N A T I O N A L P E T R O L E U M R E S E R V E I N A L A S K A

HISTORY
OF
DRILLING OPERATIONS

NORTH KALIKPIK TEST WELL NO. 1

HUSKY OIL NPR OPERATIONS, INC.
Prepared by: Drilling Department
Edited by: S. L. Hewitt

For the

U. S. GEOLOGICAL SURVEY
Office of the National Petroleum Reserve in Alaska
Department of the Interior
SEPTEMBER, 1982

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NORTH KALIKPIK TEST WELL NO. 1

INTRODUCTION

The North Kalikpik Test Well No. 1 is located in the National Petroleum Reserve in Alaska (Figure 1). It is 2,766 feet from the north line and 2,593 feet from the west line of protracted Section 3, Township 13 North, Range 2 West, Umiat Meridian (Latitude: 70°30'33.023" North; Longitude: 152°22'04.169" West). Alaska State Plane Coordinates are X = 699,455.87 and Y = 6,038,525.13, Zone 5. Drilling related operations started with rig up on February 5, 1978, and were completed on May 5, 1978.

The well was drilled to a total depth of 7395'. The primary objective of the well was to test a stratigraphic, erosional remnant of the Kuparuk River Sandstone. At the conclusion of the drilling and evaluation operations, the well was 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 Department of the Interior, U.S. Geological Survey/ONPRA. Parco Rig 96, a National 130, was used to drill the well.

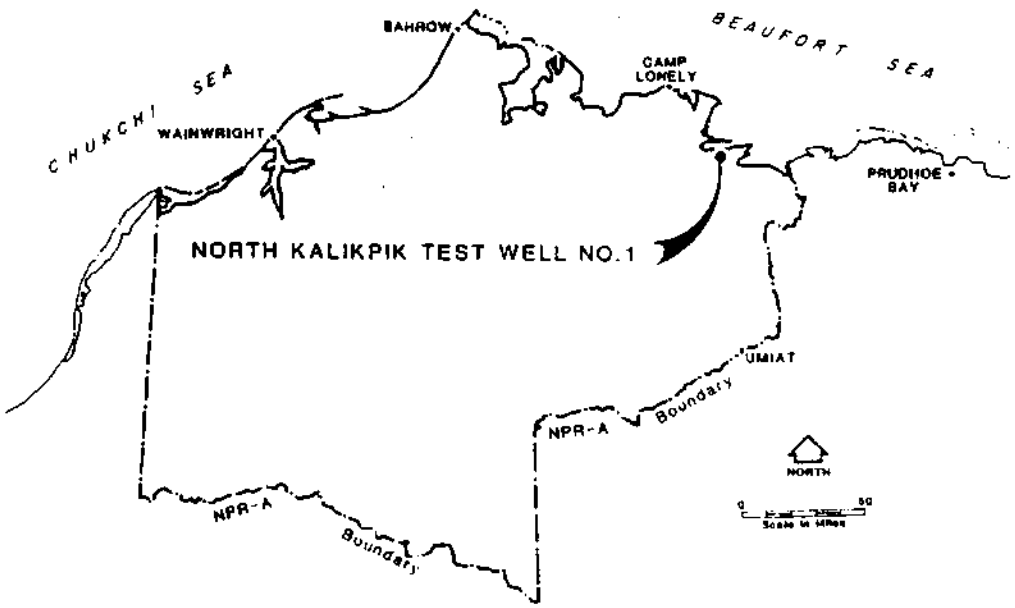


FIGURE 1 - WELL LOCATION MAP - NORTH KALIKPIK NO. 1

DRILLING SUMMARY

Field operations at the North Kalikpik Test Well No. 1 started on December 2, 1977, with the mobilization of construction crews and equipment required to build the drilling location and an ice airstrip to accommodate C-130 Hercules aircraft. Construction work was completed on January 31, 1978.

Rig move-in operations began on January 29, 1978. The rig, Parco 96, was moved from the West Fish Creek No. 1 location. The move was completed on February 6, 1978. A total of 110 loads were hauled by Rolligon. Ice conditions of the airstrip prevented the use of heavy aircraft during the rig move. Rig-up operations began on February 6, 1978. Rig-up was completed in 22 days and the well spudded at 10:00 a.m., February 27, 1978.

During rig-up, a 20" conductor had been set at 103' KB and cemented with 158 sacks of Permafrost cement. A 20" casing head and a 20" annular blowout preventer were installed. A 17-1/2" hole was drilled to 2615'. The hole was logged from total depth to the bottom of the conductor with the DIL/SP and the BHC-Sonic/GR.

After conditioning the hole, 13-3/8" casing was run to 2603' and cemented with 2,400 sacks of Permafrost cement on March 4, 1978. A 13-5/8" split unihead and 13-5/8", 5,000 psi blowout preventer stack (SRRA assembly) were installed. A 5,000 psi choke manifold and kill line were also installed. The rams, choke manifold, and kill lines were tested to 5,000 psi. The annular preventer was tested to 2,500 psi. The 13-3/8" casing was tested to 2,500 psi and drilled out with a 12-1/4" bit. The formation was tested to a 0.58 psi/ft. gradient and leaked off to 0.54 psi/ft. Two retests confirmed the leak off test.

A 12-1/4" hole was drilled from 2615' to a total depth of 7395'. The following stratigraphic cores were cut in this interval:

Core No. 1, 3810' to 3820', recovered 11.3';
Core No. 2, 4994' to 5004', recovered 10';
Core No. 3, 5871' to 5881', recovered 8';
Core No. 4, 6698' to 6708', recovered 10';
Core No. 5, 6992' to 7026', recovered 34';
Core No. 6, 7026' to 7047', recovered 21';
Core No. 7, 7047' to 7107', recovered 60';
Core No. 8, 7107' to 7136', recovered 29';
Core No. 9, 7136' to 7140', recovered 4';
Core No. 10, 7140' to 7161', recovered 21';
Core No. 11, 7161' to 7163', recovered 2';
Core No. 12, 7163' to 7165', recovered 2';
Core No. 13, 7165' to 7167', recovered 3';
Core No. 14, 7167' to 7197', recovered 30';
Core No. 15, 7197' to 7225', recovered 28';
Core No. 16, 7225' to 7230', recovered 3';
Core No. 17, 7390' to 7395', recovered 5'.

It should be noted that the discrepancy in the cored interval and the footage recovered in Cores No. 1 and No. 13 is due to a difference in the footage recorded by the driller and the actual footage recovered in the core barrel. Core No. 17 was cut from 7385' to 7390' and documented as such. A later steel line measurement showed the total depth of the well to be 7395'. Thus, as Core No. 17 was cut in the last 5' of the hole, it was actually cut in the interval 7390-7395'.

At 7395', the 12-1/4" hole was logged back into the 13-3/8" casing shoe at 2603' as follows: DIL/SP/GR; FDC/CNL/CAL/GR; BHC-Sonic/GR; HDT-Dipmeter; Velocity Survey; and Sidewall Cores.

After evaluation of the wireline logs, a decision was made to plug and abandon the well. Plugs were set as follows: Plug No. 1; 280 sacks 15.8 ppg Class "G" cement from 6700' to 6400' in the open hole; Plug No. 2, 470 sacks 15.8 ppg Class "G" cement from 4750' to 4550' in the open hole; Plug No. 3, 340 sacks 15.0 ppg Permafrost cement from 3500-3150' in the open hole; Plug No. 4, 380 sacks 15.0 ppg Permafrost cement from 2900' to 2500' across the 13-3/8" shoe; and Plug No. 5, 50 sacks of 14.9 ppg Permafrost cement from 2350' to 2232' set on top of an EZ drill retainer in the 13-3/8" casing. When attempting to place Plug No. 5, the original EZ drill retainer was prematurely set at 76.5', drilled and pushed to 2445', and a second retainer then set at 2350'.

After plugging back, the 13-3/8" annulus was displaced with diesel from 2200' to the surface to allow future temperature measurements by U. S. Geological Survey personnel.

The 13-5/8" blowout preventer stack was nippled down and the 13-5/8" wellhead removed. The abandonment marker was set and the drilling rig released at 2:00 p.m., April 14, 1978. The rig was rigged down in preparation for moving to the Ikpikpuk Test Well No. 1 location.

Detailed drilling information, in the form of 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

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 Alaska

9. WELL NO.: North Kalikpik Test well No. 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 3, T13N, R2W, UM

12. COUNTY OR PARISH: North Slope Borough

13. STATE: AK

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

b. TYPE OF WELL: OIL WELL [ ] 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

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 2766' FNL; 2593 FWL
At proposed prod. zone: Same (straight hole)

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 116 miles southeast of Barrow, Alaska

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
46,400	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**
110,000'	7,400'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): Ground = 15'; Pad = 20'; KB = 40'

22. APPROX. DATE WORK WILL START*: January 15, 1978

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
26"	20" (Conductor)	133# (K-55)	± 110' KB	To surface-Permafrost to Surface
17 1/2"	13 3/8"	72# (S-95)	± 2600'	± 1900 Sx - Permafrost to Surface
12 1/4"	9 5/8"	53.5 (S-95)	± 7400'	± 350 Sx Class "G", 500' fill above top of pay. Second stage: 300 sx Permafrost. Down squeeze through FO @ ± 2350'.

Blowout Preventer Program

From ± 110' KB 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 Max Brewer TITLE Chief of Operations DATE December 15, 1977

(This space for Federal or State office use)

CONFORMS WITH PERTINENT PROVISIONS 30 CFR 221

Rodney A. Smith TITLE Oil and Gas Supervisor DATE 2/24/78

CONDITIONS OF CONCURRENCE ATTACHED

*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: 2766' FNL, 2593' FWL
   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. North Kalikpik Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 3, T13N, R2W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB, AND WD) 40' 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 Spud Date			

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

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

This well was spudded at 10:00 AM on February 27, 1978.

Initial hole size was 17 1/2".

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 9 March 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED

TITLE DISTRICT SUPERVISOR DATE 14 MAR 19

MAR 15 19

OFFICE OF OIL & GAS OPERATIONS

*See Instructions on Reverse Side

U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ gas well ☐ other 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: 2766' FNL, 2593' FWL
   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. North Kalikpik Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 3, T13N, R2W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB, AND WD) 40' 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 change of wellhead			

RECEIVED
ONSHORE DIST. OFFICE
FEB 17 1978
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

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

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

In the original well plan, the intent was to use National thru-bore wellhead arrangements. Certain problems have been encountered relating to machining tolerances and landing procedures from the manufacturer. These problems will require further engineering design work and machining to effect a solution. Timing is such that the operator plans to change wellhead assemblies from National to FMC, Oil Center Tool. The FMC, OCT wellheads were used last season on NPRA and are similar to those used in Prudhoe Bay. These particular wellheads, although used, have been thoroughly checked and reconditioned by the local FMC representative. The National starter head (20", 2000 psi) will still be used along with the 13 3/8" hanger slips and lower pack-off unit. The entire assembly above the 20" starter head will be FMC, OCT. The 20", 2000 psi flanges on both units are API and completely compatible.

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

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

SIGNED Mark Brewer TITLE Chief of Operations DATE 15 February 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

TITLE DISTRICT SUPERVISOR DATE 23 FEB 1978

*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: 2766' FNL; 2593' FWL
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.
North Kalikpik Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 3, T13N, R2W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
40' KB

RECEIVED
MAR 27 1978
OIL AND GAS CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

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

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 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.)*

A 17 1/2" hole was drilled to 2615' and logged. Ran 67 joints of 13 3/8", 72 lb/ft, S-95, Buttress casing and landed with the floatshoe at 2603' KB and the duplex float collar at 2530'. Cemented with 2400 sacks of Permafrost cement at 14.8 ppg slurry weight. Had 300 sacks of 14.6 ppg slurry in returns. Full returns throughout job. Cement in place at 1:30 PM, 3/4/78. Installed packoff and OCT wellhead and nippled up 13 5/8", 5000 psi SRRA BOP arrangement. (Poslock system on rams.) Tested 20" flange to 2000 psi. Tested BOP, choke manifold, and kelly cocks to 5000 psi. Tested Hydril to 2500 psi. Tested 13 3/8" casing to 2500 psi. Drilled float collar, float shoe, and 10' of formation. Tested formation to equivalent gradient of 0.58 psi/ft. Bled off to 0.54 psi/ft (equivalent mud weight of 10.4 ppg). Maximum anticipated mud weight is 10.2 ppg.

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 24 March 78

(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 [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: 2766' FNL; 2593' FWL
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.
North Kalikpik Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 3, T13N, R2W, UM

12. COUNTY OR PARISH North Slope
13. STATE Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
40' KB

RECEIVED DIST. OFFICE
MAR 27 1978
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

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.		

(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.)*

As a result of a rig inspection conducted on 3/10/78, nine items of non-compliance were noted on Parco Rig 96. These are itemized on the attached Form 9-1832 (green copy). Items 1, 2, 4, 6, 7, 8, & 9 have all been corrected with the date of compliance so indicated. Items 3 and 5 will not be completed within the seven-day compliance period allowed. It is requested that a waiver be granted allowing more time to bring items 3 and 5 into compliance. Item 5 should be completed within four or five days after the compliance period ends if the necessary materials are received in time. Electrical wiring repairs, item 3, are in progress; however, considerable work is required to complete. It is expected that two or three weeks will be needed to bring all electrical systems in compliance barring delays in receiving materials. *Verbal approval given on 3/16/78 to [illegible] for time extension on items 3 and 5. [illegible]*

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 *24 March 78*

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED BY *[illegible]* TITLE ~~DISTRICT SUPERVISOR~~ DATE *[illegible]*

*See Instructions on Reverse Side

UNIT ` 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: 2766' FNL; 2593' FWL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH:
5. .SE 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. North Kalikpik Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 3, T13N, R2W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB, AND WD) 40' 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)			

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

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

This well was drilled to a total depth of 7395' and logged. Following log evaluation, the well was plugged and abandoned as follows: Spotted a 280 sack Class "G" cement (15.8 ppg) plug from 6700' to ± 6400' in open hole through open ended drill pipe. CIP at 12:44 PM, 4/11/78. Picked up to 4750' and spotted a 470 sack Class "G" cement (15.8 ppg) plug from 4750' to ± 4550' in open hole. CIP at 3:00 PM, 4/11/78. Picked up to 3500' and spotted a 340 sack Permafrost cement (15 ppg) plug from 3500' to ± 3150' in open hole. CIP at 8:00 PM, 4/11/78. Picked up to 2900' and spotted a 380 sack Permafrost cement (15 ppg) plug from 2900' to ± 2500', which is approximately 100' inside the 13 3/8" casing set at 2603'. CIP at 10:00 PM, 4/11/78. Ran a cement retainer which prematuerly set at 76' KB. Drilled out retainer slips and pushed remaining section to 2445'. Ran casing scraper to 2400' and ran second retainer and set at 2350'. Spotted 50 sacks of Permafrost cement on top of retainer. Picked up to

(Continued)

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

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

SIGNED Max C Brewer TITLE Chief of Operations DATE April 25, 1978

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

_____ TITLE _____ DATE _____

*See Instructions on Reverse Side

Sundry Notices and Reports on Wells
Subsequent Report of Abandonment
North Kalikpik Test Well No. 1
April 25, 1978

2200' and reversed drilling mud out with water and reversed water out with diesel. Nippled down BOP stack and wellhead to 20" braden head flange. Installed abandonment marker and released the rig at 2:00 PM on 4/14/78.

Form 9-331
(Nov. 1-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

Form approved.
Budget Bureau No. 42-R355.5.

RECEIVED
MAY 22 1978
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

ONSHORE DIST. OFFICE

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.: No. Kalikpik Test Well No. 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec 3, T13N, R2 W, UM

12. COUNTY OR PARISH: North Slope

13. STATE: Alaska

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

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

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

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

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

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface: 2766' FNL; 2593' FWL
At top prod. interval reported below
At total depth: Same (straight hole)

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

15. DATE SPUDDED: 2/27/78 — 16. DATE T.D. REACHED: 4/8/78 — 17. DATE COMPL. (Ready to prod.): N/A — 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*: 40' KB — 19. ELEV. CASINGHEAD: 18'

20. TOTAL DEPTH, MD & TVD: - — 21. PLUG, BACK T.D., MD & TVD: 2293' — 22. IF MULTIPLE COMPL., HOW MANY*: N/A — 23. INTERVALS DRILLED BY: → — ROTARY TOOLS: All — CABLE TOOLS: None

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

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: DIL/SP, BHC-Sonic/GR, FDC/CNL/GR, HRD, 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
13 3/8"	72	2603'	17 1/2"	2400 Sx Permafrost Cement 14.8 ppg	N/A

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
N/A				

30. TUBING RECORD

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

31. PERFORATION RECORD (Interval, size and number): N/A

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
N/A	

33.* PRODUCTION

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

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO

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

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

35. LIST OF ATTACHMENTS
1. Core Descriptions

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

SIGNED: Max C Brewer — TITLE: Chief of Operations, ONPRA — DATE: 18 May 78

*(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

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Torok	3450	6896	3810 - 3820' Shale, very dark gray, soft, weakly indurated, very fine-silty, micro-micaceous, abundant pyritic worm borings. 4994 - 5004' Shale, dark gray, firm, moderately indurated, very thinly laminated, micro-micaceous, especially along laminations, trace of pyrite; occasional Sandstone in laminae, cut-and-fill laminae and small scale ripple cross laminae, predominately quartz, fine to very fine, subrounded to subangular, small fragments, moderately to poorly sorted, slightly calcareous, abundant small scale growth "faults" from apparent slumping, some possible bioturbation or turbation from expulsion of water or gas; abundant large scale fractures at approximately 30° - 45° to wellbore; bedding planes dip at 15° angle to wellbore.

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Torok	3450	-
Pebble Shale	6896	-
Kingak	7148	-

U.S. GOVERNMENT PRINTING OFFICE: 1983—O-403836

Formation	Top	Bottom	Description, Contents, Etc.
			5871 - 5881' Shale, dark gray, very well indurated, very thinly laminated, micromicaceous especially along laminaes, trace of pyrite; interlaminated shaly siltstone, medium gray to dark gray, micromicaceous; interlaminated Sandstone, fine to very fine grained, poorly sorted, predominately quartz with some rare crystalline fragments, calcareous in part; Sandstone present as laminae, cut-and-fill cross laminae and small scale replacement cross laminae; no fractures at acute angle to wellbore as in above interval; bedding planes normal to wellbore; rock has "poker chip" appearance.
			6698 - 6708' Shale, dark gray, very well indurated, very thinly laminated, micromicaceous, especially along laminae, trace of pyrite, interlaminated shaly siltstone, medium gray to dark gray, micromicaceous, interlaminated Sandstone, fine to very fine grained, poorly sorted, predominately quartz with some rock fragments, calcareous in part; sandstone present as laminae, cut-and-fill cross laminae, small scale replacement cross laminations; shale parts easily in "poker chip" pieces; sandy parts are very hard and part with difficulty; bedding planes normal to wellbore; NSCF, slight odor on breaking of core.
Pebble Shale	6896	7148	6992 - 7026' Shale, dark gray to black, very well indurated, very thinly laminated, blocky to sub-fissile in part, highly organic in part, with laminations of bitumen to 1 mm thick; rare brown shale, bentonitic in part, organic with dull gold fluorescence and strong pale yellow cut fluorescence; abundant laminae of green gray tuff 1 to 5 mm thick; one bed of bentonite 1/2" thick, light green when fresh, dark green when dried, with bright gold fluorescence; pyrite spheres common, some pyrite in irregular lenses and inclusions, some with dark centers; some tarry residue, soft and plastic, with pale yellow cut fluorescence; very rare rounded frosted floating quartz grains to 1/2 mm in diameter; vertical fracturing, some filled with medium brown mineral (dolomite?); core bleeding as from laminae.
			7026 - 7047' Shale, medium brown, and dark gray to black, very well indurated, very thinly laminated, blocky to sub-fissile in part, highly organic in part, rare laminations of bitumen to 1 mm thick; brown shale has bright gold fluorescence and strong pale yellow cut fluorescence; rare laminations of tuff; rare laminations of bentonite, medium green to dark green with bright gold fluorescence; pyrite minor except near bottom of core; minor tarry residue leaving black stain on hands; no rounded frosted floating quartz grains observed; one chert pebble 1/2" in diameter observed at 7026' in loose chips; horizontal fractures common; some slickensided

Formation	Top	Bottom	Description, Contents, Etc.
			surfaces observed cutting core at acute angle; core gave off strong hydrocarbon odor on breaking; core contained one inclusion of Sandstone, very fine grained, light gray, silty, non-calcareous, predominately quartz, subangular to subrounded, inclusion is approximately 1" X 2", corners are square, inclusion does not penetrate core completely, appears to have little effects from transport. 7047 - 7107' Shale, dark gray to black, moderate to well indurated, very thinly laminated, blocky to fissile, highly organic, pyrite and marcasite common to abundant, primarily as replacement of worm borings and fecal matter, minor medium brown claystone in beds to 10 inches thick; noted apparent absence of bentonite, tuff, siderite, and brown shale with fluorescence and cut as in above interval; slickensided zones observed; some beds at approximately 5 degrees or less to well bore. NOSCF; bleeding gas from fractures in claystone. 7107 - 7136' Shale, dark gray to black, moderately to poorly indurated, very thinly laminated, blocky to fissile, highly organic, pyrite and marcasite common to abundant, primarily as replacement of worm borings and fecal matter, minor moderate brown claystone in beds to 1 foot thick; slickensided surfaces common; beds normal to wellbore. NOSCF. 7136 - 7140' Moderate brown argillite, siltstone, and silty claystone, hard, moderate to highly calcareous, fossils, pelecypods (?) and others (?); interbedded organic shale, dark gray to black, fissile to blocky, some bioturbation, pyrite and marcasite noted only in upper 6 inches of organic shale at 7136.5', vertical fractures common, some calcareous healing; bedding approximately normal to wellbore. NOSCF.
Pebble Shale and Kingak	7148	TD	7140 - 7161' Shale, medium gray to dark gray, very well indurated, thinly laminated to very thinly laminated, predominately blocky to rarely subfissile, slightly micro-micaceous in part; minor dark gray to black and brownish black organic shale, very thinly laminated, subfissile in part, some pyritic worm borings and fecal matter, some possible contorted bedding or draping over concretions (?) approximately 2" X 3", some very well rounded pebbles (?) of quartzite, medium brown, very calcareous siltstone, 1" in diameter, pebbles mostly in upper part; possible ammonite at 7146', possible pelecypods at 7152'. 7161 - 7163' Shale, dark gray, rare dark brownish gray, organic, pyritic worm trails, one ironstone concretion 2" X 3", light brown to tan, highly

Formation	Top	Bottom	Description, Contents, Etc.

calcareous with brown dolomite (?) vein filling of dessication cracks, one quartzite cobble 2" X 4". Cobble may have caused barrel to jam.

7163 - 7165' Shale, dark gray, rare dark brownish gray, organic, pyritic worm trails, trace of marcasite.

7165 - 7167' Shaly mudstone, dark gray, dark brownish gray in part, organic, very well indurated, pyritic worm trails, ammonite at 7167'; NSCF, core gives off odor on breaking.

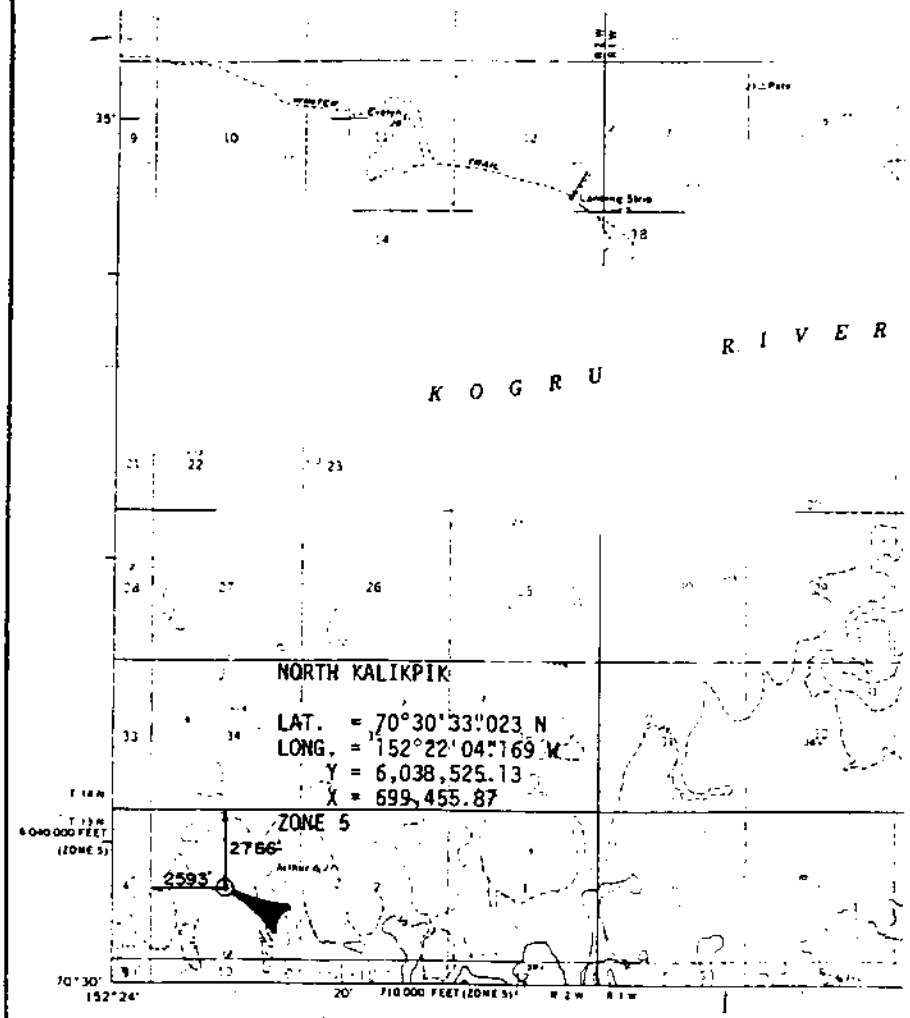
7167 - 7197' Shaly mudstone, dark gray and dark brownish gray, organic, very well indurated, slightly subfissile in part, abundant pyritic worm trails and borings; ammonite at 7197'; slight odor on breaking, no saturation or cut, slight cut fluorescence.

7197 - 7225' Mudstone, dark gray to black and dark brownish gray, organic, very well indurated, pyritic worm trails and borings, very thinly laminated but parts difficultly; large pelecypod at 7206', some pelecypods at 7210'; NOSCF, gas show of 1150 units from fractures at 7220'.

7225 - 7230' Shaly mudstone, dark gray to black and brownish gray, very well indurated, very thinly laminated, blocky to subfissile in part, very slightly micro-micaceous, very slightly silty, noncalcareous, some small pelecypods, large possible brachiopod at 7225'; core bleeding pinpoint bubbles in some portions; NOSCF.

7390 - 7395' Shaly mudstone, dark gray to black and brownish gray, organic, clayey ironstone concretion 1 - 2" with brown calcite centers; NOSCF; bleeding gas along fractures.

NOTE: It should be noted that the discrepancy in the cored interval and the footage recovered in Cores No. 1 and No. 13 is due to a difference in the footage recorded by the driller and the actual footage recovered in the core barrel. Core No. 17 was cut from 7385' to 7390' and documented as such. A later steel line measurement showed the total depth of the well to be 7395'. Thus, as Core No. 17 was cut in the last 5' of the hole, it was actually cut in the interval 7390-7395'.



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

STATE OF ALASKA
349TH
JOHN H. HERRING
No. 953-S
REGISTERED PROFESSIONAL LAND SURVEYOR

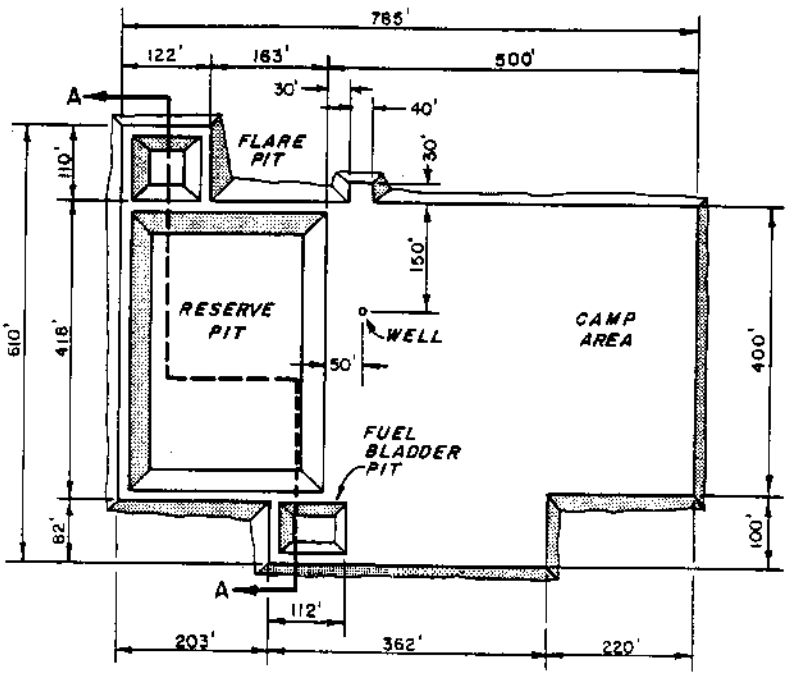
0 1/2 1 2
SCALE IN MILES

AS STAKED
NORTH KALIKPIK
LOCATED IN
1/4 PROTRACTED SEC. 3 T 13 N, R 2 W UMIAT MERIDIAN, AK

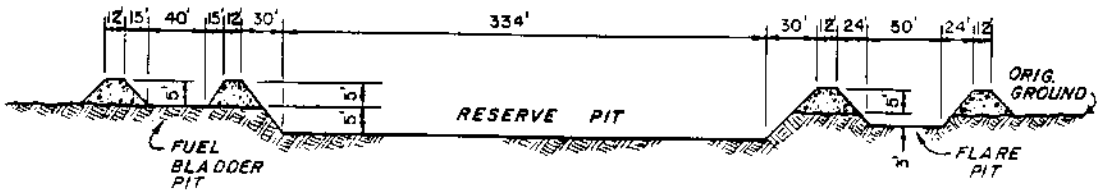
Surveyed for
HUSKY OIL
N.P.R. OPERATIONS INC.

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

NORTH KALIKPIK DRILLSITE



PLAN VIEW



SECTION A-A

OPERATIONS HISTORY

DATE AND FOOTAGE DRILLED AS OF 6:00 A.M.	ACTIVITY
2/6/78	Began rig up operations. Thirteen camp units and subbase set. Draw works on floor. Motors set. Broke crossbeam under draw works.
2/7/78	Set three camp units. Set both pumps and parts house. Raised and set fuel tank. Putting shop building together.
2/8/78	Finished setting up shop. Set in one boiler. Connected SDU and put in operation. Pulled Cat 343 engine out of camp generator house to be replaced.
2/9/78	Worked on fuel storage area. Replaced liner. Setting windwalls around subbase. Continued with general rig up.
2/10/78	Built berm around rig tank. Fixed air ducts on Tioga heater. Laid lines through subbase.
2/11/78	Put derrick on floor and strung lights. Put liner in fuel storage pit. Checked bladder for leaks. Installed bladder.
2/12/78	Raised A frame. Began putting windwalls around floor. Put monkey board on derrick. Strung boom and catline. Aligned mud pumps and put on belts. Worked on generator systems. Only one generator running.
2/13/78	Completed windwalls on floor. Working on new mud tanks. Relocated desander, desilter, and shaker. Worked on generators. Started one camp generator. Put other generator on rig. Two generators still down.
2/14/78	Built berm and set in liner for 5,000 gallon camp fuel tank. Put shale shaker and mixers on mud tanks. Laid fuel line to Tioga heater. Set rig boilers and two rig light plant buildings. Received third Parco crew.
2/15/78	Rig up 50% complete. Set four mud tanks and two water tanks. Laid fuel lines to boilers. Installed two centrifugal pumps. Worked on winterizing and Tioga heater.

2/16/78	Installed charge pumps and worked on mud system piping. Worked on mud tanks and set lower portion of windwalls around mud tank. Started Tioga heater.
2/17/78	Set in desilter, desander, and degasser. Rearranged desander and desilter pumps. Completed pump shed. Set Halliburton equipment.
2/18/78	Hooked up Halliburton tanks and transfer pods. Set in suitcases. Hooked up steam, water, and fuel lines. Welder worked on mud tanks, D850 pump guard, and bull wheel. Hooked up lights and bridle line in derrick. Welder repaired spreader in A leg.
2/19/78	Continued setting up Halliburton equipment and suitcases. Worked on mud tanks and pump. Hooked up lights in derrick.
2/20/78	Welders worked on mud tanks. Crews worked on steam, water, and fuel lines. Rigged up steam heaters. Attempted to raise derrick. Fast line fouled in blocks. Cut and restored line. Raised derrick. Rigging up front of subbase.
2/21/78	Rigging up floor. Installed windwalls on front of rig. Set in ramp and catwalk. Rebuilt pump guards and pipe suctions through mixing tank. Built windwall extensions around mud hopper. Building desander and desilter lines.
2/22/78	Picked up swivel and removed kelly cock. Repacked swivel. Set rat and mouse holes. Hooked up weight indicator. Stacked out drilling subs for inspection. Welding on entrance way to mud tank mixing hopper.
2/23/78	Cemented 20" surface conductor with 158 sacks of Permafrost cement at 14.8 ppg. Worked on water line and cleaned out mud tanks. Installed dump valves on mud tanks.
2/24/78	Worked on desander and desilter line. Completed shaker slides. Changed 20 x 20 screens and installed lines between for trough. Started filling tanks. Repaired leaks in mud tanks and finished filling with water. Finished mud hopper enclosure. Welding on 20" wellhead. Rigging up Quadco equipment.
2/25/78	Completed work on desander and desilter. Welded on 20" head and tested to 750 psi. Nippled up 20" Hydril and tested to 250 psi. Installed drilling nipple and built extension. Inspecting drill collars and subs.

2/26/78	Set 20" casing at 103' KB. Rigged up walkways and hand rails. Worked on mud system. Built flowline and hooked up to shale shaker. Repaired rat hole and kelly boot. Building docks for storage in yard.
2/27/78	Built flowline jets. Hooked up cellar jet. Picked up bottom hole assembly. Worked on master clutch. Mixed spud mud. Repaired leaks in mud lines. Worked on pumps. Preparing to spud.
	Spudded well February 27, 1978, at 10:00 a.m.
2/28/78 670'	Total Depth: 773'; Mud Weight: 9.1; Viscosity: 33. Repaired mud line leaks. Drilled from 103' to 773'. Worked on pumps.
3/1/78 1011'	TD: 1784'; MW: 9.2; Vis: 31. Drilled to 983'. Unplugged flowline. Made short trip to top stabilizer. Drilled to 1481'. Made short trip to 20" shoe. Drilled to 1784'.
3/2/78 787'	TD: 2571'; MW: 9.5; Vis 45. Drilled to 1988'. Made short trip to drill collars with 10,000-25,000 pound drag from 1300' to 1350'. Steel line measured with 41' correction. Corrected total depth: 1946'. Drilled to 2102'; conditioned mud. Drilled to 2571' and surveyed.
3/3/78 44'	TD: 2615'; MW: 9.5; Vis: 85. Drilled to 2615'. Conditioned hole for logs. Tripped out to log. Ran DLL/SP to 2615', logger's total depth. Ran BHC-Sonic/GR to 2609', logger's total depth. Tripped in with bit, conditioned hole for casing while working on pump.
3/4/78 0'	TD: 2615'. Circulated and conditioned to cement casing. Worked on centrifugal pump. Rigged up and ran 69 joints of 13-3/8", 72#, S-95, Buttress casing. Shoe at 2603', duplex float collar at 2530'. Tripped in with stinger. Circulated and prepared to cement casing.
3/5/78 0'	TD: 2615'. Conditioned hole for cement. Cemented 13-3/8" casing with 2,400 sacks of Permafrost cement with 20 barrels of water ahead and 2 barrels of water behind. Circulated 300 sacks of cement to surface with average weight of returns 14.6 ppg. Displaced with mud and pulled 5 stands of drill pipe. Set 13-3/8" casing slips. Tripped out with drill pipe. Cut off 13-3/8" casing. Nippled down 20" blowout preventer equipment.

3/6/78 0'	TD: 2615'. Attempted to install 13-3/8" packoff assembly; would not fit. Cut off 3 inches of 13-3/8" casing. Found 13-3/8" slips were not properly installed. Ground off casing. Installed packoff assembly. Installed lower head assembly. Nippled up 13-3/8", 5,000 psi blowout preventer equipment.
3/7/78 0'	TD: 2615'. Ground off 13-3/8" stub. Installed 20", 2,000 psi, 13-5/8", 5,000 psi casing spools. Attempted to test packoff. National packing did not hold. Nippled down. Pulled packing. Cut and ground off National packing supports. Installed packoff assemblies. Tested packoffs to 2,000 psi. Nippled up.
3/8/78 0'	TD: 2615'. Installed blowout preventer stack. Tied in kill line and choke line. Installed kill nipple. Installed hydraulic control lines to blowout preventer equipment.
3/9/78 0'	TD: 2615'. Nippled up and tested blowout preventer equipment. Tested rams to 5,000 psi and Hydril to 2,500 psi. Tested upper and lower kelly cocks to 5,000 psi. Tested choke manifold to 5,000 psi. Picked up bottom hole assembly.
3/10/78 37'	TD: 2652'; MW: 9.0; Vis: 39. Installed wear bushing. Pulled running tool into rotary and had to reset. Picked up bottom hole assembly. Tripped in steel line measure. Tested casing to 2,500 psi. Drilled float collar and shoe. Drilled to 2625'. Conditioned mud. Tested formation to 0.58 psi/ft. gradient. Leaked off to 0.55 psi/ft. in 5 minutes and to 0.54 psi/ft. in 20 minutes. Retested with the same results.
3/11/78 916'	TD: 3568'; MW: 9.5; Vis: 33. Drilled to 2705'. Repaired mud line. Drilled to 3099'. Worked on drilling recorder. Drilled to 3530'. Repaired air leak. Drilling ahead.
3/12/78 244'	TD: 3812'; MW: 9.2; Vis: 34. Drilled to 3810'. Tripped out steel line measure to pick up core barrel. Repaired nitrogen system and strung Geronimo line. Tripped in with core barrel. Cut Core No. 1: 3810' to 3821'.
3/13/78 556'	TD: 4368'; MW: 9.3; Vis: 33. Pulled out of hole, laid down core barrel. Tripped in to 3810'; reamed core hole and continued drilling. Performed blowout preventer drill.

3/14/78 626'	TD: 4994'; MW: 9.2; Vis: 38. Drilled to 4803' and surveyed. Drilled to 4994' and surveyed. Tripped out for core barrel and tripped in. No. 1 motor and pump down.
3/15/78 10'	TD: 5004'; MW: 9.2; Vis: 38. Ran in hole with core barrel; circulated and washed out fill. Cut Core No. 2: 4994' to 5004'. Pulled out, laid down core barrel. Tested blowout preventer to 5,000 psi and Hydril to 2,500 psi. Changed blind ram rubbers and retested to 5,000 psi. Installed wear bushing, picked up monel collar and ran in hole with 12-1/4" bit.
3/16/78 532'	TD: 5536'; MW: 9.7; Vis: 38. Washed and reamed 4920' to 5004'. Drilling ahead.
3/17/78 335'	TD: 5871'; MW: 9.6; Vis: 40. Drilled to 5871'. Tripped out steel line measure. Repaired No. 1 pump.
3/18/78 107'	TD: 5978'; MW: 9.6; Vis: 39. Cut drilling line. Tripped in with core barrel. Tight at 5703'. Washed to 5871'. Repaired rig. Cut Core No. 3: 5871' to 5881'. Tripped out and laid down core. Tripped in; washed to bottom and reamed core hole. Drilling ahead.
3/19/78 624'	TD: 6602'; MW: 9.6; Vis: 35. Drilled to 6370'; surveyed. Drilling ahead.
3/20/78 106'	TD: 6708'; MW: 9.8; Vis: 40. Drilled to 6650'. Serviced rig. Drilled to 6898'. Circulated and surveyed. Tripped out for core barrel. Cut Core No. 4: 6698' to 6708'.
3/21/78 115'	TD: 6823'; MW: 9.8; Vis: 34. Tripped out with core barrel. Serviced rig; repaired air leak. Ran in hole to 6565'; washed four joints to top of core hole. Reamed core hole. Drilled to 6733'. Repaired leak in suction tank. Drilled to 6774'. Repaired and replaced connections on air lines; repaired pumps and leak in suction pit. Drilled to 6805'; stuck pipe on connection. Worked pipe loose; reamed and washed. Drilled to 6823'. Circulating samples.
3/22/78 169'	TD: 6992'; MW: 10.2; Vis: 42. Circulated samples at 6823'. Drilled 15'; circulated one-half hour. Repeated process 6823' to 6992' and circulated bottoms up. Surveyed at 6940'. Tripped out; 30,000 pound to 70,000 pound drag from 6951' to 6796'. Tested blowout preventer.

3/23/78 34'	TD: 7026'; MW: 10.2; Vis: 42. Tested blowout preventer to 5,000 psi and Hydril to 2,500 psi. Replaced pipe ram rubber. Installed wear ring. Picked up core barrel. Ran in hole to 6986'; washed to bottom. Dropped ball. Cut Core No. 5: 6992' to 7026'. Tripped out; laid down core barrel.
3/24/78 21'	TD: 7047'; MW: 10.2; Vis: 43. Tripped in and washed 30 feet to bottom. Reamed core hole, circulated, and tripped out to pick up core barrel. Cut drilling line. Tripped in and cut Core No. 6: 7026' to 7047'. Barrel jammed.
3/25/78 3'	TD: 7050'; MW: 10.2; Vis: 47. Tripped out with Core No. 6. Tripped in with bit to 6542' and worked on brakes. Tripped in to 6921' and washed 100 feet to bottom; no fill. Reamed core hole; circulated. Tripped out. Pulled 80,000 pound drag first 15 feet off bottom. Worked free. Picked up core barrel and tripped in. Washed 60 feet to bottom; no fill. Dropped ball and cored.
3/26/78 57'	TD: 7107'; MW: 10.1; Vis: 41. Cut Core No. 7: 7047' to 7107'. Tripped out and laid down core. Tripped in and washed to top of core hole. Reaming core hole at 7080'.
3/27/78 29'	TD: 7136'; MW: 10; Vis: 40. Reamed core hole to 7107'. Tripped out and picked up core barrel. Tripped in and cut Core No. 8: 7107' to 7136'. Barrel jammed; tripped out.
3/28/78 0'	TD: 7136'; MW: 10.1; Vis: 44. Laid down Core No. 8. Repaired draw works brakes. Tripped in to five stands off bottom and broke circulation. Tripped in; washed 60 feet. Reamed core hole 7107' to 7136'. Circulated and conditioned mud.
3/29/78 3'	TD: 7139'; MW: 10.2; Vis: 47. Tripped in with core barrel. Circulated and dropped ball. Attempted to unplug outer core barrel. Stood back kelly and picked up off bottom. Repaired mud line union. Ran wireline and retrieved ball. Tripped back in four stands. Circulated and washed to bottom. Cut Core No. 9: 7136' to 7140'. Core barrel jammed. Tripped out and laid down core.
3/30/78 4'	TD: 7143'; MW: 10.3; Vis: 47. Repacked swivel and replaced wash pipe. Tested blowout preventer rams to 5,000 psi, choke manifold to 5,000 psi, and Hydril to 2,500 psi. Tripped in with core barrel.

	Repaired water line. Tripped in to 6614'; broke circulation. Tripped in to 7079'; washed 60 feet to bottom. Dropped ball and cut Core No. 10: 7140' to 7161'. Worked on swivel.
3/31/78 16'	TD: 7159'; MW: 10.2; Vis: 48. Tripped out and laid down core. Tripped in with bit. Reamed core hole. Circulated and conditioned. Sloughing shales in returns. Tripped out for core barrel.
4/1/78 2'	TD: 7161'; MW: 10.3; Vis: 47. Tripped out with bit. Serviced core barrel. Tripped in and cut drilling line. Laid down stabilizers. Tripped in and out. Cut Core No. 11: 7161' to 7163'. Barrel jammed. Tripped out. Serviced core barrel. Tripped in. Circulated plugged core barrel. Unplugged core barrel. Circulated and prepared to core.
4/2/78 4'	TD: 7165'; MW: 10.3; Vis: 44. Cut Core No. 12: 7163' to 7165'. Core barrel jammed. Tripped out and laid down core. Inner barrel plugged. Tripped in with bit and reamed 7159' to 7165'. Circulated and conditioned hole. Tripped in with core barrel.
4/3/78 21'	TD: 7188'; MW: 10.4; Vis: 51. Tripped in with core barrel. Circulated; dropped ball. Cut Core No. 13: 7165' to 7167'. Core barrel plugged. Tripped out with core barrel. Laid down bottom 30 feet of core barrel and installed spacers on inner barrel. Tripped in with core barrel. Circulated; dropped ball. Cut Core No. 14: 7167' to 7188' (finished cutting core on 4/4/78).
4/4/78 9'	TD: 7197'; MW: 10.3; Vis: 47. Completed cutting Core No. 14: 7188' to 7197'. Tripped out; laid down core barrel. Tripped in with bit, reamed 7165' to 7193'. Circulated bottoms up. Tripped out for core barrel.
4/5/78 28'	TD: 7225'; MW: 10.3; Vis: 47. Worked blowout preventer. Tripped in with core barrel; washed to bottom. Cut Core No. 15: 7197' to 7225'. Tripped out; laid down core. Tripped in hole with bit; reamed 7193' to 7223'.
4/6/78 5'	TD: 7330'; MW: 10.3; Vis: 46. Reamed core hole. Circulated bottoms up. Tripped out for core barrel. Cut drilling line. Tripped in, circulated clean to bottom. Dropped ball; cut Core No. 16: 7225' to 7230'. Barrel jammed. Tripped out with core barrel and laid down. Pulled wear bushing. Tested blowout preventer to 5,000 psi and Hydril to 2,500 psi. Tripped in with Bit No. 7.

4/7/78 114'	TD: 7344'; MW: 10.3; Vis: 62. Tripped in. Reamed to bottom. Drilled and circulated samples. Drilling ahead.
4/8/78 51'	TD: 7395'; MW: 10.3; Vis: 56. Drilled to 7390'. Surveyed; strapped out of hole. Replaced high chain. Tripped in with core barrel and cut Core No. 17: 7390' to 7395'. Core barrel jammed. Tripped out laying down core.
4/9/78 0'	TD: 7395'; MW: 10.3; Vis: 55. Laid down core barrel. Tripped in with bit and reamed 5-foot core hole. Circulated; made short trip. Circulated; tripped out to log. Rigged up to log. Ran DIL and FDC/CNL to 7394'.
4/10/78 0'	TD: 7395'; MW: 10.3; Vis: 55. Finished running FDC/CNL. Ran Gamma Ray, Dipmeter, and Velocity Survey. Shooting sidewall cores.
4/11/78 0'	TD: 7395'; MW: 10.3; Vis: 57. Finished sidewall cores. Rigged down Schlumberger. Pulled wear bushing and tripped in with Bit No. 8. Broke circulation at 2600', 4600', and 7300'. Circulated and conditioned mud. Tripped out and laid down bottom hole assembly. Tripping in open ended.
4/12/78 0'	TD: 7395'; PBTD: 2500'; MW: 10.4; Vis: 50. Tripped in open ended to 6700' and circulated. Set Plug No. 1, 280 sacks of Class "G" (15.8 ppg). Cement in place at 12:44 p.m. Picked up to 4750' and circulated. Spotted Plug No. 2, 470 sacks of Class "G" (15.88 ppg). Cement in place at 3:00 p.m. Pulled out of hole to 3500' and circulated. Set Plug No. 3, 340 sacks of Permafrost cement (15 ppg). Cement in place at 8:00 p.m. Pulled out of hole to 2900' and circulated. Set Plug No. 4, 380 sacks of Permafrost cement (15 ppg). Cement in place at 10:00 p.m. Finished laying down drill pipe. Picked up 13-3/8" EZ drill retainer and started in. Retainer set at 76.5 KB. Laid down setting tool and picked up two drill collars.
4/13/78 0'	TD: 7395'; PBTD: 2293'; MW: 10.2; Vis: 42. Picked up 12-1/4" bit and drilled on retainer. Pushed retainer to 2445'. Tripped out and laid down bit. Picked up 13-3/8" casing scraper. Pin broke while making up. Waited on replacement scraper. Tripped in with scraper to 2400'. Circulated at 2400'. Tripped out; laid down drill collar and scraper.

	Picked up 13-3/8" retainer; tripped in and set at 2350'. Mixed and pumped 50 sacks of Permafrost cement. Spotted from 2350' to 2293'. Pulled five joints and circulated.
4/14/78	PBTD: 2293'. Reversed out mud to water at 2200'. Reversed out water to diesel at 2200'. Laid down 75 joints of drill pipe. Cleared rig floor. Nippled down blowout preventer stack and OCT wellhead. Cleaned mud pits. Preparing to set dry hole marker.
4/15/78	PBTD: 2293'. Finished cleaning mud pits. Released rig April 14, 1978, at 2:00 p.m. Rigging down.

DRILLING TIME ANALYSIS

NORTH KALIKPIK TEST WELL NO. 1

PARCO, INC., RIG 96

Spudded 2/27/78, Rig released 4/14/78

Total Depth: 7,395 Feet

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

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 1-29																							24		Hauling Rig
1-30																							24		Hauling Rig
1-31																							24		Hauling Rig
2-1																							24		Hauling Rig
2-2																							24		Hauling Rig
2-3																							24		Hauling Rig
2-4																							24		Hauling Rig
2-5																							24		Hauling Rig
2-6	24																								Began Rig Up
2-7	24																								Rigging Up
2-8	24																								Rigging Up
2-9	24																								Rigging Up
2-10	24																								Rigging Up
2-11	24																								Rigging Up
2-12	24																								Rigging Up

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. NORTH KALIKPIK TEST WELL NO. 1 Page 2 of 6

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
2-13	24																								Rigging Up
2-14	24																								Rigging Up
2-15	24																								Rigging Up
2-16	24																								Rigging Up
2-17	24																								Rigging Up
2-18	24																								Rigging Up
2-19	24																								Rigging Up
2-20	24																								Rigging Up
2-21	24																								Rigging Up
2-22	24																								Rigging Up
2-23	24																								Rigging Up
2-24	24																								Rigging Up
2-25	24																								Rigging Up
2-26	24																								Rigging Up
2-27		7½		2½			5½	8½																Mixing Spud Mud	Spudded Well at 10:00 A. M.

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. NORTH KALIKPIK TEST WELL NO. 1 Page 3 of 6

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
2-28		12		4	2½	½	1½	2½															1	Drilling	
3-1		13½		7	1		1½	1																Drilling	
3-2		5¼		7½	1½		1	2¼	6½															Deviation Survey	Ran Schlumberger Wireline Logs
3-3				3			5	2		13													1	Repairing Rig	
3-4				10				5		2½		5½											1	Circulating & Conditioning	
3-5				1½			3					19½												Nipple Up BOP	
3-6												24												Nipple Up BOP	
3-7												24												Nipple Up BOP	
3-8												6	16										2	Rigging Up Drill Floor	
3-9		1½		9			1	3															9½	Tripping	
3-10		18			1		3	½															1½	Drilling	
3-11		11½		7¼	1	2¾	½	1																Drilling	
3-12		7¼	½	11⅓			½	1									2						¾	Coring	Core No. 1: 3810' - 3820'
3-13		19		2	1¾	¼		1																Drilling	
3-14			¾	11½			½						8¾			1½							1	Tripping	Core No. 2: 4994' - 5004'

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. NORTH KALIKPIK TEST WELL NO. 1 Page 4 of 6

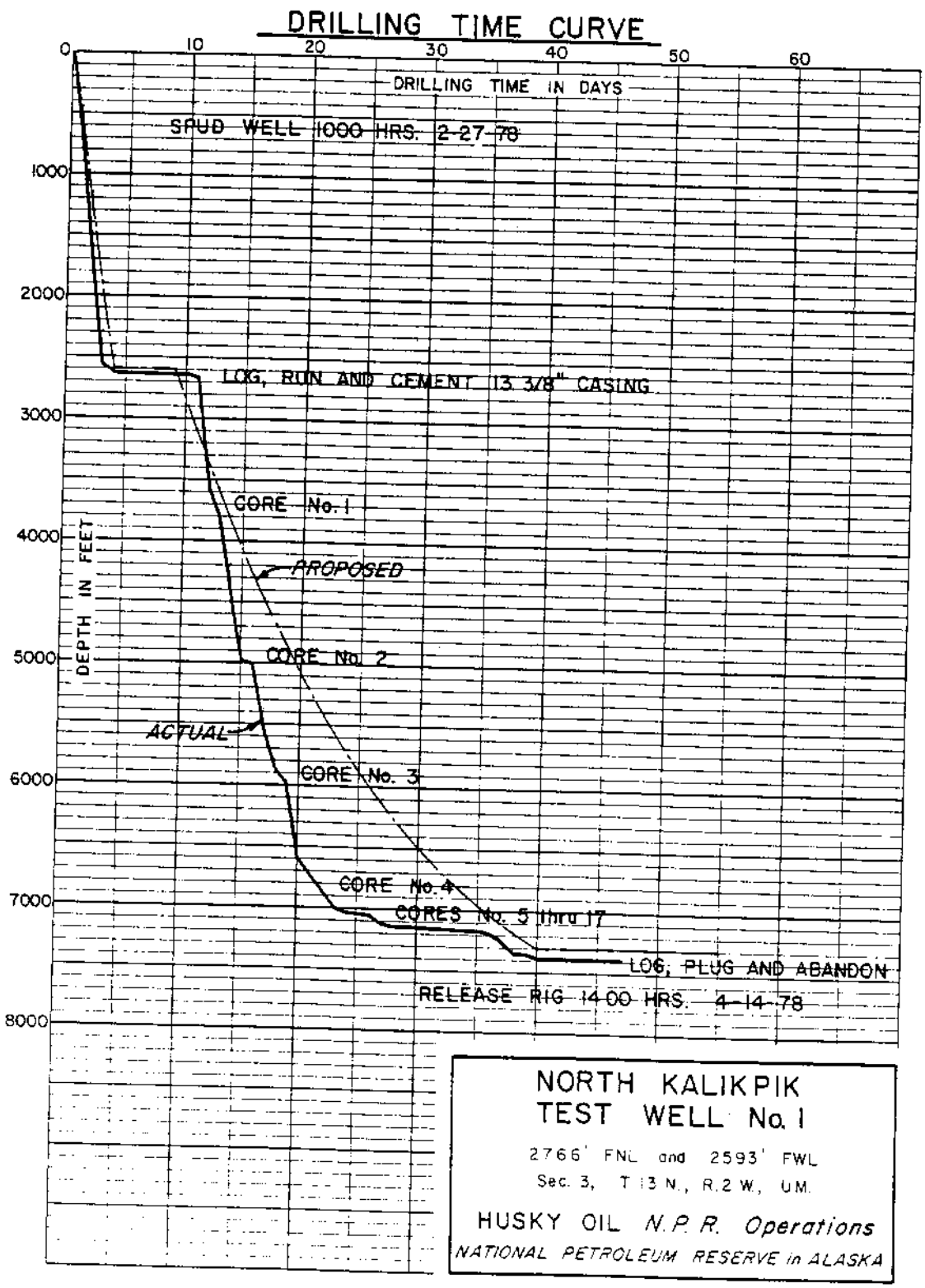
DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
3-15		14¼	2½	4½		¼							1½										¼	Tripping	
3-16		19¼		1¼	1½	¼																	1¼	Deviation Survey	
3-17			4¾	15			1¾	¼									1½						¾	Tripping	Core No. 3: 5871' - 5881'
3-18		21¾	½		¾																		1	Drilling	
3-19		11		9½		½		2															1	Drilling	
3-20		3		7¾		½	7¾										2						3	Tripping	Core No. 4: 6698' - 6708'
3-21		7		4½			3	8¼															1¼	Circulating	
3-22				4¾				1					9½				6¾						2	Testing BOP	Core No. 5: 6992' - 7026'
3-23			2¼	13¾		½		2¾															4¾	Retrieving Core	
3-24			½	12¼			1	2¼									5						3	Coring	Core No. 6: 7026' - 7047'
3-25			7¼	7½			¼	¾									6¼						1¾	Reaming	Core No. 7: 7047' - 7107'
3-26			4	10½		¼	½	1¾									5						1¾	Reaming	Core No. 8: 7107' - 7136'
3-27				6¼		½	13¼	1									2						1	Tripping	
3-28			2¼	11¾		½	1¾	2¾									1¼						3¾	Conditioning Mud	Core No. 9: 7136' - 7140'
3-29				11			2	1						9¾										Tripping	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. NORTH KALIKPIK TEST WELL NO. 1 Page 5 of 6

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
3-30			1	9½			5¼	1									5⅝						2	Repairing	Core No. 10: 7140' - 7161'
3-31			2½	14¼		½		2¼									1						2⅛	Tripping	Core No. 11: 7161' - 7163'
4-1			1½	12				2½									2						6	Coring	Core No. 12: 7163' - 7165'
4-2				17½				3¼									2¾						¼	Tripping	Core No. 13: 7165' - 7167'
4-3			4¼	8				9½															2	Coring	Core No. 14: 7167' - 7197'
4-4			2½	11¼		¼		1¼									5						2¾	Tripping	Core No. 15: 7197' - 7225'
4-5			4	11½			½	2					2				2						2	Reaming	Core No. 16: 7225' - 7230'
4-6		11¼	2½	5			½	1					3½											Tripping	
4-7		12½		7½			2	2																Drilling	
4-8			1	12½				5	1½								1½						2½	Tripping	Core No. 17" 7390'- 7395'
4-9									24															Logging	Ran Schlumberger Wireline Logs
4-10				7				6½	10														½	Logging	
4-11				7¾				8½		2½													5¼	Tripping	
4-12		3		7½				½							½								12½	Laying Down Pipe	
4-13				3¾				3¼		1½		7½											8	Circulating	

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

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
4-14	24																							Rigging Down	Rig Released 2:00 p.m.
4-15	24																							Rigging Down	
4-16	24																							Rigging Down	
4-17	24																							Rigging Down	
4-18	24																							Rigging Down	
4-19	24																							Rigging Down	
4-20	24																							Completed Rigging Down	
4-21																								Began Rig Move to Ikpikpuk Com. May 1, 1978	
	572	45		11			63½	42		-0-			41¼	-0-		52¾		-0-		-0-		282¾			
TOTAL HOURS		199¾		332¾		7¾		101¼		19½		86½		9¾		½		-0-		-0-		-0-			


DRILLING TIME CURVE
0
10
20
30
40
50
60
DRILLING TIME IN DAYS
SPUD WELL 1000 HRS. 2-27-78
1000
2000
3000
4000
5000
6000
7000
8000
DEPTH IN FEET
LOG, RUN AND CEMENT 13 3/8" CASING
CORE No. 1
PROPOSED
CORE No. 2
ACTUAL
CORE No. 3
CORE No. 4
CORES No. 5 thru 17
LOG, PLUG AND ABANDON
RELEASE RIG 1400 HRS. 4-14-78
NORTH KALIKPIK
TEST WELL No. 1
2766' FNL and 2593' FWL
Sec. 3, T 13 N., R. 2 W., U.M.
HUSKY OIL N.P.R. Operations
NATIONAL PETROLEUM RESERVE in ALASKA

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL North Kalikpik Test Well No. 1 COUNTY North Slope

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 3 TWP 13N RNG 2W

STOCKPOINT Lonely DATE 2/28/78 ENGINEER McKane/Douville

CASING PROGRAM: 20 inch at 103 ft.
13 3/8 inch at 2603 ft.
_____ inch at _____ ft.

TOTAL DEPTH 7395 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
1978	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, ms/ml	
2/27		8.4	34	10	5	4/4	9.0	20		2			4000	120	Nil	2		98		Mixed spud mud.
2/28	780	9.1	33	14	6	2/6	8.5	20		2			4000	60	1	6		94		
3/1	1740	9.6	31	10	4	2/4	8.5	16		2			4600	60	2	7		93		
3/2	2570	9.5	45	45	20	4/10	9.0	10		2			4500	60	1	8		92		
3/3	2615	9.5	85	48	30	6/18	9.5	12		2			4600	60	1	8		92		Ran "E" logs.
3/4	2615	9.5	85	48	35	6/18	9.5	12		2			4600	60	1	8		92		Ran 13 3/8" casing. Cemented.
3/5-10	2678	9.0	39	14	10	4/6	9.0	16		2			4000	80	Tr	5		95		
3/11		9.5	33	10	4	2/4	9.0	8.6		2			4000	60	1	7		93		Dispersed system.
3/12	3808	9.2	34	8	4	1/2	9.0	10		2			4000	60	1	6		94		
3/13	4378	9.3	33	8	4	1/2	9.0	12		2			4000	60	1	6.5		93.5		
3/14	4994	9.2	38	14	8	2/6	9.0	10.5		2			4000	60	1½	6		94		
3/15	5004	9.2	38	14	8	2/6	8.5	10		2			4000	60	1	6		94		Coring.
3/17	5871	9.6	40	20	10	2/4	9.5	8.5		2			3200	60	½	8.5		91.5		
3/18		9.6	39	16	8	2/4	9.5	10.0		2			3000	60	Tr	8.5		91.5		
3/19	6560	9.6	35	12	5	2/4	9.5	11.0		2			3000	60	Tr	8.5		91.5		
3/20	6708	9.8	40	18	10	2/4	9.5	8.0		2			3000	60	Tr	9.5		90.5		Coring. Raised mud weight.
3/21	6805	9.8	34	10	6	2/4	9.0	8.5		2			3000	60	1	10		90		Reduced filtrate.
3/23	7026	10.2	42	24	14	2/6	10.5	4.0		2			2000	60	½	13		87		Coring.
3/24	7047	10.2	43	20	10	2/4	10.5	4.0		2			2000	60	Tr	13		87		Coring.
3/25	7047	10.2	47	28	12	2/6	10.5	3.5		2			2000	60	Tr	13		87		
3/26	7107	10.1	41	18	8	2/4	10.5	4.0		2			2000	60	Tr	12		88		Coring.
3/27	7126	10.0	40	18	8	2/4	10.5	4.0		2			2000	60	Tr	12		88		Coring.
3/28	7136	10.2	44	24	12	2/6	10.0	4.0		2			2000	60	Tr	13		87		
3/29	7139	10.2	47	26	14	2/6	10.0	3.5		2			2000	60	Tr	14		86		Coring.
3/30	7144	10.3	47	28	14	2/6	9.5	3.5		2			2000	60	Tr	14		86		
3/31	7159	10.2	45	24	14	2/6	10.0	3.0		2			2000	60	Tr	13		87		
4/1	7161	10.3	47	28	16	2/6	10.0	3.0		2			2000	60	Tr	14		86		Coring.
4/2	7165	10.3	44	26	14	2/4	10.0	3.0		2				60	Tr	14		86		
4/3	7185	10.4	51	32	18	4/6	10.5	4.5		2			2000	60	Tr	14		86		Coring.
4/4	7170	10.3	47	22	8	3/9	10.5	4.7		2			1300	40	½	12		88		
4/4	7195	10.3	45	22	11	3/10	10.5	4.3		2			1300	40	½	12		88		Coring.
4/5	7205	10.3	42	16	8	2/6	10.0	4.2		2			1300	40	½	12		88		
4/5	7225	10.2	44	25	10	3/10	10.0	3.9		2			1300	40	½	10		90		Coring.
4/5	7215	10.3	47	24	12	3/9	10.0	4.0		2			1300	40	½	10		90		
4/6	7230	10.3	46	27	11	4/11	9.5	3.8		2			1300	40	½	11		89		Coring.

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska CASING PROGRAM: 20 inch at 103 ft.

WELL North Kalikpik Test Well No. 1 COUNTY North Slope 13 3/8 inch at 2603 ft.

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 3 TWP 13N RNG 2W ____ inch at ____ ft.

STOCKPOINT Lonely DATE 4/7/80 ENGINEER McKane/Douville TOTAL DEPTH 7395 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
	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, ms/ml	
4/7	7255	10.3	45	17	11	3/8	9.0	4.2		2			1300	32	½	10		90		Drilling. Raised viscosity.
4/7	7280	10.3	58	33	24	6/16	9.5	3.9		2			1300	28	½	11		89		
4/7	7335	10.3	62	35	20	6/18	9.0	4.0		2			1300	28	½	11		89		
4/8	7385	10.3	56	30	20	7/13	9.0	4.0		2			1300	40	½	11		89		
4/9	7395	10.3	55	30	20	5/14	8.5	4.2		2			1300	40	½	12		88		Coring. Rigged up to log.
4/10	7395	10.3	55	30	20	5/14	8.5	4.2		2			1300	40	½	12		88		Running "E" logs.
4/11	7395	10.3	57	32	21	8/15	8.3	4.6		2			1300	60	½	12		88		Shooting sidewall cores & VS.
4/12	6700	10.3	50	25	15	6/11	8.3	5.0		2			1300	60	½	12		88		Plugging.
4/13	2450	10.2	42	20	15	4/10	8.5	5.8		2			1300	80	½	11		89		Plugging to abandon.

BIT RECORD

COMPANY: Husky Oil NPR Operations	CONTRACTOR: Parco, Inc.			COUNTY: North Slope Borough	STATE: Alaska
LEASE: National Petroleum Reserve	WELL NO: North Kalikpik TW No. 1	SEC: 3	TOWNSHIP: 13N	RANGE: 2W	BLOCK:
TOOL PUSHER	DRILL PIPE			DRAW WORKS	FIELD
DAY DRILLER	TOOL JOINT: MAKE	SIZE	TYPE	POWER HP	UNDER SURF
EVENING DRILLER	DRILL COLLAR: NO	O D	I D	LENGTH	PUMP NO 1: MAKE / MODEL / STROKE
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 T	B	G	REMARKS FORMATION, CIRC, FLUID, ETC.	DATE
1	17½	Sec	S3SJ	621599	16	16	16	2615	2512	37.25	37.25	67.4	35/40	90/120	3/4	900			68	9.5	45	4	6	I		
2	12¼	Sec	S33S	771976	11	13	13	3810	1195	29.5	66.75	40.5	35/40	90	"	1900			68	9.0	33	4	6	I		
CH1	8½	Chri	MC-20	8R1048				3821	11	1.5	68.25	7.3	15	70	"	1000			48	9.0	33	Excellent Condition				
3	12¼	Sec	S33S	771969	11	13	13	4494	1173	26.75	95	43.9	40/45	90/100	2	1200			54	9.3	33	2	6	I		
RR CH1	8½	Chri	MC-20	8R1048				5004	10	1.75	96.75	5.7	15	70	2	1000			48	9.2	38	Excellent Condition				
4	12¼	Sec	S33S	770797	11	11	13	5871	867	34.25	131	25.3	35/38	120/144	1	1600			60	9.5	40	3	6	I		
RR CH1	8½	Chri	MC-20	8R1048				5881	10	1.5	132.5	6.7	20	70	2	1000			48	9.5	39	Excellent Condition				
5	12¼	Sec	S33S	770975	11	11	13	6698	817	32.75	165.25	25.0	42/45	110	1/2	1800			62	9.5	35	2	5	I		
RR CH1	8½	Chri	MC-20	8R1048				6708	10	2	167.25	5.0	20	78	1/2	1100			48	9.8	40	Six Shattered Diamonds				
6	12¼	Sec	S3S	784135	11	11	13	6992	284	10	177.25	28.4	45	110	1/4	1800			62	10.2	42	2	5	I		
RR CH1	8½	Chri	MC-20	8R1048				7026	34	6.75	184	5.0	22/25	78		1600			54	10.2	42	Good Condition				
RR6	12¼	Sec	S3S	784135	11	11	13	7026	(Reamed 34)	(2.25)	–	–	20	110	–	1800			62	10.2	43	2	5	I		
RR CH1	8½	Chri	MC-20	8R1048				7047	21	4.5	188.5	4.7	20/25	78	–	1600			56	10.2	43	Good Condition				
RR6	12¼	Sec	S3S	784135	11	11	13	7047	(Reamed 21)	(.75)	–	–	20	110	–	1800			62	10.2	47	2	5	I		
RR CH1	8½	Chri	MC-20	8R1048				7107	60	12.75	201.25	4.7	25	45		1600			52	10.2	47	Good Condition				
RR6	12¼	Sec	S3S	784135	11	11	13	7107	(Reamed 60)	(3.25)	–	–	25	45		1800			59	10.2	40	2	6	I		
RR CH1	8½	Chri	MC-20	8R1048				7136	29	7	208.25	4.1	25	45	–	1500			54	10.1	41	Good Condition				
RR5	12¼	Sec	S33S	770975	11	11	13	7136	(Reamed 29)	(1.75)	–	–	25	110	–	1800			61	10.1	44	2	5	I		
RR CH1	8½	Chri	MC-20	8R1048				7139	3	1.25	209.5	2.4	25	110	–	1500			54	10.2	47	Good Condition				
RR CH1	8½	Chri	MC-20	8R1048				7159	20	4.5	214	4.4	25	70	–	1300			54	10.2	48	Good Condition				
RR5	12¼	Sec	S33S	770975	11	11	13	7159	(Reamed 20)	(3.5)	–	–	20	70	–	1600			54	10.2	48	2	5	I		

SMITH REPRESENTATIVE _____ PHONE _____

BIT RECORD

COMPANY	CONTRACTOR		COUNTY	STATE
Husky Oil NPR Operations	Parco, Inc.		North Slope Borough	Alaska
LEASE	**WELL NO**	**SEC**	**TOWNSHIP**	**RANGE**	**BLOCK**	**FIELD**
National Petroleum Reserve	North Kalikpik TW No. 1	3	13N	2W		

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	I O 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 T	B	G	REMARKS FORMATION, CIRC FLUID, ETC	DATE
RR CH1	8½	Chri	MC-20	8R1048				7161	2	2	216	1.0	20	70		1300			54	10.3	47	Good				
RR CH1	8½	Chri	MC-20	8R1048				7165	4	2	218	2.0	20	70		1300			59	10.3	48	Good				
RR5	12¼	Sec	S33S	770975	11	11	13	7161	6	1.5	219.5	4	20	70		1200			52	10.3	49	2	4	I		
RR CH1	8½	Chri	MC-20	8R1048				7167	2	2	221.5	1	20	70		1100			52	10.4	51	Good				
RR CH1	8½	Chri	MC-20	8R1048				7185	28	9.75	231.25	2.9	20	70		1100			50	10.4	51	Good				
RR5	12¼	Sec	S33S	770975	16	16	16	7193	28	4.75	236	5.9	25	70		1100			51	10.4	51	2	4	I		
RR CH1	8½	Chri	MC-20	8R1048				7225	30	7.5	243.5	4	20	70		1200			50	10.3	47	Good				
RR1	12¼	Sec	S3S	784135	16	16	16	7223	30	4	247.5	7.5	25	70		1200			50	10.3	47					
RR CH1	8½	Chri	MC-20	8R1048				7230	5	2	249.5	2.5	20	70		1100			50	10.3	46	Good				
7	12¼	HTC	X1G	FU821	11	11	13	7390	160	24.5	274	6.5	42	75		1900			52	10.3	56	4	1	I		
RR CH1	8½	Chri	MC-20	8R1048				7395	5	2.5	296.5	2	20	70		1100			52	10.4	56	Good				
RR7	12¼	HTC	X1G	FU821				7395	(Reamed 5)	(1)	–	5	25	70		1900			54	10.4	55	4	1	I		
8	12¼	HTC	X1G	FV100	13	13	13	7395		Breaking circulation.																
9	12¼	HTC	OSC1G	HD487	16	16	16	7395	–	3.5	–		10	120		900			52	10.2	42	2	1	I	Ran bit to drill out EZ Drill cement retainer which set prematurely.	

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. Pailetize 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 North Kalikpik Test Well No. 1 was as follows: 20" conductor at ±110'; 13-3/8" at ±2600'; 9-5/8" to a total depth of 7400' if needed for evaluation. Casing actually run was 20" conductor at 103', and 13-3/8" at 2603'. The 9-5/8" string was not needed.

When abandoning the well, the 13-3/8" annulus was left full of diesel from 2200' to the surface. This was to allow re-entry into that part of the wellbore by U. S. Geological Survey personnel to make future temperature measurements.

CASING TALLY
SUMMARY SHEET

DATE: March 4, 1978

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

SUMMARY OF PAGE MEASUREMENTS			
	NO. OF JOINTS	FEET	00'S
PAGE 1	50	1932	59
PAGE 2	19	738	46
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	69	2671	05

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	00'S
1	TOTAL CASING ON RACKS	69	2671	05
2	LESS CASING OUT (JTS NOS. #59 & #69	12	69	60
3	TOTAL (1 - 2)	67	2601	45
4	SHOE LENGTH		1	92
5	FLOAT LENGTH		1	71
6	MISCELLANEOUS EQUIPMENT LENGTH		-	-
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)	67	2605	08
8	LESS WELL DEPTH (KB REFERENCE) Set off bottom @ 2603.18	-	2603	18
9	"UP" ON LANDING JOINT Above KB reference		1	90

Weight indicator before cementing: 160,000 ; after slack-off: - ; inches slacked off Set full casing weight on slips.

SUMMARY OF STRING AS RUN								
WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW/USED	LOCATION IN STRING	NO. OF JOINTS	FOOTAGE	INTERVAL
72#	S-95	BTC	Lone Star & Armco	New	JT NO. 60 THRU NO. 68	9		22.55 - 345.75
72#	S-95	BTC	Lone Star & Armco	New	JT NO. 3 THRU NO. 58	56	2184.09	345.75 - 2529.84
		BTC	Halliburton	New	Float Collar	-	1.71	2529.84 - 2531.55
72#	S-95	BTC	Lone Star	New	JT NO. 1 THRU NO. 2	2	69.71	2531.55 - 2601.26
-	-	BTC	Halliburton	New	Float Shoe	-	1.92	2601.26 - 2603.18
		BTC	Buttress Thread and Coupling		JT NO. THRU NO.			

PAGE 1 OF 2

CASING TALLY

DATE: March 1, 1978

FIELD NPRA LEASE & WELL NO. No. Kalikpik T W 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	34	30	34	30	
2	35	41	35	40	
3	42	28	42	28	
4	41	80	41	80	
5	35	47	35	46	
6	38	50	38	48	
7	41	62	41	63	
8	40	61	40	60	
9	40	83	40	83	
0	41	73	41	74	
TOTAL A	392	55	392	52	

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT 00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT 00'S	WT GR
31	40	10	40	10	
2	39	50	39	51	
3	38	58	38	58	
4	41	40	41	40	
5	38	25	38	24	
6	41	80	41	79	
7	42	10	42	07	
8	38	05	38	03	
9	40	22	40	21	
0	36	49	36	48	
TOTAL D	396	49	396	41	

11	42	02	42	03	
2	42	35	42	35	
3	37	38	37	37	
4	37	13	37	13	
5	38	13	38	13	
6	40	38	40	39	
7	35	52	35	50	
8	37	28	37	28	
9	40	15	40	15	
20	41	88	41	87	
TOTAL B	392	22	392	20	

41	33	55	33	55	
2	35	52	35	52	
3	36	74	36	73	
4	37	12	37	13	
5	36	00	36	00	
6	35	74	35	75	
7	35	81	35	79	
8	36	32	36	31	
9	40	00	40	00	
50	33	71	33	70	
TOTAL E	360	51	360	48	

21	42	00	42	00	
2	39	58	39	60	
3	35	85	35	85	
4	38	88	38	88	
5	40	36	40	36	
6	37	48	37	46	
7	42	26	42	25	
8	40	16	40	16	
9	36	44	36	44	
30	37	81	37	81	
TOTAL C	390	82	390	81	

TOTAL A	392	55	392	52
TOTAL B	392	22	392	20
TOTAL C	390	82	390	81
TOTAL D	396	49	396	41
TOTAL E	360	51	360	48
TOTAL PAGE	1932	59	1932	42

PAGE 2 OF 2 CASING TALLY DATE: March 1, 1978

FIELD NPRA LEASE & WELL NO. No. Kalikpik T W 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.
51	33	77	33	77	
2	39	62	39	61	
3	42	43	42	42	
4	42	45	42	45	
5	40	33	40	33	
6	40	12	40	13	
7	40	49	40	50	
8	42	00	42	00	
9	33	21	33	20	
60	39	53	39	51	
TOTAL A	393	95	393	92	

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					

61	35	65	35	65	
2	37	88	37	90	
3	38	45	38	45	
4	41	75	41	75	
5	41	44	41	46	
6	37	91	37	90	
7	37	62	37	64	
8	37	42	37	42	
9	36	39	36	40	
0					
TOTAL B	344	51	344	57	

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	95	393	92
TOTAL B	344	51	344	57
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	738	46	738	49

CASING OR LINER CEMENT JOB

Lease National Petroleum Reserve Well North Kalikpik TW No. 1 Date March 4, 1978

Size Casing 13 3/8" Setting Depth 2603.18 Top (liner hanger) _____

Hole Size 17 1/2 " Mud Gradient .494 psi/ft Viscosity 85

Casing Equipment

Halliburton float shoe, Halliburton float collar located 71.63 fee

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

and - feet.

Thirteen Halliburton centralizers located at 2593', 2567', 2531', 2487', 2410', 2330'

2248', 2165', and 2085'.

- scratchers located -

Liner hanger and pack off (describe) -

Miscellaneous (baskets etc.) -

Cement (around shoe)

	No. Sacks	Brand	Type	Additives	Slurry Weight	Slurry Volume
(1)	2400	Permafrost		14.8 - 15.0 #/Gal		2256
(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 3450 bbls @ 12.8 BPM, pumped in 20 ~~(cu. ft.)~~ (barrels) water

prewash, used bottom plug (yes, no), mixed cement (1) above 140

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

42 ~~(cu. ft.)~~ (barrels) in 10 minutes at rate of 4.2 BPM, ~~CFM,~~

~~(Bumped plug) (Did not bump plug).~~ Used DP & Float Collar Sting In Tool. Final Pressure 600. Reciprocated

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

minutes. Had full circulation (full, partial,

none, etc.). Completed job at 1:30 ~~a.m.,~~ p.m.

Cementing Procedure (through (DV, FO) at _____ 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.)

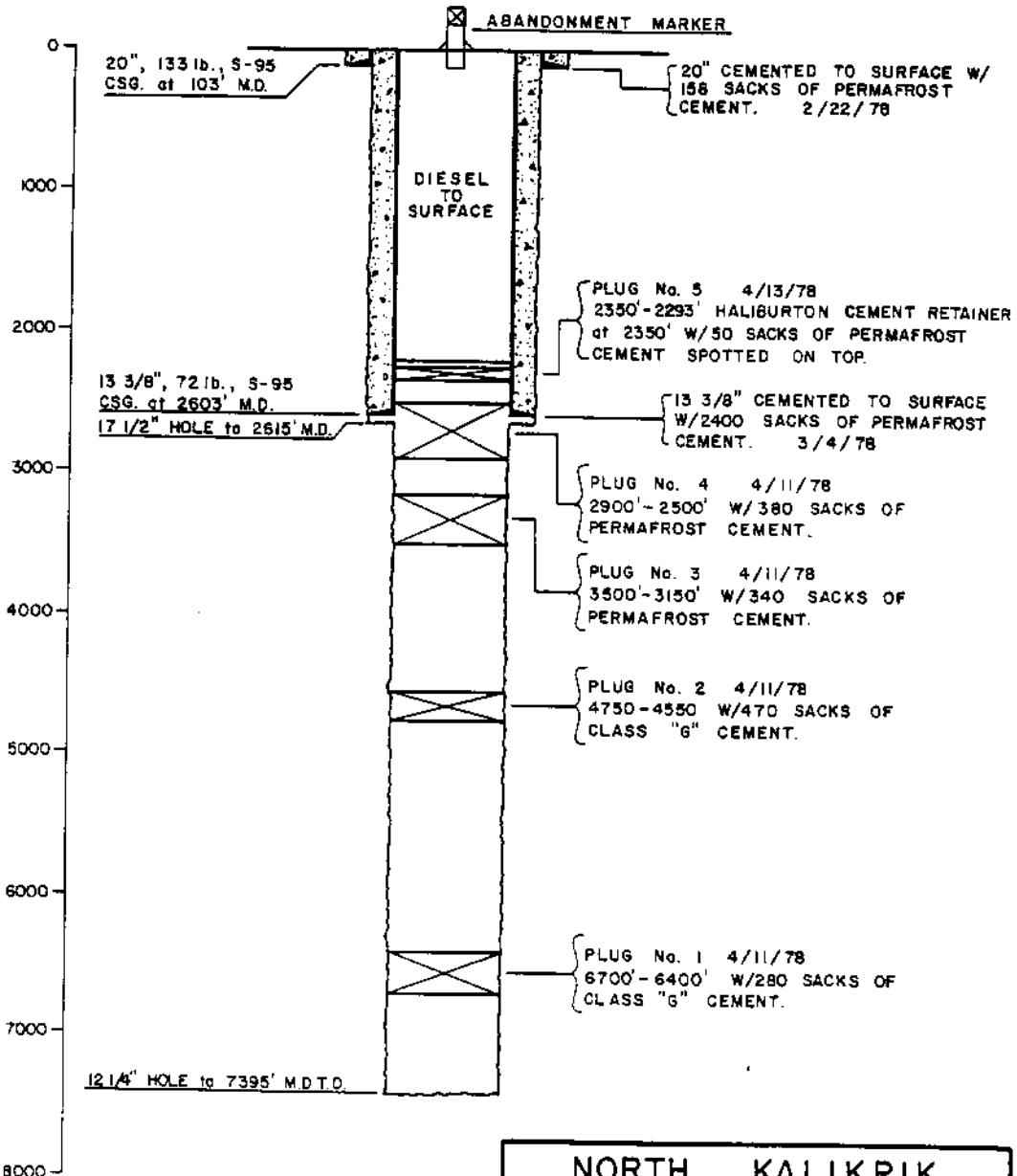
Remarks (Third Stage Job, etc.)

Cement circulated to surface after mixing 2000 sacks. Continued to mix cement until return slurry reached 14.6#/gal. Circulated out 300 sacks of good 14.6#/gal slurry + 100 sacks of mud contaminated cement slurry.

Gene Harmon

Foreman

WELLBORE SCHEMATIC

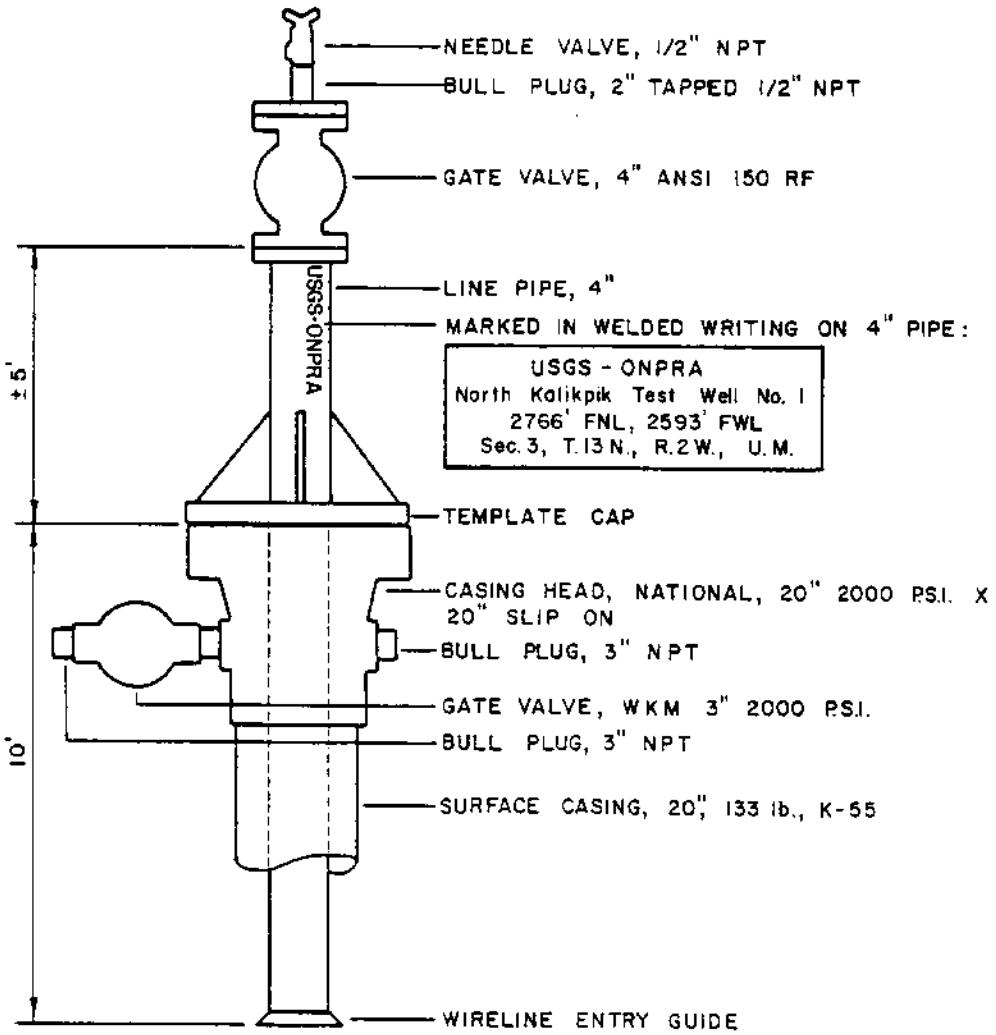


NORTH KALIKPIK
TEST WELL No. 1

2766' FNL and 2593' FWL
Sec. 3, T.13 N., R.2 W., U.M.

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

ABANDONMENT MARKER



NORTH KALIKPIK
TEST WELL No. 1

2766' FNL and 2593' FWL
Sec. 3, T. 13 N., R. 2 W., U.M.

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

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

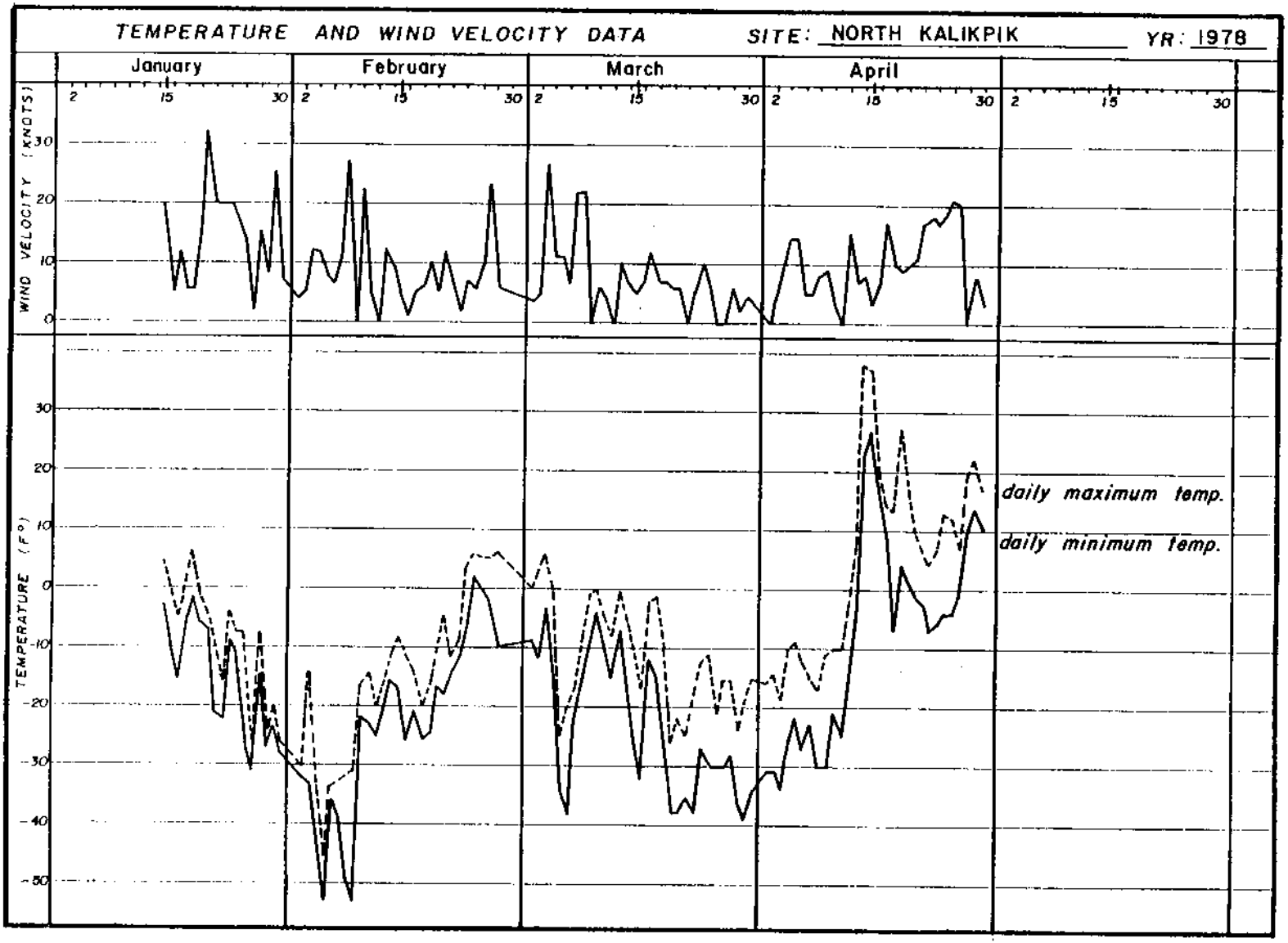
Parker, steel, 9-5/8" x 20'.

Mouse Hole

Parker, steel, 7" x 16'.

Fire Extinguishers

Ansle, powder AB, K30.


TEMPERATURE AND WIND VELOCITY DATA
SITE: NORTH KALIKPIK
YR: 1978
January
February
March
April
2
15
30
WIND VELOCITY (KNOTS)
30
20
10
0
TEMPERATURE (F°)
30
20
10
0
-10
-20
-30
-40
-50
daily maximum temp.
daily minimum temp.