NATIONAL PETROLEUM RESERVE IN ALASKA

HISTORY
OF
DRILLING OPERATIONS

IKPIKPUK 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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IKPIKPUK TEST WELL NO. 1

INTRODUCTION

The Ikpikpuk Test Well No. 1 is located in the National Petroleum Reserve in Alaska (Figure 1). It is 1,306 feet from the north line and 785 feet from the east line of protracted Section 25, Township 13 North, Range 10 West, Umiat Meridian (Latitude: 70°27'19.679" North; Longitude: 154°19'52.780" West). Alaska State Plane Coordinates are: X = 459,399.70 and Y = 6,016,300.06, Zone 5. Elevations are: pad 32 feet, Kelly bushing 52 feet. Drilling related operations started with rig-up on April 18, 1978 and curtailed on May 2 for the summer, with start-up again scheduled for the fall of 1978. After two winter seasons of drilling, the well was terminated on February 28, 1980 at a total depth of 15,481 feet.

The well was drilled to provide stratigraphic information and to test structural closure in Triassic through Devonian sediments. At the conclusion of the drilling and evaluation operations, the well was plugged and abandoned with cement and mechanical plugs set at selected intervals.

Husky Oil NPR Operations, Inc. supervised and directed the drilling and support operations as prime contractor to the U. S. Geological Survey, Department of the Interior. Parco Rig 96, a National 130, was used to drill the well.

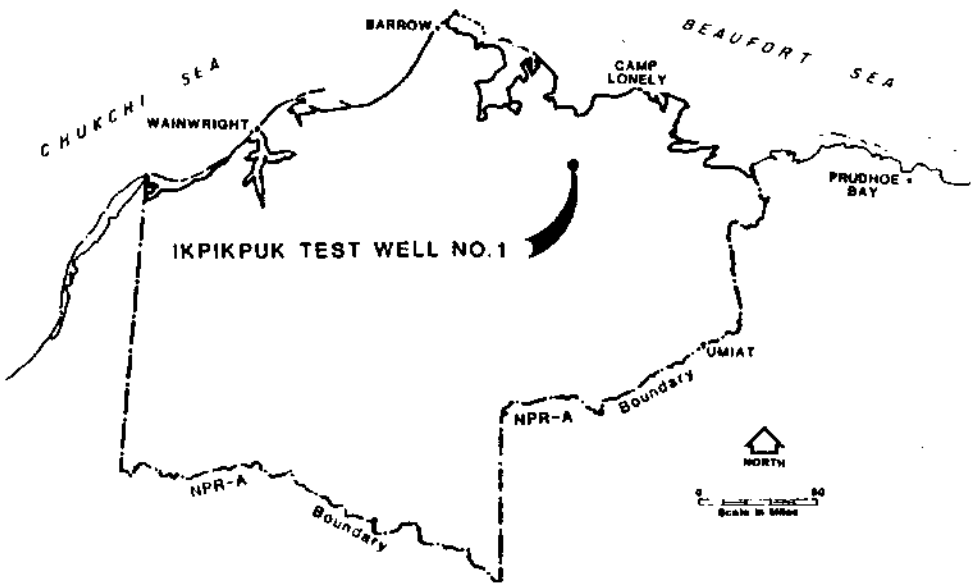

FIGURE 1 - WELL LOCATION MAP - IKPIKPUK NO. 1

DRILLING SUMMARY

Field operations at the Ikpikpuk Test Well No. 1 started on January 6, 1978, with the mobilization of crews and equipment required to build the drilling location and an ice airstrip to accommodate C-130 Hercules aircraft. Construction work was completed on February 7.

Rig move-in operations began April 14, 1978, and rig-up began on April 18. Ninety-one Herc loads and 51 Rolligon loads were required to move Parco Rig 96 to Ikpikpuk. The move was completed on May 2, and the operation was suspended for the summer, with the rig approximately 85 percent rigged up.

Parco and Kodiak crews arrived on location November 1, 1978, to activate the rig camp and prepare to support the Construction crew. An Otter airstrip was prepared on a nearby lake and the camp placed in full operation. Rather than wait until the lake ice had frozen sufficiently and to facilitate an early start of drilling operations, an ice airstrip to accommodate the Hercules C-130, was constructed on the tundra. Camp support for construction began on November 6 and continued until November 21. During this time, rig-up began and maintenance work was conducted on the rig.

Rig-up with full crew began November 22, 1978 and the derrick was raised on November 23. The 30" conductor was set at 100' and cemented in place with 305 sacks of Permafrost II cement on November 26. Rig-up was completed, and the well was spudded November 28, 1978, at 3:00 p.m.

A 17-1/2" hole was drilled to 535'. The hole was logged with DIL/SP/GR and BHC-Sonic/GR logs. The 17-1/2" hole was opened to 26" to 298'. The draw works broke down and were repaired. The 17-1/2" hole was opened to 26" to 535'. The hole was conditioned for 20" casing. Thirteen joints of 20", 133#, K55, 8rd, ST&C casing were run and landed at 521'. The hole was conditioned for cementing. The 20" casing was cemented with 1,650 sacks of Permafrost II cement, mixed at 14.8 to 15 ppg, with final returns of 14.9 ppg. The cement was preceded with 20 barrels of water and displaced with two barrels of water and five barrels of mud. The cement was in place December 1, 1978, at 4:11 p.m. After waiting on cement for 24 hours, the 20" casing was cut off and a 20" starter head was welded on. The weld was tested to 750 psi. A 20" diverter and spool were nippled up and the diverter was tested to 300 psi.

Drilling continued with a 17-1/2" bit from 521' to 2623', and the hole was conditioned for logs. The hole was logged with the DIL/SP/GR and BHC-Sonic/GR logs. The DIL/SP/GR had to be rerun. The hole was conditioned for casing, and 64 joints of 13-3/8", 72#, S-95, BTC casing were run and landed at 2603'. It was cemented with 3,500 sacks of 14.9 ppg Permafrost II cement. Returns at the end of the job were 14.7 ppg. The cement was preceded with 20 barrels of water and displaced with 40 barrels of mud. The cement was in place December 8, 1978, at 9:51 p.m. The top job was cemented with 100 sacks of 14.9 ppg Permafrost II cement through one-inch pipe. The 13-3/8" slips were installed, and a 20", 2,000

psi x 13-5/8", 5,000 psi split unihead was installed. The 20" flange and packoffs were tested to 2,000 psi. A 13-5/8", 5,000 psi blowout-preventer stack and choke manifold were nippled up. The rams, choke manifold, and floor valves were tested to 5,000 psi. The Hydril and casing were tested to 2,500 psi. The shoe was drilled out to 2633', and the formation tested to a 14.0 ppg gradient.

A 12-1/4" hole was drilled to 9,913 feet. Stratigraphic cores were cut as follows: Core No. 1, from 2930' to 2960', recovered 30'; Core No. 2, from 3784' to 3812', recovered 28'; Core No. 3, from 5690' to 5700', recovered 10'; Core No. 4, from 7132' to 7143', recovered 11'; Core No. 5, from 7368' to 7378', recovered 9'; Core No. 6, from 7491' to 7501', recovered 10'. Lost returns and tight-hole problems were encountered below 7491'. Returns were lost 11 stands off bottom while tripping in at 7491' and while reaming to bottom at 8332'. Partial returns were lost while drilling from 9150' to 9422'. In all cases, returns were regained and drilling was continued. Below 7938' tight-hole conditions required extensive reaming on trips into the hole and pumping off bottom when attempting to pull out of the hole.

At 9913' the 12-1/4" hole was logged back into the 13-3/8" casing at 2603'. Logs included a DIL/SP/GR, FDC/CNL/GR/CAL, BHC-Sonic/GR, HDT-Dipmeter, and Velocity Survey. Sixty-nine sidewall cores were shot with 42 recovered. The FDC/CNL/GR/CAL had to be run twice to get a log. Also, when running the second sidewall core gun, the wireline backlashed and the tangled line had to be pulled from the hole and stripped from the drum. A third gun was run to complete the job.

At the completion of logging 9-5/8" casing was run to 9873' (244 joints of 53.5#, S-95, BTC casing). The float collar was at 9875', the DV at 7197', and the FOs at 2336' and 2142'. The casing was cemented in three stages. The first stage at the shoe was cemented with 1,800 sacks of 15.6-15.8 ppg Class "G" cement (1% CFR-2, 0.3% HR-7) with full returns. The second stage was cemented through the DV at 7197' with 1,300 sacks of 15.8 ppg Class "G" cement (1% CFR-2, 0.1% HR-7). The third stage was cemented through the FO at 2386'. It was opened and tested. The formation was broken down with 1,140 psi and an injection rate established at 4 barrels per minute at 400 psi. Three hundred sacks of 14.8 ppg Permafrost II cement were pumped and down-squeezed at a maximum of 700 psi. The FO was closed and tested to 3,000 psi. The upper FO at 2142' was opened, circulated with no cement returns, closed, and tested to 3,000 psi. The casing was tested to 3,000 psi and the shoe drilled out to 9923'. The formation was tested to a 0.635 psi/ft. equivalent gradient with no leak off.

An 8-1/2" hole was drilled to 14,210'. Cores were cut as follows: Core No. 7, from 10,270' to 10,300', recovered 30'; Core No. 8, from 10,619' to 10,649', recovered 30'; Core No. 9, from 10,815' to 10,842', recovered 27'; Core No. 10, from 11,108' to 11,135', recovered 27 feet; Core No. 11, from 11,718' to 11,733', recovered 15'; Core No. 12, from 12,743' to 12,753', recovered 10'. Lost circulation and tight-hole conditions caused problems throughout the interval. Returns were lost at 10,651', 11,002' and at

14,011' after pulling off bottom into the shoe. The pipe was stuck at 11,329' while reaming to bottom at 13,531' on a trip. It was again stuck at 11,314' while tripping out from a depth of 13,761', and at 11,840' while tripping out from 14,011'. While reaming back in at 14,011', the pipe stuck at 11,416'. In all cases the pipe was worked free and drilling continued.

At 14,210' a decision was made to suspend the well for the summer. The well was logged as follows: DIL/SP/GR; FDC/CNL/GR/CAL; BHC-Sonic/GR; HDT-Dipmeter and Velocity Survey. Thirty sidewall cores were shot with a recovery of 13.

A 7" liner was run from 9528' to 14,208' (114 joints of 7", 32#, N-80, LT&C, 8rd). It was cemented with 550 sacks of 15.2 ppg Class "G" cement (1% CFR-2, 0.5% Haland 22A, 0.5% LWL, and 35% silica flour). After the cement had set, the casing was cleaned out to 9528' and the liner lap tested. It broke down at 600 psi at four barrels per minute. A retainer was set at 9417' and the lap squeezed with 400 sacks of 15.8 ppg Class "G" cement (0.3% HR-7, 1% CFR-2). Five barrels of cement were spotted on top of the retainer. Next, the 9-5/8" x 13-3/8" annulus was Arctic Packed through the FO at 2142', the FO closed, and tested to 3,000 psi. The excess Arctic Pack was spotted at 4282'. The mud was reversed to water and then to diesel at 2000'. A kill string of 217 joints of 2-7/8" tubing was run to 6556' and landed. The bonnet and tree were then nippled up and tested to 5,000 psi.

The well was secured and the rig released for the season on April 17, 1979, at 12:00 noon. The rig was partially rigged down and the derrick laid down. The camp was closed, and all personnel were off location by April 21, 1979.

In preparation for re-entering and deepening the hole, personnel returned to location on November 21, 1979. The camp was rigged up, support equipment started, and the sewer plant set. The ice road to the water hole was constructed, and an Otter strip laid out. As no environmental damage occurred from the building of the original Herc ice airstrip on the tundra, another was constructed for support of the second winter drilling season.

Rig-up was started and while raising the derrick, the "A" legs were damaged. After these were repaired, rig-up was continued. The tree left on the well was nippled down on December 24. The blowout-preventer stack was nippled up and new mud was mixed. The blowout preventers would not test with the tubing hanger in place and had to be repaired. The tubing hanger and tubing were pulled wet, and the diesel and Arctic Pack left in the well bore were circulated out and burned. A total of 121 barrels of diesel and 141 barrels of Arctic Pack were burned. The blowout preventers were again tested, and then the cement and retainer were drilled out to 9538'. A 5-7/8" bit was picked up and washed to 10,865'. The casing and the liner lap were tested to 3,000 psi. Next a negative flow lap test was successfully run. A bit was then run in to 14,014' (top cement) and the liner tested to 3,000 psi. The shoe was drilled out to 14,221' and the formation tested to a 0.69 psi/ft. equivalent gradient.

A 5-7/8" hole was drilled to a total depth of 15,481'. Cores were cut as follows: Core No. 13, from 14,971' to 14,986', recovered 15'; Core No. 14, from 15,421' to 15,424', recovered 1.1'; Core No. 15, from 15,461' to 15,462', no recovery; Core No. 16, from 15,462.7' to 15,469.2', recovered 4'. The hole was tight on connections and trips below 15,313'.

At 15,481' a decision was made to terminate the well. Schlumberger wireline logs were run as follows: Temperature Survey (first run); DIL/SP/GR; BHC-Sonic/GR; FDC/CNL/GR/CAL; HDT-Dipmeter; Velocity Survey; and Temperature Survey (second run).

After log evaluation was completed, a decision was made to plug back and test the intervals from 7446' to 7462' and 6877' to 6923'. Plugs were set as follows: Plug No. 1, 14,700' to 15,155', 90 sacks of 15.6 ppg Class "G" cement in the open hole; Plug No. 2, 14,020' to 14,397', 60 sacks of Class "G" cement across the 7" liner shoe; a 7" retainer was set at 13,800'; Plug No. 3, from 9328' to 9725', 75 sacks of Class "G" cement across the 7" x 9-5/8" liner lap; and Plug No. 4 on top of a 9-5/8" retainer at 9254' to 9054', 50 sacks of Class "G" cement.

In preparation for testing the interval 7446' to 7462', the annulus behind the 9-5/8" casing was squeezed with cement to insure isolation of the test zone. The 9-5/8" casing was perforated at 7583' with four shots. A retainer was set at 7537' and the formation squeezed with 75 sacks of Class "G" cement with an injection rate of 1-1/3 barrels per minute at 1,400 psi (final pressure 1,800 psi). Ten sacks of cement were left on top of the retainer. Next, the 9-5/8" casing was perforated with five shots at 7390'. A retainer was set at 7350', and the formation squeezed with 50 sacks of Class "G" cement at a rate of 1-1/2 barrels per minute at 2,800 psi (final rate 1/4 barrel per minute at 2,400 psi). Five sacks of cement were left on top of the retainer. After the cement had set, the hole was drilled out to 7530', and a cement bond log was run (CBL/VDL/CCL/GR) from 7522' to 2100' to confirm isolation of the test zones.

Drill-Stem Test No. 1, a cased-hole test, was conducted in the interval 7446-7472' (4 perforations per foot) with no cushion as follows:

(NOTE: Pressures given are taken from Halliburton Services, Formation & Production Test Data.)

Gauge Depth: 7397'.

1st Flow Period (30 minutes): IHP 4,039 psi, opened with immediate strong blow through 1/8" choke. Maximum surface pressure 50 psi, IFP 121-255 psi. Shut in for 151 minutes, ISIP 2,570 psi.

2nd Flow Period (300 minutes): Opened through 1/8" choke with gas to surface (TSTM), surface pressure 50 psi declined to 30 psi end of period, FFP 255-417 psi. Shut in well for 602 minutes, FSIP 2,651 psi, FHP 4,039 psi. Recovered gas too small to measure and 1338' of slightly gas-cut rat hole mud.

At the conclusion of the test a retainer was set at 7345', and the test perforations were squeezed with 75 sacks of 15.8 ppg Class "G" cement.

In preparation for testing the interval 6877' to 6923', the zones above and below were squeezed with cement to insure isolation. Four perforations were shot at 6950', a retainer set at 6940', and 150 sacks of Class "G" cement squeezed away at 3 barrels per minute at 1,100 psi. Next, four perforations were shot at 6862', a retainer set at 6819', and 150 sacks of Class "G" cement squeezed away at 3 barrels per minute at 1,400 psi.

Drill-Stem Test No. 2, a cased-hole test, was conducted through perforations at 6877-6883', 6893-6898', 6903-6910' and 6917-6923' (4 perforations per foot) with no cushion as follows:

> (NOTE: Pressures from Halliburton Services, Formation Test Data):
>
> Gauge Depth: 6841.63'.
>
> 1st Flow Period (30 minutes): IHP 3,753 psi, opened through 1/8" choke, strong blow air in 2 minutes, IFP 94-108 psi. Shut in for 62 minutes, ISIP 937 psi.
>
> 2nd Flow Period (179 minutes): Opened with strong blow air, GTS in 50 minutes (TSTM), maximum surface flow pressure 13 psi, FFP 108-175 psi. Shut in for 356 minutes, FSIP 2,178 psi, FHP 3,753 psi. Recovered 935 feet of gas-cut mud and formation water.

At the conclusion of the test the perforations were squeezed with 75 sacks of Class "G" cement through a retainer set at 6818'. Five barrels of cement were spotted on top of the retainer.

A decision was made to plug and abandon the well. A 9-5/8" retainer was set at 2118' and 35 sacks of Class "G" cement spotted on top of it (Plug No. 5). The top of the cement was at 2047'. The mud in the 9-5/8" annulus from 2047' to the surface was displaced with water and the water displaced with diesel. This was to allow future temperature measurements by U. S. Geological Survey personnel.

After laying down the drill pipe and nippling down blowout preventers, an abandonment head was installed. The rig was released February 28, 1980, at midnight. It was then rigged down and moved off the Reserve.

Detailed drilling information, including bit records, mud summary, time analysis, and casing and cementing reports, is included in the body of the report.

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 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

RECEIVED
OCT 31 [illegible]
U.S. GEOL. SURVEY, ANCHORAGE, ALASKA

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1306' FNL; 785' FEL
At proposed prod. zone: Same (straight hole)

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: Ikpikpuk Test Well No. 1
10. FIELD AND POOL, OR WILDCAT: Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 25, T13N, R10W, UM
12. COUNTY OR PARISH: North Slope
13. STATE: Alaska

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 58 miles southeast of Barrow

16. 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
132,000'	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**
142,560	± 15,200'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): Pad = 32'; KB = 52'

22. APPROX. DATE WORK WILL START*: November 1, 1978

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
36"	30" Conductor	110.32# (X-60)	± 110' KB	SEE
26"	20"	133# (K-55)	± 500'	DRILLING
17 1/2"	13 3/8"	72# (S-95)	± 2,600'	PROGRAM
12 1/4"	9 5/8"	53.5# (S-95)	± 8,960'	FOR
8 1/2"	7" Liner	32# (N-80)	± 8,660' to TD	DETAILS & AMOUNTS

BOP Program:

From ± 500' to ± 2600':
20", 2000 psi, SA Diverter Assembly.

From ± 2600' to TD:
13 5/8", 5000 psi, SRRA BOP Assembly
w/5000 psi Choke Manifold and Kill Lines

See Drilling Program for details.

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 James F. Stout — acting TITLE Chief of Operations, ONPRA — DATE Oct 30, 78

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY R. A. Unger — TITLE DISTRICT SUPERVISOR — DATE 11/21/78

CONDITIONS OF APPROVAL, IF ANY:

SEE ATTACHED.

*See Instructions On Reverse Side

RECEIVED
ANCHORAGE DIST. OFFICE

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: 1306' FNL; 785' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Straight Hole

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.
Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 25, T13N, R10W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Pad 32'; KB 52'

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 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 spudded at 3:00 PM, November 28, 1978. Hole size at spud: 17 1/2".

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 5 December 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Robert E. Goff TITLE DISTRICT SUPERVISOR DATE 12/7/78

*See Instructions on Reverse Side

RECEIVED
DEC 6
ANCHORAGE, ALASKA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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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: 1306' FNL; 785' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Straight hole.

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.: Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 25, T13N, R10W, UM

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

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB, AND WD): Pad 32'; KB 52'

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) Request for Variance -- Test Pressure Annular BOP			

(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.)*

Item 11.a.(1) of the Conditions for Drilling Approval for this well requires that annular type BOP shall be pressure tested to 70% of the rated working pressure. Variance to test annular-type BOP to 50% of rated working pressure is requested.

Testing wear to annular sealing elements from applied test pressure and required hydraulic pressure at 70% is rapid and costly. The useful life, and thus the operational reliability, of the sealing element decreases in proportion to the frequency and magnitude of applied test pressure and required hydraulic closing pressure to which it is subjected.

Testing to 50% of rated working pressure has in the past proved satisfactory, reliable, and an accepted practice.

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 5 December 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Robert E. Luff TITLE DISTRICT SUPERVISOR DATE 12/7/78

*See Instructions on Reverse Side

Revised 6/9/83

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 Wildcat
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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: 1306' FNL; 785' 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
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12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB, AND WD) 521 KB; pad 32'

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.)

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

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 535' and opened to 26". Ran 13 joints 20", 133#, K-55, ST&C casing with duplex float shoe at 521' KB. Installed centralizers on first four joints. Ran duplex stinger and stabbed into duplex shoe and conditioned mud. Cemented to surface with 1650 sacks Permafrost II cement at 15 ppg slurry weight. Good returns throughout with 14.9 ppg returned slurry at end of job. Cement in place at 4:11 PM 12/1/78. WOC 24 hours. Cut off 20" casing and installed 20" starter head. Tested weld to 750 psi. Nipple up 20", 2000 psi Hydril and diverter spool; install diverter system.

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 9 June 83

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

TITLE DISTRICT SUPERVISOR 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 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: 1306' FNL; 785' 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. Ikpikpuk Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 25, T13N, R10W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB, AND WD) 52' KB

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.)

(other) Subsequent Report of Running and Cementing 13 3/8" Surface Casing

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 17 1/2" hole to 2623' and logged with DIL and BHC Sonic. Conditioned hole and ran 64 joints of 13 3/8", 72 #/ft, S-95 buttress casing with centralizers: 10' above shoe and one on collars (from bottom) 1, 3, 5, 7, 9, 13, 15, 17. Float shoe at 2603' KB. Duplex collar @ 2521' KB. Ran duplex stinger on drill pipe and stabbed in to collar. Conditioned mud, pumped 20 bbl water spacer. 3500 sacks Permafrost II cement at 14.9 ppg slurry weight, 2 bbl water spacer and displaced with 40 bbls mud. CIP @ 9:51 PM, 12/8/78. Good returns throughout job with cement returns after 2400 sacks pumped. Final slurry weight in returns 14.8 ppg. Floats held OK. Ran 1" down 13 3/8" X 20" annulus. Cemented with 100 sacks Permafrost II. Pulled 1". Set 13 3/8" slips. Nipple up wellhead and SRRA BOP stack. Tested 20" flange and packoff to 2000 psi. Tested blind rams, pipe rams, choke manifold, and kelly cocks to 5000 psi. Tested Hydril to 2500 psi. Drill out float collar and shoe to 2633'. Tested formation to an equivalent gradient of 0.754 psi/ft. A slow leak off to 0.723 psi/ft was observed. Total WOC: 122 hours.

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 15 December 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Wm James Weber TITLE DISTRICT SUPERVISOR ACTING DATE December 19, 1978

*See Instructions on Reverse Side

RECEIVED
ONSHORE DIST. OFFICE

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: 1306' FNL; 785' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Straight Hole

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. Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 25, T13N, R10W, UM

12. COUNTY OR PARISH North Slope

13. STATE Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD) Pad: 32'; KR: 52'

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 Drilling Program for this well submitted and approved with the Notice of Intent to Drill called for setting 9 5/8" casing at the top of the Shublik formation, through the Sag River Sandstone, at ± 8960'. The Sag River is a known lost circulation zone on the Reserve, as evidenced by several wells having lost returns in the formation. Hole conditions in the geopressured Kingak formation are such that, should lost circulation occur with the Kingak open, the potential for stuck pipe and loss of the hole is greatly increased. It is therefore intended to set 9 5/8" casing at ± 9900', above the Sag River. The casing will be cemented as programmed with appropriate adjustments in stage tool location and cement volumes.

This change in plan was discussed with Mr. Jim Weber and verbal concurrence received on January 26, 1979.

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

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

SIGNED Mark C Brewer TITLE Chief of Operations DATE 2 February 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED BY Jim Weber TITLE ACTING DISTRICT SUPERVISOR DATE 2/7/79

*See Instructions on Reverse Side

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ONSHORE DIST. OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FEB 21 1979

DIVISION OF SURVEY ALASKA

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: 1306' FNL; 785' FEL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH: Straight hole
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. Ikpikpuk Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 25, T13N, R10W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB AND WD) Pad 32'; KB 52'

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 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.)*

A 12 1/4" hole was drilled to 9913', at which point an assessment of the hole conditions was made. Because of the increasing pore pressure, it was decided to run casing at this depth rather than risk drilling into the Shublik Formation. The hole was conditioned, logs run, and 244 joints of 9 5/8", 53.5#/ft S-95 Buttress casing were run and landed at 9873' with mandrel casing hanger. The float collar was located at 9785', DV collar located at 7197', FOs at 2336' and 2142'. Centralizers were run only on two collars above and below FOs and on the last three collars at the surface; the rest of the centralizers were not run because of poor hole conditions Cemented first stage with 1800 sacks of Class "G" cement containing 1% CFR2 plus 0.3% HR7 at 15.6 to 16.2 ppg. Preceded cement with 50 bbls water. Displaced cement with 65 bbls water and 624 bbls mud. Had full returns throughout job. Bumped plug with 3000 psi. CIP at 2:20 AM, 2/2/79. Dropped bomb, opened DV at 7197' and circulated. Cemented second stage with 1300 sacks of Class "G" cement containing 1% CFR2 plus

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 17 February 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED BY Wm. James Mebes ACTING DISTRICT SUPERVISOR DATE 2/26/79

*See Instructions on Reverse Side

0.1% HR7 at 15.8 ppg. Preceded cement with 50 bbls water. Dropped closing plug and displaced with 508 bbls mud. Had full to partial returns throughout cement job. Bumped plug with 3000 psi. CIP at 4:22 PM, 2/2/79. Set mandrel hanger packoff and tested to 5000 psi. Down squeezed third stage through FO at 2336' with 300 sacks of Permafrost cement at 14.8 ppg. Broke down formation with 1140 psi. Injected formation at 400 psi. Preceded cement with 10 bbls water and displaced cement with 40 bbls mud. Maximum squeeze pressure: 700 psi. CIP at 3:14 PM, 2/3/79. Closed FO and tested to 3000 psi. Pulled out of hole, tested BOP and choke manifold. Picked up the bottom hole assembly and drilled out the cement. Tested the formation at the shoe to the equivalent gradient of 0.635 psi/ft with no leak off. Resumed drilling.

RECEIVED
ONSHORE OIL & GAS OFFICE
APR 6

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: 1306' FNL; 785' FEL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH: Straight hole
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. Ikpikpuk Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 25, T13N, R10W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB AND WD) Pad 32'; KB 52'
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.)

(other) Notice of Intent to Run and Cement 7" Liner and Suspend Operations for Summer

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 following general procedure outlines the liner running and summer suspension program to be conducted at Ikpikpuk Test Well No. 1 in anticipation of re-entry during the early 1979-80 drilling season. Detailed procedure is as follows:

1. An 8 1/2" hole was drilled to ± 14,000', at which point an assessment of hole conditions and work yet to be completed, along with the lateness of the drilling season, required a decision to suspend the well for the summer with anticipation of re-entry during the early 1979-80 drilling season.

2. Hole to be conditioned and logged.

3. Condition and run 7" liner with ± 300 feet lap in 9 5/8" casing to TD.

(Continued)

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

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

SIGNED Max W. Brewer TITLE Chief of Operations DATE 5 April 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

TITLE DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

4. Set liner and cement around shoe with Class "G" cement containing 35% Silica Flour, 1% CFR-2, 0.5% Halaid 22-A, 0.5% LWL. Cement volume to be calculated from FDC/CNL caliper log to theoretically fill back to ± 11,000'.

5. Run bit and scraper to top of liner.

6. Run and set EZ Drill retainer ± 100' above liner. Squeeze liner lap with 400 sacks Class "G" cement containing 1% CFR-2, 0.3% HR-7. Leave 5 barrels in drill pipe to drop on top of retainer.

7. Condition mud; pull out of hole. Pick up Halliburton FO shifting fingers and RTTS packer. Run in and open FO at 2142'. Condition mud for Arctic Pack.

8. Arctic Pack the 9 5/8" X 13 3/8" annulus. Close FO. Test to 3000 psi.

9. Change out mud ± 2000' in 9 5/8" casing to water, then to diesel.

10. Run 2 7/8" tubing to ± 6500' with mule shoe and land.

11. Nipple down BOP and nipple up Christmas tree and test to 5000 psi.

12. Prepare rig for summer shut down. Suspension will then be completed and rig released.

Revised 6/9/83

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: 1306' FNL; 785' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Straight hole.

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.: Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 25, T13N, R10W, UM

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

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB, AND WD): Pad 32'; KB 52'

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 7" Liner and Suspending Operations for Summer			

(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 following procedure describes the 7" liner running and cementing and summer suspension program conducted at Ikpikpuk Test Well No. 1 in anticipation of re-entry during the 1979-80 drilling season.

1. An 8 1/2" hole was drilled to 14,210', at which point an assessment of the required work yet to be completed, along with the lateness in the drilling season, was made. Based on the assessment, it was decided to log, run 7" liner, and suspend the well for the summer with anticipation of re-entry during the 1979-1980 drilling season.

2. The 8 1/2" hole was conditioned and logged.

3. 7" liner was run and hung from 9528' to 14,208'. Centralizers 10' from shoe on nos. 3,5,7,9,11,111,109,107,105,103 and 101 casing collars.

Subsurface Safety Valve: Manu. and Type _____ Set @ (See continuation) FT

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

SIGNED [signature] TITLE Chief of Operations DATE 9 June 83

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

Revised 6/9/83

4. Liner was cemented with 550 sacks Class "G" cement containing 1% CFR-2, 35% silica flour, .5% Halaid 22-A, .5% LWL.

5. Ran 8 1/2" bit and 9 5/8", 53.5# scraper to top of liner.

6. Set Howco E-Z Drill retainer at 9417'. Squeezed lap with 400 sacks Class "G" cement containing 1% CFR-2 and .3% HR-7. Spotted 5 bbls cement on top of retainer.

7. Arctic Packed 9 5/8" X 13 3/8" annulus to surface through upper FO at 2142'.

8. Spotted 150 bbls excess Arctic Pack in hole from 4284' to 2165'.

9. Picked up to 2000'. Displaced mud to water and water to diesel.

10. Ran 2 7/8" tubing to 6556' with mule shoe and landed.

11. Nippled down BOP and nippled up National tubing bonnet and OCT Xmas tree. Tested to 5000 psi.

12. Prepared rig for summer shut down. Suspension work completed and rig released April 17, 1979, at 12:00 noon.

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: 1306' FNL; 785' 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.: Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 25, T13N, R10W, UM

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

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB, AND WD): Est 32' Pad; 52' KB

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			

(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.)*

Ikpikpuk Test Well No. 1 will be re-entered approximately January 1, 1980. Re-entry program is attached. Hole will be drilled out with 5 7/8" bit and drill to the proposed TD ± 15,200'.

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ONSHORE DIST. OFFICE

DEC 7 1979

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

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 December 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 DEC 10 1979

*See Instructions on Reverse Side

IKPIKPUK TEST WELL NO. 1
RE-ENTRY PROGRAM

1. After reactivating Parco Rig 96, mix and condition mud to 10.5 ppg. Mix 500 bbls useable volume. (Final amount to be mixed after diesel and Arctic Pack cleaned from wellbore.)

2. Check for pressure on tree and annulus. Check for pressure under BPV. Pull BPV and inspect for corrosion. Test casing to 3000 psi. Set BPV.

3. Nipple down tree, verify thread type and condition of threads in tubing hanger. Nipple up BOPE with 2 7/8" pipe rams. Dope and run in landing joint. Make up in tubing hanger. Test pipe rams to 5000 psi and Hydril to 2500 psi. Test the choke manifold to 5000 psi. Make sure the flare and blow down lines are clean and dry. Keep the choke manifold filled with 60/40 glycol and water mixture.

4. Back out tubing anchor screws. Pull tubing so that mule shoe of 2 7/8" tubing is at ± 4900'. Inspect tubing hanger for damage. Remove BPV.

5. Rig up mud line and begin pumping mud through 2 7/8" tubing. Rig up return lines through choke manifold and to burn pit for flaring. (Approximately 350 bbls required to displace the top 4900' of 9 5/8" casing and 2 7/8" tubing.) Do not exceed 3000 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, time diesel returns are established, and time Arctic Pack returns are obtained. Shut down as soon as returns are primarily mud. Switch to circulating through mud tanks. Be sure to clear flare and blowdown lines. Fill choke manifold with 60/40 mixture of glycol and water.

6. Pull and lay down tubing. (Change pipe rams to 5" DP.) Set BOP test plug. Test blind rams and 5" pipe rams to 5000 psi. Install wear bushing.

7. Strap into hole with 8 1/2" bit (open nozzled) and drill collars. Circulate and condition mud on way in hole. Tag cement on top of cement retainer. Condition and build volume to 10.5 ppg. (Pre-treat for cement contamination.) Drill out retainer and cement. Tag top of liner at 9528'.

8. POH. Pick up 5 7/8" bit, 4 3/4" drill collars, and enough 3 1/2" drill pipe to clean out to landing collar at 14,119'. Strap into hole. Clean out to landing collar. Check against pipe tally. Circulate and condition mud. Close pipe rams and test to 3000 psi. During this test, plot volume versus pressure. If lap test fails, squeeze lap as instructed.

9. If lap test holds, run negative flow lap test as follows:

   A. Run Howco DST tools on drill pipe as follows:

      (1) Howco HT-500 temperature recorder.
      (2) Howco BT pressure recorder (BP - outside).
      (3) Howco BT pressure recorder (BP - outside).

(4) Howco perforated anchor pipe (2 joints).
(5) Howco 9 5/8", 53.5# hookwall packer.
(6) Howco V-R safety joint.
(7) Howco hydraulic jars.
(8) Howco hydrospring tester.
(9) Howco dual CIP valve.
(10) Crossover to 5", 19.5# DP with 4 1/2" IFTJ.
(11) One stand 5", 19.5# drill pipe.
(12) Howco impact reversing sub.
(13) 5" drill pipe to surface.

B. Run 6200' water cushion. This gives 2500 psi differential across 7" liner lap.

(6200' WATER PAD FOR 2500 PSI DRAWDOWN)

C. Open tool three hours.

D. Close tool three hours. If strong blow, shut in may be extended.

E. Drop bar and reverse out cushion.

F. Check pressure charts. If lap does not test, cement squeeze as directed.

10. Run tapered drill string and 5 7/8" bit. Strap into landing collar and test casing and liner to 3000 psi.

11. 5 7/8" Hole to Proposed TD @ ± 15,200.

A. Check pipe tally. Drill out landing collar, float collar, and float shoe. Drill 10' formation. Condition mud and test formation to a .69 psi/ft equivalent gradient. Pressure up slowly 1/4 to 1/3 BPM. Plot volume versus pressure. Should leak off or rupture occur before the .69 psi/ft gradient is reached, stop pumping and record pressure decline in one-minute intervals until stable. Report results and send graphs to the Anchorage Drilling Office. Open-hole integrity tests may be run if required.

B. Drill 5 7/8" hole to ± 15,200', the proposed TD. Cores and DSTs may be taken of selected intervals. Pay close attention to pore pressure plots and d_c exponents during drilling as mud weight will be determined as drilling conditions dictate. Detailed DST procedures will be furnished as required.

C. Condition hole for logs as set out in the Logging Program and as directed by the Wellsite Geologist.

D. The decision to test, suspend with completion, or abandon the well will be made after all logs have been evaluated. The appropriate procedures will be furnished at the time as required.

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: 1306' FNL; 785' 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.
Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 25, T13N, R10W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD)
Est 321 Pad, 52' KB

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.)*

At the Ikpikpuk Test Well No. 1 location, a tapered drill string will be required. To handle this combination drill pipe string, we have added an additional set of rams to the BOP stack. The configuration is now SRRRA. All are 13 5/8", 5000 psi ratings.

RECEIVED
ONSHORE DIST. OFFICE

JAN 3 1980

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

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 2 January 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Barry A Bondurant DISTRICT SUPERVISOR DATE 1-8-80

*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: 1306' FNL; 785' 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.
Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 25, T13N, R10W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD)
Est 32' Pad; 52' KB

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			

RECEIVED
ONSHORE OIL & GAS OFFICE
JAN 16 1980
(NOTE: Report results of multiple completion or zone change on Form 9-330.)
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.)*

On December 24, 1979, the Ikpikpuk Test Well No. 1 was re-entered after summer suspension. The back pressure valve was installed. Nipple down the Xmas tree. Rig up BOP stack. Attempt to test stack with tubing hanger in place. Would not hold. Pull hanger and test annular preventer to 2500 psi. Circulate out diesel and Arctic Pack. Burn in flare pit. Start at 4:45 PM, 12/26/79. Wind E 050 at 12K. Temperature -16°F. Circulate 121 bbls diesel and 141 bbls Arctic Pack. Job complete at 10:00 AM, 12/27/79. Temperature -22°F; wind E 050° at 6K. Lay down 2 7/8" tubing. Test BOPE. Pick up BHA with 8 1/2" bit. Pick up DP. Hit bridge at 318'. Circulate through bridge. Stage in to hole. Tag cement at 9378'. Drill cement. Retainer at 9418'. Drill retainer and cement to 9422'. Trip for bit. Tag top of liner at 9538'. Pick up 5 7/8" and BHA. RIH. Hit bridge at 9850'. Cleaning out liner to 10,865'. Test lap to 3000 psi. POH. RIH with bit and scraper to 9520'. POH. RIH with DST tools to negative flow test lap. Run 6200' water cushion. Three-hour initial flow; Three-

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 15 January 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Barry A Bondurant TITLE DISTRICT SUPERVISOR DATE 1-17-80

*See Instructions on Reverse Side

hour shut in. Had ± 100' of fluid rise. Bomb at 9490'. IH 5342 psi; IF 2829; FF 2829; FSI 3008; BHS 5326; BHT 200°F. Lap test good. POH with DST tools. Clean out 7" liner with 5 7/8" bit. Tag wiper plug at 14,014'. Test casing to 3000 psi. Tag landing collar at 14,116'. Tag shoe at 14,200'. Drill shoe and wash to 14,210'. Drill to 14,221'. Condition mud. Test formation to 0.69 psi/ft equivalent gradient. No leak off. Drilling 5 7/8" hole.

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:
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.: Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 25, T13N, R10W, UM

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

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB AND WD): Est 32' Pad, 52' KB

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 TVD to be 15,200'. Due to thicker geologic sequences, the objective TVD is expected to be 16,000'. Verbal notification to Mr. Jim Weber was given 1/28/80.

RECEIVED
OFFICE
FEB 20 19[illegible]
ALASKA

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 19 February 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Barry A Bonham DISTRICT SUPERVISOR DATE 2-21-80

*See Instructions on Reverse Side

Revised 6/9/83

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: 1306' FNL; 785' 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.
Ikpikpuk Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 25, T13N, R10W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Est 32' Pad; 52' KB

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 Abandon			

(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 Ikpikpuk Test Well No. 1 has been drilled to TD of 15,481' and logged with Temperature Survey, DIL, FDC/CNL, BHC-Sonic, Dipmeter, Velocity Survey, HDT and evaluated. A decision to abandon this well with minor information Drill Stem Testing is planned. This plan was discussed with and verbally approved by Mr. Jim Webber on 2/15/80. Programs are attached.

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.

_____ DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Revised 6/9/83

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

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: 1306' FNL; 785' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

5. LEASE: N/A

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

7. UNIT AGREEMENT NAME: N/A

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

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

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 25, T13N, R10W, UM

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

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB, AND WD): Est 32' Pad; 52' KB

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*	[ ]		[X]
(other)			

(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.)*

5 7/8" hole was drilled to 15,481'. Conditioned hole for logs. Ran Temperature Survey to 11,600'. Tool failed. Second run failed at 12,900'. Attempted DIL/GR; it failed. Successfully ran Temperature Log to 15,435'. Ran DIL/GR 15,394' - 14,194'. BHC-Sonic/GR 15,294' - 14,194'. FDC/CNL/GR/CAL 15,400' - 14,194'. Dipmeter, Velocity Survey, 14 shots, to 15,405'. Temperature Log. Evaluated logs and decided no porous or hydrocarbon bearing formations. RIH with open ended drill pipe to 15,155'. Spotted 90 sacks Class "G" cement containing 35% Silicia Flour, 1% CFR-2, .6% Halad 22A, 1% HR 20. Mixed at 15.6 ppg. Top cement at 14,700'. Pull up to 14,397'. Spot Plug No. 2, 60 sacks Class "G" cement (same as Plug No. 1). Top at 14,020'. (188' in 7" liner.) POH. RIH with 5 1/2" bit and 7" casing scraper to 13,850'. POH. Set retainer at 13,800'. POH to 9725'. Spot Plug No. 3, 75 sacks Class "G" cement (same as Plug No. 1). Top plug 9328'. Run 9 5/8" casing scraper to 9300'. Set retainer at 9254'. Spot Plug No. 4, 50 sacks Class "G" cement (same

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 9 June 83

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

as Plug No. 1). Top cement at 9054'. Condition mud to 10.4 ppg at 8882'. POH. Test BOPE. Perforate at 7583' with 4 shots. Set 9 5/8" retainer at 7537'. Squeeze formation with 75 sacks Class "G" cement with 1% CFR-2. Injection rate 1 1/3 BPM at 1400 psi. Final 1800 psi. Left 10 sacks on top of retainer. Perf 5 shots at 7390'. Set 9 5/8" retainer at 7350'. Injection rate 1 1/2 BPM at 2800 psi. Squeeze 50 sacks Class "G" cement containing 1% CFR-2. Final 1/4 BPM at 2400 psi. ISIP 1900 psi. Left 5 sacks on top retainer. RIH with bit. Tag cement at 7332'. Drill to retainer at 7350'. Drill retainer and cement to 7390'. Tag cement at 7530'. Run scraper to 7530'. Run VDL/CBL/GR/CCL log from 7522' to 2100'. Perforate 7446' to 7472'. 26' 4 shot/ft with 4" casing gun. Run DST No. 1 no cushion. Packer at 7380'. 30 minute initial flow. Strong blow. 2 1/2 hour initial shut in. 6 hour final flow. 12 hour shut in. Recovered 23 3/4 bbls mud and gas cut mud. 1338' fluid rise. Pull tools loose. POH. Run bit and scraper to 7525'. Set retainer at 7345'. Squeeze perfs with 75 sacks Class "G" cement containing 1% CFR-2 at 15.8 ppg. Inject 2 BPM at 800 psi ISIP 700 psi. CIP 11:36 AM, 2/23/80. Spot 5 sacks on top retainer. Perforate 4 holes at 6950'. Set retainer at 6940'. Injection rate 3 BPM at 1100 psi. Squeeze with 150 sacks Class "G" cement containing 1% CFR-2. 3 BPM at 1100 psi. ISIP 450 psi. CIP 12:20 AM, 2/24/80. Perforate 4 shots at 6862'. Set retainer at 6819'. Injection rate 2 1/2 BPM at 1500 psi. Squeeze 150 sacks Class "G" cement containing 1% CFR-2. 15.8 ppg. 3 BPM at 1400 psi. CIP 10:01 AM, 2/24/80. ISIP 1000 psi. Tag cement at 6791'. Drill cement to 6865'. Wash and ream to 6939'. Run scraper to 6939'. Perforate 6917' to 6923', 6903' to 6910', 6893' to 6898', 6877' to 6883' with 4 shot per ft and 4" casing gun. Run DST No. 2 with packer at 6821'. No cushion. 30 minute initial flow, 1 hour initial shut in. 3 hour final flow and 6 hour shut in. Gas to surface at 50 minutes in final flow. Shut in final flow at 7:56 AM. Reverse out recovery 935' or 16.6 bbls gas cut mud. 2100 ppm max Cl^2 in samples. Pull tools loose at 2:00 PM, 2/26/80. POH. Run bit and scraper. Circulate and condition mud. Set retainer at 6818'. Break down formation at 1500 psi. 3 BPM at 1100 psi. Squeeze with 75 sacks Class "G" cement containing 1% CFR-2. 3 BPM at 1200 psi. CIP 4:05 AM, 2/27/80. ISIP 900 psi. 800 psi in 2 minutes. Spot 5 bbls cement on top retainer. POH. Lay down excess 5" DP and DCs. Set 9 5/8" retainer at 2118'. Spot 35 sacks Class "G" cement containing 1% CFR-2 on top retainer. Top cement 2047'. Reverse mud to water. Reverse water to diesel with 130 bbls diesel. Lay down DP. Nipple down BOPs. Clean mud pits. Install dry hole marker. Release rig at midnight 2/28/80. Rig down Parco Rig 96 to move off National Petroleum Reserve in Alaska.

Form 9-330
(Rev. 5-63)

Revised 6/9/83
Form approved
Budget Bureau No. 42-R355.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

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.: Ikpikpuk Test Well No. 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec 25, T13N, R10W, UM

12. COUNTY OR PARISH: North Slope

13. STATE: Alaska

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [X] Other: Wildcat

b. TYPE OF COMPLETION: NEW WELL [ ] WORK OVER [ ] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] 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

RECEIVED
ONSHORE DIST. OFFICE

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface: 1306' FNL; 785' FEL
At top prod. interval reported below
At total depth: 1351' FNL; 976' 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
11/28/78	2/13/80	N/A	KB 52'; Pad 32'	

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
15,481' MD 15,475' STVD	2047'	N/A	→	All	None

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

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: DIL/GR/SP, BHCS/GR/TTI, FDC/CNL/GR/Cal, HDT (Dipmeter), Temperature Velocity 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"	110.32# (X-60)	100'	36"	305 Sx Permafrost II Cmt	None
20"	133# (K-55)	521'	26"	1650 Sx Permafrost II Cmt	None
13 3/8"	72# (S-95)	2603'	17 1/2"	3600 Sx Permafrost II Cmt	None
9 5/8"	53.5# (S-95)	9873'	12 1/4"	3100 Sx Class G Cement plus 300 Sacks Permafrost II	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
7"	9528'	14,208'	950	

TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
N/A		

31. PERFORATION RECORD (Interval, size and number)

7446' - 7472' 4" Hyperjet II 4 Shots per Foot
6877' - 6923' 4" Hyperjet II 4 Shots per Foot

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
7446' to 7472'	75 Sx Class G Cmt w/1% CFR-2
6877' to 6923'	75 Sx Class G Cmt w/1% CFR-2

33.* PRODUCTION

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

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
2/21/80 & 2/26/80	14 Hours 13 Hours	8/64			TFTM		

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

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: Max Brewer TITLE: Chief of Operations/ONPRA DATE: 9 June 83

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

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				38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
SEE ATTACHMENTS				Nanushuk Gp	Surface	Straight Hole
				Torok Sh	3750'	
				Pebble Sh	7237'	
				Basal Cret. Ss	7432'	
				Kingak Sh	7640'	
				Sag River	9844'	
				Shublik	9898'	
				Sadlerochit Gp	10,443'	
				Kavik Sh	11,098'	
				Echooka	11,290'	
				Lisburne Gp	11,446'	
				Endicott Gp	14,880'	
				Quartzite/ Basement	15,320'	

Revised 6/9/83

U.S. GOVERNMENT PRINTING OFFICE: 1981 O-361-834

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

DRILL STEM TEST SUMMARY

TEST NO.	FORMATION	INTERVAL	TEST DESCRIPTION
1	Kuparuk/"Pebble Shale" sand	7446-7472'	Cased hole DST (perforated 9-5/8" casing with 4 shots/ft.). 1st FP (30 min.): IHP 4039 psi, opened tool with weak blow, increasing to strong blow through 1/8" bubble hose. IFP 121-255 psi; shut in well for 151 minutes; ISIP 2,570 psi. 2nd FP (300 min.): Opened with gas to surface; rate too small to measure through 1/8" choke; maximum surface flowing pressure 50 psi; FFP 255-417 psi. Shut in well for 602 minutes, FSIP 2,651 psi, FHP 4,039 psi. Recovered gas too small to measure and 1338' of slightly gas-cut rat hole mud.
2	Lower Torok sands	6877-6883' 6893-6898' 6903-6910' 6917-6923'	Cased hole DST (perforated 9-5/8" casing with 4 shots/ft.). 1st FP (30 min.): IHP 3,753 psi, strong blow of air in 2 minutes, continuing throughout period through 3/8" bubble hose. IFP 94-108 psi; shut well in for 62 minutes; ISIP 937 psi. 2nd FP (179 min.): Immediate strong blow with gas to surface in 50 minutes; rate too small to measure through 1/8" choke, maximum surface FP 13 psi; FFP 108-175 psi; shut in well for 356 minutes; FSIP 2,178 psi; FHP 3,753 psi. Recovered 935 feet of slightly gas-cut mud and formation fluid.

Revised 6/9/83

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

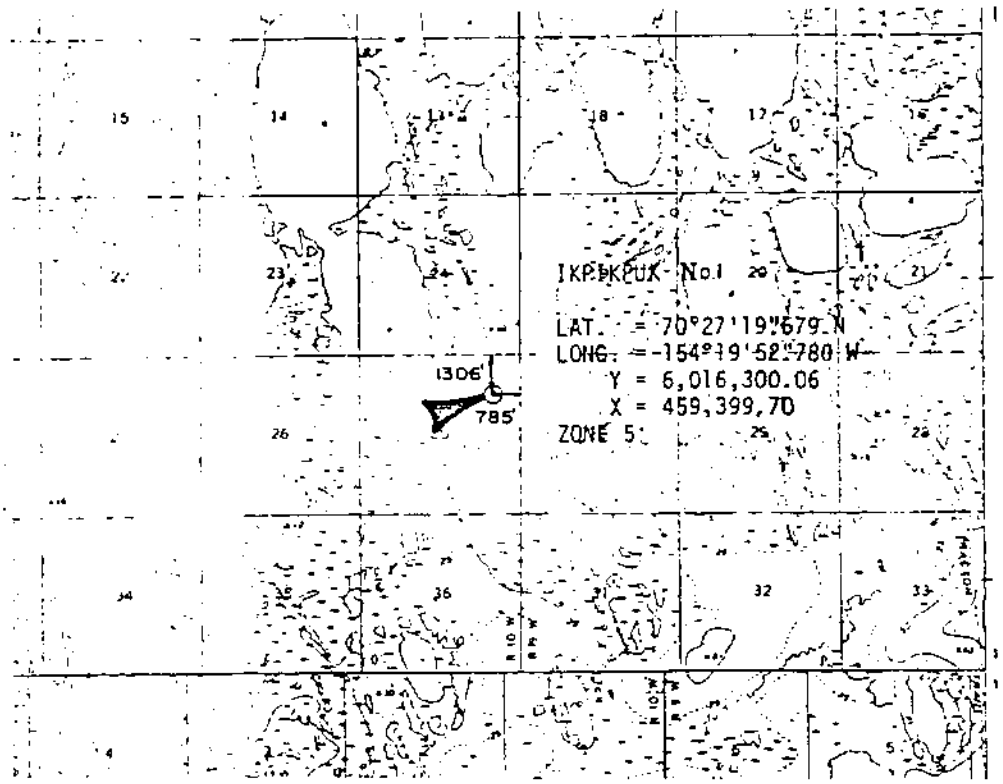
CORE SUMMARY

CORE NO.	FORMATION	INTERVAL	DESCRIPTION
1	Nanushuk	2930-2960' Rec. 30'	Interbedded Siltstone and Claystone, no indication of hydrocarbons.
2	Torok	3784-3812' Rec. 28'	Shale, no indication of hydrocarbons.
3	Torok	5690-5700' Rec. 10'	Shale with irregular Siltstone interlaminations; no indication of hydrocarbons.
4	Torok	7132-7143' Rec. 11'	Shale with silty Sandstone interbeds, no indication of hydrocarbons.
5	"Pebble Shale"	7368-7378' Rec. 9'	Shale with floating sand grains, no indication of hydrocarbons.
6	L. Cretaceous	7491-7501' Rec. 10'	Shale: micaceous, trace of vertical fracture, no indication of hydrocarbons.
7	Shublik	10,270'-10,300' Rec. 30'	Shale with interbedded fossiliferous Limestone, no indication of hydrocarbons.
8	Sadlerochit/ Ivishak	10,619-10,649' Rec. 30'	Sandstone: very fine grained, massive, no porosity, no indication of hydrocarbons. Core and log analysis indicates zone is water wet.
9	Sadlerochit/ Ivishak	10,815-10,842' Rec. 27'	Sandstone: very fine to medium grained, nil to poor porosity, no indication of hydrocarbons.
10	Kavik Shale	11,108-11,135' Rec. 27'	Shale with thin stringers of silty Shale, no indication of hydrocarbons.
11	Lisburne	11,718-11,733' Rec. 15'	Limestone: fossiliferous, trace of Shale, generally nil porosity with 1' of vugular porosity at 11,733', no indication of hydrocarbon.
12	Lisburne	12,743-12,753' Rec. 10'	Limestone: Medium to coarse crystalline with 1' of Siltstone at base, no porosity, no indication of hydrocarbons.

Revised 6/9/83

CORE SUMMARY

CORE NO.	FORMATION	INTERVAL	
13	Endicott/ Kayak?	14,971-14,986' Rec. 15'	Shale: red, cherty, grading to Sandstone: red, grading to Siltstone, also contains Limestone clasts and Chert concretions, grades to red, silty Shale at base, no porosity, no indication of hydrocarbons.
14	Pre-Devonian?	15,421-15,424' Rec. 1.1'	Quartzite: highly altered and metamorphosed Quartz conglomerate and siliceous Mudstone, highly fractured. No porosity, no indication of hydrocarbons.
15	Pre-Devonian?	15,461'-15,462' Rec. 0'	No recovery.
16	Pre-Devonian?	15,462.7-15,469.2' Rec. 4'	Quartzite: highly altered and metamorphosed, highly fractured and brecciated, no indication of hydrocarbons.



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.

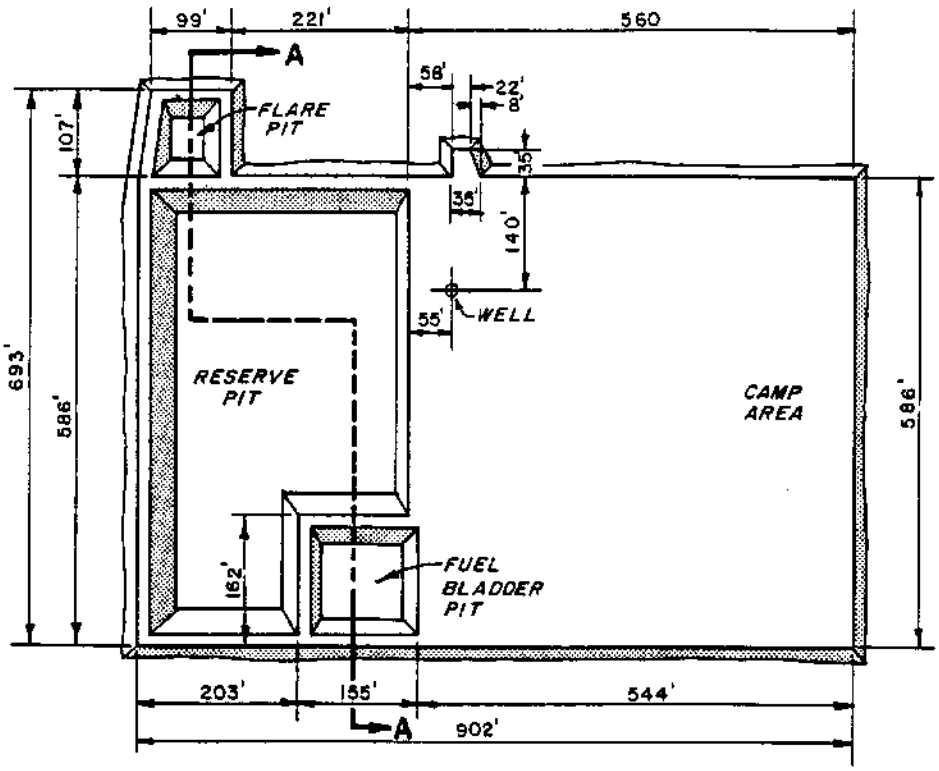
August 17, 1977

0 1/2 1 2
SCALE IN MILES

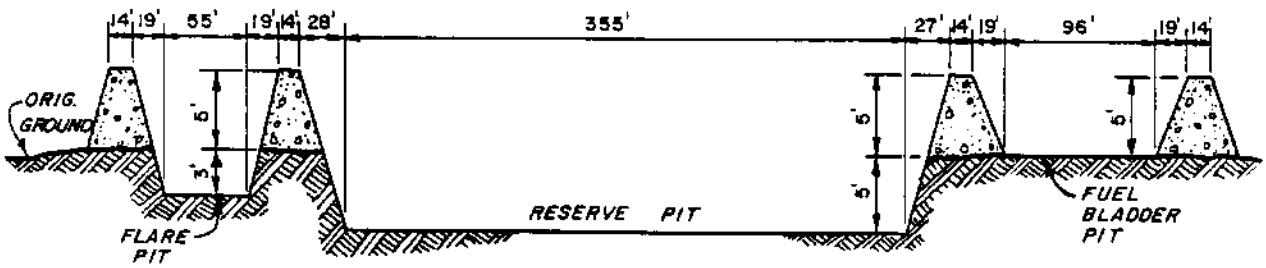
AS STAKED
IKPIKPUK I
LOCATED IN
NE1/4 PROTRACTED SEC 25 T13 N, R10 W, UMIAT MERIDIAN, AK

Surveyed for
HUSKY OIL
N.P.R. OPERATIONS INC.

Surveyed by
Bell, Herring and Associates
ENGINEERS AND LAND SURVEYORS
801 West Fireweed, Suite 102
ANCHORAGE, ALASKA 99503



PLAN VIEW



SECTION A-A

IKPIKPUK DRILLSITE

OPERATIONS HISTORY

DATE AND FOOTAGE DRILLED AS OF 6:00 A.M.	ACTIVITY
11/22/78	Continued rigging up from last spring. Hauled water to rig tanks; fired No. 1 boiler. Started rig motors; rigged up mud guns on pits.
11/23/78	Checked out No. 2 pump; fired No. 2 boiler. Worked on No. 1 boiler; rigged oiler on compound. Changed out kelly hose; hooked up lines to Poor Boy degasser. Rigged up mud hopper to pill pit.
11/24/78	Raised derrick; hooked up lines in derrick. Worked on No. 1 mud pump. Pulled No. 1 boiler out of boiler house.
11/25/78	Put up windwalls on V door side; set in catwalk and ramp. Thawed steam lines and circulated steam through suitcases. Put new boiler in boiler house. Plugged off mud-pit lines. Put sleeve on draw works low-gear shaft. Herc strip checked at 3:00 p.m. and checked OK.
11/26/78	Fired new boiler and put into service. Replaced air line to air hoist. Hooked up steam heater on rig floor and pump parts house. Installed mouse hole. Installed rotary torque wheel and rotary drive chain. Wind blew radio tower down across Parco camp unit and knocked a hole in the unit.
11/27/78	Completed inspection of bottom-hole assembly and rotary tools. Found that three 8" drill collars, one upper and one lower kelly cock, and one saver sub needed repair. Cleaned water lines and mud pits. Set 30" conductor at 100' and cemented with 305 sacks of Permafrost cement. Filled pits with water; repaired leaks; mixed spud mud.
11/28/78	Continued with rig up. Cleaned off snow and reset ramp, catwalk, and step. Strung up Geronimo line. Strung geolograph line; rigged up pressure, volume, temperature equipment. Hooked up intercom; nipped up on 30" conductor. Picked up bottom-hole assembly.
11/29/78 435'	Total Depth: 535'; Mud Weight: 9.1; Viscosity: 85. Hooked up flowline; repaired air lines. Spudded well

November 28, 1978, at 3:00 p.m. Performed minor air line repairs. Drilled to 535'; conditioned hole. Made short trip and conditioned hole for logs. Tripped out to log.

11/30/78
0'

TD: 535; MW: 9.2; Vis: 50. Rigged up to log; log stopped at 470'. Laid down logging tools. Tripped in with bit to 535'; conditioned hole for logs. Dropped survey and tripped out; rigged up to log. Ran DIL/SP/GR and BHC-Sonic/GR to 530'. Rigged down logging equipment. Picked up bit, 26" hole opener, and bottom-hole assembly. Opened 17-1/2" hole to 26", 100' to 298'. Bearing on draw works jackshaft locked up. Worked on draw works.

12/1/78
0'

TD: 535'; MW: 9.3; Vis: 60. Worked on draw works. Tripped out; removed jackshaft assembly from draw works. Tripped in; opened hole to 26". Drilled rough at 477'. Tripped out; found hole opener balled up. Tripped in; opened hole to 26" to 535'. Circulated and conditioned hole; short tripped. Conditioned hole for casing. Raised viscosity and yield point. Tripped out, steel-line measuring. Laid down hole opener; rigged up and ran 20" casing.

12/2/78
0'

TD: 535'; MW: 9.1; Vis: 30. Ran 13 joints of 20", 133#, K-55, ST&C casing; landed at 521'. Tripped in with Howco stinger and conditioned mud. Cemented 20" with 20 barrels water and 1,650 sacks Permafrost II cement at 14.8-15.0 ppg. Had full returns throughout job; had cement returns at 900 sacks pumped. Final returns: 14.9 ppg. Displaced with two barrels water and five barrels mud. Cement in place December 1, 1978, at 4:11 p.m. Tripped out; drained 30"; waited on cement.

12/3/78
0'

TD: 535'; MW: 9.1; Vis: 30. Waited on cement 24 hours. Cut off 20" casing, set out rotary table. Dressed 20" stub; set 20" casing head in place; preheated to 500°F; welded on 20" head.

12/4/78
0'

TD: 535'; MW: 8.9; Vis: 29. Tested weld to 750 psi. Welded cap over 20" x 30" annulus. Nippled up Hydril and diverter spool; extended drilling nipple. Set in rotary and floor; picked up bottom-hole assembly. Tripped in to 517'; tagged cement. Tested Hydril and 20" casing to 300 psi. Nippled up diverter lines.

12/5/78
452'

TD: 987'; MW: 9.3; Vis: 38. Nippled up diverter line. Pressure tested kelly cock and inside blowout

	preventer valve to 5,000 psi. Drilled out float shoe; cleaned out to 535'; drilled to 849'. Circulated; surveyed; tripped out. Repaired fuel leak. Changed bottom-hole assembly; tripped in; washed six joints to bottom. Drilled ahead.
12/6/78 953'	TD: 1940'; MW: 9.5; Vis: 30. Drilled to 1347'; circulated survey; tripped out. Changed bit; tripped in. Washed 90 feet to bottom; no fill. Drilled to 1474'. Worked on mud pumps. Drilled to 1883'; circulated survey. Made short trip to casing; hole clean. Drilled ahead.
12/7/78 683'	TD: 2623'; MW: 9.7; Vis: 75. Drilled to 2594'; circulated. Made short trip to casing; steel-line measured. Corrected total depth: 2623'. Tripped in; no fill. Circulated survey; tripped out to log. Steel-line measured, chain out.
12/8/78 0'	TD: 2623'; MWL 9.7; Vis: 44. Pulled out of hole. Ran DIL/SP/GR and BHC-Sonic/GR logs from 2616' to 521'. Reran DIL. Ran in hole; conditioned mud for casing. Pulled out of hole; rigged up to run 13-3/8" casing.
12/9/78 0'	TD: 2623'; MW: 9.7; Vis: 34. Ran 64 joints of 13-3/8", 72#, S-95 Buttress casing; landed at 2603' KB. Duplex collar at 2521'. Centralizers as per program. Circulated and conditioned hole. Tripped in with stinger on drill pipe. Conditioned hole for cement. Rigged up and cemented casing with 20 barrels water and 3,500 sacks Permafrost II cement at 14.9 ppg. Displaced cement with two barrels water and 40 barrels mud. Final returns: 14.7 ppg. Had good returns during job. Cement in place December 8 at 9:51 p.m. Tripped out; nippled down and rigged up to do top job.
12/10/78 0'	TD: 2623'; MW: 9.6; Vis: 34. Topped out 13-3/8" x 20" annulus with 100 sacks Permafrost cement. Pulled one inch line. Set 13-3/8" slips; had to grind outer edge of slips to fit bowl since casing was 1/16" oversize. Cut off 13-3/8" casing and installed packoff. Set 13-3/8" x 20" wellhead spool. Tested 20" flange and packoff to 2,000 psi. Began setting 13-5/8" blowout-preventer stack and nippled up.
12/11/78 0'	TD: 2623'; MW: 9.2; Vis: 30. Hooked up fill and kill lines; hooked up choke manifold; hooked up HCR and blowout-preventer equipment control lines.
12/12/78 0'	TD: 2623'; MW: 8.7; Vis: 29. Leveled mud pits 1 and 2. Repaired and tested blowout-preventer test

	line; worked on mud spool valve. Revised piping to degasser. Tested blind rams; door seal failed. Repaired seal and retested to 5,000 psi. Tested lower kelly cock and floor valves to 5,000 psi. Tested pipe rams to 5,000 psi. Tested choke manifold; it failed due to possible test plug leak. Tested upper kelly cock; it failed. Thawed out test line.
12/13/78 0'	TD: 2623'; MW: 8.7; Vis: 30. Repaired blowout-preventer test plug. Tested pipe rams to 5,000 psi. Tested choke manifold, valves, and HCR to 5,000 psi. Changed upper kelly cock and tested to 5,000 psi; tested Hydril to 2,500 psi. Filled choke manifold with glycol and water; repaired leak in bell nipple. Straightened fingers and board; laid down 9" drill collar. Repaired tongs; tripped in with drill pipe and laid down 28 joints for inspection. Picked up bottom-hole assembly.
12/14/78 57'	TD: 2680'; MW: 8.8; Vis: 48. Tripped in with bit and bottom-hole assembly; changed out drilling lines. Washed through soft bridge at 2300'; washed to float collar. Tested casing to 2,500 psi. Drilled float collar and good cement to shoe. Drilled shoe and 12 feet of cement. Drilled to 2633'; test formation to 14.5 ppg or 775 psi. Pressure bled off slowly to 700 psi, or 14.0 ppg gradient. Drilled ahead.
12/15/78 278'	TD: 2958'; MW: 9.0; Vis: 35. Drilled to 2930'; surveyed and tripped out. Picked up core barrel. Cut Core No. 1, 2930' to 2960'. Tripped out and laid down core with full recovery.
12/16/78 710'	TD: 3668'; MW: 9.4; Vis: 39. Stood back core barrel. Tripped in; reamed core hole, 2930' to 2960'. Drilled to 3254'; surveyed. Drilled ahead.
12/17/78 143'	TD: 3811'; MW: 9.4; Vis: 36. Drilled to 3784'. Tripped for core barrel. Tripped in; cut Core No. 2, 3784' to 3812'. Tripped out; recovered 28-foot core. Tripped in; reamed core hole.
12/18/78 716'	TD: 4527'; MW: 9.7; Vis: 43. Reamed core hole to 3812'. Drilled to 4337'; surveyed; drilled ahead.
12/19/78 330'	TD: 4857'; MW: 9.7; Vis: 38. Drilled to 4633'; tripped for bit. Tested blowout-preventer equipment; upper kelly cock failed. Tripped in; drilled ahead.
12/20/78 580'	TD: 5437'; MW: 9.6; Vis: 44. Drilled to 5131'; surveyed. Drilled to 5225'; repaired rotary chain. Drilled to 5437'; replaced rotary chain.

12/21/78 256'	TD: 5693'; MW: 9.6; Vis: 40. Finished repairs. Drilled to 5690'; tripped out for core barrel. Tripped in; tight at 5390'.
12/22/78 212'	TD: 5905'; MW: 9.8; Vis: 40. Cut Core No. 3, 5690' to 5700'. Pulled out of hole, recovered 10-foot core. Tripped in; washed and reamed to bottom. Drilled to 5905'.
12/23/78 120'	TD: 6025'; MW: 9.8; Vis: 39. Drilled to 6025'. Circulated and surveyed. Short tripped eight stands, with 30,000 pound drag on first three stands. No. 1 motor drive sprocket slipped one-half inch and was running on the guard. Moved the guard; tripped out to shoe. Rigged up circulating line and hung off blocks. Began removing shaft from compound.
12/24/78 208'	TD: 6233'; MW: 9.8; Vis: 40. Repaired sprocket on No. 1 motor drive shaft. Tripped in; drilled ahead.
12/25/78 253'	TD: 6486'; MW: 9.8; Vis: 39. Drilled to 6486'; bit locked up. Tripped out; tested blowout-preventer equipment.
12/26/78 216'	TD: 6702'; MW: 9.6; Vis: 38. Tripped in with bit; washed 47 feet to bottom. Drilled ahead.
12/27/78 146'	TD: 6848'; MW: 9.7; Vis: 46. Drilled to 6848'. Tripped out; tight at 5850' and 5300'. Tripped in; repaired low drum clutch.
12/28/78 284'	TD: 7132'; MW: 10.1; Vis: 44. Tripped in; washed 41 feet to bottom. Drilled; repaired low drum linkage. Drilled to 7132'; tripped for core barrel.
12/29/78 25'	TD: 7157'; MW: 10.1; Vis: 42. Picked up core barrel; tripped in. Laid down 13 joints of Grade "G" drill pipe. Picked up 13 joints of Grade "E" drill pipe. Washed 10 feet to bottom. Cut Core No. 4, 7132' to 7143'. Tripped out; laid down core. Steel-line measured and made 2-foot correction. Total Depth: 7,141 feet. Received an 11-foot core. Repaired HCR valve control line. Tripped in to shoe; cut drilling line. Tripped in; washed 21 feet to bottom; no fill. Reamed rat hole. Drilled ahead.
12/30/78 211'	TD: 7368'; MW: 10.3; Vis: 45. Drilled to 7368' and conditioned for Core No. 5.
12/31/78 10'	TD: 7378'; MW: 10.3; Vis: 45. Tripped out; tripped in with core barrel. Laid down top and

middle stabilizers. Lock screws missing; sleeves had backed off. Tripped in to shoe; repaired rotary lock and quick-release valve on drum clutch. Tripped in; washed 21 feet of soft fill to bottom. Cut Core No. 5, 7368' to 7378'. Tripped out; recovered 9-foot core. Laid down core barrel; changed bottom-hole assembly; tripped in.

1/1/79
113'

TD: 7491'; MW: 10.4; Vis: 40. Washed 16 feet to top of core hole. Reamed from 7368' to 7378'. Drilled to 7491'; surveyed and tripped out, two joints pulled tight. Picked up core barrel; tripped in, washed to bottom.

1/2/79
37'

TD: 7528'; MW: 10.4; Vis: 47. Washed to bottom. Cut Core No. 6, 7491' to 7501'; tripped out. Recovered 10-foot core. Tested blowout-preventer equipment; tripped in with bit. Lost returns eleven stands off bottom. Picked up kelly and gained returns. Bridge at ten stands off bottom. Washed and reamed tight spots 6445', 6465', 7054', and 7419'. Reamed core hole; drilled to 7528'.

1/3/79
353'

TD: 7881'; MW: 10.8; Vis: 48. Drilled ahead.

1/4/79
81'

TD: 7962'; MW: 10.9; Vis: 80. Drilled to 7938'; tripped out. Pulled three stands with 150,000 pounds drag. Hole started to swab. Picked up kelly; pumped out 11 singles. Set back kelly; tripped out. Laid down stabilizers; tripped in with new bit and jars. Hit bridge five stands plus one double off bottom. Washed and reamed to bottom. Drilled ahead.

1/5/79
225'

TD; 8187'; MW: 10.9; Vis: 50. Drilled to 8107'; short tripped 18 stands. Had drag on fifth stand. Tripped in; bridge at 230 feet off bottom. Washed and reamed to bottom; drilled ahead.

1/6/79
19'

TD: 8206'; MW: 10.9; Vis: 47. Drilled to 8206'; circulated large amount of shale for one and one-half hours. Tripped out; pulled five stands with 100,000 pounds over string weight. Picked up kelly and pumped out one single. Pulled and laid down 13 more singles, for a total of 14 singles laid down. Repaired rig, replacing rotary chain and draw-works chain; realigned rotary. Tripped in to shoe; cut drilling line. Tripped in; hit bridge five stands off bottom. Reamed to bottom.

1/7/79
112'

TD: 8318'; MW: 11.8; Vis: 55. Reamed 12 joints of drill pipe to bottom; had sloughing shale. Last 89 feet reamed with no problem. Drilled ahead.

1/8/79 14'	TD: 8332'; MW: 11.7; Vis : 52. Drilled to 8332'. Short tripped 15 stands with 30,000 to 75,000 pounds drag. Tripped in; bridge at six stands off bottom. Reamed to bottom; hole started packing off while reaming. Hole started taking mud; lost 130 barrels of mud at 1 barrel per minute. Cut mud weight from 12 ppg to 11.8 ppg. Regained full returns. Reamed from 7773' to 8020', with high torque. Conditioned mud and hole. Tripped for bit; pulled tight seven stands. Worked pipe free; tripped out.
1/9/79 0'	TD: 8332'; MW: 11.8; Vis: 61. Tripped for bit. Tripped in to 4802'; broke circulation. Laid down nine joints of drill pipe. Encountered bridges at 4808', 5248', and 7387'. Picked up kelly; washed and reamed.
1/10/79 104'	TD: 8436'; MW: 12.1; Vis: 70. Washed and reamed to bottom at 8332'; drilled ahead.
1/11/79 39'	TD: 8475'; MW: 12.1; Vis: 57. Drilled to 8475'; circulated and conditioned hole. Tripped out with 20,000 pounds drag, 8150' to 8100'; had 55,000 pounds drag from 7657' to 7250'. Tripped out; tripped in. Bridges at 7460' and 7680'. Washed and reamed to bottom.
1/12/79 136'	TD: 8611'; MW: 12.0' Vis: 60. Washed and reamed from 7680' to 8475'. Drilled ahead.
1/13/79 77'	TD: 8688'; MW: 12.0; Vis: 58. Drilled 12-1/4" hole to 8688'. Pulled out of hole; had 20,000 pounds drag, 8114' to 8052'. Worked pipe through tight spots, 7649' and 7618'. Worked blowout preventer; ran in hole to shoe; repaired; ran in hole.
1/14/79 130'	TD: 8818'; MW: 12.0; Vis: 59. Tripped in to 8637'; washed and reamed 51 feet to bottom. Drilled to 8817'; short tripped, with 3500 pounds drag. Worked through tight spots at 8263', 7620', and 7649'. Drilled ahead.
1/15/79 145'	TD: 8963'; MW: 12.0; Vis: 75. Drilled ahead.
1/16/79 44'	TD: 9007'; MW: 12.0; Vis: 74. Drilled to 8966'; circulated survey. Tripped out, with 20,000 pounds drag at 8653' and 8254' and 25,000 pounds drag at 7654'. Tested blowout-preventer equipment; tripped in; washed 32 feet to bottom with 30 feet of fill. Drilled ahead.

1/17/79 129'	TD: 9136'; MW: 12.0; Vis: 84. Drilled from 9007' to 9027'. Circulated samples; drilled ahead.
1/18/79 132'	TD: 9268'; MW: 12.0; Vis: 80. Circulated one-half hour at 9136'. Short tripped 20 stands; drilled ahead to 9150'. Lost partial returns; lost ±60 barrels last 20 hours. Current loss rate: 10 barrels per hour while drilling.
1/19/79 28'	TD: 9296'; MW: 12.0±; Vis: 80. Drilled to 9288'; circulated; short tripped to 7203' with 40,000 pounds drag at 7633'. Repaired rig. Ran in hole; hit bridge at 7651'; reamed from 7651' to 7740'. Reamed what appeared to be large chunks, 7780' to 7800'. Ran in hole from 7800' to total depth. Washed 60 feet to bottom. No mud loss while reaming. Lost 20 barrels in one-half hour while drilling. Loss rate: two barrels per hour while drilling.
1/20/79 126'	TD: 9422'; MW: 11.9; Vis: 77. Drilled ahead; no mud loss noted during last 24 hours. Mixed in 80 barrels premixed mud, with five sacks fine Kwik Seal slowly added throughout system. Drilled ahead.
1/21/79 26'	TD: 9448'; MW: 11.9; Vis: 72. Drilled to 9425'; short tripped to 7075' with 50,000 pounds drag at 8620', 8609', 7593', and 7575'. Tripped in; bridge at 7592'. Reamed to 7700'. Started getting H_2S in mud while reaming at 7600'. Maximum H_2S: 14 ppm. Ran in hole to 8107'. Reamed 8107' to 9425'. Hole sloughed splintery shale. Drilled from 9425' to 9488' in 4 1/2 hours. No H_2S at current time. Drilled ahead.
1/22/79 50'	TD: 9498'; MW: 11.9; Vis: 77. Drilled to 9458'; bit torqued up. Circulated bottoms up; surveyed; pulled out of hole. Hole tight, 7670' to 7625'. Worked blowout preventers; changed bits, jars, and shock sub. Ran in hole with bottom-hole assembly; cut drilling line. Ran in hole to 9438'; washed 20 feet to bottom, with 10 feet of fill. Drilled ahead.
1/23/79 167'	TD: 9665'; MW: 12.0; Vis: 85. Drilled ahead.
1/24/79 57'	TD: 9722'; MW: 11.9; Vis: 77. Drilled to 9722'; circulated bottoms up. Surveyed; pulled out of hole; hole tight at 8752' to 8747'. Tested blowout-preventer equipment. Picked up bit and ran in hole.
1/25/79 102'	TD: 9824'; MW: 12; Vis: 58. Tripped in to 6925'; broke circulation. Ran in hole to bottom; washed 30 feet to bottom; no fill. Drilled ahead.

1/26/79 31'	TD: 9855'; MW: 12; Vis: 64. Drilled to 9840'; circulated sample; conditioned hole. Short tripped to 7009'; 15,000 pounds drag at 7695'; 40,000 pounds drag at 7506'. Took 60,000 pounds at each point on trip in; picked up to work through; no fill. Drilled to 9855'; circulated; surveyed. Pulled out of hole to change bit. Worked on draw works; ran in hole.
1/27/79 41'	TD: 9896'; MW: 12; Vis: 58. Ran in hole; broke circulation at 2600' and 6600'. Ran in hole to bottom; washed 60 feet to bottom. Drilled to 9896'; circulated; short tripped to 7100'. Chained out tight at 9403', 9061', and 7445', with drag from 15,000 to 30,000 pounds. Ran in hole; circulated for logs. Pulled out of hole; steel-line measured and chained out; tight at 9370'.
1/28/79 0'	TD: 9913' (Corrected); MW: 11.9; Vis: 65. Pulled out of hole; 17-foot correction on steel-line measure. Rigged up Schlumberger. Ran DIL/SP/GR, 9904' to 2603'; two misruns. Ran FDC/CNL/GR/Caliper to 9908'. Tool failed; pulled out of hole.
1/29/79 0'	TD: 9913'; MW: 11.9; Vis: 53. Ran BHC-Sonic/GR logs, 9909' to 2603'. Ran HDT-Dipmeter, 9909' to 2603'. Rigged down Schlumberger; ran in to condition hole. Broke circulation 30 stands off bottom; washed 60 feet to bottom; had four feet of fill. Circulated and conditioned mud; circulated two hours while waiting on Schlumberger to receive logging tools from Deadhorse. Pulled out of hole to log; steel-line measured and chained out.
1/30/79 0'	TD: 9913'; MW: 12.0; Vis: 63. Finished trip out with 20,000 to 25,000 pounds drag, 7450' to 7500'. Rigged up to log. Ran FDC/CNL/GR/Caliper, 9908' to 2606', ran CNL to 100', and Velocity Survey. Ran 24-shot sidewall core gun; recovered 9 of 24. Tripped in with No. 2 core gun; wireline backlashed. Waited on wireline clamp and T bar.
1/31/79 0'	TD: 9913'; MW: 12; Vis: 53. Pulled tangled wire out of hole; cut off lead line and stripped off drum. Ran 45-shot sidewall core gun. Shot 45 sidewall cores; recovered 33; lost 11 bullets. Tripped in to shoe and circulated. Tripped in to 7020'; circulated. Tripped in with 6 feet of fill; circulated and conditioned for casing; tripped out.
2/1/79 0'	TD: 9913'; MW: 12; Vis: 57. Tripped out; pulled wear bushings and set test plug. Changed rams to 9-5/8". Tested blowout-preventer equipment; checked brake blocks. Rigged up and ran 9-5/8" casing.

2/2/79
0'

TD: 9913'; MW: 11.8; Vis: 38. Finished running 244 joints of 9-5/8", 53.5#, S-95 Buttress casing. Landed with shoe at 9873'; float collar at 9785'; DV at 7197'; FOs at 2336' and 2142'. Circulated and conditoned for cement. Cemented first stage with 50 barrels water and 1,800 sacks Class "G" cement with 1.0% CFR-2, 0.3% HR-7 at 15.6 to 15.8 ppg. Dropped shut-off plug, displaced with 65 barrels water and 624 barrels mud. Bumped plug with 3,000 psi; floats held. Had full returns throughout job. Cement in place at 2:20 a.m. Dropped DV opening bomb; waited on bomb one hour. Opened DV with 1,000 psi; conditioned through DV and waited on cement.

2/3/79
0'

TD: 9913'; MW: 11.7; Vis: 44. Cemented second stage with 50 barrels water and 1,300 sacks Class "G" cement with 1% CFR-2 and 0.1% HR-7 at 15.8 ppg. Dropped closing plug; pumped two barrels water and displaced with 508 barrels mud. Bumped plug with 3,000 psi for five minutes. Bled off; DV closed. Cement in place February 2 at 4:22 p.m. Pulled landing joint; washed out bowl. Set mandrel pack-off and tested to 5,000 psi. Changed pipe rams and installed bore protector. Tripped in and laid down drill collars. Broke tongs while laying down drill collars; worked on tongs.

2/4/79
0'

TD: 9913'; MW: 11.7; Vis: 45. Repaired tongs; finished laying down 8" drill collars. Picked up Howco shifting tools; tripped in to 1924'. Tested casing and FOs to 500 psi. Opened FO at 2142'; circulated, closed, and tested to 3,000 psi. Opened FO at 2336'; circulated, closed, and tested to 3,000 psi. Reopened and set packer at 2301'. Broke formation at 1,140 psi; established injection rate at ±4BPM at 400 psi. Pumped 10 barrels water and 300 sacks Permafrost II cement at 14.8 ppg; displaced with 40 barrels water. Maximum squeeze pressure: 700 psi. Shut down; pressure bled off to 0. Cement in place February 3 at 3:14 p.m. Closed FO and reversed out two barrels cement. Tested FO to 3,000 psi. Opened upper FO; circulated OK. No cement returns. Closed FO and tested to 3,000 psi. Tripped out and laid down tools. Changed lines in No. 1 pump; repaired draw works; installed four Koomey bottles; installed flanged T in choke.

2/5/79
0'

TD: 9913'; MW: 11.6; Vis: 48. Completed work on Koomey unit and choke manifold. Worked on brake bands and rat hole; completed basic hookup on Ex-Log unit. Tested blowout preventers. Picked up bottom-hole assembly; ran in hole to DV collar.

	Tested casing to 3,000 psi; tagged DV plug at 7196'. Drilled DV; ran in hole to shut-off plug; tested casing to 3,000 psi. Tagged plug at 9739'; drilled plug, baffle, and firm cement.
2/6/79 17'	TD: 9930'; MW: 11.2; Vis: 44. Drilled firm cement to float shoe; cleaned out hole to 9913'; circulated and conditioned mud. Drilled to 9923'; tested formation to 0.635 psi/ft. gradient; no break down or leak off. Drilled to 9930'; circulated and tripped for bit. Cleaned junk basket; changed bits; ran in hole.
2/7/79 40'	TD: 9970'; MW: 11.2; Vis: 44. Reamed 12 feet to bottom; drilled to 9970'. Circulated; pulled out of hole. Picked up bit; ran in hole to shoe; slipped and cut drilling line. Ran in hole.
2/8/79 124'	TD: 10,094'; MW: 11.2; Vis: 45. Ran in hole; washed 30 feet to bottom. Drilled ahead.
2/9/79 89'	TD: 10,183'; MW: 11.1; Vis: 51. Drilled to 10,108'. Repaired; drilled to 10,183'; circulated. Pulled out of hole for bit.
2/10/79 87'	TD: 10,270'; MW: 11.1; Vis: 41. Pulled out of hole; laid down bit; cleaned junk basket. Picked up three stabilizers; ran in hole. Reamed 63 feet to bottom; drilled from 10,183' to 10,270'. Circulated; surveyed. Pulled out of hole. Picked up core barrel.
2/11/79 30'	TD: 10,300'; MW: 11; Vis: 41. Ran in hole with core barrel; washed 40 feet to bottom. Cut Core No. 7, 10,270' to 10,300'. Pulled out of hole; laid down core. Recovered 30-foot core. Tested blowout preventers. Tested Hydril; test plug would not hold. Pulled plug; changed out O rings; washed out blowout-preventers stack. Attempted to test Hydril; test plug would not hold.
2/12/79 134'	TD: 10,434'; MW: 11.0; Vis: 42. Laid down test plug; installed wear bushing. Tripped in with bit; thawed mudline; reamed 30-foot core hole. Drilled ahead.
2/13/79 116'	TD: 10,550'; MW: 11; Vis: 41. Drilled ahead; pulled out of hole.
2/14/79 53'	TD: 10,603'; MW: 10.9; Vis: 41. Surveyed; pulled out of hole. Pulled wear bushing; waited on test plug. Ran wear bushing; repaired. Picked up bit and ran in hole. Reamed to bottom; drilled ahead.

2/15/79 14'	TD: 10,617'; MW: 10.9; Vis: 44. Drilled from 10,603' to 10,617'; circulated up drilling break. Pulled out of hole; steel-line measured. Bit out of gauge. Tested blowout-preventer equipment. Had to spot Gel pill on plug to get test. Ran in hole with bit. Cut drilling line; ran in hole. Reamed from 10,492' to 10,550'.
2/16/79 32'	TD: 10,649'; MW: 10.9; Vis: 41. Reamed from 10,550' to 10,617'; drilled from 10,617' to 10,619'. Surveyed; pulled out of hole. Picked up core barrel and ran in hole for Core No. 8. Washed 30 feet to bottom; cored from 10,619' to 10,649'. Pulled out of hole; laid down 30 foot core. Ran in hole with bit.
2/17/79 94'	TD: 10,743'; MW: 10.6; Vis: 40. Tripped in to 10,619'; reamed core hole from 10,619' to 10,649'. Drilled to 10,651'; lost returns. Lost 65 barrels of mud. Mixed an 80-barrel lost-circulation material pill with 50 pounds per barrel lost-circulation material. Regained partial returns while spotting pill; regained full returns after spotting. Total loss: 135 barrels. Drilled ahead.
2/18/79 36'	TD: 10,779'; MW: 10.6; Vis: 39. Drilled to 10,750'; pulled out of hole. Repaired low drum clutch. Tripped in; reamed 65 feet to bottom. Drilled ahead.
2/19/79 36'	TD: 10,815'; MW: 10.6; Vis: 40. Drilled to 10,815'; circulated drilling break at 10,810'. Pulled out of hole for core barrel; tripped in to 10,785'. Reamed to bottom.
2/20/79 65'	TD: 10,880'; MW: 10.6; Vis: 41. Cut Core No. 9, 10,815' to 10,842'. Pulled out of hole; laid down core barrel; recovered 27-foot core. Picked up bit; changed stabilizer sleeve; ran in hole to shoe. Broke circulation; ran in hole to 10,807' and reamed 35 feet to bottom. Drilled ahead.
2/21/79 65'	TD: 10,945'; MW: 10.6; Vis: 42. Drilled ahead.
2/22/79 5'	TD: 10,950'; MW: 10.6; Vis: 45. Drilled to 10,950'; pulled out of hole. Inspected bottom-hole assembly; found four bad drill collars and monel with cracked pin. Tested blowout-preventer equipment; test plug stuck; worked loose. Picked up bottom-hole assembly; ran in hole and circulated at shoe. Ran in hole and washed and reamed 57 feet.
2/23/79 52'	TD: 11,002'; MW: 10.7; Vis: 46. Reamed to bottom; had torque drag from 10,935' to 10,950'.

	Drilled to 10,980'; circulated samples. Drilled to 10,993'; pumped pill. Pulled ten stands; well appeared to be flowing. Ran in hole; circulated bottoms up. Pumped pill; pulled out of hole; slipped and cut drilling line. Picked up bit and monel drill collar; ran in hole; broke circulation at shoe. Drilled to 11,002'; lost returns. Mixed and pumped lost-circulation material pill; lost 364 barrels mud.
2/24/79 79'	TD: 11,081'; MW: 10.5; Vis: 49. Regained partial returns before pill reached bottom; spotted pill; circulated with 75 percent returns. Pulled out of hole to shoe; circulated with full returns. Drilled ahead.
2/25/79 36'	TD: 11,117'; MW: 10.6; Vis: 47. Drilled; circulated at 11,108'; surveyed. Pulled out of hole; steel-line measured. Picked up core barrel; ran in hole. Broke circulation at shoe, six stands, and one stand off bottom.
2/26/79 48'	TD: 11,165'; MW: 10.5; Vis: 4. Cut Core No. 10, 11,108' to 11,135'. Pulled out of hole and laid down core barrel. Recovered 27-foot core. Cleaned shaker pit. Ran in hole; broke circulation at shoe. Reamed core hole and drilled ahead.
2/27/79 150'	TD: 11,315'; MW: 10.5; Vis: 4. Drilled ahead.
2/28/79 57'	TD: 11,372'; MW: 10.5; Vis: 40. Drilled to 11,327'; circulated sample. Drilled to 11,370'; circulated bottoms up. Surveyed and pulled out of hole. Picked up stabilizer and five 6-1/2" drill collars. Cut drilling line; ran in hole; broke circulation at shoe; ran in hole. Drilled ahead.
3/1/79 104'	TD: 11,476'; MW: 10.5; Vis: 40. Drilled ahead.
3/2/79 87'	TD: 11,563'; MW: 10.5; Vis: 42. Drilled; short tripped; drilled ahead.
3/3/79 16'	TD: 11,579'; MW: 10.6; Vis: 45. Drilled to 11,570'; tripped for bit. Tested blowout-preventer equipment, rams, kelly cocks, and mud cross valves to 5,000 psi; tested Hydril to 2,500 psi. Tripped in; drilled ahead.
3/4/79 71'	TD: 11,650'; MW: 10.6; Vis: 42. Drilled to 11,650'; short tripped 10 stands. Encountered tight hole at 11,215', 11,150', and 11,000', with 30,000 to 60,000 pounds drag. Tripped in to 11,030'; picked up kelly to ream.

3/5/79 68'	TD: 11,718'; MW: 10.6; Vis: 42. Reamed tight spots, 11,030' to 11,215'. Ran in hole to bottom; had ten feet of fill. Drilled to 11,718'; circulated samples; surveyed; pulled out of hole to core. Chained out 15 stands.
3/6/79 15'	TD: 11,733'; MW: 10.6; Vis: 44. Picked up core barrel; changed bottom-hole assembly; worked on drum clutch. Ran in hole; broke circulation at shoe. Worked past tight spot at 11,160'; washed and reamed 52 feet to bottom. Cut Core No. 11, 11,718' to 11,733'. Pulled out of hole; recovered 15 feet of core. Changed bottom-hole assembly; ran in hole and broke circulation at shoe. Reamed core hole.
3/7/79 141'	TD: 11,874'; MW: 10.5; Vis: 40. Washed and reamed to bottom. Drilled ahead.
3/8/79 173'	TD: 12,047'; MW: 10.5; Vis: 42. Drilled from 11,874' to 11,893'. Short tripped 12 stands; tight at 11,582' and 11,029'. Encountered bridge at 11,060'; reamed 25 feet. Ran in hole; drilled. Lost 30 barrels of mud at 11,985'. Drilled ahead.
3/9/79 62'	TD: 12,109'; MW: 10.5; Vis: 42. Drilled to 12,109'; surveyed; pulled out of hole. Encountered tight hole at 11,148' to 10,162' and 10,138' to 10,152'. Tested blowout-preventer equipment; changed bit; replaced reamer cutters and stab sleeve. Ran in hole; cut drilling line.
3/10/79 140'	TD: 12,249'; MW: 10.5; Vis: 40. Tripped in to 12,022'; washed and reamed 87 feet. Drilled ahead.
3/11/79 180'	TD: 12,429'; MW: 10.6; Vis: 40. Drilled ahead.
3/12/79 55'	TD: 12,484'; MW: 13; Vis: 45. Drilled from 12,429' to 12,450'; surveyed; pulled out of hole. Hole tight from 11,433' to 11,425'. Ran in hole to 12,396'; washed and reamed 56 feet. Drilled ahead.
3/13/79 149'	TD: 12,633'; MW: 10.6; Vis: 39. Drilled ahead.
3/14/79 110'	TD: 12,743'; MW: 10.6; Vis: 4. Drilled to 12,743'; surveyed; pulled out of hole.
3/15/79 10'	TD: 12,753'. Pulled out of hole; picked up core barrel. Ran in hole; broke circulation at shoe; circulated and washed 35 feet to bottom. Cut Core

	No. 12, 12,743' to 12,753'. Pulled out of hole; laid down core barrel; full recovery. Tested blowout-preventer equipment; ran in hole.
3/16/79 94'	TD: 12,847'; MW: 10.6; Vis: 41. Ran in hole to shoe; cut drilling line; broke circulation. Ran in hole to 12,690'; washed and reamed from 12,690' to 12,753'. Drilled ahead.
3/17/79 115'	TD: 12,962'; MW: 10.5; Vis: 40. Drilled ahead.
3/18/79 30'	TD: 12,992'; MW: 10.6; Vis: 42. Drilled to 12,972'; surveyed; pulled out of hole. Repaired rotary slips; cleaned suction pit and repaired master clutch air valve on draw works. Ran in hole with new bit and bottom stabilizer sleeve. Moved stabilizer up one spot. Ran in hole; washed and reamed from 12,892' to 12,972'. Drilled ahead.
3/19/79 107'	TD: 13,099'; MW: 10.6; Vis: 39. Drilled ahead.
3/20/79 35'	TD: 13,134'; MW: 10.6; Vis: 42. Drilled to 13,134'. Pulled out of hole; had drag from 11,447' to 11,230'. Changed bit, two pins, and cutters in reamer. Worked blowout preventers. Ran in hole to shoe; broke circulation. Ran in hole to 13,090'.
3/21/79 55'	TD: 13,189'; MW: 10.6; Vis: 42. Washed 60 feet to bottom; drilled ahead.
3/22/79 92'	TD: 13,281'; MW: 10.6; Vis: 40. Drilled to 13,281'; circulated; surveyed. Pulled out of hole; chained out to shoe. Quadco worked on Flo-Sho.
3/23/79 10'	TD: 13,291'; MW: 10.6; Vis: 48. Pulled out of hole; tested blowout-preventer equipment. Installed bypass dump on shaker. Changed out reamer and jars. Ran in hole to shoe; cut drilling line; broke circulation. Ran in hole; washed and reamed 60 feet to bottom. Drilled to 13,286'; checked for flow; drilled ahead.
3/24/79 104'	TD: 13,395'; MW: 10.6; Vis: 40. Drilled ahead.
3/25/79 129'	TD: 13,524'; MW: 10.6; Vis: 42. Drilled ahead.
3/26/79 7'	TD: 13,531'; MW: 10.6; Vis: 41. Drilled to 13,531'. Circulated bottoms up; surveyed; pulled out of hole.

	Picked up core barrel; ran in hole to shoe; broke circulation. Ran in hole to bridge at 11,329'. Picked up kelly and reamed through bridge. Pipe worked tight; pipe became stuck at 11,329'. Worked free; pumped out ten singles; pipe came free. Circulated and conditioned mud; pulled out of hole.
3/27/79 4'	TD: 13,535'; MW: 10.6; Vis: 49. Pulled out of hole; inspected bottom-hole assembly. Found two change-over subs with cracked boxes and monel with bad pin. Laid down core barrel; changed out 30 joints of bent Grade "E" drill pipe. Encountered bridges at 11,110' and 13,100'. Picked up kelly and reamed out bridges. Ran in hole to total depth; drilled ahead.
3/28/79 131'	TD: 13,666'; MW: 10.6; Vis: 39. Drilled; serviced rig; drilled ahead.
3/29/79 95'	TD: 13,761'; MW: 10.6; Vis: 39. Drilled to 13,761'; mixed 80-barrel high viscosity pill and circulated. Had cuttings over shaker. Pulled out of hole; became stuck at 11,343'.
3/30/79 0'	TD: 13,761'. Pulled out of hole; hole tight. Worked pipe 26 stands off bottom. Picked up kelly; broke circulation. Pipe became stuck with bit at 11,314'. Jars failed; used as bumper sub and worked pipe. Mixed and spotted 45-barrel pill of Free Pipe; spotted 30 barrels around bottom-hole assembly, leaving 15 barrels inside drill pipe. Moved pill one barrel per hour and worked pipe. Worked pipe free at 5:00 a.m. Pulled out of hole to 10,700'. Broke circulation and conditioned mud.
3/31/79 0'	TD: 13,761'; MW: 10.6; Vis: 50. Circulated and conditioned mud at 10,700'. Pulled out of hole; laid down 17 joints of Grade "G" drill pipe. Steel-line measured; no correction. Tested blowout-preventer equipment. Made up bottom-hole assembly and ran in hole. Laid down 12 joints of bent Grade "E" drill pipe. Ran in hole to shoe; picked up 28 joints of Grade "E" drill pipe. Slipped and cut drilling line; broke circulation at shoe. Ran in hole; reamed out-of-gauge hole at 13,758'.
4/1/79 124'	TD: 13,885'; MW: 10.5; Vis: 40. Reamed to bottom; drilled ahead.
4/2/79 126'	TD: 14,011'; MW: 10.6; Vis: 39. Drilled to 14,011'; reamed tight at 13,898'. Circulated; surveyed; pulled out of hole. Repaired; pulled out of hole.

4/3/79 0'	TD: 14,011'; MW: 10.6; Vis: 45. Pulled out of hole; pulled tight at 11,840'. Picked up kelly and broke circulation; worked stuck pipe loose; pulled out of hole. Ran in hole to shoe; broke circulation. Ran leak-off test; formation held equivalent gradient of 10.94 ppg at shoe, 10.92 ppg at 10,000', and 10.84 ppg at total depth.
4/4/79 0'	TD: 14,011'; MW: 10.6; Vis: 62. Reamed tight shale section from 11,065' to 11,416'. Raised viscosity for better hole cleaning. Pipe became stuck with bit at 11,416'. Worked stuck pipe; no movement. Appeared to be stuck above jars; no jarring action. Mixed and spotted SFT pill; spotted 30 barrels outside from 11,416' to 10,460' (top of drill collars: 10,580') and left 15 barrels inside pipe. Pill in place at 10:00 p.m. Kelly began freezing; attempted to thaw; was unable to move pill.
4/5/79 0'	TD: 14,011'; MW: 10.7; Vis: 50. Worked pipe free; pulled to shoe. Added lost-circulation material and raised mud weight to 10.8 ppg; lost complete returns. Lost total of 167 barrels of mud. Gained full returns; circulated and dropped mud weight to 10.7 ppg. Ran in hole; encountered bridge at 11,176'; pulled back to 11,021'. Picked up kelly; reamed 11,021' to 11,154'.
4/6/79 49'	TD: 14,060'; MW: 10.6; Vis: 49. Washed and reamed from 11,154' to 11,549' and from 13,918' to 14,011'. Drilled ahead.
4/7/79 107'	TD: 14,167'; MW: 10.5; Vis: 45. Drilled to 14,096'. Pulled out of hole 46 stands; had 30,000 pounds excess drag at 13,884', 11,930' to 11,840', and 11,186' to 11,176'. Cut drilling line; ran in hole; had 50,000 pounds excess drag from 11,279' to 11,465'. Ran in hole; drilled ahead.
4/8/79 43'	TD: 14,210'; MW: 10.6; Vis: 47. Drilled to 14,210'; short tripped to shoe; circulated and conditioned mud. Surveyed; pulled out of hole to log. Rigged up to log; ran in hole.
4/9/79 0'	TD: 14,210'; MW: 10.6; Vis: 49. Ran DIL/GR/SP, 14,202' to 9602'. Bottom-hole temperature: 252°F. Ran FDC/CNL/ GR/Caliper, 14,198' to 9800'. Bottom-hole temperature: 262°F. Ran BHC-Sonic/GR/Caliper, 14,190' to 9867'. Bottom-hole temperature: 266°F. Ran HDT Dipmeter, 14,205' to 9867'. Bottom-hole temperature: 272°F.

4/10/79
0'

TD: 14,210'; MW: 10.6; Vis: 49. Reran FDC/CNL/GR, 14,202' to 9606'; ran Velocity Survey. Shot 30 sidewall cores; recovered 13. Rigged down logging unit. Tested blowout-preventer equipment; ran in hole and washed and reamed from 14,139' to 14,210'. Circulated and conditioned mud and hole.

4/11/79
0'

TD: 14,210'; MW: 10.5; Vis: 45. Circulated; made 46-stand short trip. Circulated and conditioned mud and hole. Pulled 37 stands of drill pipe; hole tight between thirty-first and thirty-second stands. Ran in hole; worked pipe through tight hole; ran in hole to bottom with 2 feet of fill. Pulled and stood back 104 stands of drill pipe. Rigged up and laid down drill pipe and bottom-hole assembly.

4/12/79
0'

TD: 14,210'; MW: 10.6; Vis: 47. Rigged up to run casing; ran 114 joints of 7", 32#, N-80, 8rd on 102 stands of drill pipe. Circulated 30 minutes at 4773', 30 minutes at 9810', and 45 minutes at 14,201'. Tagged bottom and circulated. Picked up to 14,208'; dropped ball pressure to 2,500 psi and set liner. Pumped 20 barrels of water; 550 sacks of Class "G" with 1% CFR-2, 0.5% Halad 22A, 0.5% LWL, and 35% Silica Flour at 15.2 ppg slurry. Dropped plug, displacing cement.

4/13/79
0'

TD: 14,210'; MW: 10.5; Vis: 44. Completed displacing cement; bumped plug. Cement in place April 12 at 7:00 a.m. Released pressure; checked floats. Pulled out of hole; cleaned floor; laid down TIW equipment. Picked up bit and casing scraper; changed pipe rams to 5". Ran in hole to 8853'; cut drilling line. Ran in hole to 9121'; scraped 9-5/8" casing from 9321' to 9528'. Top of liner at 9528'. Circulated bottoms up; closed Hydril; pressured up on casing. Pumped around liner with 600 psi at 4 BPM. Pulled out of hole; laid down casing scraper and bit. Picked up Howco E-Z drill retainer; ran in hole.

4/14/79
0'

TD: 14,210'; MW: 10.6; Vis: 47. Completed trip in with 9-5/8" Howco cement retainer; circulated one-half hour at 9430'. Set retainer at 9417'; pumped around liner lap at 800 psi at seven BPM. Cement squeezed 20 barrels of water and 400 sacks of Class "G" cement with 0.3% HR-7 and 1% CFR-2, at 15.8 ppg. Total volume: 82 barrels. Average pump rate: 1.6 BPM. Pulled out of retainer and left five barrels on top of retainer. Pulled three stands of drill pipe; reversed out; no cement. Pulled out of hole; laid down setting tools. Picked up FO shifting fingers and RTTS

	packer; ran in hole to 2142'. Opened FO; set packer at 2132'. Circulated and conditioned mud in 9-5/8" x 13-3/8" annulus. Cleaned suction pits and started mixing Arctic Pack in preparation for temporary suspension of the well.
4/15/79 0'	TD: 14,210'; MW: 10.5; Vis: 44. Mixed Arctic Pack: 250 barrels at 9.5 ppg. Pumped 550 barrels water pre-flush through 9-5/8" x 13-3/8" annulus. Followed with 235 barrels Arctic Pack, with 4% water in returns. Released packer; closed FO at 2142'; closed Hydril and reversed out excess Arctic Pack. Set packer and tested FO and casing to 3,000 psi. Pulled out of hole; laid down Howco tools. Ran in hole open ended to 4284'; spotted excess Arctic Pack. Pulled out of hole.
4/16/79 0'	TD: 14,210'. Laid down drill pipe and drill collars. Reversed out mud with water; reversed out water with diesel at 2000'. Laid down 2000' of drill pipe; laid down swivel. Rigged up to run tubing. Ran in hole with 2-7/8" tubing.
4/17/79 0'	TD: 14,210'. Ran in hole with 2-7/8" tubing with mule shoe on first joint. Ran 217 joints to 6556'. Landed tubing hanger in tubing spool with BPV in place. Cleaned floor; laid down kelly; set table out and nippled down blowout preventers. Nippled up National tubing bonnet and OCT Christmas tree on well. Filled tree with Glycol; tested tree to 5,000 psi. Pumped and cleaned mud pits.
4/18/79 0'	TD: 14,210'. Cleaned Arctic Pack and diesel from No. 3 mud pit. Winterized rig for shut down; drained pumps, water lines, and draw works. Removed windwalls on floor; drained small bladder tank. Released rig April 17, 1979, at 12:00 noon.
	WELL TEMPORARILY SUSPENDED UNTIL DECEMBER 25, 1979.
12/25/79 0'	TD: 14,210'; MW: 10.5; Vis: 40. Nippled down Christmas tree and adapter flange. Nippled up blowout-preventer equipment.
12/26/79 0'	TD: 14,210'; MW: 10.5; Vis: 42. Mixed additional mud; worked on blowout-preventer equipment.
12/27/79 0'	TD: 14,210'; MW: 10.5; Vis: 41. Worked on rams; pulled wet tubing. Circulated out diesel at 4:45 p.m. Arctic Pack broke through after circulating 121 barrels of diesel. Circulated out 58 barrels of Arctic Pack.

	Flare line broke; repaired. Line split; repaired. Arctic Pack would not move with 1,500 psi. Laid down new flare line.
12/28/79 0'	TD: 14,210'; MW: 10.5; Vis: 41. Circulated Arctic Pack and diesel to flare pit. Completed at 10:00 a.m. Pulled tubing.
12/29/79 0'	TD: 14,210'; MW: 10.5; Vis: 42. Laid down 2-7/8" tubing. Tested blowout-preventer equipment.
12/30/79 0'	TD: 14,210'; MW; 10; Vis: 43. Tested annular preventer to 2,500 psi. Picked up kelly; tested blowout-preventer equipment to 5,000 psi; upper new and old kelly cocks would not hold. Picked up bottom-hole assembly and circulated at 215'.
12/31/79 0'	TD: 14,210'; MW: 10.5; Vis: 46. Picked up drill collars and drill pipe; staged in hole.
1/1/80 0'	TD: 14,210'; MW: 10.5; Vis: 45. Picked up 5" drill pipe. Broke circulation at 8500'. Ran in hole to 9000'; washed down. Tagged cement at 9378'; drilled cement. Tagged retainer at 9417'; drilled retainer and cement to 9422'. Pulled out of hole; steel-line measuring; made 10-foot correction. Changed bits.
1/2/80 0'	TD: 14,210'; MW: 10.5; Vis: 44. Ran in hole to 9422'; drilled cement to liner top at 9538'. Circulated bottoms up. Pulled out of hole, steel-line measuring.
1/3/80 0'	TD: 14,210'; MW: 10.6; Vis: 49. Pulled out of hole; picked up 5-7/8" bit and bottom-hole assembly. Tagged liner top; ran in hole to 9850'. Started to take weight on bit; washed fill to 10,865'.
1/4/80 0'	TD: 14,210'; MW: 10.7; Vis: 44. Pressured casing and liner lap to 3,000 psi; pulled out of hole. Ran in hole to 9520' with casing scraper. Pulled out of hole; picked up drill-stem test tools; ran in hole.
1/5/80 0'	TD: 14,210'; MW: 10.6; Vis: 42. Tripped in with drill-stem test tools; ran 6,200 foot water cushion; set packer at 9482'. Conducted test; had 179 psi buildup. Concluded liner lap to be OK.
1/6/80 0'	TD: 14,210'; MW: 10.6; Vis: 43. Picked up bottom-hole assembly; ran in hole to liner hanger; broke circulation. Ran in hole, circulating and washing.

1/7/80 0'	TD: 14,210'; MW: 10.5; Vis: 40. Tagged wiper plug at 14,014'; pressure tested liner to 3,000 psi. Drilled wiper plug and tagged landing collar at 14,116'. Drilled cement.
1/8/80 14'	TD: 14,224'; MW: 10.5; Vis: 47. Drilled to 14,221'; tested formation to 0.69 psi/ft. Drilled to 14,224'; circulated; pulled out of hole. Tested blowout-preventer equipment; ran in hole.
1/9/80 91'	TD: 14,315'; MW: 10.5; Vis: 41. Ran in hole; drilled ahead.
1/10/80 67'	TD: 14,382'; MW: 10.5; Vis: 45. Drilled; circulated; pulled out of hole.
1/11/80 76'	TD: 14,458'; MW: 10.5; Vis: 44. Ran in hole; drilled ahead.
1/12/80 24'	TD: 14,482'; MW: 10.5; Vis: 45. Drilled ahead; pulled out of hole; changed bits and ran in hole.
1/13/80 78'	TD: 14,560'; MW: 10.4; Vis: 43. Drilled ahead.
1/14/80 33'	TD: 14,593'; MW: 10.4; Vis: 47. Drilled from 14,560' to 14,587'. Surveyed; pulled out of hole. Laid down three joints of 5" drill pipe. Ran in hole; broke circulation at 11,000'. Picked up three joints of 3-1/2" drill pipe.
1/15/80 84'	TD: 14,677'; MW: 10.5; Vis: 43. Drilled ahead.
1/16/80 24'	TD: 14,701'; MW: 10.4; Vis: 46. Drilled to 14,701'; pulled out of hole; tested blowout-preventer equipment. Ran in hole.
1/17/80 72'	TD: 14,773'; MW: 10.4; Vis: 42. Ran in hole; broke circulation at 11,200'. Drilled ahead.
1/18/80 55'	TD: 14,828'; MW: 10.4; Vis: 43. Drilled to 14,828'; surveyed; pulled out of hole. Replaced rotary sprocket.
1/19/80 49'	TD: 14,877'; MW: 10.3; Vis: 40. Performed rig maintenance. Ran in hole; drilled ahead.
1/20/80 31'	TD: 14,908'; MW: 10.2; Vis: 40. Drilled to 14,908'; pulled out of hole. Ran in hole with bit; surveyed; misrun.

1/21/80 35'	TD: 14,943'; MW: 10.2; Vis: 4. Ran in hole; drilled ahead.
1/22/80 28'	TD: 14,971'; MW: 10.3; Vis: 44. Drilled to 14,971'; surveyed; pulled out of hole. Tested blowout-preventer equipment. Picked up core barrel.
1/23/80 15'	TD: 14,986'; MW: 10.3; Vis: 46. Ran in hole with core barrel. Cut Core No. 13, 14,971' to 14,986'. Barrel jammed; pulled out of hole. Recovered 15-foot core. Ran in hole with bit.
1/24/80 49'	TD: 15,035'; MW: 10.3; Vis: 41. Ran in hole to 14,971'; reamed core hole to 14,986'. Drilled ahead.
1/25/80 24'	TD: 15,059'; MW: 10.3; Vis: 42. Drilled to 15,059'; surveyed. Pulled out of hole; changed bits. Ran in hole.
1/26/80 51'	TD: 15,110'; MW: 10.3; Vis: 44. Ran in hole to 15,059'; drilled ahead.
1/27/80 33'	TD: 15,143'; MW: 10.3; Vis: 43. Drilled to 15,143'; surveyed. Pulled out of hole.
1/28/80 41'	TD: 15,184'; MW: 10.4; Vis: 5. Pulled out of hole. Picked up diamond drill bit; ran in hole. Washed 55 feet to bottom; drilled ahead.
1/29/80 15'	TD: 15,199'; MW: 10.4; Vis: 48. Drilled to 15,199'; pump pressure increased. Surveyed; pulled out of hole. Tested blowout-preventer equipment. Ran in hole.
1/30/80 47'	TD: 15,246'; MW; 10.4; Vis: 47. Ran in hole; drilled ahead.
1/31/80 25'	TD: 15,271'; MW: 10.4; Vis: 45. Drilled to 15,271'; surveyed. Pulled out of hole; changed bits. Ran in hole with bottom-hole assembly and 3-1/2" drill pipe, cut drilling line.
2/1/80 40'	TD: 15,311'; MW: 10.5; Vis: 50. Ran in hole; drilled ahead.
2/2/80 49'	TD: 15,360'; MW: 10.5; Vis: 53. Drilled ahead.
2/3/80 18'	TD: 15,378'; MW: 11; Vis: 63. Drilled ahead.
2/4/80 36'	TD: 15,414'; MW: 11; Vis: 53. Drilled to 15,414'; surveyed. Pumped out five singles. Pulled out of hole; steel-line measured.

2/5/80 3'	TD: 15,424'; MW: 11; Vis: 62. Made 7-foot correction. Picked up core barrel; ran in hole. Washed 90 feet to bottom; tight hole. Cut Core No. 14, 15,421' to 15,424'. Pumped out four singles. Pulled out of hole to 14,143'; repaired brake band.
2/6/80 0'	TD: 15,424'; MW: 10.6; Vis: 72. Pulled out of hole with core; recovered 1.1 foot core. Tested blowout-preventer equipment. Ran in hole to bridge at 15,280'; reamed to 15,320'.
2/7/80 37'	TD: 15,461'; MW: 11.0; Vis: 50. Reamed from 15,320' to 15,424'; drilled to 15,461'; circulated a short trip. Ran in hole; encountered bridge at 15,350'. Washed to 15,430'; reamed to 15,461'. Circulated; surveyed.
2/8/80 0'	TD: 15,461'; MW: 11.0'; Vis: 55. Dropped survey; pulled out of hole; pumped out final five joints. Picked up bit; ran in hole to 15,290'. Broke circulation at 12,000'; reamed out-of-gauge hole, 15,290' to 15,461'. Circulated one-half hour at 15,461'. Dropped survey; pulled out of hole. Prepared to pick up core barrel.
2/9/80 1'	TD: 15,462'; MW: 11.0; Vis: 50. Ran in hole for Core No. 15'; reamed from 15,280' to 15,461'. Cored four hours; made one foot, 15,461' to 15,462'. Pulled out of hole with core barrel; found that head was 1/8" under gauge.
2/10/80 0'	TD: 15,462'; MW: 11; Vis: 47. Ran in hole; reamed from 15,290' to 15,462'. Circulated; pulled out of hole.
2/11/80 7'	TD: 15,469'; MW; 11.1; Vis: 47. Finished pulling out of hole. Picked up core barrel; ran in hole. Washed from 15,275' to 15,400'; reamed to 15,462'. Cut Core No. 16, 15,462.7' to 15,469.2'.
2/12/80 0'	TD: 15,469'; MW: 11.1; Vis: 48. Pulled out of hole with core; recovered 4.0 feet of quartzite. Tested blowout-preventer equipment; replaced inside choke valve. Ran in hole; circulated at 9000' and 12,000'. Encountered bridge at 15,281'; washed and reamed to 15,450'. Lost 100 barrels mud on trip.
2/13/80 12'	TD: 15,481'; MW: 10.9; Vis: 44. Washed and reamed from 15,450' to 15,469'. Drilled to 15,481'. Circulated; stuck at 15,481' for one-half hour.

	Worked free. Lost 150 barrels mud; spotted 40 barrels of lost-circulation material; spotted second 40 barrels of lost-circulation material. Pulled out of hole to 15,000'; circulated and built volume. Ran in hole to 15,471'; no bridge; ten feet of fill. Circulated; spotted 50 barrels lost-circulation material. Pulled out of hole to log.
2/14/80 0'	TD: 15,481'; MW: 0'; Vis: 41. Chained out of hole with wet string to 14,347'; unplugged jets. Pulled out of hole. Ran Temperature Log: 0' to 11,600'; misrun. Ran Temperature Log: 0' to 12,900'; misrun. Ran DIL/SP/GR, 15,395' to 14,194'; misrun. Ran Temperature Log: 100' to 15,435' (288°F).
2/15/80 0'	TD: 15,481'; MW: 10.8; Vis: 46. Ran the following logs: DIL/SP/GR, BHC-Sonic/GR, FDC/CNL/GR/Caliper, and HRD Dipmeter. Ran Velocity Survey, 14 shots.
2/16/80	PBTD: 14,020'; MW: 10.7; Vis: 45. Pulled out of hole with Temperature Log. Ran in hole with drill pipe to 15,155'; conditioned mud. Spotted Plug No. 1: 75 sacks of Class "G", with 35% Silica flour, 1% CFR-2, 0.6% Halad 22-A, and 1% HR 20, mixed at 15.6 ppg. Top of plug at 14,700'. Pulled out of hole to 14,550'; reversed drill pipe. Pulled out of hole to 14,397'; conditioned mud. Spotted Plug No. 2: 60 sacks Class "G" with same qualities as Plug No. 1. Top of plug at 14,020'. Pulled out of hole to 13,900'; reversed drill pipe. Pulled out of hole.
2/17/80	PBTD: 13,800'; MW: 10.6; Vis: 44. Pulled out of hole with open ended drill pipe. Picked up bit and scraper. Ran in hole to 13,850'; circulated bottoms up. Pulled out of hole; laid down 5-7/8" bottom-hole assembly; picked up 7" E-Z drill retainer. Ran in hole; set at 13,800'. Pulled out of hole to 9725'. Circulated and conditioned mud.
2/18/80	PBTD: 9328'; MW: 10.7; Vis: 48. Conditioned mud at 9725'. Spotted Plug No. 3: 75 sacks Class "G" with same qualities as Plug No. 1. Top of plug at 9328'. Spotted 10 barrels H_2O ahead and one barrel H_2O and 108 barrels mud behind cement. Pulled out of hole to 9307'; reversed drill pipe. Pulled out of hole and laid down 186 joints of 3-1/2" drill pipe. Ran in hole with 8-1/2" bit and 9-5/8" scraper to 9300'. Ran in hole with 9-5/8" retainer.

2/19/80 PBTD: 7537'; MW: 10.4; Vis: 47. Set 9-5/8" retainer at 9254'. Spotted Plug No. 4, 50 sacks Class "G", on top of retainer. Pulled four stands; reversed out. Top of cement at 9054'. Circulated and conditioned mud at 8882'. Reduced mud weight to 10.4 ppg. Tested blowout-preventer equipment. Rigged up Schlumberger unit; ran in hole. Perforated at 7583' with four shots. Picked up 9-5/8" retainer; ran in hole and set at 7537'. Began rigging up to test casing.

2/20/80 PBTD: 7537'; MW: 10.3; Vis: 40. Tested casing to 3,000 psi; tested drill pipe to 3,000 psi. Injection rate: one and one-third barrels per minute at 1,400 psi. Squeezed at 7583' with 75 sacks Class "G" with 1% CFR-2. Final: 1,800 psi. Spotted 10 sacks on top of retainer. Reversed drill pipe; pulled out of hole. Perforated at 7390'; set retainer at 7350'. Tested casing to 3,000 psi. Injection rate: 1-1/2 barrels per minute at 2,800 psi. Squeezed with 50 sacks Class "G", containing 1% CFR-2. Final pump rate: 2,400 psi at one-fourth barrel per minute. Shut in: 1,900 psi. Spotted five sacks on top of retainer. Reversed out drill pipe; pulled out of hole. Waited on cement. Cement in place February 19 at 8:30 p.m.

2/21/80 PBTD: 7530'; MW: 10.4; Vis: 43. Circulated and waited on cement. Ran in hole; tagged cement at 7332'. Drilled cement and retainer to 7390'. Ran in hole; tagged cement at 7530'. Circulated bottoms up and pulled out of hole. Picked up casing scraper; ran in hole to 7525'. Circulated and conditioned mud.

2/22/80 PBTD: 7530'; MW: 10.3; Vis: 46. Circulated and tripped out. Ran VDL/CBL/GR/Collar log from 7522' to 2100'. Perforated from 7446' to 7472', 119 holes. Ran in hole with drill-stem test tools; dry. Set packer at 7380'. Opened for initial flow for 30 minutes at 9:43 p.m., February 21, shut in at 10:13 p.m.; strong blow at shut-in, with 35 psi at surface; some gas to surface; hooked head to flair line. Flare line frozen, laid new line. Opened for final flow February 22 at 12:45 a.m. Flowed on 8/64" choke and flared gas. Flow: TSTM. Surface pressure increased to 38 psi after two hours and forty-five minutes into final flow. Declined to 29 psi at end of final flow. Closed tool for final shut in at 5:45 a.m. Dropped bar; reversed out recovery.

2/23/80 PBTD: 7530'; MW: 10.4; Vis: 44. Completed reversing out recovery on Drill-Stem Test No. 1. Had 1,338-foot fluid rise (23-3/4 barrels, four of which

were rat-hole fluid and 19-3/4 of which were fluid entry). Drill-stem test shut in until 3:45 p.m. Pulled packer loose and pulled out of hole. Laid down drill-stem test tools; picked up bit and casing scraper. Ran in hole to 7525'; circulated and conditioned mud. Pulled out of hole. Picked up Halliburton retainer.

2/24/80 PBTD: 6940'; MW: 10.4; Vis: 43. Ran in hole, set retainer at 7345'; tested to 3,000 psi. Injection rate: 3 BPM at 1,200 psi. Pumped 20 barrels of water, 75 sacks Class "G" cement with 1% CFR-2 at 15.8 ppg, one barrel of water and 106 barrels of mud. Squeezed 2 barrels per minute at 800 psi. ISIP: 700+. Cement in place 2/23/80 at 11:36 a.m. Spotted five sacks cement on top of retainer. Pulled out of hole one stand; reversed out. Pulled out of hole; shot four shots at 6950'. Set retainer at 6940'; tested to 3,000 psi. Injection rate: 3 barrels per minute at 1,100 psi. Pumped 20 barrels of water, 150 sacks Class "G" with 1% CFR-2 at 15.8 ppg, one barrel of water and 83 barrels of mud. Squeezed at 3 barrels per minute at 1,100 psi. ISIP: 450 psi. Cement in place 2/24/80 at 12:20 a.m. Pulled out of hole; perforated four shots at 6862'. Picked up retainer.

2/25/80 PBTD: 6940'; MW: 10.4; Vis: 41. Ran in hole; set retainer at 6819'. Tested casing to 3,000 psi, injection rate at 2-1/2 barrels per minute at 1,500 psi, perforate at 6862'. Pumped 20 barrels water; squeezed 150 sacks Class "G" cement with 1.0% CFR-2 at 15.8 ppg; followed with 1 barrel of water, displaced with 81 barrels mud. Squeezed 38 barrels mud at 3 barrels per minute with 1,400 psi. Cement in place at 10:01 a.m. ISIP 1,000 psi; 900 psi in 2 minutes. Pulled out of hole, picked up bit. Ran in hole to 6725' and circulated. Tagged cement at 6791'. Drilled to 6819'.

2/26/80 PBTD: 6939'; MW: 10.4; Vis: 43. Drilled cement to 6865'; washed and reamed to 6939'. Pulled out of hole; ran scraper to 6939'. Circulated and conditioned mud; pulled out of hole. Perforated from 6917-6923', 6903-6910', 6893-6898' and 6877-6883' at four shots per foot, with four-inch casing gun. Ran in hole for Drill-Stem Test No. 2; no cushion. Set packer at 6821'. Initial open: 30 minute flow at 3:26 a.m.; strong blow after two minutes. Initial shut in: one hour at 3:56 a.m. to 4:56 a.m.; strong blow and gas to surface at 50 minutes into final flow. Gas flow: TSTM.

2/27/80 PBTD: 6748'; MW: 10.4; Vis: 44. Extend final flow to 7:56 a.m.; shut in, dropped bar, reversed out

recovery: 935 feet of gas-cut mud (16.6 barrels); 2,100 ppm Cl_2. Pulled loose at 2:00 p.m.; pulled out of hole. Ran scraper to 6931'; pulled out of hole. Set retainer at 6818'; tested to 3,000 psi, established injection rate at 3 barrels per minute at 1,100 psi, squeezed formation with 75 sacks Class "G" cement containing 1% CFR-2. Ran 20 barrels water ahead and one barrel water behind cement. Displaced with 95 barrels mud. Squeezed 20 barrels mud at 3 barrels per minute with 1,200 psi. Cement in place February 27 at 4:05 a.m. ISIP: 900 psi; after two minutes: 800 psi. Spotted five barrels cement on top of retainer. Pulled one stand; reversed drill pipe. Pulled out of hole 23 stands. Began rigging to lay down drill pipe.

2/28/80 PBTD: 2047'. Laid down drill pipe and drill collars. Set retainer at 2118'; spotted 35 sacks Class "G" cement with 1% CFR-2 on top of retainer. Top of cement at 2047'. Reversed mud to water and water to diesel (130 barrels diesel). Laid down drill pipe; nippled down blowout preventers.

2/29/80 PBTD: 2047'. Set out blowout preventers; installed dry-hole marker; cleaned mud pit. Released rig February 28, 1980, at 12:00 midnight.

DRILLING TIME ANALYSIS

IKPIKPUK TEST WELL NO. 1

PARCO, INC., RIG 96

Spudded 11/28/78, Rig released 2/28/80

Total Depth: 15,481 Feet

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

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
1978																									
4-18	12																							Rigging Up	
4-19	12																							Rigging Up	
4-20	12																							Rigging Up	
4-21	12																							Rigging Up	
4-22	12																							Rigging Up	
4-23	12																							Rigging Up	
4-24	24																							Rigging Up	
4-25	24																							Rigging Up	
4-26	24																							Rigging Up	
4-27	24																							Rigging Up	
4-28	24																							Rigging Up	
4-29	24																							Rigging Up	
4-30	24																							Rigging Up	
5-1	24																							Rigging Up	
5-2	24																							Rigging Up	Operations suspended until 11-1-78

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 2 of 20

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
1978 11-1	24																								Rig Up - 42 Days
11-2	24																								Rigging Up
11-3	24																								Rigging Up
11-4	24																								Rigging Up
11-5	24																								Rigging Up
11-6	24																								Rigging Up
11-7	24																								Rigging Up
11-8	24																								Rigging Up
11-9	24																								Rigging Up
11-10	24																								Rigging Up
11-11	24																								Rigging Up
11-12	24																								Rigging Up
11-13	24																								Rigging Up
11-14	24																								Rigging Up
11-15	24																								Rigging Up

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 3 of 20

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
11-16	24																								Rigging Up
11-17	24																								Rigging Up
11-18	24																								Rigging Up
11-19	24																								Rigging Up
11-20	24																								Rigging Up
11-21	24																								Rigging Up
11-22	24																								Rigging Up
11-23	24																								Rigging Up
11-24	24																								Rigging Up
11-25	24																								Rigging Up
11-26	24																								Rigging Up
11-27	18							1				5												Rigging Up	
11-28		8½				½		15																Conditioning Mud	Spudded Well at 3:00 p.m.
11-29		3½		4				3¼	6½													6½		Tripping	Ran Schlumberger Wireline Logs
11-30			10¼	6¼		4		3½																Working on Drum Shaft	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 4 of 20

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
12-1				2¼		¼		1		12½	7												1	Running Casing	Set 20" Casing at 521'
12-2											16	8												Waiting on Cement	
12-3				2								22												Nipple Up BOP	
12-4		6½		1½				1	2¾			8½	2¾										1	Installing Relief Lines	
12-5		15		7¼				1½	¼															Drilling	
12-6		20½		1	¼			½	2															Drilling	
12-7				10½	¼				4½	7¼	1½													Tripping	Ran Schlumberger Wireline Logs
12-8				4					2½		12¾												4¾	Running Casing	Set 13 3/8" Casing at 2603'
12-9				1							1		17½										4½	Setting Casing Slips	
12-10													24											Nipple Up BOP	
12-11													18	6										Testing BOP	
12-12				4½			1½							12									6	Testing BOP	
12-13		5½		9				2½															7	Tripping	
12-14		10		8	¼			2¾															2½	Drilling	
12-15		11¼	2	6				½									3½						½	Laying Down Core	Core No. 1: 2930' - 2960'

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 5 of 20

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
12-16		7½		6½	1		1	2				1					5¼							Drilling	Core No. 2: 3784' - 3812'
12-17		15¾	1	4¾	1½																		1	Reaming	
12-18		8		9	½								6½											Drilling	
12-19		22			1¾		¾																	Drilling	
12-20		15		3	1¾		4¾																	Repairing Rotary Chain	
12-21		7	1	12			½										2						1½	Tripping	Core No. 3: 5690' - 5700'
12-22		13½		1¼	1½		7¾																	Drilling	
12-23		4¼		3¼			15½																	Repairing Input Shaft	
12-24		22		1	½			½																Drilling	
12-25		11½		6								4½											2	Testing BOP	
12-26		19		4½	½																			Drilling	
12-27		14½		4¼			4¼	¾															¼	Repairing Rig	
12-28				17			2	1¼									2¾						¾	Tripping	Core No. 4: 7132' - 7143'
12-29		19½	1	2½																			1	Drilling	
12-30		4½		8½	½		3	2½									4¼						¾	Circulating	Core No. 5: 7368' - 7378'

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 6 of 20

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
12-31		9½	1	8½	¼			2½															2	Tripping	
1979 1-1				12¼				1					4¼				4½						2	Tripping	Core No. 6: 7491' - 7501'
1-2		19¼	4¼	½																				Drilling	
1-3		10½		11	½			2																Drilling	
1-4		15	5	3				1																Drilling	
1-5		8½		5½	¼		6	3½																Drilling	
1-6		6½	12½	3½			1																¾	Washing & Reaming	
1-7		8	9½	2½				4																Drilling	
1-8			12	8¼			¼	3½																Tripping	
1-9		10½	13½																					Reaming	
1-10		13½		6	½			4																Drilling	
1-11		14½	4	4½		½	½																	Reaming	
1-12		19½		3½	½	½																		Drilling	
1-13		15½	½	5¾		½	1¼																	Tripping	
1-14		21¼		2¾		½																		Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 7 of 20

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
1-15		8½	1	9½	½			½					4											Drilling	
1-16		18						6																Drilling	
1-17		21½		2				½																Drilling	
1-18		9½	12	1½			½	½																Drilling	
1-19		19½	3½	1																				Drilling	
1-20		6½	14	3				½																Drilling	
1-21		¾	2	10½	1¼			2½														½		Drilling	
1-22		24																						Drilling	
1-23		17		3½	1			2½																Drilling	
1-24		14		6				½					3½											Tripping	
1-25		16		4½	½			3																Drilling	
1-26		8		9½				4														2½		Tripping	
1-27				6½				2½	15															Tripping	Ran Schlumberger Wireline Logs
1-28			½	5				3½	15															Logging	
1-29				5				5	14															Tripping	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 8 of 20

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
1-30				5½				2	16														½	Logging	Sidewall Cores
1-31				4½				5		12			2½											Tripping	
2-1								8½		15½														Running 9-5/8" Casing	
2-2				2				10		9¾		1½											¾	Circulating	
2-3				6			8½	3½		½													5½	Repairing Rig	
2-4				5½			11½					6											1	Repairing Rig	
2-5		11		4				8															1	Drilling	
2-6		10½	1	9			1	1¾															1	Tripping	
2-7		15	1	7																			1	Tripping	
2-8		22½					1½																	Drilling	
2-9		12½	¾	9	½			½															1	Tripping	
2-10				12¾	½			2					1½				7¼							Tripping	Core No. 7:10270' - 10300'
2-11		11	½	5									7										½	Testing BOP	
2-12		24																						Drilling	
2-13		11¼	1½	6¾	¾		1¼																2½	Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 9 of 20

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
2-14		7½		8				1½					7											Drilling	
2-15		¾	11½	8	½												2½						1	Reaming	Core No. 8: 10619' - 10649'
2-16		7¾	2½	7				4¾									1						1	Tripping	
2-17		12½	½	8	½		2	½																Drilling	
2-18		15½		5	½			2									1							Drilling	
2-19		2½	1	12½				½									4¼						3½	Coring	Core No. 9: 10815' - 10842'
2-20		24																						Drilling	
2-21		8		11½	½								4											Drilling	
2-22		5½		12				3½					1½										1½	Tripping	
2-23		14½		3½				6¼																Circulating	
2-24		14		7½	½			1½															½	Drilling	
2-25			1	12½													8½						2	Coring	Core No. 10: 11108' - 11135'
2-26		23¾				¼																		Drilling	
2-27		14¾		6	½			2¾																Drilling	
2-28		18¾		4¼				¼															¾	Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 10 of 20

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
3-1		23		1																				Drilling	
3-2		8¾		7½				1¼					5										1	Drilling	
3-3		21		3																				Drilling	
3-4		18½	4½					1																Reaming	
3-5				15½			1	2									3						2½	Tripping	Core No. 11: 11718' - 11733'
3-6		16½		7½																				Tripping	
3-7		20½		3½																				Drilling	
3-8		17½		4½	½								1½											Drilling	
3-9		13	1¼	5¾									3										1	Cutting Drilling Line	
3-10		24																						Drilling	
3-11		10¾	1	11¾	½																			Drilling	
3-12		24																						Drilling	
3-13		24																						Drilling	
3-14		3		16¾	½			¾									3							Tripping	Core No. 12: 12743' - 12753'
3-15		12	1	7¼									2¾										1	Tripping	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 11 of 20

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
3-16		24																						Drilling	
3-17		9¼		11	½		1¼	½															1	Drilling	
3-18		23	1																					Drilling	
3-19		18¾		5	¼																			Drilling	
3-20		17¼	¼	5¾				¼																Tripping	
3-21		23½																					½	Drilling	
3-22		4½		13¾				1¼					3										1½	Drilling	
3-23		21¾	1	1		¼																		Drilling	
3-24		24																						Drilling	
3-25		7½		13½	½			2½																Drilling	
3-26				15				3															6	Tripping	
3-27		19½	2	2½																				Drilling	
3-28		24																						Drilling	
3-29		¾		7½				3¾															12	Tripping	
3-30				13				2					4										5	Circulating	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 12 of 20

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
3-31		17½		4¾				1															¾	Conditioning	
4-1		23¼	½			¼																		Drilling	
4-2		3½		14½	½		¾	3															2	Repairing Drilling Line	
4-3			10	2			3¾	1¾															6½	Reaming	
4-4				2				14															8	Thawing Kelly & Cock	
4-5		9½	11½	1½				1½																Reaming	
4-6		18¾		4																			1¼	Drilling	
4-7		12¼		7¾	½			3½																Drilling	
4-8				2½					21½															Logging	Ran Schlumberger Wireline Logs
4-9				4				1½	16				2½											Logging	
4-10			½	13¼				10															¼	Circulating	
4-11				10				½		10½													3	Laying Down Drill String	
4-12			1¾	10				4		3¾													4½	Running 7" Liner Cementing	
4-13				15½				6		2½														Tripping	
4-14				1½				18½															4	Making Arctic Pack	Preparing Rig For Summer Suspension

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 13 of 20

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
4-15				13				6½															4½	Circulating	
4-16																							24	Running Tubing	
4-17																							24	Cleaning Mud Pits	Released Rig at 12:00 noon
4-18																							24	Rigging Down	
4-19																							24	Cleaning Location	
4-20																							24	Cleaning Location	
4-21																							24	Transferring Diesel	
			DRILLING	OPERATIONS				SUSPENDED				FOR	THE		SUMMER										
11-21																							12	Opening Camp	
11-22	24																							Rigging Up	
11-23	24																							Rigging Up	
11-24	24																							Rigging Up	
11-25	24																							Rigging Up	
11-26	24																							Rigging Up	
11-27	24																							Rigging Up	

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 14 of 20

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
11-28	24																							Rigging Up	
11-29	24																							Rigging Up	
11-30	24																							Rigging Up	
12-1	24																							Rigging Up	
12-2	24																							Rigging Up	
12-3	24																							Rigging Up	
12-4	24																							Rigging Up	
12-5	24																							Rigging Up	
12-6	24																							Rigging Up	
12-7	24																							Rigging Up	
12-8	24																							Rigging Up	
12-9	24																							Rigging Up	
12-10	24																							Rigging Up	
12-11	24																							Rigging Up	
12-12	24																							Rigging Up	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 15 of 20

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
12-13	24																							Rigging Up	
12-14	24																							Rigging Up	
12-15	24																							Rigging Up	
12-16	24																							Rigging Up	
12-17	24																							Rigging Up	
12-18	24																							Rigging Up	
12-19	24																							Rigging Up	
12-20	24																							Rigging Up	
12-21	24																							Rigging Up	
12-22	24																							Rigging Up	
12-23	24																							Rigging Up	
12-24	24																							Rigging Up	
12-25	1½										12	4½												Rigging Up	
12-26											7	2½										14½	Nipple Up BOP		
12-27				5½			½	3½														14½	Thawing Flare Line		

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 16 of 20

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
12-28												9	4										11	Laying Down Tubing	
12-29													14½										9½	Testing BOP	
12-30				13				6½															4½	Circulating	
12-31				8½				6															9½	Circulating	
1980 1-1				9				2															13	Working BOPs	
1-2			1	19½				½															3	Tripping	
1-3			3½	14				5															1½	Circulating	
1-4				15½														6½					2	Tripping	Liner Lap Test
1-5				13½				7															3½	Cleaning Floor	
1-6			16	1½			1	5½																Reaming	
1-7		3½				7		4					2½										7	Drilling Cement	
1-8		8	1	8½				1					4										1½	Tripping	
1-9		17		6				1																Drilling	
1-10		10	3	11																				Tripping	
1-11		16½		7½																				Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 17 of 20

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
1-12		16½		6½			1																	Tripping	
1-13		14		9½	½																			Drilling	
1-14		19½		3½																			1	Drilling	
1-15		14		7	½								2½											Drilling	
1-16		11		7½									5½											Tripping	
1-17		21¾		1¼	½																			Drilling	
1-18		9¼		11¾																			3	Changing Rotary Sprocket	
1-19		20		3½	½																			Drilling	
1-20		14		8			1																1	Cut Drilling Line	
1-21		19		4¼	¾																			Drilling	
1-22				10¾			1½	1¼					4½				4½						1½	Testing BOP	Core No. 13: 14971' - 14986'
1-23		11½	½	9		½	1½																1	Tripping	
1-24		18½		3½	1		1																	Drilling	
1-25		13½		6¼			½	½															3½	Tripping	
1-26		23½				½																		Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 18 of 20

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
1-27		10	½	12	1	½																		Tripping	
1-28		15		5½			½	1					2											Drilling	
1-29		14½		5½		½							3½											Tripping	
1-30		20½		2½	½																		½	Drilling	
1-31		14		7½		½																	2	Cutting Drill Line	
2-1		23	1																					Drilling	
2-2		8	4	11½		½																		Drilling	
2-3		22½	½					1																Drilling	
2-4			3	15½	½	½	2										2½							Tripping	Core No. 14: 15421' - 15424'
2-5				11½			6						5										1½	Relining Brake Band	
2-6		11½	10	1		½		½															½	Washing & Reaming	
2-7		3½	3½	13	½	½	1½	1½																Circulating	
2-8			6	11½	½			1									4						1	Laying Down Collar	Core No. 15: 15461' - 15462'
2-9			7½	11		½		1															4	Laying Down Collar	
2-10			2	12½		½											7						2	Tripping	Core No. 16: 15462.7' - 15469.7'

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. IKPIKPUK TEST WELL NO. 1 Page 19 of 20

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
2-11				14									8										2	Pulling Out Of Hole	
2-12		5	8	1½				9½																Reaming	
2-13				9				6	9															Tripping	
2-14									24															Logging	Ran Schlumberger Wireline Logs
2-15				6				10	7	1														Logging	
2-16			½	17½				4			2													Tripping	
2-17			½	18				4½		½													½	Tripping	
2-18				11				5	2				4										2	Tripping	
2-19				11½				2												8			2½	Squeezing Cement	
2-20				5½				3			2½												13	Circulating	
2-21				10½				3	6½									2¼					2	Circulating	Ran CBL/VDL/CCL/GR
2-22				7½													15½						1	Drill Stem Testing	Ran DST No. 1
2-23				15½				3	1½											4				Tripping	
2-24		10	2	10				2																Squeezing Cement	
2-25		8½	½	7½				4	2½														1	Squeezing Cement	

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

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
2-26				12				3										9						Drill Stem Testing	Ran DST No. 2
2-27	6½							5½											1	½			10½	Tripping	
2-28	24																							Rigging Down	Rig Released at 12:00 midnight
	1760		242½		31¼		101¼		168½		42¾		197¼		-0-		70¾		1		-0-		448		
TOTAL HOURS		1880¼		1258¼		20		362¼		75¾		80		18		-0-		33¼		12½		-0-			

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Ikpikpuk Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR _____ LOCATION 1306' FNL; 785' FEL SEC 25 TWP 13N RNG 10W

STOCKPOINT _____ DATE _____ ENGINEER R. Douville; G. Monroe

CASING PROGRAM: 20 inch at 100 ft.
13 3/8 inch at 2603 ft.
9 5/8 inch at 9873 ft.
7 inch at 14,208 ft.

TOTAL DEPTH _____ ft.

DATE 1978	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	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
11/28	80	8.5	40	8	16	7/8	7.5			3			600	60		2	-	98		Mixed spud mud.
11/29	535	9.1	85	12	26	14/17	8.5			3			700	20	Tr	6	-	94		Drilled 17 1/2" hole.
11/30	535	9.2	50	12	18	14/15	8.0			3			700	20	1/4	7	-	93		Ran "E" logs.
12/1	535	9.3	60	14	29	22/27	8.0			3			700	20	Tr	7	-	93		Opening hole for 20" casing.
12/2	535	9.1	30	6	1	0/0	7.5			3			700	20	Tr	6	-	94		Running casing.
12/3	521	9.1	30	5	1	0/0	7.5			3			700	20	Tr	6	-	94		WOC; nipple up 20" Hydril.
12/4	521	8.9	29	4	1	0/0	7.5			2			600	20	Tr	5	-	95		Nipple up; test BOPs.
12/5	849	9.3	38	7	8	0/2	9.5			2			1100	20	0	8	-	92		Drilling 17 1/2" hole.
12/6	1904	9.5	30	5	1	0/0	8.0			2			800	20	Tr	10	-	90		Drilling.
12/7	2623	9.7	75	23	39	15/18	8.5			2			600	20	Tr	11	-	89		Raised viscosity for logs.
12/8	2623	9.7	44	20	12	3/7	8.0			2			600	20	Tr	11	-	89		
12/9	2603	9.7	34	9	1	0/0	8.0			2			600	20	Tr	11	-	89		Ran 13 3/8" casing.
12/10	2603	9.6	34	9	1	0/0	8.0			2			600	20	0	10	-	90		Nipple up.
12/11	2603	9.2	30	4	0	0/0	8.0			3			600	20	0	6	-	94		Nipple up; leveled mud pits.
12/12	2603	8.7	29	3	0	0/0	8.0			3			600	20	0	3	-	97		Tested BOP stack.
12/13	2603	8.7	30	3	0	0/0	8.0			3			650	20	Tr	3	-	97		Tested BOP stack.
12/14	2633	8.8	48	5	60	20/25	10.0			3			900	480	1/4	4	-	96		Drilled out cement and shoe.
12/15	2955	9.0	35	5	20	13/20	9.0			3			850	400	Tr	5	-	95		
12/16	3610	9.4	39	12	11	12/15	10.5			2			700	120	1/4	7	-	93		Cut Core No. 1.
12/17	3805	9.4	36	9	7	8/13	10.0			3			650	40	1/2	7	-	93		Cut Core No. 2.
12/18	4500	9.7	43	17	16	8/18	10.0			2			500	Tr	1/2	8	-	92		
12/19	4820	9.7	38	11	13	4/13	10.0			2			450	Tr	1/4	8	-	92		
12/20	5440	9.6	44	17	16	4/15	8.5			2			350	Tr	1/4	8	-	92		
12/21	5690	9.6	40	13	14	4/12	8.0			2			350	Tr	1/4	8	-	92		
12/22	5890	9.8	40	13	14	5/16	9.5			2			350	Tr	1/4	9	-	91		Cut Core No. 3.
12/23	6025	9.8	39	14	11	3/10	9.5			2			350	Tr	Tr	9	-	91		
12/24	6200	9.8	40	14	12	3/11	9.5			2			350	Tr	1/4	9	-	91		Circulated at shoe.
12/25	6486	9.8	39	13	12	3/7	9.0			2			350	Tr	Tr	9	-	91		
12/26	6680	9.6	38	12	11	3/5	9.0			2			300	20	Tr	8	-	92		
12/27	6848	9.7	46	15	19	5/11	9.0			2			300	20	Tr	8	-	92		
12/28	7132	10.1	44	17	17	4/10	8.5			2			300	20	1/4	10	-	90		Raised wt to 10.1 ppg.
12/29	7150	10.1	42	16	12	3/6	8.5			2			300	Tr	Tr	10	-	90		Cut Core No. 4
12/30	7368	10.3	45	18	18	4/8	9.5			2			350	20	1/4	11	-	89		Raised wt to 10.3; added soltex.
12/31	7378	10.3	45	18	19	3/8	9.5			2			350	20	Tr	12	-	88		Cut Core No. 5.

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Ikpikpuk Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR _____ LOCATION 1306' FNL; 785' FEL SEC 25 TWP 13N RNG 10W

STOCKPOINT _____ DATE _____ ENGINEER R. Douville; C. Monroe

CASING PROGRAM: 20 inch at 100 ft.
13-3/8 inch at 2603 ft.
9-5/8 inch at 9873 ft.
7 inch at 14,208 ft.

TOTAL DEPTH _____ ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
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	
1/1	7490	10.4	44	14	16	3/5	9.0	8.4		2			350	20	Tr	12	-	88		Cut Core No. 6.
1/2	7500	10.4	47	19	20	5/12	10.0	7.8		2			350	20	Tr	12	-	88		Hole bridging.
1/3	7880	10.8	48	21	18	5/8	10.5	7.5		2			350	20	Tr	14	-	86		Raised weight.
1/4	7938	10.9	80	26	60	5/27	11.0	5.8		2			350	20	Tr	15	-	85		Raised viscosity.
1/5	8160	10.9	50	24	20	4/11	10.5	6.7		2			350	20	Tr	15	-	85		
1/6	8206	10.9	47	22	20	5/11	10.5	6.9		2			350	20	Tr	15	-	85		Hole tight; raised weight.
1/7	8292	11.8	55	30	24	5/20	10.5	6.7		2			350	20	Tr	18	-	82		Raised weight.
1/8	8332	11.7	52	27	26	6/17	10.0	7.0		2			350	20	Tr	17	-	83		Hole took mud; reduced weight.
1/9	8332	10.8	61	23	50	5/30	11.0	5.2		2			350	20	1/4	18	-	82		
1/10	8425	12.1	70	30	30	7/43	10.0	7.7		2			400	24	1/4	19	-	81		Raised weight to 12.1.
1/11	8475	12.1	57	32	31	8/44	10.0	7.3		2			400	32	1/4	19	-	81		
1/12	8600	12.0	60	27	31	9/45	10.0	7.6		2			400	28	1/2	19	-	81		
1/13	8688	12.0	58	32	26	7/39	9.5	7.8		2			400	28	1/2	20	-	80		
1/14	8817	12.0	59	29	32	7/41	10.0	7.7		2			400	32	1/2	19	-	81		
1/15	8950	12.0	75	35	40	9/44	9.5	7.2		2			400	28	1/2	20	-	80		
1/16	9000	12.0	74	32	36	8/47	10.0	7.0		2			400	32	1/2	20	-	80		
1/17	9125	12.0	84	32	36	10/55	10.5	6.7		2			400	40	1/2	20	-	80		
1/18	9255	12.0	80	32	41	12/59	10.0	7.2		2			400	28	1/2	20	-	80		Drilling.
1/19	9288	12.0	80	37	36	12/58	9.5	6.7		2			400	32	1/2	20	-	80		
1/20	9415	11.9	77	30	30	11/55	9.0	7.0		2			400	28	1/2	20	-	80		
1/21	9440	12.0	72	25	25	14/64	10.5	6.9		2			400	28	1/2	20	-	80		
1/22	9485	11.9	77	20	35	22/70	10.5	7.2		2			400	28	1/2	20	-	80		
1/23	9655	12.0	85	20	35	22/70	10.5	7.5		2			400	32	1/2	20	-	80		
1/24	9722	11.9	77	20	55	28/80	10.5	8.4		2			400	20	1/2	19	-	81		
1/25	9820	12.0	58	20	30	30/85	10.5	9.7		2			400	24	1/2	19	-	81		
1/26	9855	12.0	64	20	45	33/85	10.5	9.8		2			400	28	1/2	20	-	80		
1/27	9896	12.0	58	20	40	33/87	10.5	10.0		2			400	20	1/2	19	-	81		
1/28	9896	11.9	65	17	41	32/75	10.5	9.9		2			400	24	1/2	19	-	81		Conditioned mud & hole for logs.
1/29	9913	11.9	53	15	35	23/72	10.5	9.6		2			400	24	1/4	19	-	81		
1/30	9913	12.0	63	20	35	24/66	10.5	9.8		2			400	28	1/4	19	-	81		
1/31	9913	12.0	53	20	30	22/70	10.5	9.6		2			400	28	1/4	19	-	81		
2/1	9913	12.0	57	18	34	25/78	10.5	9.5		2			400	32	1/2	19	-	81		Conditioned for casing.
2/2	9913	11.8	38	17	11	8/34	10.5	9.7		2			400	32	1/2	20	-	80		
2/3	9913	11.7	44	15	20	14/54	11.0	10.9		2			400	100	1/2	20	-	80		
2/4	9913	11.7	45	19	17	15/53	11.0	11.0		2			400	80	1/2	20	-	80		

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORL

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Ikpikpuk Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR _____ LOCATION 1306' FNL; 785' FEL SEC 25 TWP 13N RNG 10W

STOCKPOINT _____ DATE _____ ENGINEER R. Douville; G. Monroe

CASING PROGRAM: 20 inch at 100 ft.
13-3/8 inch at 2603 ft.
9-5/8 inch at 9873 ft.
7 inch at 14,208 ft.

TOTAL DEPTH _____ ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
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	
2/5	9913	11.6	48	20	20	12/38	11.0	10.6		2			400	100	1/2	19	-	89		
2/6	9930	11.2	44	20	10	6/19	12.0	0.6		2			500	80	1/2	16	-	84		
2/7	9970	11.1	40	14	7	2/5	10.5	9.4		2			500	60	1/4	14	-	86		
2/8	10090	11.2	45	28	9	1/4	10.5	5.8		2			500	80	1/4	14	-	86		
2/9	10182	11.1	51	35	20	2/7	10.0	6.0		2			500	80	1/4	14	-	86		
2/10	10270	11.1	41	19	7	1/3	10.0	5.8		2			500	100	Tr	14	-	86		
2/11	10300	11.0	41	22	6	1/3	10.5	5.6		2			500	100	Tr	14	-	86		Cut Core No. 7.
2/12	10420	11.0	42	22	4	1/3	10.5	5.5		2			500	120	Tr	13	-	87		
2/13	10544	11.0	41	22	6	1/2	10.5	5.6		2			600	140	Tr	14	-	87		
2/14	10590	10.9	41	22	3	0/2	10.5	5.8		2			600	100	Tr	13	-	87		
2/15	10617	10.9	44	22	6	1/3	10.5	5.5		2			600	120	Tr	14	-	86		
2/16	10635	10.9	41	25	5	1/3	10.5	5.6		2			600	100	Tr	14	-	86		Cut Core No. 8.
2/17	10740	10.6	40	18	4	0/1	10.0	5.7		2			600	80	Tr	13	-	87		
2/18	10770	10.6	39	16	3	0/1	10.0	5.5		2			600	100	Tr	13	-	87		
2/19	10815	10.6	40	18	4	0/2	10.0	5.4		2			600	100	Tr	13	-	87		
2/20	10875	10.6	41	25	5	0/2	10.5	5.4		2			600	120	Tr	13	-	87		Cut Core No. 9.
2/21	10940	10.6	42	22	6	0/1	9.5	5.5		2			600	140	1/4	13	-	87		Hole took mud.
2/22	10950	10.6	45	20	10	0/2	9.5	5.6		2			600	100	1/4	13	-	87		
2/23	10995	10.7	46	30	5	1/3	10.0	5.2		2			600	120	1/4	13	-	87		
2/24	11078	10.5	49	22	8	1/3	9.0	5.5		2			600	140	1/4	12	-	88		Lost circulation.
2/25	11110	10.6	47	22	6	1/3	9.5	5.1		2			600	140	1/2	12	-	88		
2/26	11155	10.5	41	23	4	1/2	10.5	4.9		2			600	120	1/4	12	-	88		Cut Core No. 10.
2/27	11300	10.5	41	23	3	0/2	10.5	4.8		2			600	130	1/4	12	-	88		Slight mud loss.
2/28	11370	10.5	40	23	2	0/1	10.5	4.8		2			600	140	1/4	12	-	88		
3/1	11470	10.5	40	21	3	0/2	10.5	4.7		2			650	140	1/4	12	-	88		
3/2	11560	10.5	42	21	3	0/2	10.5	4.7		2			650	140	1/4	12	-	88		
3/3	11575	10.6	45	29	3	1/4	10.5	4.7		1			650	140	1/4	12	-	88		
3/4	11640	10.6	42	24	5	1/3	10.0	3.7		1			700	120	1/4	12	-	88		
3/5	11718	10.6	42	24	4	1/3	10.0	4.1		1			700	120	1/4	12	-	88		
3/6	11733	10.6	44	28	7	2/9	10.0	4.5		1			750	120	1/4	12	-	88		Cut Core No. 11.
3/7	11870	10.5	40	18	9	1/3	10.0	4.0		1			850	160	Tr	11	-	89		
3/8	12045	10.5	42	18	6	2/3	10.0	4.2		1			900	160	Tr	11	-	89		
3/9	12109	10.5	42	19	9	1/4	10.0	4.2		1			1000	120	1/4	11	-	89		
3/10	12255	10.5	40	18	9	1/3	10.0	4.5		2			900	120	Tr	11	-	89		
3/11	12429	10.6	40	18	7	1/3	10.0	4.5		2			900	110	Tr	11	-	89		

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORL

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Ikpikpuk Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR _____ LOCATION 1306' FNL; 785' FELSEC 25 TWP 13N RNG 10W

STOCKPOINT _____ DATE _____ ENGINEER R. Douville; G. Monroe TOTAL DEPTH _____ ft.

CASING PROGRAM: 20 inch at 100 ft.
13-3/8 inch at 2603 ft.
9-5/8 inch at 9873 ft.
7 inch at 14,208 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
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	
3/12	12480	10.6	41	20	10	2/4	10.0	4.6		2			1000	100	Tr	11		89		
3/13	12630	10.6	39	17	10	2/4	10.0	4.6		2			950	100	Tr	11		89		
3/14	12743	10.6	41	19	10	2/4	10.0	4.7		2			950	120	Tr	12		89		
3/15	12745	10.6	47	20	10	3/6	10.5	5.3		2			900	120	1/4	12		88		Cut Core No. 12
3/16	12840	10.6	41	20	8	2/7	10.5	5.4		2			900	140	1/4	12		88		
3/17	12950	10.5	40	16	4	2/4	10.5	5.5		2			900	140	Tr	11		89		
3/18	12980	10.6	42	22	6	2/8	10.0	5.4		2			900	160	Tr	11		89		
3/19	13090	10.6	39	17	5	2/7	10.5	5.0		2			900	160	Tr	11		89		
3/20	13134	10.6	42	20	5	2/8	10.5	4.9		2			900	120	1/4	12		88		
3/21	13185	10.6	42	21	6	2/9	10.5	4.9		2			900	120	1/4	12		88		
3/22	13281	10.6	40	20	5	2/6	10.5	4.4		2			900	120	1/4	12		88		
3/23	13286	10.6	48	25	5	3/13	10.0	4.8		2			900	120	1/4	12		88		
3/24	13390	10.6	40	18	4	2/5	10.5	4.7		2			900	120	Tr	12		88		
3/25	13515	10.6	42	20	5	2/8	10.0	4.8		2			900	120	Tr	12		88		
3/26	13531	10.6	41	20	5	2/8	10.0	4.8		2			900	120	1/4	12		88		
3/27	13531	10.6	49	22	6	2/11	10.0	5.0		2			900	120	1/4	12		88		
3/28	13660	10.6	41	20	10	2/10	10.5	4.9		2			900	120	1/4	13		87		
3/29	13761	10.6	39	19	8	2/9	10.5	5.1		2			900	120	1/4	13		87		
3/30	13330	10.6	44	20	10	2/10	10.5	5.3		2			900	120	1/4	13		87		
3/31	13761	10.6	50	25	4	3/15	10.0	4.9		2			900	120	1/4	13		87		
4/1	13880	10.5	40	20	10	2/4	10.0	4.6		1			900	120	1/4	13	3	84		
4/2	14011	10.6	39	18	4	2/7	10.5	4.8		1			900	140	1/4	13	2	85		
4/3	14011	10.6	45	25	10	2/9	10.0	5.0		1			900	140	1/4	13	2	85		
4/4	14011	10.6	62	42	11	4/10	10.5	4.0		1			900	140	1/4	14	2	84		
4/5	14011	10.7	50	30	10	2/8	10.5	4.4		1			900	140	1/4	14	3	83		
4/6	14045	10.6	49	35	10	3/8	10.0	5.4		1			900	140	8	14	4	82		
4/7	14160	10.5	45	30	10	2/10	10.5	4.8		1			900	140	5	14	4	82		
4/8	14210	10.6	47	32	6	2/8	10.5	4.4		1			900	140	5	14	3	83		
4/9	14210	10.6	49	31	10	2/11	10.5	4.8		1			900	120	5	14	3	83		
4/10	14210	10.6	49	35	5	2/10	10.5	4.5		1			900	140	4	14	3	83		
4/11	14210	10.5	45	27	5	2/8	10.5	4.7		1			900	140	4	14	3	83		
4/12	14210	10.6	47	35	7	2/11	10.5	4.8		1			900	140	4	14	3	83		
4/13	14208	10.5	44	25	10	2/10	10.5	4.8		1			900	140	3	14	3	83		
4/15	14208	Mixed 250 barrels of Arctic Pack and displaced between casings. Hole suspended for summer.																		

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3139 Denali Street

DRILLING MUD RECORD

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DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
1979-80	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	
12/25	14208	10.5	40	8	7	1/4	7.5	18		3			250	20	0	9		91		Mixed mud for re-entry.
12/26	14208	10.5	42	9	7	1/5	7.5	20		3			250	20	0	9		91		
12/27	14208	10.5	41	8	6	1/4	7.5	16		3			250	20	0	9		91		Circulated out diesel and Pack.
12/28	14208	10.5	41	16	7	1/6	8.0	10.2		2			450	120	0	12	6	82		
12/29	14208	10.5	42	16	7	1/5	8.0	10		2			450	120	0	12	4	84		
12/30	14208	10.5	43	17	8	1/6	8.0	10		2			450	120	0	12	4	84		
12/31	14208	10.5	46	17	6	1/9	8.0	5		1			700	120	0	12	3	85		
1/1	14208	10.5	45	17	6	1/6	11.0	4.2		1			750	100	Tr	12	4	84		Drilled cement and bridge plug.
1/2	14208	10.5	44	18	7	2/14	11.0	4.5		1			750	100	Tr	12	4	84		
1/3	14208	10.6	49	21	8	1/6	11.0	5.4		2			750	80	Tr	13	4	83		
1/4	14208	10.7	44	19	6	1/5	11.0	5.2		2			750	80	1/4	13	4	83		
1/5	14208	10.6	42	19	5	1/4	11.0	5.6		2			800	120	Tr	13	4	83		
1/6	14208	10.6	43	21	6	1/4	11.0	6.0		2			850	120	1/4	14	3	83		
1/7	14208	10.6	40	16	3	1/3	10.5	6.7		2			800	140	1/4	14	4	82		
1/8	14224	10.5	47	23	6	2/8	10.0	6.8		2			700	100	1/4	14	4	82		Drilled float shoe.
1/9	14308	10.5	41	17	4	1/3	10.0	6.3		2			700	120	1/2	15	4	81		
1/10	14382	10.5	45	21	4	1/3	10.5	6.3		2			650	120	1/2	15	4	81		
1/11	14453	10.5	44	20	5	1/3	10.5	6.0		2			650	120	1/2	14	4	82		
1/12	14482	10.5	45	22	3	1/3	10.5	5.8		2			650	140	1/2	15	4	81		
1/13	14557	10.4	43	22	3	1/3	10.5	5.1		2			650	140	1/2	15	4	81		
1/14	14590	10.4	47	26	6	1/4	10.5	4.7		2			650	140	1/2	15	4	81		
1/15	14670	10.5	43	21	3	1/3	10.5	4.7		2			650	160	1/2	15	4	81		
1/16	14701	10.4	46	22	3	1/3	10.5	4.3		2			650	160	1/4	15	4	81		
1/17	14766	10.4	42	21	3	1/3	10.0	4.5		2			650	160	1/4	15	4	81		
1/18	14828	10.4	43	20	4	1/3	10.5	4.5		2			650	160	1/4	13	3	84		
1/19	14870	10.3	40	18	2	1/2	10.0	4.4		2			700	160	1/4	12	3	84		
1/20	14908	10.2	40	13	3	1/2	10.0	4.6		2			650	160	1/4	12	3	85		
1/21	14939	10.2	41	18	3	1/2	10.5	4.6		2			700	160	1/4	12	3	85		
1/22	14971	10.3	44	19	4	1/2	10.0	4.6		2			700	160	1/4	12	3	85		
1/23	14985	10.3	46	23	4	1/3	10.0	4.6		2			700	160	1/4	12	3	85		
1/24	15033	10.3	41	18	3	1/2	10.0	4.6		2			700	180	1/4	13	3	84		Cut Core No. 13
1/25	15059	10.3	42	13	3	1/2	10.0	4.0		2			700	160	Tr	13	3	84		
1/26	15107	10.3	44	17	4	1/2	10.0	4.0		2			700	160	Tr	13	3	84		
1/27	15143	10.3	45	18	4	1/2	10.0	4.0		2			700	160	Tr	13	3	84		

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Ikpikpuk Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR _____ LOCATION 1306' ~~FNL~~; ~~785~~' FEL SEC ~~25~~ TWP 13N RNG 10W

STOCKPOINT _____ DATE _____ ENGINEER R. Douville; G. Monroe

CASING PROGRAM: 20 inch at 100 ft.
13-3/8 inch at 2603 ft.
9-5/8 inch at 9873 ft.
7 inch at 14,208 ft.

TOTAL DEPTH _____ 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	Pm	Pf/Mf	Cl ppm	Ca ppm	SAND %	RETORT Solids %	RETORT Oil %	RETORT Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
1/28	15182	10.4	51	24	10	2/4	11.0	4.2		2			700	160	Tr	12	2	86		Raised viscosity.
1/29	15199	10.4	48	27	9	2/4	11.0	4.2		2			700	160	Tr	12	2	86		
1/30	15242	10.4	47	28	13	2/4	11.0	4.0		2			700	160	Tr	13	2	85		
1/31	15271	10.4	45	23	6	1/3	10.5	4.0		2			600	140	Tr	12	2	86		
2/1	15309	10.5	50	30	7	2/3	11.3	4.0		2			600	160	Tr	12	2	86		
2/2	15355	10.5	53	36	11	2/3	10.9	4.0		1			600	160	Tr	12	2	86		
2/3	15374	11.0	63	48	16	2/3	10.5	4.0		1			800	160	Tr	12	2	86		
2/4	15413	11.0	53	36	9	1/3	11.1	4.4		1			800	160	Tr	13	2	85		
2/5	15422	11.0	62	48	10	2/3	10.6	3.8		1			800	160	Tr	13	2	85		Cut Core No. 14
2/6	15424	11.0	72	48	18	2/6	10.6	3.8		1			800	160	Tr	13	2	85		
2/7	15455	11.0	50	35	8	1/3	10.6	3.8		1			800	160	Tr	13	2	85		
2/8	15461	11.0	55	42	8	1/3	10.2	3.8		1			800	200	1/4	13	2	85		
2/9	15463	11.0	50	28	4	1/3	10.2	4.0		1			800	200	Tr	14	2	84		Cut Core No. 15
2/10	15463	11.0	47	27	6	1/3	10.0	3.9		1			800	200	1/4	14	2	84		
2/11	15469	11.1	47	27	6	1/3	9.8	3.9		1			800	200	1/4	14	2	84		Cut Core No. 16
2/12	15469	11.1	48	29	6	1/3	9.5	3.9		1			800	200	1/4	14	2	84		
2/13	15481	10.9	44	25	10	2/4	9.5	3.6		1			700	160	Tr	12	2	86		
2/14	15481	10.9	41	20	5	1/3	9.5	4.4		1			700	160	Tr	12	2	86		
2/15	15481	10.8	46	25	10	1/3	9.4	4.1		1			700	160	Tr	12	2	86		
2/16	15150	10.7	45	25	5	1/3	9.0	4.8		1			700	160	Tr	12	2	86		
2/17	13850	10.6	44	24	6	1/3	9.0	5.2		1			700	160	Tr	12	2	86		
2/18	9300	10.7	48	28	6	1/2	9.0	5.2		1			700	160	Tr	12	2	86		
2/19	9254	10.4	47	22	4	1/3	10.0	6.3		1			700	200	Tr	10	1	89		
2/20	5044	10.3	40	22	3	1/2	10.0	6.6		1			700	200	Tr	10	1	89		
2/21	7525	10.4	43	18	4	1/2	11.5	6.6		2			700	240	Tr	10	1	89		
2/22	7525	10.3	46	23	2	1/2	12.0	6.2		2			700	240	Tr	10	1	89		
2/23	7525	10.4	44	17	5	1/3	12.0	6.4		2			700	240	Tr	10	1	89		
2/24	6940	10.4	43	18	5	1/2	12.0	6.6		2			700	240	Tr	10	1	89		
2/25	6830	10.4	41	16	2	1/3	12.5	7.6		2			700	340	Tr	10	1	89		
2/26	6937	10.4	43	18	2	1/2	12.5	5.8		2			700	180	Tr	10	1	89		
2/27	6930	10.4	44	23	4	1/3	12.5	5.7		2			700	200	Tr	10	1	89		

06

BIT RECORD

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

LEASE: National Petroleum Reserve | WELL NO: Ikpikpuk Test Well No. 1 | SEC: 25 | TOWNSHIP: 13N | RANGE: 10W | BLOCK: | FIELD:

TOOL PUSHER | DRILL PIPE | DRAW WORKS | UNDER SURF

DAY DRILLER | TOOL JOINT MAKE / SIZE / TYPE | 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	2	3	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 CODE I	B	G	REMARKS FORMATION, CIRC FLUID, ETC	DATE
1	17½	HTC	OSC3A	PH492	24	24	24	535	435	12.25	12.25	35.5	10/20	90	1/4	500			42	9.1	85	2	2	I		
2	17½	HTC	OSC3A	PH758	13	13	13	1347	812	15	27.25	54.1	30/40	120	1/4	2000			52	9.5	30	3	2	I		
3	17½	HTC	OSC3A	PJ197	14	16	20	2623	1276	26.25	53.50	48.6	40	120	3/4	2000			52	9.7	44	4	3	I		
4	12¼	HTC	X1G	PM173	11	11	12	2930	307	9	62.50	34.1	35	70	0	1900			52	9.0	35	1	2	I		
5	12¼	HTC	OSC3A	JH867	11	11	12	3784	826	19	85	43.5	40	110	0	2000			58	9.4	36	2	6	I		
6	12¼	HTC	OSC3A	JH905	11	11	12	4633	822	25.50	114.75	32.2	50	100	3/4	2050			58	9.7	38	3	6	I		
7	12¼	HTC	X3A	KX028	11	11	12	5690	1057	39.50	154.25	26.8	40/50	100	1 1/2	2000			58	9.7	40	2	5	I		
8	12¼	Reed	S11	231503	11	11	12	6486	786	47.25	203.50	16.6	40/45	100	3/4	2000			56	9.8	39	5	8	I		
9	12¼	HTC	X1G	ZK040	11	11	12	6848	362	30.50	234	11.8	45	100	1/2	2000			55	9.5	38	6	8	I		
10	12¼	HTC	X3A	PH769	11	12	12	7132	284	14.50	248.50	19.6	50	100	1/2	2000			56	10.1	44	3	2	I		
11	12¼	HTC	OSC3A	JH884	11	12	12	7368	228	24	274.25	9.5	50	110	1/4	2450			60	10.3	45	5	7	I		
12	12¼	HTC	X3A	PM785	12	12	12	7491	113	9.50	286.75	11.9	45/50	100	1/2	2300			62	10.4	40	4	2	I		
13	12¼	HTC	X3A	PM692	12	12	12	7938	437	29.75	320	14.7	45/50	100/125	3/4	2300			60	10.8	48	4	7	1/8		
14	12¼	HTC	X3A	PM782	12	12	12	8206	268	23.50	343.50	11.4	50	100	1/2	2300			58	10.9	47	5	7	I		
15	12¼	HTC	X3A	PM728	12	12	12	8332	126	14.25	357.75	8.8	45	100	–	2300			58	11.7	52	4	4	1/8		
16	12¼	HTC	OSC3A	KD393	13	13	13	8475	143	24	381.75	6.0	40/50	90	1/4	2000			60	12.1	57	6	7	I		
17	12¼	STC	SDT	989PT	13	13	13	8688	213	34	415.75	6.3	45/60	100	1/2	2000			58	12.0	58	7	7	1/8		
18	12¼	HTC	X16	ZK041	13	13	13	8966	278	43.25	459	6.4	50/60	60/90	1/2	2000			58	12.0	59	5	8	1/8		
19	12¼	STC	F-2	787PJ	13	13	13	9458	492	83.75	542.75	5.9	45/60	60	3/4	2000			57	11.9	77	1	8	1/8		
20	12¼	HTC	XDV	JB441	13	13	13	9722	264	41.50	584.25	6.4	60	60	3/4	2000			57	11.9	77	4	4	I		
21	12¼	HTC	XDV	ZN778	13	13	13	9855	133	30	614.25	4.4	55/60	60/90	3/4	2300			60	12.0	64	7	4	I		

Compliments of SMITH TOOL

SMITH TOOL
P.O. BOX C19511 • IRVINE, CALIF. 92713
DIVISION OF SMITH INTERNATIONAL, INC.

SMITH REPRESENTATIVE _____ PHONE _____

BIT RECORD

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

LEASE: National Petroleum Reserve | WELL NO: Ikpikpuk Test Well No. 1 | SEC: 25 | TOWNSHIP: 13N | RANGE: 10W | BLOCK | FIELD

TOOL PUSHER | DRILL PIPE | DRAW WORKS

DAY DRILLER | KELLY JOINT: MAKE / SIZE / TYPE | POWER: H P | UNDER SURF

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 MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	JET SIZE 2	JET SIZE 3	DEPTH OUT	FTGE	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
22	12¼	STC	F-2	428PX	13	13	13	9913	58	8	622.25	7.2	50	50	3/4	2300			60	12	44	8	7	1/16		
23	8½	HTC	OSC1G	NJ096	10	10	10	9930	17	4.5	626.75	3.8	30/45	60	-	2500			55	11.2	44	8	7	1/16		
24	8½	HTC	XDV	HL600	10	10	10	9970	40	10.25	637	3.9	45	55	-	2300			54	11.2	40	8	2	I		
25	8½	STC	3JS	DD524	9	10	10	10,183	213	42	679	5.1	50	50	-	2600			54	11.1	50	8	8	1/8		
26	8½	HTC	X1G	PK565	10	10	10	10,270	87	7.75	686.75	11.2	50	50	3/4	2100			50	11.1	41	2	2	I		
27	8½	STC	F-2	VS561	9	10	10	10,550	250	41	733.75	6.1	50/55	48	1	2500			52	11	41	3	3	1/16		
28	8½	STC	3JS	DD512	10	10	10	10,617	67	12.75	746.5	5.2	40	42	-	2400			52	10.9	41	8	3	1/8		
29	8½	HTC	J-7	HS248	10	10	10	10,619	2	00.25	746	8.0	30	50	-	2250			52	10.9	44	2	4	I		
30	8½	HTC	J-44	LW719	10	10	10	10,750	101	16.75	767	6.0	30	40	-	2000			48	10.6	40	4	3	I		
31	8½	HTC	J-44	WP448	10	10	10	10,815	65	19	786	3.4	35	40	-	2150			50	10.6	40	3	4	J		
32	8½	HTC	J-44	RB377	10	10	10	10,950	108	34.50	825.5	3.1	45	40	2 1/4	2200			52	10.6	45	8	5	1/8		
33	8½	HTC	J-55	VC233	10	10	10	11,108	115	27	857	4.3	37	40	4	2100			50	10.6	47	3	3	I		
34	8½	HTC	J-44	CJ-813	10	10	10	11,370	235	38.50	904	6.1	40/50	40	2 3/4	2300			53	10.5	40	3	2	I		
35	8½	STC	F-4	154-FD	10	10	10	11,570	200	50.25	954.25	4.0	45	45	2 3/4	2300			52	10.5	42	6	3	1/16		
36	8½	HTC	J-44	PR097	10	10	10	11,718	148	39.50	993.75	3.8	45.50	40	2 1/2	2350			53	10.6	42	2	3	I		
37	8½	HTC	J-44	PR096	10	10	10	12,109	376	54.50	1051.25	6.9	45	45	2 1/4	2350			52	10.5	42	8	5	1/8		
38	8½	HTC	J-44	LB113	10	10	10	12,450	341	47.75	1099	7.1	42	45	2 1/4	2400			53	10.6	41	8	6	I		
39	8½	HTC	J-44	DA694	10	10	10	12,743	293	51	1150	5.7	40	40/45	2 1/2	2400			53	10.6	41	4	5	I		
40	8½	HTC	J-44	PR095	10	10	10	12,972	219	45.75	1198.75	4.8	45	45	2 1/2	2400			53	10.6	42	3	7	I		
41	8½	HTC	J-44	PR400	10	10	10	13,134	162	41.50	1240.25	3.9	45	40/50	2 1/2	2350			53	10.6	42	3	8	I		
42	8½	SEC	N84F	828633	11	10	10	13,281	147	45.25	1285.50	3.3	45	40	-	2400			53	10.6	48	8	8	I		

SMITH REPRESENTATIVE _____ PHONE _____

BIT RECORD

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LEASE: National Petroleum Reserve | WELL NO: Ikpikpuk Test Well No. 1 | SEC: 25 | TOWNSHIP: 13N | RANGE: 10W | BLOCK | FIELD

TOOL PUSHER | DRILL PIPE | DRAW WORKS

DAY DRILLER | TOOL JOINT: MAKE, SIZE, TYPE | POWER, H P | UNDER SURF

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 MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	JET SIZE 2	JET SIZE 3	DEPTH OUT	FTGE	HOURS RUN	ACC HOURS	FT/HR	WEIGHT 1000 LBS	ROTARY R P M	VERT DEV	PUMP PRESS	PUMPS Mo	PUMPS Liner	PUMPS SPM	MUD WT	MUD VIS	DULL CODE T	DULL CODE B	DULL CODE G	REMARKS FORMATION CIRC FLUID, ETC	DATE
43	8½	HTC	J55	PR673	10	10	10	13,531	250	52.25	1337.75	4.8	45	40	2 3/4	2300			52	10.6	42	7	4	I		
44	8½	HTC	J55	PR694	10	10	10	13,761	235	44	1381.75	5.3	40	40		2300			52	10.6	44	8	7	1½		
45	8½	HTC	J55	PR697	10	10	10	14,011	250	44.25	1426	5.7	40/45	40	2 3/4	2350			52	10.6	40	4	4	1/32		
46	8½	HTC	J55	PJ381	10	10	10	14,210	199	40.50	1466.50	4.9	40	40	2 3/4	2300			52	10.6	47	3	6	1/8		
47	8½	HTC	X1G	PJ688	0	0	0	-	-	9.50	-	-	8/20	42/60	-	550			50	10.5	45	3	1	I		
48	8½	HTC	X1G	TB955	20	20	20	-	-	11.50	-	-	15/20	42/60	-	900			60	10.5	45	2	1	I		
49	5 7/8	STC	K-2	AD48549	R	E	G	-	-	4.50	-	-	5/10	42	-	800			45	10.6	49	1	1	I		
50	5 7/8	STC	K-2	AD47907	R	E	G	14,224	14	3.50	1470	4.0	10/20	42	-	1900			35	10.5	40	8	8	5/8		
51	5 7/8	STC	F-5	AN3009	10	10	10	14,382	158	25	1495	6.3	15	44	-	2000			38	10.5	45	5	6	I		
52	5 7/8	STC	F-5	AN3726	10	10	10	14,482	100	26.50	1521.50	3.8	15	42	-	2300			39	10.5	45	4	7	I		
53	5 7/8	STC	F-5	AN3010	10	10	10	14,587	105	30.50	1552	3.4	13/15	42	1 3/4	2300			39	10.4	47	4	6	I		
54	5 7/8	STC	F-5	AN4154	10	10	10	14,701	114	33.50	1585.50	3.4	14	42		2300			39	10.4	46	4	7	I		
55	5 7/8	STC	F-5	AN3595	10	10	10	14,828	127	32.75	1618.50	3.9	13/14	42	4	2250			39	10.4	43	4	6	I		
56	5 7/8	STC	F-5	AN3004	10	10	10	14,908	80	29.25	1647.50	2.7	13	38	-	2250			39	10.3	41	5	6	I		
57	5 7/8	HTC	J-55	TN127	10	10	10	14,971	63	33	1680.50	1.9	13	38	2 3/4	2200			39	10.3	43	3	7	I		
58	5 7/8	STC	F-5	AN2802	10	10	10	15,059	73	30	1715	2.4	12/14	38	-	2100			38	10.3	41	4	5	I		
59	5 7/8	STC	F-5	AN3320	10	10	10	15,143	84	37.50	1752.50	2.2	12/15	38	1 1/4	2200			38	10.3	42	1	5	I		
60	5 7/8	CHRS	MD331	OW2776	-	-	-	15,199	56	24.50	1777	2.3	12/14	70	1 1/2	1800			31	10.4	48	Center			Gone	
61	5 7/8	STC	F2	AN3070	10	10	10	15,271	72	35	1812	2.6	12/14	38	-	2200			38	10.4	45	2	5	I		
62	5 7/8	HTC	J55	RJ401	10	10	10	15,363	92	44.50	1856.5	2.6	13	38	-	2250			37	11	63	7	7	1/8		
63	5 7/8	HTC	J55	RM055	10	10	10	15,414	51	22.50	1879	2.3	14	38	2	2400			38	11	53	5	6	3/8		

SMITH REPRESENTATIVE _____ PHONE _____

BIT RECORD

COMPANY	CONTRACTOR	COUNTY	STATE
Husky Oil NPR Operations, Inc.	Parco, Inc.	North Slope Borough	Alaska

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Reserve	Ikpikpuk Test Well No. 1	25	13N	10W		

TOOL PUSHER	DRILL PIPE				DRAW WORKS	
DAY DRILLER	TOOL JOINT	MAKE	SIZE	TYPE	POWER H P	UNDER SURF
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 MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	2	3	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 CODE I	B	G	REMARKS FORMATION, CIRC FLUID, ETC	DATE
64	5 7/8	STC	F-5	AN3917	10	10	10	15,461	37	15	1896.5	2.5	10/14	38/42		2350			38	11	50	7	4	1/4		
65	5 7/8	STC	F-2	AN1203	10	10	10	15,461	0	3.50	1896.5	-	5	42		2000			32	11	42	1	1	1/16		
66	5 7/8	STC	K-2	AD47909	R	E	G	15,462	0	7.50	1900.5	-	0/5	45/55		1700			40	11	47	1	8	3/8		
67	5 7/8	HTC	J-55	WF624	10	10	10	15,481	12	5	1912.5	-	14	38		2100			35	10.9	44	3	4	3/16	Total Depth	

SMITH REPRESENTATIVE _____ PHONE _____

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:

		YIELD STRENGTH (PSI)		MINIMUM PRESSURE REQUIREMENT (PSI)		
SIZE[1]	WEIGHT	MIN.	MAX.	COLLAPSE	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"	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.

Casing programmed for Ikpikpuk Test Well No. 1 was as follows: 30" conductor at ±110'; 20" surface casing at ±500'; 13-3/8" casing at ±2600'; 9-5/8" casing at ±8960'; and a 7" liner from ±8660' to total depth if needed for evaluation of hydrocarbons occurring in the interval. Actual casing run was 30" conductor at 100'; 20" casing at 521'; 13-3/8" casing at 2603'; 9-5/8" casing at 9873'; and a 7" liner from 9528' to 14,208'. The 9-5/8" casing was set low as the Sag River Sandstone was approximately 1000' low to forecast. The 7" liner was run from 9528' to 14,208' to protect open hole below the 9-5/8" shoe at 9873' during suspension of the well through the summer months.

The 9-5/8" x 13-3/8" annulus was Arctic Packed through an FO in the 9-5/8" casing at 2142' back to the surface. This was to protect the 9-5/8" casing from collapse while the well was suspended during the summer months. It was left in place when the well was abandoned and the 9-5/8" annulus displaced with diesel from 2047' to the surface. This was to allow future temperature measurements to be taken by U. S. Geological Survey personnel.

CASING TALLY
SUMMARY SHEET

DATE: December 1, 1978

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

SUMMARY OF PAGE MEASUREMENTS			
	NO OF JOINTS	FEET	00'S
PAGE 1	15	611	63
PAGE 2			
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL		611	63

SUMMARY OF DEPTH CALCULATIONS				
		NO OF JOINTS	FOOTAGE FEET	00'S
1	TOTAL CASING ON RACKS	15	611	63
2	LESS CASING OUT (JTS NOS. 13 & 15 also less threads	2	81 5	71 69
3	TOTAL (1 - 2) (and threads)		524	23
4	SHOE LENGTH (Included on Jt. No. 1)		-	-
5	FLOAT LENGTH		-	-
6	MISCELLANEOUS EQUIPMENT LENGTH		-	-
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		524	23
8	LESS WELL Shoe DEPTH (KB REFERENCE)		521	20
9	"UP" ON LANDING JOINT (above KB)		3	03

Weight indicator before cementing: 90,000 ; after slack-off: _____ ; inches slacked off _____ .

Due to poor make-up on shoe joint, joint No. 1 was welded and strapped to joint No. 2.

SUMMARY OF STRING AS RUN								
WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW USED	LOCATION IN STRING	NO OF JOINTS	FOOTAGE	INTERVAL
133	K-55	ST&C 8rd		New	JT NO 1 THRU NO 13	13		
					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: December 1, 1978

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	44	98			
2	42	79			
3	43	00			
4	44	47			
5	39	48			
6	39	13			
7	38	24			
8	39	77			
9	42	60			
0	41	72			
TOTAL A	416	18			

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	37	90			
2	41	39			
3	42	31			
4	34	45			
5	39	40			
6					
7					
8					
9					
0					
TOTAL B	195	45			

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	416	18		
TOTAL B	195	45		
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	611	63		

CASING OR LINER CEMENT JOB

Lease National Petroleum Reserve Well Ikpikpuk Test Well No. 1 Date December 1, 1978

Size Casing 20" Setting Depth 521' RDB Top (liner hanger) -

Hole Size 26 " Mud Gradient .482 Viscosity 55

Casing Equipment

Howco duplex float shoe. _____ float located - feet

above shoe. - (DV, FO) collars located at - feet

and - feet.

_____ centralizers located 10 feet above shoe and one each on next three collars.

_____ scratchers located _____

Liner hanger and pack off (describe) _____

Miscellaneous (baskets, etc.) _____

Cement (around shoe)

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(1)	1650	Howco	PF II	(premixed)	14.8-15.0	273 Bbls
(2)						

Cement through (DV, FO) Collar at _____ feet

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(3)						
(4)						

Cementing Procedure (around shoe) (cross out where necessary)

Circulated 960 bbls @ 8 BPM, pumped in 20 ~~(cu. ft.)~~, (barrels) water

_____ prewash, used bottom plug ~~(yes)~~, no), mixed cement (1) above 120

minutes, cement (2) above _____ minutes, top plug ~~(yes~~, no) displaced with

42 ~~(cu. ft.)~~, (barrels) in 8 minutes at rate of 5+ BPM, ~~CFM.~~

(Bumped plug) (Did not bump plug). Final Pressure N/A 500 psi. Reciprocated

pipe 0 feet while (mixing) and (displacing) cement. Displacing time _____

minutes. Had full circulation (full, partial,

none, etc.). Completed job at 9:51 ~~a.m.~~ p.m.

Cementing Procedure (through ~~(DV, FO)~~ at 1" Surface feet) (cross out where necessary) SEE BELOW

Opened (DV, FO) at _____ a.m., p.m., circulated _____ bbls @ _____ BPM, pumped in

_____ (cu. ft.), (barrels) _____ prewash, mixed cement (3) above

_____ minutes, cement (4) above _____ minutes, dropped closing plug, dis-

placed with _____ (cu. ft.), (barrels) in _____ minutes at rate of _____

_____ BPM, CFM. (Bumped plug) (Did not bump plug). Final Pressure _____

Displacing time _____ minutes. Had _____ circulation

(full, partial, none, etc.)

Remarks (Third Stage Job, etc.)

TOP JOB: Cement fell about 40 feet after completing job. Ran 50 feet of 1" pipe down annulus. Mixed and pumped 100 sacks of Permafrost II cement at 15.1 ppg. Circulated about 40 sacks to cellar. Cement in place 12/9/78 at 7:00 AM.

B. R. Allard
Foreman

CASING TALLY
SUMMARY SHEET

DATE: December 5, 1978

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

SUMMARY OF PAGE MEASUREMENTS

	NO OF JOINTS	FEET	00'S
PAGE 1	50	2016	15
PAGE 2	18	737	13
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	68	2753	28

SUMMARY OF DEPTH CALCULATIONS

		NO OF JOINTS	FOOTAGE FEET	FOOTAGE 00'S
1	TOTAL CASING ON RACKS	68	2753	08
2	LESS CASING OUT (JTS NOS 47, 63, 66, 68	4	150	93
3	TOTAL (1 - 2)		2602	35
4	SHOE LENGTH		2	04
5	FLOAT LENGTH		1	79
6	MISCELLANEOUS EQUIPMENT LENGTH			
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		2605	98
8	~~LESS WELL~~ Shoe DEPTH (KB REFERENCE)		2602	98
9	"UP" ON LANDING JOINT		3	00

Weight indicator before cementing: 145,000 ; 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
72	S-95	Buttress		New	JT NO 1 THRU NO 68	68	2753.08	
					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 2 **CASING TALLY** DATE: December 5, 1978

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	40	08			
2	40	51			
3	39	18			
4	37	60			
5	40	11			
6	41	71			
7	38	52			
8	39	22			
9	41	78			
0	39	14			
TOTAL A	397	85			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	81			
2	40	68			
3	42	12			
4	41	30			
5	42	15			
6	42	00			
7	41	10			
8	42	88			
9	36	90			
0	41	62			
TOTAL D	412	56			

1	43	13			
2	41	64			
3	41	32			
4	40	78			
5	37	55			
6	41	53			
7	40	26			
8	40	48			
9	41	06			
0	42	64			
TOTAL B	410	39			

1	41	43			
2	42	64			
3	37	21			
4	42	25			
5	40	56			
6	41	02			
7	36	05			
8	39	06			
9	42	80			
0	39	50			
TOTAL E	402	52			

1	41	18			
2	37	92			
3	38	11			
4	33	60			
5	37	72			
6	41	21			
7	42	63			
8	37	31			
9	40	86			
0	42	29			
TOTAL C	392	83			

TOTAL A	397	85		
TOTAL B	410	39		
TOTAL C	392	83		
TOTAL D	412	56		
TOTAL E	402	52		
TOTAL PAGE	2016	15		

PAGE 2 OF 2 **CASING TALLY** DATE: December 5, 1978

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	42	03			
2	41	76			
3	39	52			
4	41	10			
5	42	41			
6	39	80			
7	42	28			
8	42	71			
9	42	47			
0	41	89			
TOTAL A	415	97			

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	41	28			
2	42	55			
3	37	66			
4	40	57			
5	40	50			
6	37	87			
7	41	38			
8	39	35			
9					
0					
TOTAL B	321	16			

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	415	97		
TOTAL B	321	16		
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	737	13		

CASING OR LINER CEMENT JOB

Lease National Petroleum Reserve Well Ikpikpuk Test Well No. 1 Date December 8, 1978

Size Casing 13 3/8 Setting Depth 2603 Top (liner hanger) -

Hole Size 17 1/2 " Mud Gradient 0.503 Viscosity 34

Casing Equipment

Howco float shoe, Howco duplex float located 80.59 feet

above shoe, - (DV, FO) collars located at - feet

and _____ feet.

Nine centralizers located 10' above shoe; one each, next three

collars; one each, every other collar through the thirteenth.

- scratchers located -

Liner hanger and pack off (describe) N/A

Miscellaneous (baskets, etc.) _____

Cement (around shoe)

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(1)	3500	Howco	Permafrost II	(premixed)	14.9-15.1	586 Bbls
(2)						

Cement through ~~(DV, FO) Collar~~ 1" Surface at 50 feet (Top Job)

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(3)	100	Howco	Permafrost II	(premixed)	15.1	16.74 Bbls
(4)						

Cementing Procedure (around shoe) (cross out where necessary)

Circulated 413 bbls @ 7 BPM, pumped in 20 ~~(cu. ft.)~~, (barrels) water

_____ prewash, used bottom plug (yes, no), mixed cement (1) above 52

minutes, cement (2) above _____ minutes, top plug ~~(yes,~~ no) displaced with

7 ~~(cu. ft.)~~, (barrels) in 6 minutes at rate of 12 BPM, ~~CFM~~,

(Bumped plug) (Did not bump plug). Final Pressure 200. Reciprocated

pipe 0 feet while (mixing) and (displacing) cement. Displacing time _____

minutes. Had full circulation (full, partial,

none, etc.). Completed job at 4:11 ~~a.m.~~, p.m.

Cementing Procedure (through (DV, FO) at 0 feet) (cross out where necessary)

Opened (DV, FO) at _____ a.m., p.m., circulated _____ bbls @ _____ BPM, pumped in

_____ (cu. ft.), (barrels) _____ prewash, mixed cement (3) above

_____ minutes, cement (4) above _____ minutes, dropped closing plug, dis-

placed with _____ (cu. ft.), (barrels) in _____ minutes at rate of _____

_____ BPM, CFM. (Bumped plug) (Did not bump plug). Final Pressure _____

Displacing time _____ minutes. Had _____ circulation

(full, partial, none, etc.)

Remarks (Third Stage Job, etc.)

Had cement in returns after pumping 900 sacks. After 1200 sacks, weight of returns was 14.6 ppg. At end of job, weight of returns was 14.9 ppg. Cut off 30" and checked top of 20"X30" annulus. Had about four feet of slump.

B. R. Allard

Foreman

CASING TALLY
SUMMARY SHEET

DATE: February 2, 1979

FIELD National Petroleum Reserve in AK LEASE & WELL NO. Ikpikpuk Test Well No. 1 TALLY FOR 9 5/8" CASING

SUMMARY OF PAGE MEASUREMENTS			
	NO OF JOINTS	FEET	00'S
PAGE 1	50	2026	71
PAGE 2	50	2032	56
PAGE 3	50	2054	61
PAGE 4	50	2008	58
PAGE 5	44	1718	52
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	244	9840	98

SUMMARY OF DEPTH CALCULATIONS				
		NO OF JOINTS	FOOTAGE FEET	00'S
1	TOTAL CASING ON RACKS			
2	LESS CASING OUT (JTS NOS.)			
3	TOTAL (1 - 2)	244	9840	98
4	SHOE LENGTH		2	00
5	FLOAT LENGTH		1	78
6	MISCELLANEOUS EQUIPMENT LENGTH FO and DVs		10	82
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		9855	58
8	~~LESS WELL DEPTH (KB REFERENCE)~~ RDB to Hanger Profile		19	10
9	~~"UP" ON LANDING JOINT~~ Total Landing Depth (RDB)		9873	68

Weight indicator before cementing: 425,000 ; after slack-off: 18,000 ; inches slacked off: 1

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. 244	244	9840.98	
					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 5 **CASING TALLY** DATE: February 2, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	45	10			
2	39	08			
3	42	91			
4	40	57			
5	39	70			
6	40	66			
7	40	72			
8	35	39			
9	41	00			
0	39	32			
TOTAL A	404	45			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT 00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT 00'S	WT GR.
1	38	57			
2	34	02			
3	42	13			
4	39	82			
5	37	04			
6	41	52			
7	39	86			
8	40	92			
9	40	87			
0	37	65			
TOTAL D	392	40			

1	37	67			
2	41	38			
3	39	13			
4	42	68			
5	42	84			
6	42	85			
7	42	70			
8	38	04			
9	42	28			
0	43	70			
TOTAL B	413	27			

1	40	58			
2	42	41			
3	38	23			
4	42	56			
5	41	06			
6	37	83			
7	42	30			
8	40	78			
9	40	95			
0	39	31			
TOTAL E	406	01			

1	39	66			
2	42	58			
3	40	37			
4	40	26			
5	43	18			
6	44	64			
7	41	25			
8	39	36			
9	40	26			
0	39	02			
TOTAL C	410	58			

TOTAL A	404	45		
TOTAL B	413	27		
TOTAL C	410	58		
TOTAL D	392	40		
TOTAL E	406	01		
TOTAL PAGE	2026	71		

PAGE 2 OF 5 **CASING TALLY** DATE: February 2, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	40	75			
2	41	40			
3	38	03			
4	42	51			
5	39	31			
6	39	51			
7	39	60			
8	41	15			
9	35	07			
0	40	10			
TOTAL A	397	43			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	43	17			
2	42	78			
3	40	82			
4	39	16			
5	42	53			
6	42	18			
7	43	31			
8	41	57			
9	42	26			
0	42	61			
TOTAL D	420	39			

1	41	60			
2	40	82			
3	40	97			
4	40	10			
5	42	18			
6	40	74			
7	42	20			
8	41	65			
9	42	90			
0	35	13			
TOTAL B	408	29			

1	39	31			
2	38	72			
3	42	95			
4	39	80			
5	40	25			
6	41	10			
7	42	01			
8	43	70			
9	40	23			
0	37	31			
TOTAL E	405	38			

1	40	81			
2	42	83			
3	37	77			
4	39	94			
5	40	61			
6	39	30			
7	42	00			
8	40	50			
9	40	81			
0	36	50			
TOTAL C	401	07			

TOTAL A	397	43		
TOTAL B	408	29		
TOTAL C	401	07		
TOTAL D	420	39		
TOTAL E	405	38		
TOTAL PAGE	2032	56		

PAGE 3 OF 5 **CASING TALLY** DATE: February 2, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	36			
2	43	33			
3	42	33			
4	38	51			
5	42	60			
6	43	22			
7	41	86			
8	40	92			
9	35	21			
0	43	70			
TOTAL A	415	04			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	42	91			
2	42	00			
3	40	37			
4	42	18			
5	43	23			
6	38	70			
7	41	58			
8	36	75			
9	39	71			
0	45	14			
TOTAL D	412	57			

1	38	67			
2	37	08			
3	42	60			
4	40	77			
5	43	54			
6	42	76			
7	40	64			
8	40	64			
9	38	75			
0	39	61			
TOTAL B	405	06			

1	43	16			
2	42	51			
3	37	14			
4	41	58			
5	42	10			
6	41	38			
7	42	11			
8	40	41			
9	41	20			
0	38	61			
TOTAL E	410	20			

1	41	06			
2	40	03			
3	41	16			
4	38	64			
5	42	50			
6	42	37			
7	42	38			
8	40	17			
9	43	88			
0	39	55			
TOTAL C	411	74			

TOTAL A	415	04		
TOTAL B	405	06		
TOTAL C	411	74		
TOTAL D	412	57		
TOTAL E	410	20		
TOTAL PAGE	2054	61		

PAGE 4 OF 5 **CASING TALLY** DATE: February 2, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	42	61			
2	39	90			
3	43	54			
4	41	66			
5	42	57			
6	39	02			
7	35	96			
8	35	64			
9	35	00			
0	43	20			
TOTAL A	399	10			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	18			
2	41	30			
3	40	10			
4	39	91			
5	40	94			
6	37	63			
7	39	07			
8	37	93			
9	36	66			
0	39	54			
TOTAL D	394	26			

1	42	44			
2	41	50			
3	41	62			
4	44	20			
5	40	96			
6	37	32			
7	42	08			
8	40	63			
9	41	87			
0	38	92			
TOTAL B	411	54			

1	40	88			
2	39	80			
3	40	38			
4	37	78			
5	42	46			
6	40	71			
7	42	03			
8	40	30			
9	39	23			
0	41	56			
TOTAL E	405	13			

1	41	14			
2	38	52			
3	41	20			
4	42	46			
5	40	90			
6	38	38			
7	40	01			
8	34	92			
9	39	20			
0	41	82			
TOTAL C	398	55			

TOTAL A	399	10		
TOTAL B	411	54		
TOTAL C	398	55		
TOTAL D	394	26		
TOTAL E	405	13		
TOTAL PAGE	2008	58		

PAGE 5 OF 5

CASING TALLY

DATE: February 2, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk 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	40	52			
2	43	00			
3	42	65			
4	44	40			
5	38	96			
6	42	98			
7	35	74			
8	36	37			
9	43	58			
0	39	81			
TOTAL A	408	01			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	37	30			
2	40	70			
3	41	18			
4	39	26			
5	39	14			
6	37	81			
7	39	40			
8	37	25			
9	39	51			
0	38	72			
TOTAL D	390	27			

1	37	97			
2	39	80			
3	42	33			
4	39	37			
5	40	48			
6	40	51			
7	40	02			
8	36	47			
9	40	92			
0	38	51			
TOTAL B	396	38			

1	40	30			
2	39	54			
3	39	63			
4	18	34			
5					
6					
7					
8					
9					
0					
TOTAL E	137	81			

1	39	61			
2	40	28			
3	38	01			
4	37	52			
5	38	26			
6	38	52			
7	37	10			
8	38	94			
9	39	70			
0	38	11			
TOTAL C	386	05			

TOTAL A	408	01		
TOTAL B	396	38		
TOTAL C	386	05		
TOTAL D	390	27		
TOTAL E	137	81		
TOTAL PAGE	1718	52		

CASING OR LINER CEMENT JOB

Lease National Petroleum Reserve Well Ikpikpuk Test Well No. 1 Date February 2, 1979

Size Casing 9 5/8" Setting Depth 9873' Top (liner hanger) -

Hole Size 12 1/4" Mud Gradient 0.62 Viscosity 53

Casing Equipment

Float shoe, 9873', float located 88 feet

above shoe, _____ (DV, ~~FO~~) collars located at 7197 feet

and _____ feet.

_____ centralizers located two collars above and below FOs and on last three collars at surface.

_____ scratchers located _____

Liner hanger and pack off (describe) N/A

Miscellaneous (baskets, etc.) _____

Cement (around shoe)

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(1)	1800	Howco	Cl "G"	1% CFR2 + 0.3% HR7	15.6-16.2	369 Bbls
(2)						

Cement through (DV, ~~FO~~) Collar at 7197 feet

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(3)	1300	Howco	Cl "G"	1% CFR2 + 0.1% HR7	15.8	277 Bbls
(4)	300	Howco	Permafrost II (premixed)		14.8	50 Bbls

Cementing Procedure (around shoe) (cross out where necessary)

Circulated 3250 bbls @ 6.8 BPM, pumped in 50 ~~(cu. ft.)~~, (barrels) water

_____ prewash, used bottom plug (yes, ~~no~~), mixed cement (1) above 90

minutes, cement (2) above _____ minutes, top plug (yes, ~~no~~) displaced with

65 barrels water + 624 barrels mud in 75 minutes at rate of 9.5 BPM, ~~CFM;~~

(Bumped plug) ~~(Did not bump plug)~~. Final Pressure 3000. Reciprocated

pipe 0 feet while (mixing) and (displacing) cement. Displacing time 75

minutes. Had full circulation (full, partial,

none, etc.). Completed job at 2:20 a.m., ~~p.m.~~

Cementing Procedure (through (DV, ~~FO~~) at 7197 feet) (cross out where necessary)

Opened (DV, ~~FO~~) at 3:30 a.m., ~~p.m.~~, circulated 3670 bbls @ 6 BPM, pumped in

50 ~~(cu. ft.)~~, (barrels) water prewash, mixed cement (2) above

65 minutes, cement (4) above _____ minutes, dropped closing plug, dis-

placed with 508 ~~(cu. ft.)~~, (barrels) in 80 minutes at rate of 6.4

_____ BPM, ~~CFM;~~ (Bumped plug) ~~(Did not bump plug)~~. Final Pressure 3000.

Displacing time 80 minutes. Had partial circulation

(full, partial, none, etc.)

Remarks (Third Stage Job, etc.)

Third Stage: Down squeezed through FO at 2336'. Set packer at 2301'. Broke down formation with rig pump at 1140 psi. Injected at 400 psi and 4BPM. Pumped 10 barrels water, 300 sacks Permafrost II and displaced with 40 barrels water. Maximum squeeze pressure: 700 psi. Shut down; pressure bled off immediately. Cement in place 2/3/79 at 3:14 PM.

B. R. Allard
Foreman

CASING TALLY
SUMMARY SHEET

DATE: April 11, 1979

FIELD National Petroleum Reserve in Alaska LEASE & WELL NO. Ikpikpuk Test Well No. 1 TALLY FOR 7 " CASING

SUMMARY OF PAGE MEASUREMENTS			
	NO. OF JOINTS	FEET	00'S
PAGE 1	50	2055	60
PAGE 2	50	2040	28
PAGE 3	20	789	49
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	120	4885	37

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	00'S
1	TOTAL CASING ON RACKS	120	4885	37
2	LESS CASING OUT (JTS NOS 115, 116, 117, 118, 119, 120	6	234	46
3	TOTAL (1 - 2)	114	4650	91
4	SHOE LENGTH TIW LS Set Shoe		2	40
5	FLOAT LENGTH TIW Float Collar		0	80
6	MISCELLANEOUS EQUIPMENT LENGTH TIW Hydro Hanger (9 5/8"X7"), HS Landing Collar, Ext Nipple & TIW LC-6 Setting Collar		25	95
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		4680	06
8	LESS WELL DEPTH (KB REFERENCE) RDB to Top of Liner		9527	94
9	"UP" ON LANDING JOINT Top of Liner @ 9528; Bottom @			

Weight indicator before cementing: 130,000 ; after slack-off: 18,000 14,208' ; inches slacked off 0 - Hung in Tension

SUMMARY OF STRING AS RUN										
WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW USED	LOCATION IN STRING			NO. OF JOINTS	FOOTAGE	INTERVAL Top - Bottom
7"	TIW LC-6 Setting Collar			New	JT NO.	THRU NO.			7.25	9527.94 - 9535.19
7"	Extension Nipple			New	JT NO.	THRU NO.			10.10	9535.19 - 9545.29
7"	TIW Tandem Cone Hydro Hanger			New	JT NO.	THRU NO.			7.60	9545.29 - 9552.89
32#	N-80	8RD LT&C		New	JT NO. 3	THRU NO.	114	112	4568.25	9552.89 - 14,121.14
7"	TIW HS Landing Collar			New	JT NO.	THRU NO.			1.00	14,121.14 - 14,122.14
32#	N-80	8RD LT&C		New	JT NO. 2	THRU NO.		1	40.77	14,122.14 - 14,162.91
7"	TIW Float Collar			New	JT NO.	THRU NO.			0.80	14,162.91 - 14,163.71
32#	N-80	8RD LT&C		New	1			1	41.89	14,163.71 - 14,205.60
7"	TIW LS Set Shoe			New					2.40	14,205.60 - 14,208.00

PAGE 1 OF 3

CASING TALLY

DATE: April 10, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk Test Well No. 1 TALLY FOR 7 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR
1	41	89			
2	40	77			
3	39	16			
4	38	44			
5	40	52			
6	40	81			
7	40	96			
8	41	94			
9	40	77			
0	41	83			
TOTAL A	407	09			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR
1	42	14			
2	42	21			
3	42	20			
4	41	80			
5	38	40			
6	38	96			
7	41	64			
8	39	35			
9	42	26			
0	41	20			
TOTAL D	410	16			

1	42	85			
2	41	46			
3	39	31			
4	42	49			
5	41	66			
6	40	60			
7	41	05			
8	40	81			
9	41	42			
0	41	83			
TOTAL B	413	48			

1	42	28			
2	41	92			
3	41	30			
4	41	65			
5	40	35			
6	42	25			
7	41	75			
8	41	97			
9	40	23			
0	41	93			
TOTAL E	415	63			

1	41	00			
2	39	95			
3	39	16			
4	41	22			
5	42	27			
6	41	57			
7	41	45			
8	40	12			
9	41	90			
0	40	60			
TOTAL C	409	24			

TOTAL A	407	09		
TOTAL B	413	48		
TOTAL C	409	24		
TOTAL D	410	16		
TOTAL E	415	63		
TOTAL PAGE	2055	60		

PAGE 2 OF 3

CASING TALLY

DATE: April 10, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk Test Well No. 1 TALLY FOR 7 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	39	97			
2	42	12			
3	40	85			
4	40	00			
5	41	97			
6	40	40			
7	37	71			
8	39	57			
9	41	71			
0	41	16			
TOTAL A	405	46			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	40	82			
2	39	84			
3	41	75			
4	40	66			
5	39	10			
6	39	77			
7	41	32			
8	43	06			
9	41	75			
0	41	11			
TOTAL D	409	18			

1	42	48			
2	40	80			
3	42	00			
4	40	53			
5	39	60			
6	37	65			
7	41	99			
8	41	00			
9	42	10			
0	41	00			
TOTAL B	409	15			

1	41	93			
2	41	77			
3	40	33			
4	37	82			
5	41	71			
6	42	36			
7	42	11			
8	41	11			
9	38	68			
0	39	23			
TOTAL E	407	05			

1	40	63			
2	41	68			
3	40	86			
4	41	97			
5	40	57			
6	41	55			
7	40	04			
8	41	15			
9	41	84			
0	39	15			
TOTAL C	409	44			

TOTAL A	405	46		
TOTAL B	409	15		
TOTAL C	409	44		
TOTAL D	409	18		
TOTAL E	407	05		
TOTAL PAGE	2040	28		

PAGE 3 OF 3

CASING TALLY

DATE: April 10, 1979

FIELD NPRA LEASE & WELL NO. Ikpikpuk Test Well No. 1 TALLY FOR 7 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	59			
2	40	08			
3	39	74			
4	34	75			
5	41	34			
6	41	26			
7	34	02			
8	40	83			
9	39	88			
0	40	38			
TOTAL A	393	87			

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	41	01			
2	39	37			
3	41	47			
4	39	29			
5	34	40			
6	37	10			
7	38	64			
8	40	84			
9	41	63			
0	41	87			
TOTAL B	395	62			

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	393	87		
TOTAL B	395	62		
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	789	49		

CASING OR LINER CEMENT JOB

Lease National Petroleum Reserve Well Ikpikpuk Test Well No. 1 Date April 12, 1979

Size Casing 7" Setting Depth 14,208' Top (liner hanger) 9528'

Hole Size 8 1/2 " Mud Gradient 10.6 ppg Viscosity 42

Casing Equipment

Float shoe, float collar, & TIW HS landing collar located 89 feet

above shoe. _____ (DV, FO) collars located at - feet

and - feet.

_____ centralizers located 10 feet above shoes 3, 5, 7, 9, 11, 101, 103, 105, 107, 109, 111, and 113 casing collars.

_____ scratchers located _____

Liner hanger ~~and pack-off~~ (describe) TIW tandem cone hydro hanger, 7" X 9 5/8" .

Miscellaneous (baskets, etc.) _____

Cement (around shoe)

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(1)	550	Howco	Cl "G"	35% Silicia Flour, 1% CFR2, .5% Halad 22A, 5% LWL	15.2	152 Bbls
(2)						

Cement through ~~DV, FO collar~~ Retainer at 9428 feet

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(3)	400	Howco	Cl "G"	1% CFR2, 0.3% HR7	15.8	82 Bbls
(4)						

Cementing Procedure (around shoe) (cross out where necessary)

Circulated 1300 bbls @ 7 BPM, pumped in 20 ~~(cu. ft.)~~, (barrels) water

_____ prewash, used bottom plug ~~(yes~~, no), mixed cement (1) above 48

minutes, cement (2) above _____ minutes, top plug (yes, ~~no~~) displaced with

337.5 ~~(cu. ft.)~~, (barrels) in 52 minutes at rate of 6.5 BPM, CFM,

(Bumped plug) (Did not bump plug). Final Pressure 2500 psi. Reciprocated

pipe 0 feet while (mixing) and (displacing) cement. Displacing time 52

minutes. Had full circulation (full, partial,

none, etc.). Completed job at 7:00 a.m., ~~p.m.~~

Cementing Procedure (through ~~(DV, FO)~~ retainer at 9420 feet) (cross out where necessary)

~~Opened (DV, FO)~~ Set retainer at 8:00 a.m., ~~p.m.~~, circulated 650 bbls @ 7 BPM, pumped in

20 ~~(cu. ft.)~~, (barrels) water prewash, mixed cement (2) above

13 minutes, ~~cement (4) above _____ minutes, dropped closing plug, displaced with _____ (cu. ft.), (barrels)~~ in 105 minutes at rate of 1.6

_____ BPM, CFM. (Bumped plug) (Did not bump plug). Final Pressure 0

Displacing time 105 minutes. Had _____ circulation

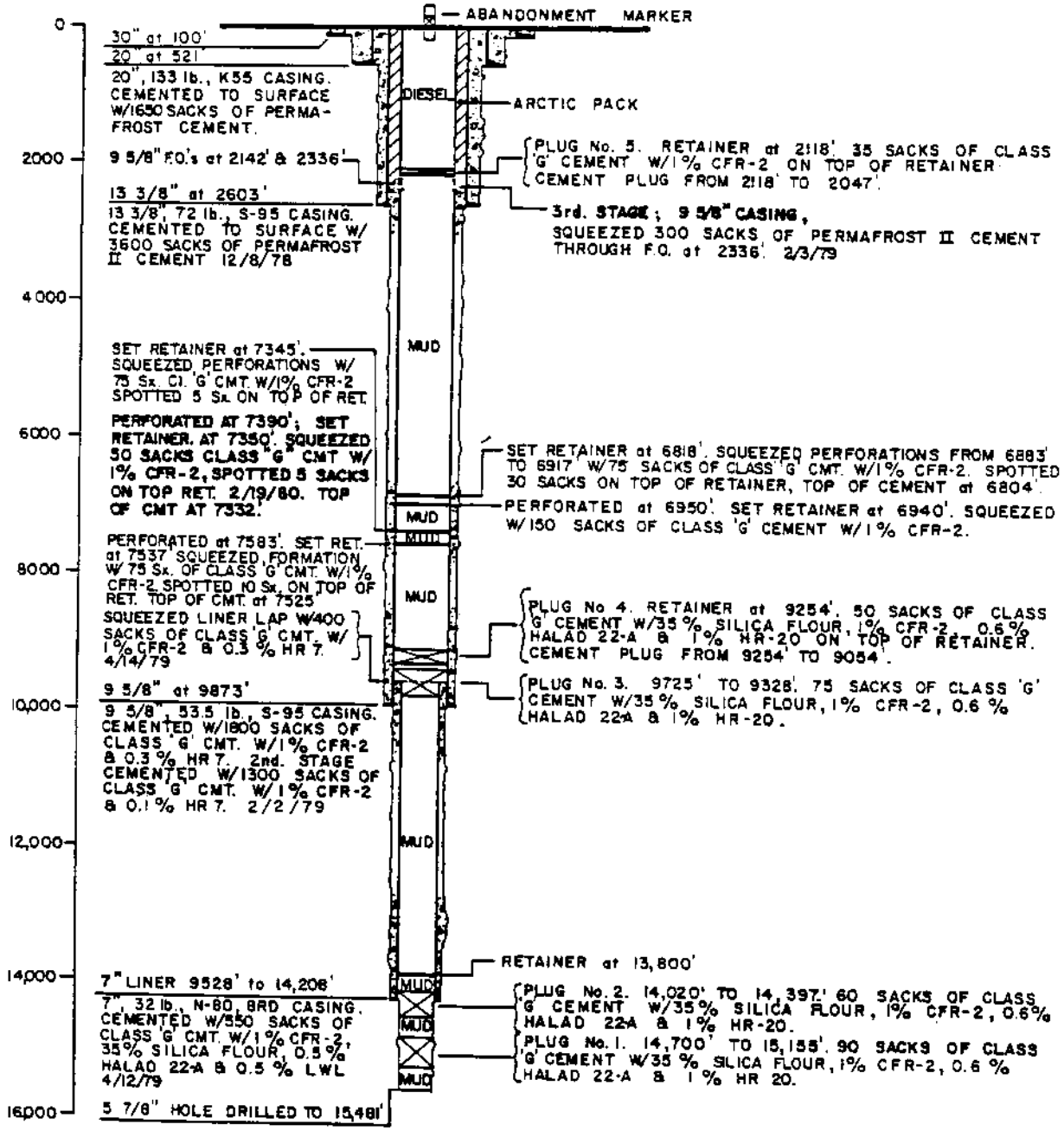
(full, partial, none, etc.)

Remarks (Third Stage Job, etc.)

Spotted 20 barrels water to retainer. Squeezed 20 barrels water and 77 barrels cement into liner lap. Spotted five barrels cement on top of tool. No surface pressure druing squeeze due to increased hydrostatic.

Gene Harmon

Foreman



IKPIKPUK TEST WELL No. 1

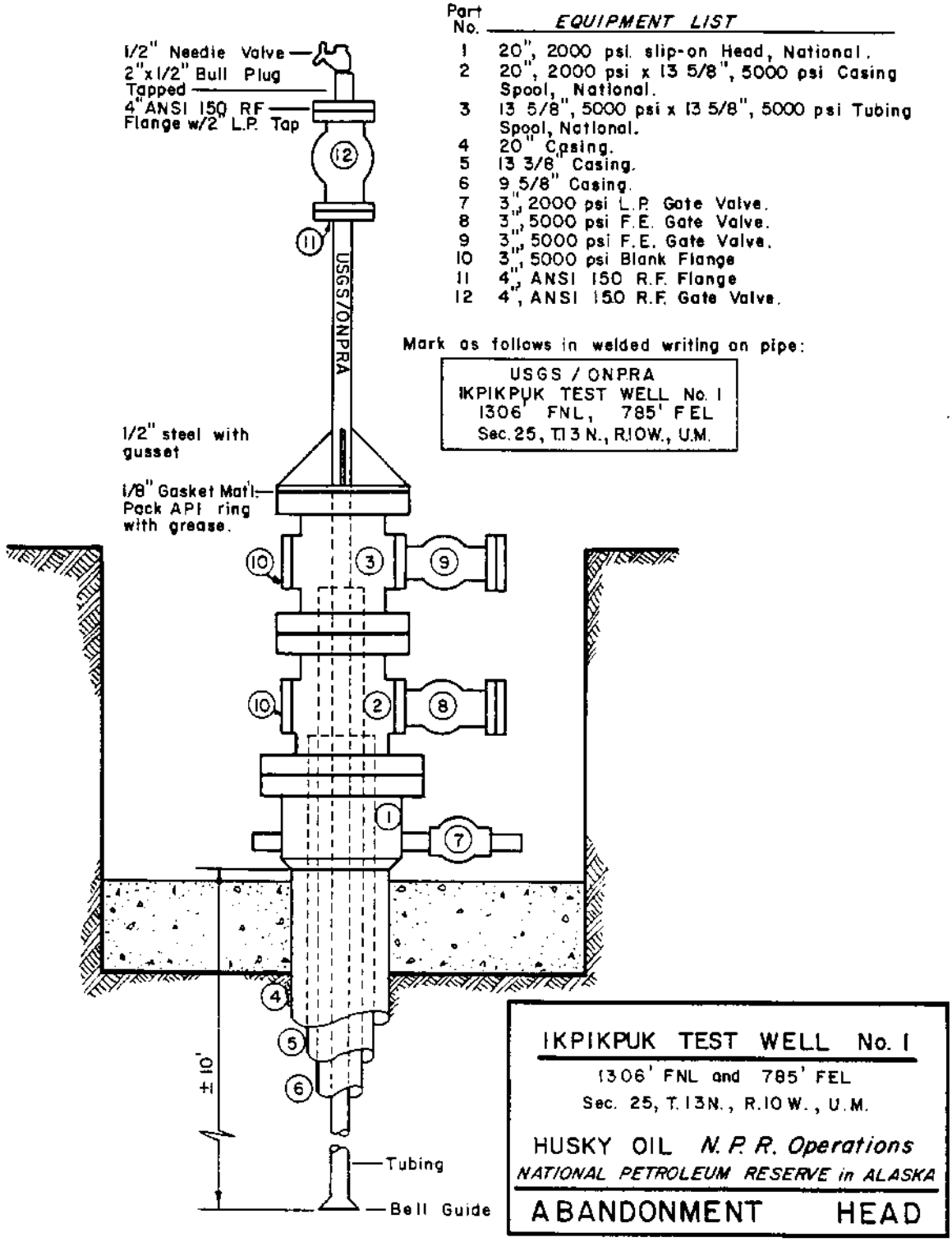
1306' FNL and 785' FEL

Sec. 25, T.13N., R.10W., U.M.

HUSKY OIL *N.P.R. Operations*

NATIONAL PETROLEUM RESERVE in ALASKA

WELLBORE SCHEMATIC



Part No.	EQUIPMENT LIST
1	20", 2000 psi. slip-on Head, National.
2	20", 2000 psi x 13 5/8", 5000 psi Casing Spool, National.
3	13 5/8", 5000 psi x 13 5/8", 5000 psi Tubing Spool, National.
4	20" Casing.
5	13 3/8" Casing.
6	9 5/8" Casing.
7	3", 2000 psi L.P. Gate Valve.
8	3", 5000 psi F.E. Gate Valve.
9	3", 5000 psi F.E. Gate Valve.
10	3", 5000 psi Blank Flange
11	4", ANSI 150 R.F. Flange
12	4", ANSI 150 R.F. Gate Valve.

Mark as follows in welded writing on pipe:

USGS / ONPRA
IKPIKPUK TEST WELL No. 1
1306' FNL, 785' FEL
Sec. 25, T.13 N., R.10W., U.M.

IKPIKPUK TEST WELL No. 1

1306' FNL and 785' FEL
Sec. 25, T.13N., R.10W., U.M.

HUSKY OIL *N. P. R. Operations*
NATIONAL PETROLEUM RESERVE in ALASKA

ABANDONMENT HEAD

ARCTIC CASING PACK - INTRODUCTION

In production wells, wells suspended through summer months, and wells completed for re-entry with temperature recording tools, Baroid Arctic Casing Pack was used between casing strings. It is a stable, highly viscous fluid which will not freeze and collapse casing set in permafrost zones. Its unique gelling characteristics exhibit excellent thermal properties (heat transfer coefficient of approximately 0.1 BTU per hour per square feet per degree F at 32°F). Composition of Baroid Arctic Casing Pack used is as follows for each 100 barrels mixed:

Diesel	82.0 barrels
Water	5.0 barrels
Salt	60.0 ppb per barrel of water
EZ Mul	12.5 ppb
Gel Tone	50.0 ppb
Barite	103.0 ppb

The 9-5/8" x 13-3/8" annulus in the Ikpikpuk Test Well No. 1 was Arctic Packed prior to suspension of the well during the summer months. This was completed through the FO in the 9-5/8" casing at 2142' back to the surface. The Arctic Pack provided protection from casing collapse during the suspension of the well. The Arctic Pack was left in place when the well was abandoned to prevent collapse of the 9-5/8" casing. The 9-5/8" casing was left full of diesel from 2047' to the surface to allow future temperature measurements by U. S. Geological Survey personnel.

ARCTIC PACK RECORD

DATE: April 14, 1979

I. JOB SUMMARY

Annulus volume: 9 5/8" x13 3/8" x2142'	125	bbl
Drill pipe volume: 5" x 19.5 #/ft x 1832', .0176 X 1832	35	bbl
Total volume of system HW 310', .0089 X 310	160	bbl
Volume of water used in water wash	550	bbl
Volume of water pumped at water breakthrough	141	bbl
Volume of pack pumped	235[1] - 260[2]	bbl
Volume of pack pumped at breakthrough	137[1] - 140[2]	bbl
Displacement efficiency at breakthrough	79[1] 88[2]	%
% Water contamination of returns at end of job	4	%

Remarks (including weather): [1]Per Halliburton stroke counter volumes; [2]per actual pit volume. Weather: -23°F, 4K, 7 miles visibility, clear. Good job; no problems. Job proceeded as planned.

II. PILOT TEST OF FLUIDS

A. Prepack

Retort Data.

% Oil	84
% Water	4
% Solids	12
Weight	9.5 #/gal

Rheology (at 40 °F):

PV	20 cps
YP	10 #/100 ft^2
10 Sec Gel	7 #/100 ft^2
Emulsion Stability	2000 volts

B. Gelled Pack (25.2 #/bbl Geltone added to prepack)

Rheology (at 60 °F):

PV	Pegged cps
YP	Pegged #/100 ft^2
10 Sec Gel	70 #/100 ft^2

C. Drilling Mud (prior to displacement with water):

Wt	10.5 #/gal
PV	25 cps
YP	10 #/100 sq ft
10 Sec Gel	2 #/100 sq ft

Remarks:

III. RELEVANT WELL DATA

Outer casing: 13 3/8" ; 72.0 #/ft
Inner casing: 9 5/8" ; 53.5 #/ft
Drill pipe: 5" Plus HW ; 19.5 #/ft

Depth of cement sleeve: 2142 ft

Casing annulus volume: 125 bbls

Drill pipe volume (includes height to floor) 35 bbls
Total system volume 160 bbls
Rig pump capacity - strokes/bbl
Cementing unit pump capacity - strokes/bbl

Remarks:

IV. WATER WASH STEP

Volume water pumped 550 bbls

Rate 9 bbl/min

Volume pumped at water breakthrough (0.5 #/gal drop in weight of mud return) 141 bbls

Appearance of water at end of water wash
clear
x turbid
muddy

Remarks:

V. ARCTIC PACK DISPLACEMENT

a. Volume of pre-mix spacer 10 bbl
b. Total volume of gelled pack pumped $235^1 - 260^2$ bbl
c. Total number of (50 lb) sacks of Geltone added 111 sacks
d. Average lb Geltone added per bbl $56.2^1 - 53.1^2$ lb/bbl
e. Pumping rate 4 bbl/min
f. Total volume of pre-mix and gelled pack pumped at breakthrough 127 bbl
g. Volume of returns dumped into mud system 0 bbl
h. Volumes of fluids used to displace drill pipe 30 bbl of Mud
5 bbl of Pack
i. Volume of uncontaminated returns 55 bbl
k. Remarks:

RIG INVENTORY

Draw Works

National 130, Serial No. T-1442.

Hydromatic Brakes

Parkersburg, 60" SR, Serial No. 46544.

Catworks Unit

Compound and Rig Drive

National, 2,000 HP.

Drilling Engines

Caterpillar, D398, V12, 750 HP, Serial No. 66B2396.
Caterpillar, D398, V12, 750 HP, Serial No. 66B2395.
Caterpillar, D398, V12, 750 HP, Serial No. 66B2147.

Starting Engines

Delco, electrical, 24 volt, No. 1 Engine.
Delco, electrical, 24 volt, No. 2 Engine.
Delco, electrical, 24 volt, No. 3 Engine.

Sheds

PDL, steel, 8' x 32'.
PDL, steel, 8' x 32'.
PDL, steel, 8' x 32'.

Skids

Transmissions

Torque Clutches

Twin Disc, friction, 18", No. 1 Engine.
Twin Disc, friction, 18", No. 2 Engine.
Twin Disc, friction, 18", No. 3 Engine.

Rig Lights

Quartz, GE, 500 watt/1500 watt, vapor proof.

No. 1 Light Plant

Parker, steel, 7' x 8' x 36'.

No. 1 Engine

Caterpillar, diesel, D-343, Serial No. 62B6148.

No. 1 AC Generator

Caterpillar, Westinghouse, 219 KW, Serial No. 200TH175

No. 2 Light Plant

Parker, steel, 7' x 8' x 36'.

No. 2 Engine

Caterpillar, diesel, D-343, Serial No. 62B6487.

No. 2 AC Generator

Caterpillar, AC, 219 KW, Serial No. 200TH1756.

No. 3 Light Plant

Parker, steel, 7' x 8' x 36'.

No. 3 Engine

Caterpillar, diesel, D-343, Serial No. 62B6489.

No. 3 AC Generator

Caterpillar, AC, 219 KW, Serial No. 200TH-1751.

Mast and Substructure

L. C. Moore, Jackknife, 136', 1,025M, Serial No. T1502.

Crown

L. C. Moore, 7 sheaves, 48".

Substructure

L. C. Moore, step down box, 18' x 29' x 38'.

Wire Line Anchor

National, 1-3/8", 80 ton.

No. 4 Light Plant

Parker, steel, 7' x 8' x 36'.

No. 4 Engine

Caterpillar, diesel, D-343, Serial No. 62B6470.

No. 4 Generator

Caterpillar, AC, 219 KW, Serial No. 200TH-1732.

Windwalls

Parker, steel, 8' x 20', Rig Floor.
Parker, steel, Pump House and Pit Room.

Catwalks

Parker, steel, 8' x 40'.

Pipe Racks

Parker, steel drill pipe, 30'.

No. 1 Pump

EMSCO, duplex, DA850, Serial No. 113.

Power End

EMSCO, duplex, 850 HP, Serial No. 113.

Fluid End

EMSCO, forged steel duplex, 7-1/2" x 5,000#, Serial No. 113.

Pulsation Dampener

EMSCO, bladder, PD%, Serial No. 53.

No. 2 Pump

EMSCO, duplex, DB700, Serial No. 232.

Power End

EMSCO, duplex, 700 HP, Serial No. 232.

Fluid End

EMSCO, forged steel, 7-1/2" x 5,000#, Serial No. 232.

Pulsation Dampener

EMSCO, bladder, PD3, Serial No. 37.

No. 5 Light Plant

Parker, steel, 8' x 36'.

No. 5 Engine

Caterpillar, diesel, D-343, Serial No. 62B6141.

No. 5 Generator

Caterpillar, AC, 219 KW, Serial No. 200TH1678.

Mud Pits

Parker, steel, 8' x 39'.

Mud Mixing Unit

Engine

Caterpillar, diesel, D-333, Serial No. 23C375.

Pump

Mission, centrifugal, 6' x 8'.

Lightening Mixers

Lightening, agitator, 7.5" x 36", Serial Nos: 721-326-4, 721-326-3, 721-326-6.

Desander

Swaco, two-cone, 1,000 GPM.

Pump

Mission, centrifugal, 6' x 8'.

Motor

Caterpillar, diesel, D-333, Serial No. 23C376.

Desilter

Swaco, six-cone, 1,000 GPM, 4" cone.

Pump

Mission, centrifugal, 6' x 8'.

Motor

Caterpillar, diesel, D-333, Serial No. 23C374.

Degasser

A: Drilco; B: Winco.

Pump

A: Gorman; B: Drilco.

Motor

GMC 6-71, diesel, 65 HP, Serial No. E69A6793N293.

Utility Skid

Parker, box, drill pipe, 8' x 25'.

Shale Shaker

Linkbelk, NRM, 4' x 8'.

Motor

Dayton, AC electric, 5HP; GE, AC electric, 5 HP.

Traveling Block

National, Ideal, 350 ton.

Hook

Byron-Jackson, UNI hour 4300, 350 ton.

Swivel

National, N-815, 350 ton.

Tongs-Nonpower

Byron-Jackson, B, 46".

Elevators

BJ, 5-7/16", 350 ton; Byron-Jackson, MGG, 5", 350 ton.

Elevator Bails

Byron-Jackson, forged steel, 350 ton.

Rotary Table

Ideco 1750, 350 ton.
National, 20.5, 350 ton.

Master Bushings

Baash Ross, Hex.

Kelly

Drilco, steel, 5-1/4".

Kelly Cock

Shaffer, 6-5/8" regular ball, 10,000 WP.

Air Compressor

Quincey, piston 390.

Motor

Marathon, electric, 10HP.

Air Hoist

Ingersoll Rand, K6U, 7,000#.

Drilling Lines

Tiger Brand, right lay, 1-3/8".

Steam Heater

Modine, steam, HS1285.
Modine, steam, V-415.

Boilers

Cleaver, 4 Pass, 100 HP, Serial No. L47589.
Brooks, Steam, Serial No. 2-L47588.

Hot Air Heaters

Tioga, DF18, 4200, Serial No. 125.
Tioga, IDF21, 4600, Serial No. 1026.

Boiler House

Parker, steel, 8' x 40'.

Rotary Hose

Thordflow, rubber, 4" x 55'.
Thordflow, steel, 7,500 psi.

Vibrator Hose

Thordflow, 10'.

Dog House

Parker, steel, insulated, 8' x 8' x 36'.

Sanitary Facility House

Parker, insulated, steel, 20' x 40' x 8', two sections.

Sewage Units

Metpro, IPC, 14000, Serial No. 6060-3.
Comptro, diesel fired, 7500, Serial No. C-13 75.

Water Storage House

Parker, steel, ACS90 insulation, 8' x 40', Serial No. 036350.
State, 42 gallon.

Carrier heating system, Serial No. 29C72723.

Parts Storage House

Parker, electrical parts, 8' x 8' x 36'.
Parker, rig parts, 8' x 8' x 36'.

Water Pump

Goulo, 2 HP.

Toolpusher Trailer House

Century, 2 HP.

Blowout Preventers

Shaffer, Single gate LWS, 13-5/8" x 5,000#.

Annular Preventer
Shaffer, 13-5/8" x 5,000#.

Rotating Head

Gate Valves

Cameron, gate, 2" x 5,000#.
Cameron, gate, 3" x 5,000#.
Cameron, gate, 4" x 5,000#.

Flanges

Cameron, double studded, 4" x 3", 5,000#.
OCT, double studded 3" x 2", 5,000#.

Drilling Spools

Shaffer, hub, 13-5/8" x 13-5/8", 5,000#.

Rams

Shaffer, rubber, Type 70, 2-7/8" x 5,000#.
Shaffer, rubber, Type 70, 3-1/2" x 5,000#.
Shaffer, rubber, Type 70, 4-1/2" x 5,000#.
Shaffer, rubber, Type 70, 5" x 5,000#.
Shaffer, Type 70, 7" x 5,000#.

Kill Line

Parker, Drill pipe, 20' x 5,000#.

Valves

Demco, gate, 4" x 5,000#.
Demco, gate, 4" x 5,000#.
Demco, gate, 2" x 5,000#.

Accumulator

Koomey, T1-5080-35, 4 stations, Serial No. 3389.
Koomey, GERC-5, 4 stations, Serial No. 3389.

Water Tanks

Parker, steel insulated steam, 8' x 8' x 40'.

Fuel Tanks

Parker, steel, double wall, 8' x 8' x 40', 17,800 gallon.

Tong Torque Gauge

Martin Decker, 20,000#.

Rotary Torque Gauge

Martin Decker, 500 FTP.

Mud Pressure Gauge

Cameron, 0-5000, Type D.

Weight Indicator

Martin Decker.
Cameron.

Auto Driller

Bear.

Welding Machine

Miller, electric, 300 amp, Serial No. HD719807.
Lincoln, diesel, 200 amp, Serial No. 615826.

Motor.

Wire Line Unit

Halliburton, electric, 3-speed, Serial No. 805216.
Motor, G.E., 7-1/2 HP.

Drill Pipe Slips

Baash Ross, DU, 5".
Varco, SDU, 5".

Drill Collar Slips

Baash Ross, 6".
Baash Ross, 8".

Subs

Three Saver Subs, 4-1/2" IF x 4-1/2" IF.
Two 6-5/8" Reg. x 6-5/8" Reg.
One 5" H90 x 6-5/8" Reg.
Two 4-1/2" IF x 4" H90.
Two 4" H90 x 4-1/2" IF.
One 4-1/2" IF x 4-1/2" IF.
One 4-1/2" IF x 4-1/2" Reg.
Two 6-5/8" Reg. x 4-1/2" IF.
Two 4-1/2" IF x 6-5/8" Reg.
One 5" H90 x 4-1/2" Reg.
Two 6-5/8" Reg. x 7-5/8" Reg.
Two 4-1/2" IF x 7-5/8" Reg.
Two Junk Baskets, 4-1/2" Reg. x 4-1/2" Reg.
Two Junk Baskets, 6-5/8" Reg. x 6-5/8" Reg.
One 6-5/8" x 7-5/8" Reg.
One 4-1/2" Reg. x 4-1/2" Reg.
One 4-1/2" Reg. x 6-5/8" Reg.

Rat Hole

Parker, steel, 9-5/8" x 20'.

Mouse Hole

Parker, steel, 7" x 16'.

Fire Extinguishers

Ansle, powder AB, K30.