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-17-79 Time 0600

Present Depth 18,838' Previous Depth 18,757 Footage 24 Hrs. 81

Formation(s) LISBURNE Top 17,100

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 18,740-18,830' Sampling Interval 10 ft. Sample Quality fair - good
Lag Time: 216 min. @ 18,795 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,740-18,830' | Ls: varying from gy to dk gy to gy blk; and from carb to slty, a/a; nil vis por, some free calc xls and drusy calcite xls from vug or frac fill at 18,810-18,820' | 12.7 - 34.0 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 18 Connection 37 @ 18,793' Trip - Peaks 22 @ 18,820' 24 @ 18,775'

Mud: Wt. 15.8 Vis 55 W.L. 6.7 ph 10.8 cc Oil ____ % $Cl_2$ 1200 Temp. 115 °F. in 122 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,750' | | 1.12 | 15.15 |
| 18,775' | | 1.09 | 15.15 |
| 18,800' | | 1.05 | 15.14 |
| 18,825' | | 1.04 | 15.11 |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-18-79 Time 0600

Present Depth 18,917' Previous Depth 18,838' Footage 24 Hrs. 79

Formation(s) LISBURNE Top 17,100'

Present Activity: Tripping for bit, POH at report time.

## LITHOLOGIC DESCRIPTION

Interval Reported 18,830-18,910' Sampling Interval 10 ft. Sample Quality good
Lag Time: 216 min. @ 18,895 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,830-18,880' | Ls: mostly a/a, generally becoming more sil to chty; tr-20% Cht, impure, grdg to Ls, dk brn - blk, blky, calcareous. | 11.2 - 27.9 |
| 18,880-18,910' | Ls: gy and gy brn, slty, arg, some f. dis pyr, freq sil w/subconchoidal frac, mod - w. ind, some xl calcite from vugs or fracs. | 13.8 - 32.6 |

## SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 14 Connection 22 @ 18,886' Trip - Peaks 25 @ 18,885'

Mud: Wt. 15.8 Vis 55 W.L. 6.7 ph 10.7 cc Oil - % $Cl_2$ 1200 Temp. 118 °F. in 125 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,850' | - | 1.11 | 15.11 |
| 18,875' | - | 1.05 | 15.13 |
| 18,900' | - | 1.02 | 15.14 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | 18,580-18,900' | 1 | Bx #60 |
| Unwashed Ditch (USGS) | 18,580-18,900' | 1 | Bx #60 |
| GeoChem (canned) | 18,490-18,820' | 1 | Bx #61 |
| Cores | No. | | |

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-19-79 Time 0600

Present Depth 18,934' Previous Depth 18,917' Footage 24 Hrs. 17'

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling (no samples to surface at report time).

## LITHOLOGIC DESCRIPTION

Interval Reported - Sampling Interval - ft. Sample Quality -
Lag Time: 216 min. @ 18,917 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 18 Connection Trip 800 @ 18,917' Peaks -

Mud: Wt. 15.9 Vis 73 W.L. 6.8 ph 10.7 cc Oil % $Cl_2$ 1200 Temp. 98 °F. in 106 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,925' | | 1.04 | 15.14 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-20-79 Time 0600

Present Depth 18,961' Previous Depth 18,934' Footage 24 Hrs. 27

Formation(s) LISBURNE Top 17,100'

Present Activity: Tripping for bit.

## LITHOLOGIC DESCRIPTION

Interval Reported 18,910-18,950' Sampling Interval 10 ft. Sample Quality fair - good
Lag Time: 216 min. @ 18,960 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,910-18,950' | Ls: dk brn - blk a/a, w/Ls lt gy, slty, arg, mod - w. ind, nil vis por; w/tr Sh, 18,930-18,950', gy - blk, fis, sub-metallic luster. | 10.0 - 29.9 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 17 Connection 20 @ 18,947' Trip _____ Peaks 20 @ 18,930'

Mud: Wt. 15.8 Vis 56 W.L. 6.8 ph 10.8 cc Oil _____ % $Cl_2$ 1200 Temp. 118 °F. in 124 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,950' | 2.68 | 1.13 | 15.10 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-21-79 Time 0600

Present Depth 18,961' Previous Depth 18,961' Footage 24 Hrs. 0

Formation(s) LISBURNE Top 17,100'

Present Activity: Rig repairs.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |
| | REQUEST: Long white business envelopes | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 15.8 Vis 55 W.L. 6.8 ph 10.6 cc Oil - % $Cl_2$ 1200 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

GORDON LEGG

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK No. 1 Date 11-22-79 Time 06:00

Present Depth 19,027 Previous Depth 18,961' Footage 24 Hrs. 66'

Formation(s) Lisburne Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 18,950 - 19,020' Sampling Interval 5-10' ft. Sample Quality fair-good
Lag Time: 218 min. @ 19,025 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 18,950-18,985' | LS: mostly a/a, varying degrees of shalyness, and siltyness and organic content, generally micro xln, dense, lithographic in pt, chalky in pt; tr Volcanics, green chloritized Andesite @ 18,980'. | 10.2 - 34.6 |
| 18,985-19,000 | LS: gy, becoming med xl, some crs xl, abunt chalky pieces, some possible fos replacement w/ calcite. | 9.3 - 12.0 |
| 19,000-19,010 | LS: gy, v. slty to sdy, grdg to SLTST, microxln, dense, occ specks pyr, nil vis porosity | 9.3 - 15.7 |
| 19,010-19,020 | LS: becoming dk gy, carb, arg, still slty; tr red and green pieces Volcanics. | 18.0 - 19.9 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 8 Connection - Trip 420 @ 18,961 Peaks -

Mud: Wt. 15.7 Vis 56 W.L 6.4 ph 10.7 cc Oil - % $Cl_2$ 1200 Temp. 112 °F. in 120 °F. out
max temp. 116°F. on trip @ 18,961'

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 18,975 | | 1.16 | 15.10 |
| 19,000 | | 1.14 | 15.09 |
| 19,025 | | 1.18 | 15.04 |
| | | | |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | 17,780' - 19,000 | 2 | Bx 20 sets 1 & |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist G. Legg

8/78

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK No. 1 Date 11-23-79 Time 06:00

Present Depth 19,083' Previous Depth 19,027' Footage 24 Hrs. 56

Formation(s) Lisburne Fm. Top 17,100'

Present Activity: Drilling.

## LITHOLOGIC DESCRIPTION

Interval Reported 19,020-19,075 Sampling Interval 5-10' ft. Sample Quality fair-good
Lag Time: 218 min. @ 19,075 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,020-19,050 | LS: mostly a/a, w/abunt free f. xl's pyr, and occ f. grn ang free qtz. | 19.9 - 31.4 |
| 19,050-19,060 | LS: a/a, v. arg, slty and organic, grdg to SLTST; w/pyr and occ qtz a/a. | 12.4 - 22.5 |
| 19,060-19,075 | LS: a/a, but w/ some pieces w/ v. glassy appearance, v. minute black glass inclus - possible volcanic glass, and v.f. dis pyr. | 22.0 - 27.6 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 8 Connection - Trip - Peaks -

Mud: Wt. 15.7 Vis 65 W.L. 6.8 ph 11 cc Oil - % $Cl_2$ 1200 Temp. 117 °F. in 120 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,050 | | 1.16 | 15.01 |
| 19,075 | | 1.18 | 15.01 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-24-79 Time 0600

Present Depth 19,092' Previous Depth 19,083' Footage 24 Hrs. 9

Formation(s) LISBURNE Top 17,100'

Present Activity: Running in w/new bit

## LITHOLOGIC DESCRIPTION

Interval Reported 19,075-19,080' Sampling Interval 5 ft. Sample Quality fair - good
Lag Time: 218 min. @ 19,092 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,075-19,085' | Ls: a/a. | 30.2 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % $Cl_2$ _____ Temp. _____ °F. in _____ °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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HUSKY OIL NPR OPERATIONS, INC
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-25-79 Time 0600

Present Depth 19,136' Previous Depth 19,092' Footage 24 Hrs. 44'

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 19,080-19,120' Sampling Interval 5-10 ft. Sample Quality poor - fair
Lag Time: 218 min. @ 19,125 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,080-19,100' | Ls: dk gy - blk, a/a, some w/tarry, organic appearance. | 20.7 - 27.6 |
| 19,100-19,120' | Ls: off wh to tn, tr gy, f. - med xl, abnt spar calcite, occ incls gy Sh, tr pyr, occ xl calcite as vein filling, mod w. ind to dns, nil vis por; becoming more arg and dk gy @ 19,110-19,120'; w/tr-10% Sh, charcoal gy, micromica, sub-metallic luster. | 10.9 - 27.7 |

SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 8 Connection 14 @ 19,102' Trip 624 @ 19,092' Peaks 25 @ 19,118' 22 @ 19,111'

Mud: Wt. 15.5 Vis 60 W.L. 6.8 ph 10.8 cc Oil - % $Cl_2$ 1200 Temp. 116 °F. in 123 °F. out
Max temp on trip: 115°F. @ 19,092'

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,100' | 2.64 | 1.19 | 14.99 |
| 19,125' | 2.64 | 1.18 | 14.98 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-26-79 Time 0600

Present Depth 19,206' Previous Depth 19,136' Footage 24 Hrs. 70'

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 19,120-19,190' Sampling Interval 10 ft. Sample Quality fair - good
Lag Time: 218 min. @ 19,200 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,120-19,140' | Ls: a/a. | 10.9 - 27.7 |
| 19,140-19,180' | Ls: tn - lt brn, med xl to occ crs xl, abnt fos hash replaced by calcite, fos pred spines, mod ind, p. - nil por; w/some Ls: dk gy, sil, lithographic, subconchoidal frac, tr Sh: charcoal gy, submetallic luster. | 10.9 - 30.6 |
| 19,180-19,190' | Ls: a/a, becoming v. slty; grdg to Sltst: dk gy, v. calc, occ pyr. | 27.0 - 30.1 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 18-13 Connection 24 @ 19,164' Trip - Peaks none

Mud: Wt. 15.6 Vis 64 W.L. 6.8 ph 10.8 cc Oil - % $Cl_2$ 1000 Temp. 120 °F. in 128 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,150' | 2.65 | 1.05 | 14.99 |
| 19,175' | 2.67 | 1.19 | 15.0 |
| 19,200' | 2.67 | 1.15 | 15.0 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Logs: GORDON LEGG

8/

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-27-79 Time 0600

Present Depth 19,233' Previous Depth 19,206' Footage 24 Hrs. 27

Formation(s) LISBURNE Top 17,100'

Present Activity: RIH w/new bit

LITHOLOGIC DESCRIPTION

Interval Reported 19,190-19,225' Sampling Interval 5-10 ft. Sample Quality poor - v. poor
Lag Time: 218 min. @ 19,230 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,190-19,225' | Ls: gy - dk gy, occ gy brn, occ slty - v. slty; grdg to Sltst: frequently sil, blky frac; w/Sltst: gy, v. calc, grdg back to Ls. | 12.4 - 27.5 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 12 Connection nil Trip - Peaks none

Mud: Wt. 15.6 Vis 55 W.L. 6.4 ph 10.6 cc Oil - % $Cl_2$ 1000 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,225' | 2.66 | 1.07 | 14.98 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | 18,900-19,220' | 1 (Bx #61) | |
| Unwashed Ditch (USGS) | 18,900-19,220' | 1 (Bx #61) | |
| GeoChem (canned) | 18,850-19,210' | 1 (Bx #62) | |
| Cores | No. | | |

Geologist GORDON LEGG

8/7

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-28-79 Time 0600

Present Depth 19,286' Previous Depth 19,233' Footage 24 Hrs. 53

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 19,225-19,280' Sampling Interval 10 ft. Sample Quality poor - fair
Lag Time: 218 min. @ 19,280 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,225-19,280' | Ls: gy - dk gy, arg, occ f. - med xl, occ lithographic, com slty; grdg to Sltst: lt gy - gy, v. calc, grdg to Ls: occ v. sil, w/tr Sh: charcoal gy, micromica, f. pyr, submetallic luster, blky. | 14.6 - 28.1 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 12 Connection nil Trip 640 @ 19,233' Peaks 24 @ 19,250'

Mud: Wt 15.6 Vis 60 W.L. 6.6 ph 10.3 cc Oil 0 % $Cl_2$ 1000 Temp. 122 °F. in 130 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,250' | 2.67 | 1.15 | 14.99 |
| 19,275' | 2.66 | 1.16 | 14.97 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

GORDON LEGG

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-29-79 Time 0600

Present Depth 19,344' Previous Depth 19,286' Footage 24 Hrs. 58

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 19,280-19,330' Sampling Interval 10 ft. Sample Quality poor - fair
Lag Time: 204 min. @ 19,300 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,280-19,320' | Ls and Sltst a/a. | 24.5 - 38.5 |
| 19,320-19,330' | Ls: lt tn, microxl, chalky - earthy, mod ind, rr fos, w/ observed pelecypod shell and fish scale. | 7.3 - 13.6 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 14 - 16 Connection nil Trip - Peaks none

Mud: Wt. 15.6 Vis 55 W.L. 6.6 ph 10.5 cc Oil 0 % $Cl_2$ 1000 Temp. 121 °F. in 129 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,300' | 2.67 | 1.02 | 14.92 |
| 19,325' | 2.67 | 0.83 | 14.91 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 11-30-79 Time 0600

Present Depth 19,361' Previous Depth 19,344' Footage 24 Hrs. 17'

Formation(s) LISBURNE Top 17,100'

Present Activity: Tripping

## LITHOLOGIC DESCRIPTION

Interval Reported 19,330-19,350' Sampling Interval 10 ft. Sample Quality fair
Lag Time: 205 min. @ 19,361 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,330-19,350' | Ls: a/a; w/occ Ls: gy, f. - med xl, sil, abnt pyr minerali- | 12.2 - 22.7 |
| | zation, w/occ v. pale blue mineral which appears to be rdd | |
| | Cht, w. ind. | |

## SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 10-14 Connection nil Trip - Peaks none

Mud: Wt. 15.6 Vis 52 W.L. 6.4 ph 10.5 cc Oil 0 % $Cl_2$ 1000 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,350' | - | 1.10 | 15.25 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

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U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-1-79 Time 0600

Present Depth 19,414' Previous Depth 19,361' Footage 24 Hrs. 53'

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 19,350-19,410' Sampling Interval 5-10 ft. Sample Quality fair
Lag Time: 205 min. @ 19,415 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,350-19,390' | Ls: lt gy - dk gy, arg, v. slty; grdg in pt to Sltst: occ fos, w/pelecypod and fos hash, occ fish scale, rr rd smokey v.f. Qtz grns. | 12.5 - 25.1 |
| 19,390-19,410' | Ls: mostly a/a, w/fltg v.f. - slt size Qtz grns, sa-ang, becoming more slty to sdy at base; grdg to Sltst: calc. | 15.7 - 37.3 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 10 Connection nil Trip 208 @ 19,361' Peaks none

Mud: Wt. 15.6 Vis 67 W.L. 6.6 ph 10.5 cc Oil 0 % $Cl_2$ 1000 Temp. 118 °F. in 127 °F. out
Max temp on trip: 112°F.

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,375' | - | 1.03 | 15.23 |
| 19,400' | - | 1.02 | 15.21 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-2-79 Time 0600

Present Depth 19,459' Previous Depth 19,414' Footage 24 Hrs. 45

Formation(s) LISBURNE Top 17,100'

Present Activity: Running survey, prep to POH for bit

LITHOLOGIC DESCRIPTION

Interval Reported 19,410-19,450' Sampling Interval 5-10 ft. Sample Quality fair
Lag Time: 207 min. @ 19,457 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,410-19,445' | Ls: a/a becoming increasingly slty and grdg to Sltst: gy, v. arg, sl sdy, v. calc, grds back to Ls: a/a. | 30.1 - 33.3 |
| 19,445-19,450' | Ls: crm - wh, v. crs xl, occ chky - earthy, good rhombohedral cleavage, xls are over 5 mm in "dia"; w/Ls and Sltst a/a. | 28.0 - 32.0 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 10-17 Connection nil Trip - Peaks none

Mud: Wt. 15.5 Vis 67 W.L. 6.4 ph 10.3 cc Oil 0 % $Cl_2$ 900 Temp. 124 °F. in 131 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,425' | - | 1.23 | 15.10 |
| 19,450' | - | 1.17 | 15.06 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-3-79 Time 0600

Present Depth 19,465' Previous Depth 19,459' Footage 24 Hrs. 6

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: 207 min. @ 19,460' ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 8-12 Connection - Trip not up Peaks _____

Mud: Wt. 15.6 Vis 65 W.L. 6.4 ph 10.3 cc Oil _____ % $Cl_2$ 1000 Temp. 90 °F. in 104 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist: GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-4-79 Time 0600

Present Depth 19,547' Previous Depth 19,465' Footage 24 Hrs. 82'

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 19,450-19,535' Sampling Interval 5-10 ft. Sample Quality fair
Lag Time: 207 min. @ 19,545 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,450-19,535' | Ls: tn to brn, fos.w/fos replaced by calcite (a fos hash), f. - med xl, mod w. ind; w/intbdd Ls, dk gy, slty, sl arg, some spar calcite in mtx; w/some Ls, dk gy to blk, arg, carb, sil, nonfos, w/ ind. | 9.3 - 17.9 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 5-10 Connection - Trip 62 @ 19,459' Peaks -

Mud: Wt. 15.5 Vis 66 W.L. 6.8 ph 11.0 cc Oil ____ % $Cl_2$ 1000 Temp. 122 °F. in 127 °F. out
Max temp on trip: 110°F.

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,475' | | 1.05 | 15.14 |
| 19,500' | | 1.09 | 15.14 |
| 19,525' | | 1.03 | 15.06 |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist: GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-5-79 Time 0600

Present Depth 19,626' Previous Depth 19,547' Footage 24 Hrs. 79

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 19,535-19,620' Sampling Interval 5-10' ft. Sample Quality fair - good
Lag Time: 206 min. @ 19,625 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,535-19,550' | Ls: tn - gy, microxl, occ f. xl, occ arg, mod w. ind. | 15.6 - 19.3 |
| 19,550-19,600' | Ls: mostly a/a, alternating slty, to arg, to fairly clean, w/occ rhombic xls of calcite, abnt spar calcite in mtx (appears to be replacing detrital fos hash). | 10.0 - 24.4 |
| 19,600-19,620' | Ls: a/a w/increase in calcite xls (up to 30% of spl) appear to be vein and frac fill. | 15.7 - 21.1 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 4-8 Connection - Trip - Peaks -

Mud: Wt. 15.5 Vis 6.6 W.L. 6.6 ph 10.4 cc Oil - % $Cl_2$ 1000 Temp. 124 °F. in 131 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,550' | | 1.18 | 15.08 |
| 19,575' | | 1.02 | 15.11 |
| 19,600' | | 1.10 | 15.11 |
| 19,625' | | 1.24 | 15.02 |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | 19,220-19,580' | 1 | Bx #62 |
| Unwashed Ditch (USGS) | 19,220-19,590' | 1 | Bx #62 |
| GeoChem (canned) | 19,210-19,570' | 1 | Bx #63 |
| Cores | No. | | |

Geologist GORDON LEGG

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-6-79 Time 0600

Present Depth 19,633' Previous Depth 19,626' Footage 24 Hrs. 7

Formation(s) LISBURNE Top 17,100'

Present Activity: RIH w/new bit, reaming to btm at 19,575' at report time.

## LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: 207 min. @ 19,634' ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 6-8 Connection - Trip - Peaks -

Mud: Wt. 15.5 Vis 58 W.L. 6.8 ph 10.3 cc Oil - % $Cl_2$ 1200 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | De Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

8/7

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HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-7-79 Time 0600

Present Depth 19,689' Previous Depth 19,633' Footage 24 Hrs. 56

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 19,620-19,680' Sampling Interval 5-10 ft. Sample Quality poor - fair
Lag Time: 206 min. @ 19,680 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,620-19,630' | No spl recovered, 100% walnut hulls. | 24.0 - 30.2 |
| 19,630-19,650' | Ls: lt - dk gy, sl sil, v. slty in pt, grdg to Sltst; abnt calcite veining. | 24.5 - 32.6 |
| 19,650-19,660' | Ls: becoming v. slty and arg, grdg to Sltst; w/Sltst lt - dk gy, sil, v. calc, arg, grdg to Ls. | 25.8 - 26.0 |
| 19,660-19,680' | Ls: tn to gy, f. - med xl, abnt spar calcite in mtx, rr broken fos, mostly replaced by calcite, mod ind; w/some Ls, dk gy - blk, carb, arg, slty, mod to w. ind. | 12.0 - 29.0 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 8-22 Connection 54 @ 19,663' Trip 832 @ 19,634' Peaks none

Mud: Wt. 15.5 Vis 65 W.L. 6.6 ph 10.3 cc Oil ____ % $Cl_2$ 1200 Temp. 122 °F. in 129 °F. out
Max temp on trip: 109°F.

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,650' | | 1.19 | 14.97 |
| 19,675' | | 1.02 | 15.00 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-8-79 Time 0600

Present Depth 19,718' Previous Depth 19,689' Footage 24 Hrs. 29

Formation(s) LISBURNE Top 17,100'

Present Activity: Running wear bushing after testing BOP's

LITHOLOGIC DESCRIPTION

Interval Reported 19,680-19,710' Sampling Interval 5-10 ft. Sample Quality fair
Log Time: 205 min. @ 19,700 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,680-19,710' | Ls and Sltst a/a. | 15.8 - 28.5 |
| 19,710-19,715' | Ls: a/a; w/Ls gy, microxl, sil, w/flint-like appearance, subconchoidal frac, pyritic in pt, v.w. ind, w/some f. - med xl Ls below 19,705' | 9.9 12.5 |

SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 10 Connection 36 @ 19,694' Trip - Peaks -

Mud: Wt. 15.5 Vis 60 W.L. 6.0 ph 10.5 cc Oil ____ % $Cl_2$ 1200 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,700' | | 1.17 | 14.98 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| [illegible] | | | |
| [illegible] | No. | | |

GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-9-79 Time 0600

Present Depth 19,778' Previous Depth 19,718' Footage 24 Hrs. 60

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 19,710-19,750' Sampling Interval 5-10 ft. Sample Quality fair
Lag Time: 207 min. @ 19,760 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,710-19,730' | Ls: a/a. | 12.3 - 23.3 |
| 19,730-19,750' | Ls: a/a; w/Ls, off-wh to tn to gy, f. - med xl, rr calcite replaced broken fos; mod ind; w/Ls, dk gy to gy, v. slty, grdg to Sltst; w/Sltst lt gy - gy, arg, v. calc grdg to Ls. | 9.1 - 28.9 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 10 Connection - Trip 480 @ 19,718' Peaks -

Mud: Wt. 15.5 Vis 67 W.L. 6.1 ph 10.3 cc Oil ____ % $Cl_2$ 1200 Temp. 115 °F. in 123 °F. out
Max temp on trip: 104°F. @ 19,718'

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,725' | | 1.16 | 14.99 |
| 19,750' | | 1.10 | 14.99 |
| 19,775' | | 1.00 | 14.98 |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Logger: GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-10-79 Time 0600

Present Depth 19,892' Previous Depth 19,778' Footage 24 Hrs. 114'

Formation(s) Lisburne Top 17,100'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 19,750-19,875' Sampling Interval 5-10 ft. Sample Quality fair
Lag Time: 208 min. @ 19,850 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,750-19,760' | Ls and Sltst, a/a. | 25.8 - 26.1 |
| 19,760-19,830' | Ls: tn, f. med xl, occ crs xl, occ fos; w/Ls dk gy, micro-xl, lithographic, sil, subconchoidal frac, occ becoming f. xl to med xl, w ind. | 9.1 - 29.0 |
| 19,830-19,860' | Ls: a/a w/abnt altered and replaced fos (a fos hash), some small rd incls, pos oolites. | 10.2 - 14.9 |
| 19,860-19,877' | Ls: mostly lt tn to tn, f. - med xl, occ chalky to earthy, abnt spar calcite xls in mtx, appears to be rexlized, mod fossiliferous w/occ - com broken fos frags. | 9.7 - 11.9 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 12 Connection 40 @ 19,849' 15 @ 19,819' Trip - Peaks -

Mud: Wt. 15.5 Vis 64 W.L. 6.0 ph 10.2 cc Oil ____ % $Cl_2$ 1200 Temp. 122 °F. in 131 °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,800' | | 1.07 | 14.98 |
| 19,825' | | 1.00 | 14.99 |
| 19,850' | | 1.09 | 14.99 |
| 19,875' | | 1.06 | 14.99 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

GORDON LEGG

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-11-79 Time 0600

Present Depth 19,893' Previous Depth 19,892' Footage 24 Hrs. 1

Formation(s) LISBURNE Top 17,100'

Present Activity: Reaming thru key seat at 15,075-15,132' on way in hole w/flat btm mill (left 3 cones in hole from last bit).

LITHOLOGIC DESCRIPTION

Interval Reported 19,875-19,890' Sampling Interval 5-10 ft. Sample Quality fair
Lag Time: 208 min. @ 19,850 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,875-19,890' | Ls: lt tn - tn, f. med xl, some crs xl, sil in pt, pseudo-brecciated appearance in pt, occ fossiliferous w/scat broken fos. | 10.8 - 12.3 |

SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 12 Connection - Trip - Peaks -

Mud: Wt. 15.5 Vis 60 W.L. 5.8 ph 10.3 cc Oil - % $Cl_2$ 1200 Temp. 109 °F. in 112 °F. out
Max temp on trip: 104°F. @ 19,893'

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | 19,590-19,890' | 1 | Bx #63 |
| Unwashed Ditch (USGS) | 19,580-19,890' | 1 | Bx #63 |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

8/

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-12-79 Time 0600

Present Depth 19,893' Previous Depth 19,893' Footage 24 Hrs. 0

Formation(s) LISBURNE Top 17,100'

Present Activity: RIH w/bit.

## LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| | | |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 1-12 Connection 37 @ 19,880' Trip 844 @ 19,893' Peaks _____

Mud: Wt. 15.5 Vis 65 W.L. 5.9 ph 10.1 cc Oil - % $Cl_2$ 1200 Temp. 89 °F. in 89 °F. out
Max temp on trip: 109°F. @ 19,893'

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

Well: TUNALIK #1 Date: 12-13-79 Time: 0600

Present Depth: 19,921' Previous Depth: 19,893' Footage 24 Hrs.: 28

Formation(s): LISBURNE Top: 17,100'

Present Activity: POH for bit

LITHOLOGIC DESCRIPTION

Interval Reported: 19,890-19,920' Sampling Interval: 5-10 ft. Sample Quality: p. - v. p.
Lag Time: 209 min. @ 19,900 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,890-19,900' | Ls: mostly a/a but becoming v. sil and v. w. ind. | 19.3 - 24.9 |
| 19,900-19,910' | Ls: tn - brn, f. - med xl, some crs xl, chalky in pt, sil in pt; w/10% Sh dk gy, slty, organic, micromica, p. - mod w. ind. | 8.5 - 9.3 |
| 19,910-19,920' | Ls: a/a, sl fos; w/Ls gy - dk gy, v. slty, sl sdy, sil, arg, grds to Sltst; w/Sh, v. slty, grdg to Sltst. | 8.9 - 20.4 |

SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 15 Connection - Trip 360 @ 19,893' Peaks 72 @ 19,915'

Mud: Wt. 15.5 Vis 59 W.L. 5.8 ph 10 cc Oil ____ % $Cl_2$ 1200 Temp. 98 °F. in 112 °F. out
Max temp on trip: 106°F. @ 19,893

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,900' | 2.67 | 1.08 | 14.97 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| Geo/Chem (canned) | | | |
| Cores | No. | | |

GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-14-79 Time 0600

Present Depth 19,965' Previous Depth 19,921' Footage 24 Hrs. 44

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 19,920-19,940' Sampling Interval 5-10 ft. Sample Quality poor-fair
Lag Time: 206 min. @ 19,950 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,920-19,940' | Ls: a/a w/Sltst; dk gy - blk, v. arg, v. calc, grdg to Ls. | 6.9 - 19.1 |

## SHOW DESCRIPTION (Gas and/or Oil)

Ditch Gas (Units): Background 12 Connection - Trip 560 @ 19,921' Peaks -

Mud: Wt. 15.5 Vis 60 W.L. 6.1 ph 10 cc Oil ____ % $Cl_2$ 1200 Temp. 111 °F. in 119 °F. out
Max temp on trip: 106°F. @ 19,921'

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,925' | 2.68 | 1.03 | 14.97 |
| 19,950' | 2.67 | 1.15 | 14.99 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | 19,570-19,930' | 1 | Bx #64 |
| Cores | No. | | |

GORDON LEGG

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-15-79 Time 0600

Present Depth 20,037' Previous Depth 19,965' Footage 24 Hrs. 72

Formation(s) LISBURNE Top 17,100

Present Activity: Tripping

## LITHOLOGIC DESCRIPTION

Interval Reported 19,940-20,030' Sampling Interval 5-10 ft. Sample Quality fair
Lag Time: 216 min. @ 19,990 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 19,940-19,960' | Ls and Sltst: a/a. | 6.9 - 19.1 |
| 19,960-20,000' | Ls: a/a; w/Ls: tn - brn - gy, f. - med xl, occ crs xl, abnt incls of detrital calc mat, occ fos frag, pos crinoid stem; mnr $H_2S$ at 19,975', see below. | 7.7 - 14.7 |
| 20,000-20,030' | Ls: becoming gy - dk gy, slty, arg, sil - chty in pt; w/mnr Sh: dk gy - blk, organic, subfis - fis, slty, noncalc; w/occ loose v. crs sparry calcite xls. | 6.9 - 13.7 |

~~SHOW DESCRIPTION/S [illegible]~~

| | | |
|---|---|---|
| 19,975' | 20 ppm $H_2S$ dissolved in mud which declined immediately; no apparent associated por. | |

Ditch Gas (Units): Background 10 Connection 26 @ 20,007' Trip - Peaks none

Mud: Wt. 15.5 Vis 57 W.L. 5.8 ph 10.0 cc Oil - % $Cl_2$ 1200 Temp. - °F. in - °F. out

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 19,975' | 2.65 | 1.02 | 14.99 |
| 20,000' | 2.63 | 1.03 | 15.01 |
| 20,025' | 2.63 | 0.98 | 15.02 |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist: GORDON LEGG

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

# DAILY GEOLOGICAL REPORT

WELL TUNALIK #1 Date 12-16-79 Time 0600

Present Depth 20,085' Previous Depth 20,037' Footage 24 Hrs. 48

Formation(s) LISBURNE Top 17,100'

Present Activity: Drilling

## LITHOLOGIC DESCRIPTION

Interval Reported 20,030-20,060' Sampling Interval 5 ft. Sample Quality fair
Lag Time: 216 min. @ 20,054 ft.

| Interval | Description | Avg. Drill Rate min./ft. |
|---|---|---|
| 20,030-20,060' | Ls: calcarenitic, mottled lt - gy brn, crs xl, composed pred of detrital fos mat. some crinoid stems, w/crs xl spar calcite; intbdd w/Ls: blk, slty, arg, carb, w/f. - crs frag of detrital fos and spar calcite xl; intbdd w/Sh (prob cavings): blk; tr Cht: blk, blky, conchoidal frac. | 11.0 - 17.0 |

## SHOW DESCRIPTION (Gas and/or Oil)

| | | |
|---|---|---|
| | | |

Ditch Gas (Units): Background 27 Connection nil Trip 640 @ 20,037' Peaks 40 @ 20,055'

Mud: Wt 15.5 Vis 60 W.L. 5.7 ph 9.9 cc Oil - % $Cl_2$ 1200 Temp. 114 °F. in 122 °F. out
Max temp on trip: 112°F.

Data Unit:

| Depth | Shale Density | Dc Exponent | Pore Pressure |
|---|---|---|---|
| 20,050' | 2.67 | 1.03 | 15.02 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Dispatched Samples:

| Type | Interval | No. of Boxes | Set No. |
|---|---|---|---|
| Washed & Dried Ditch | | | |
| Unwashed Ditch (Paleo) | | | |
| Unwashed Ditch (USGS) | | | |
| GeoChem (canned) | | | |
| Cores | No. | | |

Geologist: DAVE FENEX