NATIONAL PETROLEUM RESERVE IN ALASKA

HISTORY
OF
DRILLING OPERATIONS

LISBURNE TEST WELL NO. 1

HUSKY OIL NPR OPERATIONS, INC.
Prepared by: S. L. Hewitt
Edited by: R. G. Brockway

For the

U. S. GEOLOGICAL SURVEY
Office of the National Petroleum Reserve in Alaska
Department of the Interior
JUNE 1983

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LISBURNE TEST WELL NO. 1

INTRODUCTION

The Lisburne Test Well No. 1 is located on the National Petroleum Reserve in Alaska (Figure 1). The well is located 792 feet from the south line and 2,411 feet from the east line of protracted Section 17, Township 11 South, Range 16 West, Umiat Meridian (Latitude: 68° 29' 05.4381" North; Longitude: 155° 41' 35.510" West). Alaska State Plane Coordinates are: Y = 5,298,127.35 and X = 272,584.12, Zone 5. Elevations are: Kelly Bushing 1862', Pad 1834'. Rig-up began on May 18, 1979 and was completed on June 10. The well was spudded on June 11, 1979 at 8:00 a.m.

The hole was drilled to a total depth of 17,000 feet. The primary objective of the well was to test structural trap(s) within the Lisburne Group. At the conclusion of the drilling and evaluating operations, the well was plugged and abandoned, with cement and mechanical plugs set at selected intervals. The rig was released on June 2, 1980, at 12:00 midnight.

Husky Oil NPR Operations, Inc. supervised and directed the drilling and support operations as prime contractor for the U. S. Geological Survey, Department of the Interior. Nabors Alaska Drilling, Inc. was the drilling contractor; Nabors Rig 17, an Oilwell 860, was used to drill the well.

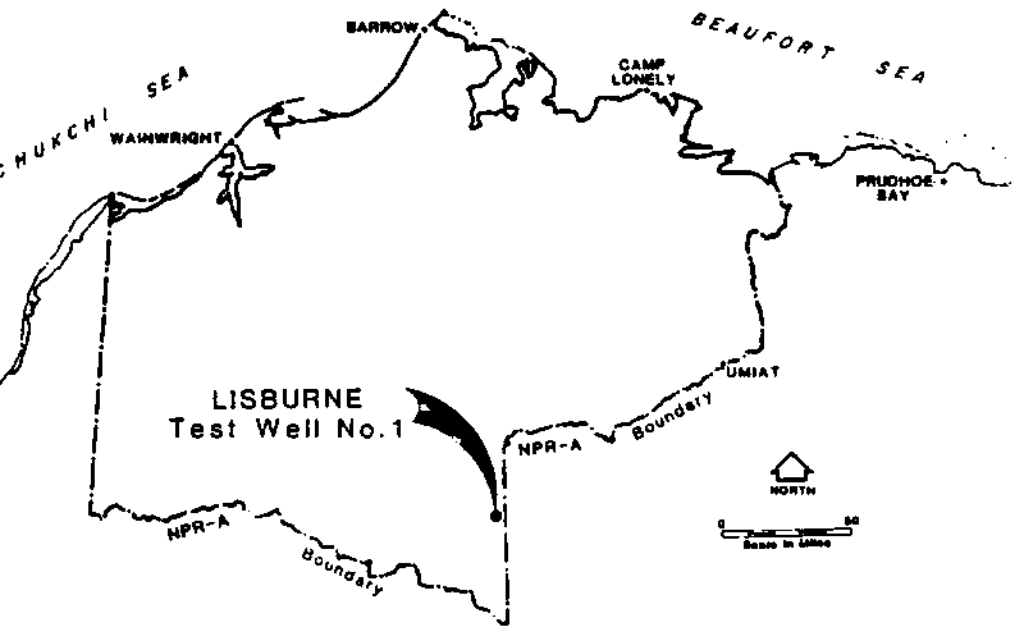

FIGURE 1 - WELL LOCATION MAP - LISBURNE NO. 1

DRILLING SUMMARY

Field operations at Lisburne Test Well No. 1 started on February 21, 1979, with mobilization of construction crews and equipment required to build the drilling pad and airstrip. Construction work was completed May 12, 1979, and crews and equipment were demobilized.

Rig move-in operations began May 14 and rig-up operations started on May 18, 1979. During rig-up, a 30-inch conductor was set at 129' KB and cemented in place with 1,730 sacks Permafrost cement. The well was spudded June 11, 1979 at 8:00 a.m.

A 17-1/2" hole was drilled to 1515', opened to 26" to 1511' then logged with a DIL/GR/SP and BHC-Sonic/GR. Twenty-inch casing (37 joints, 133#, K-55, 8 round) was run and landed at 1504' with the duplex collar at 1423'. Nine centralizers were installed and the casing cemented to surface with 4,800 sacks of 14.9 ppg Permafrost cement. The shoe was drilled out and the formation tested to a 0.67 psi/ft. gradient with no leak off.

A 17-1/2" hole was drilled to 4510'. The following cores were cut: Core No. 1, 1554.1' to 1558.8', recovered 4.0'; Core No. 2, 2075' to 2090.5', recovered 15.5'; Core No. 3, 2990' to 3000', recovered 9'; Core No. 4, 3900' to 3910', recovered 9'. Schlumberger wireline logs were run as follows from 4510' back into the 20" casing: DIL/GR/SP, FDC/CNL/GR/CAL; BHC-Sonic/GR/TTI; Velocity Survey. No dipmeter or sidewall cores were attempted due to oversized hole.

The 13-3/8" casing was run and landed at 4509' (110 joints, 72#, S-95 BTC). The float collar was at 4428', with FOs at 2013' and 1025'. The casing was cemented in three stages. The first stage at the shoe was cemented with 2,000 sacks 15.8 ppg Class "G" cement (with 1% CFR-2 and 0.05% HR-7). The second stage was through the FO at 2013' with 1,000 sacks 14.9 ppg Permafrost cement. The third stage was through the FO at 1025' with 1,200 sacks 14.9 ppg Permafrost cement (returns 14.6 ppg). After the cement had set, the shoe and formation were drilled to 4514', and the formation tested to 0.60 psi per foot equivalent gradient with no leak off.

A 12-1/4" hole was drilled to 6773' at which point the well was temporarily suspended due to a labor dispute between Nabors Alaska Drilling and the Roughneck and Drillers Association. Core No. 5 was cut from 5340' to 5356' with 16 feet recovered, and Core No. 6 was cut from 6215' to 6225' with 10 feet recovered. Husky personnel logged the open hole with a DIL/GR/SP and a BHC-Sonic/GR. A plug of 125 sacks of 14.9 ppg Permafrost cement was squeezed below an E-Z drill retainer in the 13-3/8" casing at 4301'. Maximum squeeze pressure was 1,500 psi. The top 1003' of the hole was displaced to diesel. The drill pipe was run in to 4207' and the 13-3/8" casing pressure tested to 2,500 psi. Two safety valves were installed at the surface and the pipe rams closed. The well was suspended August 23, 1979 at 12:00 midnight.

The rig was reactivated on October 24, 1979. The diesel in the top of the hole was burned after being displaced with mud and the blowout preventer tested. The retainer at 4301', cement stringers were drilled and the hole washed and reamed to bottom. A steel-line measurement showed a corrected total depth of 6789'. Continuous problems of sloughing shales and stuck pipe were encountered during the re-entry.

A 12-1/4" hole was drilled to 8015' and the hole logged prior to running 9-5/8" casing. Logs run from total depth to the 13-3/8" shoe at 4509' included a DIL/GR/SP, FDC/CNL/GR/CAL, BHC-Sonic/GR, HDT-Dipmeter, and a Velocity Survey. Shot 45 sidewall cores with 30 recovered.

The 9-5/8" casing was run with the shoe landed at 8002' (184 joints, 53.5#, S-95, Buttress, Range 3). The float collar was at 7910', DV at 4600', and FO at 2013'. The casing was cemented in two stages. The first stage was cemented around the shoe with 1,200 sacks of 15.8 ppg Class "G" cement (1% CFR-2, 0.15% HR-7). The second stage was cemented through the DV at 4600' with 800 sacks 15.8 ppg Class "G" cement (1% CFR-2) with full returns. A CBL/VDL log was run to 7910'. The shoe and formation were drilled to 8026' and the formation tested to a 0.60 psi per foot equivalent gradient with no leak off.

An 8-1/2" hole was drilled to 13,650'. Cores were cut as follows: Core No. 7, 8038' to 8068', 30' recovered; Core No. 8, 8730' to 8740', 8.5' recovered; Core No. 9, 9728' to 9738', 10' recovered; Core No. 10, 11,162' to 11,173', 11' recovered; Core No. 11, 11,686.5 to 11,691', 4' recovered; Core No. 12, 13,600.7' to 13,609', 7.7' recovered. The hole was logged from total depth back into the 9-5/8" casing at 8002' with the following logs: DIL/GR/SP, BHC-Sonic/GR, FDC/CNL/GR/CAL, HDT-Dipmeter.

A 7-5/8" liner was run from 13,650' to 7700' (148 joints, 38.05#, S-95, AB-FL4S casing). A 30-barrel 11.7 ppg, Sam V spacer was pumped and the liner cemented with 225 sacks of 12.8 ppg Class "G" cement (10% gel, 1% CFR-2, 0.5%, HR-7, 1/4 lb./sack Flocele). This was followed by 200 sacks 15.8 ppg Class "G" cement (1% CFR-2, 0.2% HR-7, 1/4 lb./sack Flocele). The plug was bumped, and the float held. A 9-5/8" E-Z drill retainer was set at 7602', and the liner lap tested to 3,100 psi with the pressure decreasing to 2,950 psi in 15 minutes. The retainer was drilled, and the liner and landing collar were drilled out to 13,570'. There was no cement below the landing collar, and the liner would not hold pressure.

As neither the liner lap nor the shoe would hold pressure, both had to be squeezed. The hole was drilled to 13,650.5' (0.5' below shoe), and a 7-5/8" E-Z drill retainer set at 13,580'. The shoe was squeezed through the retainer with 100 sacks Class "G" cement (1% CFR-2, 0.2% HR-7). The formation locked up at 4,500 psi and held at that pressure for 10 minutes. Next a retainer (9-5/8" E-Z drill) was set at 7626' to squeeze the liner lap. The lap was squeezed through the retainer with 100 sacks 15.8 ppg Class "G" cement (1% CFR-2, 0.1% HR-7). The upper retainer was drilled and the liner cleaned out to the retainer at 13,580'. It was determined that the liner would not hold pressure between 13,125' and 13,155' using a Halliburton RTTS. An E-Z drill retainer was set at 13,073' and 100 sacks

of Class "G" cement (1% CFR-2, 0.2% HR-7) squeezed through it. The pressure locked up and held at 3,000 psi during the squeeze. The retainer was drilled, and the liner cleaned out to 13,569'. It was tested to 3,000 psi. The liner was then cleaned out to 13,580', the lower retainer drilled out, and the liner and new hole drilled to 13,653'. The shoe was tested to 4,500 psi and the formation tested to an 0.89 psi equivalent gradient.

After milling junk from 13,653' to 13,660', a 6-1/4" hole was drilled to 17,000'. Cores were cut as follows: Core No. 13, 13,859' to 13,870.5', 11.5' recovered; Core No. 14, 15,328' to 15,342', recovered 12'; Core No. 15, 15,596' to 15,598', no recovery; Core No. 16, 15,655' to 15,663', recovered 3'; Core No. 17, 15,902' to 15,911', recovered 4.8'; Core No. 18, 16,302' to 16,328', recovered 22.5'; Core No. 19, 16,859' to 16,875.5', recovered 12'; Core No. 20, 16,982' to 17,000', recovered 14.5'. The open hole from 17,000' to the 7-5/8" shoe at 13,650' was logged as follows: Temperature Log (100-16,955'); DLL/GR; BHC-Sonic/GR; FDC/CNL/ GR/CAL; HDT-Dipmeter; Velocity Survey (4500-16,942'); CBL/VDL/ CCL/GR (6500-12,500').

After log evaluation was complete, a decision was made to plug back and test the zones 11,618' to 11,841', 7645' to 7662', and 7022' to 7104'. Plugs were set as follows: Plug No. 1 in the open hole, 16,100' to 16,400', 125 sacks of 15.8 ppg Class "G" cement (1% CFR-2, 0.8% HR-12); Plug No. 2 in open hole, 15,200' to 15,500', 125 sacks 15.8 ppg Class "G" cement (1% CFR-2, 0.8% HR-12); Plug No. 3, 13,400' to 13,900' across liner shoe, 150 sacks 15.8 ppg Class "G" cement (1% CFR-2, 0.6% HR-12).

In preparation for cased-hole Drill-Stem Test No. 1, the zones 11,618' to 11,638', 11,728' to 11,742', and 11,826' to 11,841' were perforated at 4 shots per foot with Schlumberger's HyperJet gun. The test was conducted with 3000' of water cushion and is summarized as follows:

1st FP (34 minutes): IHP 6,227 psi, well dead at surface throughout flow period, IFP 2,593-4,985 psi, reset packer resulting in 38 minutes ISIP, ISIP 6,227 psi.

2nd FP (60 minutes): Opened through 1/4" choke with weak blow decreasing to faint blow at end of period, 2nd FP 3,984-5,040 psi, shut in for 124 minutes, 2nd SIP 5,022 psi.

3rd FP (118 minutes): Opened through 1/4" choke with weak blow, FFP 4,829-5,040 psi, shut in for 303 minutes, FSIP 5,022 psi, FHP 6,208 psi.

Recovered 3000' water cushion and 2100' mud and filtrate.

NOTE: Analysis of test data indicates tool was only momentarily and/or partially opening on each flow period; test data therefore is not considered completely reliable.

At the conclusion of the test, a retainer was set at 11,575' and the perforations squeezed with 125 sacks 15.8 ppg Class "G" cement containing 1% CFR-2 and 0.6% HR-12 (Plug No. 5).

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Next the zone 7645' to 7662' was perforated at 4 shots per foot for cased-hole Drill-Stem Test No. 2. The test tool would not open, and the test was aborted.

Test tools were rerun and Drill-Stem Test No. 3 was conducted over the same interval (7645-7662'), with no water cushion. The test is summarized as follows:

1st FP (67 minutes): IHP 4,071 psi, opened through 1/4" choke with moderate blow increasing to moderately strong blow in 46 minutes, IFP 124-529 psi; shut in well for 122 minutes, ISIP 2,921 psi.

2nd FP (478 minutes): Opened through 1/4" choke with moderate blow increasing to moderately strong blow in 5 hours with FWHP 15 psi. FFP 554-1,740 psi, shut in 720 minutes, FSIP 3,081 psi, FHP 4,058 psi.

Recovered 10 barrels mud and filtrate, 61 barrels water with slight gas odor. Sample chamber recovery: 2.14 cubic feet "sour" gas and 1,966 cubic centimeters formation water.

At the conclusion of Drill-Stem Test No. 3, a retainer was set at 7605' and the perforations squeezed with 30 sacks of Class "G" cement. An additional 130 sacks of Class "G" cement were spotted on top of the retainer to 7200' (Plug No. 6).

The zone 7022' to 7104' was perforated with 4 shots per foot for cased-hole Drill-Stem Test No. 4. The test was conducted with no water cushion and detailed below:

1st FP (120 minutes): IHP 3,781 psi, opened through 1/8" choke with strong blow, GTS in 28 minutes, FWHP 220 psi decreased to 65 psi end of FP, IFP 322-223 psi, shut in 244 minutes, ISIP 1,271 psi.

2nd FP (480 minutes): Opened through 1/4" choke with FWHP 60 psi increasing to 136 psi in 25 minutes, FWHP declined to 10 psi at end period, FFP 272-173 psi, shut in for 960 minutes, FSIP 2,295 psi, FHP 3,756 psi.

Recovered 16.6 barrels slightly gas-cut mud and filtrate. Sample-chamber recovery: 0.81 cubic feet of gas and 0.0 liquid.

At the conclusion of Drill-Stem Test No. 4, a decision was made to plug and abandon the well. A retainer was set at 7000', and the perforations at 7022-7104' were squeezed with 100 sacks of 15.9 ppg Class "G" cement (1% CFR-2, 0.1% HR-7). An additional 50 sacks of 15.9 ppg Class "G" cement was spotted on top of the retainer to 6850' (Plug No. 7). A retainer was set at 1970', and Plug No. 8 of 50 sacks of 14.9 ppg Permafrost cement spotted on top of it to 1840'. The 9-5/8" annulus was then displaced from the top of the plug to the surface with diesel. This was to allow future temperature measurements by U. S. Geological Survey personnel.

The rig was released June 2, 1980, at 12:00 midnight and the abandonment head was installed. The rig was moved to the airstrip at Ivotuk where it was stacked for shipment to the Koluktak wellsite in the fall of 1980. Demobilization required 10 days and was completed on June 12, 1980.

Form 9-331 C
(May 1963)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NOTICE OF INTENT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] OTHER Wildcat SINGLE ZONE [ ] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR: 2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 792' FSL; 2411' FEL
At proposed prod. zone: Same (straight hole)

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 104 miles southwest of Umiat, Alaska

5. LEASE DESIGNATION AND SERIAL NO.: N/A
6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A
7. UNIT AGREEMENT NAME: N/A
8. FARM OR LEASE NAME: National Petroleum Reserve in AK
9. WELL NO: Lisburne Test Well No. 1
10. FIELD AND POOL, OR WILDCAT: Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 17, T11S, R16W, UM
12. COUNTY OR PARISH: North Slope
13. STATE: Alaska

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
21,120'	23,600,000	N/A
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
620,400'	15,000	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): Pad 1834'; KB 1862'

22. APPROX. DATE WORK WILL START*: May 21, 1979

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
52"	30" Conductor	110.32# X-60	± 120' KB	SEE
26"	20"	169# K-55	± 1500' KB	DRILLING
17 1/2"	13 3/8"	72# S-95	± 4500' KB	PROGRAM
12 1/4"	9 5/8"	53.5# S-95	± 8500' KB	FOR
8 1/2"	7 5/8" Liner	39# S-95	± 13,000' KB	DETAILS
6 1/4"	5 1/2" Liner	23# S-95	To TD	AND AMOUNTS

SEE DRILLING PROGRAM FOR DETAILED DRILLING PLAN.

BOP Program:
From ± 120' to ± 1500':
29 1/2", 500 psi Annular Diverter
From ± 1500' to ± 4500':
20", 2000 psi, SRRA w/3000 psi
Choke Manifold
From ± 4500' to ± 8500'
13 5/8", 5000 psi, SRSRRA w/5000 psi
Choke Manifold
From ± 8500' to TD:
11", 10,000 psi, SRSRRA w/10,000 psi
Choke Manifold

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED Mark C Brewer TITLE _____ DATE 16 May 79

(This space for Federal or State office use)

APPROVED BY _____ TITLE DISTRICT ENGINEER DATE _____

CONDITIONS OF APPROVAL, IF ANY:

See attached conditions.

*See Instructions On Reverse Side

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR
2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE
N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
N/A

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH North Slope 13. STATE Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent Report of Spud			

(NOTE: Report results of multiple completion or zone change on Form 9–330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

This well was spudded June 11, 1979, at 8:00 AM. Hole size at spud is 17 1/2". Thirty inch conductor cemented in place at 129' KB with 1730 sacks Permafrost cement previous to spud.

RECEIVED
ONSHORE DIST. OFFICE
JUN 22

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct
SIGNED Max V. Brewer TITLE Chief of Operations DATE 20 June 79

(This space for Federal or State office use)
Conforms with pertinent provisions of 30 CFR 221.
APPROVED BY [illegible] TITLE DISTRICT SUPERVISOR DATE 6/22/79
ACTING

*See Instructions on Reverse Side

Revised 6/29/83

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR: National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR: 2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE: N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME: National Petroleum Reserve in Alaska

9. WELL NO.: Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH: North Slope | 13. STATE: Alaska

14. API NO.: N/A

15. ELEVATIONS (SHOW DF, KDB, AND WD): Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐

(other) Subsequent Report of Running and Cementing 20" Surface Casing

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

A 17 1/2" hole was drilled to 1515' and logged. Opened hole to 26" to 1511'. Ran 37 joints of 20", 133#, K-55, 8rd casing. Landed with float shoe at 1504' and duplex float collar at 1423'. Installed centralizers 10 feet above shoe, first collar above shoe, first collar above float collar, and on every other collar through the fifteenth joint (total of 9 centralizers). Cemented with 4800 sacks of Permafrost cement at 14.9 ppg slurry weight. Had 14.0 ppg slurry weight in returns. Cement in place 6/29/79 at 3:00 PM. WOC 24 hours. Installed National NSB 20", 3000 psi landing flange and tested weld to 250 psi. Nippled up 20", 3000 psi BOP stack, choke manifold, and kill line and tested. Tested 20" casing to 2000 psi. Drilled out float collar and float shoe. Tested formation to .67 psi/ft gradient with no leak off.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED _____ TITLE Chief of Operation DATE _____

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

_____ TITLE _____ DATE _____

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR: National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR: 2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE: N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME: National Petroleum Reserve in Alaska

9. WELL NO.: Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH: North Slope | 13. STATE: Alaska

14. API NO.: N/A

15. ELEVATIONS (SHOW DF, KDB, ND WD): Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent	☐		☐

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SEP 5 1979
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

(NOTE: Report results of multiple completion or zone change on Form 9–330.)

ning and Cementing of 13 3/8" Casing

ERATIONS (Clearly state all pertinent details, and give pertinent dates, ... proposed work. If well is directionally drilled, give subsurface locations and ... markers and zones pertinent to this work.)*

...and logged. After logging, the hole was con... [illegible] ...(total of 47 centralizers). Cemented first ...ment with 12 CFR-2 and 0.05% HR-7 @ 15.8 ppg.... M. Opened FO @ 2013' and circulated. Mud recovered:::: OPE and installed 20" - 3000 X 13 5/8" - 5000 casing:::: ippled up BOPE. Tested to 5000 psi and Hydril to S and shifting fingers. Opened FO @ 2013' and cir- f Permafrost cement @ 14.9 ppg. Cement in place. nd tested to 2500 psi OK. POH to the FO @ 1025'. ent returns::: WOC. Cemented third stage from FO rost cement at 14.9 ppg with 14.6 ppg returns.

...Set @ _____ Ft.

17. DESCRIBE PROPOSED OR COMPLETED ... including estimated date of starting any ... measured and true vertical depths for all ...

A 17 1/2" hole was drilled to 45... ditched for casing. 110 joints ... shoe was landed @ 4509'. Float ... were installed per drilling prog... stage with 2000 sacks Class "G" ... Cement in place 7/28/79 at 3:00 ... contaminated mud. Nippled down ... spool. Tested to 2500 psi OK. ... 2500 psi OK. Tripped in with RTT ... culated, then pumped 1000 sacks ... 7/31/78 at 12:30 AM. Closed FO. ... and circulate bottoms up. No cem... @ 1025' with 1200 sacks of Permaf...

Subsurface Safety Valve: Manu. and Type _____

18. I hereby certify that the foregoing is true and ...

correct

SIGNED Max Brewer TITLE Chief of Operations DATE 31 August 79

(This space for Federal or State office use)

APPROVED BY Barry A. Bowden TITLE DISTRICT SUPERVISOR DATE Sept 5 1979

Conforms with pertinent provisions of 30 CFR 221.

See Instructions on Reverse Side

10

16

Had full returns. Cement in place 8/1/79 at 10:45 AM. Tested FO @ 1025' to 2500 psi. OK. Clean out cement to float collar and tested casing to 2500 psi. OK. Drilled out of shoe and formation to 4514'. Tested formation to 0.60 gradient. Drilled ahead, 12 1/4" hole.

12

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well [X] gas well [ ] other Wildcat
2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)
3. ADDRESS OF OPERATOR 2525 C Street, Suite 400, Anchorage, AK 99503
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
   AT SURFACE: 792' FSL; 2411' FEL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH: Same

5. LEASE N/A
6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A
7. UNIT AGREEMENT NAME N/A
8. FARM OR LEASE NAME National Petroleum Reserve in Alaska
9. WELL NO. Lisburne Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 17, T11S, R15W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB AND WD) Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	[ ]		[ ]
FRACTURE TREAT	[ ]		[ ]
SHOOT OR ACIDIZE	[ ]		[ ]
REPAIR WELL	[ ]		[ ]
PULL OR ALTER CASING	[ ]		[ ]
MULTIPLE COMPLETE	[ ]		[ ]
CHANGE ZONES	[ ]		[ ]
ABANDON*	[ ]		[ ]
(other) Notice of Intent to Temporarily Suspend			

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

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U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Due to the labor dispute between Nabors Alaska Drilling and the Roughneck and Drillers Union, the Lisburne Test Well No. 1 will be temporarily suspended per the attached program. Verbal approval received from Mr. Rodney Smith August 18, 1979.

Subsurface Safety Valve: Manu. and Type _____ Set @: _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED Max Brewer TITLE Chief of Operations DATE 4 September 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Barry A Bowdoin DISTRICT SUPERVISOR DATE Sept 5, 1979

*See Instructions on Reverse Side

LISBURNE TEST WELL NO. 1
TEMPORARY SUSPENSION PROGRAM

1. Condition hole for logs.

2. Run logs as directed by the Wellsite Geologist.

3. Pick up 12 1/4" bit and 13 3/8", 72# scraper. Run in hole to ± 4325'. Circulate and condition mud to 10.4 ppg, viscosity 40-45. Scrape interval from 4325' to 4275'.

4. Pull out of hole. Pick up Howco 13 3/8", 72# E-Z Drill cement retainer. Run in hole and set retainer at ± 4300'. Avoid setting retainer in a collar.

5. Unsting and condition mud, test retainer and casing to 2500 psi.

6. Stab into retainer. Pump into formation and establish injection rate and pressure. Limit pressure to 2500 psi. Unsting from retainer.

7. Mix and pump 125 sacks of Permafrost cement at 14.9 ppg. Yield 0.95 ft 3/sack. Mix water 3.5 gallons/sack. Precede cement with 20 bbls water and follow cement with 3 bbls water.

8. Displace cement to within 500-600 feet of retainer and sting in. Squeeze cement, limiting pressure to 2500 psi. Monitor annulus for any sign of leak.

9. Shut down, leaving ± 25 sx of cement in drill pipe. Unsting from retainer and spot remaining cement on top of retainer.

10. Pull out two stands and reverse out drill pipe.

11. WOC 12 hours. Pull out of hole, lay down stab in tool. Run in hole to ± 1140' open ended. Reverse mud to water and water to diesel.

12. Close Hydril and open choke line to flare pit. Strip in to ± 4250'. Place inside BOP two stands from KB. Land drill pipe in slips for a kill string.

13. Rig up double valves on drill pipe at surface. Close pipe rams and test to 2500 psi through kill line. Release pressure and lock pipe rams.

14. Drain mud pits.

15. Prepare rig for temporary suspension.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☒ gas well ☐ other Wildcat
2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)
3. ADDRESS OF OPERATOR 2525 C Street, Suite 400, Anchorage, AK 99503
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
   AT SURFACE: 792' FSL; 2411' FEL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH: Same
5. LEASE N/A
6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A
7. UNIT AGREEMENT NAME N/A
8. FARM OR LEASE NAME National Petroleum Reserve in Alaska
9. WELL NO. Lisburne Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 17, T11S, R16W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB AND WD) Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Report of Temporary Suspension			

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

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SEP 6 1979
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U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Due to the labor dispute between Nabors Alaska Drilling and the Roughneck and Drillers' Union, the Lisburne Test Well No. 1 was temporarily suspended.

The well was drilled to 6773' and logged with DIL and BHCS/GR. RIH and set Howco 13 3/8", 72# E-Z Drill cement retainer at 4301'. Unstung and pumped 20 bbls H_2O, preceded by 125 sacks of Permafrost cement at a slurry weight of 14.9 ppg and displaced with 1 bbl H_2O and 35 bbls mud. Stabbed into retainer and squeezed 26 bbls with a maximum pressure of 1500 psi. Pulled out of retainer, leaving 1100 psi on the tool. Reversed out 15 bbls of contaminated mud. Displaced mud to water to diesel at 1003', then stripped in to 4207'. Tested casing to 2500 psi. Filled DP with diesel. Installed inside BOP one stand below the table. Tested [illegible] valve at surface and [illegible] with diesel. Well suspended at 12:00 midnight 8/23/79.

Type Set @ Ft.

Subsurface Safety Valve: Manu. and

18. I hereby certify that the foregoing is true and correct

SIGNED [illegible] TITLE Area Chief of Operations DATE 9-4-79

SIGNED [illegible] TITLE DISTRICT SUPERVISOR DATE 9-10-79

Conforms with Conditions of Approval dated 8-24-79

(See Instructions on Reverse Side)

14

12

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other Wildcat
2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)
3. ADDRESS OF OPERATOR 2525 C Street, Suite 400, Anchorage, AK 99503
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
   AT SURFACE: 792' FSL; 2411' FEL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH:
5. LEASE N/A
6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A
7. UNIT AGREEMENT NAME N/A
8. FARM OR LEASE NAME National Petroleum Reserve in Alaska
9. WELL NO. Lisburne Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 17, T11S, R16W, UM
12. COUNTY OR PARISH North Slope, 13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB AND WD) Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Notice of Intent to Re-enter and Continue Drilling Program			

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NOV 26 1979
CONSERVATION DIVISION
U. S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

(NOTE: Report results of multiple completion or zone change on Form 9–330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

See attached.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED Max S. Brewer TITLE Chief of Operations DATE 23 November 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

(Orig. Sgd.) Barry A. Boudreau TITLE DISTRICT SUPERVISOR DATE NOV 27 1979

*See Instructions on Reverse Side

LISBURNE TEST WELL NO. 1
RE-ENTRY PROGRAM

1. After reactivating Nabors Rig 17, mix and condition mud to 10.6 ppg. Pre-treat mud for drilling cement.

2. Check for pressure on drill pipe and annulus.

3. Test BOPE. Test between pipe rams to 5000 psi and Hydril to 2500 psi. Test the choke manifold to 5000 psi. Make sure the flare and blowdown lines are clean and dry. Test casing to 2500 psi.

4. Rig up mud line and begin pumping mud through the drill pipe. ± 125 barrels is the required amount to displace the diesel from the wellbore through the choke and flair line to the flair pit for burning. Do not exceed 2500 psi in attempting to break circulation at this depth. Control rate of burn by pumping rate. Make note and log wind direction and velocity during burn. Note time displacement is started. Shut down as soon as returns are primarily mud. Switch over and begin circulating and conditioning mud through the mud tanks. Be sure to clean flare and blow-down lines. Fill choke manifold with 60/40 mixture of glycol and water.

5. Circulate and condition mud to a uniform 10.6 ppg.

6. Pull out of hole, finish testing BOPE, and pick up a 12 1/4" drill bit (open nozzled) and slick drilling assembly with one non-rotating stabilizer one joint up from bit and second non-rotating stabilizer one stand above the first. Run in hole to top of cement retainer at 4301'.

7. Drill out cement retainer and cement plug. Treat and condition mud to uniform 10.6 ppg.

8. Stage in hole to suspended TD at 6773'. Condition hole and mud to 10.6 ppg. Trip out and pick up complete drilling assembly.

9. Trip in to TD. Resume Section C, Part 3, of Drilling Procedure as stated in the Drilling Program for Lisburne Test Well No. 1, April 28, 1979.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other - Wildcat
2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)
3. ADDRESS OF OPERATOR 2525 C Street, Suite 400, Anchorage, AK 99503
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
   AT SURFACE: 792' FSL; 2411' FEL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH:
5. LEASE N/A
6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A
7. UNIT AGREEMENT NAME N/A
8. FARM OR LEASE NAME National Petroleum Reserve in Alaska
9. WELL NO. Lisburne Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 17, T11S, R16W, UM
12. COUNTY OR PARISH North Slope 13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB AND WD) Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent Report of Re-entry			

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(NOTE: Report results of multiple completion or zone change on Form 9–330.) NOV 26 19??

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Nabors Rig 17 was reactivated on October 24, 1979. Mixed and conditioned mud in pits to 10.6 ppg. Tested BOPE. Displaced diesel out with mud. Started displacing and burning diesel at 4:55 AM; finished displacing at 5:27 AM with 115 bbls diesel to surface. Burn finished by 6:30 AM, 10/25/79. Weather conditions during burn were 1600' overcast, +5°F, wind NE at 11 MPH. POH, tested BOPE. RIH to top of cement at 4298'. Drilled retainer and cement stringers to 4692'. Washed to 4724'; hole sloughing. POH to shoe, circulated and conditioned mud. Washing and reaming was continued until the old TD was reached on November 5, 1979. Continuous problems of hole sloughing and sticking pipe were encountered during this re-entry period. The previous TD measure of 6773' was found in error and corrected to 6789' SLM. Drilling ahead with 12 1/4" hole.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED Max Brewer TITLE Chief of Operations DATE 23 November 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

(Orig. Sgd.) Barry A. Boudreau DISTRICT SUPERVISOR DATE NOV 27 1979

*See Instructions on Reverse Side

23

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

5. LEASE
N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
N/A

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH 13. STATE
North Slope , Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD)
Pad 1834'; KB 1862'

OTICES AND REPORTS ON WELLS
or proposals to drill or to deepen or plug back to a different
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ugh Husky Oil NPR Operations, Inc.)
OPERATOR
, Suite 400, Anchorage, AK 99503
WELL (REPORT LOCATION CLEARLY. See space 17

792' FSL; 2411' FEL
INTERVAL:
TH: Same

PRIATE BOX TO INDICATE NATURE OF NOTICE,
OTHER DATA

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NOV 26 1979
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

OPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, nated date of starting any proposed work. If well is directionally drilled, give subsurface locations and true vertical depths for all markers and zones pertinent to this work.)*

n of drilling conditions at Lisburne Test Well No. 1 has lead to the to Arctic Pack this well at the 9 5/8" casing point. The well will be d at the point it becomes necessary.

Valve: Manu. and Type _____ Set @ _____ Ft.

y that the foregoing is true and correct

x Brewer TITLE Chief of Operations DATE 23 November 79

(This space for Federal or State office use)

Barry A. Boudreau DISTRICT SUPERVISOR DATE NOV 27 1979

*See Instructions on Reverse Side

SUNDRY N
(Do not use this form
for Permit. Use Form 9-

1. oil well ☒
2. NAME OF OP
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3. ADDRESS OF
2525 C Stree
4. LOCATION OF
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AT SURFACE:
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16. CHECK APPR
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NOTICE OF INT
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17. DESCRIBE PR
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Subsurface Safety

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SIGNED

Conforms with
pertinent (Orig. Sgd.)
provisions of
30 CFR 221.

Revised 6/29/83

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR 2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A

7. UNIT AGREEMENT NAME N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO. Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH North Slope | 13. STATE Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD) Pad 1634'; KB 1892'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent Notice of Running and Cementing 9 5/8" Casing			

(NOTE: Report results of multiple completion or zone change on Form 9–330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled a 12 1/4" hole to 8015'. Logged with DIL/GR/SP, FDC/CNL/GR/CAL, BHC/GR, HRD Dipmeter, Velocity Survey, and shot sidewall cores. Ran 184 joints of 9 5/8", 53.5#, S-95 Buttress, Range 3 casing. Ran centralizers per Drilling Program. Float shoe at 8001.77'. Float collar at 7909.66'. DV at 4600.13'. FO at 2012.73'. First stage cemented with 50 bbls of H_2O and 1200 sacks of Class "G" cement with 1% CFR-2 and .15% HR-7. Slurry weight at 15.8 ppg. Displaced with 20 bbls water and 557 bbls of mud. Bumped plug with 3000 psi. CIP at 12.08 PM, 11/27/79. Second stage cemented with 50 bbls of water and 800 sacks of Class "G" cement with 1% CFR-2. Slurry weight of 15.8 ppg. Displaced with 5 bbls of water and 123 bbls of mud. Bumped plug with 3000 psi. CIP at 10:42 AM, 11/28/79. Good returns. Nippled down BOP and set casing on slips with 355,000#. Installed 10,000# BOPE and tested to 10,000 psi OK. Tested casing to 3000 psi OK. Ran in hole. Drilled out DV, float collar, and cement to 7979'. Ran cement bond log to 7910'. Drilled to 8026' and tested formation to .6 psi/ft gradient; no leak off. Drilling 8 1/2" hole ahead.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED _____ TITLE Chief of Operations DATE _____

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED BY _____ TITLE DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR
2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE
N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
N/A

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH | 13. STATE
North Slope | Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD)
Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐

(NOTE: Report results of multiple completion or zone change on Form 9–330.)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR
2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE
N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
N/A

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH 13. STATE
North Slope. Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD)
Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:	SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF ☐	☐
FRACTURE TREAT ☐	☐
SHOOT OR ACIDIZE ☐	☐
REPAIR WELL ☐	☐
PULL OR ALTER CASING ☐	☐
MULTIPLE COMPLETE ☐	☐
CHANGE ZONES ☐	☐
ABANDON* ☐	☐
(other) Notice of Intent to Change Plans	

(NOTE: Report results of multiple completion or zone change on Form 9–330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

The original Notice of Intent to Drill indicated the proposed TD to be 15,000'. Due to thicker geologic sequences, the objective TVD is expected to be 17,000'.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED [signature] TITLE Chief of Operations DATE 5 May 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

[signature] TITLE DISTRICT SUPERVISOR DATE 5-7-80

*See Instructions on Reverse Side

MAY 6 1980

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9–331–C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR: National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR: 2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE: N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME: National Petroleum Reserve in Alaska

9. WELL NO.: Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH: North Slope

13. STATE: Alaska

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB AND WD): Pad 1834'; KB 1892'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent Notice of Running and Cementing 7 5/8" Casing			

RECEIVED
ONSHORE DIST. OFFICE

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drill 8 1/2" hole to 13,650'. Logged with DIL/GR/SP, BHCS/GR, FDC/CNL/GR/CAL, and HDT Dipmeter. Ran 148 joints of 7 5/8", 38.05 lb, S-95, AB-FL 4S casing. Shoe at 13,650'. Top of liner at 7700'. Pumped a 30 bbl Sam V Spacer at 11.7 ppg, then cemented with 225 sacks of Class "G" cement with 10% Gel, 1% CFR-2, 0.5% HR-7, and 1/4 lb/sk of Flow Seal at 12.8 ppg, followed by 200 sacks of Class "G" cement with 1% CFR-2, 0.20% of HR-7, and 1/4 lb/sk of Flow Seal at 15.8 ppg. Had returns throughout job. CIP at 2:25 PM 3/3/80. Bumped plug with 3000 psi. OK. Set 9 5/8" EZ Drill retainer at 7602' and tested liner lap. Satisfactory. Drilled out retainer and shoe to 13,650.5'. No cement under landing collar. Set retainer at 13,580' and attempted to squeeze shoe. Formation locked up at 4500 psi. Ran a negative flow test on liner lap. Had minor leak. Set retainer at 7726' and squeeze liner lap with 100 sacks of Class "G" cement with 1% CFR-2 and 0.1% HR-7 at 15.8 ppg. Drill out retainer and cement in liner. Found leak in casing. Set retainer at 13,073'.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED Max Brewer TITLE Chief of Operations DATE 16 April 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Barry A. Poulsen TITLE DISTRICT SUPERVISOR DATE 4-21-80

*See Instructions on Reverse Side

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Cemented leak with 100 sacks of Class "G" cement with 1% CFR-2, 0.2% HR-7 and 1/4 lb/sk of Flow Seal at 15.8 ppg. Pressure built to 3000 psi and formation locked up and held. CIP at 12:00 midnight, 3/13/80. Drilled out cement and retainer. Tested formation, liner, and casing to 4500 psi (≈ .89 psi/ft gradient). OK; no leak off. Drilling 6 1/4" hole ahead.

Revised 6/29/83

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR
2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 792' FSL; 2411' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE
N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
N/A

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Lisburne Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH: North Slope | 13. STATE: Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Pad 1834'; KB 1862'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent Report of Abandonment			

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled 6 1/4" hole to 17,000'. Ran logs. Set Plug No. 1 from 16,100' to 16,400' with 125 sacks of Class G cement containing 1% CFR-2 and .8% HR-12. Slurry weight: 15.8 ppg. Set Plug No. 2 from 15,200' to 15,500' with 125 sacks of Class G cement containing 1% CFR-2 and .8% HR-12. Slurry weight: 15.8 ppg. Set Plug No. 3 from 13,400' to 13,900' with 150 sacks of Class G cement containing 1% CFR-2 and .6% HR-12. Slurry weight: 15.8 ppg. Test zones from 11,618' to 11,638', 11,728' to 11,742', and 11,826' to 11,841'. Set retainer at 11,575'. Squeezed perforations with 125 sacks of Class G cement containing 1% CFR-2 and .6% HR-12. Slurry weight: 15.8 ppg. Set retainer at 7680'. Tested zone 7645' to 7662'. Set retainer at 7605'. Squeezed perforations with 30 sacks of Class G cement containing 1% CFR-2 and 0.1% HR-7. Formation locked up. Spotted Plug No. 6, 130 sacks of Class G cement containing 1% CFR-2 and 0.1% HR-7. Slurry weight: 15.8 ppg. Test zone from 7022' to 7104'. Set retainer at 7000'. Squeezed perforations with 100 sacks

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED _____ TITLE Chief of Operations DATE _____

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

_____ TITLE _____ DATE _____

*See Instructions on Reverse Side

of Class G cement containing 1% CFR-2 and 0.1% HR-7. Spotted Plug No. 7 from 7000' to 6850' with 150 sacks of Class G cement containing 1% CFR-2 and .1% HR-7. Slurry weight 15.9 ppg. Set retainer at 1970'. Changed mud to water. Spotted Plug No. 8 from 1970' to 1840' with 50 sacks of Permafrost cement. Slurry weight: 14.9 ppg. Displaced water to diesel. Rig released at 12:00 midnight, June 2, 1980.

Form 9-330
(Rev. 5-63)

Revised 6/29/83
Form Approved.
Budget Bureau No. 42-R355.5

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

5. LEASE DESIGNATION AND SERIAL NO.: N/A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME: National Petroleum Reserve in AK

9. WELL NO.: Lisburne Test Well No. 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec 17, T11S, R16W, UM

12. COUNTY OR PARISH: North Slope

13. STATE: Alaska

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☐ Other: Wildcat

b. TYPE OF COMPLETION: NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☒ DIFF. RESERVR. ☐ Other

2. NAME OF OPERATOR: National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)

3. ADDRESS OF OPERATOR: 2525 C Street, Suite 400, Anchorage, AK 99503

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface: 792' FSL; 2411' FEL
At top prod. interval reported below
At total depth: 1531' FSL; 2739' FEL

14. PERMIT NO.: N/A — DATE ISSUED: N/A

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
6/11/79	5/19/80	N/A	Pad 1834'; KB 1862'	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
17,000' MD 16,816' TVD	1840'	N/A	→	All	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: CBL/VDL/GR/CCL; Velocity Survey; DLL/GR; BHCS/GR/TTI; CNL/FDC/CAL/GR; HDT; Temperature Survey

27. WAS WELL CORED: Yes

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
30"	110.22		36"		None
20"	133 (K-55)	1504'	26"	4800 Sx Permafrost	None
13 3/8"	72 (S-95)	4509'	17 1/2"	2000 Sx Cl G & 2200 Sx Pmfst	None
9 5/8"	53.5 (S-95)	8002'	12 1/4"	2000 Sx Class G	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
7 5/8"	7700'	13,650'	425 Sx	

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD (Interval, size and number)
11,618'-11,638'; 11,728'-11,742';
11,826'-11,841'; 7645'-7662'; 7022'-7104'

All at four shots per foot.

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
11,575'	125 Sx Cl G w/1% CFR2; .6% HR12
7,605'	30 Sx Cl G w/1% CFR2; 0.1% HR7
7,200'	100 Sx Cl G w/1% CFR2; 0.1% HR7

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
N/A	3 DSTs	Plugged & Abandoned

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
5/25/80; 6/7/80	1 to 16 Hrs	-		-	-	-	-

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
-	-		-	-		

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.): Vented — TEST WITNESSED BY

35. LIST OF ATTACHMENTS: Wellbore Schematic

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

SIGNED _____ TITLE Chief of Operations, CNPRA DATE _____

*(See Instructions and Spaces for Additional Data on Reverse Side)

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INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: "Sacks Cement" Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES

SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
SEE ATTACHED FOR SUMMARY OF DSTs AND CORES			

38. GEOLOGIC MARKERS

NAME	DIL Depth[nor] MEAS. DEPTH	TRUE VERT. DEPTH
Fortress Mt/	Surface to	
"Pebble Shale"	6940'	
Shublik No. 1	6940'	
Lisburne No. 1	7408'	
Fault/Post Shublik	8600'	
Shublik No. 2	9024'	
Lisburne No. 2	9670'	
Fault/Post Shublik	10,898'	
Shublik No. 3	11,020'	
Lisburne No. 3	11,540'	
Fault/Shublik No. 4	13,370'	
Lisburne No. 4	13,736'	
Fault/Shublik No. 5	15,320'	
Lisburne No. 5	15,396'	
Total Depth	17,000'	16,816'

U.S. GOVERNMENT PRINTING OFFICE: 1977 O-[illegible]

[illegible]

Revised 6/29/83

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Well Completion Report
National Petroleum Reserve in Alaska
Lisburne Test Well No. 1

SUMMARY OF CORED INTERVALS

CORE NO.	FORMATION	INTERVAL	DESCRIPTION
1	L. Cretaceous	1554.1-1558.8' (Rec 4')	Shale: Dark gray, carbonaceous, highly fractured, no indication of hydrocarbons.
2	L. Cretaceous/ Fortress Mt	2075-2090.5' (Rec 15.5')	Sandstone: With shale and limestone clasts, no porosity, bleeding traces of dead oil and gas from fractures.
3	L. Cretaceous	2990-3000' (Rec 9')	Shale and Siltstone: Calcite-filled fractures common. No indication of hydrocarbons.
4	L. Cretaceous	3900'-3910' (Rec 9')	Shale and Siltstone: With siltstone clasts, apparent dip 80°. No indication of hydrocarbons.
5	L. Cretaceous	5340'-5356' (Rec 16')	Shale: Fractured with thin interbeds sandstone. No porosity. Three inches of sandstone with very poor oil show.
6	L. Cretaceous	6215-6225' (Rec 10')	Siltstone: With claystone laminations and scattered chert fragments, fractured. No indication of hydrocarbons.
7	Lisburne	8038-8068' (Rec 30')	Shale (6'): Subvertical fractures containing traces of dead oil; overlying dolomite with nil to very poor porosity. No permeability. Bleeding traces of sour gas.
8	L. Cretaceous/ "Pebble Shale"	8730-8740' (Rec 8.5')	Shale: Highly fractured, with heavy hydrocarbons (gilsonite?) along fractures planes.
9	Lisburne	9728-9738' (Rec 10')	Dolomite: With interbedded limestone, fractures with occasional open vugular porosity, no indication of hydrocarbons.
10	Shublik	11,162-11,173' (Rec 11')	Shale: With calcite-filled fractures, partly open, no indication of hydrocarbons.
11	Lisburne	11,686.5-11,691' (Rec 4')	Dolomite: With abundant chert, common closed fractures. No indication of hydrocarbons.

Revised 6/29/83

Well Completion Report
National Petroleum Reserve in Alaska
Lisburne Test Well No. 1

CORE NO.	FORMATION	INTERVAL	DESCRIPTION
12	Shublik	13,600.7-13,609' (Rec 7.7')	Shale: Siliceous, well indurated, closed fractures, possible gilsonite(?) on fractures.
13	Lisburne	13,859-13,870.5' (Rec 11.5')	Limestone: With chert and thin contorted shale beds, common calcite-filled fractures, no porosity, no indication of hydrocarbons.
14	Shublik	15,328-15,342' (Rec 12')	Shale: Highly contorted with interbedded limestone, argillaceous, fractures. No indication of hydrocarbons.
15	Lisburne	15,596-15,598' (Rec 0')	No recovery.
16	Lisburne	15,655-15,663' (Rec 8')	Dolomite: With isolated patches of dolomitic limestone, abundant near vertical fractures, occasional chert, very poor to nil porosity, traces of possible gilsonite(?).
17	Lisburne	15,902-15,911' (Rec 4.8')	Dolomite: With calcite-filled fractures and chert, some fractures filled with gilsonite(?).
18	Lisburne	16,302-16,328' (Rec 22.5')	Limestone: Argillaceous, fossiliferous, pyritic, occasional chert nodules, with some interbedded siltstone. No porosity, no indication of hydrocarbons.
19	Lisburne	16,859-16,875.5' (Rec 12')	Limestone: Argillaceous, with abundant black shale laminations, occasional chert nodules. No porosity. No indication of hydrocarbons.
20	Lisburne	16,892-17,000' (Rec 14.5')	Limestone: Very argillaceous, fine crystalline, abundant black shale laminations, rare near vertical closed fractures, no porosity. No indication of hydrocarbons.

Revised 6/29/83

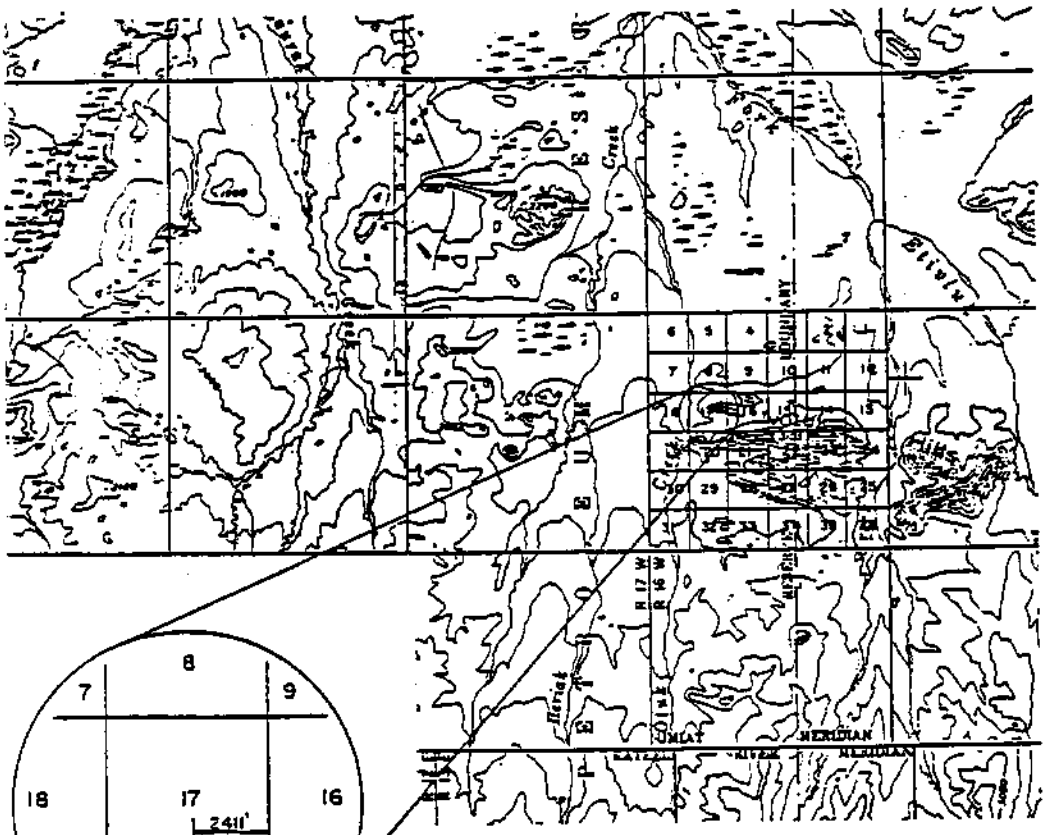
SUMMARY OF DRILL STEM TESTS

TEST NO.	FORMATION	INTERVAL	TEST DESCRIPTION
1	Lisburne	Perforations: 11,618-11,638' 11,728-11,742' 11,826-11,841'	Cased hole DST, 3000' water cushion. NOTE: Analysis of downhole recorders indicates tool was only momentarily and/or partially opening on each flow period, resulting in unreliable and questionable test data. 1st FP (34 min): IHP 6227 psi, opened tool with no blow. FP 2593-4985 psi, reset tool and packer resulting in SI w/SIP 6227. 2nd FP (60 min): Opened with weak blow decreasing throughout period. FP 3984-5040 psi, shut in for 124 min. 2nd SI psi. 3rd FP (118 min): Opened with weak blow continuing throughout period, FP 4829-5040 psi, shut in for 301 min, FSIP 5122 psi, FHP 6208 psi. Recovered 3000' water cushion and 2100' rat hole mud and formation. Sample chamber recovery 1 cu ft gas, 1850 psi at surface.
2	Lisburne	Perforations: 7645-7662'	Misrun. Tool not opening. See DST No. 3.
3	Lisburne	Perforations: 7645-7662'	Cased hole DST (retest of interval attempted on DST No. 2, perforated with 4 shots/ft.) No cushion. 1st FP (67 min): IHP 4071 psi, opened tool with moderate blow through 1/4" choke, increasing to moderately strong blow in 5 minutes, IFP 124-529 psi; shut in well for two hours; ISIP 2021 psi. 2nd FP (478 min): Opened with moderate blow through 1/4" choke increasing to moderately strong blow in 5 hours with FWHP 15 psi. No fluid to surface. FFP 554-1740 psi, shut in well for 727 minutes, FSIP 3081 psi, FHP 4058 psi.

Revised 6/29/83

Well Completion Report
National Petroleum Reserve in Alaska
Lisborne Test Well No. 1

TEST NO.	FORMATION	INTERVAL	TEST DESCRIPTION
3 (Continued)			Recovered 10 bbls rat hole mud/filtrate and 61 bbls formation water with slight gas odor. Sample chamber 2.14 cu ft gas, 1966 cc formation water at 7100 ppm Cl_2.
4	Shublik	Perforations: 7022-7104'	Cased hole DST, perforated with 4 shots/ft. No cushion. 1st FP (120 min): IHP 3781 psi, opened with strong blow through 1/8" choke, GTS in 28 minutes with FWHP 220 psi, FWHP declined to 65 psi end of FP, IFP 322-223 psi, shut in 244 min, ISIP 1271 psi. 2nd FP (480 min): Opened through 1/4" choke with 60 psi FWHP increasing to 136 psi and 213 MCFPD in 25 minutes, pressure slowly declined to 10 psi at end period, FFP 272-173 psi, shut well for 960 minutes, FSIP 2295 psi, FHP 3756 psi. Recovered 16.6 bbls slightly gas-cut rat-hole mud filtrate. Sample chamber recovery 0.81 cu ft gas.



LISBURNE 7-79

LAT. = 68° 29' 05.4381"
LONG. = 155° 41' 35.510"
Y = 5,298,127.35
X = 272,584.12
ZONE 5

CERTIFICATE OF SURVEYOR

I hereby certify that I am properly registered and licensed to practice land surveying in the State of Alaska and that this plat represents a location survey made by me or under my supervision, and that all dimensions and other details are correct.

March 19, 1979

STATE OF ALASKA
49TH
JOHN H. HERRING
No. 953-S

0 1 2 4 6 8 10
SCALE IN MILES

AS STAKED

LISBURNE 7-79

SW¼ of SE¼ PROTRACTED SEC. 17
T11S, R16W, UMIAT MERIDIAN, AK

SURVEYED FOR

HUSKY OIL

N.P.R. OPERATIONS, INC.

Bell, Herring and Associates
ENGINEERS AND LAND SURVEYORS
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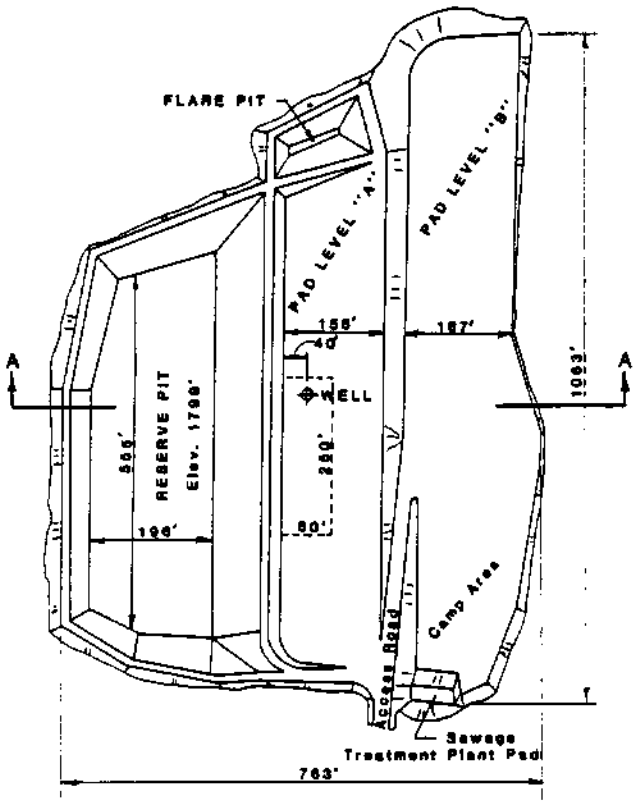
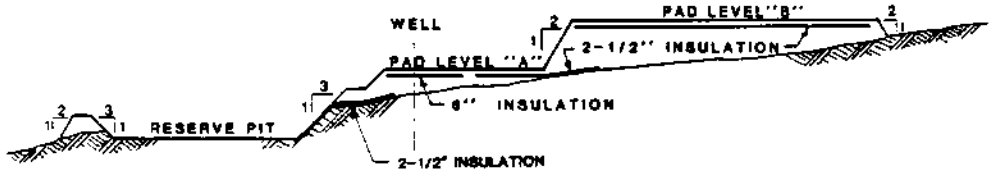
ANCHORAGE, ALASKA 99503



PLAN VIEW



SECTION A-A

LISBURNE DRILL PAD

OPERATIONS HISTORY

DATE AND FOOTAGE DRILLED AS OF 6:00 A.M.	ACTIVITY
6/10/79	Set 30" conductor at 129' and cemented through 1" pipe to 48'. Mixed and pumped 1,070 sacks of Permafrost cement; slurry weight: 14.9 ppg. Cement in place at 9:00 a.m. Used total of 1,730 sacks on conductor.
6/11/79	Welders completed shale slide. Put water in pits and repaired leaks. Mixed mud. Picked up bottom-hole assembly; cleaned out cement from 98' to 129'. Pulled out of hole to change bottom-hole assembly.
6/12/79 260'	Total Depth: 389'; Mud Weight: 8.8; Viscosity: 36. Spudded well June 11, 1979, at 8:00 a.m., with slick bottom-hole assembly. Deviated 1-1/2 degree. Pulled out of hole; picked up three-point reamer 60 feet from bit. Drilled to 300'; surveyed.
6/13/79 56'	TD: 445'; MW: 9.1; Vis: 35. Drilled 17-1/2" hole from 389' to 429'; surveyed. Drilled to 445'; pulled out of hole. Picked up bit and two 26" hole openers; ran in hole to 129'. Opened hole from 129' to 442'.
6/14/79 105'	TD: 550'; MW: 8.9; Vis: 34. Pulled out of hole with hole opener; picked up bottom-hole assembly. Ran in hole; drilled 17-1/2" hole from 445' to 490'; surveyed. Drilled to 550'; surveyed. Pulled out of hole.
6/15/79 14'	TD: 564'; MW: 9; Vis: 38. Drilled 17-1/2" hole from 550' to 564'; pulled out of hole. Picked up tandem 26" hole openers; ran in hole. Opened hole to 26" from 442' to 558'. Pulled out of hole; picked up bottom-hole assembly.
6/16/79 100'	TD: 664'; MW: 9; Vis: 36. Ran in hole with packed pendulum bottom hole opener. Drilled 17-1/2" hole from 564' to 632'; surveyed. Drilled from 632' to 637'; pulled out of hole for bit. Ran in hole; washed 30 feet to bottom. Drilled from 637' to 664'.
6/17/79 163'	TD: 827'; MW: 9; Vis: 42. Drilled 17-1/2" hole from 664' to 744'; surveyed. Pulled out of hole; changed bit. Ran in hole; drilled to 827'; surveyed.

6/18/79 41'	TD: 868'; MW: 8.9; Vis: 37. Drilled to 843'; surveyed. Pulled out of hole; picked up locked bottom-hole assembly. Ran in hole to 813'; reamed 30 feet to bottom. Drilled ahead.
6/19/79 158'	TD: 1026'; MW: 9.1; Vis: 42. Drilled to 872'; lost pump pressure. Pulled out of hole; found that jars were washed out. Changed jars and bit. Ran in hole; drilled ahead.
6/20/79 163'	TD: 1189'; MW: 9.3; Vis: 40. Drilled and surveyed 17-1/2" hole from 1026' to 1072'. Pulled out of hole for bit. Ran in hole; drilled to 1189'; surveyed. Pulled out of hole to begin opening hole to 26".
6/21/79 0'	TD: 1189'. Ran in hole with 26" tandem hole opener to 558'; opened 17-1/2" hole to 26" to 836'. Had tight hole at 706' and 804'. After reaming, hole began to cave. Mud temperature in: 110; mud temperature out: 119.
6/22/79 0'	TD: 1189'; MW: 9.3; Vis: 47. Opened hole from 836' to 841'; pulled out of hole. Laid down bottom hole opener. Changed cutters. Ran in hole; opened hole from 841' to 1098'. Checked for washout; found that jars were washed out.
6/23/79 0'	TD: 1189'; MW: 9.3; Vis: 50. Laid down washed-out jars; changed cutters. Ran in hole; opened hole from 1098' to 1169'. Repaired rig; opened hole from 1169' to 1186'. Circulated hole clean. Pulled out of hole, surveying every 200 feet. Laid down hole opener. Made up 26" bit. Ran in hole to 121'; drilled cement from 121' to 130'.
6/24/79 76'	TD: 1265'. Ran in hole with 26" bit; washed to bottom from 1175' to 1186'. Drilled 26" hole to 1190'. Circulated; pulled out of hole for 17-1/2" d[illegible] assembly. Changed bottom-hole assembly. Ran [illegible] hole; drilled to 1244'; surveyed. Drilled ahead.
6/25/79 135'	TD: 1400'; MW: 9.1; Vis: 54. Drilled and surve[illegible] to 1301'; repaired rig. Drilled and surveyed [illegible] 1400'.
6/26/79 115'	TD: 1515'; MW: 9.1; Vis: 52. Drilled to 14[illegible] Pulled out of hole; changed bit and bottom-[illegible] assembly. Ran in hole to 1283'; washed to 13[illegible] Reamed from 1335' to 1401'. Drilled and surveyed [illegible] 1516'. Circulated and conditioned.

6/27/79 0'	TD: 1515'; MW: 9.2; Vis: 54. Pulled out of hole, steel-line measuring. Picked up 26" hole opener. Ran in hole to 1163'; washed to 1190'. Opened hole to 1405'. Repaired rig. Opened hole to 1462'.	
6/28/79 0'	TD: 1515'; MW: 9.1; Vis: 46. Opened 17-1/2" hole to 26" from 1462' to 1490'. Repaired rig. Opened hole from 1490' to 1511'. Circulated; surveyed. Pulled out of hole; cleaned bottom-hole assembly. Ran in hole; circulated for logs. Pulled out of hole. Ran DIL/GR and BHC-Sonic/GR. Picked up tandem hole openers; ran in hole to 1511'. Circulated to run casing.	
/79	TD: 1515'. Circulated and conditioned hole. Pulled out of hole; tight from 897' to shoe. Cleaned hole openers. Ran in hole. Washed 12 feet to bottom; circulated. Pulled out of hole. Rigged up casing tools. Ran 37 joints of 133#, 20-inch casing. Shoe at 1504'; float collar at 1423', with nine centralizers. Rigged down casing tools.	6/2 0'
/79	TD: 1515'; MW: 9.1; Vis: 44. Finished rigging down casing tools. Steel-line measured into hole with Howco stab-in mandrel. Circulated 1,000 barrels of mud. Pumped 20 barrels of water, 4,800 sacks of Permafrost cement at 14.9 ppg, and 15 barrels of water behind. Received contaminated mud at 4,000 sacks pumped. Had 13.8 ppg returns at 4,500 sacks pumped; had 14 ppg returns at 4,800 sacks pumped. Cement in place 6/29/79 at 3:00 p.m. Pulled out of hole; washed 30" Hydril. Waited on cement.	6/3 0'
/79	TD: 1515'; MW: 9.1; Vis: 40. Waited on cement until 3:00 p.m. Cut off 30" and 20" casing; nippled down 30" stack. Welded on 20" x 3,000 psi base flange and tested to 250 psi.	7/1 0'
/79	TD: 1515'; MW: 9.1; Vis: 40. Began nippling up 20" blowout-preventer equipment.	7/2 0'
/79	TD: 1527'; MW: 9.1; Vis: 54. Completed nippling up 20" blowout-preventer equipment; tested. Worked on Koomey unit; ran bowl protector. Made up bottom-hole assembly. Ran in hole, steel-line measuring. Tagged float at 1423'; tested casing at 2,000 psi. Drilled cement and shoe; cleaned out to 1515'. Drilled to 1517'. Tested formation to 0.67 psi/ft. gradient. Drilled to 1527'; tripped for bit. Drilled ahead.	7/3 12'

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7/4/79 50'	TD: 1577'; MW: 9; Vis: 38. Drilled to 1554'; circulated; surveyed. Steel-line measured. Pulled out of hole. Ran in hole with core barrel; circulated. Cut Core No. 1, 1554.1' to 1558.8'; core barrel jammed. Pulled out of hole; laid down core. Recovered four feet of core. Laid down core barrel. Picked up bottom-hole assembly; ran in hole. Reamed core hole. Drilled from 1558' to 1570'; surveyed; drilled ahead.
7/5/79 250'	TD: 1827'; MW: 9.2; Vis: 38. Drilled from 1577' to 1592'; circulated samples. Drilled and surveyed, 1592' to 1827'.
7/6/79 215'	TD: 2042'; MW: 9.1; Vis: 35. Drilled and surveyed to 2008'. Pulled out of hole for bit and stabilizer. Ran in hole; reamed 30 feet to bottom. Drilled from 2008' to 2032'. Repaired rig; drilled ahead.
7/7/79 49'	TD: 2091'; MW: 9.1; Vis: 37. Drilled, circulated. Cut Core No. 2, 2075' to 2090.5'; recovered 15.5 feet of core. Reamed core hole; drilled ahead.
7/8/79 128'	TD: 2219'; MW: 9.2; Vis: 38. Rereamed core hole; drilled 17-1/2" hole from 2091' to 2095'. Surveyed; pulled out of hole; cut drilling line. Ran in hole; washed and reamed from 2052' to 2095'. Drilled ahead.
7/9/79 222'	TD: 2441'; MW: 9.5; Vis: 45. Drilled, surveyed.
7/10/79 230'	TD: 2671'; MW: 9.3; Vis: 40. Drilled; surveyed. Pulled out of hole for bit. Ran in hole; washed and reamed 43 feet. Drilled; surveyed.
7/11/79 174'	TD: 2845'; MW: 9.4; Vis: 47. Drilled to 2728'. Pulled out of hole. Tested blowout-preventer equipment. Washed and reamed from 2685' to 2728'. Drilled ahead.
7/12/79 145'	TD: 2990'; MW: 9.4; Vis: 40. Drilled; surveyed from 2845' to 2990'. Pulled out of hole. Picked up core barrel; ran in hole. Circulated.
7/13/79 65'	TD: 3055'; MW: 9.4; Vis: 54. Circulated; cut Core No. 3, 2990' to 3000'. Recovered nine feet. Ran in hole; reamed core hole. Drilled ahead.
7/14/79 153'	TD: 3208'; MW: 9.4; Vis: 58. Drilled and surveyed, 3055' to 3136'. Pulled out of hole for bit. Ran in hole; washed and reamed 43 feet to bottom. Had 15 feet of fill. Drilled from 3136' to 3208'.

7/15/79 240'	TD: 3448'; MW: 9.3; Vis: 45. Drilled and surveyed to 3448'; had tight connection at 3384'.
7/16/79 114'	TD: 3562'; MW: 9.2; Vis: 45. Drilled and surveyed from 3448' to 3556'; had tight connection at 3459'. Lost 150 barrels of mud to fractured formation. Surveyed and pulled out of hole; hole tight. Pumped out eight joints. Changed bit, one stabilizer, jars, and shock sub. Worked on Koomey control. Ran in hole; reamed from 3278' to bottom. Drilled ahead.
7/17/79 135'	TD: 3697'; MW: 9.2; Vis: 47. Drilled to 3697'; lost 100 barrels of mud at 3585'.
7/18/79 134'	TD: 3831'; MW: 9.3; Vis: 44. Drilled from 3697' to 3712'; surveyed. Pulled out of hole, steel-line measuring. Changed bit. Ran in hole; washed and reamed 20 feet to bottom. Drilled from 3712' to 3831'.
7/19/79 75'	TD: 3906'; MW: 9.3; Vis: 47. Drilled to 3900'; pulled out of hole. Tested blowout-preventer equipment. Picked up core bit and ran in hole. Washed 21 feet to bottom. Began cutting Core No. 4.
7/20/79 140'	TD: 4046'; MW: 9.4; Vis: 41. Cut Core No. 4, 39 to 3910'. Pulled out of hole; recovered nine feet core. Ran in hole; reamed core hole. Drilled 4046'; reamed each connection twice.
7/21/79 222'	TD: 4268'; MW: 9.4; Vis: 42. Drilled ahead.
7/22/79 39'	TD: 4307'; MW: 9.4; Vis: 41. Drilled to 429 surveyed. Pulled out of hole; changed bit a stabilizer. Ran in hole; washed and reamed 60 feet bottom. Drilled to 4293'; surveyed. Drilled to 430 Jet became plugged; bit balled up. Pulled out of ho changed bit. Ran in hole.
7/23/79 143'	TD: 4450'; MW: 9.4; Vis: 43. Finished running hole; washed and reamed from 4230' to 4307'. Drill to 4325'; serviced rig. Drilled to 4356'; surveye Drilled ahead.
7/24/79 60'	TD: 4510'; MW: 9.5; Vis: 55. Drilled to 451 circulated bottoms up. Surveyed; short tripped heavy-weight drill pipe. Washed and reamed 30 feet bottom. Circulated and conditioned for logs. Pull out of hole, steel-line measuring. Rigged Schlumberger unit; ran DIL/GR. Hit bridge at 157 Tripped in; washed through bridge, 1578' to 160 Ran in hole to condition.

7/25/79 0'	TD: 4510'; MW: 9.5; Vis: 65. Ran in hole; washed and reamed from 4441' to 4510'. Circulated; pulled out of hole. Rigged up to log. Ran DIL/SP/GR, FDC/CNL/GR/Cal, and BHC/GR. Ran Velocity Survey, 250' to 4400'; total of nine shots. Did not run HRD due to a 21" washout at 1600'.
7/26/79 0'	TD: 4510'; MW: 9.5; Vis: 65. Finished Velocity Survey. Ran in hole; circulated and conditioned. Pulled out of hole. Changed rams and pulled wear bushing. Rigged up and ran 110 joints of 13-3/8", 72#, S-95 buttress casing. Shoe at 4509'; float collar at 4428'. FOs at 2013' and 1025'. String weight: 251,000 pounds. Ran centralizers as per program. Rigged down casing tools; made up stinger and ran in hole.
7/27/79 0'	TD: 4510'; MW: 9.5; Vis: 60. Ran in hole to FO at 2013'; attempted to close FO. Pulled out of hole. Picked up four stands of drill collars and new closing fingers. Ran in hole; had light indication of FO. Pulled out of hole; spread fingers; ran in hole. Closed FO; cycled FO several times. Pulled out of hole and stood back drill collars.
7/28/79 0'	TD: 4510'; MW: 9.5; Vis: 38. Ran in hole with stab-in and closing fingers. Stabbed into float collar at 4428'. Circulated and conditioned hole. Mixed and pumped 2,000 sacks Class "G" cement with 1% CFR-2 and 0.05% HR-7 at 15.8 ppg. Displaced with 63 barrels of mud. Left two barrels of cement on top of float collar. Pressure: 200 at start; 2,200 on displacement. Floats held. Cement in place at 3:00 p.m. Pulled out of hole. Ran in hole with Howco shifting assembly. Ran in hole to FO at 2013'; circulated and recovered contaminated mud. Pulled out of hole. Set 13-3/8" slips with 220,000 pounds. Rough cut 13-3/8" casing. Nippled down blowout-preventer equipment.
7/29/79 0'	TD: 4510'; MW: 9.5; Vis: 38. Finished nippling down blowout preventer. Installed 20", 3,000 x 13-5/8", 5,000 psi casing spool. Tested to 2,500 psi. Nippled up blowout preventers.
7/30/79 0'	TD: 4510'; MW: 9.5; Vis: 38. Nippled up blowout-preventer equipment; tested to 5,000 psi. Tested Hydril to 2,500 psi. Single gate bottom pipe ram failed to open. Worked on blowout preventers.

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7/31/79 0'	TD: 4510'; MW: 9.5; Vis: 36. Worked on blowout preventers; retested to 5,000 psi. Ran in hole with FO shifting assembly. Opened FO at 2013'. Circulated 20 x 13-3/8" annulus. Mixed and pumped 1,000 sacks Permafrost cement; 14.9 ppg slurry weight. Displaced with five barrels water and 22 barrels mud, with 10 barrels water ahead of cement. Cement in place at 12:30 a.m. Closed FO and tested to 2,500 psi. Pulled out of hole to 1025'. Opened FO and circulated bottoms up. No cement returns. Closed FO and pulled out of hole. Waited on cement.
8/1/79 41'	TD: 4551'; MW: 9.0; Vis: 32. Waited on cement. Ran in hole to 1025'. Opened FO and cemented with 10 barrels water and 1,200 sacks Permafrost cement at 14.9 ppg. Had returns at 1,000 sacks pumped. Final returns weight: 14.6 ppg. Closed FO and tested to 2,500 psi. Pulled out of hole; laid down shifting tools. Installed wear bushing. Picked up bottom-hole assembly; ran in hole to 2025'; hit bridge. Drilled cement and circulated out contaminated mud. Ran in hole to cement at 4417'; circulated and tested casing to 2,500 psi. Drilled cement from 4417' to 4509'. Drilled float shoe and five feet of formation. Tested formation to 0.60 psi/ft. equivalent gradient; no leak off. Drilled ahead.
8/2/79 100'	TD: 4651'; MW: 9.1; Vis: 39. Drilled from 4551' to 4584'; surveyed. Pulled out of hole; laid down 21 joints of drill pipe. Worked blowout preventers. Changed element in Strip-o-matic. Laid down 17-1/2" tools; picked up 12-1/4" bottom-hole assembly. Ran in hole; washed and reamed from 4509' to 4584'. Drilled to 4651'.
8/3/79 370'	TD: 5021'; MW: 9.3; Vis: 43. Serviced rig. Drilled from 4651' to 4807'; circulated; surveyed. Drilled from 4807' to 4964'; circulated; surveyed. Drilled ahead.
8/4/79 300'	TD: 5321'; MW: 9.8; Vis: 54. Drilled and surveyed from 5021' to 5321'. Worked on No. 1 pump.
8/5/79 1/35'	TD: 5356'; MW: 9.8; Vis: 42. Drilled to 5340'; circulated for core; surveyed. Pulled out of hole; picked up core barrel. Ran in hole; cut Core No. 5, 5340' to 5356'. Pulled out of hole; recovered 16 feet of core. Ran in hole with bit; reamed core hole. Drilled ahead.
8/6/79 276'	TD: 5632'; MW: 9.9; Vis: 40. Drilled and surveyed 12-1/4" hole from 5356' to 5632'.

8/7/79 117'	TD: 5749; MW: 9.9; Vis: 43. Drilled from 5632' to 5749'; surveyed. Pulled out of hole; tested blowout-preventer equipment. Ran in hole.
8/8/79 336'	TD: 6085'; MW: 9.9; Vis: 44. Washed and reamed to bottom; no fill. Drilled; surveyed, drilled.
8/9/79 84'	TD: 6169'; MW: 10.1; Vis: 43. Drilled to 6169'; circulated; surveyed. Pulled out of hole to shoe; repaired rig; finished pulling out of hole. Changed oil in draw works. Ran in hole to 6119'; reamed to bottom.
8/10/79 50'	TD: 6219'; MW: 10.1; Vis: 45. Drilled from 6169' to 6198'; surveyed; drilled at 6215'. Pulled out of hole, picked up core barrel. Ran in hole; reamed and washed 30 feet to bottom. Began cutting Core No. 6 at 6215'.
8/11/79 52'	TD: 6271'; MW: 10; Vis: 43. Completed cutting core at 6225'. Pulled out of hole; recovered 10 feet of core. Ran in hole; reamed core hole. Drilled from 6225' to 6271'. Circulated bottoms up; pulled out of hole.
8/12/79 47'	TD: 6318'; MW: 10.1; Vis: 53. Ran in hole; reamed from 6222' to 6271'. Drilled from 6271' to 6294'. Pulled out of hole. Ran in hole to 6274'; reamed to 6294'. Drilled ahead.
8/13/79 156'	TD: 6474'; MW: 10.1; Vis: 38. Drilled to 6388'; circulated samples. Drilled ahead.
8/14/79 145'	TD: 6619'; MW: 10; Vis: 52. Drilled to 6533'; surveyed. Drilled ahead.
8/15/79 111'	TD: 6730'; MW: 10; Vis: 42. Drilled to 6622'; short tripped to shoe. Ran back in hole; hit bridges at 6248', 6271', and 6368' to 6390'. Ran in hole to 6516'; reamed to bottom. Drilled ahead.
8/16/79 43'	TD: 6773'; MW: 10.3; Vis: 47. Drilled ahead; raised mud weight to 10.3. Pulled out of hole to shoe and circulated. Crew left location at 4:00 p.m. to attend union meeting at airport. Crew returned to location at 5:45 p.m., but were locked out by Contractor. All crew members were removed to Anchorage by charter aircraft which departed the location at 11:45 p.m. Continued circulating under supervision of Nabors and Husky supervisory personnel.

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8/17/79 0'	TD: 6773'; MW: 10.4; Vis: 43. Circulated at 4378'.
8/18/79 0'	TD: 6773'; MW: 10.4; Vis: 43. Circulated at 4378'.
8/19/79 0'	TD: 6773'; MW: 10.4; Vis: 45. Circulated at 4378'.
8/20/79 0'	TD: 6773'; MW: 10.4; Vis: 43. Circulated at 4378'.
8/21/79 0'	TD: 6773'; MW: 10.4; Vis: 43. Circulated at 4378'. Received instructions from Anchorage to suspend well for an indefinite period of time.
8/22/79 0'	TD: 6773'; MW: 10.5; Vis: 60. Ran in hole to 6623'; washed and reamed to 6773'. Circulated and conditioned to log; short tripped. Washed 60 feet to bottom, circulated. Pulled out of hole.
8/23/79 0'	TD: 6773'; MW: 10.5; Vis: 53. Pulled out of hole; rigged up logging unit and ran DIL/SP/GR and BHC/GR/Cal logs. Rigged down logging unit. Pulled wear ring; picked up 12-1/4" bit and 13-3/8" scraper; staged in hole. Pulled out of hole for EZ drill retainer.
8/24/79	TD: 6773'; PBTD: 4276'; MW: 10.5; Vis: 55. Ran in hole; set EZ drill retainer at 4301'. Pulled out and circulated above retainer. Established injection rate at 2-1/2 BPM at 1,000 psi. Pumped 20 barrels of water; mixed and pumped 125 sacks of Permafrost cement at 14.9 ppg, one barrel of water, and 35 barrels of mud. Stabbed into retainer; squeezed 26 barrels. Maximum pressure: 1,500 psi. Pulled out of retainer, leaving 1,100 psi on tool. Reversed out; recovered 15 barrels of contaminated mud. Pulled out of hole; ran back in hole to 1003'. Displaced mud to water to diesel. Ran in hole to 4207'; tested casing to 2,500 psi. Installed two safety valves at surface; closed pipe rams. Well suspended August 23, 1979, at 12:00 midnight.
8/25/79 through 10/19/79	Well suspended.
10/20/79	TD: 6773'; PBTD: 4276'. Began preparing rig for start up.

10/21/79 through 10/24/79	TD: 6773'; PBTD: 4276'. Continued with preparation for resuming drilling operations.
10/25/79 0'	TD: 6773'; PBTD: 4276'; MW: 10.6; Vis: 44. Mixed mud; tested blowout-preventer equipment. Displaced diesel, beginning at 4:55 a.m. Wind: NE at 11 MPH; Visibility: 1,600 feet and overcast; Temperature: 50°F. Finished displacing at 5:27 a.m. with 710 strokes, 115 barrels. Cleaned out manifold and flare line.
10/26/79 0'	TD: 6775'; MW: 10.6; Vis: 42. Circulated out contaminated mud. Pulled out of hole; tested blowout-preventer equipment. Ran in hole to top of cement at 4298'. Drilled on cement and retainer to 4305'.
10/27/79 0'	TD: 6773'; MW: 10.8; Vis: 44. Drilled cement stringers to 4692'. Circulated and conditioned mud; washed to 4724'. Hole began sloughing and pipe became stuck. Worked pipe loose and pulled out to shoe. Circulated and conditioned mud. Ran in hole; cleaned out to 4830'.
10/28/79 0'	TD: 6775'; MW: 10.7; Vis: 55. Washed and reamed from 4830' to 4950'; hole sloughed; hole tight with high torque.
10/29/79 0'	TD: 6773'; MW: 10.8; Vis: 55. Washed and reamed from 4950' to 4975'. Pulled out of hole. Checked bottom-hole assembly; found 12 bad drill collars, 10 cracked boxes, and 3 cracked pins.
10/30/79 0'	TD: 6773'; MW: 10.8; Vis: 45. Finished inspection of bottom-hole assembly. Picked up bottom-hole assembly and ran in hole to 4975'; washed and reamed to 4990'. Repaired rig. Washed and reamed to 5040'.
10/31/79 0'	TD: 6773'; MW: 10.9; Vis: 48. Washed and reamed to 5255', pipe became stuck. Worked pipe free. Washed and reamed to 5567'; circulated bottoms up. Pulled out of hole.
11/1/79 0'	TD: 6773'; MW: 11; Vis: 65. Pulled out of hole; laid down nonrotating stabilizer. Tested blowout-preventer equipment. Made up bottom-hole assembly. Ran in hole to 5557'; had ten feet of fill. Washed and reamed to 5575'. Pipe became stuck at 5668'; worked free. Washed and reamed to 5857'; pipe became stuck again. Worked free; hole sloughing.

11/2/79 0'	TD: 6773'; MW: 11.1; Vis: 68. Washed and reamed to 5970'; pipe became stuck. Worked free; washed and reamed to 6264'.
11/3/79 0'	TD: 6773'; MW: 10.9; Vis: 65. Washed and reamed to 6764'.
11/4/79 0'	TD: 6789' (corrected depth); MW: 11; Vis: 74. Washed and reamed to 6773'; circulated short trip. Laid down excess drill pipe and pulled out of hole to heavy-weight drill pipe. Checked measurements; corrected depth to 6789'. Ran in hole; washed and reamed from 6632' to 6789'. Circulated; pulled out of hole. Picked up bottom-hole assembly.
11/5/79 0'	TD: 6789'; MW: 11; Vis: 75. Ran in hole to 6701'. Bit jets became plugged. Pulled out of hole; unplugged bit. Ran in hole; washed from 6640' to 6673'.
11/6/79 60'	TD: 6849'; MW: 11; Vis: 65. Washed and reamed from 6703' to 6781'. Drilled ahead.
11/7/79 74'	TD: 6923'; MW: 11; Vis: 64. Drilled to 6891'; surveyed. Drilled ahead.
11/8/79 60'	TD: 6983'; MW: 11; Vis: 65. Drilled to 6983'; circulated bottoms up. Surveyed; pulled out of hole.
11/9/79 0'	TD: 6983'; MW: 11; Vis: 63. Pulled out of hole, steel-line measuring; no correction. Tested blowout-preventer equipment. Hydril test failed; changed out Hydril rubber.
11/10/79 44'	TD: 7027'; MW: 10.9; Vis: 59. Completed repairs to Hydril and tested to 2,500 psi. Ran in hole; reamed 60 feet to bottom; had 30 feet of fill. Drilled ahead.
11/11/79 89'	TD: 7116'; MW: 11; Vis: 62. Drilled to 7065'. Circulated gas show (1,150 units). Drilled to 7103'. Made wiper trip; tight at 5990'. Ran in hole; washed and reamed from 6790' to 6850' and from 7040' to 7103'. Drilled ahead.
11/12/79 90'	TD: 7206'; MW: 10.9; Vis: 63. Drilled ahead.
11/13/79 86'	TD: 7292'; MW: 10.9; Vis: 59. Drilled ahead. Circulated.

11/14/79 0'	TD: 7292'; MW: 11; Vis: 62. Circulated; pulled out of hole for bit. Ran in hole; hit bridge at 6142'. Washed and reamed to 6270'.
11/15/79 0'	TD: 7292; MW: 11; Vis: 63. Washed and reamed to 6339'; pulled out of hole. Ran in hole; hit bridge at 6240'. Reamed to 6300'. Ran in hole; hit bridge at 6787'. Washed and reamed to 7285'.
11/16/79 48'	TD: 7340'; MW: 11; Vis: 61. Reamed to 7292'; circulated. Pulled out of hole. Picked up bottom-hole assembly. Ran in hole; reamed from 7247' to 7292'; had 30 feet of fill. Drilled ahead.
11/17/79 120'	TD: 7460'; MW: 11; Vis: 64. Drilled ahead.
11/18/79 108'	TD: 7568'; MW: 10.9; Vis: 63. Drilled; circulated samples; surveyed. Pulled out of hole.
11/19/79 0'	TD: 7568'; MW: 11; Vis: 63. Pulled out of hole; tested blowout-preventer equipment. Ran in hole; reamed from 7528' to 7558'.
11/20/79 122'	TD: 7690'; MW: 11; Vis: 65. Reamed to 7568'. Drilled ahead.
11/21/79 89'	TD: 7779'; MW: 11; Vis: 67. Drilled to 7779'. Circulated bottoms up; surveyed. Pulled out of hole; ran in hole.
11/22/79 141'	TD: 7920'; MW: 11; Vis: 64. Ran in hole; reamed from 7714' to 7779'. Drilled ahead.
11/23/79 95'	TD: 8015'; MW: 11; Vis: 67. Drilled to 8015'; short tripped; circulated. Pulled out of hole for logs; tight at 7545'.
11/24/79 0'	TD: 8015'; MW: 11; Vis: 68. Pulled out of hole and rigged up logging unit. Ran DIL/SP/GR, FDC/CNL/GR/Cal, BHC/GR, and HDT-Dipmeter. Ran in hole for Velocity Survey. Logger's depth: 8030'.
11/25/79 0'	TD: 8015'; MW: 11; Vis: 72. Ran Velocity Survey; tool failed on Shot No. 4. Reran No. 4 at 4500' and No. 5 at 8020'. Shot 45 sidewall cores; lost two; 13 were empty. Ran in hole with bit; reamed from 7995' to 8015' and conditioned for casing. Pulled out of hole and laid down bottom-hole assembly.

11/26/79 0'	TD: 8015'; MW: 11; Vis: 74. Finished laying down 12-1/4" bottom-hole assembly. Prepared to run 9-5/8" casing. Ran 184 joints of 9-5/8", 53.5#, S-95 Buttress casing to 8002'. Shoe at 8001.77'; float collar at 7909.66'; DV at 4600.13'; FO at 2012.73'. Circulated and prepared to cement.
11/27/79 0'	TD: 8015'; MW: 11; Vis: 65. Continued circulating and conditioning. Pumped 50 barrels of water; dropped wiper plug. Mixed and pumped 1,200 sacks Class "G" with 1% CFR-2 and 0.15% HR-7; weight: 15.8 ppg. Dropped plug. Pumped five barrels of water and 20 barrels of mud. Pumped 532 barrels of mud with rig pump at 10 BPM. Pressure: 1,150 psi. Bumped plug to 3,000 psi; floats held. Cement in place at 12:08 p.m. Dropped DV opening plug; located plug at 1975' with wireline. Attempted to push plug down with six-foot piece of two-inch pipe on wireline. Ran in hole with bit sub, heavy-weight drill pipe, and drill pipe. Pushed plug to DV at 4600'. Shifted DV with 65,000 pounds. Pulled out of hole.
11/28/79 0'	TD: 8015'; MW: 10.9; Vis: 65. Pulled out of hole with drill pipe. Circulated through DV collar; conditioned mud for second cement stage. Rigged up to cement; cemented with 50 barrels of water and 800 sacks Class "G" with 1% CFR-2. Slurry weight: 15.8 ppg; mixing time: 22 minutes. Dropped closing plug. Displaced with five barrels of water and 123 barrels of mud. Bumped plug with 3,000 psi; held for 10 minutes; tool closed. Cement in place at 10:42 a.m. Good returns on complete job. Had approximately 25 barrels water in returns. Nippled down blowout preventers. Set casing on slips with full casing load (355,000 pounds). Cut 9-5/8" casing and removed blowout preventers. Set National casing-head stack; tested pack off to 10,000 psi.
11/29/79 0'	TD: 8015'; MW: 10.9; Vis: 62. Nippled up 11" x 10,000 psi blowout-preventer equipment and choke manifold. Changed pumps to 5-1/2" liners.
11/30/79 0'	TD: 8015'; MW: 10.9; Vis: 62. Finished nippling up blowout-preventer equipment; tested Hydril to 5,000 psi; tested pump down. Picked up 6-1/2" drill collars and stood back. Rigged up to test blowout-preventer equipment.
12/1/79 0'	TD: 8015'; MW: 10.8; Vis: 65. Tested blowout-preventer equipment. Ran in hole to 4598'; drilled out DV collar. Tested casing to 3,000 psi. Ran in hole to 7837'; conditioned mud. Drilled cement, baffle collar, and cement to 7885'. Pulled out of hole.

12/2/79 0'	TD: 8015; MW: 10.6; Vis: 48. Finished pulling out of hole. Ran CBL/VDL/CCL/GR log; tool stopped at 7425'. [illegible] reamed from [illegible] to 7885'. Cleaned out to 7910'; circulated; pulled out of hole. Laid down two joints of heavy weight drill pipe. Ran CBL; stopped at 7330'. Ran in hole with drill pipe, slipped and cut drilling line.	
12/3/79 0'	TD: 8015; MW: 10.6; Vis: 63. Circulated and conditioned mud; pulled out of hole. Rigged up Schlumberger unit and ran CBL from 7910' to surface. Ran in hole; cleaned out float collar and cement to 7979'. Tested casing to 3,000 psi.	
12/4/79 30'	TD: 8045'; MW: 10.2; Vis: 42. Cleaned out to 8015'; circulated and conditioned mud. Drilled from 8015' to 8026'. Tested formation to 0.6 gradient (560 psi on surface); no leak off. Drilled to 8038'. Pulled out of hole for core barrel; ran in hole.	
12/5/79 45'	TD: 8090'; MW: 10.2; Vis: 48. Cut Core No. 7, 8038' to 8068'. Pulled out of hole; recovered 30 feet of core. Ran in hole; reamed from 8002' to 8068'. Drilled ahead.	
12/6/79 90'	TD: 8180'; MW: 10.2; Vis: 47. Drilled to 8171'; surveyed. Pulled out of hole. Ran in hole; reamed from 8160' to 8171'. Drilled ahead.	
12/7/79	TD: 8287'; MW: 10.2; Vis: 49. Drilled ahead; began pulling out of hole for bit and blowout preventer test.	10
79	TD: 8315'; MW: 10.2; Vis: 50. Pulled out of hole; tested blowout preventer equipment. Ran in hole; washed and reamed from 8245' to 8247'.	12/8/ 28'
79	TD: 8465'; MW: 10.2; Vis: 48. Drilled ahead.	12/9/ 150'
/79	TD: 8560'; MW: 10.2; Vis: 46. Drilled to 8475'; surveyed. Pulled out of hole. Ran in hole; washed and reamed to 8435'. Drilled ahead.	12/10 95'
/79	TD: 8616'; MW: 10.2; Vis: 47. Drilled to 8569'; pulld out of hole. Ran in hole; drilled ahead.	12/11 56'
/79	TD: 8696'; MW: 10.2; Vis: 48. Drilled ahead.	12/12 80'

12/13/79 36'	TD: 8732'; MW: 10.2; Vis: 49. Drilled to 8730'; surveyed. Pulled out of hole; ran in hole with core barrel.
12/14/79 51'	TD: 8783'; MW: 10.2; Vis: 49. Cut Core No. 8, 8730' to 8740'. Pulled out of hole; received 8.5 feet of core. Ran in hole; reamed from 8718' to 8740'. Drilled ahead.
12/15/79 171'	TD: 8954'; MW: 10.4; Vis: 47. Drilled to 8804'; circulated a five-foot drilling break; had 168 units of gas. Drilled to 8934'; circulated a five-foot drilling break; had 228 units of gas. Drilled to 8954'; circulated a drilling break, ending at 8900'. Drilled ahead.
12/16/79 98'	TD: 9052'; MW: 10.6; Vis: 48. Drilled to 9052'; circulated; surveyed. Pulled out of hole; tested blowout-preventer equipment.
12/17/79 65'	TD: 9117'; MW: 10.7; Vis: 47. Finished testing blowout-preventer equipment. Ran in hole; reamed from 9007' to 9052'; had six feet of fill. Drilled to 9098'; circulated a drilling break; recovered 184 units of background gas. Drilled ahead.
12/18/79 56'	TD: 9173'; MW: 10.8; Vis: 48. Drilled to 9173'; circulated; surveyed. Pulled out of hole; hole tight. Pumped out three singles. Pulled out of hole. Ran in hole; reamed 30 feet to bottom. Drilled ahead.
12/19/79 140'	TD: 9313'; MW: 10.8; Vis: 48. Drilled ahead.
12/20/79 109'	TD: 9422'; MW: 10.8; Vis: 46. Drilled to 9422'; circulated; surveyed. Pulled out of hole.
12/21/79 78'	TD: 9500'; MW: 10.9; Vis: 48. Pulled out of hole. Tested blowout-preventer equipment; test plug leaked. Ran in hole, reamed 9390' to 9422'. Drilled; circulated.
12/22/79 124'	TD: 9624; MW: 10.9; Vis: 48. Circulated a drilling break from 9495' to 9517'. Drilled ahead.
12/23/79 32'	TD: 9656'; MW: 10.9; Vis: 48. Drilled to 9628'; surveyed. Pulled out of hole; tested blowout-preventer equipment. Ran in hole to 9600'; washed and reamed to bottom; no fill. Drilled ahead.

12/24/79 72'	TD: 9728'; MW: 10.9; Vis: 50. Drilled; circulated. Drilled to 9728'; surveyed. Pulled out of hole. Ran in hole with core barrel; reamed 30 feet to bottom.
12/25/79 25'	TD: 9753'; MW: 10.7; Vis: 42. Cut Core No. 9, 9728' to 9738'. Pulled out of hole; recovered 10 feet of core. Ran in hole to 9375'; reamed to 9500'. Ran in hole to 9687'; reamed to bottom. Drilled to 9753'; lost full mud returns. Filled annulus; could not circulate. Pulled out of hole to shoe; began circulating and cutting mud weight.
12/26/79 70'	TD: 9823'; MW: 10.5; Vis: 54. Cut mud weight from 10.9 to 10.5 at shoe. Ran in hole to 8799'; reamed to 8974'; hit bridge at 8829'. Ran in hole to 9717'; reamed to bottom. Drilled ahead.
12/27/79 72'	TD: 9895'; MW: 10.5; Vis: 50. Drilled to 9836'; surveyed. Pulled out of hole. Ran in hole to 9801'; washed and reamed to 9836'. Drilled ahead.
12/28/79 68'	TD: 9963'; MW: 10.5; Vis: 48. Drilled; surveyed. Pulled out of hole. Ran in hole; reamed 50 feet to bottom. Drilled ahead.
12/29/79 63'	TD: 10,026'; MW: 10.5; Vis: 49. Drilled; surveyed; pulled out of hole. Tested blowout-preventer equipment; plug failed. Ran in hole.
12/30/79 117'	TD: 10,143'; MW: 10.5; Vis: 48. Ran in hole to 10,003'; reamed to 10,026'. Drilled ahead.
12/31/79 67'	TD: 10,210'; MW: 10.5; Vis: 48. Drilled; surveyed. Pulled out of hole; tested blowout-preventer equipment.
1/1/80 82'	TD: 10,292'; MW: 10.5; Vis: 45. Tested blowout-preventer equipment; installed mud manifold. Ran in hole; drilled ahead.
1/2/80 130'	TD: 10,422'; MW: 10.4; Vis: 48. Drilled ahead.
1/3/80 135'	TD: 10,557'; MW: 10.5; Vis: 49. Drilled ahead.
1/4/80 127'	TD: 10,684'; MW: 10.5; Vis: 47. Drilled ahead.
1/5/80 135'	TD: 10,819'; MW: 10.5; Vis: 49. Drilled ahead.

1/6/80 53'	TD: 10,872'; MW: 10.5; Vis: 46. Drilled to 10,872'; surveyed. Pulled out of hole. Changed bottom two pads on square drill collars; repaired compound. Ran in hole.
1/7/80	TD: 10,942'; MW: 10.5; Vis: 47. Ran in hole; reamed from 10,872' to 10,942'. Drilled ahead.
1/8/80 29'	TD: 10,971'; MW: 10.5; Vis: 45. Drilled to 10,971'; surveyed. Pulled out of hole; tested blowout-preventer equipment. Ran in hole.
1/9/80 75'	TD: 11,046'; MW: 10.5; Vis: 47. Ran in hole to 10,945'; broke circulation; washed to 10,971'. Drilled ahead.
1/10/80 116'	TD: 11,162'; MW: 10.5; Vis: 47. Drilled to 11,162'; circulated; surveyed. Pulled out of hole.
1/11/80 10'	TD: 11,172'; MW: 10.5; Vis: 47. Pulled out of hole; inspected bottom-hole assembly. Picked up core barrel. Ran in hole; washed and reamed from 11,142' to 11,162'. Began coring.
1/12/80 36'	TD: 11,208'; MW: 10.5; Vis: 48. Cut Core No. 10, 11,162' to 11,173'. Pulled out of hole; recovered 11 feet of core. Ran in hole; reamed from 11,074' to 11,173'. Drilled ahead.
1/13/80 117'	TD: 11,325'; MW: 10.5; Vis: 50. Drilled ahead.
1/14/80 45'	TD: 11,370'; MW: 10.5; Vis: 48. Drilled to 11,364'; surveyed. Pulled out of hole; ran in hole with new bit; reamed from 11,325' to 11,364'. Drilled ahead.
1/15/80 107'	TD: 11,477'; MW: 10.5; Vis: 48. Drilled ahead.
1/16/80 30'	TD: 11,507'; MW: 10.5; Vis: 45. Drilled; surveyed; pulled out of hole. Tested blowout-preventer equipment; ran in hole.
1/17/80 30'	TD: 11,537'; MW: 10.5; Vis: 47. Ran in hole; washed and reamed from 11,480' to 11,507'. Drilled from 11,507' to 11,537'.
1/18/80 28'	TD: 11,565'; MW: 10.5; Vis: 50. Drilled to 11,540'; pulled out of hole. Repaired rig. Ran in hole; washed and reamed from 11,490' to 11,540'. Drilled to 11,565'.

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1/19/80 65'	TD: 11,630'; MW: 10.5; Vis: 48. Drilled to 11,630', surveyed. Pulled out of hole; changed out shock sub. Ran in hole.
1/20/80 56'	TD: 11,686'; MW: 10.5; Vis: 48. Ran in hole to 11,615'; reamed to 11,630'. Drilled to 11,686'; circulated bottoms up. Pulled out of hole, steel-line measured.
1/21/80 5'	TD: 11,691'; MW: 10.5; Vis: 49. Ran in hole with core barrel. Cut Core No. 11, 11,686.5' to 11,691'. Recovered four feet of core. Laid down core barrel; ran in hole.
1/22/80 88'	TD: 11,779'; MW: 10.5; Vis: 49. Ran in hole; reamed from 11,676' to 11,688'. Pipe became stuck; pulled pipe free with 420,000 pounds. Reamed to bottom; drilled ahead.
1/23/80 132'	TD: 11,911'; MW: 10.5; Vis: 48. Drilled ahead.
1/24/80 63'	TD: 11,974'; MW: 10.5; Vis: 48. Drilled to 11,930'; pulled out of hole. Tested blowout-preventer equipment. Ran in hole; reamed from 11,888' to 11,930'. Drilled to 11,953', with high drilling torque. Had clean drilling from 11,953' to 11,974'.
1/25/80 3'	TD: 11,977'; MW: 10.5; Vis: 43. Washed and reamed due to high torque from 11,950' to 11,974'. Drill pipe became stuck at 11,965'; worked free after 2-1/4 hours. Lost wear pad from stabilizer. Ran in hole with reverse-circulating junk basket. Reamed from 11,915' to 11,975. Washed over junk to 11,977'. Pulled out of hole.
1/26/80 91'	TD: 12,068'; MW: 10.5; Vis: 50. Finished trip out with junk basket. Recovered 1.5 feet core; no junk. Ran in hole with bit to 11,900'; reamed to 11,977'. Drilled ahead.
1/27/80 24'	TD: 12,092'; MW: 10.5; Vis: 43. Drilled to 12,092'; wear pad from RWP fell into stuck pipe at 12,092'. Would not work free. Ran Freepoint. Became stuck at 12,027'. Backed off; left 64.57 feet of fish in hole. Pulled out of hole.
1/28/80 0'	TD: 12,092'; MW: 10.5; Vis: 46. Laid down jars and shock sub; picked up fishing tools. Ran in hole; screwed into fish at 12,027'. Jarred on fish for 6.5 hours; no movement. Backed off top of screw-in sub. Top of fish at 12,026'.

1/29/80
0'

TD: 12,092'; MW: 10.5; Vis: 47. Installed new kelly hose. Ran in hole with washover pipe. Washed from 12,026' to 12,031'; pulled out of hole. Ran in hole with new shoe; washed over fish.

1/30/80
0'

TD: 12,092'; MW: 10.5; Vis: 47. Continued washing over fish. Pulled out of hole; picked up diamond shoe. Ran in hole; washed over fish. Lacked about five inches being over first stabilizer.

1/31/80
0'

TD: 12,092'; MW: 10.5; Vis: 49. Washed over fish at 12,034.5'. Pulled out of hole; checked shoe. Ran in hole; washed five hours; no results. No. 1 engine compound went out; pulled out of hole to 8200' and repaired engine.

2/1/80
0'

TD: 12,092'; MW: 10.5; Vis: 51. Repaired engine.

2/2/80
0'

TD: 12,092'; MW: 10.5; Vis: 52. Installed compound engine. Pulled out of hole; ran in hole with overshot. Washed over fish at 12,026'. Pulled 100,000 pounds; overshot came free. Pulled out of hole.

2/3/80
0'

TD: 12,092'; MW: 10.5; Vis: 48. Pulled out of hole; ran in hole with washpipe. Washed over fish from 12,033' to 12,035'. Pulled out of hole; shoe split. Picked up overshot.

2/4/80
0'

TD: 12,092'; MW: 10.5; Vis: 48. Ran in hole with 8-1/2" overshot dressed with 6-5/8" grapple. Engaged fish at 12,026'; jarred on fish. Overshot pulled off. Pulled out of hole; lost grapple and packoff. Ran in hole with screw-in sub. Worked fish loose. Pulled out of hole; tight at 120'. Laid down fish.

2/5/80
0'

TD: 12,092'; MW: 10.5; Vis: 46. Ran in hole with 8-1/4" mill; milled to 11,882'. Washed to 12,092'; milled on junk. Pulled out of hole; recovered junk in boot basket. Made up Bowen reverse-circulating basket; ran in hole. Dropped ball; cut core over junk.

2/6/80
0'

TD: 12,092'; MW: 10.6; Vis: 45. Cored over junk; pulled out of hole. Ran in hole with junk basket and bottom-hole assembly. Washed and reamed from 12,000' to 12,089'. Drilled on junk from 12,089' to 12,092'. Torqued up; pulled out of hole.

2/7/80 0'	TD: 12,092'; MW: 10.5; Vis: 47. Made up flat-bottomed mill; ran in hole; tight at 11,762'. Washed and reamed from 11,762' to 12,091; milled on junk from 12,091' to 12,092.5'. Pulled out of hole; mill was worn out. Recovered 3-1/2 pounds of junk. Ran in hole.
2/8/80 65'	TD: 12,157'; MW: 10.5; Vis: 52. Ran in hole; reamed 12,074' to 12,092'. Drilled to 12,157'. Pulled out of hole.
2/9/80 30'	TD: 12,187'; MW: 10.5; Vis: 52. Tested blowout-preventer equipment. Ran in hole to 12,120'; reamed to 12,157'. Drilled ahead.
2/10/80 66'	TD: 12,253; MW: 10.5; Vis: 48. Drilled to 12,253'; surveyed. Pulled out of hole. Ran in hole.
2/11/80 116'	TD: 12,369'; MW: 10.5; Vis: 52. Ran in hole; reamed from 12,217' to 12,253'. Drilled ahead.
2/12/80 56'	TD: 12,425'; MW: 10.5; Vis: 48. Drilled to 12,420'; surveyed. Pulled out of hole; changed bits. Ran in hole; washed and reamed from 12,390' to 12,420'. Drilled ahead.
2/13/80 108'	TD: 12,533'; MW: 10.5; Vis: 47. Drilled ahead.
2/14/80 132'	TD: 12,665'; MW: 10.6; Vis: 48. Drilled ahead; had a one-foot drilling break at 12,540'.
2/15/80 114'	TD: 12,779'; MW: 10.7; Vis: 48. Drilled to 12,724'; circulated samples. Drilled to 12,762'; circulated samples. Drilled ahead.
2/16/80 112'	TD: 12,891'; MW: 10.7; Vis: 48. Drilled to 12,855'; circulated a six-foot drilling break. Drilled to 12,891'; surveyed. Pulled out of hole.
2/17/80 79'	TD: 12,970'; MW: 10.7; Vis: 53. Pulled out of hole; changed RWP stabilizer. Tested blowout-preventer equipment. Ran in hole; lost 128 barrels of mud on trip in. Reamed from 12,881' to 12,891'. Drilled ahead. Lost 122 barrels of mud during first seven hours of drilling; lost no mud during last four hours.
2/18/80 96'	TD: 13,066'; MW: 10.7; Vis: 44. Drilled ahead. Lost 20 barrels of mud during last 24 hours.

2/19/80 78'	TD: 13,144'; MW: 10.7; Vis: 50. Drilled ahead. Lost approximately 48 barrels of mud during last 24 hours.
2/20/80 89'	TD: 13,233'; MW: 10.7; Vis: 47. Drilled to 13,233'; circulated samples.
2/21/80 52'	TD: 13,285'; MW: 10.7; Vis: 47. Circulated a drilling break at 13,233'. Spotted lost-circulation material pill; surveyed; pulled out of hole. Changed jars. Ran in hole; drilled ahead.
2/22/80 101'	TD: 13,386'; MW: 10.7; Vis: 44. Drilled ahead.
2/23/80 72'	TD: 13,458'; MW: 10.7; Vis: 42. Drilled; surveyed. Pulled out of hole.
2/24/80 23'	TD: 13,481'; MW: 10.7; Vis: 41. Pulled out of hole; tested blowout-preventer equipment. Ran in hole; reamed from 13,410' to 13,458'. Drilled ahead.
2/25/80 64'	TD: 13,545'; MW: 10.7; Vis: 40. Drilled ahead.
2/26/80 55'	TD: 13,600'; MW: 10.7; Vis: 42. Drilled to 13,552'; circulated samples. Drilled to 13,600'; spotted lost-circulation material pill. Surveyed; pulled out of hole. Picked up core barrel; ran in hole.
2/27/80 9'	TD: 13,609'; MW: 10.7; Vis: 44. Cut Core No. 12, 13,600.7' to 13,609'. Spotted lost-circulation material pill. Pulled out of hole; recovered 7.7 feet of core. Ran in hole with bit.
2/28/80 41'	TD: 13,650'; MW: 10.7; Vis: 46. Ran in hole; reamed core hole to 13,609'. Drilled to 13,650'. Circulated and conditioned for logs. Spotted lost-circulation material pill. Pulled out of hole; rigged up logging unit.
2/29/80 0'	TD: 13,650'; MW: 10.7; Vis: 47. Ran DIL/GR/SP, BHCS/GR/TTI, CNL/FDC/GR/CAL, and began running Dipmeter. Logger's total depth: 13,650 feet.
3/1/80 0'	TD: 13,650'; MW: 10.7; Vis: 44. Ran Dipmeter to 13,650'. Tested blowout-preventer equipment. Tripped and conditioned for liner; pulled out of hole. Laid down excess five-inch drill pipe.

3/2/80 0'	TD: 13,650'; MW: 10.7; Vis: 45. Laid down drill pipe and bottom-hole assembly. Rigged up to run 7-5/8" liner; changed rams. Picked up liner and assembly.
3/3/80 0'	TD: 13,650'; MW: 10.7; Vis: 44. Circulated at 6039'; ran in hole to 7970'; circulated. Ran 148 joints of 7-5/8", 38.05#, S-95, AB-FL4S casing. Shoe at 13,650'; top of liner at 7700'. Circulated; pumped 30 barrels of Sam V spacer at 11.7 ppg. Cemented with 225 sacks of Class "G" cement with 10% Gel, 1% CFR-2, and 0.5% HR-7 with 1/4 pound per sack Flow Seal at 12.8 ppg; followed with 200 sacks of Class "G" cement with 1% CFR-2 and 0.2% HR-7 with 1/4 pound per sack of Flow Seal at 15.8 ppg. Had full returns. Cement in place 3/3/80 at 2:25 p.m. Bumped plug with 3,000 psi; plug held. Released tool and pulled out of hole.
3/4/80 0'	TD: 13,650'; MW: 10.6; Vis: 48. Pulled out of hole; laid down setting tool. Ran in hole with bit and scraper; tagged liner at 7700'. Circulated and recovered contaminated mud and trace of cement. Pulled out of hole. Picked up retainer; ran in hole and set at 7602'. Circulated and waited on cement. Pressured lap to 3,100 psi; bled to 2,950 psi in 15 minutes. Pulled out with stinger.
3/5/80 0'	TD: 13,650'; MW: 10.7; Vis: 56. Pulled out of hole with Howco stab-in tool. Picked up 8-1/2" bit; ran in hole. Drilled retainer at 7602'. Pulled out of hole; picked up 6-1/4" bit and bottom-hole assembly. Ran in hole; drilled on retainer.
3/6/80 0'	TD: 13,650'; MW: 10.7; Vis: 48. Ran in hole to 13,567'; drilled junk cement and landed collar. Washed to float collar at 13,602'; drilled float collar to 13,606'. Washed to shoe at 13,647'; drilled to 13,650'. Circulated; pulled out of hole. Picked up 7-5/8" casing scraper and ran in hole.
3/7/80 0'	TD: 13,650'; MW: 10.7; Vis: 48. Ran in hole with bit and casing scraper to 13,590'; circulated. Pulled out of hole. Ran in hole with 5-7/8" EZ drill retainer; set at 13,580'. Unstung test casing; pumped in two barrels at 2,800 psi. Stabbed into retainer. Tested shoe to 3,000 psi; held for one minute. Repressured; had circulation at 2,500 psi. Recycled tool with some results. Rigged up to squeeze; mixed and pumped 100 sacks cement. Stabbed into retainer. Pumped 1-1/4 barrels; locked up at 4,500 psi. Had no bleed off; reversed out cement.

3/8/80 0'	TD: 13,650'; MW: 10.7; Vis: 48. Tested liner lap. Established injection rate of 10 barrels; 2-1/2 BPM at 2,750 psi. Circulated; pulled out of hole. Picked up Howco test tools. Ran in hole; ran 3,000 foot cushion. Set tool at 7648'. Opened for one hour; weak blow to dead. Closed for two hours. Tested 9-5/8" casing to 2,500 psi. Laid down test tools; no fluid entry. Had 211 psi buildup.
3/9/80 0'	TD: 13,650'; MW: 10.7; Vis: 47. Ran in hole to 7626' and set retainer. Tested casing; stabbed in; established injection rate. Pulled out; pumped 100 sacks cement; displaced. Stabbed in; squeezed cement. Unstabbed; pulled one stand. Reversed out; pulled out of hole. Tested blowout-preventer equipment. Ran in hole with 8-1/2" bit; circulated. Waited on cement. Drilled on retainer at 7726'.
3/10/80 0'	TD: 13,650'; MW: 10.7; Vis: 48. Drilled retainer from 7726' to 7630'; drilled cement from 7630' to 7700' at top of liner. Circulated and pulled out of hole. Picked up 6-1/4" bit and 4-3/4" bottom-hole assembly. Ran in hole; drilled on cement from 7700' to 8062'.
3/11/80 0'	TD: 13,650'; MW: 10.7; Vis: 48. Drilled cement from 8062' to 8114'. Ran in hole; bridge at 13,138'. Washed and reamed to 13,170'; tagged retainer at 13,580'. Tested casing to 2,000 psi. Lost 700 psi in seven minutes. Pulled out of hole; waited on tools. Picked up RTTS and ran in hole.
3/12/80 0'	TD: 13,650'; MW: 10.7; Vis: 48. Ran in hole with 7-5/8" packer, looking for hole in casing. Tested at 13,251' and at 12,967'. Leaked off to 1,300 psi in five minutes. Tested at 13,155'. Pulled out of hole; ran in hole with bit and scraper to 13,115'. Circulated and conditioned mud; pulled out of hole.
3/13/80 0'	TD: 13,650'; MW: 10.7; Vis: 48. Pulled out of hole with bit and 7-5/8" casing scraper. Ran in hole with 7-5/8" retainer; hole tight at 13,030'. Set retainer at 13,039'; failed to hold weight; pushed to 13,569'. Pulled out of hole; ran in hole with 7-5/8" retainer; set at 13,073'. Pumped 10 barrels of water and 100 sacks of Class "G" cement with 1% CFR-2 and 0.2% HR-7 with 1/4 pound Flow Seal per sack. Slurry weight: 15.8 ppg. Pumped two barrels of water and 127 barrels of mud; squeezed 28 barrels. Pumped water and nine barrels outside pipe. Squeezed to 3,000 psi. Cement in place at 12:00 midnight. Pulled out of hole 15 feet; reversed drill pipe; pulled out of hole.

3/14/80 3'	TD: 13,653'; MW: 10.7; Vis: 47. Pulled out of hole with retainer-setting tools. Ran in hole with 6-1/4" bit; tagged cement at 13,055'. Circulated and waited on cement. Drilled cement to 13,070'; drilled retainer to 13,073'; drilled cement to 13,129'. Tagged retainer at 13,569'. Tested liner to 3,000 psi. Pushed retainer to 13,573'. Drilled retainer at 13,580'. Washed and reamed to 13,650'; drilled formation to 13,653'.
3/15/80 0'	TD: 13,653'; MW: 10.7; Vis: 46. Pulled out of hole; found that cone was lost off bit. Ran in hole with reverse-circulating junk basket; washed over junk from 13,650' to 13,653'. Pulled out of hole; recovered retainer parts. Ran in hole with flat-bottom mill.
3/16/80 4'	TD: 13,657'; MW: 10.7; Vis: 46. Ran in hole; milled on junk from 13,653' to 13,655'. Pulled out of hole; tested blowout-preventer equipment. Ran in hole with bit; reamed from 13,650' to 13,655'. Drilled to 13,657'; pulled out of hole.
3/17/80 3'	TD: 13,660'; MW: 10.7; Vis: 58. Pulled out of hole; bit locked up with junk. Ran in hole with 5-7/8" mill; milled on junk from 13,657' to 13,660'. Pulled out of hole.
3/18/80 40'	TD: 13,700'; MW: 10.7; Vis: 58. Pulled out of hole with 5-7/8" mill. Ran in hole with 6-1/4" bit. Reamed from 13,650' to 13,660'. Drilled ahead.
3/19/80 66'	TD: 13,766'; MW: 10.7; Vis: 52. Drilled ahead.
3/20/80 39'	TD: 13,805'; MW: 10.7; Vis: 48. Drilled to 13,774'; surveyed. Pulled out of hole; inspected bottom-hole assembly. Ran in hole to 13,684'; reamed to 13,774'. Drilled ahead.
3/21/80 39'	TD: 13,844'; MW: 10.7; Vis: 47. Drilled to 13,811'; surveyed. Pulled out of hole. Ran in hole; drilled ahead.
3/22/80 20'	TD: 13,864'; MW: 10.7; Vis: 47. Drilled to 13,859'; circulated samples; surveyed. Pulled out of hole; ran in hole with core barrel; reamed from 13,809' to 13,859.
3/23/80 6'	TD: 13,870'; MW: 10.7; Vis: 48. Cut Core No. 13, 13,859' to 13,870.5'. Pulled out of hole; recovered 11.5 feet of core. Tested blowout-preventer equipment. Ran in hole with bit and roller reamer; reamed core hole.

3/24/80 80'	TD: 13,950'; MW: 10.7; Vis: 47. Reamed from 13,840' to 13,870'. Drilled ahead.
3/25/80 76'	TD: 14,026'; MW: 10.8; Vis: 48. Drilled 6-1/4" hole to 14,026'.
3/26/80 16'	TD: 14,042'; MW: 10.8; Vis: 50. Pulled out of hole; tested blowout-preventer equipment. Ran in hole to 13,976'; reamed to bottom. Drilled ahead.
3/27/80 90'	TD: 14,132'; MW: 10.8; Vis: 46. Drilled ahead.
3/28/80 59'	TD: 14,191'; MW: 10.8; Vis: 47. Drilled to 14,191'; pulled out of hole. Ran in hole with bottom-hole assembly; dropped junk in hole. Pulled out of hole; picked up junk bit and basket.
3/29/80 11'	TD: 14,202'; MW: 10.8; Vis: 47. Ran in hole with junk sub and bit; drilled on junk from 14,191' to 14,199'. Drilled ahead.
3/30/80 98'	TD: 14,300'; MW: 10.8; Vis: 48. Drilled ahead.
3/31/80 76'	TD: 14,376'; MW: 10.8; Vis: 48. Drilled to 14,376'; surveyed. Pulled out of hole; ran in hole with new bit.
4/1/80 85'	TD: 14,461'; MW: 10.8; Vis: 47. Ran in hole; drilled ahead.
4/2/80 30'	TD: 14,491'; MW: 10.8; Vis: 50. Drilled to 14,485'; surveyed. Pulled out of hole; tested blowout-preventer equipment. Ran in hole; reamed from 14,445' to 14,485'. Drilled ahead.
4/3/80 41'	TD: 14,532'; MW: 10.8; Vis: 50. Drilled to 14,500'; pulled out of hole. Ran in hole; drilled ahead.
4/4/80 90'	TD: 14,622'; MW: 10.8; Vis: 48. Drilled to 14,622'.
4/5/80 78'	TD: 14,700'; MW: 10.8; Vis: 52. Drilled to 14,700'; surveyed. Pulled out of hole. Ran in hole; tight at 13,816'; reamed to bottom.
4/6/80 20'	TD: 14,720'; MW: 10.8; Vis: 58. Drilled to 14,704'; bit torqued up. Pulled out of hole; bit had flat marks on bottom. Picked up milled-tooth bit and ran in hole. Drilled from 14,704' to 14,714'. Pulled out of hole; recovered one piece of junk. Made up bit and ran in hole; drilled ahead.

4/7/80 110'	TD: 14,830'; MW: 10.8; Vis: 48. Drilled ahead.
4/8/80 70'	TD: 14,900'; MW: 10.8; Vis: 49. Drilled to 14,900'; surveyed. Pulled out of hole; ran in hole.
4/9/80 86'	TD: 14,986'; MW: 10.8; Vis: 48. Ran in hole; reamed from 14,860' to 14,900'. Drilled ahead.
4/10/80 32'	TD: 15,018'; MW: 10.8; Vis: 50. Drilled to 14,987'; surveyed. Pulled out of hole; tested blowout-preventer equipment. Ran in hole; washed and reamed from 14,950' to 14,987'. Drilled to 15,018'; pulled out of hole.
4/11/80 57'	TD: 15,075'; MW: 10.8; Vis: 45. Ran in hole; reamed from 14,980' to 15,018'. Drilled to 15,075'; surveyed. Pulled out of hole.
4/12/80 37'	TD: 15,112'; MW: 10.8; Vis: 44. Pulled out of hole; ran in hole to 15,075'. Drilled to 15,112'.
4/13/80 45'	TD: 15,157'; MW: 10.8; Vis: 45. Drilled to 15,126'; surveyed. Tripped; washed and reamed from 15,105' to 15,126'. Drilled ahead.
4/14/80 67'	TD: 15,224'; MW: 10.8; Vis: 45. Drilled to 15,224'; circulated samples.
4/15/80 38'	TD: 15,262'; MW: 10.8; Vis: 45. Circulated samples; surveyed. Tripped; reamed from 15,184' to 15,224'. Drilled ahead.
4/16/80 36'	TD: 15,298'; MW: 10.8; Vis: 47. Drilled; surveyed; drilled ahead.
4/17/80 30'	TD: 15,328'; MW: 10.8; Vis: 47. Drilled; surveyed. Pulled out of hole for core. Began running in hole with core barrel.
4/18/80 20'	TD: 15,348'; MW: 10.8; Vis: 47. Finished running in hole with core barrel. Cut Core No. 14, 15,328' to 15,342'. Pulled out of hole; laid down core. Received a 12-foot core. Ran in hole; reamed from 15,328' to 15,342'. Drilled ahead.
4/19/80 118'	TD: 15,466'; MW: 10.8; Vis: 44. Drilled ahead.
4/20/80 61'	TD: 15,527'; MW: 10.8; Vis: 44. Drilled to 15,492'; tripped for bit. Reamed 30 feet to bottom; drilled ahead.

4/21/80 69'	TD: 15,596'; MW: 10.8; Vis: 44. Drilled to 15,596'; surveyed. Pulled out of hole; ran in hole with core barrel.
4/22/80 2'	TD: 15,598'; MW: 10.8; Vis: 47. Ran in hole with core barrel; reamed from 15,550' to 15,596'. Cut Core No. 15, 15,596' to 15,598'; core barrel jammed. Pulled out of hole; no recovery. Ran in hole with bit; cut drilling line. Ran in hole six stands off bottom; lost 15,000 pounds pressure. Pulled out of hole; found that drilling jars had parted at pin. Picked up 5-3/4" Bowen overshot dressed with 4-3/4" grapple; ran in hole. Top of fish at 15,072'.
4/23/80 5'	TD: 15,603'; MW: 10.8; Vis: 46. Circulated. Engaged fish at 15,072'; pulled out of hole. Ran in hole with bit to 15,580'; reamed to 15,598'. Drilled ahead.
4/24/80 39'	TD: 15,642'; MW: 10.8; Vis: 47. Drilled; surveyed; drilled ahead.
4/25/80 17'	TD: 15,659'; MW: 10.8; Vis: 47. Drilled to 15,655'; surveyed. Pulled out of hole. Ran in hole with core barrel to 15,640'; reamed to bottom. Began coring.
4/26/80 17'	TD: 15,676'; MW: 10.8; Vis: 46. Cut Core No. 16, 15,655' to 15,663'. Pulled out of hole; recovered a three-foot core. Ran in hole to 15,610'; reamed to 15,663'. Drilled ahead.
4/27/80 71'	TD: 15,747'; MW: 10.8; Vis: 44. Drilled to 15,717'. Circulated a five-foot drilling break; had 18 units of gas. Drilled ahead.
4/28/80 62'	TD: 15,809'; MW: 10.8; Vis: 44. Drilled; surveyed. Pulled out of hole. Ran in hole to 15,737'; reamed to 15,777'. Drilled ahead.
4/29/80 93'	TD: 15,902'; MW: 10.8; Vis: 43. Drilled; surveyed. Pulled out of hole.
4/30/80 9'	TD: 15,911'; MW: 10.8; Vis: 43. Pulled out of hole; ran in hole with core barrel. Cut Core No. 17, 15,902' to 15,911'. Core barrel jammed. Pulled out of hole; received 4.8 feet of core.
5/1/80 93'	TD: 16,004'; MW: 10.8; Vis: 43. Ran in hole to 15,892'; reamed core hole to 15,911'. Drilled to 16,004'; lost 40 barrels of mud.

5/2/80 63'	TD: 16,067'; MW: 10.6; Vis: 46. Lost mud at rate of 10 to 15 barrels per hour. Lost 50 barrels at 16,007'. Cut mud weight to 10.6 ppg and mixed fine mica. Total mud loss: 125 barrels. Drilled to 16,067'; spotted a mica pill. Surveyed; pulled out of hole. Tested blowout-preventer equipment.
5/3/80 64'	TD: 16,131'; MW: 10.5; Vis: 48. Tested blowout-preventer equipment; ran wear bushing. Ran in hole; circulated at 7700' and at 13,600'. Lost 70 barrels of mud on trip in. Drilled ahead; had small loss of mud while drilling.
5/4/80 98'	TD: 16,229'; MW: 10.4; Vis: 46. Drilled to 16,229'; cut mud weight to 10.4 ppg. Mud loss stabilized. Surveyed; pulled out of hole.
5/5/80 61'	TD: 16,290'; MW: 10.4; Vis: 45. Pulled out of hole; changed bit. Ran in hole; circulated at 13,650'. Drilled ahead.
5/6/80 12'	TD: 16,302'; MW: 10.4; Vis: 48. Drilled to 16,319'; circulated samples. Pulled out of hole; ran in hole with core barrel. Circulated.
5/7/80 26'	TD: 16,328'; MW: 10.4; Vis: 50. Cut Core No. 18, 16,302' to 16,328'. Repaired rig; pulled out of hole. Recovered 22.5 feet of core.
5/8/80 127'	TD: 16,455'; MW: 10.4; Vis: 43. Drilled ahead.
5/9/80 42'	TD: 16,497; MW: 10.4; Vis: 47. Drilled to 16,497'; surveyed. Pulled out of hole; tested blowout-preventer equipment to 5,000 psi. Ran in hole.
5/10/80 95'	TD: 16,592'; MW: 10.3; Vis: 43. Finished running in hole; reamed from 16,467' to 16,497'. Drilled ahead.
5/11/80 77'	TD: 16,669'; MW: 10.3; Vis: 44. Drilled to 16,669'; pulled out of hole. Dressed bottom-hole assembly; picked up bit.
5/12/80 82'	TD: 16,751'; MW: 10.2; Vis: 43. Ran in hole; drilled ahead.
5/13/80 57'	TD: 16,808'; MW: 10.2; Vis: 44. Drilled to 16,808'; surveyed. Pulled out of hole; ran in hole.

5/14/80 51'	TD: 16,859'; MW: 10.1; Vis: 43. Finished running in hole. Reamed from 16,668' to 16,808'; drilled to 16,859'. Surveyed; pulled out of hole. Changed bit; ran in hole.
5/15/80 15'	TD: 16,874'; MW: 10.2; Vis: 43. Ran in hole; washed and reamed from 16,829' to 16,859'; circulated for core. Pulled out of hole; picked up core barrel. Ran in hole and cut Core No. 19, 16,859' to 16,875.5'.
5/16/80 21'	TD: 16,895'; MW: 10.2; Vis: 43. Pulled out of hole; recovered 12 feet of core. Tested blowout-preventer equipment. Ran in hole; reamed from 16,821' to 16,825'. Drilled ahead.
5/17/80 45'	TD: 16,940'; MW: 10.1; Vis: 43. Drilled; surveyed. Pulled out of hole; ran in hole.
5/18/80 29'	TD: 16,969'; MW: 10.2; Vis: 44. Ran in hole; washed and reamed from 16,910' to 16,940'. Drilled to 16,969'. Circulated and conditioned for logs. Pulled out of hole, steel-line measuring.
5/19/80 16'	TD: 16,998' (corrected depth); MW: 10.2; Vis: 44. Finished pulling out of hole; corrected total-depth measurement from 16,969' to 16,982'. Rigged up to log but received orders not to log. Rigged down logging unit. Picked up core barrel and ran in hole. Reamed from 16,951' to 16,982'. Began coring.
5/20/80 2'	TD: 17,000'; MW: 10.2; Vis: 43. Cut Core No. 20, 16,982' to 17,000'. Circulated and conditioned mud to log. Pulled out of hole; recovered a 14.5-foot core. Ran Temperature Survey to 15,900'. Pulled out of hole; ran in hole.
5/21/80 0'	TD: 17,000'; MW: 10.2; Vis: 44. Finished running in hole; had three feet of fill. Circulated and conditioned. Pulled out of hole; serviced rig. Rigged up Schlumberger unit. Ran Temperature Survey to 16,955'; ran DLL/GR to 16,965'.
5/22/80 0'	TD: 17,000'; MW: 10.2; Vis: 43. Ran BHCS/GR and CNL/FDC/GR/CAL. Logging tool failed on bottom. Pulled out of hole for repairs. Cut off 3,560 feet of line. Picked up at 16,977' to rerun log.
5/23/80 0'	TD: 17,000'; MW: 10.1; Vis: 43. Reran CNL/FDC/GR/CAL; ran HDT-Dipmeter, CBL, and Velocity Survey. Began running Temperature Survey.

5/24/80 TD: 17,000'; PBTD: 13,400'; MW: 10.2; Vis: 38. Finished running Temperature Survey; maximum temperature: 246°F. Ran in hole open ended to 16,400'. Circulated and conditioned mud. Set Plug No. 1: 125 sacks Class "G" with 1% CFR-2 and 0.8% HR-12. Slurry weight: 15.8 ppg. Pumped 20.3 barrels water ahead and three barrels of water behind. Displaced with mud. Top of plug at 16,100'. Cement in place 5/23/80 at 7:22 p.m. Pulled out of hole to 15,500'; circulated and conditioned mud. Recovered 10 barrels of water. Set Plug No. 2: 125 sacks Class "G" with 1% CFR-2 and 0.8% HR-12. Slurry weight: 15.8 ppg. Ran 19.5 barrels water ahead and three barrels water behind. Top of plug at 15,200'. Cement in place 5/23/80 at 10:57 p.m. Pulled out of hole to 13,900'; circulated and conditioned mud. Set Plug No. 3: 150 sacks Class "G" with 1% CFR-2 and 0.6% HR-12. Slurry weight: 15.8 ppg. Pumped 18.7 barrels water ahead and four barrels water behind. Cement in place 5/24/80 at 2:45 a.m. Top of plug at 13,400'. Pulled out of hole to 12,000'. Circulated and conditioned mud. Pulled out of hole for scraper.

5/25/80 TD: 17,000'; PBTD: 13,400'; MW: 10.2; Vis: 38. Ran 7-5/8" casing scraper and 6-1/4" bit to 11,580'. Circulated and conditioned mud. Pulled out of hole. Rigged up lubricator and tested to 500 psi. Perforated from 11,826' to 11,841', from 11,728' to 11,742', and from 11,618' to 11,638' with four shots per foot. Tested surface testing equipment to 1,000 psi; tested flow to 5,000 psi. Picked up drill-stem test tools.

5/26/80 TD: 17,000'; PBTD: 13,400'; MW: 10.2; Vis: 38. Ran in hole for Drill-Stem Test No. 1. Ran 3,000-foot water cushion. Set packer at 11,584'. Tested surface connections to 5,000 psi. Set tail pipe at 11,684'. Opened test tools at 5:23 p.m.; light blow. Shut in at 6:23 p.m.; opened at 8:27 p.m. with light blow over open period. Final shut-in at 10:25 p.m. Dropped bar; reversed out drill pipe. Had 14 barrels of fluid entry; 2,100 feet in 3-1/2" drill pipe. Pulled drill-stem test tools at 3:38 p.m. Circulated; pulled out of hole. Samples contained no gas nor oil. Drill-stem test chart analysis indicated tool was opening only momentarily during all flow periods.

5/27/80 TD: 17,000'; PBTD: 11,527'; MW: 10.2; Vis: 40. Laid down drill-stem test tools. Ran 7-5/8" retainer and set at 11,575'. Tested drill pipe to 3,000 psi and casing to 3,000 psi. Broke down formation with 1,500

psi. Pumped 20 barrels of water. Mixed 125 sacks Class "G" with 1% CFR-2 and 0.6% HR-12. Displaced with three barrels of water and mud. Displaced to 1,000 feet from retainer. Stabbed in and squeezed 23.6 barrels cement below retainer. Pulled out and dropped two barrels cement on top retainer. Slurry weight: 15.8 ppg. Cement in place 5/26/80 at 5:52 p.m. Maximum pressure: 2,950 psi. Stabilized within five minutes at 1,500 psi. Pulled out of hole to 8800'. Circulated and conditioned mud. Top of plug at 11,528'. Laid down 3-1/2" drill pipe and 4-3/4" drill collars. Pulled out of hole; picked up 9-5/8" scraper.

5/28/80

TD: 17,000'; PBTD: 7680'; MW: 10.3; Vis: 41. Ran in hole to 7690'; circulated and conditioned mud. Pulled out of hole. Rigged up Schlumberger unit and ran gauge ring junk basket to 7690'. Ran 9-5/8" retainer on wireline and set at 7680'. Picked up lubricator and tested to 500 psi. Ran 17-foot Hyper Jet casing gun. Top ten feet failed to fire. Perforated from 7655' to 7662'. Reran gun and perforated from 7645' to 7655'. Rigged down Schlumberger unit; picked up Johnston test tool for Drill-Stem Test No. 2. Ran in hole on 5" drill pipe; set packer at 7610' and tail at 7640'. Opened tool at 1:19 a.m.; no bubbles. Checked tool at 2:19 a.m. Reopened tool at 2:36 a.m.; closed tool at 3:30 a.m. Pulled loose at 5:57 a.m. Pulled out of hole.

5/29/80

TD: 17,000'; PBTD: 7680'; MW: 10.2; Vis: 36. Charts indicated drill-stem test tool was plugged. Hydrostatic: 4,068 psi. Final buildup: 3,119 psi. Cleaned and checked tools; found no indication that they were plugged. Changed out MFE, balance sub, and base. Rerun as Drill-Stem Test No. 3; no cushion. Set packer at 7610'; set tail pipe at 7640'. Opened tool with moderate blow through 1/4" choke, increasing to strong blow in 46 minutes. Shut in well for two hours. Opened with moderate blow, increasing to moderately strong blow in 5 hours with FWHP of 15 psi. No fluid to surface. Shut in well for 720 minutes.

5/30/80

TD: 17,000'; PBTD: 7230'; MW: 10.1; Vis: 39. Reversed out 71 barrels of water and mud. Pulled test tools at 5:11 p.m. after a 12-hour shut-in. Pulled out of hole. Laid down test tools. IH: 4,071 psi; IFP 529 psi,; FF: 1,740 psi; FSI: 3,081 psi; FH: 4,058 psi. Sample chamber: 1,100 psi; 2.14 cu. ft. of gas; 1,960 cc fluid with 3,100 ppm Cl_2.

Bottom-hole temperature: 124°F. Ran in hole with 9-5/8" retainer and set at 7605'. Tested casing and

drill pipe to 3,000 psi. Broke down formation at 3,700 psi. Pumped 20 barrels of water and 160 sacks Class "G" with 1% CFR-2 and 0.1% HR-7; followed with three barrels of water. Displaced to 1,000 feet from retainer. Stung in and squeezed six barrels at 5,000 psi. Dropped 24 barrels of cement on top retainer. Cement in place May 30, 1980, at 3:30 a.m. Slurry weight: 15.8 ppg. Pulled out of hole; reversed out seven barrels of water; no cement. Pulled out of hole.

5/31/80

TD: 17,000'; PBTD: 7230'; MW: 10.2; Vis: 40. Ran in hole with 8-1/2" bit and 9-5/8" scraper to 7200'; circulated and conditioned mud. Pulled out of hole. Perforated for Drill-Stem Test No. 4, 7022' to 7104', with 4" HyperJet casing gun at four shots per foot. Picked up drill-stem test tools; ran in hole with no cushion. Set packer at 6983' and tail at 7014'. Initial flow at 11:26 p.m. with strong blow. Opened to separator at 11:30 p.m. on 1/8" choke with 75 psi. Changed to 1/4" choke at 11:40 p.m. with 190 psi. Gas to surface at 11:54 p.m. Maximum pressure: 220 psi; declined to 65 psi. Initial shut-in at 1:26 a.m.; opened for final flow at 5:30 a.m. on 1/4" choke, with 60 psi FWHP increasing to 136 psi and 213 MCFPD in 25 minutes. Pressure slowly declined to 10 psi at end of period. FFP: 272 to 173 psi. Shut well in for 960 minutes. FSIP: 2,295 psi; FHP: 3,756 psi. Recovered 16.6 barrels slightly gas-cut rat-hole mud filtrate. Sample chamber recovery: 0.81 cu. ft. gas.

6/1/80

TD: 17,000'; PBTD: 7230'; MW: 10.2; Vis: 40. Final shut-in at 1:30 p.m. Reversed out 16.6 barrels drilling mud; had 935 feet of fill in 5" drill pipe. Pulled test tools at 5:30 a.m. after 16-hour shut-in. Pulled out of hole.

6/2/80

TD: 17,000'; PBTD: 1840'. Set 9-5/8" retainer at 7000'. Tested casing and drill pipe to 3,000 psi; broke down at 1,800 psi; 2,200 psi at 3.5 BPM. Pumped 150 sacks Class "G" with 1% CFR-2 and 0.1% HR-7. Pumped 20 barrels of water ahead and three barrels of water behind. Squeezed 20 barrels of cement with maximum pressure of 4,550 psi. Spotted 10 barrels cement above retainer. Top of cement at 6850'. Cement in place 6/1/80 at 3:16 p.m. Pulled out of hole, laying down drill pipe. Ran in hole and set 9-5/8" retainer at 1970'. Changed hole to water. Spotted 50 sacks of Permafrost cement on top of retainer. Cement in place 6/1/80 at 6:00 p.m. Changed to diesel.

6/3/80	TD: 17,000'; PBTD: 1840'. Cleaned rig floor; nippled down 10,000 psi blowout-preventer stack and choke. Cleaned mud tanks; disassembled Dowell cement house. Released rig June 2, 1980, at 12:00 midnight. Removed wind walls. Installed abandonment head and prepared to lay down derrick.

DRILLING TIME ANALYSIS

LISBURNE TEST WELL NO. 1

NABORS ALASKA DRILLING, INC., RIG 17

Spud 6/11/79; Rig released 6/2/80

Total Depth: 17,000 Feet

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 1 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
1979 5-18	24																							Began Rigging Up	Rigging Up
5-19	24																								Rigging Up
5-20	24																								Rigging Up
5-21	24																								Rigging Up
5-22	24																								Rigging Up
5-23	24																								Rigging Up
5-24	24																								Rigging Up
5-25	24																								Rigging Up
5-26	24																								Rigging Up
5-27	24																								Rigging Up
5-28	24																								Rigging Up
5-29	24																								Rigging Up
5-30	24																								Rigging Up
5-31	24																								Rigging Up
6-1	24																								Rigging Up

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 2 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W.O.C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
6-2	24																								Rigging Up
6-3	24																								Rigging Up
6-4	24																								Rigging Up
6-5	24																								Rigging Up
6-6	24																								Rigging Up
6-7	24																								Rigging Up
6-8	24																								Rigging Up
6-9	24																								Rigging Up
6-10	24																							Set 30" Conductor 129'	Rigging Up
6-11	3	11½		4½	1		1	1														2	Drilling Cement	Spudded Well at 8:00 a.m.
6-12	10		8½	4½	1																		Drilling	
6-13		12	6	5	¾	¼																	Reaming	
6-14		6	13¾	3½	½	¼																	Drilling	
6-15		16½	4	3	½																		Tripping	
6-16		18	1½	4½																			Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC.

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT
6-17		16½		6	1½															
6-18		20		2½	½	¼														
6-19		18½		4½	1															
6-20		2½	14½	6½	¾															
6-21			18½	4			1½													
6-22			12	8			¾	2½												
6-23			7	13½				1½												
6-24		21			2½		½													
6-25		13	1½	8	1½															
6-26		4½	11½	6½	1		½													
6-27			11	5½	½		1	4	2											
6-28				12				4¼	2	5										
6-29				5				3		10		6								
6-30											14	10								
7-1												24								

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BURNE TEST WELL NO. 1 Page 3 of 23

W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
		Drilling	
		Drilling	
		Drilling	
		Tripping	
		Reaming	
		Tripping	
	2	Tripping	
		Drilling	
		Surveying	
		Tripping	
		Reaming	
		Circulating	
		Ran 20" Casing to 1504', Rigging Down Casing Tools	
		Waiting on Cement	
		Nipple Up BOP	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 4 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
7-2		1¾		1½			2½					8	7										3¼	Nipple Up BOP	
7-3		7½	1¼	11¾	¼	¼		¾										2½						Reaming	Core No. 1: 1554.1' - 1598'
7-4		17	¼	3	2½			¾										½						Drilling	
7-5		20½		1	2½																			Drilling	
7-6		5	¾	8½			1	4¼										4½						Drilling	Core No. 2: 2075' - 2090.5'
7-7		8½	4½	8½			1											1½						Reaming	
7-8		23			1																			Drilling	
7-9		7½	12	4	¾																			Drilling	
7-10		15½	½	3½	1		½						3											Drilling	
7-11		21		2	1																			Drilling	
7-12		3	3½	9½			1											5					2	Tripping	Core No. 3: 2990' - 3000'
7-13		17¾	1¼	3½	1½																			Drilling	
7-14		22			1	½																	½	Drilling	
7-15		16½	2	2½			1																2	Drilling	
7-16		18	4½	1½																				Reaming	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
7-17		16¼	¼	6	1½																			Drilling	
7-18		15½	4¼	¼	¼								2				1						¾	Drilling	
7-19		7	2¾	6¾		¼											7¼							Coring	Core No. 4: 3900' - 3910'
7-20		21	¾		1½	¼																	½	Drilling	
7-21		14¼	1	7	1½	¼																		Drilling	
7-22		12¾	2	6½	1½	¼																	1	Tripping	
7-23		13¾	1	2¼	6½	½																		Drilling	
7-24			1	7				4½	11½															Tripping	Running Schlumberger Wireline Logs
7-25				5				3	8½	7½														Logging	Set 13 3/8" Casing at 4509'
7-26				9½						4													10½	Tripping	
7-27				16				5½		2½														Tripping	
7-28				2								16											6	Cutting Casing	
7-29							3½					13	7½											Nipple Up BOP	
7-30				1				2					4										17	Working on BOP	
7-31				9½				3½		½	6½	4												Waiting on Cement	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 6 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
8-1		7		12½			2																2½	Drilling	
8-2		20½	1	1	½		½	½																Drilling	
8-3		21½			1½			1																Drilling	
8-4		6½	½	9	½			1½									6							Drilling	Core No. 5: 5340' - 5356'
8-5		17	1½	4½	½			½																Reaming	
8-6		17		4	1			½					1										½	Drilling	
8-7		17		3½	½			½					2½											Tripping	
8-8		15		2½	½		5	1																Drilling	
8-9		10½	1	8	1		2½	1																Drilling	
8-10		6	3	9½			1										4½							Coring	Core No. 6: 6215' - 6225'
8-11		5	4	13½	½		½	½																Tripping	
8-12		21½		½				2																Drilling	
8-13		23			1																			Drilling	
8-14		17½	4½	2																				Drilling	
8-15		14		1				9																Drilling	

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
8-16								24																Circulating	
8-17								24																Circulating	
8-18								24																Circulating	
8-19								24																Circulating	
8-20								24																Circulating	
8-21		2½	1½					20																Circulating	
8-22		1	11					5	7															Circulating	Running Schlumberger Wireline Logs
8-23			14½					5		1½													3	Tripping	
8-24	DRILLING OPERATIONS SUSPENDED THROUGH 10-23-79																								Well Suspended Due To Labor Lockout
10-24													3										21		Crews Arrived Well Site at 10:00 a.m.
10-25			9					2					5½										7½	Steaming Out Flare Line	
10-26		8¾	4½	6																			4¾	Drilling Cement	
10-27		22½																					1½	Reaming	
10-28		12	4																				8	Reaming	
10-29		5	6																				13	Working on Master Clutch	

DRILLING TIME ANALYSIS (HOURS)

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 8 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
10-30			23																				1	Reaming	
10-31			11	10				1					2											Tripping	
11-1			20½																				3½	Reaming	
11-2			24																					Reaming	
11-3			10¼	9¾			½	3½																Reaming	
11-4			18¼																				5¾	Picking Up BHA	
11-5		13¾	5½	4½		¼																		Reaming	
11-6		21½			1½	½		½																Drilling	
11-7		23¾	¼																					Drilling	
11-8				8½	½		4	2					5½										3½	Tripping	
11-9		6¼	1	4½		¼						2	1½										8½	Working on Hydril	
11-10		17¾		5½		¼		½																Drilling	
11-11		19¾	4			¼																		Drilling	
11-12		23½				½																		Drilling	
11-13		5		17				2																Circulating	

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 9 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
11-14		12		10½		¼		1																Reaming	
11-15		7½		8¼	7/8			¼																Reaming	
11-16		23½					½																	Drilling	
11-17		21½		2		½																		Drilling	
11-18		2		10	½		1½	2					8											Tripping	
11-19		15½	3	3			1½																1	Reaming	
11-20		20½		½	½			2½																Drilling	
11-21		13½	2½	7½				½																Tripping	
11-22		21		2½				½																Drilling	
11-23				8½		1		2½	12															Tripping	Running Schlumberger Wireline Logs
11-24			1	5¼				4¼	13½															Logging	Shot 45 SWCs, Recovered 30
11-25				7½						12½													4	Tripping	Set 9 5/8" Casing at 8002'
11-26				2½				5½		15													1	Circulating	
11-27				4½			2¼	2		2													13	Tripping	
11-28												24												Nippling Up 11" BOP	

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 10 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
11-29												24												Nippling Up at 11" BOP	
11-30		1½		5				½					14½										2½	Testing BOP	
12-1		5	2½	11½				1½	2½														1	Tripping	
12-2			1	7⅞				3	10														2¼	Cutting Drilling Line	
12-3		7		10½			½	3⅞	⅛														1⅞	Drilling Cement	Ran CBL
12-4				9½				1½									11⅜						1½	Coring	Core No. 7: 8038' - 8068'
12-5		17¼	1½	4⅞	½																			Drilling	
12-6		18	½	3		⅛	1⅞																	Drilling	
12-7		8½	½	9¼		¼	½	½					5½											Tripping	
12-8		24																						Drilling	
12-9		15	½	8	½																			Drilling	
12-10		13½	2	8½																				Drilling	
12-11		24																						Drilling	
12-12		16		6½				1														½		Drilling	
12-13		4½	2	9		½											6					2		Coring	Core No. 8: 8730' - 8740'

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO 1 Page 11 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
12-14		21½						2½																Drilling	
12-15		20		2¼	½			1⅝																Drilling	
12-16		2½		7½				2					12											Testing Hydril	
12-17		16¼		4	½			3¼																Drilling	
12-18		18		1	5																			Reaming	
12-19		24																						Drilling	
12-20		9¼	2	7¾	½			1½					2½											Tripping	
12-21		22						2																Circulating	
12-22		10½	¾	7½	½								4									¾		Drilling	
12-23		16½		3½	½			3½																Drilling	
12-24			2	10½				2									9¾							Washing	Core No. 9: 9728' - 9738'
12-25		10½	2½	3½				8																Circulating	
12-26		13½	1	9	½																			Drilling	
12-27		14½	½	7½	½																		1½	Drilling	
12-28		19		4½	½																			Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 12 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
12-29		16	1½	3									2½										1	Tripping	
12-30		21½		2	½																			Drilling	
12-31		10¾		6¾			2						4½											Testing BOP	
1980 1-1		24																						Drilling	
1-2		24																						Drilling	
1-3		24																						Drilling	
1-4		24																						Drilling	
1-5		15½		5	½																		3	Drilling	
1-6		16½	1	5½			1																	Tripping	
1-7		19		4½	½																			Drilling	
1-8		14¼	1¼	5									3½											Tripping	
1-9		24																						Drilling	
1-10		2	1½	12	½			1									5½						1½	Tripping	
1-11			2½	8½													8						5	Coring	Core No. 10: 11,162' - 11,173'
1-12		24																						Drilling	

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 13 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
1-13		18		5½	½																			Drilling	
1-14		20	1	3																				Drilling	
1-15		15		5	½								3½											Drilling	
1-16		12	1½	3½									5										2	Making Up Bit	
1-17		10½	1½	9½				½															2	Drilling	
1-18		19		4½	½																			Drilling	
1-19		13	½	7½				3																Tripping	
1-20			1	13													10							Picking Up Core Barrel	Core No. 11: 11,686.5' - 11,69
1-21		12	1¼	8¾													1						¼	Laying Down Drill Pipe	
1-22		24																						Drilling	
1-23		9½	1½	9									3										1	Drilling	
1-24		5¼	1½	9																			7¾	Washing & Reaming	
1-25		8	1½	12																			2½	Tripping	
1-26		9¼							8														6¾	Drilling	
1-27				11½												5							7½	Tripping	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 14 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
1-28		6¾		7½		½										2¾							6¾	Installing Gooseneck	
1-29				12				¾															11½	Working Over Fish	
1-30				6½																			17½	Working Over Fish	
1-31				1½			3½	½															18½	Waiting on Shaft	
2-1				6½																			17½	Waiting on Shaft	
2-2				12½				1								7							3½	Tripping	
2-3				15½		½	½	½								2¾							4½	Laying Down Wash Pipe	
2-4			1½	12		1		½								3½							5½	Tripping	
2-5			4½	11				½								3							5	Fishing For Junk	
2-6			5¼	9½				1															7¾	Pulling Out of Hole	
2-7		11¾	2	8				½															1¾	Running In Hole	
2-8			4	½	11¾			½					4										3¾	Pulling Out Of Hole	
2-9		19½	½	2¼	¼																		1	Drilling	
2-10		16	½	6½				½															½	Tripping	
2-11		18		5½	¾																			Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 15 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
2-12		20	½	3½																				Drilling	
2-13		24																						Drilling	
2-14		22						2																Drilling	
2-15		20¾						3¼																Drilling	
2-16		7½	½	10½	1								3½										1	Tripping	
2-17		23						1																Drilling	
2-18		24																						Drilling	
2-19		24																						Drilling	
2-20		8¼		11	½			3¼																Circulating	
2-21		24																						Drilling	
2-22		24																						Drilling	
2-23		6¼	½	9½	½			½					6¾											Tripping	
2-24		21¾						2¼																Drilling	
2-25		19¾		1	½	½		2¼																Drilling	
2-26			1	12½			½	½									8½						1	Tripping	Core No. 12: 13,600.7' - 13,609

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 16 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
2-27		15	1	4½				2									1½							Tripping	
2-28				4				1	17½														1½	Preparing To Log	Running Schlumberger Wireline Logs
2-29				4				8	8¾				3¼											Logging	Ran Dipmeter
3-1				5				2		6½													10½	Laying Down Drill Pipe	
3-2				4				8½		8													3½	Changing Rams	Set 7 5/8" Casing at 13,650'
3-3				14		½		4½		2½													2½	Tripping	
3-4		3		14½				½		½	1½												4	Tripping	
3-5		6		9				6															3	Circulating	
3-6				21¼				2¼																Tripping	
3-7				13				2¾		2										3½			3	Squeezing Cement	
3-8				8¼				2					3					5½		4¾				Laying Down DST Tools	
3-9		11		5½	5	½		1			1													Drilling Cement	
3-10		7	½	6¼				5½															4¼	Drilling Cement	
3-11				11½				2															10½	Tripping	
3-12				17½				3½															3	Tripping	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
3-13		[illegible]	1	11				3												2			6¼	Tripping	
3-14				13½												1							9½	Tripping	
3-15		2½	1	13¼			¼	1					3										2½	Tripping	
3-16		5½		8¼			4	½															5¾	Conditioning Mud	
3-17		14	1¾	7¾				½																Tripping	
3-18		24																						Drilling	
3-19		9	2	12	1																			Drilling	
3-20		12½	½	10	½		½																	Drilling	
3-21		10½		7½	½		2½	2															1¼	Drilling	
3-22			2	5½			2½						½				9½						4	Coring	Core No. 13: 13,859' - 13,870.
3-23		16½	2	3½			1																1	Washing & Reaming	
3-24		24																						Drilling	
3-25		6½		9½	½								7½											Drilling	
3-26		23	1																					Drilling	
3-27		21¼		2¼	½																			Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 18 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
3-28		2		17																			5	Tripping	
3-29		18¾	1¼	4																				Drilling	
3-30		24																						Drilling	
3-31		14	¾	7½	½			¼															1	Tripping	
4-1		14		6½	¾								2¾											Drilling	
4-2		13	¾	10¼																				Drilling	
4-3		24																						Drilling	
4-4		20½		3	½																			Drilling	
4-5		6	½	15½		1		¾																Drilling	
4-6		19½	½	3½		½																		Drilling	
4-7		22		1					1															Drilling	
4-8		15¼	¾	7																			1	Cutting Drilling Line	
4-9		9¾	1½	8	1¼								3½											Drilling	
4-10		15		8½				½																Pumping Pill	
4-11		13¼		9½	½																		1	Tripping	

DRILLING TIME ANALYSIS (HOURS)

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
4-12		16		6½	½																			Drilling	
4-13		12½		8½	½																			Drilling	
4-14				7½				2¼																Circulating	
4-15								1																Drilling	
4-16								2																Drilling	
4-17								1½					3				9¼						2½	Tripping	Core No. 14: 15,328' - 15,342'
4-18		19½	¼	3½																			½	Drilling	
4-19		15½	1	7½	½																			Drilling	
4-20		22½		½																				Drilling	
4-21		1		17½																				Drilling	
4-22				22				1¼									2							Tripping	Core No. 15: 15,596' - 15,598'
4-23	9	5½		8½	½	½																	1½	Tripping	
4-24				16½																				Drilling	
4-25				16½				2½					4										1	Drilling	
4-26				16½				2									5						½	Coring	Core No. 16: 15,655' - 15,663'
4-26		18	1½	1½				2¼																Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 20 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
4-27		14		8																				Drilling	
4-28		24																						Drilling	
4-29		2	1	9¼	½			3									5						2¾	Tripping	Core No. 17: 15,902' - 15,911'
4-30		13½	1½	8																			1	Tripping	
5-1		20		2	½			1½																Drilling	
5-2		8¼		9¼									6											Testing BOPs	
5-3		24																						Drilling	
5-4		12½		10	½			1																Drilling	
5-5		11		6¼	¼			4															2	Circulating	
5-6				10¼			1¼	2									8¾						1¾	Circulating	Core No. 18: 16,302' - 16,328'
5-7		18	1	4½				½																Reaming	
5-8		16½			¼			5½				1¼												Drilling	
5-9		15¼	¼	5				½					2½											Tripping	
5-10		24																						Drilling	
5-11		11		10½	½		1																1	Tripping	

DRILLING TIME ANALYSIS (HOUR

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
																								Drilling	
								½																Circulating	
								½														1½		Tripping	
													2½				8½							Coring	Core No. 19: 16,859' - 16,875'
																								Drilling	
5-12		20½		2				2																Tripping	
5-13		16¼	1	5¾		½		¼									4					2½		Tripping	
5-14			1	16	½	½		4½									7					7		Coring	Core No. 20: 16,982' - 17,000'
5-15			2½	10½				½	11½															Logging	Running Schlumberger Wireline Logs
5-16		24							24															Logging	
5-17		T3	½	7½	½		½		24															Logging	
5-18			1	11¼				1½	10¼													2½		Logging	
5-19				7		½		2½	2½										¾			3½		Tripping	
5-20				9½		½		2										10				8½		Testing Varalco Lines	
5-21								3½											4	1½		3½		Tripping	Running DST No. 1
5-22																									
5-23				6¼																					
5-24				11¼																					
5-25				5½																					

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 22 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
5-27				13½				1½	7½								1½							Tripping	
5-28				6½													7						10½	Perforating	Ran DST No. 2
5-29				3½				¾															19¾	Perforating	Ran DST No. 3
5-30				10				2¾	6¼								2½						2½	Tripping	
6-31																		24						Drill Stem Testing	Ran DST No. 4
6-1				10¼				1										9		3½				Drill Stem Testing	
6-2												17											7	Removing Rotary Tables	Released Rig at 12:00 Midnight
6-3	24																							Rigging Down	
6-4	24																							Rigging Down	
6-6	24																							Rigging Down	
6-5	24																							Rigging Down	
6-7	24																							Rigging Down	
6-8	24																							Rigging Down	
6-9	24																							Rigging Down	

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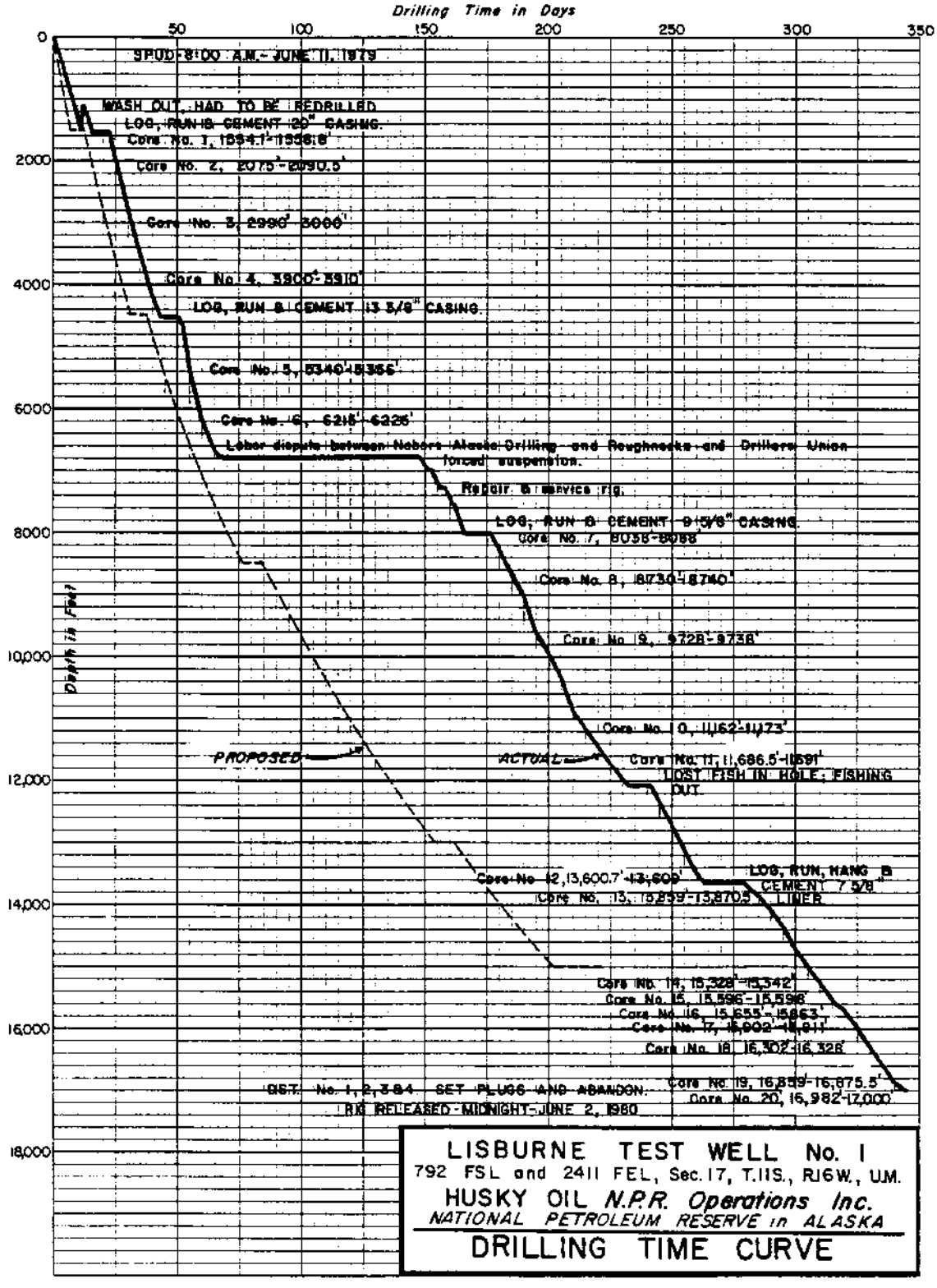
DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. LISBURNE TEST WELL NO. 1 Page 23 of 23

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
	757		445		110¼		65½		191		23		168¾		-0-		153½		4¾		-0-		482¼		
TOTAL HOURS	2994¾		1698		17¾		431¾		80		149¾		-0-		25		59½		15		-0-				

06

9/6


Drilling Time in Days
0
50
100
150
200
250
300
350
2000
4000
6000
8000
10,000
12,000
14,000
16,000
18,000
Depth in Feet
SPUD 8:00 A.M. JUNE 11, 1979
WASH OUT, HAD TO BE REDRILLED
LOG, RUN 18 CEMENT 20" CASING.
Core No. 1, 1934.1'-1936.8'
Core No. 2, 2075'-2090.5'
Core No. 3, 2996'-3006'
Core No. 4, 3900'-3910'
LOG, RUN & CEMENT 13 3/8" CASING.
Core No. 5, 5340'-5356'
Core No. 6, 6215'-6226'
Labor dispute between Nabors Alaska Drilling and Roughnecks and Drillers Union forced suspension.
Repair & service rig.
LOG, RUN & CEMENT 9 5/8" CASING.
Core No. 7, 8038-8058'
Core No. 8, 8730-8740'
Core No. 9, 9728-9738'
Core No. 10, 11162-11173'
PROPOSED
ACTUAL
Core No. 11, 11,686.5'-11691'
LOST FISH IN HOLE; FISHING OUT.
Core No. 12, 13,600.7'-13,609'
LOG, RUN, HANG & CEMENT 7 5/8" LINER
Core No. 13, 15259-15,270.5'
Core No. 14, 15,328'-15,342'
Core No. 15, 15,596-15,598'
Core No. 16, 15,655'-15663'
Core No. 17, 15,902-15,911'
Core No. 18, 16,302'-16,328'
DST. No. 1, 2, 3 & 4 SET PLUGS AND ABANDON.
RIG RELEASED-MIDNIGHT-JUNE 2, 1980
Core No. 19, 16,859'-16,875.5'
Core No. 20, 16,982-17,000'
LISBURNE TEST WELL No. 1
792 FSL and 2411 FEL, Sec. 17, T. 11S., R. 16W., U.M.
HUSKY OIL N.P.R. Operations Inc.
NATIONAL PETROLEUM RESERVE in ALASKA
DRILLING TIME CURVE

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W

STOCKPOINT _____ DATE _____

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13 3/8 inch at 4509 ft.
9 5/8 inch at 8002 ft.
TOTAL DEPTH 17,000' ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	7-5/8" liner 7700-13,650'
1979	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec / 10 min	Strip Cl Meter Cl	ml API	HTHP @ °F	Cake 32nds	P_m	P_f/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	REMARKS AND TREATMENT
6/10	102	8.6	44	6	12	4/6	10.5	–		5		1.5	30	280	0	3	0	97		
6/11	380	8.8	36	5	18	2/10	10.0	–		5		.5	200	280	1/4	4	0	96		
6/12	448	9.1	35	6	12	2/6	9.0	36		4		.15	100	120	1/4	5	0	95		Opening hole to 26"
6/13	552	8.9	34	9	8	2/6	9.0	12		2		.1	100	80	1/4	4	0	96		
6/14	552	9.0	38	9	16	2/6	9.0	12.4		2		.1	100	80	1/4	5	0	95		
6/15	660	9.0	36	10	7	2/8	9.0	12.8		2		.1	100	40	1/4	5	0	95		
6/16	822	9.0	42	10	11	2/8	9.0	11.8		2		.1	100	40	1/4	5	0	95		
6/17	864	8.9	37	11	10	3/10	9.0	11.2		2		.1	100	40	1/4	4	0	96		
6/18	1021	9.1	42	16	17	5/18	8.8	11.2		2		.1	100	40	1/4	5	0	95		
6/19	1189	9.3	40	11	6	2/8	8.5	12.4		2		.1	100	40	1/4	6	0	94		
6/20	1189	9.2	48	14	10	2/10	8.5	11.5		2		.1	100	40	1/4	6	0	94		
6/21	1189	9.3	47	13	16	3/20	8.5	11.5		2		.1	100	40	1/4	6	0	94		
6/22	1189	9.3	47	13	17	3/22	8.0	12.0		2		.2	100	40	1/4	7	0	93		
6/23	1189	9.3	50	13	16	3/20	8.0	11.0		2		.1	100	40	Tr	7	0	93		
6/24	1250	9.2	46	13	15	2/12	8.0	10.0				.2	100	40	Tr	6	0	94		
6/25	1386	9.1	54	18	24	4/24	8.0	10.0		2		.1	250	40	Tr	6	0	94		
6/26	1509	9.1	52	19	24	4/24	8.0	10.0		2		.3	300	40	Tr	6	0	94		
6/27	1515	9.2	54	17	24	4/20	8.0	10.0		2		.1	300	40	Tr	7	0	93		
6/28	1515	9.1	46	17	17	3/12	8.0	10.0		2		.3	300	40	Tr	6	0	94		Logging
6/29	1515	9.2	45	45	16	3/10	8.0	12.0		2		.2	300	40	Tr	6	0	94		
6/30	1515	9.1	44	9	11	2/4	8.0	9.0		2		.2	200	40	Tr	6	0	94		Set 20" casing
7/1	1515	9.1	40	9	10	2/4	8.0	9.0		2		.2	200	40	Tr	6	0	94		
7/2	1515	9.1	38	8	8	2/3	8.0	9.0		2		.2	200	40	Tr	6	0	94		
7/3	1527	9.1	44	8	18	4/18	9.5	13.0		2		.6	200	80	Tr	5	0	95		
7/4	1570	9.0	38	9	12	4/11	9.0	16.0		2		.4	1000	400	Tr	5	0	95		Drilling 17 1/2" hole
7/5	1821	9.2	38	10	10	4/20	9.5	9.5		2		.4	700	120	Tr	6	0	94		
7/6	2030	9.1	35	9	9	2/8	9.0	9.0		2		.3	400	40	Tr	5	0	95		
7/7	2091	9.1	37	11	11	2/6	9.0	8.4		2		.3	300	40	Tr	5	0	95		
7/8	2200	9.2	38	12	12	2/7	8.0	8.0		2		.4	250	Tr	Tr	6	0	94		
7/9	2428	9.3	45	16	18	3/14	8.0	9.6		2		.3	250	Tr	1/4	7	0	93		
7/10	2650	9.3	40	14	12	2/7	8.0	7.6		2		.3	250	Tr	Tr	6	0	94		
7/11	2830	9.4	47	17	17	3/14	8.0	8.6		2		.3	120	20	Tr	8	0	92		
7/12	2990	9.4	40	12	12	2/9	8.0	8.4		2		.3	120	40	Tr	8	0	92		
7/13	3048	9.4	54	16	16	4/19	8.0	9.0		2		.4	200	20	Tr	8	0	92		Tight hole; building viscosity
7/14	3172	9.4	58	23	23	4/17	8.0	7.6		2		.3	200	20	Tr	8	0	92		

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W

STOCKPOINT _____ DATE _____ ENGINEER _____

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13-3/8 inch at 4509 ft.
9-5/8 inch at 8002 ft
TOTAL DEPTH 17,000 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	7-5/8" liner 7700-13,650'
1979	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec / 10 min	Strip Cl Meter Cl	ml API	HTHP / °F	Cake 32nds	Pm	P1/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	REMARKS AND TREATMENT
7/15	3440	9.3	45	12	9	2/6	8.0	7.4		2		.4	300	20	Tr	7	0	93		
7/16	3556	9.2	45	14	18	4/12	8.0	7.2		2		.4	300	20	Tr	6	0	94		Lost 150 barrels mud
7/17	3697	9.2	47	15	17	4/12	8.0	7.8		2		.6	300	40	Tr	6	0	94		Lost 100 barrels mud
7/18	3831	9.3	44	15	16	5/12	8.0	7.8		2		.7	300	40	Tr	7	0	93		Diluting solids
7/19	3906	9.3	47	16	18	5/12	8.0	7.6		2		.6	200	20	Tr	7	0	93		
7/20	4046	9.4	41	13	14	5/10	8.0	8.1		2		.7	200	20	1/4	8	0	92		
7/21	4268	9.4	42	16	19	5/10	8.0	8.2		2		.6	200	40	Tr	8	0	92		
7/22	4307	9.4	41	15	18	5/10	8.0	7.9		2		.7	200	40	Tr	8	0	92		
7/23	4450	9.4	43	16	17	5/10	8.0	8.1		2		.6	200	40	Tr	8	0	92		
7/24	4510	9.5	55	20	26	5/26	8.0	8.3		2		.6	200	40	Tr	9	0	91		
7/25	4510	9.5	65	40	25	8/22	8.0	8.5		2		.6	200	40	Tr	9	0	91		
7/26	4510	9.5	65	38	24	8/19	8.0	8.6		2		.6	200	40	Tr	9	0	91		
7/27	4510	9.5	60	34	25	8/20	8.0	8.6		2		.6	200	40	Tr	9	0	91		
7/28	4510	9.5	38	17	6	2/6	8.0	9.0		2		.7	200	40	Tr	9	0	91		
7/29	4509	9.5	38	18	8	2/4	9.0	9.5		2		.8	200	40	Tr	9	0	91		
7/30	4509	9.5	37	16	6	2/4	8.5	9.5		2		Tr	200	40	Tr	9	0	91		
7/31	4509	9.5	36	15	16	2/4	8.5	9.5		2		Tr	200	40	Tr	9	0	91		
8/1	4528	9.0	32	9	6	1/2	10.5	14		2		2.4	300	80	1/4	5	0	95		
8/2	4628	9.1	39	10	14	3/18	11.0	12		2		1.6	400	40	Tr	6	0	94		
8/3	4964	9.3	43	11	10	5/26	11.0	8.5		2		1.1	500	Tr	Tr	7	0	93		
8/4	5273	9.8	54	19	15	4/30	10.0	8.8		2		1.1	400	Tr	Tr	11	0	89		
8/5	5355	9.8	42	16	12	3/26	10.0	8.0		2		1.0	400	Tr	Tr	11	0	89		
8/6	5613	9.9	40	14	13	3/13	10.0	8.0		2		.9	400	Tr	1/4	12	0	88		
8/7	5744	9.9	45	14	15	3/12	9.5	8.0		2		.7	400	Tr	1/4	11	0	89		
8/8	6050	9.9	44	14	13	3/7	9.0	7.5		2		.6	300	Tr	1/4	12	0	88		
8/9	6169	10.1	43	16	13	3/9	9.0	7.0		2		.7	300	Tr	1/4	13	0	87		
8/10	6216	10.1	45	17	12	3/7	9.0	7.0		2		.7	300	Tr	Tr	13	0	87		
8/11	6271	10.0	43	17	14	3/11	9.0	6.5		2		.6	300	Tr	Tr	12	0	88		
8/12	6313	10.1	53	16	19	3/35	10.5	6.0		2		.4	300	Tr	1/4	12	0	88		
8/13	6470	10.1	38	13	11	2/8	10.5	7.0		2		.8	300	Tr	Tr	13	0	87		
8/14	6595	10.0	52	16	13	3/9	10.0	7.0		2		.7	300	Tr	Tr	12	0	88		
8/15	6720	10.0	42	16	12	2/6	10.0	6.6		2		.7	300	Tr	Tr	11	0	89		
8/16	6775	10.3	47	22	18	4/9	9.5	5.4		2		.7	300	Tr	Tr	14	0	86		
8/17	6773	10.4	43	19	11	3/7	9.5	5.6		2		.7	300	Tr	Tr	14	0	86		
8/18	6773	10.4	43	19	11	3/7	9.5	5.6		2		.7	300	Tr	Tr	14	0	86		

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska CASING PROGRAM: 30 inch at 129 ft.

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough 20 inch at 1504 ft.

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W 13-3/8 inch at 4509 ft. 9-5/8" at 8002 ft.

STOCKPOINT DATE ENGINEER TOTAL DEPTH 17,000 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SANDS	REPORT			CEC	7-5/8" liner 7700-13,650'
1979	feet	lb/gal	Sec API @ °F	Pv @ °F		10 sec/10 min	Strip □ Meter ○	ml API	HTHP @ °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	REMARKS AND TREATMENT
8/19	6773	10.4	43	19	14	3/7	9.5	5.6		2		.7	300	Tr	Tr	14	0	86		
8/20	6773	10.4	43	19	14	3/7	9.5	5.6		2		.7	300	Tr	Tr	14	0	86		
8/21	6773	10.4	43	19	14	2/7	9.5	5.6		2		.7	300	Tr	Tr	14	0	86		
8/22	6773	10.4	60	27	22	6/38	10.0	5.7		2		1.2	300	Tr	Tr	14	0	86		
8/23	6773	10.5	55	21	16	5/26	10.0	5.8		2		1.4	300	Tr	Tr	14	0	86		Logging
8/24	6773	10.5	55	21	14	4/22	10.0	5.6		2		3.5	300	Tr	Tr	14	0	86		Preparing to suspend
			OPERATIONS		SUSPENDED		DUE	TO	LABOR	LOCKOUT										
10/25	6773	10.6	44	22	8	2/6	8.0	14		4		0	300	120	0	10	0	90		Mixing 800 barrels new mud
10/26	6301	10.6	42	22	8	2/4	9.4	10		3		.8	300	80	Tr	10	0	90		Reentered; began drilling
10/27	6773	10.8	44	18	8	5/25	9.0	17		3		.3	300	80	1/4	12	0	88		
10/28	4925	10.7	55	22	14	12/38	9.0	13		3		.3	250	60	1/4	12	0	88		Hole sloughing
10/29	6773	10.8	55	22	14	10/34	9.0	13		3		.3	200	60	1/4	12	0	88		
10/30	5024	10.8	45	17	16	20/45	9.0	12		3		.3	300	48	1/4	13	0	87		Opening hole
10/31	5567	10.9	48	21	15	11/40	9.0	9		2		.3	400	30	1/4	15	0	85		Hole caving
11/1	5857	11.0	65	22	18	26/60	9.0	9.8		2		.3	500	30	1/4	18	0	82		
11/2	6233	11.1	68	29	24	16/60	9.0	10.8		3		.3	500	30	1/4	18	0	82		
11/3	6481	10.9	65	32	22	10/35	9.0	10.0		2		.5	500	12	1/4	16	0	84		
11/4	6789	11.0	74	35	25	12/44	8.5	9.6		2		.5	500	12	1/4	16	0	84		
11/5	6701	11.0	75	34	24	12/42	8.5	9.8		2		.5	500	12	1/4	16	0	84		
11/6	6843	11.0	65	34	27	5/35	8.5	7.5		2		.5	500	12	1/4	16	0	84		
11/7	6920	11.0	64	35	22	8/40	8.5	7.0		2		.5	450	8	1/4	16	0	84		
11/8	6984	11.0	65	35	20	6/30	8.5	6.5		2		.6	400	8	1/4	16	0	84		
11/9	6984	11.0	63	33	20	6/30	8.5	6.5		2		.5	400	8	1/4	16	0	84		
11/10	7027	10.9	59	26	21	5/39	8.5	6.8		2		.6	450	8	Tr	14	0	86		
11/12	7103	11.0	62	30	24	6/35	8.5	6.7		2		.6	450	12	1/4	14	0	86		
11/13	7202	10.9	63	30	24	5/30	8.5	6.6		2		.6	400	8	1/4	15	0	85		
11/14	7295	10.9	59	26	21	5/30	8.5	6.8		2		.5	400	10	1/4	15	0	85		
11/15	7272	10.9	62	27	23	5/30	8.5	6.8		2		.6	450	10	1/4	15	0	85		
11/16	7292	11.0	63	32	27	6/33	8.5	6.7		2		.6	400	10	1/4	15	0	85		
11/17	7335	11.0	61	30	21	6/31	8.5	6.4		2		.6	400	8	Tr	15	0	85		
11/18	7568	10.9	63	29	23	6/30	8.5	6.5		2		.6	400	12	1/4	15	0	85		
11/19	7568	11.0	63	31	26	6/33	8.5	6.5		2		.6	400	12	1/4	15	0	85		
11/20	7682	11.0	65	28	32	6/33	8.5	6.8		2		.6	450	12	1/4	16	0	84		
11/21	7779	11.0	67	29	31	6/31	8.5	6.5		2		.8	450	8	Tr	16	0	84		
11/22	7916	11.0	67	26	27	6/31	8.5	6.8		2		.7	450	8	1/4	16	0	84		

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W

STOCKPOINT _____ DATE _____ ENGINEER _____

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13-3/8 inch at 4509 ft.
9-5/8" at 8002'
TOTAL DEPTH 17,000 ft.

7-5/8" liner 7700-13,650'

DATE 1979	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	VISCOSITY PV @ °F	Yp	GELS 10 sec/10 min	pH Strip Ø Meter Ø	FILTRATION ml API	FILTRATION HTHP @ °F	FILTRATE ANALYSIS Cake 32nds	FILTRATE ANALYSIS Pm	FILTRATE ANALYSIS Pf/Mf	FILTRATE ANALYSIS Cl ppm	FILTRATE ANALYSIS Ca ppm	SAND %	RETORT Solids %	RETORT Oil %	RETORT Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
11/23	8015	11.0	67	27	34	6/36	8.5	7.2		2		.7	450	8	1/4	16	0	84		
11/24	8015	11.0	68	27	35	8/40	8.5	7.2		2		.7	450	8	1/4	16	0	84		
11/25	8015	11.0	72	28	36	10/48	8.5	7.4		2		.7	450	8	1/4	16	0	84		
11/26	8007	11.0	65	28	34	10/40	8.5	9.8		2		.7	450	8	1/4	16	0	84		
11/27	8007	11.0	74	28	38	10/50	8.5	7.4		2		.7	450	8	1/4	16	0	84		
11/28	8007	11.0	65	27	33	10/40	8.5	10.0		2		.7	450	8	1/4	16	0	84		
11/29	8007	10.9	62	26	30	8/36	8.5	10.0		2		.7	450	8	1/4	16	0	84		
11/30	8007	10.8	65	26	38	10/55	11.0	9.6		2		1.3	450	8	1/4	16	0	84		
12/1	8007	10.6	48	10	10	2/4	11.0	9.8		2		1.5	450	8	1/4	15	0	85		
12/2	8007	10.6	63	24	30	10/40	11.0	10.0		2		1.8	450	8	1/4	15	0	85		
12/3	8043	10.2	42	14	10	6/22	11.0	10.0		2		1.4	400	12	1/4	12	0	88		
12/4	8084	10.2	48	19	13	6/30	10.5	9.2		2		1.0	350	10	1/4	12	0	88		
12/5	8174	10.2	47	19	14	6/26	10.5	5.8		1		1.0	350	10	1/4	12	0	88		
12/6	8287	10.2	49	19	15	5/24	10.5	6.2		1		1.1	350	10	1/4	12	0	88		
12/7	8308	10.2	50	19	15	6/22	10.5	6.3		1		1.0	350	10	1/4	12	0	88		
12/8	8444	10.2	48	19	15	5/19	10.5	5.8		1		1.1	350	10	Tr	12	0	88		
12/9	8550	10.2	46	18	14	5/16	10.0	5.4		1		1.0	350	10	Tr	12	0	88		
12/10	8607	10.2	47	17	14	4/12	10.0	5.9		1		1.2	350	15	Tr	12	0	88		
12/11	8689	10.2	48	19	17	5/13	9.5	6.3		1		1.1	350	20	Tr	12	0	88		
12/12	8730	10.2	49	18	16	5/11	9.5	6.1		1		1.0	350	20	Tr	12	0	88		
12/13	8776	10.2	47	19	18	5/15	9.0	5.9		1		1.2	350	20	Tr	12	0	88		
12/14	8954	10.4	47	17	14	4/18	9.0	6.4		2		1.2	350	20	Tr	13	0	87		
12/15	9052	10.6	48	20	15	5/16	9.0	6.4		2		1.2	350	20	Tr	14	0	86		
12/16	9098	10.7	47	19	15	5/18	9.0	5.9		2		1.3	350	40	Tr	14	0	86		
12/17	9173	10.8	48	22	17	6/24	9.0	6.0		2		1.2	350	40	Tr	14	0	86		
12/18	9305	10.8	48	24	22	5/18	9.0	5.0		2		1.3	300	12	1/4	15	0	85		
12/19	9421	10.8	46	23	15	4/15	9.0	5.6		2		1.2	250	8	1/4	15	0	85		
12/20	9490	10.9	48	24	19	6/18	9.0	5.6		2		1.2	200	8	1/4	15	0	85		
12/21	9628	10.9	48	22	20	6/20	9.0	5.8		2		1.4	300	8	1/4	15	0	85		
12/22	9652	10.9	48	21	17	4/18	8.5	6.0		2		1.4	350	12	1/4	15	0	85		
12/23	9728	10.9	48	24	23	6/22	9.0	5.6		2		1.4	250	12	1/4	15	0	85		
12/24	9751	10.7	42	19	13	2/12	8.5	9.8		2		1.2	250	8	1/4	14	0	86		
12/25	9822	10.5	54	27	22	8/24	8.5	6.8		2		1.2	200	12	1/4	13	0	87		
12/26	9891	10.5	50	23	18	5/18	8.5	6.4		2		1.1	250	10	1/4	13	0	87		
12/27	9957	10.5	48	21	17	4/15	8.5	6.0		2		1.1	200	8	1/4	13	0	87		

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W

STOCKPOINT _____ DATE _____ ENGINEER _____

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13-3/8 inch at 4509 ft.
9-5/8" at 8002'
TOTAL DEPTH 17,000 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	7-5/8" liner 7700-13,650'
1979-80	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec / 10 min	Strip Or Meter	ml API	HTHP @ °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	REMARKS AND TREATMENT
12/28	10026	10.5	49	20	14	4/12	8.5	5.6		2		1.0	200	8	1/4	13	0	87		
12/29	10139	10.5	48	23	15	4/15	8.5	6.0		2		1.1	200	8	1/4	13	0	87		
12/30	10210	10.5	48	21	13	4/15	8.5	5.8		2		1.1	200	8	1/4	13	0	87		
12/31	10287	10.5	45	20	13	3/12	8.5	6.0		2		1.1	200	8	1/4	13	0	87		
1/1	10413	10.4	48	18	17	3/10	8.5	6.0		2		1.1	200	8	1/4	13	0	87		
1/2	10548	10.5	49	19	17	3/13	8.5	5.8		2		1.1	200	8	1/4	13	0	87		
1/3	10674	10.5	47	18	17	3/14	8.5	5.8		2		1.1	200	8	1/4	13	0	87		
1/4	10812	10.5	49	21	20	3/16	8.5	5.6		2		1.1	200	8	1/4	13	0	87		
1/5	10872	10.5	46	15	19	2/11	8.5	5.2		2		1.0	200	8	Tr	13	0	87		
1/6	10940	10.5	47	19	17	2/13	8.5	5.2		2		1.0	200	8	1/4	13	0	87		
1/7	10971	10.5	45	18	16	2/11	8.5	5.4		2		1.0	200	8	1/4	13	0	87		
1/8	11042	10.5	47	23	15	3/16	8.5	6.4		2		.9	200	8	1/4	13	0	87		
1/9	11162	10.5	47	22	15	4/15	8.5	5.8		2		.9	200	8	1/4	13	0	87		
1/10	11171	10.5	46	20	17	2/15	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/11	11202	10.5	48	22	20	3/16	8.5	6.0		2		1.0	200	8	1/4	13	0	87		Lost 40 barrels while tripping
1/12	11321	10.5	50	23	23	3/15	8.5	5.8		2		.9	200	8	1/4	13	0	87		
1/13	11365	10.5	48	23	18	3/15	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/14	11472	10.5	48	22	20	4/19	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/15	11507	10.5	45	18	15	2/10	8.5	6.2		2		.9	200	8	1/4	13	0	87		
1/16	11535	10.5	47	21	22	4/20	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/17	11540	10.5	50	22	22	4/20	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/18	11630	10.5	48	17	18	2/16	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/19	11686	10.5	48	22	18	4/16	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/20	11691	10.5	49	22	19	4/16	8.5	6.0		2		.9	200	8	1/4	13	0	87		
1/21	11744	10.5	49	20	18	4/16	8.5	5.8		2		.9	200	12	1/4	13	0	87		
1/22	11907	10.5	48	20	20	4/18	8.5	5.6		2		.9	200	12	1/4	13	0	87		
1/23	11967	10.5	48	21	20	4/16	8.5	5.8		2		.9	200	12	1/4	13	0	87		
1/24	11977	10.5	46	19	16	3/17	8.5	6.0		2		.9	200	12	1/4	13	0	87		
1/25	12068	10.5	50	17	24	5/16	8.5	5.8		1		1.0	200	12	1/4	13	0	87		
1/26	12092	10.5	44	10	17	2/11	8.5	5.8		2		.8	200	12	Tr	12	0	88		
1/27	12092	10.5	46	14	22	3/15	8.5	5.6		1		.8	200	8	Tr	12	0	88		
1/28	12092	10.5	48	16	23	4/12	8.5	6.2		1		.7	200	8	Tr	12	0	88		
1/29	12092	10.5	50	17	28	3/14	8.5	5.6		1		.8	200	8	1/4	13	0	87		
1/30	12092	10.5	49	17	26	5/17	8.5	6.2		1		.9	200	8	Tr	13	0	87		
1/31	12092	10.5	51	18	25	6/18	8.5	6.2		2		.9	200	8	Tr	13	0	87		

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc.
WELL Lisburne Test Well No. 1
CONTRACTOR Nabors Alaska Drilling, Inc.
STOCKPOINT
STATE Alaska
COUNTY North Slope Borough
LOCATION NPRA
SEC 17 TWP 11S RNG 16W
DATE
ENGINEER

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13-3/8 inch at 4509 ft.
9-5/8" at 8002'
TOTAL DEPTH 17,000 ft.

DATE 1980	DEPTH feet	WEIGHT lb/gal	VISCOS Sec API @ °F	PV @ °F	Yp	GELS 10 sec/10 min	pH Strip D Meter D	FILTRATION ml API	HTHP @ °F	Cake 32nds	FILTRATE ANALYSIS Pm	Pf/Mf	Cl ppm	Ca ppm	SAND %	RETORT Solids %	Oil %	Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
																				7-5/8" liner 7700-13,650'
2/1	12092	10.5	52	18	26	8/24	8.5	6.4		2		.9	200	8	1/4	13	0	87		
2/2	12092	10.5	48	17	20	4/16	8.5	6.4		2		.9	200	8	1/4	13	0	87		
2/3	12092	10.5	48	17	21	4/16	8.5	6.4		2		.9	200	8	1/4	13	0	87		
2/4	12092	10.5	46	15	17	3/12	8.5	6.4		2		.9	200	8	1/4	13	0	87		
2/5	12092	10.5	45	17	15	3/14	8.5	6.4		2		.9	200	8	1/4	13	0	87		
2/6	12092	10.5	47	17	16	3/12	8.5	6.4		2		.9	200	8	1/4	13	0	87		
2/7	12156	10.5	52	23	20	4/18	8.5	6.0		2		1.0	200	8	1/4	13	0	87		
2/8	12182	10.5	52	23	20	4/18	8.5	6.4		2		1.1	200	12	1/4	13	0	87		
2/9	12253	10.5	48	20	18	4/18	8.5	6.2		2		1.1	200	12	1/4	13	0	87		
2/10	12362	10.5	52	20	22	4/22	8.5	6.0		2		1.1	200	12	1/4	13	0	87		
2/11	12420	10.5	48	21	18	4/18	8.5	6.0		2		1.1	200	13	1/4	13	0	87		
2/12	12530	10.5	47	18	22	4/20	8.5	6.2		2		1.1	200	12	1/4	13	0	87		
2/13	12660	10.6	48	21	20	4/18	8.5	6.0		2		1.0	200	12	1/4	14	0	86		1000 units of gas; increased wt
2/14	12773	10.7	48	21	17	4/18	8.5	6.2		2		1.0	200	12	1/4	14	0	86		
2/15	12891	10.7	48	21	18	4/18	8.5	6.0		2		1.0	200	12	1/4	14	0	86		
2/16	12961	10.7	53	24	22	4/20	8.5	5.8		2		1.1	200	12	1/4	13	0	87		Lost 250 barrels of mud; added
2/17	13061	10.7	44	19	14	3/16	8.5	6.6		2		1.1	200	12	1/4	13	0	87		LCM
2/18	13140	10.7	50	22	18	4/18	8.5	6.4		2		1.1	200	12	1/4	13	0	87		Lost 50 barrels of mud
2/19	13232	10.7	47	21	17	3/18	8.5	6.2		2		1.1	200	12	1/4	13	0	87		
2/20	13280	10.7	47	19	18	3/18	8.5	6.8		2		1.1	200	12	1/4	13	0	87		
2/21	13380	10.7	44	13	18	5/20	8.5	6.5		2		1.1	200	12	Tr	13	0	87		
2/22	13458	10.7	42	17	15	5/18	8.5	6.9		2		1.1	200	40	Tr	13	0	87		
2/23	13475	10.7	41	15	16	4/14	8.5	6.5		2		1.2	200	40	1/4	13	0	87		
2/24	13544	10.7	40	14	13	4/17	8.5	7.0		2		1.2	200	60	1/4	13	0	87		
2/25	13600	10.7	42	14	14	4/17	8.5	6.6		2		1.2	200	60	Tr	13	0	87		
2/26	13607	10.7	44	15	17	6/22	8.5	6.9		2		1.3	200	60	Tr	13	0	87		
2/27	13650	10.7	46	18	20	4/22	8.5	7.2		2		1.3	200	12	1/4	13	0	87		
2/28	13650	10.7	47	18	20	4/22	8.5	7.4		2		1.2	200	12	1/4	13	0	87		
2/29	13650	10.7	44	14	16	4/24	8.5	9.0		2		2.3	200	12	1/4	13	0	87		
3/1	13650	10.7	45	14	16	4/22	8.5	9.2		2		2.2	200	12	1/4	13	0	87		
3/2	13650	10.7	44	15	14	4/22	8.5	8.8		2		2.0	250	8	1/4	13	0	87		
3/3	13650	10.6	48	15	16	4/24	13.0	9.4		3		3.1	600	8	1/4	13	0	87		
3/4	13650	10.7	56	27	12	4/18	13.0	13.0		3		2.4	1100	80	1/4	13	0	87		
3/5	13650	10.7	48	25	8	2/4	13.0	11.0		3		2.4	500	20	1/4	13	0	87		
3/6	13650	10.7	48	24	8	2/4	13.0	11.2		3		2.4	500	20	1/4	13	0	87		

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W

STOCKPOINT _____ DATE _____ ENGINEER _____

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13-3/8 inch at 4509 ft.
9-5/8" at 8002'
TOTAL DEPTH 17,000 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	7-5/8" liner 7700-13,650'
1980	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec/10 min	Strip Cl Meter Cl	ml API	HTHP @ °F	Cake 32nds	P_m	P_f/M_f	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	REMARKS AND TREATMENT
3/7	13651	10.7	48	24	9	2/4	13.0	11.0		3		2.3	500	20	1/4	13	0	87		
3/8	13651	10.7	47	23	7	2/4	12.5	11.2		3		2.2	400	20	1/4	13	0	87		
3/9	13651	10.7	48	23	8	2/4	12.5	11.2		2		2.2	400	20	1/4	13	0	87		
3/10	13651	10.7	48	23	9	2/4	12.0	11.2		2		2.4	400	20	1/4	13	0	87		
3/11	13651	10.7	48	23	10	2/5	12.5	11.4		2		2.4	400	20	1/4	13	0	87		
3/12	13651	10.7	48	23	9	2/5	12.5	11.4		2		2.4	400	20	1/4	13	0	87		
3/13	13652	10.7	47	23	9	2/4	12.5	11.0		3		2.4	350	20	1/4	13	0	87		
3/14	13653	10.7	46	22	8	2/4	12.5	11.4		3		2.4	400	60	1/4	13	0	87		
3/15	13659	10.7	46	21	8	2/4	12.5	10.2		2		2.2	350	40	1/4	13	0	87		
3/16	13660	10.7	58	24	12	2/12	13.0	9.8		2		2.8	400	20	1/4	13	0	87		
3/17	13698	10.7	52	25	17	2/16	12.5	6.8		2		2.5	400	20	1/4	13	0	87		
3/18	13762	10.7	52	28	16	2/14	12.0	5.8		2		2.4	400	20	1/4	13	0	87		
3/19	13802	10.7	48	26	15	2/14	12.0	5.8		2		2.1	350	20	1/4	13	0	87		
3/20	13838	10.7	47	21	12	2/10	12.0	6.8		2		2.2	350	20	1/4	13	0	87		
3/21	13864	10.7	47	20	16	3/11	12.0	6.2		2		2.2	350	20	Tr	13	0	87		
3/22	13870	10.7	48	20	17	3/11	12.0	6.3		2		2.1	350	20	Tr	13	0	87		
3/23	13950	10.7	47	20	16	3/9	11.5	6.0		2		2.0	350	20	Tr	13	0	87		
3/24	14025	10.8	48	21	16	3/10	11.5	6.2		2		1.9	350	20	Tr	13	0	87		
3/25	14042	10.8	50	22	17	3/12	11.5	6.2		2		1.8	350	20	Tr	13	0	87		
3/26	14132	10.8	46	19	15	3/9	11.0	6.0		2		1.7	350	20	Tr	13	0	87		
3/27	14191	10.8	47	16	17	2/10	11.0	5.8		2		1.6	300	20	1/4	13	0	87		
3/28	14199	10.8	47	19	13	2/10	11.0	6.2		2		1.6	300	20	1/4	13	0	87		
3/29	14296	10.8	48	23	14	2/10	11.0	6.0		2		1.5	250	20	1/4	13	0	87		
3/30	14376	10.8	48	23	15	2/10	11.0	6.0		2		1.5	250	20	1/4	13	0	87		
3/31	14437	10.8	47	20	13	2/10	11.0	6.2		2		1.4	200	20	1/4	13	0	87		
4/1	14493	10.8	50	22	16	2/12	11.0	6.0		2		1.5	200	20	1/4	13	0	87		
4/2	14529	10.8	50	22	16	2/10	10.5	6.0		2		1.4	200	20	1/4	13	0	87		
4/3	14618	10.8	48	22	13	2/10	10.5	6.2		2		1.4	200	20	1/4	13	0	87		
4/4	14700	10.8	52	24	18	2/14	10.5	6.0		2		1.4	200	20	1/4	13	0	87		
4/5	14714	10.8	58	26	18	2/16	10.0	6.2		2		1.4	200	20	1/4	13	0	87		
4/6	14824	10.8	48	22	15	2/10	10.0	5.8		2		1.5	300	40	1/4	13	0	87		
4/7	14900	10.8	49	21	14	2/10	10.0	6.0		2		1.5	300	40	1/4	13	0	87		
4/8	14983	10.8	48	19	13	2/8	10.0	6.2		2		1.4	300	40	1/4	13	0	87		
4/9	15018	10.8	50	22	17	2/10	9.5	6.2		2		1.6	400	62	1/4	13	0	87		
4/10	15075	10.8	45	19	12	2/10	10.0	6.0		2		1.4	300	48	1/4	13	0	87		Lost 100 barrels mud

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W

STOCKPOINT DATE ENGINEER

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13-3/8 inch at 4509 ft.
9-5/8" at 8002'
TOTAL DEPTH 17,000 ft.

DATE 1980	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	VISCOSITY PV @ °F	Yp	GELS 10 sec/10 min	pH Strip ☐ Meter ☐	FILTRATION ml API	FILTRATION HTHP @ °F	FILTRATE ANALYSIS Cake 32nds	FILTRATE ANALYSIS Pm	FILTRATE ANALYSIS Pf/Mf	FILTRATE ANALYSIS Cl ppm	FILTRATE ANALYSIS Ca ppm	SAND %	RETORT Solids %	RETORT Oil %	RETORT Water %	CEC Mud, me/ml	7-5/8" liner 7700-13,650' REMARKS AND TREATMENT
4/11	15108	10.8	44	17	10	2/8	10.0	6.0		2		1.8	300	40	1/4	13	0	87		
4/12	15153	10.8	45	19	13	2/10	10.0	6.0		2		1.8	300	40	1/4	13	0	87		
4/13	15222	10.8	44	19	12	2/10	9.5	6.2		2		1.3	300	40	1/4	13	0	87		
4/14	15239	10.8	45	20	12	2/10	10.0	6.2		2		1.4	200	30	1/4	13	0	87		
4/15	15295	10.8	47	20	12	2/10	9.5	6.0		2		1.4	200	40	1/4	13	0	87		
4/16	15328	10.8	47	21	14	2/10	9.5	6.2		2		1.5	200	44	1/4	13	0	87		
4/17	15346	10.8	47	19	13	2/9	9.5	6.3		2		1.4	200	40	Tr	13	0	87		
4/18	15466	10.8	44	18	10	3/8	9.5	5.3		2		1.5	200	40	Tr	13	0	87		
4/19	15527	10.8	44	18	11	3/8	9.5	5.5		2		1.5	200	40	1/4	13	0	87		
4/20	15596	10.8	44	18	10	4/9	9.5	5.4		2		1.4	200	40	Tr	13	0	87		
4/21	15596	10.8	47	19	14	4/10	9.5	5.4		2		1.3	200	40	Tr	13	0	87		
4/22	15596	10.8	46	19	13	3/9	9.5	5.0		2		1.5	200	40	Tr	13	0	87		
4/23	15642	10.8	47	19	15	4/9	9.5	4.8		2		1.5	200	40	Tr	13	0	87		
4/24	15656	10.8	47	18	14	3/10	9.5	4.7		1		1.5	200	40	Tr	13	0	87		
4/25	15676	10.8	46	18	13	3/9	9.5	4.8		1		1.4	200	40	Tr	13	0	87		
4/26	15727	10.8	44	17	12	3/8	9.5	5.0		1		1.4	200	40	Tr	13	0	87		
4/27	15809	10.8	44	19	14	3/10	9.5	5.2		1		1.4	200	40	Tr	13	0	87		
4/28	15901	10.8	43	18	13	3/9	9.5	5.0		1		1.4	200	40	Tr	13	0	87		
4/29	15911	10.8	43	18	12	3/7	9.5	5.2		2		1.5	200	40	Tr	13	0	87		
4/30	16004	10.8	43	17	12	2/7	9.5	5.4		1		1.4	200	40	Tr	13	0	87		Slowly losing mud
5/1	16067	10.6	46	19	12	2/8	9.5	5.8		2		1.3	200	40	1/4	12	0	88		Lost 125 barrels mud
5/2	16127	10.5	48	22	13	2/8	9.5	6.0		2		1.3	200	40	1/4	12	0	88		Lost 70 barrels mud during trip
5/3	16228	10.4	46	22	13	2/8	9.5	5.8		2		1.3	200	36	1/4	12	0	88		
5/4	16282	10.4	45	20	13	2/8	9.5	6.0		2		.8	200	30	1/4	12	0	88		Fluid losses stopped
5/5	16322	10.4	48	23	15	2/8	9.5	6.0		2		1.0	200	26	1/4	12	0	88		Lost 25 barrels mud
5/6	16328	10.4	50	23	18	2/8	9.5	6.2		2		.9	200	26	1/4	12	0	88		
5/7	16452	10.4	43	18	12	2/8	9.0	5.8		2		.8	200	26	1/4	12	0	88		
5/8	16497	10.4	47	17	13	2/8	9.5	5.8		2		.8	200	26	1/4	12	0	88		
5/9	16590	10.4	43	16	11	2/6	9.5	5.8		2		1.0	200	18	1/4	12	0	88		
5/10	16669	10.3	44	18	12	2/8	9.5	5.6		2		.9	200	18	1/4	12	0	88		
5/11	16750	10.2	43	18	11	2/6	9.5	6.0		2		1.0	200	18	1/4	11	0	89		
5/12	16808	10.2	44	18	11	2/8	9.5	5.8		2		1.1	200	12	1/4	11	0	89		
5/13	16859	10.1	43	15	13	2/8	9.5	5.8		2		1.1	200	8	1/4	11	0	89		
5/14	16873	10.2	43	17	11	2/6	9.0	5.8		2		1.0	200	8	1/4	11	0	89		
5/15	16894	10.2	43	15	10	2/6	9.0	6.0		2		.9	200	8	1/4	11	0	89		

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ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Lisburne Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling, Inc. LOCATION NPRA SEC 17 TWP 11S RNG 16W

STOCKPOINT _____ DATE _____ ENGINEER _____

CASING PROGRAM: 30 inch at 129 ft.
20 inch at 1504 ft.
13-3/8 inch at 4509 ft.
9-5/8" at 8002'
TOTAL DEPTH 17,000 ft.

DATE 1980	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API / PV @ °F	Yp	GELS 10 sec / 10 min	pH Strip / Meter	FILTRATION ml API	HTHP @ °F	Cake 32nds	FILTRATE ANALYSIS Pm	Pf/Mf	Cl- ppm	Ca ppm	SAND %	RETORT Solids %	Oil %	Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
																			7-5/8" liner 7700-13,650
5/16	16940	10.1	43 / 16	12	2/6	9.5	5.8		2		.9	200	8	1/4	11	0	89		
5/17	16969	10.2	44 / 18	13	2/6	9.5	5.8		2		.1	200	8	1/4	11	0	89		
5/18	16995	10.2	44 / 18	12	2/6	9.5	5.8		2		.1	200	8	1/4	11	0	89		
5/19	17000	10.2	43 / 18	12	2/6	9.5	5.8		2		.1	200	8	1/4	11	0	89		
5/20	17000	10.2	44 / 18	12	2/6	9.5	5.0		2		.1	200	Tr	Tr	11	0	89		
5/21	17000	10.2	43 / 18	12	2/6	9.5	5.0		2		.1	200	Tr	Tr	11	0	89		
5/22	17000	10.1	43 / 18	12	2/6	9.5	5.0		2		.1	200	Tr	Tr	11	0	89		
5/23	17000	10.3	39 / 15	5	2/4	10.0	5.0		2		1.0	200	Tr	Tr	11	0	89		
5/24	11840	10.2	38 / 14	4	2/4	9.0	8.5		2		3.2	200	Tr	Tr	11	0	89		
5/25	11840	10.2	38 / 14	4	2/4	9.0	8.5		2		1.2	200	0	Tr	11	0	89		
5/26	8800	10.2	40 / 16	6	2/5	9.0	8.0		2		3.5	200	Tr	Tr	11	0	89		Began plugging back
5/27	7680	10.3	41 / 16	7	3/5	9.0	6.5		2		0.5	200	0	Tr	11	0	89		
5/28	7645	10.2	36 / 13	5	2/5	9.0	7.5		2		3.5	200	0	Tr	11	0	89		
5/29	7608	10.1	39 / 16	6	2/5	9.0	6.5		2		2.2	250	Tr	Tr	11	0	89		
5/30	7104	10.2	40 / 16	8	2/5	9.5	6.0		2		3.0	250	Tr	Tr	11	0	89		
5/31	7022	10.1	39 / 15	8	2/4	9.5	6.5		2		3.0	250	Tr	Tr	11	0	89		
																	89		
																	89		
																	89		Testing completed

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BIT RECORD

COMPANY: Husky Oil NPR Operations, Inc. | CONTRACTOR: Nabors Alaska Drilling, Inc. | CO. OR PARISH: North Slope Borough | STATE: Alaska

LEASE: National Petroleum Reserve in Alaska | WELL NO: Lisburne Test Well No. 1 | SEC: 17 | TOWNSHIP: 11S | RANGE: 16W | BLOCK: | FIELD:

TOOL PUSHER: | DRILL PIPE: SIZE: TYPE: | DRAW WORKS: | UNDER SURF.

DAY DRILLER: | TOOL JOINT: MAKE: | POWER: H.P. | INT. DATE:

EVENING DRILLER: | DRILL COLLAR: NO. O.D. I.D. LENGTH | PUMP NO. 1: MAKE: MODEL: STROKE: | T.D. DATE:

MORNING DRILLER: | DRILL COLLAR: NO. O.D. I.D. LENGTH | PUMP NO. 2: MAKE: MODEL: STROKE:

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	JET SIZE 2	JET SIZE 3	DEPTH OUT	FTGI	HOURS RUN	ACC. HOURS	FT/HR	WEIGHT (1000 LBS)	ROTARY R.P.M.	VERT DEV	PUMP PRESS	PUMPS No.	PUMPS LINER	PUMPS SPM	MUD WT	MUD VIS	DULL CODE T	DULL CODE B	DULL CODE G	REMARKS FORMATION CIRC. FLUID ETC.	DATE
1	17½	HTC	OSC3A	HX731	14	14	14	129	38	5	5	7.6	5/10	60	0	400	1	6	50	8.6	44	1	1	1		
2	26	Sec		67792	14	14	14	445	316	21.5	26.5	14.7	8/10	125	2.5	2200	1	6	50	8.8	30	2	2	2	POH to open hole	
3	17½	HTC	OSC16	5X384	14	14	14	564	119	18	59	6.6	20/25	125	4	2000	1	6	50	9	34	4	2	2		
4	17½	HTC	OSC16	TB494	14	14	15	637	73	16.5	93.5	4.4	6/10	150	4	2000	¼ 2	6	49	9	36	5	2	I		
5	17½	HTC	OSC16	TS647	14	14	15	744	107	17.5	111	6.1	6/10	150	4	2000	"	6	49	9	42	4	5	I		
6	17½	HTC	OSC16	ZC429	14	14	15	843	99	13	124	7.6	6/10	150	4	2000	"	6	49	8.9	37	3	4	I		
7	17½	HTC	OWV	HV645	14	14	15	872	23	9.5	133.5	3	15	150	4	2000	"	6	50	9.1	42	5	2	I		
8	17½	HTC	OWV	HY646	14	14	15	1072	200	24	157.5	8.33	35	120	3 75	2000	"	6	50	9.1	42	6	5	I		
9	17½	HTC	OWV	VD756	14	14	15	1189	117	10	167.5	11.7	18/20	150	5	2000	"	6	48			2	2	I		
10	26	Smi	DG	222SL	N	O	N E	1190	3	1.5	169	2	5	80	5							G	O	O D		
11	17½	HTC	OSC16	JO596	14	14	15	1401	211	32.5	201.5	6.4	8/15	120	2	2000	"	6	50	9.2	46	6	6	I	Pulled for BHA change	
12	17½	HTC	OSC16	ZC428	14	14	15	1515	114	12.5	214	9.1	10	120	3 25	2000	"	6	50	9.2	46	2	2	I	Pulled to open hole	
13	17½	Smi	DJG	393AD	N	O	N E	1554	27	7	227.5	3.8	10	160	3.5	1500	"	6	45	9.1	45	1	1	I		
14	17½	HTC	X3A	5D-190	15	15	15	2075	67	5	275	13.4	50	100	3.5 4	2300	"	8	44	9.1	37	1	1	1	Pulled for Core No. 2	
15	17½	HTC	OSC1G	RJ451	15	15	15	2441	346	35.5	273.5	9.74	45/50	100	75	2300	"	6	45	9.3	40	5	3	I		
16	17½	HTC	OSC16	RL667	15	15	15	2728	287	24	297.5	11.95	50/45	100	5	2000	"	6	44	9.4	47	4	3	I		
17	17½	HTC	OSC3A	RA404	15	15	15	2990	262	25	322.5	10.48	50/60	100	5 75	1000	"	6	60	9.4	40	5	5	0		
18	17½	HTC	OWV	HV647	13	13	13	3136	136	20	347.5	6.8	50	100	7	2300	"	6	44	9.4	58	2	2	1		
19	17½	HTC	OSC16	RJ450	15	15	15	3556	420	39 75	387 25 412	10.75	35	100	8 75 9	2100	"	6	42	9.2	45	2	5	I		
20	17½	Sec	S4T	861964	15	15	15	3712	156	25	25	6.24	60	80	25	2100	"	6	42	9.2	47	5	4	I		
21	17½	Sec	S4T	901065	15	15	15	3900	188	24 75	437	7.59	55	100	9	2150	"	6	43	9.3	47	4	3	I		

SMITH REPRESENTATIVE _____ PHONE _____

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DIVISION OF SMITH INTERNATIONAL, INC.

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BIT RECORD

COMPANY: Husky Oil NPR Operations, Inc.
OPERATOR: Nabors Alaska Drilling, Inc.
COUNTY: North Slope Borough
STATE: Alaska
LEASE: National Petroleum Reserve in Alaska
WELL NO: Lisburne Test Well No. 1
SEC: 17
TOWNSHIP: 11S
RANGE: 16W
BLOCK:
FIELD:
TOOL PUSHER:
DAY DRILLER:
EVENING DRILLER:
MORNING DRILLER:
DRILL PIPE: MAKE / SIZE / TYPE
DRILL COLLAR: NO. / O.D. / I.D. / LENGTH
DRILL COLLAR: NO. / O.D. / I.D. / LENGTH
DRAW WORKS:
POWER: H.P.
PUMP NO. 1: MAKE / MODEL / STROKE
PUMP NO. 2: MAKE / MODEL / STROKE
UNDER SURF.
I.D. DATE
I.D. DATE

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	JET SIZE 2	JET SIZE 3	DEPTH OUT	FTG	HOURS RUN	ACC. HOURS	FT/HR	WEIGHT 1000 LBS	ROTARY R.P.M.	VERT DEV	PUMP PRESS	PUMPS No	PUMPS Liner	PUMPS SPM	MUD Wt	MUD Vis	DULL CODE 1	DULL CODE 2	DULL CODE 3	REMARKS FORMATION DEPTH, ETC.	DATE
22	17½	HTC	OSC3J	HS817	15	15	15	4290	390	35.75	483.75	10.8	60/70	95	8.5	2000	1/2	6	43	9.3	41	5	4	1		
23	17½	HTC	X3A	38473	15	15	15	4307	18	6.5	490.25	2.8	60/70	95	9	2000	"	6	43	9.4	42	4	3	1		
24	17½	Sec	S4TJ	902695	15	15	15	4510	203	26.5	93	7.6	60/70	95	8.25	2000	"	6	43	9.5	45	3	4	1		
25	12¼	Smi	DGS	220AV	11	11	10	4584	70	7.5	524.75	9.3	30/40	95	9.5	2400	"	6	60	9.1	39	1	1	1	Pulled to change BHA	
26	12¼	HTC	X1G	ZK104	11	11	11	5340	756	48.5	573.25	15.5	30/55	110	8.75	2401	1	6	60	9.8	42	3	2	1	Pulled for Core No. 5	
27	12¼	HTC	X1G	ZB311	11	11	11	5749	393	34.5	613.75	11.3	45/55	110	9.5	2400	1	6	57	9.9	43	6	2	I		
28	12¼	HTC	X1G	LK100	11	11	12	6169	420	31	644.75	13.5	55/60	110	9	2400	1	6	60	10.1	43	8	3	I		
29	12¼	HTC	X3A	RW460	11	11	12	6215	46	10.5	655.25	4.3	35/50	90	8	2400	1	6	60	10.1	45	7	3	0		
30	12¼	HTC	X1G	VA068	11	11	12	6271	46	10	669.75	4.6	35/50	95		2400	1	6	60	10.1	45	8	5	0		
31	12¼	Sec	H7J	779685	11	12	12	6294	23	4.5	674.25	5.1	50/60	90	7.75	2400	1	6	60	10.1	53	4	4	I		
32	12¼	Smi	F3	251LR	11	12	12	6773	479	76	750.25	6.3	60	45	6.5	2400	1	6	60	10.4	52				Circulating due to L/O	
33	12¼	HTC	OSC	PF813																					Wash and ream	
34	12¼	HTC	OSC1G	PJ385	15	15	15	5567	592	30															Wash and ream	
35	12¼	HTC	X1G	KN456	18	18	18	6789	1222	62.5															Wash and ream	
36	12¼	Smi	F3	287NP	18	18	18	6983	194	58.75	809	3.3	50	55	5.75	1300	1	6	60	11	65	3	2	I	Resumed drilling	
37	12¼	Smi	F3	982NP	12	12	11	7292	309	72.25	881.25	4.3	55	55	6	2500	1	6	58	10.9	59	5	5			
38	12¼	Smi	F3	592LD	12	12	11	7292	0	0																
39	12¼	HTC	X1G	PM239	15	15	15	7292	0	0																
40	12¼	Smi	F3	622LD	12	12	11	7568	276	54.25	935.5	5.1	50/55	55	6.5	2500	1	6	58	10.9	63	6	6			
41	12¼	Smi	F3	804NP	12	12	11	7779	211	36	971.5	5.86	45	50	6	2800	1	6	49	11	67	6	4			
42	12¼	Smi	F3	286NP	12	12	11	8015	236	34.5	1006	6.84	40	45		2500	1	6	58	11	67	5	3			

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DIVISION OF SMITH INTERNATIONAL, INC.

SMITH REPRESENTATIVE: PHONE:

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BIT RECORD

COMPANY: Husky Oil NPR Operations, Inc. | CONTRACTOR: Nabors Alaska Drilling, Inc. | COUNTY: North Slope Borough | STATE: Alaska

LEASE: National Petroleum Reserve in Alaska | WELL NO: Lisburne Test Well No. 1 | SEC: 17 | TOWNSHIP: 11S | RANGE: 16W | BLOCK | FIELD

TOOL PUSHER | DRILL PIPE MAKE / SIZE / TYPE | DRAW WORKS | GROUND ELEV

DAY DRILLER | TOOL JOINT SIZE / O.D. / I.D. / LENGTH | POWER H.P. | SPUD DATE

EVENING DRILLER | DRILL COLLAR NO. / O.D. / I.D. / LENGTH | PUMP NO. 1 MAKE / MODEL / STROKE | T.D. DATE

MORNING DRILLER | | PUMP NO. 2 MAKE / MODEL / STROKE

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	2	3	DEPTH OUT	FTG	HOURS RUN	ACC HOURS	FT/HR	WEIGHT 1000 LBS	ROTARY R.P.M	VERT DEV	PUMP PRESS	PUMPS No	Liner	SPM	MUD WT	VIS	DRLG CODE I	B	G	REMARKS FORMATION CIRC FLUID ETC	DATE
43	8½	HTC	OSC1G	ND198	10	10	10									1000	1	5.5	60	10.6	48	7	7	I		
44	8½	Sec	H77GS	843995	10	10	10	8038	23	2.75	1008.75	8.36	22	50		2100	2	5	50	10.2	42	6	5	I		
45	8½	HTC	DJ33	KV278	10	10	B	8171	103	17.25	1037.75	5.97	35/40	39		1950	2	5	48	10.2	47	8	5			
46	8½	HTC	DJ33	SP866	10	10	B	8287	116	22.75	1060.50	5.1	35/50	37		2000	2	5	48	10.2	49	4	4	I		
47	8½	HTC	J-44	PR354	10	10	B	8475	188	34.5	1095	2.45	35/55	38	6.75	1700	2	5	52	10.2	46	7	4			
48	8½	HTC	J-44	PR062	9	9	8	8569	94	15.5	1110.5	6.06	55	38		1700	2	5	52	10.2	46	7	9			
49	8½	HTC	J-55	S371	9	9	8	8730	161	42	1152.5	3.83	55	38	6	1700	2	5	52	10.2	48	4	4	I		
50	8½	Smi	F-3	751NF	9	9	9	9052	312	45.5	1198	6.86	55	38	5.5	2000	2	5	55	10.6	48	8	5	1		
51	8½	Smi	F-3	170AK	9	9	9	9173	121.5	18.75	1216.75	6.48	55	38	5.25	2000	2	5	55	10.8	48	8	3			
52	8½	HTC	J44	JT111	9	9	9	9422	249	44.75	1261.5	5.56	55	38	6.25	2000	2	5	55	10.8	48	5	4			
53	8½	Reed	HPSM	893393	9	9	9	9628	206	36	1297.5	5.72	55	60	8	2000	1	5.5	42	10.9	48	7	3	I		
54	8½	Reed	HPSM	893402	9	9	9	9728	100	20	1317.5	5	45	70	9	2000	2	5	54	10.9	50	7	3			
55	8½	HTC	J-55	PR693	9	9	9	9336	98	19.25	1344.5	5.09	45	30/35	9	1700	2	5	54	10.5	54	8	5			
56	8½	HTC	J-55	PV989	9	9	9	9896	60	11	1355.5	54.5	45	30	9	1875	2	5	54	10.5	50	7	4			
57	8½	Reed	HPSM	893394	9	9	9	10,026	130	26.75	1382.25	4.86	35/40	30	9	2000	1	5.5	43	10.5	50	6	3			
58	8½	HTC	J-77	PV678	9	9	9	10,210	284	37.5	1419.75	4.9	40/45	30		1750	2	5	53	10.5	48	6	6			
59	8½	HTC	J-99	NV115	9	9	9	10,872	662	122.25	1542	5.42	55	30	9.75	1750	2	5.5	52	10.5	46	7	7			
60	8½	HTC	J-99	2X736	9	9	9	10,971	99	35.5	1577.5	2.79	55	30	10	1750	1	5.5	42	10.5	46	1	1	I		
61	8½	HTC	J-44	J4705	9	9	9	11,162	191	40.25	1617.75	4.75	55	35	8.25	1750	1	5.5	42	10.5	47	7	5			
62	8½	HTC	J-55	MC203	9	9	9	11,364	191	42	1672.75	4.55	55	35	7.25	1750	1	5.5	42	10.5	47	4	3			
63	8½	Reed	HPSM	743249	9	9	9	11,507	143	34.5	1707.25	4.14	55	45	5.5	1750	2	5	52	10.5	48	7	3			

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BIT RECORD

Operations, Inc. — Contractor: Nabors Alaska Drilling, Inc. — County: North Slope Borough — State: Alaska

Company: Husky Oil NPR Operations — Well No.: Lisburne Test Well No. 1 17 — Township: 11S — Range: 16W — Block — Field

Lease: National Petroleum Reserve Alaska

Tool Pusher: [illegible] — Drill Pipe — Drawworks — Engine Size

Day Driller — Tool Joint: Make / Size / Type — Power: H.P. — Engine Spd

Evening Driller — Drill Collar: No. / O.D. / I.D. / Length — Pump No. 1: Make / Model / Stroke — Int. Date

Morning Driller — Drill Collar: No. / O.D. / I.D. / Length — Pump No. 2: Make / Model / Stroke — T.D. Date

Bit No	Bit Size	Bit Make	Bit Type	Serial No. of Bit	Bit Size 1	2	3	Depth Out	Cond.	Hours Run	Accum. Hours	Ft./Hr.	Weight (1000 lbs)	Rotary R.P.M.	Vert. Dev.	Pump Press.	Liners No.	Liners	Liners SPM	Mud Wt.	Mud Vis.	Dull Code T	Dull Code B	Dull Code G	Remarks Elevation Circ. Time Etc.	Drlg. Time
				K5697	9	9	9	11,540	33	22.5	1729.75	1.46	50	43		1750	2	5	52	10.5	50	1	1	1		
64	8½	HTC	J77	893398	9	9	9	11,630	90	19	1748.34	4.73	50	33	5.75	1975	2	5	52	10.5	48	8	7	0		
65	8½	Reed	HPSY	JP481	9	9	9	11,686	56	13	1761.75	4.30	50	38		1750	2	5	52	10.5	48	6	4	0		
66	8½	HTC	J44	840614	9	9	9	11,930	239	45	1816.75	5.3	35/45	35		1850	2	5	52	10.5	48	6	4	0		
67	8½	Sec	M89TF	JR140	9	9	9	12,092	115	17.25	1839.25														Stuck pipe	
68	8½	HTC	J77	844010	9	9	9	12,157	65	16		4.6	40	38		1750	2	5	52	10.5	48	7	4	I		
69	8½	Sec	H77SJ	851206	9	9	9	12,253	96	19.5	1875	4.92	40/55	40	5.5	1750	2	5	52	10.5	48	7	5	I		
70	8½	Sec	M89	693FG	9	9	9	12,420	167	34	1909	4.91	40/45	40	4.75	1750	2	5	52	10.7	48	2	4	I		
71	8½	HTC	J77	859088	9	9	9	12,891	471	87.75	1996.75	5.36	40/45	40	3.25	1500	2	5	52	10.7	53	6	6			
72	8½	Sec	M84F	859640	9	9	9	13,233	342	83	2079.75	4.12	40/50	40		1500	2	5	47	10.7	47	4	5	I		
73	8½	Sec	M84F	303RG	10	10	10	13,458	225	56.5	2136.25	4.5	40/50	40	3.75	1200	2	5	52	10.7	42	2	2	I		
74	8½	HTC	J44	KV416	10	10	10	13,600	142	43	2179.25	3.3	50/55	42		1500	1	5.5	41	10.7	42	2	2	I		
75	8½	HTC	D33	878LS				Changing Out 7 5/8" Liner												10.7	56					
76	6¼	Smi	WCH	081LT																10.7	48				C/O cement retainers	
77	6¼	Smi	WCH	360LS																10.7	48	4	3	I		
78	6¼	Smi	WC	016LT				13,653	3	1	2203.5									10.7	48					
79	6¼	Smi	WCH	774LT				13,657	4	8	2211.5	.25	15/20	40		1100	2	5	50	10.7	46	7	5	I		
80	6¼	Smi	W4H	AN3978	10	10	10	13,774	114	40	2258.25	2.85	20/23	45	2	2000	2	5	43	10.7	52	5	4	I		
81	6¼	Smi	F4	AN3549	9	9	10	13,811	37	10.5	2268.75	3.52	20/23	45	3.5	1900	2	5	43	10.7	48	6	2			
82	6¼	Smi	F4	AN1882	9	9	10	13,859	48	14.5	2283.25	3.3	20/23	35	3.25	2200	2	5	43	10.7	47	7	3	0		
83	6¼	Smi	F5	539853	9	9	10	14,027	157	47	2339.25	3.3	20/23	35	3	1800	2	5	42	11.8	48	7	6	0		
84	6¼	Reed	FP73																							

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DIVISION OF SMITH INTERNATIONAL, INC.

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BIT RECORD

COMPANY: Husky Oil NPR Operations, Inc. | CONTRACTOR: Nabors Alaska Drilling, Inc. | COUNTY: North Slope Borough | STATE: Alaska

LEASE: National Petroleum Reserve in Alaska | WELL NO: Lisburne Test Well No. 1 | SEC: 17 | TOWNSHIP: 11S | RANGE: 16W | BLOCK: | FIELD:

TOOL PUSHER | DRILL PIPE | DRAW WORKS

DAY DRILLER | TOOL JOINT: MAKE, SIZE, TYPE | POWER, H.P. | UNDERREAMER

EVENING DRILLER | DRILL COLLAR: NO., O.D., I.D., LENGTH | PUMP NO. 1: MAKE, MODEL, STROKE | SPUD DATE

MORNING DRILLER | DRILL COLLAR: NO., O.D., I.D., LENGTH | PUMP NO. 2: MAKE, MODEL, STROKE | T.D. DATE

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE			DEPTH OUT	FTGE	HOURS RUN	ACC HOURS	FT/HR	WEIGHT (1000 LBS)	ROTARY R.P.M	VERT DEV	PUMP PRESS	PUMPS: No	Liner	SPM	MUD: Wt	Vis	DULL GOOD: T	B	G	REMARKS: FORMATION, LOST CIRC. FLUID, ETC.	DATE
85	6¼	Reed	FP73	539226	9	9	10	14,191	164	44.25	2383.5	3.7	20/23	33	2.75	1800	2	5	42	10.8	47	6	6	I		
86	6¼	Smi	WCH	863LS				14,199	8	2	2385.5	1.1	2/15	20/30								8	2	1/4		
87	6¼	Reed	FP73	299539	9	9	10	14,376	185	42.75	2428.25	4.3	20/33	35	2	1900	2	5	43	10.8	48	8	8	0/4		
88	6¼	Reed	FP73	299541	9	9	10	14,485	109	28	2456.25	3.9	20	35	2.5	1900	2	5	43	10.8	50	8	6	1/4		
89	6¼	Reed	FP72	744995	9	9	10	14,500	15	8.5	2464.75	1.8	22	35	-	1900	2	5	43	10.8	50	1	1	I		
90	6¼	Reed	FP73	299545	9	9	10	14,700	200	49	2513.75	4.08	23	35	2.5	2000	1	5.5	34	10.8	52	5	3	I		
91	6¼	Reed	FP73	199543	9	9	10	14,704	4	2	2515.75	2	23	35	-	2000	1	5.5	34	10.8	52	1	1	I	Drilling on junk	
92	6¼	Smi	WCH	682LS	O	P	E	N	14,714	10	3.5	2519.25	2.86	23	35	-	2000	1	5.5	34	10.8	50	3	5	I	Drilling on junk	
93	6¼	Reed	FP73J	420253	9	9	10	14,900	186	41.25	2660.75	4.48	23	35	2	2000	1	5.5	34	10.8	49	7	4	I		
94	6¼	Reed	FP73J	541366	9	9	10	14,987	87	22	2582.75	3.95	23	35	3.25	1900	2	5	43	10.8	48	8	8	1/2		
95	6¼	Reed	FP73J	901626	9	9	10	15,018	31	8.5	2591.25	3.65	23	35		1900	2	5	43	10.8	48	4	4	I		
97	6¼	Reed	FP73J	299549	9	9	10	15,126	51	19.75	2625		23	35	5	1900	2	5	43	10.8	45	6	4	I		
98	6¼	Reed	FP72J	746812	9	9	10	15,224	98	32	2657	3.06	23	35	5	1900	2	5	43	10.8	48	7	5	I		
99	6¼	Reed	FP72J	744916	9	9	10	15,291	67	21.5	2678.5		23	35	4.75	1900	2	5	43	10.8	48	5	4	I		
100	6¼	Smi	F5	AN1840	9	9	10	15,328	37	12.75	2691.25		23	35	5	1900	2	5	43	10.8	47	3	3	I		
101	6¼	Smi	F4	AN3972	9	9	10	15,492	150	31.25	2731	4.72	23	37	7.5	1900	2	5	43	10.8	44	6	5	0		
102	6¼	Smi	F4	AL6081	9	9	10	15,596	104	25.75	2756.75		20	40	7.5	1900	2	5	44	10.8	44	7	3	0		
103	6¼	Reed	FP72	744996	9	9	10	15,613	15	5	2763.25		20	40	7.5	1900	2	5	43	10.8	46	2	2	0		
104	6¼	Reed	FP73	835799	9	9	10	15,655	42	13	2776.5		20	37	7.5	2001	2	5	45	10.8	47	2	2	I		
105	6¼	Reed	FP73	545247	9	9	10	15,777	114	31.25	2811.5	3.64	20	36	7	2000	2	5.5	45	10.8	46	6	4	I		
106	6¼	Reed	FP73	120651	9	9	10	15,902	125	27.75	2838.25	4.5	20	35	7		2	5	45	10.8	43	7	4	I		

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SMITH BIT REPRESENTATIVE _____ PHONE _____

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DIVISION OF SMITH INTERNATIONAL, INC.

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BIT RECORD

Drilling, Inc.

Well No. 1 | SEC 17 | TOWNSHIP 11S | COUNTY North Slope Borough | STATE Alaska | RANGE 16W | BLOCK | FIELD

COMPANY: Husky Oil NPR Operations, Inc.
CONTRACTOR: Nabors Alaska
LEASE: National Petroleum Reserve in Alaska
WELL NO.: Lisburne Test

TOOL PUSHER
DAY DRILLER
EVENING DRILLER
MORNING DRILLER

DRILL PIPE: MAKE | SIZE | TYPE | NO | O.D. | I.D. | LENGTH
TOOL HORN: NO | O.D. | I.D. | LENGTH
DRILL COLLAR
DRILL COLLAR

DRAW WORKS
POWER | H.P.
PUMP NO. 1: MAKE | MODEL | STROKE
PUMP NO. 2: MAKE | MODEL | STROKE
UNDER SURF
INT. DATE
F.D. DATE

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	2	3	DEPTH OUT	FT	HOURS RUN	ACC HOURS	FT HR	WEIGHT 1000 LBS	ROTARY R.P.M.	VERT DEV	PUMP PRESS	PUMPS No	Liner	SPM	MUD Wt	Vis	DULL CODE I	B	G	REMARKS FORMATION CIRC. LOSS ETC
107	6¼	Reed	FP73	839497	9	9	10	16,067	156	33.5	2876.75	4.6	20	36	7.5	1800	2	5	40	10.6	46	7	6	I	
108	6¼	Reed	FP73	539013	9	9	10	16,229	162	33.25	2910	4.8	20	30	7	1800	2	5	40	10.4	45	6	4	I	
109	6¼	Reed	FP73	299542	9	9	10	16,302	7	22.5	2932.5	3.3	20	35	6.75	1800	2	5	40	10.4	48	5	4	I	
110	6¼	Reed	FP73J	299544	9	9	10	16,497	16	34.5	2975.75	4.9	20	40	8.5	1800	2	5	40	10.4	47	6	5	I	
111	6¼	Reed	FP73J	539015	9	9	10	16,669	17	39.75	3015.5	4.3	21	35	9.75	1800	2	5	40	10.3	44	6	4	I	
112	6¼	Reed	FP73J	147734	9	9	10	16,808	13	31.25	3046.75	4.4	13/18	43	10.25	1800	2	5	40	10.2	44	8	8	1/8	
113	6¼	Reed	FP73J	199540	9	9	10	16,859	5	16.25	3063	3.7	19	28/35	10	1800	2	5	40	10.1	44	4	3	I	
114	6¼	Smi	F7	AS243	9	9	10	16,859		0	3063	0	0	-	10	1800	2	5	40	10.1	44				
115	6¼	Reed	FP73	147071	9	9	10	16,979	2	13	3107	2.2	15/21	35/40	11	1900	2	5	42	10.2	44	2	3	I	
					Cored		to	17,000																	

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PHONE

SMITH REPRESENTATIVE

INTRODUCTION

After the 1976 drilling season, casing requirements were reviewed and design of casing strings standardized. Every effort was made to minimize weight and grade changes for simplicity, cost effectiveness, and to reduce chances of error during handling and running operations. Casing sizes were selected to accommodate designs for wells from 2,000' to 20,000'. Steel grade selection was the controlling factor on design with low hardness (Rockwell C24-28) steel being selected for Arctic application and possible H_2S environment. Below is listed casing sizes and design criteria required by Husky:

SIZE[1]	WEIGHT	YIELD STRENGTH (PSI) MIN.	YIELD STRENGTH (PSI) MAX.	MINIMUM PRESSURE REQUIREMENT (PSI) COLLAPSE	MINIMUM PRESSURE REQUIREMENT (PSI) BURST	CONNECTION
20"	133#/ft.	55,000	80,000	1,500	3,050	STC
13-3/8"[2]	72#/ft.	95,000	110,000	3,450	5,350	BTC
9-5/8"[3]	53.5#/ft.	95,000	110,000	8,850	7,900	BTC
9-3/4"[3]	59.2#/ft.	95,000	110,000	9,750	8,540	BTC
7-5/8"	38#/ft.	95,000	110,000	12,600	9,200	BTC

(1) OD tolerance to be within API requirements unless adjustment absolutely necessary to meet ID requirements.

(2) Special drift to 12.25".

(3) Special drift to 8.50".

The following are additional requirements primarily to assure that the steel exhibits the metallurgical properties for Arctic applications and resistance to hydrogen embrittlement.

1. All pipe that is 13-3/8" OD and smaller to be quenched and tempered.

2. Run Charpy "V" notch tests on two random samples per 50 tons per heat. Minimum acceptance of 15 ft.-lb.@-50°F. Furnish test reports with order.

3. Perform all testing normally required for API approved pipe.

4. Furnish test reports for ladle analysis, quantitative analysis, and all check tests as per API requirements.

In addition, the following handling requirements were made:

1. Collars must be of same steel grade as pipe body.

2. Apply an API modified thread compound on mill-installed collar before bucking on.

3. Inspect at mill using Tuboscope's Amalog IV or equivalent on 9-3/4" and smaller, and at least magnetic particle on 13-3/8" and 20". All pipe to have special and area inspection together with full length API drifting. (Note special drifting requirements.)

4. Apply Arctic grade grease on all connections before installing thread protectors.

5. Install closed-end type thread protectors. Plastic plugs can be used to secure wrench openings in protectors.

6. Buck up thread protectors with impact wrench. Both mill and third party inspection personnel should observe the installation of thread protectors.

7. Palletize or containerize the tubulars, if possible, prior to shipment from mill. Do not haul pipe like cordwood in gondola railroad cars.

8. All pipe to be Range 3.

9. No "V" notching or metal stenciling on pipe body or collars.

The casing programmed for Lisburne No. 1 was as follows: 30" conductor at ±120', 20" at ±1500', 13-3/8" at ±4500', 9-5/8" at ±8500', 7-5/8" liner to ±13,000', 5-1/2" liner to a total depth of 15,000' if needed for evaluation. The program was designed for protection through several anticipated overpressured zones due to penetration of multiple low-angle thrust sheets in the well.

Actual casing run was 30" at 129', 20' at 1504', 13-3/8" at 4509', 9-5/8" at 8002', and 7-5/8" from 7700' to 13,650'. The 9-5/8" casing was run 500' high to forecast due to sloughing shale problems. The 5-1/2" liner was not needed. The 9-5/8" annulus was left full of diesel from the top of Plug No. 8 at 1840' to the surface to permit future temperature measurements by U. S. Geological Survey personnel.

CASING TALLY
SUMMARY SHEET

DATE: June 30, 1979

FIELD National Petroleum Reserve in AK LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 20 " CASING

SUMMARY OF PAGE MEASUREMENTS			
	NO OF JOINTS	FEET	00'S
PAGE 1	52	2017	25
PAGE 2			
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	52	2017	25

SUMMARY OF DEPTH CALCULATIONS				
		NO OF JOINTS	FOOTAGE FEET	00'S
1	TOTAL CASING ON RACKS	52	2017	25
2	LESS CASING OUT (JTS NOS	15	515	23
3	TOTAL (1 - 2)		1502	02
4	SHOE LENGTH		1	85
5	FLOAT LENGTH		1	85
6	MISCELLANEOUS EQUIPMENT LENGTH		None	
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		1505	72
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT 3.35 Casing up from R.T.		1504	22

Weight Indicator before cementing: 65,000 ; after slack-off: 30,000 ; inches slacked off 4 .

SUMMARY OF STRING AS RUN								
WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW/USED	LOCATION IN STRING	NO OF JOINTS	FOOTAGE	INTERVAL
133#	K-55	BRD		New	JT NO. 1 THRU NO. 37	37	1505.72	
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			

PAGE 1 OF 1

CASING TALLY

DATE: July 5, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 20 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	38	03			
2	40	99			
3	41	00			
4	42	04			
5	36	32			
6	42	87			
7	40	24			
8	41	11			
9	37	89			
0	42	45			
TOTAL A	402	94			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	37	97			
2	36	67			
3	43	02			
4	42	40			
5	40	31			
6	42	06			
7	42	70			
8					
9					
0					
TOTAL D	285	13			

1	42	05			
2	42	19			
3	37	31			
4	41	30			
5	42	45			
6	41	78			
7	40	37			
8	43	02			
9	42	40			
0	38	10			
TOTAL B	410	97			

1	37	45			
2	41	62			
3	35	88			
4	43	20			
5	39	97			
6	42	00			
7					
8					
9					
0					
TOTAL E	240	12			

1	36	56			
2	42	05			
3	40	67			
4	36	92			
5	37	05			
6	43	26			
7	41	42			
8	39	51			
9	42	43			
0	43	11			
TOTAL C	402	98			

TOTAL A	402	94			
TOTAL B	410	97			
TOTAL C	402	98			
TOTAL D	285	13			
TOTAL E					
TOTAL PAGE	1502	02			

Float	1	85
Shoe	1	85
	1505	72

NOTE: A,B,C,&D: Run in hole
E: Bad pipe kicked out

Casing cut off: 27.90
Casing left in hole: 1474.12

CASING AND CEMENTING REPORT

WELL NAME Lisburne Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

37	Jts	133#	8RD	K-55	20"	
	Jts					
	Jts					

Shoe @ 1504.22 Float @ 1423.35 DV @ _____

Centralizer @ Total of nine: 1494.22', 1377.37', 1342.05', 1305.73', 1222.62', 1143.62', 1059.12', 979.63', 895.85'

FIRST STAGE

Sx of Cement 4800 Type Permafrost Additives _____ % Excess _____

Preflush 20 Barrels Water Initial Pressure 200

Displacement 15.5 bbls. Final Pressure 700

Plug Down 3:00 AM ~~PM~~

SECOND STAGE - Stage Collar @ _____

Sx of Cement _____ Type _____ Additives _____ % Excess _____

Preflush _____ Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down _____ AM PM

Well Depth 1515' Overall Casing Tally 1505.72'

KB to Top of Cut Off Casing _____ Length of Landing Jt Removed _____

Weight Indicator Before Cementing 30,000 lbs.

Weight Indicator After Slacking Off 30,000 lbs.

Inches Slacked Off _____

Remarks:

170

CASING TALLY
SUMMARY SHEET

DATE: July 26, 1979

FIELD National Petroleum Reserve in AK LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 13 3/8" CASING

SUMMARY OF PAGE MEASUREMENTS			
	NO. OF JOINTS	FEET	.00'S
PAGE 1	50	2050	04
PAGE 2	50	2059	29
PAGE 3	25	1010	54
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	125	5119	87

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	.00'S
1	TOTAL CASING ON RACKS	125	5119	87
2	LESS CASING OUT (JTS NOS.	15	619	52
3	TOTAL (1 - 2)	110	4500	35
4	SHOE LENGTH		2	05
5	FLOAT LENGTH		1	95
6	MISCELLANEOUS EQUIPMENT LENGTH		7	80
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		4512	15
8	LESS WELL DEPTH (KB REFERENCE)		4509	00
9	"UP" ON LANDING JOINT		2	15

Weight indicator before cementing: 251 ; after slack-off: 220 ; inches slacked off 3

SUMMARY OF STRING AS RUN								
WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW USED	LOCATION IN STRING	NO. OF JOINTS	FOOTAGE	INTERVAL
72	S-95	Buttress		New	JT NO. 1 THRU NO. 110	110	4500.08	
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			

PAGE 1 OF 3

CASING TALLY

DATE: July 21, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 13 3/8 " CASING

JOINT NO	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	35			
2	40	03			
3	39	97			
4	41	80			
5	41	20			
6	42	98			
7	40	45			
8	42	14			
9	40	87			
0	41	76			
TOTAL A	412	55			

JOINT NO	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	42	33			
2	41	77			
3	42	90			
4	38	91			
5	40	24			
6	42	30			
7	40	57			
8	36	05			
9	40	10			
0	41	85			
TOTAL D	407	02			

1	41	97			
2	41	78			
3	40	57			
4	39	47			
5	41	70			
6	40	27			
7	41	57			
8	42	88			
9	40	23			
0	39	29			
TOTAL B	409	73			

1	42	45			
2	42	12			
3	42	84			
4	41	33			
5	41	63			
6	39	73			
7	41	30			
8	39	59			
9	42	39			
0	37	64			
TOTAL E	411	02			

1	42	20			
2	41	36			
3	42	26			
4	40	18			
5	41	63			
6	41	66			
7	41	74			
8	38	57			
9	37	59			
0	41	83			
TOTAL C	409	02			

TOTAL A	412	55		
TOTAL B	409	73		
TOTAL C	407	02		
TOTAL D	407	02		
TOTAL E	411	02		
TOTAL PAGE	2049	34		

PAGE 2 OF 3 CASING TALLY DATE: July 21, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 13 3/8" CASING

JOINT NO	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR
1	41	44			
2	41	43			
3	41	59			
4	43	24			
5	39	58			
6	40	63			
7	41	77			
8	40	77			
9	41	49			
0	41	98			
TOTAL A	413	92			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	42	14			
2	41	13			
3	41	70			
4	40	62			
5	42	57			
6	42	58			
7	42	20			
8	39	01			
9	41	18			
0	41	60			
TOTAL D	414	73			

1	33	51			
2	38	00			
3	41	03			
4	41	72			
5	38	66			
6	41	48			
7	42	32			
8	41	70			
9	41	36			
0	41	23			
TOTAL B	401	01			

1	42	00			
2	42	44			
3	42	75			
4	42	51			
5	41	56			
6	40	52			
7	41	99			
8	40	20			
9	42	21			
0	40	45			
TOTAL E	416	63			

1	40	42			
2	41	67			
3	41	84			
4	40	58			
5	41	87			
6	40	85			
7	41	89			
8	40	89			
9	40	17			
0	42	12			
TOTAL C	412	30			

TOTAL A	413	92		
TOTAL B	401	01		
TOTAL C	412	30		
TOTAL D	414	73		
TOTAL E	416	63		
TOTAL PAGE	2058	59		

PAGE 3 OF 3 **CASING TALLY** DATE: July 21, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 13 3/8 " CASING

JOINT NO	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	37	33			
2	36	79			
3	41	04			
4	40	77			
5	40	84			
6	37	87			
7	38	18			
8	40	37			
9	38	02			
0	38	89			
TOTAL A	390	10			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL D					

1	38	58			
2	41	54			
3	40	26			
4	40	90			
5	41	35			
6	38	77			
7	40	91			
8	41	57			
9	42	03			
0	41	43			
TOTAL B	407	34			

1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL E					

1	42	53			
2	42	68			
3	42	88			
4	41	87			
5	42	22			
6					
7					
8					
9					
0					
TOTAL C	212	18			

TOTAL A	390	10		
TOTAL B	407	34		
TOTAL C	212	18		
TOTAL D				
TOTAL E				
TOTAL PAGE	1009	62		

CASING AND CEMENTING REPORT

WELL NAME Lisburne Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

110	Jts	72#	S-95	13 3/8"			
	Jts						
	Jts						

Shoe @ 4509.83 Float @ 4428' FOs @ 2013' and 1025'

Centralizer @ As per program. Total of 42.

FIRST STAGE

Sx of Cement 2000 Type Class "G" Additives 1% CFR-2, 0.05% HR-7 % Excess

Preflush 10 Barrels Water Initial Pressure 200

Displacement 63 bbls. Final Pressure 2200

Plug Down 3:00 ~~AM~~ PM

SECOND STAGE - Stage Collar @ 2013'

Sx of Cement 1000 Type Permafrost Additives % Excess

Preflush 20 Barrels Initial Pressure 1200

Displacement 26.8 bbls. Final Pressure 1200

Plug Down 12:30 AM ~~PM~~

Well Depth 4510' Overall Casing Tally

KB to Top of Cut Off Casing Length of Landing Jt Removed

Weight Indicator Before Cementing 251 lbs.

Weight Indicator After Slacking Off 220 lbs.

Inches Slacked Off 3

Remarks: Third stage: Ran 10 barrels water ahead. Mixed and pumped 1200 sacks Permafrost cement at 14.9 pounds/gallon. Displaced with 70 barrels mud. Had cement returns after 1000 sacks. Cement in place at 10:45 AM.

CASING TALLY
SUMMARY SHEET

DATE: November 26, 1979

FIELD National Petroleum Reserve in Alaska LEASE & WELL NO. Lisburne Test Well No. 1

TALLY FOR 9 5/8 " CASING

SUMMARY OF PAGE MEASUREMENTS			
	NO OF JOINTS	FEET	00'S
PAGE 1	50	2186	07
PAGE 2	50	2153	11
PAGE 3	50	2163	59
PAGE 4	35	1494	05
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	185	7996	44

SUMMARY OF DEPTH CALCULATIONS				
		NO OF JOINTS	FOOTAGE FEET	00'S
1	TOTAL CASING ON RACKS	185	7996	82
2	LESS CASING OUT JTS NOS			
3	TOTAL (1 - 2)		7996	82
4	SHOE LENGTH		2	00
5	FLOAT LENGTH		1	77
6	MISCELLANEOUS EQUIPMENT LENGTH		7	18
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		8007	77
8	LESS WELL DEPTH (KB REFERENCE)		7	61
9	"UP" ON LANDING JOINT		6	00

Weight indicator before cementing: 355,000 ; after slack-off: _____ ; inches slacked off _____ .

SUMMARY OF STRING AS RUN								
WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW USED	LOCATION IN STRING	NO OF JOINTS	FOOTAGE	INTERVAL
53.5	S-95	Buttress		New	JT NO 1 THRU NO 185		7996.82	0 - 8001.77
					JT NO _____ THRU NO _____			
					JT NO _____ THRU NO _____			
					JT NO _____ THRU NO _____			
					JT NO _____ THRU NO _____			
					JT NO _____ THRU NO _____			
					JT NO _____ THRU NO _____			

PAGE 1 OF 4 CASING TALLY DATE: November 26, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 9 5/8 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	46	35			
2	41	99			
3	44	86			
4	43	10			
5	43	78			
6	45	13			
7	40	34			
8	43	58			
9	39	35			
0	44	91			
TOTAL A	433	39			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR
1	43	95			
2	46	12			
3	44	80			
4	45	64			
5	44	06			
6	41	88			
7	44	58			
8	44	74			
9	45	99			
0	44	00			
TOTAL D	445	76			

1	43	52			
2	43	48			
3	44	30			
4	43	22			
5	46	91			
6	45	13			
7	42	17			
8	47	20			
9	43	30			
0	37	87			
TOTAL B	437	10			

1	37	09			
2	44	46			
3	43	48			
4	41	18			
5	46	53			
6	44	68			
7	45	50			
8	43	74			
9	45	80			
0	45	76			
TOTAL E	438	22			

1	43	30			
2	45	57			
3	44	00			
4	42	38			
5	43	35			
6	45	16			
7	42	90			
8	38	40			
9	44	84			
0	41	70			
TOTAL C	431	60			

TOTAL A	433	39		
TOTAL B	437	10		
TOTAL C	431	60		
TOTAL D	445	76		
TOTAL E	438	22		
TOTAL PAGE	2186	07		

PAGE 2 OF 4 **CASING TALLY** DATE: November 26, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 9 5/8" CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	38	70			
2	43	19			
3	42	78			
4	38	15			
5	40	86			
6	38	95			
7	44	98			
8	43	90			
9	45	20			
0	43	78			
TOTAL A	420	49			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT. GR.
1	42	21			
2	43	40			
3	43	09			
4	45	03			
5	42	30			
6	46	18			
7	42	82			
8	42	66			
9	41	08			
0	38	10			
TOTAL D	426	87			

1	43	92			
2	42	00			
3	44	60			
4	42	71			
5	45	98			
6	46	70			
7	44	31			
8	42	57			
9	47	28			
0	44	38			
TOTAL B	444	45			

1	44	96			
2	36	65			
3	42	50			
4	43	90			
5	44	18			
6	43	89			
7	47	06			
8	43	96			
9	42	75			
0	43	50			
TOTAL E	433	35			

1	38	47			
2	42	98			
3	42	94			
4	44	30			
5	45	15			
6	44	23			
7	42	30			
8	43	21			
9	44	49			
0	39	88			
TOTAL C	427	95			

TOTAL A	420	49		
TOTAL B	444	45		
TOTAL C	427	95		
TOTAL D	426	87		
TOTAL E	433	35		
TOTAL PAGE	2153	11		

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PAGE 3 OF 4 CASING TALLY DATE: November 26, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 9 5/8 " CASING

JOINT NO	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR
1	38	75			
2	43	73			
3	43	47			
4	38	20			
5	43	10			
6	43	28			
7	44	08			
8	44	20			
9	43	12			
0	41	78			
TOTAL A	423	71			

JOINT NO	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	44	65			
2	44	00			
3	41	89			
4	43	22			
5	44	28			
6	44	09			
7	44	05			
8	43	85			
9	44	24			
0	43	87			
TOTAL D	438	14			

1	46	00			
2	44	40			
3	42	16			
4	43	98			
5	38	93			
6	42	45			
7	43	60			
8	44	75			
9	45	08			
0	46	99			
TOTAL B	438	34			

1	41	62			
2	46	26			
3	43	97			
4	45	03			
5	42	73			
6	42	50			
7	45	11			
8	42	24			
9	44	32			
0	42	81			
TOTAL E	436	57			

1	43	97			
2	43	12			
3	44	33			
4	40	85			
5	41	45			
6	44	69			
7	42	99			
8	34	95			
9	47	02			
0	43	46			
TOTAL C	426	83			

TOTAL A	423	71		
TOTAL B	438	34		
TOTAL C	426	83		
TOTAL D	438	14		
TOTAL E	436	57		
TOTAL PAGE	2163	59		

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PAGE 4 OF 4

CASING TALLY

DATE: November 26, 1979

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 9 5/8 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	43	18			
2	42	16			
3	43	60			
4	44	17			
5	43	30			
6	43	27			
7	42	67			
8	46	85			
9	43	95			
0	43	82			
TOTAL A	436	97			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR
1	42	98			
2	41	49			
3	41	70			
4	44	10			
5	32	72			
6					
7					
8					
9					
0					
TOTAL D	202	99			

1	45	00			
2	46	42			
3	41	90			
4	44	00			
5	35	30			
6	40	00			
7	41	75			
8	47	03			
9	42	73			
0	43	20			
TOTAL B	427	33			

1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL E					

1	38	90			
2	35	63			
3	43	15			
4	40	39			
5	42	10			
6	42	95			
7	45	39			
8	46	90			
9	47	50			
0	43	85			
TOTAL C	426	76			

TOTAL A	436	97		
TOTAL B	427	33		
TOTAL C	426	76		
TOTAL D	202	98		
TOTAL E				
TOTAL PAGE	1494	05		

CASING AND CEMENTING REPORT

WELL NAME Lisburne Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

185	Jts	53.5#	S-95	9 5/8"		
	Jts					
	Jts					

Shoe @ 8001.77' Float @ 7909.66' DV @ 4600.13'; FO @ 2012.73

Centralizer @ FIRST STAGE 7990', 7953', 7865', 7778', 7692', 7609', 7521', 7433', 7343', 7256', 7165', 7084', 6995', 6909', 4689', 4646', 4559', 4519', 4303', 4092', 3875', 3659', 3447', 3232', 3011', 2103', 2059', 1966', 1922', 1504', 1286', 1068', 850', 637', 423', 213', 150', 104'.

Sx of Cement 1200 Type Class "G" Additives .15% HR-7 1% CFR-2 % Excess

Preflush 50 Barrels Water Initial Pressure 400

Displacement 557 bbls. Final Pressure Bumped plug with 1150 psi and 3000 psi.

Plug Down 12:08 ~~AM~~ PM

SECOND STAGE - Stage Collar @ 4600'

Sx of Cement 800 Type Class "G" Additives 1% CFR-2 % Excess

Preflush 50 Barrels Water Initial Pressure 275

Displacement 327 bbls. Final Pressure 1250

Plug Down 10:42 AM ~~PM~~ Had 25 barrels water returned.

Well Depth 8015' Overall Casing Tally 8007.77

KB to Top of Cut Off Casing 30' Length of Landing Jt Removed 32.72

Weight Indicator Before Cementing 355,000 lbs.

Weight Indicator After Slacking Off 0 lbs.

Inches Slacked Off 0

Remarks: Landed National emergency 9 5/8" slips with total casing load. Cut off 3.07 feet of Joint No. 184 and Landing Joint No. 185; laid down. Installed 9 5/8" National pack-off assembly. Set on National 13 5/8", 5000 X 11", 10,000 casing head.

CASING TALLY
SUMMARY SHEET

DATE: March 9, 1980

FIELD National Petroleum Reserve in AK LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 7-5/8" CASING

SUMMARY OF PAGE MEASUREMENTS			
	NO OF JOINTS	FEET	00'S
PAGE 1	50	2005	86
PAGE 2	50	2007	16
PAGE 3	50	1978	41
PAGE 4	4	162	66
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	154	6154	09

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FULLY	00'S
1	TOTAL CASING ON RACKS	154	6154	09
2	LESS CASING OUT (JTS NOS)	6	250	28
3	TOTAL (1 - 2)	148	5903	81
4	SHOE LENGTH		1	00
5	FLOAT LENGTH		1	20
6	MISCELLANEOUS EQUIPMENT LENGTH		43	
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		5950	
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT			

Weight indicator before cementing: 350 ; after slack-off: 290 ; inches slacked off 16"

SUMMARY OF STRING AS RUN								
WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW USED	LOCATION IN STRING	NO OF JOINTS	FOOTAGE	INTERVAL
39#	AB FL45			New	JT NO. 1 THRU NO. 148		5903.88	7700 - 13,650
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO. THRU NO.			
					JT NO THRU NO			
					JT NO THRU NO			

PAGE 1 OF 4

CASING TALLY

DATE: March 9, 1980

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 7 5/8" CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	40	28			
2	35	71			
3	40	89			
4	39	51			
5	38	36			
6	41	05			
7	39	08			
8	38	57			
9	39	81			
0	39	03			
TOTAL A	392	29			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	43	94			
2	39	96			
3	36	79			
4	40	92			
5	40	00			
6	40	77			
7	40	29			
8	40	64			
9	43	99			
0	38	73			
TOTAL D	406	03			

1	41	18			
2	41	01			
3	43	40			
4	42	93			
5	39	63			
6	40	33			
7	41	23			
8	39	28			
9	39	56			
0	38	40			
TOTAL B	406	95			

1	39	57			
2	40	23			
3	41	38			
4	41	21			
5	40	38			
6	41	39			
7	40	02			
8	39	41			
9	41	72			
0	36	60			
TOTAL E	401	91			

1	41	10			
2	38	22			
3	40	61			
4	41	24			
5	41	50			
6	40	89			
7	39	98			
8	38	78			
9	40	66			
0	35	70			
TOTAL C	398	68			

TOTAL A	392	29		
TOTAL B	406	95		
TOTAL C	398	68		
TOTAL D	406	03		
TOTAL E	401	91		
TOTAL PAGE	2005	86		

PAGE 2 OF 4 CASING TALLY DATE: March 9, 1980

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 7 5/8 " CASING

JOINT NO	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	39	07			
2	40	96			
3	40	84			
4	41	42			
5	40	64			
6	40	48			
7	41	53			
8	39	59			
9	39	90			
0	40	85			
TOTAL A	405	28			

JOINT NO	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	40	81			
2	40	90			
3	41	03			
4	40	18			
5	40	00			
6	40	91			
7	40	49			
8	41	15			
9	40	98			
0	40	15			
TOTAL D	406	60			

1	39	62			
2	40	96			
3	44	21			
4	40	12			
5	39	31			
6	40	47			
7	39	38			
8	40	43			
9	39	96			
0	39	36			
TOTAL B	404	27			

1	40	21			
2	39	42			
3	40	48			
4	39	65			
5	39	10			
6	40	20			
7	35	23			
8	40	03			
9	38	76			
0	37	58			
TOTAL E	390	66			

1	39	92			
2	41	25			
3	39	68			
4	43	43			
5	39	82			
6	40	38			
7	40	49			
8	37	43			
9	39	65			
0	38	30			
TOTAL C	400	35			

TOTAL A	405	28		
TOTAL B	404	27		
TOTAL C	400	35		
TOTAL D	406	60		
TOTAL E	390	66		
TOTAL PAGE	2007	16		

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PAGE 3 OF 4

CASING TALLY

DATE: March 9, 1980

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 7 5/8 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	39	89			
2	40	49			
3	39	37			
4	39	23			
5	40	36			
6	41	18			
7	39	26			
8	38	87			
9	41	38			
0	39	35			
TOTAL A	399	38			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	40	39			
2	37	93			
3	39	42			
4	37	59			
5	40	68			
6	40	51			
7	39	27			
8	41	68			
9	38	76			
0	41	11			
TOTAL D	397	38			

1	37	90			
2	41	54			
3	38	61			
4	40	02			
5	38	98			
6	39	55			
7	38	91			
8	41	06			
9	39	45			
0	40	94			
TOTAL B	396	96			

1	40	10			
2	40	38			
3	40	54			
4	39	46			
5	39	51			
6	39	99			
7	39	79			
8	40	56			
9	40	33			
0	40	82			
TOTAL E	401	48			

1	38	95			
2	41	28			
3	38	43			
4	38	81			
5	39	95			
6	32	10			
7	39	22			
8	39	60			
9	40	69			
0	34	18			
TOTAL C	383	21			

TOTAL A	399	38		
TOTAL B	396	96		
TOTAL C	383	21		
TOTAL D	397	38		
TOTAL E	401	48		
TOTAL PAGE	1978	41		

PAGE 4 OF 4 CASING TALLY DATE: March 9, 1980

FIELD NPRA LEASE & WELL NO. Lisburne Test Well No. 1 TALLY FOR 7 5/8 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	40	94			
2	40	31			
3	38	94			
4	42	47			
5					
6					
7					
8					
9					
0					
TOTAL A	162	66			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL D					

1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL B					

1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL E					

1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL C					

TOTAL A	162	66		
TOTAL B				
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	162	66		

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CASING AND CEMENTING REPORT

WELL NAME Lisburne Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

148	Jts	38.05#	S-95	AB-FL4S	7 5/8"	
	Jts					
	Jts					

Shoe @ 13,650' Float @ 13,606' DV @ _____

Centralizer @ _____

FIRST STAGE

Sx of Cement 225 Type Class "G" Additives 10% Gel, 1% CFR-2, 0.5% HR-7 with 1/4 #/sack Flow Seal % Excess _____

Preflush 30 Barrels Sam 5 Spacer Initial Pressure 900

Displacement 394 bbls. Final Pressure 3000

Plug Down 2:30 AM ~~PM~~

SECOND STAGE - Stage Collar @ _____

Sx of Cement 200 Type Class "G" Additives 1% CFR-2, 0.2% HR-7 with 1/4 #/sack Flow Seal % Excess _____

Preflush _____ Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down _____ AM PM

Well Depth _____ Overall Casing Tally _____

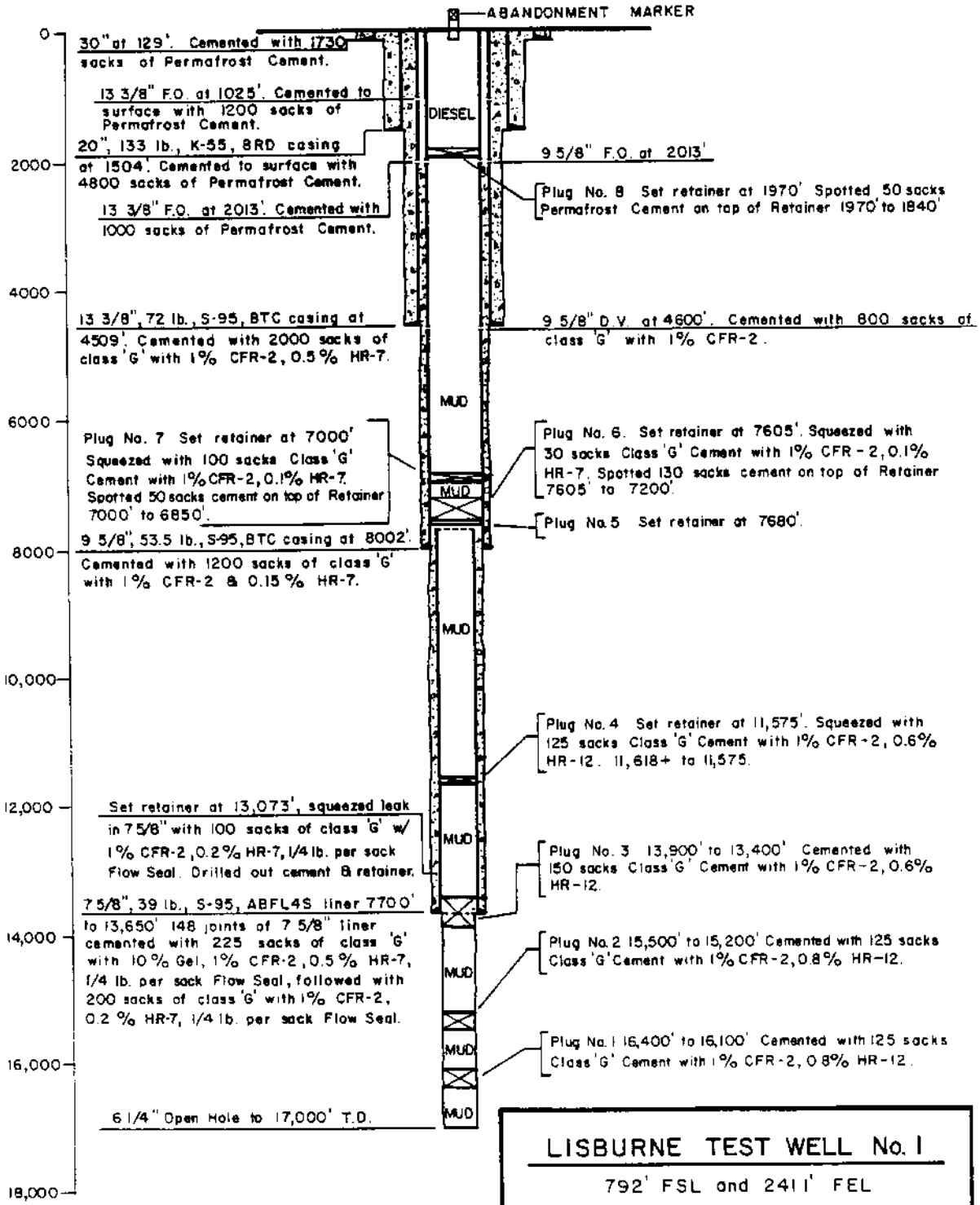
KB to Top of Cut Off Casing _____ Length of Landing Jt Removed _____

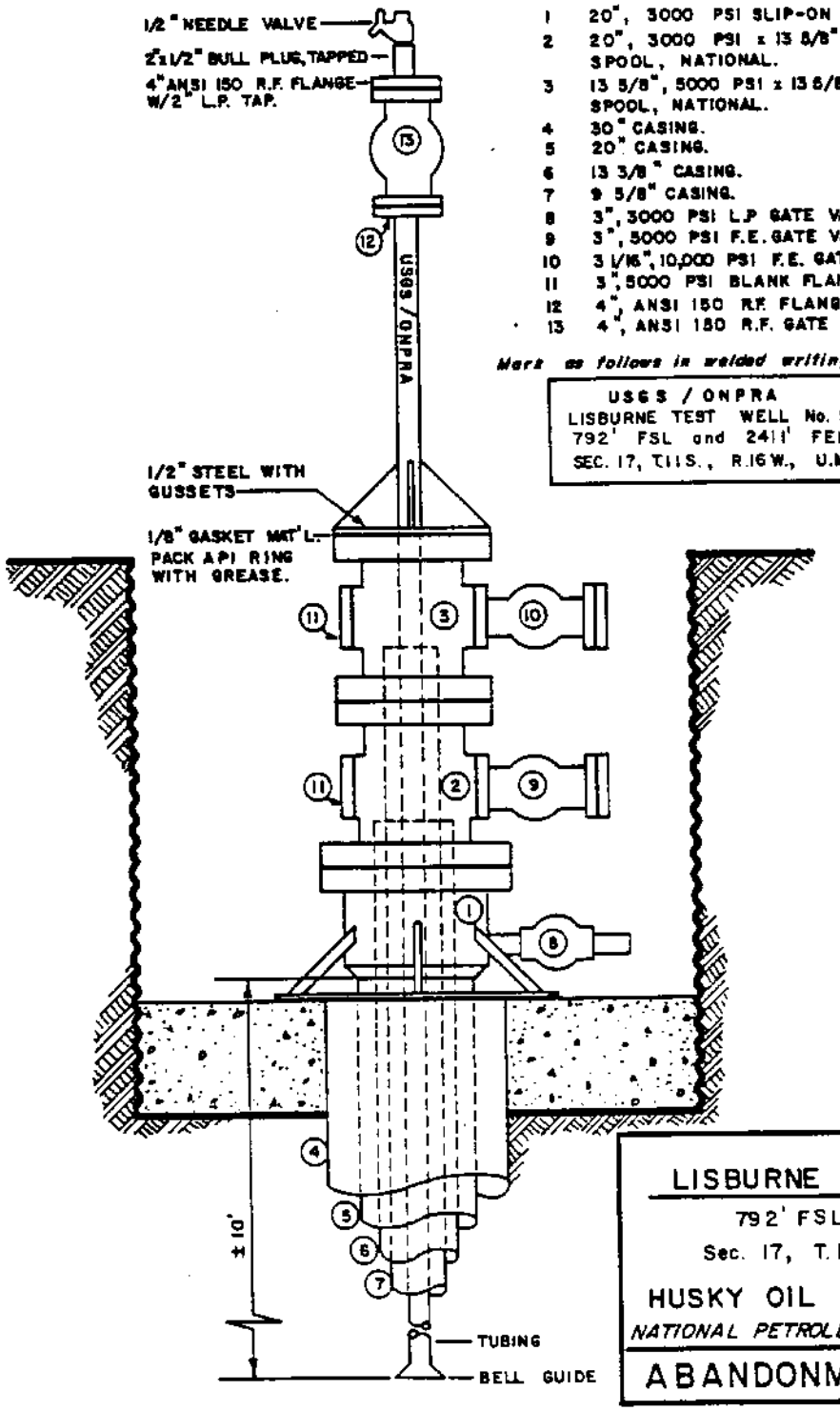
Weight Indicator Before Cementing _____ lbs.

Weight Indicator After Slacking Off _____ lbs.

Inches Slacked Off _____

Remarks:


ABANDONMENT MARKER
0
30" at 129'. Cemented with 1730 sacks of Permafrost Cement.
13 3/8" F.O. at 1025'. Cemented to surface with 1200 sacks of Permafrost Cement.
DIESEL
20", 133 lb., K-55, 8RD casing at 1504'. Cemented to surface with 4800 sacks of Permafrost Cement.
2000
9 5/8" F.O. at 2013'
13 3/8" F.O. at 2013'. Cemented with 1000 sacks of Permafrost Cement.
Plug No. 8 Set retainer at 1970' Spotted 50 sacks Permafrost Cement on top of Retainer 1970' to 1840'
4000
13 3/8", 72 lb., S-95, BTC casing at 4509'. Cemented with 2000 sacks of class 'G' with 1% CFR-2, 0.5% HR-7.
9 5/8" D.V. at 4600'. Cemented with 800 sacks of class 'G' with 1% CFR-2.
MUD
6000
Plug No. 7 Set retainer at 7000' Squeezed with 100 sacks Class 'G' Cement with 1% CFR-2, 0.1% HR-7. Spotted 50 sacks cement on top of Retainer 7000' to 6850'.
Plug No. 6. Set retainer at 7605'. Squeezed with 30 sacks Class 'G' Cement with 1% CFR-2, 0.1% HR-7. Spotted 130 sacks cement on top of Retainer 7605' to 7200'.
MUD
Plug No. 5 Set retainer at 7680'.
9 5/8", 53.5 lb., S-95, BTC casing at 8002'. Cemented with 1200 sacks of class 'G' with 1% CFR-2 & 0.15% HR-7.
8000
MUD
10,000
Plug No. 4 Set retainer at 11,575'. Squeezed with 125 sacks Class 'G' Cement with 1% CFR-2, 0.6% HR-12. 11,618+ to 11,575.
12,000
Set retainer at 13,073', squeezed leak in 7 5/8" with 100 sacks of class 'G' w/ 1% CFR-2, 0.2% HR-7, 1/4 lb. per sack Flow Seal. Drilled out cement & retainer.
MUD
Plug No. 3 13,900' to 13,400' Cemented with 150 sacks Class 'G' Cement with 1% CFR-2, 0.6% HR-12.
7 5/8", 39 lb., S-95, ABFL4S liner 7700' to 13,650' 148 joints of 7 5/8" liner cemented with 225 sacks of class 'G' with 10% Gel, 1% CFR-2, 0.5% HR-7, 1/4 lb. per sack Flow Seal, followed with 200 sacks of class 'G' with 1% CFR-2, 0.2 % HR-7, 1/4 lb. per sack Flow Seal.
14,000
MUD
Plug No. 2 15,500' to 15,200' Cemented with 125 sacks Class 'G' Cement with 1% CFR-2, 0.8% HR-12.
MUD
16,000
Plug No. 1 16,400' to 16,100' Cemented with 125 sacks Class 'G' Cement with 1% CFR-2, 0.8% HR-12.
6 1/4" Open Hole to 17,000' T.D.
MUD
18,000
LISBURNE TEST WELL No. 1
792' FSL and 2411' FEL
Sec. 17, T.11S., R.16W., U.M.
HUSKY OIL N.P.R. Operations
NATIONAL PETROLEUM RESERVE in ALASKA
WELLBORE SCHEMATIC



Part No.	EQUIPMENT LIST
1	20", 3000 PSI SLIP-ON HEAD, NATIONAL.
2	20", 3000 PSI x 13 5/8", 5000 PSI CASING SPOOL, NATIONAL.
3	13 5/8", 5000 PSI x 13 5/8", 10,000 PSI TUBING SPOOL, NATIONAL.
4	30" CASING.
5	20" CASING.
6	13 3/8" CASING.
7	9 5/8" CASING.
8	3", 3000 PSI L.P. GATE VALVE.
9	3", 5000 PSI F.E. GATE VALVE.
10	3 1/16", 10,000 PSI F.E. GATE VALVE.
11	3", 5000 PSI BLANK FLANGE.
12	4", ANSI 150 R.F. FLANGE.
13	4", ANSI 150 R.F. GATE VALVE.

Mark as follows in welded writing on pipe:

USGS / ONPRA
LISBURNE TEST WELL No. 1
792' FSL and 2411' FEL
SEC. 17, T.11S., R.16W., U.M.

LISBURNE TEST WELL No. 1

792' FSL and 2411' FEL

Sec. 17, T.11S., R.16W., U.M.

HUSKY OIL *N.P.R. Operations*

NATIONAL PETROLEUM RESERVE in ALASKA

ABANDONMENT HEAD

RIG INVENTORY

Draw Works

Oilwell 860, Serial No. H38-15, Double Drum, Main Drum 1 3/8" Lebus, Bill Drilling Control, Crown-O-Matic Crown Saver, and National Type D Dead Line Anchor.

Engines

Three (3) - Caterpillar D-398 diesel engines enclosed in Herc-size steel buildings.

Auxiliary Brake

Elmago Model 6032, Serial No. 6487.

Draw Works Drive

Oilwell Model 1600, Serial No. H-37-21.

Mast

Lee. C. Moore Model 1,025,000#, Serial No. T-3538, 142 ft.; hook load with 12 lines 703,000#; hook load with 10 lines 683,000#.

Substructure

Lee C. Moore - capacity 700,000# casing load plus a set-back load of 400,000#. Floor height 24', motor base height 16.50', G.L. to table beams of 22.10'.

Rotary Table

Oilwell Model A-2750, Size 27 1/2", Serial No. R-106-84, capacity 465 tons.

Travelling Blocks

Oilwell Model 480, Serial No. B-50-98, 6 sheaves, 480-ton rating.

Hook

W. Wilson Model Hydra-Hook, Serial No. 26, 500-ton rating.

Swivel

Oilwell Model PC 425, Serial No. 5-31-8. Capacity 425-ton dead load, 259-ton rotating.

Links

B J 3 1/2" x 120" capacity 500 ton. Spare B J 2 3/4" x 108" capacity 350 ton.

Pumps

No. 1 - Oilwell Model A-1000P, 7 3/4" x 18", Serial No. P-117-36.
No. 2 - Oilwell Model A-1000P, 7 3/4" x 18", Serial No. P-117-37.

Pulsation Dampener

Hydril Model K-20 3000, Serial No. 36082.

Generators

No. 1 - E. M. Model Bemac II, 250 KW 1200 RPM engine make Caterpillar, Model D-353E, Serial No. 46B3266.

No. 2 - E. M. Model Bemac II, 250 KW 1200 RPM engine make Caterpillar, Model D-353E, Serial No. 46B3268.

Accumulator

Stewart Stevenson Model Koomey T-15100-35, reservoir capacity 180 gallons. Charged capacity 160 gallons with 15 HP chain driven, 3/4" x 2 1/4" triplex pump, and 4 nitrogen bottles for back up. Remove system model Gerc-3.

Blowout Preventors

One (1) - 13-5/8" x 5000 Hydril G.K., Serial No. 33850.
One (1) - 13-5/8" x 5000 Double Shaffer type L.W.S.
One (1) - 13-5/8" x 5000 Single Shaffer type L.W.S.

Choke Manifold

As per attached drawing, but less automatic choke. All 3" x 5,000 psi W.P. valves and fittings insulated and heated steel building.

Wash Down Pumps

Two (2) - 3" x 2" Mission pumps driven by 20 HP electric motors.
High Pressure Blowout Preventer Test Pump.

Air Compressor

No. 1 - Westinghouse Model 4WC, Serial No. 457-1800.
No. 2 - Westinghouse Model 4WC, Serial No. 457-1756.

Air Receivers

One (1) 36" x 12', 865 cubic foot capacity, 150 psi working pressure.

Mud Tanks

No. 1 Shaker Tank - width 9.50', length 41.0', height 7.50'. "U" shaped bottom, insulated on all sides, and has steel insulated cover. Capacity 350 barrels.

No. 2 Center Tank - width 9.50', length 39.0', height 7.50'. "U" shaped bottom, insulated on all sides, and has steel insulated cover. Capacity 350 barrels.

No. 3 Suction Tank - width 9.50', length 36.55', height 7.50'. "U" shaped bottom, insulated on all sides, and has steel insulated cover.

No. 4 Premix Tank - with two agitators. Width 8.50', length 35' with winterization. Capacity 192 barrels.

1 - 6" low-pressure mud system
1 - 4" high-pressure mud system
2 - 3 HP agitators
2 - 10 HP agitators
1 - 7 1/2 HP agitator.

Shale Shaker

Dual Brandt Shaker.

Degasser

Gas-Hogg, Model GA-TX.

Desander

Bauer, Model 623-4, two 12" cones 1200 GPM.

Desilter

Pioneer 11-4" DSC-400G cones 1200 GPM.

Combination Water and Fuel Tank

Water Tank - 30' x 8' x 8' rectangular - 400 barrels.
Fuel Tank - 26.50' x 6.50' x 6.50' cylinder type - 6000 gallons.

Dog House

Length 32', width 9.0', height 8.02' steel insulated with 3/8" plywood interior.

Generator and Accumulator Building

Generator No. 1 - 31' long, 9.50' wide, 8.32' high.
Generator No. 2 - 31' long, 9.50' wide, 8.32' high.

Boilers

Two Automatic 100 HP.

Air Heater

1. Air Heaters Tioga, Model IDF 205-4M.M, Serial No. 103.
2. Air Heaters Tioga, Model IDF 2055-815M.M BTU, Serial No. 105.

Tongs

W. Wilson Type AAX with all sizes of heads to 13-3/8".

Winch

Germatic Model 6-255EC, type hydraulic line size 9/16".

Slips

Two (2) sets Varco Model SDXL Size 5".
One (1) set Varco Model DCSL Size 9".
One (1) set Varco Model CMSXL Size 20SEG.
One (1) set Baash Ross Size 7".

Elevators

Two (2) sets W. Wilson, Type 350 ton, 18 degrees, 5".
One (1) set W. Wilson, Type A, 4-1/2".
One (1) set W. Wilson, Type 50-ton, 13-3/8".
One (1) set W. Wilson, Type 50-ton, 13-3/8".
One (1) set B. J., Type A, 50-ton, 7".
One (1) set W. Wilson, Type A, 50-ton, 7" with 6-1/4" bushings.

Kelly

One (1) Drilco 5-1/4" Hex 4-1/2" IF 40' long.
One (1) Baash Ross 5-1/4" Hex 4-1/2" IF 40' long.

Kelly Spinner

Varco Model 6200 air operated.

Survey Instrument

Totco, O.D. 1-5/8" double punch 8 degrees.

Kelly Drive

Varco Model HD type pin drive 5-1/4" Hex.
24 6-1/2"/6-3/4" with 5" H90 Connectors.
24 7-3/4" with 6-5/8" Regular Connectors.

Drill Pipe

310 Joints 5" Grade E 18 Degrees 4-1/2" IF.
158 Joints 5" Grade G 18 Degrees 4-1/2" IF.

Fishing Tools

One (1) 8 1/8" OD and one (1) 5/8" OD Series 150 Bowen Over Shot top connection 5 1/2".
F.H. Maximum Catch 9" with full range of grapples.

Junk Basket

One (1) - 4-1/2" R 6-5/8" OD Skirt Junk Basket.

Other Equipment

Tool House - length 42', width 9.0', height 8.35' Steel insulated and heated.
One (1) Atco 24' x 40' fold-away shop building.
One (1) full set of sectional rig matting.

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