NATIONAL PETROLEUM RESERVE IN ALASKA

HISTORY
OF
DRILLING OPERATIONS

AWUNA TEST WELL NO. 1

HUSKY OIL NPR OPERATIONS, INC.
Edited by: C. C. Livingston & Gordon W. Legg

For the

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

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AWUNA TEST WELL NO. 1

INTRODUCTION

Awuna Test Well No. 1 is located 2,519 feet from the south line and 1,936 feet from the east line of protracted Section 30, Township 3 South, Range 25 West, of the Umiat Meridian (Latitude: 69°09'11.58" North; Longitude: 158°01'21.27" West), (Figure 1)*. Alaska State Plane Coordinates are X = 497,057.45 and Y = 5,539,587.38, Zone 6. Rig-up started on February 7, 1980, and the well was spudded on February 29, 1980. Drilling was suspended through the summer of 1980 from May 12 to December 2. The well was completed and the rig released on April 20, 1981. Elevations: Ground 1,103 feet; Kelly Bushing 1,127 feet.

The well was drilled to a total depth of 11,200 feet. The primary objectives were sandstones within the basal Torok Formation and the Fortress Mountain Formation. The well bottomed in the Fortress Mountain Formation. At the conclusion of drilling and evaluation operations, the well was plugged and abandoned.

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, Inc. was the drilling contractor; Parker Rig 95, a National 130, was used to drill the well.

* Original Survey Certificate carried 2524' FSL and 1945' FEL, but actual location was moved several feet when the rig was positioned.

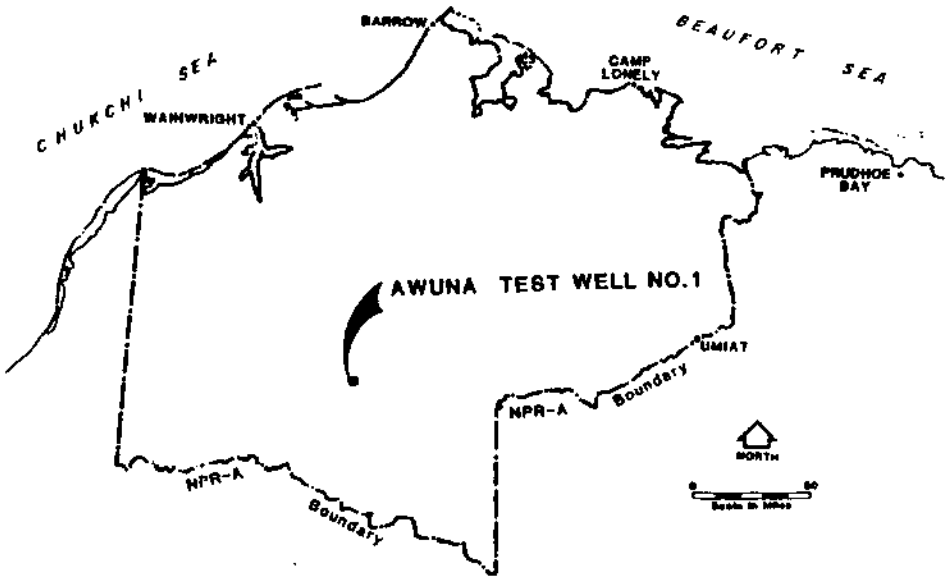

FIGURE 1 - WELL LOCATION MAP - AWUNA NO. 1

DRILLING SUMMARY

Field operations at the Awuna Test Well No. 1 were started on December 12, 1979, with the mobilization of construction crews and equipment required to build the drilling pad and an ice airstrip suitable for C-130 Hercules aircraft. Construction was completed on February 20, 1980.

Parker Rig 95 had been released at the Tunalik Test Well No. 1 on January 7, 1980. Operations were suspended awaiting completion of the ice airstrip at Awuna. The rig move from Tunalik to Awuna began on January 24, 1980, and was completed on February 17, 1980, utilizing C-130 Hercules aircraft. Rig-up started on February 7, 1980. A 30" conductor pipe was set at 108' and cemented with 450 sacks of Permafrost cement. The well was spudded February 29, 1980, at 12:00 midnight. A 29-1/2" Hydril was installed on the 30" conductor.

A 17-1/2" hole was drilled to 1514' with mud weight from 9.2 to 9.9 ppg. The following logs were run: DIL/GR/SP from 1505' to 116', BHC-Sonic/GR/TTI from 1496' to 116', and FDC/CNL/GR/CAL from 1502' to 116'. The 17-1/2" hole was opened to 26" with Grant Oil Tool hole openers to a depth of 1514'.

The hole was tight on the trip out prior to running casing, and a wiper trip was made. The mud weight was increased to 10.1 ppg, and mud viscosity was raised to 150 sec./qt. Thirty-six joints of 20", 133#/ft., K-55, 8rd, Range 3 casing were run to 1500', and cemented with 2,850 sacks of 14.8 ppg Permafrost II cement with full returns. The base plate was welded on and tested to 200 psi. The 20", 2,000 psi blowout-preventer stack (SRRA arrangement) and the 3,000 psi choke manifold were nippled up. The rams were tested to 1,500 psi, the Hydril to 1,000 psi, and the choke manifold and floor valves to 3,000 psi. Cement was drilled out of the casing to the float shoe and the casing tested to 1,400 psi over the mud weight (9.3 ppg). The shoe was drilled out to 1524' and the formation tested to a 0.478 psi/ft. equivalent gradient with no leakoff.

A 17-1/2" hole was drilled to 5300'. Stratigraphic cores were cut as follows: Core No. 1, 2447' to 2477', recovered 29.5'; and Core No. 2, 3664' to 3680', recovered 15'. Mud weight was raised throughout the interval from 9.3 ppg to 10.8 ppg to control tight-hole problems caused by overpressured shales. These problems included the following: tight-hole was experienced after trips and while making connections between 2777' and 3245'; the pipe was stuck at 3470' while reaming into the hole after a trip at 3555'; the drill string was twisted off while reaming tight hole at 3800' (successfully fished out); on a trip at 5143' the hole had to be reamed from 3995' to bottom.

At 5300' a decision was made to run 13-3/8" casing and suspend the well for the summer months. Wireline logs were run as follows: DIL/SP/GR from 1504' to 5288'; FDC/CNL/CAL/GR from 1504' to 5293'; BHC-Sonic/GR from 1504' to 5288'; and a Velocity Survey.

The 13-3/8" casing was run to 5292' with FOs at 1987' and 996' (128 joints, 72#/ft., S-95, BTC, Range 3). It was cemented with 600 sacks of Permafrost II and 2,000 sacks of 15.8 ppg Class "G" cement (0.5% CFR-2, 1.0% HR-7). Full returns were obtained throughout the cement job. The 13-3/8", 5,000 psi blowout preventer (SRRA arrangement) was nippled up and tested to 4,000 psi. In preparation for the second stage cement job, the FO at 996' was opened, the 13-3/8" x 20" annulus circulated, the FO closed and tested to 2,500 psi. The FO at 1987' was opened and 2,600 sacks of 14.8 ppg Permafrost II cement pumped away. The FO was then closed and tested to 2,000 psi. The upper FO at 996' was opened, cement circulated out, and closed and tested to 2,500 psi.

The 13-3/8" annulus was displaced with diesel to 2,000 feet to prevent freezing and casing collapse in the permafrost zone while the well was suspended. An inside blowout preventer was installed one stand below the floor and a safety valve installed on top. The slips were set, the pipe rams closed and rig-down was started. The rig was released on May 7, 1980 at 12:00 noon. Rig-down was completed, and all crews left the location on May 11, 1980, at 6:00 p.m.

On November 10, 1980, the Parker drilling crews returned to the Awuna Test Well No. 1 location to prepare for the 1980-81 winter drilling season. Construction operations on the drill pad and runway had begun on October 19, 1980, and continued through December 8, 1980. The rig was rigged up and drilling new hole resumed on December 5, 1980. Cement was cleaned out to the shoe and the 13-3/8" casing tested to 2,500 psi. The shoe was drilled out to 5305' and the formation pressure tested to a 0.832 psi/ft. equivalent gradient with no leak off.

A 12-1/4" hole was drilled to 8303'. Core No. 3 was cut from 6010' to 6040' with full recovery (30'). Higher than normal formation pressures were encountered throughout the interval. At 6344' the well started to flow on connections, consequently, the well was shut in (225 psi on drill pipe) and the mud weight brought up to 11.2 ppg from 10.4 ppg to control the well. The mud weight was gradually brought up to 12.5 ppg while drilling to 7048' where the mud was gas cut to 12.0 ppg. The mud was brought up to 14.5 ppg and drilling continued. The mud weight was increased with depth to 16.3 ppg at 8303', the planned 9-5/8" casing depth.

After conditioning the hole, Schlumberger wireline logs were run and sidewall cores obtained as follows: DLL/SP/GR from 5280' to 8299'; FDC/CNL/CAL/GR from 5280' to 8301'; BHC-Sonic/GR from 5280' to 8299'; HDT-Dipmeter from 5280' to 8303'; and Sidewall Cores (shot 30, recovered 6).

The 9-5/8" casing was run to 8297' (192 joints, 53.5#/ft., S-95, BTC, Range 3). The DV collar was at 5830' and the FO at 2118'. Cementing was completed in two stages. The first, at the shoe, consisted of 1,000 sacks of 16.4 ppg Class "G" cement (1% CFR-2, 0.17% HR-7). The second, through the DV collar at 5830', consisted of 1,300 sacks of 16.4 ppg Class "G" cement (1% CFR-2, 0.17% HR-7). After the cement had set,

an 11", 10,000 psi blowout-preventer stack (SRRA arrangement) was nippled up and the choke manifold and kill lines installed. All components were tested to 10,000 psi except the Hydril, which was tested to 5,000 psi. The casing was cleaned out to the float collar and tested to 3,000 psi. The shoe was drilled out to 8314' and the formation tested to a 0.962 psi/ft. equivalent gradient with no leakoff.

Drilling was resumed with an 8-1/2" bit, and 16.0 to 16.3 ppg mud weight was used to 8377'. Increased mud weight to 16.8 ppg and drilled to 8412'. Ran Drill-Stem Test No. 1 with Howco test tool, setting the packer at 8225' in the casing, with no water cushion. Opened tool, with fair blow increasing to strong blow; mud to surface in 56 minutes; water to surface in 65 minutes. Well flowed water at rate of 2,057 barrels per day, with 6,800 ppm chlorides. Flowed for three hours, with initial flow pressure of 2,948 psi and final flowing pressure of 3,848 psi. Shut-in for six hours with a final shut-in pressure of 7,132 psi. The initial hydrostatic pressure was 7,156 psi; the final was 7,322 psi. Pressures were taken from gauge number 3,341 at 8214'.

Resumed drilling 8-1/2" hole to 8573', with 16.8 ppg mud weight. At 8573', gas-cut mud was encountered, and the well was circulated through the choke while increasing the mud weight to 18.0 ppg to control the well. Drilling was resumed to 8872', where returns were lost while drilling with 18.0 ppg mud weight. Mixed and spotted lost-circulation material pill, and regained circulation. Resumed drilling with 17.9 ppg mud weight.

Lost circulation at 8893' with 17.9 ppg mud weight. Mixed Dia-Seal M pill and squeezed. Dia-Seal M, a diatomaceous earth product, was mixed at 23 to 26 pounds/barrel with 12 to 20 pounds/barrel of lost-circulation material. Pumped a total of 93 barrels of Dia-Seal M mix into formation, and drilled ahead to 8914'. Again lost circulation, "slugged" pipe with Barite pill, then drilled ahead to 9021' with 17.6 ppg mud weight. Drilled 8-1/2" hole from 9021' to 10,130', with mud weights from 16.6 to 17.1 ppg, losing returns at 9184', 9465', and 9798'.

At 9951' a 7-1/4" Neyrfor Turbodrill in conjunction with a diamond bit was utilized to increase the penetration rate. Drilled with Turbodrill to 10,123' where circulation was again lost. A Dia-Seal M squeeze was run and the well kicked after releasing squeeze pressure. The flow was stopped with 17.2 ppg mud weight, but resulted in lost circulation. The well was again squeezed with Dia-Seal M pill.

Severe lost circulation, followed by gas invasion of the borehole as the fluid level correspondingly dropped, finally forced a decision to cement-squeeze the open hole. This operation was performed to control the loss of returns and gas invasion prior to running a 7-5/8" liner. Ran Howco 9-5/8", E-Z drill cement retainer and set at 8193'. Squeezed with 1,200 sacks Class "G" cement containing 1% CFR-2, 7 pounds/sack Gilsonite and 0.1% HR-7, slurry weight of 15.8 ppg. Maximum pressure was 1,850 psi while pumping at 5 BPM; 850 psi was held on squeeze for five minutes after clearing retainer with cement.

Waited on cement for 18 hours, while tripping for bit, testing blowout-preventer equipment, and drilling cement retainer. Cement was drilled to 10,130' with mud losses of approximately 200 barrels. No problems with gas were encountered. After conditioning the hole, the well was logged. SP/GR/DIL/SFL logs were run from 8311' to 10,116' and BHC/GR from 8311' to 10,081'. These logs were run in tandem. Fifty-one joints of 7-5/8", 39 pound/foot, SOO-95, ABC FL4-S liner were run with a Brown Oil Tool type MC hydraulic set liner hanger. Shoe was located at 10,126', top of liner hanger at 7991', and top of tie-back sleeve at 7985'. Total length of the liner was 2140.88', with 312 feet of lap inside the 9-5/8" casing. Conditioned mud, with 80 to 90 percent returns; pumped 50 barrels of Cepeolite preflush weighing 17.0 ppg followed by 350 sacks of Class "G" cement containing 40% Silica Flour, 5 pounds/sack Gilsonite, 1% CFR-2, 0.3% HALAD-9, 0.2% HR-7, and 1/4 pound/barrel Flocele; slurry weight 15.2 ppg. Unable to bump plug after overdisplacing by five barrels. Squeezed 7-5/8" liner top with RTTS tool set at 7816'. Used 75 sacks of Class "G" cement containing 40% Silica Flour, 5 pounds/sack Gilsonite, 1% CFR-2, 0.3% HALAD-9, 0.2% HR-7, and 1/4 pound/barrel Flocele weighing 16.5 ppg. Pumped 40 sacks in open hole and 19 sacks in liner lap; left 16 sacks in the 9-5/8" casing.

Picked up 8-1/2" bit and drilled cement from 7920' to 7985', the top of the liner lap. Tested casing to 3,300 psi for 30 minutes. Picked up 6-1/2" bit and cleaned out liner to float. Tested to 3,000 psi for 30 minutes with no leakoff. Drilled ten feet of new hole (to 10,140') and tested formation to 0.8944 psi/ft. equivalent gradient (15.5 ppg mud weight plus 920 psi) with no leakoff. Increased mud weight to 15.6 ppg and resumed drilling. Picked up 5" Neyrfor Turbodrill at 10,192' with diamond bit and resumed drilling with rotary table at 48 RPM, bit at 900 to 1,000 RPM, and mud weight at 15.8 ppg. Drilled to 10,789' with Turbodrill and at that depth, because of a change in formation, reverted to a conventional tungsten carbide insert bit.

Drilled to 10,812' with insert bit; picked up Turbodrill and resumed drilling with diamond bit. Drilled to 11,122' with Turbodrill at which point bearing went out on turbo motor. Resumed drilling with insert bit with mud weight at 15.6 ppg. Drilled to 11,200' and conditioned to log. Ran HRT-Temperature from 100' to 11,185', and GR/SP/DIL/SFL from 10,119' to 11,187'; severe (7,000 pounds) drag was experienced with this log. Conditioned hole and resumed logging operations. Ran GR/BHC logs from 10,119' to 11,187'; GR/CAL/CNL/FDC logs from 10,119' to 11,193'; HRD-Dipmeter log from 10,119' to 11,150'; Birdwell Velocity Survey; and a second Temperature log. Shot 24 sidewall cores and recovered two.

Picked up 9-5/8" Howco E-Z drill cement retainer and set at 7868'. Pumped 150 sacks Class "G" cement containing 1% CFR-2 and 0.17% HR-7, 100 sacks below the retainer and left 50 sacks on top of retainer. Laid down drill pipe to 4000'. Displaced mud with water and water with diesel oil. The diesel oil was left in the wellbore across the permafrost interval to allow for the subsequent temperature logging operation planned by the USGS as part of an ongoing North Slope geothermal measurement program. The abandonment wellhead arrangement left on the well was also to accommodate this activity.

10

The abandonment head and marker were set, and the rig was released April 20, 1981, at 2:00 a.m. The rig, Parker 95, was demobilized to Deadhorse by C-130 Hercules aircraft over a period of eight days and was completed on April 27, 1981.

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

1a. TYPE OF WORK: DRILL ☒ DEEPEN ☐ PLUG BACK ☐

7. UNIT AGREEMENT NAME: N/A

b. TYPE OF WELL: OIL WELL ☒ GAS WELL ☐ OTHER Wildcat SINGLE ZONE ☐ MULTIPLE ZONE ☐

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

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

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

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

10. FIELD AND POOL, OR WILDCAT: Wildcat

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 2519' FSL; 1936' FEL
At proposed prod. zone: Same (straight hole)

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 30, T3S, R25W, UM

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 174 miles southeast of Barrow

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

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
253,440'	23,680,000	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**
401,280	15,000'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): Est 1103' Pad; Est 1127' KB

22. APPROX. DATE WORK WILL START*: February 20, 1980

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
	30"		± 100' KB	SEE
26"	20"	133# (K-55)	± 1500' KB	DRILLING
17 1/2"	13 3/8"	72# (S-95)	± 5500' KB	PROGRAM
12 1/4"	9 5/8"	53.5# (S-95)	± 8500' KB	FOR
8 1/2"	7 5/8"	39# (S-95)	± 13,000'	DETAILS AND
6 1/4"	5 1/2"	23#	± 15,000' TD	AMOUNTS

SEE DRILLING PROGRAM FOR DETAILED DRILLING PLAN

RECEIVED
ONSHORE DIST. OFFICE
JAN 29 1980
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

BOP PROGRAM

From ± 100' to ± 1500'
29 1/2", 500 psi annular diverter
From ± 1500' to 5500'
20", 3000 psi SRRA
w/5000 psi choke manifold

From ± 5500' to ± 8500'
13 5/8", 5000 psi SRSRRA
w/5000 psi choke manifold
From ± 8500' to ± 15,000' (TD)
13 5/8", 10,000 psi SRSRRA
w/10,000 psi choke manifold

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

24. SIGNED Max C. Brewer TITLE Chief of Operations DATE 28 January 80

(This space for Federal or State office use)

NO. _____ DATE _____

APPROVED BY Barry A. Bondurant TITLE DISTRICT SUPERVISOR DATE 2-28-80

CONDITIONS OF APPROVAL, IF ANY:

See attached conditions.

*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: 2519' FSL; 1936' 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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
1127' KB; 1103' Ground

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

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

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

RECEIVED
ONSHORE DIST. OFFICE
MAR 21 1980
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

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

This well was spudded February 29, 1980, at 12:00 midnight. Hole size at spud was 17 1/2". Thirty-inch conductor was cemented with 450 sacks Permafrost cement at 108' KB previous to spud.

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 20 March 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

David W. Boutwell TITLE DISTRICT SUPERVISOR DATE 3-24-80

*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: 2519' FSL; 1936' 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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
1127' KB; 1103' Ground

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) Change Plans - 20" BOPE			

RECEIVED
ONSHORE GAS OFFICE
MAR 17 1980

(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 approved drilling program for this well anticipated the use of a 20", 3000 psi SRRA BOP stack while drilling 17 1/2" hole from 1500' to ± 5500', the 13 3/8" casing depth. The availability of BOPEs requires us to use a 20", 2000 psi SRRA BOP stack. 3000 psi equipment was planned for to match the 20", 3000 psi base flange of the wellhead. Max formation fracture pressure to be incurred would be 1500 psi at 1500'. The Lisburne Test Well No. 1 used the 2000 psi BOP stack in equivalent hole size and depth. This variance of BOP equipment was discussed with Mr. Jim Weber of the USGS Department of Conservation on 3/14/80.

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

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

SIGNED J. Max Brewer TITLE Chief of Operations DATE 14 MARCH 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Wm James Weber ACTING DISTRICT SUPERVISOR DATE 3/14/80

*See Instructions on Reverse Side

Amended March 28, 1983

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

5. LEASE
N/A

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

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S., R25W., UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
1127' KB; 1103' Ground

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well [X] gas well [ ] other

2. NAME OF OPERATOR National Petroleum Reserve 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 below.)
AT SURFACE: 2519' FSL; 1936' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTIC 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 Cementi		

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly s including estimated date of starting any proposed work. If well measured and true vertical depths for all markers and zones perti

17 1/2" hole was drilled to 1510' and logged wi GR/CAL. Opened hole to 26" to 1514'. Conditio #/ft, 8rd ST&C, K-55 casing. Shoe at 1500'; co 1 on stop ring 10' above shoe, on collar number stab-in tool on DP. Conditioned to cement. Ce cement. 14.8 ppg slurry in and on returns. No 3/11/80. WOC 24 hours. Cut off 30" and 20". test weld to 200 psi. Nipple up BOP. Grout ne frost cement. CIP at 10:00 PM, 3/14/80. Test 3000 psi. Unable to run test plug through mudc cross. Measure test plug. Nipple up BOP stack blind rams and pipe rams. Test Hydril to 1000 of formation. Test formation to .478 psi/ft eq Drilling ahead 17 1/2" hole.

Subsurface Safety Valve: Manu. and Type

SIGNED: TITLE Chief of Op

Conforms with pertinent provisions of 30 CFR 221.

(This space for Federal or State
DISTRICT SU
TITLE

*See Instructions on Reve

ng 20" Casing

tate all pertinent details, and give pertinent dates, s directionally drilled, give subsurface locations and ent to this work.)*

th DIL/GR/SP, BHC-Sonic/GR/TTI, FDC/CNL/ ed hole. Ran 36 joints of 20", 133 llar at 1453'. Ran 9 centralizers, s 2, 3, 4, 6, 8, 10, 12, 14. Ran ented with 2850 sacks Permafrost lost circulation. CIP at 2:00 PM, Weld on McEvoy 20" base plate and cellar floor with 120 sacks Perma- choke manifold and floor valves to ross. Nipple down BOP. Measure mud Test to 1500 psi on casing and on si. Drill out cement, shoe, and 10' ivalent gradient. No leak off.

Set @ Ft.

erationsDATE

office use)
PERVISOR
DATE

e Side

Amended March 28, 1983

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: 2519' FSL; 1936' 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.: Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 30, T3S, R25W, UM

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

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB AND WD): 1127' KB; 1103' Ground

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 & Cementing 13 3/8" 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.)*

Seventeen and one-half inch hole was drilled to 5300'. The hole was logged with DIL/SP/GR, CNL/FDC/CAL/GR, BHC-Sonic/GR, Velocity Survey. Conditioned hole for casing. Ran 128 joints 13 3/8", S-95, 72 #/ft Buttress casing. Shoe at 5292'. Float collar at 5211'. FOs at 1987' and 996'. Circulated and conditioned. Cemented with 30 bbls water, 600 sacks Permafrost cement at 14.8 ppg, 2000 sacks Class G with .5% CFR-2 and 1.0% HR-7 at 15.8 ppg. Displaced with 72 bbls mud, duplex style job. CIP 7:45 PM, 5/3/80. Final pressure: 600 psi. WOC. Landed casing with 340,000#. Cut 13 3/8" casing. Nipplied down 20" stack. Installed 13 3/8" X 20" spool. Tested to 1500 psi. Nipplied up 13 5/8", 5000 psi stack. Tested to 4000 psi. RIH with FO assembly. Circulated FO at 996'. Closed and tested to 2500 psi. Circulated FO at 1987'. Closed and tested to 2500 psi. Cemented lower FO with 2600 sacks Permafrost cement mixed at 14.8 ppg. Returns

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

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

SIGNED _____ TITLE Chief of Operations DATE _____

Conforms with pertinent provisions of 30 CFR 221.

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ACTING
TITLE DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

at 2400 sacks pumped. Final returns weight: 14.7 ppg. Pumped 5 BPM. Closed FO. Reversed DP. Tested to 2500 psi. WOC 12 hours. POH. Total WOC: 24 hours. Tested BOPE to 4000 psi and casing to 2500 psi. CIP at 8:00 PM, 5/5/80. The casing will not be drilled out this season.

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: 2519' FSL; 1936' 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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
1127' KB; 1103' Ground

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 Suspend Well			

(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.)*

Thirteen and three-eighths inch casing has been run and cemented in the Awuna Test Well No. 1. The winter drilling season is almost over, so the well is to be suspended until the next drilling season. Attached are the schematics of the wellbore and the BOP stack. The drill pipe will be run to ± 2000' and the mud changed to diesel. The inside BOP will be one stand down and double valves on the surface. All annulus valves will be closed and the pipe rams closed on the drill pipe. The BOP stack and casing have been pressure tested. This plan has been discussed with and verbally approved by Mr. Jim Weber.

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 May 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

TITLE _____ DATE _____

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ gas well ☐ other

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

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

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 2519' FSL; 1936' 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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
1127' KB; 1103' Ground

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 Suspension			

(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.)*

Drilling operations at Awuna Test Well No. 1 were suspended as of 12:00 noon, 5/7/80. The well was suspended with 13 3/8" casing run 5292' in 5300' of 17 1/2" hole. The casing was cemented and pressure tested. Drill pipe was run to a depth of 2000'. The top 2000' was changed over to non freezing diesel. The inside BOP was placed one stand below surface and two valves were installed on the surface. The pipe rams were closed on the drill pipe. All annulus valves were secured and the rig drained for suspension. All Operations personnel left the location at 6:00 PM, 5/11/80. This well will be reactivated during the 1980-81 drilling season.

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

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

SIGNED _____ TITLE Chief of Operations DATE 15 May 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

_____ TITLE _____ DATE _____

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ gas well ☐ other

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

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

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 2519' FSL; 1936' 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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

12. COUNTY OR PARISH
North Slope

13. STATE
Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Est 1103'; 1127' 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.)*

Awuna Test Well No. 1 will be re-entered approximately December 1, 1980. The re-entry program is attached. Hole will be drilled out with 12 1/4" bit to ± 8500' and 9 5/8" casing set. Drilling will continue with 8 1/2" bit to ± 13,000', where 7 5/8" casing will be set. Drilling will continue with 6 1/4" bit to proposed TD of ± 15,000'.

RECEIVED

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 [signature] TITLE Chief of Operations DATE 28 November 80

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

_____ TITLE _____ DATE _____

*See Instructions on Reverse Side

AWUNA TEST WELLL NO. 1
RE-ENTRY PROGRAM

1. After reactivating Parker Rig 95, mix and condition mud to 10 ppg, 675 bbls useable volume. (Final amount to be mixed after diesel and Arctic Pack cleaned from wellbore.)

2. Check for pressure on BOP stack. In the event of pressure, notify the Anchorage Drilling Department. Check manifold, pipe rams, and blowdown line.

3. Pull one stand. Remove inside BOP lower string to 2010'. (Note cement bridge at 2013')

4. Rig up safety valve; displace diesel with mud to burn pit, approximately 300 bbls. Do not exceed 2000 psi in attempt to break circulation. Control rate of burn by pumping rate. Make note and log wind direction and velocity during burning. Note time displacement is started. When returns are established, shut down as soon as returns are primarily mud. Switch to circulate through mud tanks. Be sure to clear flare and blowdown lines. Fill choke manifold with 60/40 mixture glycol and water.

5. POH. Remove wear rings; install test plug. Test BOPE to 5000 psi and Hydril to 2500 psi. Install wear ring.

6. Make up 12 1/4" bit, 3-10 jets. Strap in hole to top of float collar. Pressure test casing to 2500 psi. (13 3/8", 72#, S-95 Buttress: Burst- 6390 psi; collapse- 3470 psi. If any leak, notify the Drilling Department.

7. Drill out duplex collar, float shoe, and 10 feet of formation. Test formation to equivalent gradient of 0.832 psi/ft. During this test, pressure up slowly 1/4 - 1/2 BPM. Record volume pumped vs pressure. Should leak off or rupture occur, discontinue test and report leak off pressure.

8. Resume to previously outlined Drilling Program, Section VI, 12 1/4" HOLE TO INTERMEDIATE CASING POINT (± 8500').

RECEIVED
DEPUTY CONSERVATION MGR.
OVSHORE MINERALS
NOV 2 8 1980
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ gas well ☐ other

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

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

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 2519' FSL; 1936' 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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

12. COUNTY OR PARISH
North Slope

13. STATE
Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Pad: 1103'; KB: 1127'

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 Reentry			☐

(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 reentered on December 5, 1980, with a 12 1/4" bit. Prior to reentry, mud was conditioned, cement was drilled, 5198'-5240'; 13 3/8" casing was pressure tested to 2500 psi for 30 minutes; and cement was drilled, 5240'-5292'. Five feet of new formation was drilled to 5305'. Formation was tested to an equivalent gradient of 0.832 psi/ft with 10 ppg mud at a pressure of 1650 psi with no leak off.

RECEIVED
DEPUTY CONSERVATION MGR.
ONSHORE MINERALS

JAN 1 - 1981

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 _____ TITLE Chief of Operations DATE 12 January 81

(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

Amended March 28, 1983

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: 2519' FSL; 1936' 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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Est Pad: 1103'; KB: 1127'

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

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.)*

Twelve and one-fourth inch hole was drilled to 8303' and logged with DIL/GR/SP, BHC/GR, CNL/FDC/GR/CAL, and HDT. Ran 192 joints of 9 5/8", 53.5#, S-95 buttress casing. Landed float shoe at 8297'; float collar set at 8215'. Set DV at 5830' and FO at 2118'. Set one centralizer 10 feet above shoe and additional centralizers at 8167', 8085', 8003', 5914', 5872', 5788', 5746', 5279', 5237', 2160', and 2076'. Cemented first stage with 1000 sacks Class "G" cement with 1% CFR-2 and 0.17% HR-7 at 16.4 ppg. CIP 1/27/81 at 8:45 AM. Pumped 1300 sacks Class "G" cement through DV. Second stage CIP 1/28/81 at 1:45 AM. Tested BOP and choke manifold to 10,000 psi. Drilled DV collar. Tested casing to 3000 psi. Drilled out float collar and shoe. Drilled to 8314'. Pressure tested formation to 950 psi with 16.3 ppg mud; equivalent 18.5 ppg mud.

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

SIGNED _____ TITLE Chief of Operations DATE _____

Conforms with pertinent provisions of 30 CFR 221.

(This space for Federal or State office use)
TITLE DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

Amended March 28, 1983

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

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: 2519' FSL; 1936' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same (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.: Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 30, T3S, R25W, UM

12. COUNTY OR PARISH: North Slope

13. STATE: Alaska

14. API NO.: N/A

15. ELEVATIONS (SHOW DF, KDB, AND WD): Pad: 1103', KB: 1127 (est)

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 drilling plan called for 8 1/2" hole to be drilled to 13,000'. Due to lost circulation and salt water flow, a decision was made to set a 7 5/8" liner at an approximate depth of 10,130'.

Verbal approval was received from Jim Weber, USGS, on 3/16/81.

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

SIGNED _____ TITLE Chief of Operations DATE _____

Conforms with pertinent provisions of 30 CFR 221.

(space for Federal or State office use)

TITLE DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

Amended March 28, 1983

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: 2519' FSL'; 1936' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same (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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
Pad: 1103'; KB: 1127'

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 5/8" Liner

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.)*

Set Howco EZ drill cement retainer at 8193'. Squeezed 1200 sacks Class "G" cement with 1% CFR-2 plus 7#/sack Gilsonite plus 0.1% HR-7 at 15.8 ppg. Drilled cement to 10,130'. Circulated and cleaned hole. Logged with SP/GR/DIL/SFL and BHC/GR. Ran 51 joints of 7 5/8", S-95, 39#/ft ABC FL4S liner, with shoe at 10,126'. Cemented with 350 sacks cement with 40% silica, 5#/sack Gilsonite, 1% CFR-2, 0.3% Halad 9, 0.2% HR-7 plus 1/4 PPB Flocele mixed at 15.2 ppg. No returns during cement job. Squeezed liner lap to 3000 psi with 75 sacks cement as above at 16.5 ppg. Pressure tested liner lap to 3300 psi with no leak off. Tested 7 5/8" liner to 3000 psi. Drilled cement, float collar, and float shoe. Drilled to 10,140'. Ran leak off test with 15.5 ppg mud at 920 psi (equivalent of 17.2 ppg mud).

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

SIGNED _____ TITLE Chief of Operation DATE _____

Conforms with pertinent provisions of 30 CFR 221.

(This space for Federal or State office use)

_____ TITLE _____ DATE _____

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ gas well ☐ other

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

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

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 2519' FSL; 1936' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same (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.
Awuna Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS SHOW DF, (DB AND WD)
KB: 1127'; Ground: 1103'

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,

Amended March 28, 1983

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: 2519' FSL; 1936' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same (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.: Awuna Test well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 30, T3S, R25W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD): Pad: 1103'; KB: 1127' (Est)

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)			

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

Drilled 6 1/2" hole to 11,200'. Ran the following logs: Temperature, 11,185' to 100'; Sonic, 11,187' to 10,119'; DIL, 11,186' to 10,119'; FDC/CNL, 11,193' to 10,119'; Dipmeter, 11,193' to 10,119'; Temperature, 11,160' to 100'; Birdwell Velocity Survey at 11,170' and 6180'. Shot sidewall cores, 11,150' to 10,139'. Fired 24 shots; recovered two cores. Set Howco E-Z Drill cement retainer at 7868'. Pumped 150 sacks Class "G" cement with 1% CFR-2 and 0.17% HR-7 at 15.8 ppg below E-Z Drill and 50 sxs above. Displaced top 4000 feet of hole with diesel. Installed abandonment marker. Released rig April 20, 1981, at 2:00 AM.

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

SIGNED _____ TITLE Chief of Operations DATE _____

Conforms with pertinent provisions of 30 CFR 221.

(This space for Federal or State office use)

TITLE _____ DATE _____

ACCEPTED
DISTRICT SUPERVISOR

*See Instructions on Reverse Side

Amended March 28, 1983

Form 9-330
(Rev. 5-63)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

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

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

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

7. UNIT AGREEMENT NAME: N/A

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

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

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

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

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

10. FIELD AND POOL, OR WILDCAT: Wildcat

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface: 2519' FSL; 1936' FEL
At top prod. interval reported below
At total depth: Same (straight hole)

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec 30, T3S, R25W, UM

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
N/A	N/A	North Slope Borough, AK	

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
2/29/80	4/15/81	N/A	Pad: 1103'; KB: 1127'	N/A

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
11,200'	7868'	N/A	→	0'-TD	N/A

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, CNL/FDC/GR/CAL, DIL/SP/GR, CNL/FDC/GR/Cal, BHCS/GR, DIL/GR/SP, BHCS/GR/TTI, HRT, BHC/GR/TTI, DI/SFL/GR/SP, FDC/CNL/GR/Cal, Dipmeter, HRT Temperature

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"	196.08#(X-47)	108'	36"	350 Sx Permafrost	None
20"	133# (K-55)	1500'	26"	2850 Sx Permafrost	None
13 3/8"	72# (S-95)	5292'	17 1/2"	600 Sx Pmfst; 2000 Sx "G"	None
9 5/8"	53.5# (S-95)	8297'	12 1/4"	2300 Sx Class "G" in 2 stage	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
7 5/8"	7985'	10,126'	350 "G"	N/A

30. N/A TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

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

32. N/A ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33.* N/A PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
		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.)

TEST WITNESSED BY

35. LIST OF ATTACHMENTS: Wellbore Schematic

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

SIGNED _____ TITLE Chief of Operations, ONPRA DATE _____

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

Awuna Test Well No. 1
Well Completion Report
Page 2

Amended March 28, 1983

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.)

33. 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

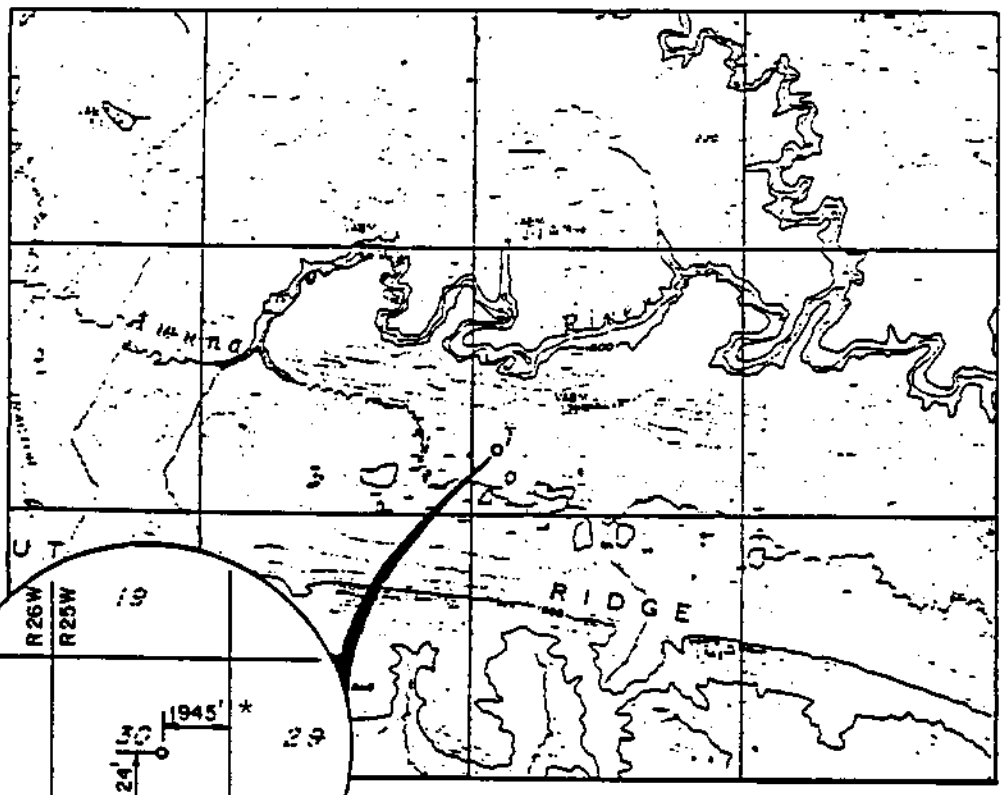
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
CORED INTERVALS			
No. 1 Torok Formation	2447'	2477'	Interbedded Ss & Sh, no porosity, no hydrocarbons.
No. 2 Torok Formation	3664'	3680'	Ss: (3 ft) No porosity, no hydrocarbons, grading to Sh: gray, w/siltstone.
No. 3 Torok Formation	6010'	6040'	Sh: w/plant frags, irregular fractures, no hydrocarbons.
DRILL STEM TEST			
No. 1 Fortress Mtn	8297'	8412'	Test of apparent fractured Fortress Mtn Ss & Sh. No cushion. IHP 7156 psi, opened for 188 min, mud to surface in 56 min, water TS in 65 min at 2057 BPD, ISP 3115 psi, FFP 3885 psi shut in for 375 min, FSIP 7136, FHP 7327 psi. Recovered 17[illegible] bbl muddy salt water at 6800 ppm Cl_2.

35. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Torok Sh	Surface	
Fortress Mtn Formation	7886'	

U.S. GOVERNMENT PRINTING OFFICE 1983—O 409030

877-755



Computed location based on data from Barr Automated Surveys, Inc. to Husky Oil NPR Operations, Inc. dated Aug. 11, 1979, a copy of which is on file with Tectonics, Inc., Anchorage, AK.

AWUNA 5-80

LAT. = 69° 09' 11.58"
LONG. = 158° 01' 21.27"
Y = 5,539,587.38
X = 497,057.45
ZONE 6

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.

0 2 4 6
SCALE MILES

STATE OF ALASKA
49TH
James B. Roberts
No. 3260-S
REGISTERED PROFESSIONAL LAND SURVEYOR

AS STAKED

AWUNA TEST WELL No. 1

LOCATED IN

SE 1/4 PROTRACTED SEC. 30, T3S, R25W, UMIAT MERIDIAN, AK.

SURVEYED FOR

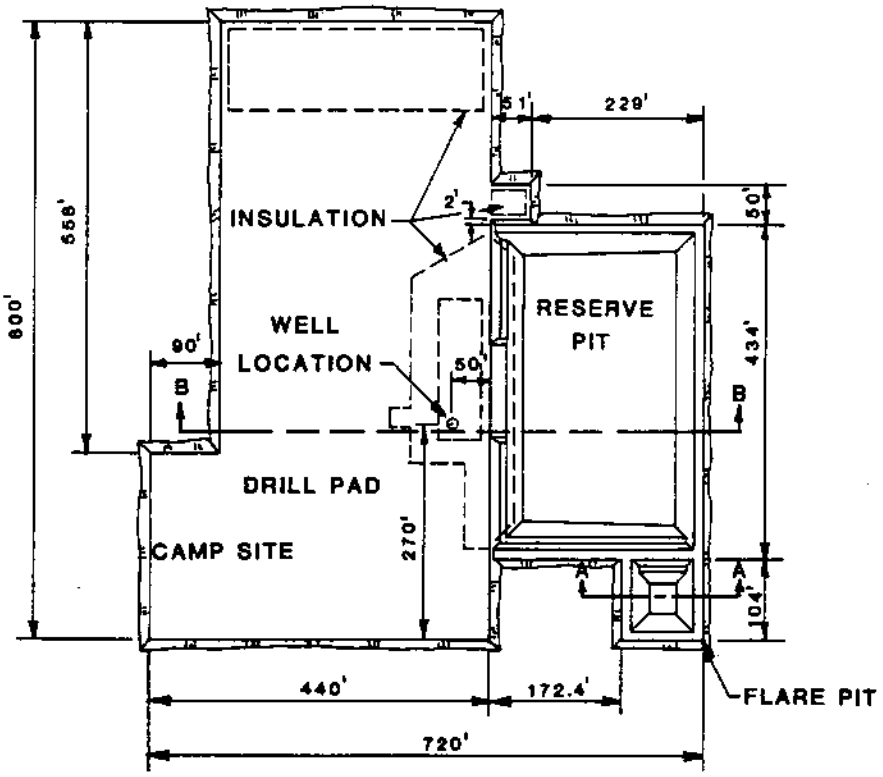
HUSKY OIL

N.P.R. OPERATIONS, INC.

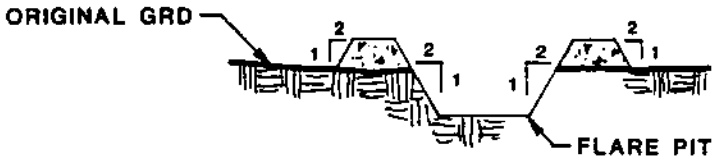
TECTONICS INC.

P.O. BOX 4-2265, ANCHORAGE, AK 99509

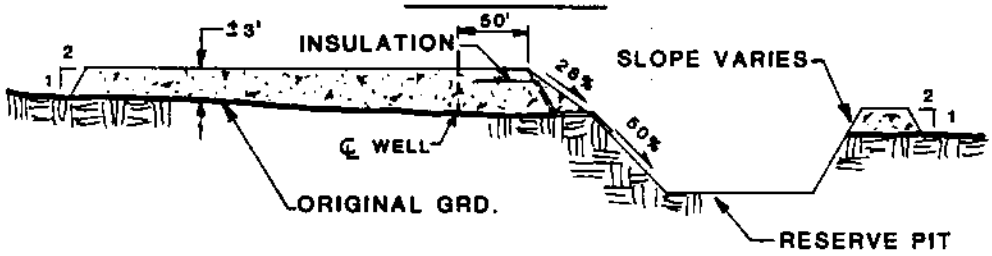
* These figures represent the original surveyed location. Actual location was moved to 2519' FSL and 1936' FEL in order to accommodate a different drilling rig than was previously scheduled.



PLAN VIEW



SECTION A-A



SECTION B-B

AWUNA DRILL PAD

OPERATIONS HISTORY

DATE AND FOOTAGE DRILLED AS OF 6:00 A.M.	ACTIVITY
2/29/80	Performed general rig-up. Set thirty-inch conductor at 108' and cemented with 100 sacks Permafrost cement mixed at 15 ppg. Cement was in place at 11:00 p.m. Mixed spud mud.
3/1/80 100'	Total Depth: 208'; Mud Weight: 8.7; Viscosity: 55. Finished general rig-up. Topped off 30" conductor with 350 sacks Permafrost cement. Spudded well February 29, 1980, at 12:00 midnight. Drilled ahead.
3/2/80 439'	TD: 647'; MW: 9.2; Vis: 65. Drilled to 261'. Circulated and cleaned hole; dropped survey. Pulled out of hole; picked up bottom-hole assembly. Ran in hole; tight at 145'. Laid down 10" drill collar. Reamed to 261'. Pulled out of hole; picked up drill collar and bottom-hole assembly. Drilled to 647'. Circulated hole; laid down three 8" drill collars; tight. Ran in hole with stand of 8" drill collars in derrick.
3/3/80 496'	TD: 1143'; MW: 9.4; Vis: 73. Drilled to 742'; surveyed. Drilled to 929'; surveyed. Serviced rig. Drilled to 1143'; surveyed. Pulled out of hole; dragged from 1143' to 800'. Changed bottom-hole assembly. Ran in hole; hit bridge at 876'. Washed and reamed.
3/4/80 339'	TD: 1482'; MW: 9.9; Vis: 65. Washed and reamed from 876' to 1143'. Drilled to 1212'; surveyed. Drilled to 1275'; surveyed. Drilled to 1338'; surveyed. Drilled to 1400'; surveyed. Drilled ahead.
3/5/80 32'	TD: 1514'; MW: 9.9; Vis: 80. Drilled to 1510'; circulated and conditioned hole; dropped survey. Rigged up to log. Ran DIL/GR/SP, BHCS/GR/TTI, and FDC/CNL/GR/CAL. Rigged down logging [illegible] laid down 25 joints of drill pipe. Made up bit and opener.
3/6/80 0'	TD: 1514'; MW: 9.9; Vis: 78. Began op[illegible] 17-1/2" hole to 26".
3/7/80 0'	TD: 1514'; MW: 9.9; Vis: 80. Opened ho[illegible] 877'; pulled out of hole. Ran in hole; reamed to [illegible] Opened hole to 1109'; hole tight on connection.

3/8/80 0'	TD: 1514'; MW: 9.9; Vis: 82. Opened hole to 1310'.
3/9/80 0'	TD: 1514'; MW: 9.8; Vis: 75. Opened hole to 1416'; surveyed. Pulled out of hole.
3/10/80 0'	TD: 1514'; MW: 10.0; Vis: 150. Reamed and washed to 1416'. Opened hole to 1514'; circulated; tight hole. Pulled out of hole to 400'; bridges at 1144', 1328', and 1452'. Washed and reamed, 1484' to 1514'; heavy returns. Circulated and built viscosity.
3/11/80 0'	TD: 1514'; MW: 10.1; Vis: 150. Circulated and conditioned mud. Short tripped; had one foot of fill. Surveyed. Ran 36 joints of 20" casing and set at 1500'; collar at 1453'; centralizers as per program. Ran in hole with stab-in tool.
3/12/80 0'	TD: 1514'; MW: 10; Vis: 90. Ran in hole; stabbed into collar. Circulated and conditioned mud. Cemented 20" casing with 20 barrels water and 2,850 sacks of Permafrost cement at 14.8 ppg. Returns: 14.8 ppg; no lost returns. Cement in place 3/11/80 at 2:00 p.m. Pulled out of hole; waited on cement and nippled down diverter system.
3/13/80 0'	TD: 1514'; MW: 8.6; Vis: 53. Waited on cement. Cut off 20" and 30" casing. Began welding on 20" base plate. Cleaned pits and mixed mud.
3/14/80 0'	TD: 1514'; MW: 8.6; Vis: 51. Continued with welding base plate; nippled up.
3/15/80 0'	TD: 1514'; MW: 8.6; Vis: 60. Completed welding base plate; tested to 200 psi. Nippled up 20" blowout preventer. Grouted cellar with 120 sacks Permafrost cement. Cement in place 3/14/80 at 10:00 p.m.
3/16/80 0'	TD: 1514'; MW: 8.6; Vis: 59. Nippled up 20" blowout-preventer stack. Tested choke manifold and floor valves to 3,000 psi. Unable to get test plug through blowout-preventer stack. Removed mud spool.
3/17/80 0'	TD: 1514'; MW: 9.0; Vis: 200. Nippled up; tested blind rams to 1,500 psi. Ran in hole; tested pipe rams to 1,500 psi; tested Hydril to 1,000 psi. Top of cement at 1375'. Drilled cement to 1453'. Tested casing to 1,400 psi. Drilled cement to 1470'.
3/18/80 90'	TD: 1604'; MW: 9.3; Vis: 43. Drilled cement to 1500'; cleaned out to 1514'. Drilled to 1524'. Tested formation to 0.478 psi/ft. equivalent gradient (14 ppg). Drilled to 1604'; pulled out of hole.

3/19/80 116'	TD: 1720'; MW: 9.5; Vis: 70. Strapped in hole; had 15 feet of fill. Drilled to 1718'; surveyed; drilled to 1720'.
3/20/80 107'	TD: 1827'; MW: 9.5; Vis: 54. Drilled to 1730'; surveyed; pulled out of hole. Changed bottom-hole assembly; ran in hole. Drilled to 1809'; surveyed. Drilled ahead.
3/21/80 58'	TD: 1885'; MW: 9.6; Vis: 50. Drilled to 1841'; surveyed. Pulled out of hole. Tested blowout-preventer equipment. Picked up bottom-hole assembly and 10" drill collar. Ran in hole to 1685'; reamed to 1841'. Drilled ahead.
3/22/80 353'	TD: 2238'; MW: 9.9; Vis: 44. Surveyed. Drilled to 1948' (tight hole); surveyed. Drilled to 2043'; surveyed. Drilled to 2200'; surveyed. Drilled ahead.
3/23/80 67'	TD: 2305'; MW: 10.0; Vis: 51. Drilled to 2262'; surveyed. Pulled out of hole; cleaned and magnafluxed bottom-hole assembly. Laid down two 8" drill collars. Ran in hole; bridges at 2060' to 2110' and 2215' to 2262'. Drilled ahead.
3/24/80 142'	TD: 2447'; MW: 9.9; Vis: 56. Drilled to 2322'; surveyed. Drilled to 2353'; surveyed. Drilled to 2416'; surveyed; resurveyed. Drilled to 2447'; circulated samples; surveyed. Pulled out of hole. Made up core barrel for Core No. 1.
3/25/80 30'	TD: 2477'; MW: 9.9; Vis: 48. Modified core barrel; ran in hole. Cut Core No. 1, 2447' to 2477'. Pulled out of hole; recovered 29.5 feet of core. Picked up new bottom-hole assembly. Ran in hole; reamed to 2447'.
3/26/80 223'	TD: 2700'; MW: 10.0; Vis: 60. Reamed 8-1/2" core hole to 2477'. Drilled to 2494'; serviced rig. Drilled to 2525'; surveyed. Drilled to 2588'; surveyed. Drilled to 2680'; surveyed. Drilled ahead.
3/27/80 135'	TD: 2835'; MW: 10.1; Vis: 54. Drilled to 2746'; surveyed. Drilled to 2777'; surveyed. Pulled out of hole; ran wear bushing. Ran in hole; reamed from 2746' to 2777'; had 15' of fill. Drilled ahead.
3/28/80 100'	TD: 2935'; MW: 10.0; Vis: 50. Drilled to 2840'; surveyed. Drilled to 2886'; surveyed. Dropped survey tool down drill pipe; tripped for tool. Tested blowout-preventer equipment. Ran in hole; drilled to 2935'; began surveying.

3/29/80 187'	TD: 3122'; MW: 10.0; Vis: 53. Drilled to 3027'; surveyed. Drilled to 3035'; circulated for samples; drilled ahead.
3/30/80 95'	TD: 3217'; MW: 10; Vis: 54. Drilled to 3217'; surveyed; circulated for samples. Pulled out of hole; changed bottom-hole assembly. Ran in hole.
3/31/80 128'	TD: 3345'; MW: 10; Vis: 54. Reamed to 3217'. Drilled to 3245'; worked tight hole; surveyed. Drilled ahead.
4/1/80 151'	TD: 3496'; MW: 10.1; Vis: 56. Drilled to 3372'; surveyed. Drilled to 3466'; surveyed. Drilled ahead.
4/2/80 59'	TD: 3555'; MW: 10.2; Vis: 57. Drilled to 3555'; surveyed; pulled out of hole. Ran in hole; reamed to 3490'. Had high torque; pipe became stuck. Worked and jarred on pipe.
4/3/80 44'	TD: 3599'; MW: 10.2; Vis: 52. Worked stuck pipe at 3470'; pipe came loose. Pulled out of hole to 3425'; reamed to 3555'. Drilled ahead.
4/4/80 65'	TD: 3664'; MW: 10.2; Vis: 57. Drilled to 3654'; surveyed. Drilled to 3664'; circulated samples. Short tripped five stands. Circulated. Pulled out of hole; picked up core barrel. Ran in hole to 3610'; washed to 3664'.
4/5/80 39'	TD: 3703'; MW; 10.2; Vis: 56. Cut Core No. 2, 3664' to 3680'. Pulled out of hole; recovered 15 feet of core. Tested blowout-preventer equipment. Ran in hole; reamed 16 feet to bottom. Drilled ahead.
4/6/80 96'	TD: 3799'; MW: 10.2; Vis: 52. Drilled to 3799'; surveyed. Pulled out of hole. Changed bottom-hole assembly. Ran in hole.
4/7/80 130'	TD: 3929'; MW: 10.2; Vis: 52. Ran in hole to 3708'; reamed to 3799'; had 30 feet of fill. Drilled to 3842'; surveyed. Drilled to 3906'; surveyed. Drilled to 3929'.
4/8/80 111'	TD: 4040'; MW: 10.2; Vis: 57. Drilled to 3967'; surveyed. Drilled to 4040'.
4/9/80 66'	TD: 4106'; MW: 10.2; Vis: 56. Drilled to 4062'; surveyed. Drilled to 4091'; surveyed. Pulled out of hole. Ran in hole to 4000'; reamed to 4091'. Drilled ahead.

4/10/80 86'	TD: 4192'; MW: 10.2; Vis: 57. Drilled to 4186'; surveyed. Drilled to 4192'.
4/11/80 77'	TD: 4269'; MW: 10.2; Vis: 53. Drilled to 4251'; surveyed; misrun. Drilled ahead.
4/12/80 14'	TD: 4283'; MW: 10.3; Vis: 57. Drilled to 4283'; surveyed. Pulled out of hole; tested blowout-preventer equipment. Picked up new bottom-hole assembly and ran in hole to 3750'. Reamed and washed to 3800'. Torqued up. Drill pipe pin pulled out leaving fish (bottom-hole assembly and 19 stands of 4-1/2" drill pipe) in hole. Picked up fishing tools.
4/13/80 0'	TD: 4283'; MW: 10.2; Vis: 48. Ran in hole with fishing tools; didn't tag fish. Pulled out of hole. Ran in hole with fishing tools; engaged fish at 751'. Jarred two hours on fish; fish came free. Pulled out of hole; laid down fish and tools. Ran in hole with drilling assembly.
4/14/80 0'	TD: 4283'; MW: 10.3; Vis: 45. Ran in hole, laying down bent drill pipe, to 3758'. Reamed to 4267'.
4/15/80 76'	TD: 4359'; MW: 10.3; Vis: 60. Reamed to 4283'. Drilled to 4354'; surveyed. Drilled ahead.
4/16/80 120'	TD: 4479'; MW: 10.3; Vis: 55. Drilled; surveyed. Drilled ahead.
4/17/80 35'	TD: 4514'; MW: 10.3; Vis: 50. Drilled; surveyed. Drilled; tested blowout-preventer equipment. Ran in hole to 4215'; reamed.
4/18/80 25'	TD: 4539'; MW: 10.2; Vis: 47. Reamed to 4514'; drilled ahead.
4/19/80 68'	TD: 4607'; MW: 10.2; Vis: 62. Drilled to 4540'; surveyed. Pulled out of hole; installed wear bushing. Ran in hole; reamed 60 feet to bottom. Drilled to 4607', repaired rig.
4/20/80 123'	TD: 4730'; MW: 10.4; Vis: 58. Completed repairs. Drilled to 4662'; surveyed. Drilled ahead.
4/21/80 75'	TD: 4805'; MW: 10.5; Vis: 56. Drilled to 4756'; surveyed. Drilled to 4805'; surveyed. Pulled out of hole.
4/22/80 81'	TD: 4886'; MW: 10.6; Vis: 56. Pulled out of hole. Ran in hole to 4749'; tight. Reamed to 4805'. Drilled to 4860'; circulated samples. Drilled ahead.

4/23/80 119'	TD: 5005'; MW: 10.6; Vis: 46. Drilled to 4943'; surveyed. Drilled ahead.
4/24/80 127'	TD: 5132'; MW: 10.6; Vis: 52. Drilled; surveyed. Drilled ahead.
4/25/80 11'	TD: 5143'; MW: 10.7; Vis: 52. Drilled; surveyed. Pulled out of hole; tight at 3911'. Ran in hole; tight. Reamed from 3980'.
4/26/80 0'	TD: 5143'; MW: 10.9; Vis: 59. Reamed to 4000' with high torque; hole began packing off. Pulled out of hole. Ran in hole; reamed from 4000' to 4040' with high torque. Worked pipe and reamed.
4/27/80 4040' 0'	TD: 5143'; MW: 10.8; Vis: 90/145. Reamed from to 4345'. Raised viscosity to 130.
4/28/80 8'	TD: 5151'; MW: 10.8; Vis: 115. Reamed and washed from 4335' to 4428'. Circulated hole clean. Pulled out of hole to 3963'. Ran in hole five stands; reamed to 5083'. Ran in hole three stands; reamed to 5143'. Drilled ahead.
4/29/80 64'	TD: 5215'; MW: 10.8; Vis: 105. Drilled; surveyed; drilled ahead.
4/30/80 75'	TD: 5290'; MW: 10.9; Vis: 95. Drilled; surveyed; short tripped. Ran in hole; drilled ahead.
5/1/80 10'	TD: 5300'; MW: 10.8; Vis: 110. Drilled to 5300'; circulated for logs. Rigged up Schlumberger unit and ran GR/SP/DIL, GR/CAL/CNL/FDC, and GR/BHCS.
5/2/80 0'	TD: 5300'; MW: 10.8; Vis: 110. Ran velocity survey. Ran in hole with bottom-hole assembly to 5210'; reamed to 5300'. Circulated; short tripped to 3500'. Ran in hole; no fill. Pulled out of hole; changed rams and tested.
5/3/80 0'	TD: 5300'. Tested blowout-preventer equipment. Rigged up to run casing. Ran 128 joints of 13-3/8", 72#, S-95 BTC casing and set at 5292'. Ran in hole with drill pipe. Stabbed into duplex collar; circulated. Rigged to cement. Shoe at 5292'; collar at 5211'. FO's at 1987' and 996'.
5/4/80 0'	TD: 5300'; MW: 10.8; Vis: 70. Cemented with 30 barrels of water, 600 sacks of Permafrost cement, and 2,000 sacks Class "G" with 0.5% CFR-2 and 1% HR-7. Slurry weight: 15.8 ppg. Displaced with 72 barrels mud. Cement in place 5/3/80 at 7:45 p.m. Waited on cement.

5/5/80 0'	TD: 5300'; MW: 10.8; Vis: 70. Waited on cement. Landed casing with 340,000 pounds. Nippled down 20" blowout preventer; installed spool; began nippling up 13-5/8", 5,000 psi blowout-preventer stack.
5/6/80 0'	TD: 5300'; MW: 9.6; Vis: 45. Finished nippling up 13-3/8" blowout preventer; tested to 4,000 pounds. Ran in hole with FO assembly. Opened and circulated FO at 996'; closed and tested to 2,500 psi. Opened and circulated lower FO at 1987'; closed and tested to 2,500 psi. Opened FO, set RTTS. Increased pressure to 500 psi on annulus. Pumped 30 barrels of water. Mixed and pumped 2,600 sacks Permafrost cement. Followed with two barrels of water and 26 barrels of mud. Cement in place 5/5/80 at 8:00 p.m. Closed FO and tested to 2,000 psi. Reversed out drill pipe; pulled to top FO. Waited on cement. Pumped 14.8 slurry at 5 BPM; had cement returns after 2,400 sacks at 14.7 ppg. Final pressure: 700 pounds.
5/7/80 0'	TD: 5300'. Waited on cement. Pulled out of hole; laid down excess drill pipe and drill collars. Tested blowout-preventer equipment to 4,000 psi. Ran in hole to 2013'; hit cement bridge. Pulled out of hole; laid down drill pipe. Ran in hole to 2000'.
5/8/80 0'	TD: 5300'. Displaced mud to water; displaced water to diesel. Placed inside blowout preventer one stand from surface. Installed kelly cock, drill-pipe pin, and surface valve. Closed rams. Released rig May 7, 1980, at 12:00 noon. SUMMER SUSPENSION - May 9, 1980, through December 2, 1980.
12/3/80 0'	TD: 5300'; MW: 10; Vis: 47. Picked up bottom-hole assembly. Thawed snow out of 4-1/2" drill pipe and heavy-weight drill pipe. Ran in hole to 2003'; hard cement from 2020' to 2030'. Ran in hole to 2649'; drilled cement from 2649' to 2670'. Circulated mud out at 2690'. Ran in hole; picked up drill pipe.
12/4/80 0'	TD: 5300'; MW: 10; Vis: 46. Finished picking up drill pipe; tagged up at 5198'. Circulated hole clean; surveyed. Circulated and conditioned mud.
12/5/80 5'	TD: 5305'; MW: 10; Vis: 44. Circulated and conditioned mud; drilled cement from 5198' to 5240'. Circulated bottoms up. Tested 13-3/8", 72# casing to 2,500 psi for 30 minutes; held OK. Drilled cement from 5240' to 5292'. Opened hole to 5300'. Drilled

	from 5300' to 5305'. Circulated bottoms up; tested formation to equivalent of 0.832 gradient. Tested with 10 pounds mud at 1,650 psi; held OK; no leak off.
12/6/80 41'	TD: 5346'; MW: 10; Vis: 47. Circulated while rigging up Exploration Logging unit. Drilled from 5305' to 5331'. Lost 700 psi. Pulled out of hole for washout; found bit washed out in weld in jet container. Changed bit. Ran in hole; drilled from 5331' to 5346'.
12/7/80 175'	TD: 5521'; MW: 10; Vis: 48. Drilled from 5346' to 5351'; surveyed. Drilled from 5351' to 5413'; surveyed. Drilled from 5413' to 5475'; surveyed. Drilled to 5521'.
12/8/80 121'	TD: 5642'; MW: 10; Vis: 51. Drilled from 5521' to 5570'; surveyed. Drilled from 5570' to 5601'; surveyed. Pulled out of hole; checked blowout preventer. Made up bit; ran in hole. Drilled to 5642'.
12/9/80 168'	TD: 5810'; MW: 10; Vis: 49. Drilled from 5642' to 5666'; surveyed. Drilled from 5666' to 5754'; surveyed. Drilled ahead.
12/10/80 53'	TD: 5863'; MW: 10; Vis: 46. Drilled from 5810' to 5820'; surveyed. Drilled from 5820' to 5863'. Twisted off; pulled out of hole. Found jars parted in body. Waited on grapple and fishing tool. Picked up fishing tools; ran in hole with 10-5/8" overshot; engaged fish at 5369'. Pulled out of hole with wet string.
12/11/80 73'	TD: 5936'; MW: 10; Vis: 46. Pulled out of hole; laid down fish and fishing tools. Changed bit; laid down one steel drill collar. Picked up new set of jars. Ran in hole with two jets plugged. Unplugged jets. Drilled from 5863' to 5884'; surveyed. Drilled to 5936'.
12/12/80 74'	TD: 6010'; MW: 10; Vis: 47. Drilled from 5936' to 5947'; surveyed. Drilled from 5947' to 6010'; surveyed. Pulled out of hole; picked up core barrel; ran in hole.
12/13/80 30'	TD: 6040; MW: 10; Vis: 46. Finished running in hole with core barrel; circulated; dropped ball. Cut Core No. 3, 6010' to 6040'. Pulled out of hole, steel line measuring; no correction. Laid down core; had full recovery. Serviced and laid down core barrel. Tested blowout preventer to specifications. Picked up bottom-hole assembly.

12/14/80
4'

TD: 6044'; MW: 10.2; Vis: 48. Ran in hole; washed and reamed from 5950' to 6040'. Drilled from 6040' to 6044'. Pulled out of hole; lost one pad on second string reverse wear pad. Serviced rig; installed new pad on reverse wear pad. Cut off 90 feet of drilling line. Waited on fishing tools. Made up 12-1/4" reverse globe basket.

12/15/80
1'

TD: 6045'; MW: 10.2; Vis: 47. Ran in hole with globe basket; attempted to work over fish. Pulled out of hole; no recovery. Serviced rig. Picked up 12-1/4" mill and junk basket. Ran in hole; milled on fish from 6044' to 6045'. Pulled out of hole with mill and laid it down; had excessive wear on mill. Made up 12" OD magnet and ran in hole.

12/16/80
3'

TD: 6048'; MW: 10.3; Vis: 48. Finished running in hole with magnet; worked magnet. Pulled out of hole; recovered 4" x 3" particle of junk. Serviced rig; made up 12-1/4" x 12" OD globe basket. Ran in hole; cut core over fish, 6045' to 6048'. Pulled out of hole; recovered junk in junk basket. Recovered six inches of clean cut formation with broken core on top. Laid down fishing tools. Ran in hole with bit.

12/17/80
195'

TD: 6243'; MW: 10.4; Vis: 52. Finished running in hole; washed and reamed, 5988' to 6048'. Worked junk basket. Drilled from 6048' to 6119'; surveyed. Drilled to 6243'.

12/18/80
101'

TD: 6344'; MW: 10.7; Vis: 44. Drilled to 6258'. Pulled out of hole; changed bit; removed junk basket. Ran in hole; washed and reamed from 6213' to 6258'. Drilled to 6275'. Repaired pump relief valve. Drilled to 6344'; well began to flow. Shut well in; had 225 psi on stand pipe. Mixed kill mud to 11.2.

11/19/80
116'

TD: 6460'; MW: 11.6; Vis: [illegible]. [illegible] built kill weight to 11.2; circulated through choke. We stabilized. Drilled to 6350'; circulated; sample Drilled to 6360'; circulated samples. Drilled to 6367 surveyed; Drilled ahead.

12/20/80
87'

TD: 6547'; MW: 11.8; Vis: 44. Drilled to 6495 ran survey. Drilled to 6547'; dropped survey Pulled out of hole; changed flange on bottom of doub gate. Tested blowout-preventer equipment.

12/21/80
0'

TD: 6547'; MW: 12; Vis: 44. Finished testin blowout-preventer equipment. Lower rams faile changed rubbers; held OK. Made Cameron quic

	change; clamps failed; retightened; held OK. Ran in hole; reamed from 6490' to 6540'. Rotary clutch went out. Circulated and conditioned mud; raised weight to 12 pounds. Pulled out of hole 14 stands into shoe. Circulated and conditioned mud. Waited on clutch parts.
12/22/80 55'	TD: 6602'; MW: 12; Vis: 44. Repaired rotary clutch. Ran in hole; reamed from 6490' to 6547'. Drilled ahead.
12/23/80 114'	TD: 6716'; MW: 12.5; Vis: 41. Pulled out of hole. Drilled to 6714'; surveyed. Repaired back brake. Drilled to 6716'; pulled out of hole.
12/24/80 78'	TD: 6794'; MW: 12.5; Vis: 42. Pulled out of hole; changed bit. Ran in hole to shoe; cut off drilling line. Ran in hole to 6656'; reamed to 6700'. Repaired draw works gear shift. Reamed to 6715'. Drilled ahead.
12/25/80 108'	TD: 6902'; MW: 12.6; Vis: 44. Drilled to 6839'; surveyed. Drilled ahead.
12/26/80 19'	TD: 6921'; MW: 12.6; Vis: 44. Drilled to 6921'; surveyed. Pulled out of hole into shoe. Repaired draw works; finished pulling out of hole. Changed bit. Ran in hole to 6830'. Washed and reamed from 6830' to 6921'.
12/27/80 62'	TD: 6983'; MW: 12.7; Vis: 47. Drilled to 6938'; tripped. Washed and reamed from 6910' to 6938'. Drilled to 6983'; circulated drilling break from 6977' to 6983'.
12/28/80 65'	TD: 7048'; MW: 13.3; Vis: 44. Drilled to 7048'. Mud weight: 12.7; cut to 12; raised to 12.7 to 12.9. Background gas: 400 units. Dropped survey. Pulled out of hole to shoe; hole not taking proper mud. Ran in hole; circulated and conditioned mud; raised weight to 13.2. Background gas: 375 units.
12/29/80 0'	TD: 7048'; MW: 14.5; Vis: 49. Built mud weight to 13.2 to 13.5. Pulled to shoe; hole not taking proper mud. Checked for flow; light flow. Ran in hole; raised mud weight to 14.5. Pulled out of hole; laid down lead collar. Changed bit; picked up shock sub.
12/30/80 95'	TD: 7143'; MW: 14.5; Vis: 46. Ran in hole; washed 27 feet to bottom. Drilled to 7082'; surveyed. Drilled ahead.

12/31/80 72'	TD: 7215'; MW: 14.6; Vis: 46. Drilled to 7215'; surveyed. Tripped for new bit. Well flowed lightly while out of hole. Circulated and conditioned mud while installing new logging unit.
1/1/81 121'	TD: 7336'; MW: 15.1; Vis: 51. Rigged up new logging unit. Circulated mud; built mud weight to 14.5 to 15.0. Drilled to 7239'; surveyed. Drilled to 7336'.
1/2/81 38'	TD: 7374'; MW: 15; Vis: 47. Drilled to 7374'. Pumped five singles out of hole. Pulled out of hole. Tested blowout preventer to specifications. Repaired rotary clutch. Tripped in hole with bit.
1/3/81 68'	TD: 7442'; MW: 15.3; Vis: 49. Built mud weight in suction pit to 14.9. Finished running in hole. Washed and reamed from 7199' to 7374'; had 20 feet of fill. Drilled ahead.
1/4/81 136'	TD: 7578'; MW: 15.3; Vis: 47. Drilled to 7485'; serviced rig. Drilled ahead.
1/5/81 30'	TD: 7608'; MW: 15.4; Vis: 49. Drilled to 7588'; surveyed. Spotted lost-circulation material pill on bottom. Pulled out of hole; first six joints tight; pumped out. Ran in hole to bottom casing. Cut drilling line. Finished running in hole; washed and reamed from 7509' to 7586'. Drilled ahead.
1/6/81 89'	TD: 7697'; MW: 15.4; Vis: 50. Drilled to 7642'; serviced rig. Drilled ahead.
1/7/81 19'	TD: 7716'; MW: 15.4; Vis: 47. Drilled to 7700'; spotted 50-barrel lost-circulation material pill and dropped survey. Pulled out of hole; circulated at 4410'. Pulled out of hole and changed bit and jars. Tripped in hole; washed and reamed from 7640' to 7700'. Drilled ahead.
1/8/81 103'	TD: 7819'; MW: 15.4; Vis: 53. Drilled to 7759'; serviced rig. Drilled ahead.
1/9/81 55'	TD: 7874'; MW: 15.4; Vis: 52. Drilled to 7874'; spotted 50-barrel lost-circulation material plug. Pulled out of hole; tight; pumped out nine joints. Last 60 feet required one-half hour per joint.
1/10/81 0'	TD: 7874'; MW: 15.4; Vis: 54. Pulled out of hole; tripped in with bit. Reamed from 7616' to 7694'. Worked on rotary clutch. Pulled out of hole into casing. Worked on rotary clutch.

1/11/81 0'	TD: 7874'; MW: 15.4; Vis: 54. Repaired rotary clutch. Ran in hole; washed and reamed from 7724' to 7844'.
1/12/81 24'	TD: 7898'; MW: 15.4; Vis: 54. Reamed from 7844' to 7874'. Drilled to 7882'. Made five-stand wiper trip. Drilled to 7894'; checked bit. Drilled to 7898'; dropped survey. Pulled out of hole; tested blowout preventer to specifications. Ran in hole with bit.
1/13/81 53'	TD: 7951'; MW: 15.2; Vis: 54. Tripped in hole; reamed from 7835' to 7898'. Drilled to 7905'. Serviced rig. Drilled to 7930'. Short tripped; no drag; no fill. Drilled ahead.
1/14/81 25'	TD: 7976'; MW: 15.5; Vis: 59. Drilled to 7953'. Had 25-barrel gain; mud weight cut to 13.5. Circulated and conditioned; built weight to 15.4. Chloride increased from 200 ppm to 700 ppm. Drilled to 7961'; dropped survey. Pulled out of hole; no drag. Serviced rig. Picked up boot basket and ran in hole. Drilled to 7976'.
1/15/81 25'	TD: 8001'; MW: 15.5; Vis: 60. Drilled to 7995'; dropped survey. Pulled out of hole; no drag. Changed bit; ran in hole to casing shoe. Cut drilling line. Finished running in hole to 7956'; reamed to 7995'. Drilled to 8001'. Repaired compound oiler chain.
1/16/81 53'	TD: 8054'; MW: 15.7; Vis: 59. Drilled to 8026'. Short tripped six stands; no drag. Serviced rig; repaired oiler system and compound. Drilled to 8054'.
1/17/81 10'	TD: 8064'; MW: 15.8; Vis: 55. Drilled to 8060'. Circulated; raised mud weight to 15.8. Dropped survey. Pulled out of hole 15 stands; hole not taking proper fluid. Ran in hole to bottom; circulated bottoms up. Pulled out of hole; inspected bottom-hole assembly. Ran in hole; reamed 60 feet. Drilled to 8064'.
1/18/81 25'	TD: 8089'; MW: 15.8; Vis: 49. Drilled to 8087'; pulled out of hole. Tested blowout preventer and pipe and blind rams to 5,000 psi; tested Hydril to 3,500 psi; tested choke, manifold, kelly cock, floor safety valve, and Swaco choke to 5,000 psi. Ran in hole; drilled ahead.
1/19/81 41'	TD: 8130'; MW: 15.8; Vis: 52. Drilled to 8130'; surveyed. Pulled out of hole.

1/20/81 43'	TD: 8173'; MW: 15.8; Vis: 51. Finished pulling out of hole; changed out jars and shock sub. Ran in hole with bit. Drilled to 8153'; serviced rig. Drilled ahead.
1/21/81 44'	TD: 8217'; MW: 15.9; Vis: 54. Drilled to 8180'. Short tripped five stands; no drag; no fill. Drilled to 8207'; surveyed. Pulled out of hole; serviced rig. Ran in hole with bit; drilled ahead.
1/22/81 50'	TD: 8267'; MW: 16; Vis: 47. Drilled to 8231'; serviced rig; worked connections. Drilled to 8267'; surveyed. Pulled out of hole.
1/23/81 32'	TD: 8299'; MW: 16.1; Vis: 45. Finished pulling out of hole. Changed bits; started in hole with new bit. Serviced rig; cut off 96 feet of drilling line. Finished running in hole. Safety reamed from 8207' to 8267'. Drilled ahead.
1/24/81 4'	TD: 8303'; MW: 16.3; Vis: 47. Drilled to 8303'; circulated. Made wiper trip to casing shoe; no drag. Circulated and conditioned mud to log. Pulled out of hole; tight at 7057'. Reamed from 7027' to 7087'. Ran in hole to 7864'; hit bridge. Reamed from 7860' to 7904'. Ran in hole to 7940'. Attempted to ream; unable to get through bridge. Slugged pipe. Pulled out of hole to change bit; changed bit and ran in to clean up hole.
1/25/81 0'	TD: 8303'; MW: 16.3; Vis: 46. Ran in hole to 7895'. Washed and reamed from 7895' to 7990' and from 8228' to 8303'. Circulated and conditioned for logging. Made 18-stand short trip; circulated bottoms up. Pulled out of hole, steel-line measuring; no corrections. Rigged up Schlumberger unit; ran DiL/GR/SP.
1/26/81 0'	TD: 8303'; MW: 16.3; Vis: 46. Ran CNL/FDC/GR/CAL, BHCS/GR, and HDT-Dipmeter. Shot 30 sidewall cores; recovered 6.
1/27/81 0'	TD: 8303'; MW: 16.3; Vis: 46. Ran in hole to casing shoe. Cut off 80 feet of drilling line. Replaced brake band. Finished running in hole; washed four feet of fill from 8299' to 8303'. Circulated bottoms up. Pulled out of hole; laid down two reverse wear pad shock subs. Tested blind and pipe rams to 5,000 psi; changed and installed 9-5/8" casing ram. Tested blowout preventer doors to 3,500 psi. Rigged up 9-5/8" casing tool to run 9-5/8" casing. Made up shoe, two joints of float collar with bypass baffle, and one joint of insert baffle.

1/28/81 0'	TD: 8303'; MW: 16.3; Vis: 48. Ran 192 joints of 9-5/8" casing; shoe at 8297', float collar at 8215', DV at 5830', and FO at 2118'. One centralizer ten feet above shoe at 8287' and at 8167', 8085', 8003', 5746', 5788', 5914', 5872', 5237', 5278', 2160', and 2076' (total of 12 centralizers). Circulated casing. Rigged up Halliburton unit; cemented casing with 1,000 sacks Class "G" cement with 1% CFR-2 and 0.17% HR-7; slurry weight: 16.4 ppg. Displaced with 584 barrels mud; bumped plug with 3,000 psi. Released pressure; held OK. Cement in place at 8:45 p.m. Dropped opening plug; opened DV. Circulated through DV. Mixed and pumped 1,300 sacks Class "G" with 1% CFR-2 and 0.17% HR-7. Slurry weight: 16.4 ppg. Displaced with 441 barrels mud. Bumped plug with 2,500 psi. Plug down at 1:45 a.m. Rigged down casing tools; began nippling down blowout preventer.
1/29/81 0'	TD: 8303'; MW: 16.3; Vis: 48. Nippled down 5,000 pound blowout preventer stack. Landed tubing spool. Secondary seal tested to 5,000 psi. Installed and began nippling up 10,000 pound blowout-preventer stack.
1/30/81 0'	TD: 8303'; MW: 16.3; Vis: 47. Nippled up 10,000 pound blowout-preventer stack. Dismantled and set out 5,000 pound choke manifold. Installed 10,000 pound choke manifold and began nippling same.
1/31/81 0'	TD: 8303'; MW: 16.3; Vis: 49. Laid down 8" drill collar; finished rigging up choke manifold. Rigged up test equipment and tested blowout preventer. Tested upper and lower pipe rams and blind rams. Checked all valves and choke manifold to 10,000 psi; tested Hydril to 5,000 psi. Rigged down test equipment; installed bowl protector.
2/1/81 0'	TD: 8303'; MW: 16.3; Vis: 49. Picked up drilling assembly. Ran eight stands drill pipe and laid down 13 joints. Ran in to 4562'. Installed rubber on drill pipe (one per stand). Broke circulation. Ran in hole to DV collar; drilled DV collar. Ran in hole to float and rubber drill pipe. Pressure tested casing to 3,000 psi. Drilled rubber plug.
2/2/81 13'	TD: 8316'; MW: 16.3; Vis: 49. Pressure tested upper and lower kelly valves and inside blowout preventer to 10,000 psi. Tested upper kelly cock; failed at 6,800 psi. A new kelly cock was ordered as a replacement. Pulled out of hole, steel-line measuring, corrected 12 feet. Changed bottom-hole assembly.

	Ran in hole to 8198'. Drilled out float collar at 8216'; drilled cement; drilled shoe at 8297'. Drilled to 8314'. Circulated and conditioned mud. Leak off tested with 16.3 mud. Pressured up with 950 psi; held OK. Drilled ahead.
2/3/81 46'	TD: 8362'; MW: 16; Vis: 46. Drilled to 8353'; dropped survey. Pulled out of hole; changed bit. Ran in hole; drilled ahead.
2/4/81 15'	TD: 8377'; MW: 16.6; Vis: 47. Drilled to 8377'; picked up. Checked for flow; well flowing. Shut well in; no pressure buildup. Circulated bottoms up. Background gas in: 60-3800; mud weight: 14 ppg. Shut well in. SIDPP: 240; casing: 440. Put on choke; circulated with 16.2 mud. Shut in well. SIDPP: 110; casing: 110. Mixed mud and thawed stand pipe. Circulated over choke; checked for flow. Circulated with Hydril open.
2/5/81 35'	TD: 8412'; MW: 16.8; Vis: 47. Circulated bottoms up. Drilled to 8412'. Made five-stand wiper trip. Conditioned for Drill-Stem Test No. 1. Dropped survey; pulled out of hole. Made up Halliburton test tools; ran in hole with test tools.
2/6/81 0'	TD: 8412'; MW: 16.8; Vis: 50. Rigged up test head and lines; pressure tested to 10,000 psi. Opened tool at 2:44 p.m.; flowed for three hours. Mud to surface in 56 minutes; water to surface in 65 minutes. Produced at a rate of 2,057 barrels per day; water had 6,800 ppm chloride. Reversed out water. Rigged down test head and lines. Picked up kelly; circulated through Halliburton bypass.
2/7/81 19'	TD: 8431'; MW: 16.8; Vis: 47. Circulated and helped mechanic. Released RTTS; circulated bottoms up. Slugged pipe; pulled out of hole. Laid down test tools. Ran in hole with drilling assembly. Washed and reamed from 8303' to 8412'. Drilled ahead.
2/8/81 47'	TD: 8478'; MW: 16.8; Vis: 48. Drilled to 8478'; circulated and slugged pipe. Surveyed; pulled out of hole. Performed rig maintenance. Replaced oil pump in compound. Finished pulling out of hole; changed upper kelly cock. Rigged up to test blowout-preventer equipment.
2/9/81 8'	TD: 8486'; MW: 16.8; Vis: 49. Tested upper and lower kelly cocks, safety valves, and inside blowout preventer to 10,000 psi. Pulled wear bushing; changed hydraulic fluid in accumulator and lines.

	Pressure tested upper pipe rams, lower pipe rams, blind rams, choke manifold, and valves to 10,000 psi; tested Hydril to 5,000 psi. Ran in hole with drilling assembly to bottom of casing. Cut off drilling line. Laid down excess drill pipe out of derrick. Reamed 8430' to 8478'. Drilled ahead.
2/10/81 60'	TD: 8546'; MW: 16.8; Vis: 46. Drilled to 8546'. (Drilled with two engines; one engine down for installation of power takeoff shaft.)
2/11/81 27'	TD: 8573'; MW: 17.5; Vis: 48. Drilled. Circulated bottoms up at 8573'; well kicked. Circulated through choke while increasing mud weight from 16.8 to 17.3 ppg. At 7:30 p.m., after pumping 17.2 ppg, SIDPP was 20 psi and SICP was 60 psi. Continued circulating; increased mud weight to 17.3 ppg. Tripped up into 9-5/8" casing. Rigged up No. 2 motor and put same on line (installed shaft and chains). Ran in hole to 8573'; began circulating at 8573' with 17.5 ppg.
2/12/81 22'	TD: 8595'; MW: 18.0; Vis: 50. Circulated and conditioned mud at 8573'; dropped survey and pulled out of hole. Ran in hole with bit; reamed 10 feet to bottom. Drilled to 8582'; circulated a drilling break. Drilled ahead.
2/13/81 55'	TD: 8650'; MW: 18.0; Vis: 52. Worked on pump line. Drilled to 8626'. Blew down kelly and pulled four stands of drill pipe. Serviced rig; tripped to bottom. Obtained reduced pump rate; drilled ahead.
2/14/81 52'	TD: 8702'; MW: 18.0; Vis: 55. Drilled to 8685'; serviced rig. Drilled ahead.
2/15/81 60'	TD: 8762'; MW: 18.0; Vis: 49. Drilled to 8719'; mud cut to 17.1 at 8707'. Serviced rig; drilled to 8728'. Short tripped four stands; no drag; no fill. Drilled ahead.
2/16/81 18'	TD: 8780'; MW: 18.0; Vis: 48. Drilled to 8771'; circulated bottoms up; surveyed. Pulled out of hole with bit; laid down 18 joints of drill pipe. Tested blowout preventers. Cleaned out kill line. Ran in hole with bit; had four feet of fill. Drilled to 8780'. Mud cut to 17.1 with bottoms up.
2/17/81 65'	TD: 8845'; MW: 18.0; Vis: 52. Repaired pump. Drilled to 8817'; serviced rig. Drilled ahead.

2/18/81
27'

TD: 8872'; MW: 18.0; Vis: 54. Drilled to 8872'; drilled last foot at 12 minutes per foot. Lost partial returns. Mixed and pumped lost-circulation material pill; no returns after pumping 100 barrels. Pumped 50 barrels with 80 percent returns. Pulled six stands into 9-5/8" casing. Building mud-volume, spotted lost-circulation pill. Total mud lost this date, 350 barrels.

2/19/81
21'

TD: 8893'; MW: 17.9; Vis: 55. Built volume in pits; hole standing full. Circulated bottoms up; full returns. Ran in hole to 8850'; washed 22 feet to bottom; no fill. Drilled from 8872' to 8893' with partial returns. Lost 20 to 30 BPH first six hours. Last two hours lost 60 to 70 BPH. Lost circulation at 60 BPH. Pulled seven stands. Built volume in pits; hole took 6 to 10 BPH. Total mud lost: 450 barrels.

2/20/81
0'

TD: 8893'; MW: 17.9; Vis: 54. Built mud volume in mud tanks. Hole took 5 to 8 BPH. Pulled out of hole; laid down jars and bit. Tripped in hole with open-ended drill pipe (no drill collars) to 8288'. Circulated with 50 percent returns for 40 minutes. Blew down and stood back kelly. Mixed Dia-Seal M squeeze. Hole took 8 BPH. Had problem mixing; checked mixing system; suction to mixing pumps was clogged. Lost 185 barrels mud during last 24 hours.

2/21/81
21'

TD: 8914'; MW: 17.9; Vis: 73. Mixed Dia-Seal M squeeze pill to 18.1 ppg. Hole took 8 to 10 BPH. Pumped and squeezed with Dia-Seal M. Slurry volume: 115 barrels. Initial pressure as Dia-Seal M started into formation was 600 psi. After 20 barrels into formation, pressure increased to 650 psi. Pumped a total of 93 barrels Dia-Seal M into formation in seven stages (stages varied 5 to 30 barrels) at 2.5 BPM. Maximum waiting time between stages was five minutes. Injection pressure to pump into formation increased for each subsequent stage. Final squeeze pressure of 520 psi was held for 15 minutes. Conditioned mud in pits to 18 ppg. Held 300 psi on squeeze. Had gas-cut mud at surface. Circulated through fully open Swaco choke with mud returns gas cut. Circulated with full returns. Tripped out with open-ended drill pipe. Picked up bit and three 6-1/2" drill collars. Tripped in hole. Reamed out Dia-Seal M squeeze from 8850' to 8893'. Drilled ahead with full returns.

2/22/81
35'

TD: 8949'; MW: 17.6; Vis: 68. Drilled to 8939'. Began losing mud at 8925' at rate of 30 BPH. Mud loss increased to 100 barrels during last hour of drilling with 50 percent returns. Slugged pipe with

	Bar pill. Pulled seven stands of drill pipe. Built mud volume in tanks. Hole took 15 BPH for 2-1/2 hours. Loss decreased to 5 to 8 BPH during last four hours. Tripped to bottom with seven stands of drill pipe. Drilled to 8949'. Lost 300 barrels of 17.7 ppg mud. Slugged pipe with Bar pill. Pulled seven stands of drill pipe. Built volume in mud tank. Hole stood full. Lost 650 barrels of mud last 24 hours.
2/23/81 72'	TD: 9021'; MW: 17.2; Vis: 58. Built mud volume in tanks; hole stood full. Tripped in hole with seven stands of drill pipe; no fill. Drilled to 8966'. Resumed drilling with 17.5 ppg mud. After 2-1/2 hours, decreased mud to 17.3 ppg. Lost 25 barrels mud while breaking circulation. Lost 70 BPH during first two hours drilling, then loss decreased to 25 BPH for next three hours. Shut down to check well for flow; well flowed slightly. Serviced rig. Drilled to 9021' with full returns. Decreased mud to 17.2 ppg. Checked well for flow at 6:00 p.m. Had slight flow of 14 BPH. No increase in background gas. Formation apparently giving back mud previously lost. Total mud loss during last 24 hours was 225 barrels.
2/24/81 131'	TD: 9152'; MW: 17.1; Vis: 55. Drilled to 9060' with full returns. Decreased mud weight to 17.1 ppg. Serviced rig; drilled to 9152'. Dropped steel ball at 10:50 p.m. to plug one jet of bit; depth 9091'. Drilling rate immediately increased from 4.8 to 7.4 FPH. No loss of mud during past 24 hours.
2/25/81 113'	TD: 9265'; MW: 17.0; Vis: 60. Drilled to 9184'; lost 50 barrels of mud while drilling. Short tripped nine stands to 9-5/8" casing; no flow. Serviced rig; tripped to bottom. Installed drill-pipe rubbers. Drilled to 9265'. Mud was cut to 16.8 ppg from short trip.
2/26/81 106'	TD: 9371'; MW: 17.0; Vis: 66. Drilled to 9310'; serviced rig. Drilled to 9371'; no mud lost past 24 hours.
2/27/81 94'	TD: 9465'; MW: 16.9; Vis: 60. Drilled to 9403'; serviced rig. Drilled to 9465'; lost mud from 9462' to 9465'. Lost 65 barrels with 20 to 30 percent returns. Mixed and pumped lost-circulation material pill; had 25 percent returns while pumping. Lost 120 barrels. Pulled out of hole, steel-line measuring. Lost 90 barrels of mud while pulling out of hole. Rigged up for blowout-preventer test. Total mud lost during last 24 hours was 275 barrels.

2/28/81 0'	TD: 9465'; MW: 16.9; Vis: 48. Tested blowout preventer; checked manifold, blind rams, and lower pipe rams to 7,000 psi. Tested upper pipe rams to 8,500 psi; tested Hydril and upper kelly cock to 5,000 psi. Lower kelly cock leaked at 1,900 psi. Swaco unit would not test; made repairs to Swaco choke. Required 25 barrels to fill hole after test. Ran in hole to 8275' at 50 feet per minute. Changed out jars and shock sub on trip in. No returns after four stands of drill collars in hole. Took 70 barrels of mud to fill hole on trip in. Cut 96 feet off drilling line. Hole took 10 barrels while cutting drilling line. Serviced rig. Attempted to circulate; pumped 70 barrels with 100 percent returns. Built volume; mixed lost-circulation material pill. Ran in hole to 9301'; no returns. Pumped lost-circulation material pill; had 85 percent returns after 10 minutes. Pulled out of hole to casing shoe; hole tight at 9100'; had 50,000 pounds drag. Built mud volume; hole standing full.
3/1/81 0'	TD: 9465'; MW: 16.9; Vis: 58. Built mud volume. Circulated; lost 60 barrels at 15 percent returns. Cleaned pit; mixed 176 barrels Dia-Seal M with 22 pounds per barrel lost-circulation material at 17.1 ppg. Squeezed with bit at 8275'; 170 barrels squeezed in stages. Maximum pump pressure at 32 SPM; 925 psi. Final squeeze: 250 psi. Held 250 psi on squeeze. Circulated and built volume in pits.
3/2/81 72'	TD: 9537'; MW: 16.6; Vis: 55. Circulated and conditioned mud; ran in hole to 9020'. Cleaned out and washed from 9020' to 9465'. Drilled ahead.
3/3/81 102'	TD: 9639'; MW: 16.6; Vis: 60. Drilled to 9573'. Pulled out of hole 10 stands; first stand tight with 80,000 pounds drag. Serviced rig. Ran in hole; drilled ahead.
3/4/81 102'	TD: 9741'; MW: 16.6; Vis: 65. Drilled to 9682'; serviced rig. Drilled to 9712'. Made short trip, with 86,000 pounds drag at 9363'. Drilled ahead.
3/5/81 57'	TD: 9798'; MW: 16.6; Vis: 65. Drilled to 9775'; serviced rig. Drilled to 9798'. Lost circulation (35 barrels in 10 minutes). Mixed 40-barrel lost-circulation material pill with 25 pounds Quickseal per barrel. Spotted on bottom; no returns. Pulled out of hole to casing shoe. Cleaned reserve pit to mix Dia-Seal M.
3/6/81 0'	TD: 9798'; MW: 16.6; Vis: 50. Squeezed 150 barrels Dia-Seal M. Built mud volume with 100 percent returns. Pulled out of hole; tested blowout preventers. Ran in hole.

3/7/81 0'	TD: 9798'; MW: 16.7; Vis: 48. Ran in hole to 9620'; washed and reamed to 9712'. After 5,900 strokes, had 6,000 units of gas. Raised mud weight to 16.7. After weight was raised, started losing 30 barrels per hour. Mixed lost-circulation material pill and spotted on bottom. Pulled out of hole to 8264'; circulated. Mixed Dia-Seal M. Gained 57 barrels of fluid in two hours. Shut well in; raised mud in pits to 16.7 ppg. Circulated down hole; after 16.7 ppg returns, started losing 5 BPH. Mixed Dia-Seal M to squeeze.
3/8/81 0'	TD: 9798'; MW: 16.7; Vis: 50. Mixed 160 barrels Dia-Seal M. Squeezed with bit at 8264'. Held pressure and squeeze. Ran in hole to 9712'; reamed and cleaned from 9712' to 9743'.
3/9/81 51'	TD: 9849'; MW: 16.6; Vis: 78. Reamed to 9738'. Pulled out of hole to shoe; circulated at shoe. Repaired rotary clutch. Ran in hole to 9610'; reamed to 9798'. Drilled to 9849'.
3/10/81 61'	TD: 9910'; MW: 16.6; Vis: 78. Drilled to 9889'; pulled out of hole to 8297'. Ran in hole to 9682'; hit bridge. Reamed bridges from 9682' to 9743' and from 9338' to 9889'. Drilled ahead.
3/11/81 41'	TD: 9951'; MW: 16.6; Vis: 76. Drilled to 9951'; surveyed. Pulled out of hole six stands; repaired air system. Pulled out of hole 36 stands; swabbed. Circulated bottoms up; gas increased to 2,230 units; chlorides increased to 2,500 PPM. Swabbed; pulled out of hole; stopped taking mud 65 stands out. Ran in hole to 9951'; hit bridge at 9838'. Circulated with 16.6 ppg mud.
3/12/81 15'	TD: 9966'; MW: 16.7; Vis: 68. Circulated and raised mud weight to 16.7. Pulled out of hole; picked up Turbodrill. Ran in hole to 9925'; washed and reamed to 9951'. Drilled ahead.
3/13/81 157'	TD: 10,123'; MW: 16.7; Vis: 60. Drilled from 9966' to 9996' with Turbodrill. Repaired air leak in No. 1 pump clutch. Drilled to 10,004'; serviced rig. Drilled to 10,123'; started losing mud. Pulled out of hole to 9-5/8" casing shoe; began mixing mud. Lost 133 barrels of mud last 24 hours.
3/14/81 7'	TD: 10,130'; MW: 16.7; Vis: 60. Ran in hole; drilled to 10,130'. Started losing mud; circulated and conditioned. Pulled out of hole; ran in hole open ended to 8290'. Mixed Dia-Seal M pill. Lost 175 barrels of mud last 24 hours.

3/15/81
0'

TD: 10,130'; MW: 16.7; Vis: 60. Built mud volume in pits. Mixed Dia-Seal M; squeezed. Well began flowing when pressure was released. Shut well in; circulated through choke.

3/16/81
0'

TD: 10,130'; MW: 17.0; Vis: 58. Closed well; raised mud weight in pits to 17.1; circulated. Began losing mud; killed well. Mixed Dia-Seal D; squeezed; held pressure on squeeze. Lost 235 barrels of mud last 24 hours.

3/17/81
0'

TD: 10,130'; MW: 17.2; Vis: 56. Held pressure on squeeze; circulated and conditioned mud. Had salt water flow; gas in mud. Raised mud weight; lost returns. Observed well. Lost 100 barrels of mud last 24 hours.

3/18/81
0'

TD: 10,130'; MW: 17.0; Vis: 56. Mixed mud; pulled out of hole. Ran in hole with Halliburton E-Z drill cement retainer and set at 8193'. Serviced rig. Mixed and pumped 1,200 sacks Class "G" cement with 1% CFR-2 and 7 pounds/sack gilsonite plus 0.1% HR-7 at 15.8 ppg. Squeezed cement.

3/19/81
0'

TD: 10,130'; MW: 17.1; Vis: 65. Squeezed cement into formation. Circulated and conditioned mud. Pulled out of hole; tested blowout preventers. Picked up bottom-hole assembly; ran in hole to 8193'. Drilled cement.

3/20/81
0'

TD: 10,130'; MW: 17.1; Vis: 68. Drilled cement from 8293' to 8444'. Pulled out of hole; repaired oiler on compound; serviced rig. Ran in hole with bit; drilled cement.

3/21/81
0'

TD: 10,130'; MW: 17.0; Vis: 60. Drilled cement from 8565' to 8726'. Laid down 10 joints of drill pipe and ran in hole with three stands and one double. Drilled cement from 8726' to 9102'. Laid down 10 joints of drill pipe. Drilled cement from 9102' to 9427'. Started losing partial returns at 9140'. Lost 35 barrels from 11:30 p.m. to 3:00 a.m. Lost 48 barrels from 3:00 a.m. to 3:30 a.m. Stopped drilling and reduced pump rate to 196 GPM. Circulated and reduced mud weight to 17.0 ppg. Lost 22 barrels from 3:30 a.m. to 6:00 a.m. Total mud lost: 105 barrels.

3/22/81
0'

TD: 10,130'; MW: 16.8; Vis: 65. Drilled cement from 9427' to 9478'. Laid down 10 joints of drill pipe. Ran in hole with three stands. Drilled cement from 9478' to 9568'. Circulated and cleaned hole. Drilled cement from 9568' to 9781'. Washed and reamed from 9781' to 9688'; hole dragging; high torque. Drilled

cement from 9781' to 9812'. Reamed and washed at 9812'; unable to make connection. Pulled out of hole; bit pinched one-fourth inch. Cleaned boot basket; ran in hole.

3/23/81
0'

TD: 10,130'; MW: 16.8; Vis: 55. Ran in hole with bit to bridge at 9497'. Reamed from 9497' to 9781'; high torque from 9750' to 9781'. Rotary clutch went out. Circulated to spot Contone; treated mud in open hole. Pulled out of hole to casing shoe; repaired rotary clutch. Ran in hole to 9750'; reamed to 9812'. Drilled cement from 9812' to 10,027'; circulated clean hole. Drilled cement from 10,027' to 10,058'.

3/24/81
0'

TD: 10,130'; MW: 16.8; Vis: 55. Repaired compound chain oiler. Drilled cement from 10,058' to 10,130'; circulated bottoms up. Short tripped to 9-5/8" shoe; circulated bottoms up. Pulled out of hole, steel line measuring to log. Rigged up logging unit and ran SP/GR/DIL/BHC. Logger's total depth: 10,122'. Rigged up to run 7-5/8" liner. Began running liner.

3/25/81
0'

TD: 10,130'; MW: 16.7; Vis: 49. Ran in hole with 7-5/8" liner; picked up liner hanger. Rigged down casing tools. Ran in hole with liner on 85 stands of drill pipe. Broke circulation at 2500'; had 90 percent returns. Circulated at 5000' and 8100'; partial returns only. Lost 86 barrels of mud on trip in hole with liner. Ran fifty-one joints of 7-5/8" S-95, 39#/ft., ABC, FL45 liner with shoe at 10,126', float collar at 10,078', catcher sub at 10,077', and Type 2 landing collar at 9996' with cross-over bushing at 8005'. Top of liner hanger at 7991'; top of tie-back sleeve at 7985'. Total length of liner: 2,140.88 feet with 312 feet of lap inside 9-5/8" casing. Circulated at low rate, losing 80 percent returns, gradually decreasing until 90 percent returns at surface. Lost 100 barrels with circulation. Pumped 50 barrels pre-flush at 17.0 ppg. Cemented with 350 sacks Class "G" cement, with 40% silica, 5#/sack Gilsonite, 1% CFR-2, 0.3% HR-7, plus 1/4 ppb Flocele mixed at 15.2 ppg. Pumped 203 barrels; did not bump plug. Had five barrels over calculated displacement; no returns during cement job. After picking up out of hanger, had 450 psi on drill pipe with fluid level standing at 40 feet BRT. Circulated 20 feet above top of liner. Mud weight: 15.8 in and 16.4 to 16.7 out, with one unit of gas. Total mud lost: 523 barrels.

3/26/81
0'

TD: 10,130'; MW: 16.8; Vis: 54. Circulated and conditioned mud and built volume after cementing liner. Rigged down Howco lines. Cut drilling line.

Pulled out of hole; laid down hanger setting tool. Set test plug; changed lower pipe rams to 3-1/2". Tested plug rings, breaking in blowout preventers. Blowout-preventer test waived until 3/26/81. Picked up 3-1/2" drill-pipe handling tools, three joints of 3-1/2" drill pipe, and RTTS packer. Ran in hole with RTTS plus three joints of 3-1/2" drill pipe. Ran in hole slow; no mud loss. Rigged up Howco; set RTTS at 7816' with tail pipe at 7915'. Established injection rate of 6.0 BPM at 1,600 psi. Total fluid pumped: 6-1/2 barrels. Started mixing cement for liner squeeze.

3/27/81
0'

TD: 10,130'; MW: 16.8; Vis: 54. Squeezed cement liner lap with 75 sacks Class "G" plus 40% silica and 5#/sack of Gilsonite, plus 18 CFR-2 and 0.3% Halad-9 plus 0.2% HR7 and 1/4 ppb Flocele mixed at 16.5 ppg. Squeezed to 3,000 psi. Pumped 40 sacks cement into open hole and 19 sacks into liner lap; left 16 sacks in the 9-5/8" casing. Thawed out mud line. Reverse circulated, no cement reversed out. Pulled out of hole; laid down RTTS. Tested blowout preventers; ran in hole with bit; tagged cement at 7920'; drilled same to 7985'. Circulated bottoms up. Pressure tested liner lap with 3,300 psi for one-half hour; no leak off. Pulled out of hole; laid down 54 joints of 4-1/2" drill pipe and 5" HWDP.

3/28/81
0'

TD: 10,130'; MW: 16.0; Vis: 45. Pulled out of hole and laid down 8-1/2" bottom-hole assembly. Attempted to pressure test 3-1/2" pipe rams without success. Damaged test plug rubbers while running test plug through blowout preventers. Picked up and stood back fifteen 4-3/4" drill collars, twelve stands of 3-1/2" HWDP, and twenty-four stands of 3-1/2" drill pipe while waiting on additional 3-1/2" test plug rubber seal rings. Tested 3-1/2" rams to 7,000 psi. Reset wear bushing. Picked up bit and tripped in with bottom-hole assembly. Unplugged flowline.

3/29/81
26'

TD: 10,156'; MW: 15.3; Vis: 50. Ran in hole with bit; tagged wiper plug and cement, 9973' to 10,003'. Tested 9-5/8" casing and 7-5/8" liner to 3,000 psi for 30 minutes; no leak off. Pulled six singles and ran in hole with two stands. Drilled cement, catcher sub, float collar, and float shoe. Drilled to 10,140'; circulated to clean hole. Rigged up Howco; thawed out frozen lines. Ran leak off test with 15.5 ppg at 920 psi. Changed suction valve in No. 1 pump. Drilled to 10,156'. Tripped out 41 stands; well had slight flow. Tripped to bottom.

3/30/81 27'	TD: 10,183'; MW: 15.6; Vis: 48. Ran in hole to circulate out after starting out of hole. Circulated; increased mud weight from 15.3 to 15.4; had 1,750 units of gas at bottoms up. Pulled out of hole; laid down 7-1/4" Turbodrill out of derrick. Serviced rig; ran in hole with bit. Reamed from 10,126' to 10,152'. Drilled ahead.
3/31/81 40'	TD: 10,223'; MW: 15.6; Vis: 48. Drilled to 10,192'. Pulled out of hole to casing shoe; waited one hour to check fluid entry to wellbore. Circulated bottoms up. Maximum gas: 165 units over background of 18. Pulled out of hole; serviced rig. Picked up 5" Turbodrill. Conditioned mud in suction pit to 15.6 ppg. Reamed from 10,126' to 10,192'. Circulated bottoms up. Drilled ahead.
4/1/81 120'	TD: 10,343'; MW: 15.7; Vis: 48. Drilled to 10,267'; serviced rig. Drilled ahead.
4/2/81 108'	TD: 10,451'; MW: 15.8; Vis: 50. Drilled to 10,363'. Repaired rig mud pump. Drilled to 10,367'; had mud gain in pits. Circulated at 10,367'. Maximum gas: 5,100 units. Cut mud from 15.7 ppg to 12.7 ppg. Increased mud weight to 15.8 ppg. Drilled to 10,388'. Serviced rig. Repaired weight indicator and torque indicator. Drilled to 10,424'. Made four-stand short trip; no drag; no fill. Drilled ahead.
4/3/81 59'	TD: 10,510'; MW: 15.8; Vis: 50. Drilled to 10,481'; serviced rig. Drilled to 10,510'; pulled out of hole for bit. Tested blowout-preventer equipment to 7,500 psi; tested Hydril to 5,000 psi. Changed bearing section in turbine.
4/4/81 121'	TD: 10,631'; MW: 15.7; Vis: 48. Tripped in with bit; drilled to 10,545'. Serviced rig; drilled to 10,631'.
4/5/81 117'	TD: 10,748'; MW: 15.7; Vis: 50. Turbodrilled to 10,637'; circulated out 900 units of gas. Turbodrilled to 10,669'; serviced rig. Turbodrilled to 10,691'. Short tripped seven stands; no fill. Turbodrilled to 10,748'.
4/6/81 41'	TD: 10,789'; MW: 15.6; Vis: 48. Turbodrilled to 10,789'; blew down kelly. Pulled out of hole; serviced rig. Changed bottom-hole assembly. Ran in hole with bit; safety reamed 60 feet to bottom.

4/7/81
4'

TD: 10,793'; MW: 15.7; Vis: 46. Drilled on junk from 10,789' to 10,792'. Pulled out of hole; serviced rig. Picked up 6-3/8" junk mill; ran in hole. Milled on junk from 10,792' to 10,793'. Pulled out of hole; recovered 8-1/2" junk piece; appeared to be all. Laid down 5" turbodrill. Ran in hole with bit.

4/8/81
19'

TD: 10,812'; MW: 15.7; Vis: 46. Cut and slipped drilling line. Finished running in hole; drilled to 10,796'. Pulled out of hole; serviced rig. Laid down bottom-hole assembly; cleaned boot basket. Recovered large quantity of junk. Repaired rollers in line guide. Ran in hole; reamed 60 feet to bottom. Drilled to 10,812'. Slugged pipe; pulled out of hole.

4/9/81
33'

TD: 10,845'; MW: 15.7; Vis: 53. Cut 525 feet off drilling line. Pulled out of hole; picked up Turbodrill and bottom-hole assembly. Serviced rig. Ran in hole with Turbodrill. Changed out lower kelly cock valve. [illegible] Reamed 50 feet to bottom; turbodrilled to 10,845'.

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4/10/81
93'

TD: 10,938'; MW: 15.6; Vis: 52. Turbodrilled 10,845' to 10,893'; serviced rig. Turbodrille 10,918'. Made ten-stand short trip; no drag; n Drilled to 10,938'.

4/11/81
78'

TD: 11,016'; MW: 15.6; Vis: 52. Turbodrill 10,986'; serviced rig. Turbodrilled to 11,016'.

4/12/81
80'

TD: 11,096'; MW: 15.6; Vis: 50. Turbodrill 11,047'; serviced rig. Turbodrilled to 11,096'.

4/13/81
26'

TD: 11,122'; MW: 15.6; Vis: 51. Turbodrill 11,122'. Dropped survey; pumped pill. Pulled hole; laid down nine joints of 4-1/2" drill Tested blowout preventers. Ran in hole with reamed to 11,122'.

4/14/81
36'

TD: 11,158'; MW: 15.6; Vis: 51. Drilled to 11 serviced rig. Drilled to 11,158'.

4/15/81
19'

TD: 11,177'; MW: 15.6; Vis: 52. Drilled to 11 pulled out of hole for bit. Serviced rig. Ran in to bottom of liner. Repaired rotary chain. Fin running in hole to 11,123'; safety reamed to 11 drilled to 11,177'.

4/16/81
23'

TD: 11,200'; MW: 15.6; Vis: 50. Drilled to 11 serviced rig. Drilled to 11,200'; circulated bo up. Short tripped; no drag; no fill. Circulat

log. Pulled out of hole for logs. Steel-line measured drill pipe; no correction. Rigged up logging unit; began running HRT-Temperature log.

4/17/81
0'

TD: 11,200'; MW: 15.6; Vis: 50. Finished running Temperature log. Began running GR/BHC. Had tight hole at 10,816' and 10,890'. Spudded tool back through tight spot at 10,890'. Finished running GR/BHC log. Casing shoe at 10,119'. Ran a second HRT-Temperature log and GR/SP/DIL/SFL. Rigged down logging unit; serviced rig. Ran in hole to condition for logs. Had 8,000 to 12,000 pounds weight at 10,816' and 10,890'. Built mud weight in pits from 14.2 ppg to 15.6 ppg. Circulated and conditioned; pulled out of hole to finish logging. Rigged up logging unit.

4/18/81
0'

TD: 11,200'; MW: 15.5; Vis: 50. Ran GR/CAL/CNL/FDC, HRD-Dipmeter, and Birdwell Velocity Survey. Shot 24 sidewall cores, 11,150' to 10,139'; recovered two. Rigged down logging unit; began laying down 3-1/2" drill pipe.

4/19/81

TD: 11,200'; PBTD: 7868'. Laid down 3-1/2" drill pipe and 4-3/4" drill collars. Ran in hole with Howco E-Z drill cement retainer, and set at 7868'. Tested back side with 1,500 psi. Established injection rate of three barrels per minute with 1,500 psi. Mixed and pumped 150 sacks of Class "G" with 1% CFR-2 and 0.17% HR-7 below E-Z drill cement retainer. Picked up out of E-Z drill cement retainer, and laid 50 sacks on top. Total volume mixed: 41 barrels (30 barrels below E-Z drill cement retainer; 11 barrels on top); weight: 15.8 ppg. Pulled out of hole 11 stands; reversed out four barrels cement returns. Laid down 4-1/2" drill pipe to 4000'. Displaced mud in hole with water to 2000'. Rigged up fuel tanker. Began displacing top 4000' of hole with diesel.

4/20/81

TD: 11,200'; PBTD: 7868'. Finished displacing with diesel. Laid down 128 joints of drill pipe. Rigged down kelly and rig floor. Nippled down and set out blowout preventers. Released rig April 20, 1981, at 2:00 a.m. Began stripping derrick and preparing to lay down.

DRILLING TIME ANALYSIS

AWUNA TEST WELL NO. 1

PARCO, INC., RIG 95

Spudded 2/29/80, Rig released 4/20/81

Total Depth: 11,200 Feet

DRILLING TIME ANALYSIS (HOURS) - HUSKY NI

IPR OPERATIONS, INC. AWUNA TEST WELL NO. 1 Page 1 of 20

DATE 1980	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
2-7	24																							Rigging Up	Began 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	
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	
																								Rigging Up	
																								Rigging Up	
																								Rigging Up	

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

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
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	24																							Rigging Up	
2-28	24																							Rigging Up	
2-29	23									1														Rigging Up	Spudded Well at 12:00 Midnig
3-1		11	3½	5½		½		1					2½											Drilling	
3-2		13½		6½	2	½		1½																Drilling	
3-3		13	2	5½	2½			1																Reaming	
3-4		9		7½	1½			2	4															Drilling	Ran Schlumberger Wireline lo
3-5			12	7		½			4½															Picking up HO & BHA	
3-6			16	6	½	½		1																Reaming	
3-7			21	2		½		½																Reaming	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
3-8			18½	2½	½	½	1½	½																Reaming	
3-9			13½	7		½		3																Reaming	
3-10			1	8½				4½		9													1	Building Viscosity	
3-11				2						12½	8½												1	Running in Hole	
3-12											14	10												Waiting on Cement	
3-13												24												Welding on Base Plate	
3-14												24												Testing Base Plate	
3-15												21	3											Nippling up BOP	
3-16				4½								4½	3										12	Waiting on Spool	
3-17		5		2½	3½	½		½															12	Drilling Cement	
3-18		7½		7½		½																	8½	Waiting on Sub	
3-19		15½		5½		½		1½	1															Drilling	
3-20		6½	2½	9½		½	1		2				2											Drilling	
3-21		15	2		5	½	1½																	Surveying	
3-22		7½	1	13	2	½																		Surveying	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
3-23		17		1	4½	½		1																Drilling	
3-24				6		½		½									9						8	Modifying Core Barrel	Core No. 1: 2447' - 2477'
3-25		16	1	4	2	½											½							Drilling	
3-26		13½	½	5½	2½	½																	1½	Drilling	
3-27		10½	½	8	2½	½							2											Drilling	
3-28		18			2	½	3	½																Surveying	
3-29		16½		4	2½			1																Surveying	
3-30		14	1	3½	2		2½	1																Reaming	
3-31		22			1½	½																		Drilling	
4-1		15		6	2	½		½																Drilling	
4-2		3	9	1		½																	10½	Working on Stuck Pipe	
4-3		16½		3	1			3½																Drilling	
4-4			3	10		½		1					2				6½						1	Reaming	
4-5		17½	1½	2	2½	½																		Drilling	Core No. 2: 3664' - 3680'
4-6		15½	1	5	1	1½																		Running in Hole	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
4-7		22			2																			Drilling	
4-8		18		3½	1½			½															½	Drilling	
4-9		21	1	1		½																	½	Drilling	
4-10		21½			2	½																		Drilling	
4-11		9½		8½									3½				½						2	Drilling	
4-12			½	4		½										16							3	Fishing	
4-13			11½	12½																				POH for Bent Pipe	
4-14		10½	13			½																		Reaming	
4-15		20½			3	½																		Drilling	
4-16		15½		3½				1½					3½											Drilling	
4-17		4	12	5		½	2						½											Reaming	
4-18		14	1½	6½		½	1½																	Drilling	
4-19		19½			1½	½	2½																	Repairing Rig	
4-20		22			1	½	½																	Drilling	
4-21		12	3½	7	1	½																		Tripping for Bit Change	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
4-22		20			1	½		2½																Drilling	
4-23		23			1																			Drilling	
4-24		9	1½	11	½	½							1½											Drilling	
4-25			15	8½		½																		Reaming	
4-26			24																					Reaming	
4-27		21½	1			½		1																Reaming	
4-28		13	3	7	½	½																		Drilling	
4-29		19½		2½	1½	½																		Drilling	
4-30		9	1	7				2	5															Drilling	Ran Schlumberger Wireline Log
5-1			3½	7		½		2	10														1	Logging	
5-2				6						16			2											Testing BOP	Set 13 3/8" at 5292'
5-3				6				2½		3½	12													Cementing	
5-4											8	16												Waiting on Cement	
5-5				3				7		2½	3	6½	2											Nippling up BOP	
5-6				8½							8		5										2½	Waiting on Cement	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
5-7	14½			5				4½																Running in Hole	
5-8	24																							Rigging Down	
5-9	12																							Rigging Down	
5-10	12																							Rigging Down	
5-11	12																							Rigging Down	
5-12	12																							Cleaning Location	
						WELL		SUSPENDED																	
10-15																						12	Repairing Camp	Rig Camp was Severely Water	
10-16																						12	Repairing Camp	Damaged during Stack-out and	
10-17																						12	Repairing Camp	Required Extensive Repairs	
10-18																						12	Repairing Camp		
10-19																						12	Repairing Camp		
10-20																						12	Repairing Camp		
10-21																						12	Repairing Camp		
10-22																						12	Repairing Camp		

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
10-23																							12	Repairing Camp	
10-24																							12	Repairing Camp	
10-25																							12	Repairing Camp	
10-26																							12	Repairing Camp	
10-27																							12	Repairing Camp	
10-28																							12	Repairing Camp	
10-29																							12	Repairing Camp	Construction Crew Arrived
10-30																							12	Repairing Camp	to Work on Pad and Runway
10-31																							12	Repairing Camp	
11-1																							12	Repairing Camp	
11-2																							12	Repairing Camp	
11-3																							12	Repairing Camp	
11-4																							12	Repairing Camp	
11-5																							12	Repairing Camp	
11-6																							12	Repairing Camp	

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

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
																							12	Repairing Camp	
																							12	Repairing Camp	
																							12	Repairing Camp	
	12																						12	Setting Tioga Heater	Drilling Crew Arrived
	12																						12	Setting Tioga Heater	
	12																						12	Hooking up Steam Lines	
	12																						12	Assembling Mix Pumps	
	12																						6	Building Fuel Dikes	Camp Repairs Completed at 12:00 Noon
	12																							Setting Cement Unit	
	12																							Repairing Right Angle Drive	
	12																							Installing Brake Blocks	
	12																							Installing Brake Blocks	
	12																							Working on Shop	
	12																							Working on No. 2 Pump	
	12																							Laying Koomey Lines	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
11-22	12																							Working on No. 1 Motor	
11-23	12																							Working on Cat Works	
11-24	12																							Working on No. 1 Motor	
11-25	12																							Working on Boiler	
11-26	12																							Starting Boilers	
11-27	12																							Starting Drawworks Engines	
11-28	12																							Laying Line to Burn Pit	
11-29	12																							Cutting Drilling Line	
11-30	12																							Setting Rotary Table	
12-1	12																							Working on Right Angle Drive	
12-2				6½				3															2½	Picking Up BHA	
12-3				8			15																1	Picking Up Drill Pipe	
12-4		6½						16½															1	Conditioning Mud	
12-5		5		6				12															1	Conditioning Mud	
12-6		17		4	3																			Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
12-7		14½		6	2½																		1	Drilling	
12-8		22	½		1½																			Drilling	
12-9		13½		2	1											7½								Drilling	
12-10		6½		7½	½											9½								Fishing	
12-11		20½		1½	1½	½																		Drilling	
12-12		6½		5				1				1					10½							RIH for Core No. 3	Core No. 3: 6010' - 6040'
12-13		3	5½	11		½							4											Picking up BHA	
12-14					4½		½		½							13							5½	Tripping for Junk Basket	
12-15				11		½		½								12								Tripping with Magnet	
12-16		15	½	5½	1			1½								½								Running in Hole	
12-17		13½	½	7	1½	½	1																	Surveying	
12-18		10			1½	½		12																Circulating	
12-19		21		1½	1½																			Drilling	
12-20		2½	1½	4½		½		2½					12½											Testing BOP	
12-21		5	4	½			14½																	Repairing Rotary Clutch	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
12-22		23				1																		Drilling	
12-23		9½	2	8	1½	1½																	1½	Pulling Out of Hole	
12-24		21			3																			Drilling	
12-25		11		9½	½		3																	Drilling	
12-26		9	6	8½		½																		Reaming	
12-27		19		2½	½			2																Circulating	
12-28				3				21																Building Mud Weight	
12-29		11	3	8	½	½	1																	Tripping For Bit	
12-30		20		3½	½																			Drilling	
12-31		13½		4	1			5½																Building Mud Weight	
1981 1-1		13		8									3											Drilling	
1-2		6½	10	4			3½																	Running in Hole with Bit	
1-3		23½				½																		Drilling	
1-4		8	1	13½																			1½	Drilling	
1-5		21½	2			½																		Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
1-6		8	2½	9				4½																Drilling	
1-7		23½				½																		Drilling	
1-8		18½																					5½	Drilling	
1-9			5	10			1																8	Pulling Drill Pipe	
1-10			14	3			7																	Repairing Rotary Clutch	
1-11		6½	15	2½																				Reaming	
1-12		10½	3	7½		½							2½											Running in Hole	
1-13		13½		7	½	½		2½																Drilling	
1-14		13	1	8½	½																		1	Drilling	
1-15		20½		1		½	2																	Drilling	
1-16		9½		10		½	½	3½																Drilling	
1-17		14	½	7				½					2											Drilling	
1-18		20		3½									½											Drilling	
1-19		14		9	½		½																	Pulling Out of Hole	
1-20		18		5	½	½																		Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSI

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT
1-21		20	½	2½						
1-22		12½	2	7½	½	½				
1-23		10½	4	3½	½			5½		
1-24			4½	13				5½	1	
1-25									24	
1-26		6	½	4				2	6	1½
1-27								2½		21½
1-28										2
1-29										
1-30				4½						
1-31				18						
2-1		3		14½		½				
2-2		17¼		4¼	½			1		
2-3		5½		4				8		
2-4		12½		2¼	½			7½		

W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
													Drilling	
												1	Pulling Out of Hole	
													Drilling	
													Laying Down Drill Pipe	Ran Schlumberger Wireline Lo
													Logging	
		4											Logging	Shot 30 SWCs Recovered 6
													Running Casing	Set 9 5/8" At 8297'
	20½											1½	Nippling Down BOPs	
	24												Nippling Up BOPs	
	6	13½											Laying Down Drill Collars	
		6											Picking Up Drill Collars	
		2										3¾	Drilling Shoe & Cement	
												1	Drilling	
												6½	Drilling	
												1½	Circulating	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
2-5				9														15						RIH for DST No. 1	
2-6			4	9½		½		8										2						Circulating	
2-7		21½		1	½			1																Drilling	
2-8				9½		½	1½						9½										3	Testing BOP	
2-9		23	½	½																				Drilling	
2-10		13½						10½																Drilling	
2-11		4	1	9½	½	1½	7½																	Circulating	
2-12		21½		1		½	1																	Drilling	
2-13		23½				½																		Drilling	
2-14		23		½		½																		Drilling	
2-15		9½		8½	½			1					4½											Drilling	
2-16		22½		½		½	½																	Drilling	
2-17		15		1				8																Drilling	
2-18		8		1½				14½																Building Mud Volume	
2-19				6				18																Building Mud Volume	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
2-20		1	1	8½				11½												2				Conditioning Mud	
2-21		16		1½				6½																Drilling	
2-22		14		1½		½																	8	Mixing Mud	
2-23		23½				½																		Drilling	
2-24		22		1½		½																		Drilling	
2-25		23½				½																		Drilling	
2-26		23½				½																		Drilling	
2-27				12		½		2					4½										5	Testing BOPs	
2-28				1				½												17			5½	Building Mud Volume	
3-1		11	4	1				4															4	Circulating	
3-2		22½		1	½																			Drilling	
3-3		22		1½		½																		Drilling	
3-4		18½		1		½		1											1				2	Drilling	
3-5				4									2										18	Mixing Pill	
3-6			1½	7½				11½					3½											Running in Hole	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
3-7								10															14	Mixing Pill	
3-8		9	8½	4½			2																	Reaming	
3-9		18	3½	2		½																		Drilling	
3-10		15½		5½		½	1	1½																Drilling	
3-11				13				11																Circulating	
3-12		17½	1	3½		½	1½																	Drilling	
3-13		3½	1	9				8½															2	Circulating	
3-14		5						2											10				7	Mixing Pill	
3-15								7½											2½				14	Circulating Through Choke	
3-16								14											10					Squeezing Cement	
3-17				9		½		2½															12	Monitoring Well	
3-18				11				4					2							7				Squeezing Cement	
3-19				9½		½	1																13	Drilling Cement	
3-20				2½																			21½	Drilling Cement	
3-21			6	1½				3															13½	Drilling Cement	

DRILLING TIME ANALYSIS (HOURS)

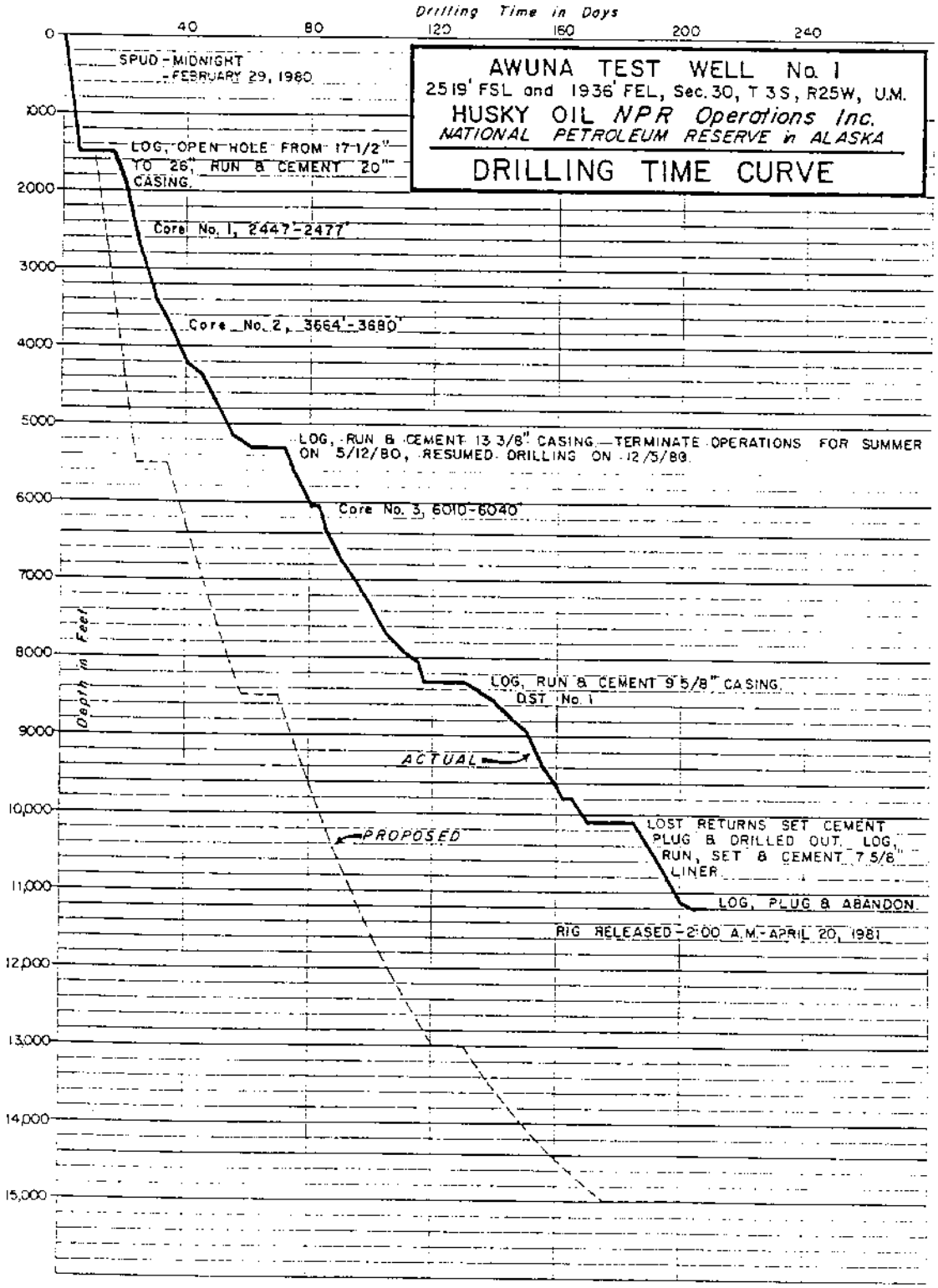
DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV.-SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
3-22			9½	10				½														4	RIH with Bit	
3-23			2	7½			1	3½	6													4	Repairing Compound Chain	Ran Schlumberger Wireline Logs
3-24				9				2	½													½	Running Casing	Set 7 5/8" 7985' - 10126'
3-25				4½				12				6½										1	Conditioning Mud	
3-26		1½		11½				2				4							4			1	Squeezing Cement	
3-27				13				½				9½										1	Laying Down Drill Pipe	
3-28		2		10				½														11½	Picking up Drill Pipe	
3-29		6	1½	12		½		2½														1½	RIH to Circulate Out Gas	
3-30		16½	1	1½				4														1	Drilling	
3-31		23½				½																	Drilling	
4-1		20				½	½	2														1	Drilling	
4-2		16½		5½		½						1½											Drilling	
4-3		12½		4½		½		½				4½										1½	Picking Up Turbodrill	
4-4		21		1		½		1½															Drilling	
4-5		18		5½		½																	Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
4-6				14		½		½															9	Drilling on Junk	
4-7		8		12		½	1½																2	Cutting Drilling Line	
4-8		8¾	¼	8½		½	½																5½	Cutting Drilling Line	
4-9		23½				½																		Drilling	
4-10		22½		1		½																		Drilling	
4-11		23½				½																		Drilling	
4-12		11½		7	1								4½											Drilling	
4-13		17	1	3½		½																	2	Reaming to Bottom	
4-14		13	½	9		½	1																	Drilling	
4-15		16½		1		½		6																Drilling	
4-16				7		½		5½	11															Logging	Ran Schlumberger Wireline Logs
4-17				3				2	19															Logging	
4-18				7					4														13	Laying Down Drill Pipe	Shot 24 SWCs, Recovered 2
4-19	12																						12	Displacing Water with Diesel	
4-20	24																							Laying Down Drawworks	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. AWUNA 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
4-21	24																							Cleaning Mud Pits	
4-22	24																							Rigging Down	
4-23	24																							Rigging Down	
4-24	24																							Rigging Down	
4-25																							24	Moving Rig & Camp	
4-26																							24	Moving Rig & Camp	
4-27																							24	Moving Rig & Camp	
4-28																							24	Moving Rig & Camp	
TOTAL HOURS	1021½ 2025¼	339¼ 945¼	94½ 53	86 377½		98½		53½ 81½		139 157½	-0- -0-	27 58½		23½ 17		30	-0- -0-						785¾		


Drilling Time in Days
0
40
80
120
160
200
240
AWUNA TEST WELL No. 1
2519' FSL and 1936' FEL, Sec. 30, T 3 S, R25W, U.M.
HUSKY OIL NPR Operations Inc.
NATIONAL PETROLEUM RESERVE in ALASKA
DRILLING TIME CURVE
SPUD - MIDNIGHT - FEBRUARY 29, 1980
LOG, OPEN HOLE FROM 17-1/2" TO 26", RUN & CEMENT 20" CASING.
Core No. 1, 2447-2477'
Core No. 2, 3664-3680'
LOG, RUN & CEMENT 13 3/8" CASING — TERMINATE OPERATIONS FOR SUMMER ON 5/12/80, RESUMED DRILLING ON 12/5/80.
Core No. 3, 6010-6040'
LOG, RUN & CEMENT 9 5/8" CASING
DST No. 1
ACTUAL
PROPOSED
LOST RETURNS SET CEMENT PLUG & DRILLED OUT. LOG, RUN, SET & CEMENT 7 5/8" LINER
LOG, PLUG & ABANDON.
RIG RELEASED - 2:00 A.M. - APRIL 20, 1981
Depth in Feet
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10,000
11,000
12,000
13,000
14,000
15,000

DRILLING MUD RECORD

ARCTIC DRILLING SERVICES

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska CASING PROGRAM: 30 inch at 108 ft.

WELL Awuna Test Well No. 1 COUNTY North Slope 20 inch at 1500 ft.

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 30 TWP 3S RNG 25W 13 3/8 inch at 5292 ft.

STOCKPOINT DATE BAROID ENGINEER 9 5/8" 8297 ft.

TOTAL DEPTH 11,200 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
1980	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec/10 min	Strip Cl Meter Cl	ml API	HTHP @ °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	7-5/8" @ 10,126'
3/1	145	8.7	55	13	20	3/20	8.0	14		3		.1	200	40	Tr	3		97		
3/2	532	9.2	65	24	30	8/32	8.5	8.5		1		.3	200	20	Tr	6		94		
3/3	1143	9.4	73	12	35	12/27	8.5	13		2		.35	200	20	Tr	8		92		
3/4	1455	9.9	65	19	37	16/48	8.5	13.5		2		.4	200	Tr	Tr	12		88		
3/5	1512	9.9	80	16	40	20/46	8.5	12.0		2		.4	200	Tr	Tr	12		88		
3/6	1514	9.9	78	20	43	17/42	8.5	13.0		3		.4	200	Tr	Tr	12		88		
3/7	1514	9.9	80	21	42	18/46	8.5	12.5		3		.4	200	Tr	Tr	12		88		
3/8	1514	9.9	82	21	49	19/53	8.5	12.5		2		.4	200	Tr	Tr	12		88		
3/9	1514	9.8	75	18	47	17/50	8.5	13.0		3		.4	200	Tr	Tr	12		88		
3/10	1514	10.1	150	30	59	20/65	8.5	11.0		3		.4	200	Tr	Tr	13		87		Raised viscosity for 20" casing
3/11	1514	10.1	150	30	61	24/70	8.5	12.0		3		.4	200	Tr	Tr	13		87		
3/12	1514																			Cleaned mud tanks.
3/13	1514	8.6	53	12	19	3/9	8.0	15.0		3		.2	200	40	0	3		97		Mixed new mud.
3/14	1514	8.6	51	12	16	3/10	8.0	15.0		3		.3	200	40	0	3		97		
3/15	1514	8.6	60	14	22	4/16	8.0	15.0		3		.3	200	40	0	3		97		
3/16	1514	8.6	59	14	22	4/15	8.0	15.0		3		.3	200	40	0	3		97		
3/17	1514	8.6	200	10	127	34/40	12.5	40		4		6.8	200	40	0	3		97		
3/18	1598	9.3	43	16	12	2/22	9.5	12.2		2		1.3	200	40	1/4	6		94		
3/19	1718	9.5	70	22	24	6/36	9.0	8.4		1		1.0	300	40	1/4	8		92		
3/20	1820	9.5	54	20	19	2/32	8.5	9.8		1		.3	300	40	Tr	8		92		
3/21	1870	9.6	50	20	16	2/28	8.5	10.0		1		.1	300	40	Tr	8		92		
3/22	2225	9.9	44	16	17	3/30	8.0	10.8		2		0	200	40	Tr	10		90		
3/23	2300	10.0	51	18	17	3/35	8.0	10.2		2		0	200	40	Tr	13		87		
3/24	2447	9.9	56	20	22	4/10	7.5	10.6		2		0	250	40	Tr	13		87		
3/25	2477	9.9	48	18	18	2/28	7.5	11.2		2		0	250	40	Tr	13		87		
3/26	2690	10.0	60	18	25	6/54	7.0	11.8		2		.4	250	40	Tr	14		86		
3/27	2825	10.1	54	20	23	6/48	7.0	12.4		2		.4	250	40	Tr	16		84		
3/28	2930	10.0	50	19	26	8/47	7.5	11.8		2		.4	250	40	Tr	14		86		
3/29	3115	10.0	53	20	23	8/46	8.0	10.0		2		.6	250	40	Tr	14		86		
3/30	3217	10.0	54	19	24	9/44	8.0	9.8		2		.6	250	40	Tr	14		86		
3/31	3334	10.1	54	19	22	9/47	8.0	9.6		2		.65	250	40	Tr	15		85		
4/1	3490	10.1	56	20	24	10/51	8.0	9.5		2		.65	250	40	Tr	15		85		
4/2	3555	10.2	57	21	23	10/45	8.0	9.2		2		.7	250	40	Tr	15		85		
4/3	3590	10.2	52	18	24	10/52	8.0	9.1		2		.7	250	40	Tr	15		85		
4/4	3664	10.2	57	20	23	8/50	8.0	9.1		2		.7	250	40	Tr	15		85		

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DRILLING MUD RECORD

ARCTIC DRILLING SERVICES

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Awuna Test Well No. 1 COUNTY North Slope

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 30 TWP 3S RNG 25W

STOCKPOINT _____ DATE _____ BAROID ENGINEER _____

CASING PROGRAM: 30 inch at 108 ft.
20 inch at 1500 ft.
13 3/8 inch at 5292 ft.
9 5/8" 8297'
TOTAL DEPTH 11,200 ft.
7-5/8" @ 10,126'

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
1980	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec/10 min	Strip Cl Meter Cl	ml API	HTHP / °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	
4/5	3703	10.2	56	20	23	9/51	8.0	9.1		2		.7	250	40	Tr	15		85		
4/6	3799	10.2	52	19	21	8/47	8.0	9.0		2		.7	250	40	Tr	15		85		
4/7	3929	10.2	52	18	19	8/49	8.0	9.3		2		.6	250	40	Tr	15		85		
4/8	4040	10.2	57	19	24	9/50	8.0	9.3		2		.6	250	40	Tr	15		85		
4/9	4099	10.2	56	20	22	9/52	8.0	9.4		2		.6	250	40	Tr	15		85		
4/10	4186	10.2	57	18	23	9/48	8.0	9.2		2		.6	250	40	Tr	15		85		
4/11	4267	10.2	53	19	25	10/48	8.0	9.2		2		.5	250	40	Tr	15		85		
4/12	4284	10.3	57	21	21	6/34	8.0	9.0		2		.6	250	40	Tr	16		84		
4/13	4284	10.2	48	20	22	5/30	8.0	9.4		2		.5	250	40	Tr	16		84		
4/14	4284	10.3	45	18	18	3/30	8.0	9.2		2		.5	250	40	1/4	17		83		
4/15	4355	10.3	60	25	27	4/48	8.0	9.2		2		.6	250	40	1/4	18		82		
4/16	4475	10.3	65	25	32	6/45	8.0	9.8		2		.6	250	40	Tr	17		83		
4/17	4516	10.3	50	21	23	3/25	8.0	9.8		2		.6	250	40	Tr	16		84		
4/18	4537	10.2	47	19	15	3/30	8.0	9.6		2		.6	250	40	Tr	16		84		
4/19	4607	10.2	62	22	24	4/40	8.0	9.0		2		.6	250	40	Tr	15		85		
4/20	4712	10.4	58	20	25	5/50	8.0	8.8		2		.6	250	40	Tr	16		84		
4/21	4805	10.5	56	23	23	4/40	8.0	8.6		2		.6	250	40	Tr	17		83		
4/22	4812	10.6	56	23	21	3/42	8.0	8.4		2		.6	250	40	Tr	17		83		
4/23	5002	10.6	46	18	18	4/35	8.0	9.0		2		.6	250	40	Tr	18		82		
4/24	5130	10.6	52	22	20	3/40	8.0	8.8		2		.6	250	40	Tr	17		83		
4/25	5143	10.7	52	22	19	4/32	8.0	9.0		2		.6	250	40	Tr	19		81		
4/26	5143	10.9	59	28	28	6/35	8.0	9.4		2		.6	250	40	3/4	20		80		
4/27	5143	10.8	90	33	40	12/52	8.0	8.4		2		.5	250	40	1/4	18		82		
4/28	5150	10.8	115	37	40	12/62	8.0	7.4		2		.5	250	40	1/4	18		82		
4/29	5210	10.8	75	28	28	4/40	8.0	7.8		2		.6	250	40	1/4	18		82		
4/30	5287	10.9	95	36	32	3/50	8.0	7.6		2		.5	250	40	Tr	18		82		
5/1	5300	10.8	110	37	39	8/60	8.0	7.6		2		.6	250	40	Tr	18		82		
5/2	5300	10.8	110	34	36	12/65	8.0	7.8		2		.6	250	40	Tr	18		82		
5/3	5300	10.8	90	25	25	6/40	8.0	8.0		2		.6	250	40	Tr	18		82		
5/4	5300	10.8	70	25	20	3/40	8.0	8.4		2		.6	250	40	Tr	18		82		
			WELL SUSPENDED FOR SUMMER MONTHS																	

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DRILLING MUD RECORD

ARCTIC DRILLING SERVICES

STATE Alaska

COUNTY North Slope

LOCATION NPRA SEC 30 TWP 35 RNG 25W

BAROID ENGINEER

CASING PROGRAM: 30 inch at 108 ft.
20 inch at 1500 ft.
13 3/8 inch at 5292 ft.
9 5/8" 8297'
TOTAL DEPTH 11,200 ft.

COMPANY Husky Oil NPR Operations, Inc.

WELL Awuna Test Well No. 1

CONTRACTOR Parco, Inc.

STOCKPOINT DATE

7-5/8" @ 10,126'

DATE 1980	DEPTH Feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	PV @ °F	Yp	GELS 10 sec / 10 min	Strength (Stormer)	pH	FILTRATE 1ITHP @ °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	SAND %	RETORT Solids %	Oil %	Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
										3			200	30		7	0	93		Mixed mud; waited on airstrip.
										3			200	30		7	0	93		
										3			200	30		8	0	92		
11/28	5300									3		1.0	300	160		8	0	92		
11/29	5300									2		1.0	300	140	Tr	8	0	92		
11/30	5300									2		.65	300	80	Tr	8	0	92		
12/1	5300									2		.5	350	120	1/4	9	0	91		
12/2	5300	10.0	58	10	34	5/12	8.0	9.0		2		.5	350	130	1/4	9	0	91		
12/3	5300	10.0	47	17	23	8/21	7.0	12.		2		.5	350	140	1/4	9	0	91		
12/4	5300	10.0	46	14	22	9/16	10.0	12.		2		.5	350	100	Tr	9	0	91		
12/5	5306	10.0	44	14	12	2/28	11.5	9.		2		.5	350	100	Tr	9	0	91		
12/6	5346	10.0	47	18	13	2/26	11.0	8.		2		.5	350	80	Tr	9	0	91		
12/7	5492	10.0	48	17	16	4/31	10.5	7.		2		.5	350	100	Tr	10	0	90		
12/8	5641	10.0	51	20	15	6/32	9.5	6.		2		.5	350	100	Tr	10	0	90		
12/9	5803	10.0	49	17	19	6/34	9.0	5.		2		.4	350	100	Tr	10	0	90		
12/10	5863	10.0	46	16	13	4/27	9.0	6.		2		.4	350	100	Tr	11	0	89		
12/11	5936	10.0	46	14	16	4/26	9.0	5.		2		.3	350	120	Tr	12	0	88		
12/12	6010	10.0	47	13	19	4/28	9.0	5.		2		.8	320	100	Tr	13	0	87		
12/13	6040	10.0	46	16	14	4/26	9.0	6.		2		.9	325	100	Tr	12	0	88		
12/14	6044	10.2	48	16	14	4/27	9.0	6.		2		.6	340	100	Tr	14	0	86		
12/15	6045	10.2	47	14	15	4/29	9.0	6.		2		.9	350	100	Tr	13	0	87		
12/16	6045	10.3	48	18	16	4/25	9.0	6.		2		1.1	325	100	Tr	12	0	88		
12/17	6237	10.4	52	18	20	5/31	9.0	6.		2		3.5	275	140	Tr	14	0	86		
12/18	6344	10.7	44	18	12	4/11	8.5	6.		2		2.2	250	125	Tr	13	0	87		
12/19	6450	11.6	44	19	12	5/11	9.5	6.		2			275	140	Tr	16	0	84		
12/20		11.8	44	19	12	5/12	9.5	6.		2		4.6	250	120	Tr	21	0	79		
12/21	6457	12.0	44	26	18	8/14	9.0	6.		2		4.1	295	120	Tr	26	0	74		
12/22	6600	12.0	44	28	16	5/14	10.0	5.		2		3.2	225	120	Tr					
12/23	6716	12.5	41	24	14	4/12	10.5	4.		2		3.7	520	100	Tr	27	0	23		
12/24	6777	12.5	42	26	16	6/13	10.0	4.		2		4.2	520	160	Tr	25	0	75		
12/25	6898	12.6	44	27	15	5/12	10.5	4.												
12/26	6921	12.6	44	28	14	6/13	10.5	5.												
12/27	6984	12.7	47	34	14	6/13	10.5	4.												
12/28	7049	13.3	46	38	16	7/18	10.0	5.												
12/29		14.5	49	39	17	7/15	10.0	4.												
12/30		14.5	46	38	13	7/17	11.0	5.												

DRILLING MUD RECORD

ARCTIC DRILLING SERVICES

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Awuna Test WEll No. 1 COUNTY North Slope

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 30 TWP 35 RNG 25W

STOCKPOINT DATE BAROID ENGINEER

CASING PROGRAM: 30 inch at 108 ft.
20 inch at 1500 ft.
13 3/8 inch at 5292 ft.
9 5/8" 8297'
TOTAL DEPTH 11,200 ft.

7-5/8" @ 10,126'

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
1981	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec/ 10 min	Strip D Meter D	ml API	HTHP @ °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	
1/1	7325	15.1	51	42	12	11/21	10.0	4.5		2		2.1	500	140	Tr	25	0	75	24	
1/2	7375	15.0	47	40	10	3/12	10.5	4.9		2		4.7	510	50	Tr	29	0	71	24	
1/3	7430	15.3	49	40	8	7/17	11.5	4.9		2		6.1	320	60	Tr	30	0	70	24.5	
1/4		15.3	47	39	8	6/15	11.5	5.2		2		5.8	300	60	1/4	31	0	69	24	
1/5	7600	15.4	49	37	7	5/16	11.5	4.1		2		5.7	300	60	1/4	31	0	69	25	
1/6	7687	15.4	50	47	8	7/20	11.5	5.0		2		5.2	250	45	1/4	31	0	69	25	
1/7	7712	15.4	47	37	8	3/18	10.5	5.8		2		4.2	200	40	1/4	31	0	69	25	
1/8	7808	15.4	53	38	12	3/31	10.5	5.4		2		4.3	200	40	1/4	31	0	69	24.5	
1/9	7874	15.4	52	39	8	6/22	10.5	5.1		2		4.1	200	45	1/4	31	0	69	24	
1/10	7874	15.4	54	41	8	5/20	11.0	4.6		2		4.3	200	40	1/4	31	0	69	24	
1/11	7874	15.4	54	38	12	6/22	10.5	4.4		2		4.3	200	40	1/4	31	0	69	24	
1/12	7898	15.4	54	39	9	5/26	10.5	4.2		2		4.4	200	40	1/4	31	0	69	24	
1/13	7944	15.2	54	49	13	5/26	11.0	4.6		2		3.4	200	35	1/4	30	0	70	27	
1/14	7970	15.5	59	46	12	6/30	11.0	4.6		2		3.8	700	45	1/4	32	0	68	30	
1/15	8000	15.5	60	46	10	5/28	11.0	4.8		2		4.2	600	40	1/4	32	0	68	30	
1/16	8050	15.7	59	42	18	6/26	10.5	5.8		2		3.6	500	50	1/4	32	0	68	29	
1/17	8060	15.8	55	44	11	5/17	10.0	5.0		2		2.5	400	60	1/4	33	0	67	29	
1/18	8087	15.8	49	36	12	4/10	11.0	3.8		2		3.1	400	60	Tr	29	0	71	29	
1/19	8129	15.8	52	38	15	5/12	11.0	4.0		2		3.0	400	50	Tr	29	0	71	29	
1/20	8167	15.8	51	39	15	4/13	11.0	3.8		2		3.4	350	70	Tr	29	0	71	29	
1/21	8208	15.8	54	40	18	5/18	11.0	4.0		2		3.4	300	50	Tr	31	0	69	29	
1/22	8260	16.0	47	41	12	5/12	10.5	4.2		2		4.3	250	45	Tr	31	0	69	29	
1/23	8294	16.1	45	35	13	3/9	11.0	4.0		2		4.4	250	50	Tr	31	0	69	29	
1/24	8304	16.3	47	36	9	4/9	10.5	3.6		2		4.0	250	50	Tr	31	0	69	29	
1/25	8304	16.3	46	36	8	4/7	10.5	3.8		2		4.3	250	50	Tr	31	0	69	30	
1/26	8304	16.3	46	36	8	4/7	10.5	3.8		2		4.3	250	50	Tr	31	0	69	30	
1/27	8303	16.3	46	36	8	4/7	10.5	3.8		2		4.3	250	50	Tr	31	0	69	30	
1/28	8303	16.3	48	35	10	5/10	10.5	3.8		2		3.8	250	80	Tr	31	0	69	31	
1/29	8303	16.3	48	36	10	4/10	10.5	3.8		2		3.8	250	80	Tr	31	0	69	31	
1/30	8303	16.3	47	36	9	4/9	10.5	4.0		2		3.9	250	80	Tr	31	0	69	31	
1/31	8303	16.3	49	36	10	5/10	10.5	4.0		2		4.0	250	80	Tr	31	0	69	30	
2/1	8303	16.3	49	36	10	4/9	10.5	4.0		2		3.8	250	80	Tr	31	0	69	30	
2/2	8313	16.3	49	35	11	5/9	10.5	3.6		2		3.9	250	80	Tr	30	0	70	30	
2/3	8356	16.0	46	31	8	3/8	10.5	3.4		2		3.9	250	80	Tr	31	0	69	30	
2/4	8375	16.6	47	40	11	4/8	10.5	3.6		2		0.6	250	80	Tr	32	0	68	32	

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DRILLING MUD RECORD

ARCTIC DRILLING SERVICES

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Awuna Test Well No. 1 COUNTY North Slope

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 30 TWP 3S RNG 25W

STOCKPOINT DATE BAROID ENGINEER

CASING PROGRAM: 30 inch at 108 ft.
20 inch at 1500 ft.
13 3/8 inch at 5292 ft.
9 5/8 " 8297 '
TOTAL DEPTH 11,200 ft.

7-5/8" @ 10,126'

DATE 1981	DEPTH feet	WEIGHT lb/gal	VISCOSITY See API @ °F	VISCOSITY PV @ °F	Yp	GELS 10 sec/10 min	pH Strip O Meter D	FILTRATION ml API	FILTRATION HTHP @ °F	FILTRATION Cake 32nds	FILTRATE ANALYSIS Pm	FILTRATE ANALYSIS Pf/Mf	FILTRATE ANALYSIS Cl ppm	FILTRATE ANALYSIS Ca ppm	SAND %	RETORT Solids %	RETORT Oil %	RETORT Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
2/5	8412	16.8	48	42	10	3/7	11.0	3.2		2		3.5	300	80	Tr	34	0	66	33	
2/6	8412	16.8	50	43	11	4/10	11.0	3.2		2		3.4	300	80	Tr	38	0	62	32	
2/7	8427	16.8	47	41	9	4/8	11.0	3.0		2		3.2	300	80	Tr	36	0	64	34	
2/8	8478	16.8	48	42	10	4/9	11.0	3.0		2		3.6	300	80	Tr	37	0	63	35	
2/9	8451	16.8	49	43	12	4/10	11.0	3.2		2		3.6	300	80	Tr	37	0	63	35	
2/10	8510	16.8	46	40	8	3/9	11.5	2.4		2		4.2	300	80	Tr	37	0	63	35	
2/11	8579	17.6	48	49	11	2/8	11.0	2.6		2		3.8	1100	70	Tr	38	0	62	35	
2/12	8593	18.0	50	52	14	4/10	11.5	2.4		2		4.2	1100	70	Tr	40	0	60	35	
2/13	8646	18.0	52	58	14	6/14	11.5	2.6		2		4.2	1000	70	1/2	39	0	61	35	
2/14	8696	18.0	53	56	10	5/12	11.5	3.4		2		4.0	900	70	3/4	39	0	61	35	
2/15	8756	18.0	49	48	8	4/8	11.5	2.8		2		4.0	900	60	1/4	37	0	63	35	
2/15	8756	18.0	49	48	8	4/8	11.5	2.8		2		4.0	900	60	1/4	37	0	63	35	
2/16	8777	18.0	48	47	10	4/7	11.5	2.8		2		4.2	900	60	Tr	37	0	63	34	
2/17	8840	18.0	52	52	15	6/14	11.0	3.2		2		3.6	800	50	1/4	38	0	62	35	
2/18	8872	18.0	54	54	14	5/12	11.0	3.6		2		3.6	700	50	1/4	39	0	61	35	
2/19	8893	17.9	55	56	16	6/15	10.5	4.8		2		3.2	500	40	Tr	39	0	61	34	
2/20	8897	17.9	54	49	12	4/12	10.5	4.9		2		3.0	400	50	Tr	38	0	62	33	
2/21	8916	17.9	73	69	14	3/6	10.0	4.5		2		1.2	400	50	1/4	41	0	59	33	
2/22	8949	17.6	68	60	12	3/8	10.5	4.6		2		2.4	800	40	1/4	40	0	60	32	
2/23	9015	17.2	58	46	10	3/6	10.5	4.0		2		3.0	800	40	1/4	39	0	61	33	
2/24	9140	17.1	55	54	10	2/5	10.0	4.9		2		3.2	800	40	1/4	40	0	60	33	
2/25	9256	17.0	60	62	14	5/12	11.0	4.8		2		3.4	700	40	1/4	40	0	60	33	
2/26	9371	17.0	66	70	15		11.0			2			800		1	38	0			
2/27	9465	16.9	60	58	12	3/10	10.5	5.0		2		3.0	800	40	1/2	37	0	63	33	
2/28	9465	16.9		48	8		11.5			2			700		Tr	37	0			
3/1	9465	16.9		55	10		11.5			2			600		Tr	37	0			
3/2	9537	16.6	55	62	14	2/7	11.5	4.8		2		4.2	600	40	1/2	37	0	63	34	
3/3	9635	16.6	60	25	10	2/8	10.5	5.4		2		4.2	700	40	1/2	37	0	63		Hole sloughing; bypassing shakers
3/4	9741	16.6	65	73	8	2/8	10.5	5.0		2		3.8	600	40	1/4	37	0	63		
3/5	9798	16.6	65	67	8	2/8	10.5	4.8		2		3.4	650	40	1/4	36	0	64		
3/6	9798	16.6	60	47	7	2/4	9.5	4.8		2		1.5	700	40	Tr	35	0	65		Building mud volume.
3/7	9798	16.6	48	50	7	2/4	10	9.8		3		1.4	1500	40	Tr	36	0	64		
3/8	9798	16.7	50	61	8	2/6	10	8.0		3		1.5	1000	80	Tr	36	0	64		
3/9	9798	16.6	78	111	14	2/12	10	4.8		3		1.4	800	80	Tr	37	0	63		
3/10	9910	16.6	78	75	7	2/6	9.5	4.8		3		.9	800	80	1/2	36	0	64		

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DRILLING MUD RECORD

ARCTIC DRILLING SERVICES

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Awuna Test Well No. 1 COUNTY North Slope

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 30 TWP 3S RNG 25W

STOCKPOINT _____ DATE _____ BAROID ENGINEER _____

CASING PROGRAM: 30 inch at 108 ft.
20 inch at 1500 ft.
13-3/8 inch at 5292 ft.
9-5/8" at 8297
TOTAL DEPTH 11,206 ft.

7-5/8" @ 10,126'

DATE 1981	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	VISCOSITY PV @ °F	Yp	GELS 10 sec/10 min	pH Strip ☐ Meter ☐	FILTRATION ml API	FILTRATE HTHP @ °F	FILTRATE Cake 32nds	FILTRATE ANALYSIS Pm	Pf/Mf	Cl ppm	Ca ppm	SAND %	RETORT Solids %	RETORT Oil %	RETORT Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
3/11	9951	16.6	76	75	8	2/6	10.0	5.0		3		1.3	1000	80	1/4	36	0	64		
3/12	9955	16.7	68	70	7	2/6	9.5	5.4		3		1.2	1000	80	1/4	37	0	63		
3/13	10123	16.7	60	60	8	2/6	9.5	4.8		2		1.3	1100	80	1/4	37	0	63		
3/14	10130	16.7	60	60	8	2/6	9.5	5.2		2		1.3	1100	80	1/4	37	0	63		
3/15	10130	16.7	60	64	8	2/6	9.5	5.4		3		1.1	1100	80	1/4	37	0	63		
3/16	10130	17.0	58	62	7	2/6	9.5	5.0		2		1.2	1100	80	1/4	38	0	62		
3/17	10130	17.2	56	60	7	2/6	9.5	5.2		2		1.2	1000	80	1/4	38	0	62		
3/18	10130	17.0	56	58	7	2/6	9.5	5.4		3		1.2	1100	80	1/4	37	0	63		
3/19	10130	17.1	65	74	10	4/12	10.0	6.2		3		1.4	1000	80	1/4	37	0	63		
3/20	10130	17.1	68	76	14	4/10	13	7.8		3		2.7	1100	2000	1/4	37	0	63		
3/21	10130	17.0	60	65	7	2/6	13	8.6		3		2.8	1100	2000	1/4	37	0	63		
3/22	10130	16.8	65	65	8	2/6	13	8.2		3		2.8	1000	1200	1/4	37	0	63		
3/23	10130	16.8	55	55	7	2/4	13	8.2		3		4.0	1100	1200	1/4	37	0	63		
3/24	10130	16.8	55	58	7	2/6	13	8.2		3		4.0	1200	1200	1/4	37	0	63		
3/25	10130	16.7	49	48	7	2/4	13	10.2		3		3.3	1300	1200	1/4	37	0	63		
3/26	10130	16.8	54	52	8	2/6	13	10.2		3		3.0	1300	1200	1/4	37	0	63		
3/27	10130	16.8	54	52	8	2/6	13	10.4		3		3.0	1200	1200	1/4	37	0	63		
3/28	10130	16.0	45	42	4	2/4	13	11.2		3		3.0	1300	1200	Tr	34	0	66		
3/29	10152	15.3	50	35	6	2/4	13	6.4		3		2.9	700	1200	Tr	33	0	67		
3/30	10181	15.6	48	32	8	2/4	13	5.4		2		3.4	1100	600	Tr	32	0	68		
3/31	10216	15.6	48	34	8	2/4	13	4.8		2		3.0	1200	600	Tr	32	0	68		
4/1	10336	15.7	48	34	8	2/4	13	4.8		2		3.0	1200	600	Tr	32	0	68		
4/2	10448	15.8	50	44	8	2/4	12	4.4		2		2.7	900	600	Tr	33	0	68		
4/3	10510	15.8	50	45	8	2/4	12	4.4		2		2.6	900	600	1/4	33	0	67		
4/4	10620	15.7	48	38	7	2/5	12	4.4		2		2.8	900	500	Tr	32	0	68		
4/5	10733	15.7	50	35	8	2/4	11	4.8		2		3.0	700	500	1/4	32	0	68		
4/6	10790	15.6	48	35	8	2/4	11.0	4.5		2		3.0	600	400	1/4	32	0	68		
4/7	10793	15.7	46	35	8	2/4	10.5	4.8		2		2.8	600	300	1/4	32	0	68		
4/8	10710	15.7	46	34	7	2/4	11.0	4.9		2		3.0	500	250	1/4	32	0	68		
4/9	10836	15.7	53	38	9	2/6	11.0	4.0		2		3.0	500	250	1/4	32	0	68		
4/10	10926	15.6	52	34	8	2/4	11.0	4.2		2		3.0	500	250	1/4	32	0	68		
4/11	11014	15.6	52	34	8	2/5	10.5	4.2		2		2.5	500	250	1/4	32	0	68		
4/12	11091	15.6	50	32	11	2/7	10.5	4.5		2		2.5	600	200	1/4	32	0	68		
4/13	11122	15.6	51	32	11	2/7	10.5	4.0		2		2.5	600	200	1/4	32	0	68		
4/14	11156	15.6	51	34	11	2/7	10.0	4.5		2		2.5	600	200	1/4	32	0	68		

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DRILLING MUD RECORD

ARCTIC DRILLING SERVICES

COMPANY Husky Oil NPR Operations, Inc. STATE Alaska

WELL Awuna Test Well No. 1 COUNTY North Slope

CONTRACTOR Parco, Inc. LOCATION NPRA SEC 30 TWP 3S RNG 25W

STOCKPOINT _____ DATE _____ BAROID ENGINEER _____

CASING PROGRAM: 30 inch at 108 ft.
20 inch at 1500 ft.
13-3/8 inch at 5292 ft.
9-5/8" 8297
TOTAL DEPTH 11,200 ft.

7-5/8" @ 10,126'

DATE 1981	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
4/15	11175	15.6	52	36	10	2/7	10.0	4.0		2		2.5	600	200	1/4	32	0	68		
4/16	11200	15.6	50	35	10	2/7	10.0	4.0		2		2.5	600	200	1/4	32	0	68		
4/17	11200	15.6	50	34	11	2/6	9.5	4.8		2		2.4	600	200	1/4	31	0	67		
4/18			PLUGGED AND ABANDONED																	

BIT RECORD

COMPANY	CONTRACTOR	COUNTY	STATE
+Husky Oil Company	Parker Drilling Company	North Slope	Alaska

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Reserve	Awuna Test Well No. 1	30	3S	25W		

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

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE			DEPTH OUT	FTGI	HOURS RUN	ACC HOURS	FT/HR	WEIGHT 1000 LBS	ROTARY R P M	VERT DEV	PUMP PRESS	PUMPS No	Liner	SPM	MUD WT	MUD Vis	DULL CODE I	B	G	REMARKS FORMATION, CIRC FLUID, ETC	DATE
1	17½	STC	DSJ	AN1845	16	16	16	1143	1035	24	24	43.1		120	7	1900	1	6	158	9.4	73	3	5	I		
2	17½	STC	DSJ	AN2337	14	14	14	1514	371	11	35	33.7		140	6 1/4	2000	1	6	136	9.9	80	2	2	I		
R2	17½	STC	DSJ	AN2337	14	14	0	1514	1406	61.5	96.5	22.7		100	5 3/4	600	1	6	173	9.9	80	I	N	C		
01	26	Grant		20382	14	14	20	877	769	19	115.5	45.9										2	5	I		
02	26	Grant		21386	14	14	20	1109	232	12	127.5	19.3										I	N	C		
R2	17½	STC	DSJ	AN2337	14	14	0	1416	1308	69	196.5	18.9										I	N	C		
02	26	Grant		21386	14	14	20	1514	637	34.5	231	18.5										I	N	C		
R1	17½	STC	DSJ	AN1845	14	14	0	1514	98	12.5	243.5	7.8		100		1300	1	6	180	10.1	150	I	N	C		
3	17½	STC	DSJ	AJ8925	13	13	16	1730	157	18.5	262	8.5		150	7	2250	1	6	153	9.5	153	4	2	I		
4	17½	STC	DSJ	AJ9449	13	13	16	1841	111	15.5	277.5	7.2		120	7	2300	1	6	140	9.6	140	1	I	I		
R4	17½	STC	DSJ	AJ9449	13	13	16	2262	421	23	300.5	18.3		135	8	2150	1	6	135	10	135	4	4	I		
5	17½	STC	DSJ	AL7464	13	13	16	2447	185	18.5	319	10		140		2250	1	6	135	9.9	56	2	2	I		
R1	8½	Chris	MC201	PW1907				2477	30	8	327	3.7		120		2250	1	6	135	9.9	48	G	O	O	D	
35	17½	STC	DSJ	AL7464	13	13	16	2777	300	24.5	351.5	12.2		120	5 7/8	2350	1	6	135	10.1	54	3	6	I		
6	17½	STC	DSJ	AN1868	13	13	16	3217	440	45	396.5	9.7		125	8	2350	1	6	135	10	54	3	6	I		
7	17½	STC	DSJ	AL8458	13	13	16	3555	338	50.5	447	6.7		125	6 3/4	2350	1	6	135	10.2	57	3	5	I		
8	17½	STC	2JS	AF1832	13	13	16	3664	109	19.5	466.5	5.6		115	6 3/4	950	1	6	66	10.2	56	G	O	O	D	
1	8½	Chri	MC201	PW1907				3680	16	6.5	473	2.5		110		2300	1	6	122	10.2	56	G	O	O	D	
R8	17½	STC	2JS	AF1832	13	14	14	3799	119	17.5	490.5	6.8		110	7	2350	1	6	123	10.2	52	2	2	I		
9	17½	STC	DSJ	AL9730	13	13	16	4091	292	55.5	546	5.3		110	6	2350	1	6	126	10.2	56	2	6	I		
R10	17½	STC	DSJ	AL8650	13	13	16	4283	192	52	598	3.7		125	5 1/4	2350	1	6	130	10.3	57	3	6	I		

MUD REPRESENTATIVE _____ PHONE _____

Compliments of SMITH TOOL

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

BIT RECORD

COMPANY	CONTRACTOR	COUNTY	STATE
Husky Oil Company	Parker Drilling Company	North Slope	Alaska

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Reserve	Awuna Test Well No. 1	30	3S	25W		

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 1	2	G	REMARKS FORMATION, CIRC. FLUID, ETC	DATE
11	17½	STC	DSJ	AL8415	13	14	14	LAYED DOWN WITH FISH																		
12	17½	STC	X3A	SD191	13	13	16	4514	231	46.5	644.5	5		90	5 f/4	2300	1	6	127	10.3	50	2	4	I		
RR8	17½	STC	2JS	AF1832	13	13	16	4540	26	10.5	655	2.5		90	5 f/4	2400	1	6	130	10.2	62	2	2	I		
13	17½	HTC	X3A	SC527	13	13	16	4805	265	50.5	705.5	5.2		110	5 3/4	2400	1	6	130	10.5	56	5	5	I		
14	17½	HTC	X3A	ZV123	13	13	16	5143	338	62	767.5	5.5		100	6	2300	1	6	125	10.7	52	4	4	I		
15	17½	Sec	S4TJ	936341	13	13	16	5180	37	10.5	778	3.5		110	6	2400	1	6	118	10.8	105	3	5	I		
16	17½	HTC	OSC	AJ970	13	13	16	5300	120	30.5	808.5	3.9				2500	1	6	118	10.8	110	7	2	I		
				WELL SUSPENDED FOR SUMMER																						

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DIVISION OF SMITH INTERNATIONAL, INC.

BIT RECORD

COMPANY: Husky Oil Company
CONTRACTOR: Parker Drilling Company
COUNTY: North Slope
STATE: Alaska
LEASE: National Petroleum Reserve
WELL NO: Awuna Test Well No. 1
SEC: 30
TOWNSHIP: 3S
RANGE: 25W
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	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	MUD VIS	DULL CODE I	B	G	REMARKS FORMATION CIRC. FLUID, ETC	DATE
17	12¼	Reed	S11J	234412	10	10	10	5331	31	5.5	598.5	5.6	10	114	5 3/4	3000	1	6	90	10	47	1	1	1		
18	12¼	Sec	S33S	207578	10	10	10	5601	270	30	628.5	9	10	150	6 1/2	268	1	6	92	10	47	3	2	1		
19	12¼	STC	SDS	AK2725	10	10	10	5863	262	33	661.5	7.9	12	170	6 1/2	2600	1	6	92	10	46	4	4	1		
20	12¼	HTC	X3A	FK169	10	10	10	6010	147	27	688.5	5.4	18	120	6 1/2	3000	1	6	89	10	46	4	2	1		
CH2	8½	ACC	EHS	1788				6040	30	8	696.5	3.75	12	85		1000	1	6	68	10	46	G	O	D	D	
21	12¼	HTC	X3A	FE380	10	10	10	6044	4	3	699.5	1.3	30	120		3000	1	6	89	10	46	8	2	1		
M1	12¼			MILLED	JUNK																					
22	12¼	HTC	X1G	2J977	10	10	10	6258	210	22.5	722	9.3	30	120		3000	1	6	90	10.7	46	4	3	1		
23	12¼	STC	SDS	BH9755	11	11	9	6547	189	36	758	5.25	25	120	6	3100	1	6	90	11.8	46	4	3	1/8		
24	12¼	STC	SDS	BH9940	11	11	9	6716	169	29.5	787.5	5.7	35	150	6	2600	1	6	85	12.5	46	4	4	1		
25	12¼	Reed	S13C	543316	11	11	11	6921	205	40	827.5	5.1	50	150	6	3100	1	6	100	12.6	46	6	7	1		
26	12¼	Reed	H551	338924	12	12	12	6935	14	4.5	832	3.1	50	100	6	3000	1	6	103	12.7	46	1	1	1		
27	12¼	Sec	M444	861833	13	13	13	7048	113	23.5	855.5	4.8	50	100	6	3000	1	6	99	14.5	49	6	6	1		
28	12¼	STC	SVH	AW8856	13	13	13	7215	167	31	886.5	5.3	50	100	7	3100	1	6	101	14.6	49	4	5	1		
29	12¼	STC	SDGH	BH8428	13	13	13	7374	159	26.5	913	6	45	125	7	3050	1	6	101	15	49	5	4	1		
30	12¼	HTC	J2	FP657	13	13	13	7588	214	38	951	5.6	50	80	6 3/4	3000	1	6	97	15.4	49	4	4	1		
31	12¼	HTC	J1	EA917	13	13	13	7700	112	28.5	979.5	3.9	60	80	7	3000	1	6	96	15.4	49	6	8	1/4		
32	12¼	HTC	J2	FP042	13	13	13	7874	174	43	1022.5	4	60	80	7	3000	1	6	94	15.4	49	6	8	1/4		
33	12¼	HTC	J2	ET172	13	13	13	7898	24	6.5	1029	3.7	60	75	7.5	3000	1	6	94	15.4	49	6	5	1/8		
34	12¼	STC	F2	PT945	13	13	13	7961	63	24	1053	2.6	60	70	8	2700	1	6	90	15.4	49	5	8	1		
35	12¼	HTC	J3	EW560	13	13	13	7995	34	13	1066	2.6	50	80	7.5	3000	1	6	94	15.5	49	7	4	1/16		

SMITH TOOL REPRESENTATIVE

PHONE

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

BIT RECORD

COMPANY	CONTRACTOR	COUNTY	STATE
Husky Oil Company	Parker Drilling Company	North Slope	Alaska

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Reserve	Awuna Test Well No. 1	30	3S	25W		

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	O	G	REMARKS FORMATION CIRC. FLUID, ETC.	DATE
36	12¼	Reed	HS51	338925	13	13	13	8060	65	30	1096	2.1	50	60	7 3/4	3000	1	6	94	15.8	55	8	8	I		
37	12¼	HTC	JD8	LA075	13	13	13	8087	27	13.5	1109.5	2	55	70		3000	1	6	94	15.8	55	4	3	I		
38	12¼	HTC	J33	SM320	13	13	13	8130	42	22.5	1132	1.8	60	55		3000	1	6	94	15.8	55					
39	12¼	Sec	M44G	861528	13	13	13	8207	77	19.5	1161.5	2.6	55	70		3000	1	6	94	15.8	55	4	6	I		
40	12¼	STC	SVH	AF7543	13	13	13	8267	60	24.5	1186	2.4	50	70		3000	1	6	94	15.8	55	7	6	I		
41	12¼	HTC	XDV	ZR227	13	13	13	8303	36	19.5	1205.5	1.8	50	70	7 1/2	3000	1	6	94	16.3	55	7	4	I		
42	12¼	STC	SDS	MP732	13	13	13	CLEAN OUT ONLY																		
43	8½	STC	SVH	AJ4424	10	10	11															4	1	I		
44	8½	STC	SVH	AT1289	10	10	11	8353	50	19.25	1224.75	2.6	20/40	75		3000	1	5½	85	16.2	49	7	6	1/8		
45	8½	Sec	M44HC	992400	10	10	11	8412	59	17.75	1242.5	3.3	40	75	7 1/2	3100	1	5½	85	16.8	49	8	7	1/8		
46	8½	STC	3JS	AC061	10	10	11	8478	66	21.5	1264	3	45	55		1650	1	5½	62	16.8	49	5	8	1/8		
47	8½	STC	F3	BC8749	10	10	11	8573	95	36.5	1300.5	2.6	45	55	6 3/4	2900	1	5½	80	17.6	50	4	2	1/8		
48	8½	STC	M84F	859617	10	10	11	8771	198	82	1382.5	2.4	38	62	7 3/4	2600	1	5½	75	18.0	48	4	2	I		
49	8½	Reed	HPSM	338597	10	10	11	8893	122	45.5	1428	2.7	38	64		2600	1	5½	75	17.9	54	2	2	I		
50	8½	Reed	HPSM	338595	12	12	12	9465	572	123.5	1551.5	4.6	42	60		2700	2	5½	71	17.1	48	3	5	I		
51	8½	HTC	J33	FB244	13	13	13	9798	333	74	1625.5	4.5	42	65		2250	1	5½	85	16.6	65	6	4	1/8		
52	8½	Reed	HPSM	906645	13	13	13	9951	153	42.5	1668	3.6	42	55/80	3/4	2250	1	5½	78	16.6	65	2	2	1/8		
53	8½	Dia	TBR	81109				10130	179	21	1689	8.5	15	700		3700	1	5½	98	16.7	65	1	1	0		
54	8½	Sec	M44N	636934				DRILLED E-Z DRILL AND CEMENT														6	4	0		
55	8½	HTC	ID-4	CH-633	13	13	13	DRILLED CEMENT AFTER OPEN HOLE SQUEEZE																		
56	8½	Reed	S13G	921529	13	13	13	DRILLED CEMENT																		

SMITH REPRESENTATIVE _____ PHONE _____

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

BIT RECORD

COMPANY	CONTRACTOR	COUNTY	STATE
Husky Oil Company	Parker Drilling Company	North Slope	Alaska

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Reserve	Awuna Test Well No.1	30	3S	25W		

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			DEPTH OUT	FTGE	HOURS RUN	ACC HOURS	FT/HR	WEIGHT 1000 LBS	ROTARY R P M	VERT DEV	PUMP PRESS	PUMPS			MUD		DULL CODE			REMARKS FORMATION, CIRC FLUID, ETC	DATE
					1	2	3										No	Liner	SPM	WT	Vis	I	B	G		
RR43	8½	STC	SVH	AJ4424	13	13	13	DRILLED CEMENT																		
57	6½	Reed	Y13J	927722	13	13	13	10152	22	5	1694	4.4	18/25	60		2000	1	5½	72	15.3	50	7	5	1/8		
58	6½	Reed	Y13J	927725	12	12	12	10192	40	11	1705	3.6	20/24	65		2000	1	5½	70	15.6	48	7	6	1/16		
59	6 15/32		TBR	81124																						

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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.

Proposed casing for Awuna Test Well No. 1 was as follows: 30" conductor at ±100'; 20" casing at ±1500'; 13-3/8" casing at ±5500'; 9-5/8" casing at ±8500'; 7-5/8" casing at ±13,000'; 5-1/2" casing at ±15,000', total depth. Actual casing runs were 30" at 108'; 20" at 1500'; 13-3/8" at 5292'; 9-5/8" at 8297'; and 7-5/8" liner at 10,126'.

When plugging and abandoning the well, a cement plug was set at 7868' and the top 4,000 feet of the hole was displaced with diesel. The latter was to allow temperature monitoring equipment to be run in the well at a later date.

NOTE: Apparently the records on the 9-5/8" casing (Casing Tally Summary Sheet and Casing Tally) were misplaced and could not be included with this report.

CASING TALLY
SUMMARY SHEET

DATE: March 4, 1980

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

SUMMARY OF PAGE MEASUREMENTS			
	NO. OF JOINTS	FEET	.00'S
PAGE 1	42	1741	05
PAGE 2			
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	42	1741	05

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	.00'S
1	TOTAL CASING ON RACKS	42	1741	05
2	LESS CASING OUT (JTS NOS.	6	244	68
3	TOTAL (1 – 2)		1496	37
4	SHOE LENGTH		2	10
5	FLOAT LENGTH		1	83
6	MISCELLANEOUS EQUIPMENT LENGTH			
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		1500	30
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT			

Weight indicator before cementing: _____ ; 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
					JT NO. THRU NO.			' _ '
					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: March 11, 1980

FIELD NPRA LEASE & WELL NO. Awuna 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	42	00			
2	43	35			
3	42	43			
4	41	22			
5	43	57			
6	40	31			
7	40	10			
8	44	20			
9	41	72			
0	43	65			
TOTAL A	422	55			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	39	51			
2	38	42			
3	42	53			
4	43	36			
5	42	27			
6	41	10			
7	41	23			
8	41	30			
9	41	08			
0	42	26			
TOTAL D	413	06			

1	43	29			
2	43	57			
3	40	24			
4	42	40			
5	41	92			
6	41	50			
7	40	26			
8	42	44			
9	36	62			
0	38	72			
TOTAL B	410	96			

1	43	11			
2	40	39			
3					
4					
5					
6					
7					
8					
9					
0					
TOTAL E	83	50			

1	38	19			
2	41	74			
3	43	66			
4	41	62			
5	38	99			
6	42	41			
7	41	20			
8	41	85			
9	42	66			
0	38	66			
TOTAL C	410	98			

TOTAL A	422	55		
TOTAL B	410	96		
TOTAL C	410	98		
TOTAL D	413	06		
TOTAL E	83	50		
TOTAL PAGE	1741	05		

CASING AND CEMENTING REPORT

WELL NAME Awuna Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

36	Jts	20"	133 #/ft	K-55	8RD	Range 3
	Jts					
	Jts					

Shoe @ 1500' Float @ 1453' DV @ _____

Centralizers One over a stop ring 10 feet above shoe and on collars numbers 2, 3, and 4; then on every other collar through the fourteenth.

FIRST STAGE

Sx of Cement 2850 Type Permafrost II Additives _____ % Excess _____

Preflush _____ Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down _____ AM PM

SECOND STAGE - Stage Collar @ _____

Sx of Cement _____ Type _____ Additives _____ % Excess _____

Preflush _____ Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down _____ AM PM

Well Depth _____ Overall Casing Tally _____

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

Weight Indicator Before Cementing _____ lbs.

Weight Indicator After Slacking Off _____ lbs.

Inches Slacked Off _____

Remarks:

CASING TALLY
SUMMARY SHEET

DATE: May 3, 1980

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

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

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	00'S
1	TOTAL CASING ON RACKS	138	5364	95
2	LESS CASING OUT (JTS NOS.)		83	52
3	TOTAL (1 - 2)		5281	43
4	SHOE LENGTH		1	75
5	FLOAT LENGTH		2	00
6	MISCELLANEOUS EQUIPMENT LENGTH		7	82
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		5292	00
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT			

Weight indicator before cementing: _____ ; 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
					JT NO. _____ THRU NO.			' _____ '
					JT NO. _____ THRU NO.			' _____ '
					JT NO. _____ THRU NO.			' _____ '
					JT NO. _____ THRU NO.			' _____ '
					JT NO. _____ THRU NO.			' _____ '
					JT NO. _____ THRU NO.			' _____ '
					JT NO. _____ THRU NO.			' _____ '

PAGE 1 OF 4

CASING TALLY

DATE: May 3, 1980

FIELD NPRA LEASE & WELL NO. Awuna 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	30			
2	42	96			
3	42	00			
4	43	40			
5	38	38			
6	40	52			
7	41	73			
8	40	87			
9	40	95			
0	42	75			
TOTAL A	415	86			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	42	03			
2	42	30			
3	42	74			
4	42	51			
5	37	90			
6	39	80			
7	42	35			
8	42	14	OUT		
9	42	75			
0	42	51			
TOTAL D	374	89			

1	42	85			
2	41	36			
3	41	83			
4	39	05			
5	36	05			
6	42	55			
7	42	99			
8	36	37			
9	41	16			
0	40	45			
TOTAL B	404	66			

1	43	06			
2	42	93			
3	38	65			
4	42	48			
5	41	42			
6	35	57			
7	40	96			
8	43	15			
9	40	97			
0	40	07			
TOTAL E	409	26			

1	42	32			
2	41	33			
3	42	52			
4	42	47			
5	42	15			
6	42	43			
7	36	94			
8	41	28			
9	42	75			
0	39	55			
TOTAL C	413	74			

TOTAL A	415	86			
TOTAL B	404	66			
TOTAL C	413	74			
TOTAL D	417	03			
TOTAL E	409	26			
TOTAL PAGE	2060	55			

PAGE 2 OF 4

CASING TALLY

DATE: May 3, 1980

FIELD NPRA LEASE & WELL NO. Awuna 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	68			
2	42	02			
3	41	52			
4	39	85			
5	42	07			
6	41	15			
7	41	81			
8	43	20			
9	43	10			
0	42	35			
TOTAL A	417	75			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	35	90			
2	40	00			
3	42	36			
4	39	10			
5	41	50			
6	40	83			
7	40	75			
8	40	71			
9	42	51			
0	36	80			
TOTAL D	400	46			

1	43	28			
2	42	85			
3	41	34			
4	40	85			
5	40	85			
6	42	87			
7	38	00			
8	42	27			
9	41	46			
0	40	98			
TOTAL B	414	75			

1	42	62			
2	37	70			
3	41	35			
4	39	80			
5	40	68			
6	42	17			
7	42	00			
8	42	50			
9	41	45			
0	42	80			
TOTAL E	413	07			

1	41	10			
2	40	54			
3	39	90			
4	40	55			
5	41	23			
6	42	55			
7	39	76			
8	43	17			
9	40	78			
0	42	65			
TOTAL C	412	23			

TOTAL A	417	75		
TOTAL B	414	75		
TOTAL C	412	23		
TOTAL D	400	46		
TOTAL E	413	07		
TOTAL PAGE	2058	26		

PAGE 3 OF 4

CASING TALLY

DATE: May 3, 1980

FIELD NPRA LEASE & WELL NO. Awuna 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	43	32			
2	42	60			
3	41	95			
4	41	95			
5	34	63			
6	41	82			
7	42	30			
8	41	40			
9	36	57			
0	42	00			
TOTAL A	408	54			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	87			
2	41	38	OUT		
3	42	00			
4	39	78			
5	43	35			
6	37	60			
7	39	55			
8	41	35			
9	41	30			
0	40	75			
TOTAL D	408	93			

1	41	97			
2	40	55			
3	42	00			
4	42	55			
5	43	00			
6	40	15			
7	43	43			
8	42	18			
9	41	35			
0	42	67			
TOTAL B	419	85			

1	42	17			
2	35	25			
3	42	15			
4	42	40			
5	42	00			
6	41	13			
7	42	62			
8	41	52			
9	40	75			
0	42	85			
TOTAL E	412	84			

1	41	11			
2	42	40			
3	42	35			
4	42	65			
5	40	48			
6	43	54			
7	42	27			
8	40	10			
9	41	00			
0	39	46			
TOTAL C	415	36			

TOTAL A	408	54		
TOTAL B	419	85		
TOTAL C	415	36		
TOTAL D	408	93		
TOTAL E	412	84		
TOTAL PAGE	2065	52		

PAGE 4 OF 4

CASING TALLY

DATE: May 3, 1980

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

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	25			
2	41	56			
3	39	34			
4	41	40			
5	40	74			
6	42	00			
7	42	01			
8	39	93			
9	40	90			
0	41	20			
TOTAL A	410	33			

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

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

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

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

TOTAL A	410	33		
TOTAL B				
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	410	33		

CASING AND CEMENTING REPORT

WELL NAME Awuna Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

128	Jts	13 3/8"	72 #/Ft	S-95	BTC	Remarks:
_____	Jts	_____	_____	_____	_____	_____
_____	Jts	_____	_____	_____	_____	_____

Shoe @ 5292' Float @ 5211' DV @ F.O @ 1987' & 996'

Centralizers _____

_____

FIRST STAGE

Sx of Cement 600 / 2000 Type Pmfst II / Cl "G" Additives 0.5% CFR-2 / 1% HR-7 % Excess _____

Preflush _____ Initial Pressure _____

Displacement 72 bbls. Final Pressure _____

Plug Down _____ AM / PM

SECOND STAGE - Stage Collar @ 1987'

Sx of Cement 2600 Type Permafrost II Additives _____ % Excess _____

Preflush _____ Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down 8:00 PM

Well Depth _____ Overall Casing Tally _____

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

Weight Indicator Before Cementing _____ lbs.

Weight Indicator After Slacking Off _____ lbs.

Inches Slacked Off _____

Remarks:

CASING AND CEMENTING REPORT

WELL NAME Awuna Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

192	Jts	9 5/8"	53.5 #/ft	S-95	BTC	Range 3
	Jts					
	Jts					

Shoe @ 8297' Float @ 8215' DV @ 5830'

Centralizers One ten feet above shoe at 8287' and at 8167', 8085', 8003', 5746', 5788', 5914', 5872', 5237', 5279', 2160', and 2076'.

FIRST STAGE

Sx of Cement 1000 Type Cl "G" Additives 1% CFR-2 .17% HR-7 % Excess

Preflush Initial Pressure 3000 psi

Displacement 584 bbls. Final Pressure

Plug Down 8:45 ~~AM~~ PM

SECOND STAGE - Stage Collar @

Sx of Cement 1300 Type Cl "G" Additives 1% CFR-2 .17% HR-7 % Excess

Preflush Initial Pressure 2500 psi

Displacement 441 bbls. Final Pressure

Plug Down 1:45 AM ~~PM~~

Well Depth Overall Casing Tally

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

Weight Indicator Before Cementing lbs.

Weight Indicator After Slacking Off lbs.

Inches Slacked Off

Remarks:

LINER TALLY
SUMMARY SHEET

DATE: March 21, 1981

FIELD National Petroleum Reserve in Alaska LEASE & WELL NO. Awuna Test Well No. 1 TALLY FOR 7 5/8" LINER

SUMMARY OF PAGE MEASUREMENTS			
	NO. OF JOINTS	FEET	.00'S
PAGE 1	50	2072	58
PAGE 2	10	404	16
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	60	2476	74

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	FOOTAGE .00'S
1	TOTAL CASING ON RACKS	60	2476	74
2	LESS CASING OUT (JTS NOS.	9	361	15
3	TOTAL (1 - 2)	51	2115	59
4	SHOE LENGTH		1	85
5	FLOAT LENGTH		0	87
6	MISCELLANEOUS EQUIPMENT LENGTH		22	67
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		2140	98
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT			

Weight indicator before cementing: 65,000 ; 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
					JT NO. THRU NO.			. _ .
					JT NO. THRU NO.			. _ .
					JT NO. THRU NO.			. _ .
					JT NO. THRU NO.			. _ .
					JT NO. THRU NO.			. _ .
					JT NO. THRU NO.			. _ .
					JT NO. THRU NO.			. _ .

LINER TALLY

PAGE 1 OF 2

DATE: March 21, 1981

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

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	45	29			
2	38	50			
3	41	59			
4	43	00			
5	40	15			
6	44	71			
7	40	19			
8	43	48			
9	44	05			
0	45	97			
TOTAL A	426	33			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	42	63			
2	38	64			
3	40	11			
4	40	02			
5	43	88			
6	43	12			
7	37	12			
8	38	30			
9	42	23			
0	43	40			
TOTAL D	409	45			

1	43	67			
2	43	08			
3	41	40			
4	43	40			
5	45	02			
6	40	97			
7	43	38			
8	34	20			
9	41	44			
0	42	90			
TOTAL B	419	46			

1	41	11			
2	40	68			
3	35	50			
4	40	08			
5	39	78			
6	39	19			
7	45	15			
8	44	34			
9	42	10			
0	45	64			
TOTAL E	413	57			

1	45	91			
2	34	89			
3	43	40			
4	41	68			
5	41	68			
6	40	18			
7	40	34			
8	40	53			
9	34	80			
0	40	36			
TOTAL C	403	77			

TOTAL A	426	33		
TOTAL B	419	46		
TOTAL C	403	77		
TOTAL D	409	45		
TOTAL E	413	57		
TOTAL PAGE	2072	58		

LINER TALLY

PAGE 2 OF 2

DATE: March 21, 1981

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

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	43	40			
2	39	80			
3	38	08			
4	40	80			
5	41	39			
6	41	88			
7	39	47			
8	37	47			
9	41	19			
0	40	68			
TOTAL A	404	16			

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

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

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

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

TOTAL A	404	16		
TOTAL B				
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	404	16		

LINER AND CEMENTING REPORT

WELL NAME Awuna Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

51 Jts 7 5/8" Liner _____ _____ _____

_____ Jts _____ _____ _____ _____ _____

_____ Jts _____ _____ _____ _____ _____

Shoe @ 10,126' Float @ 10,078' DV @ _____

Centralizers _____

_____

FIRST STAGE

Sx of Cement 350 Type Cl "G" Additives _____ % Excess _____

Preflush 50 Barrels Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down _____ AM PM

SECOND STAGE - Stage Collar @ _____

Sx of Cement _____ Type _____ Additives _____ % Excess _____

Preflush _____ Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down _____ AM PM

Well Depth _____ Overall Casing Tally _____

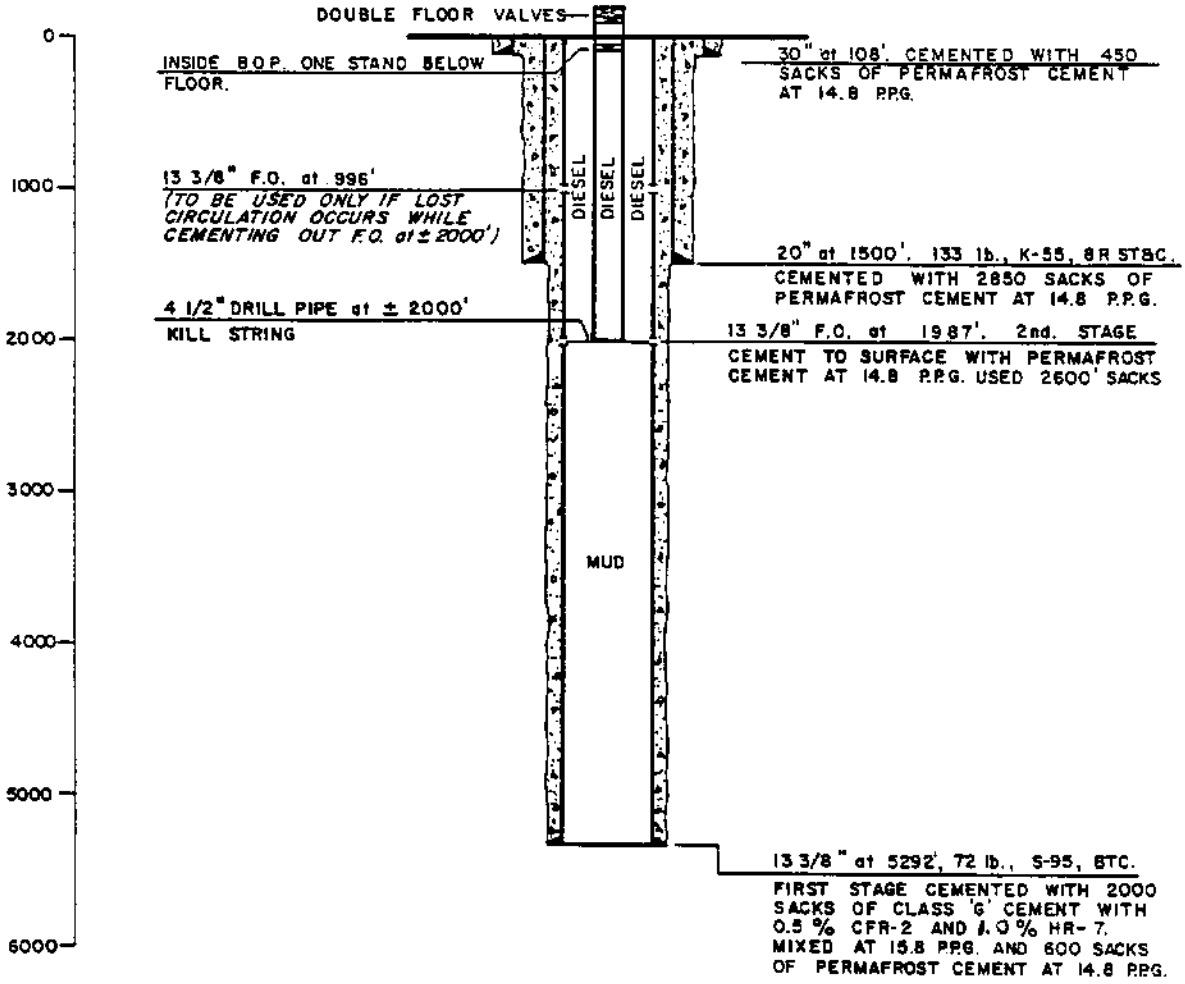
KB to Top of Cut Off Casing _____ Length of Landing Jt Removed _____

Weight Indicator Before Cementing _____ lbs.

Weight Indicator After Slacking Off _____ lbs.

Inches Slacked Off _____

Remarks:



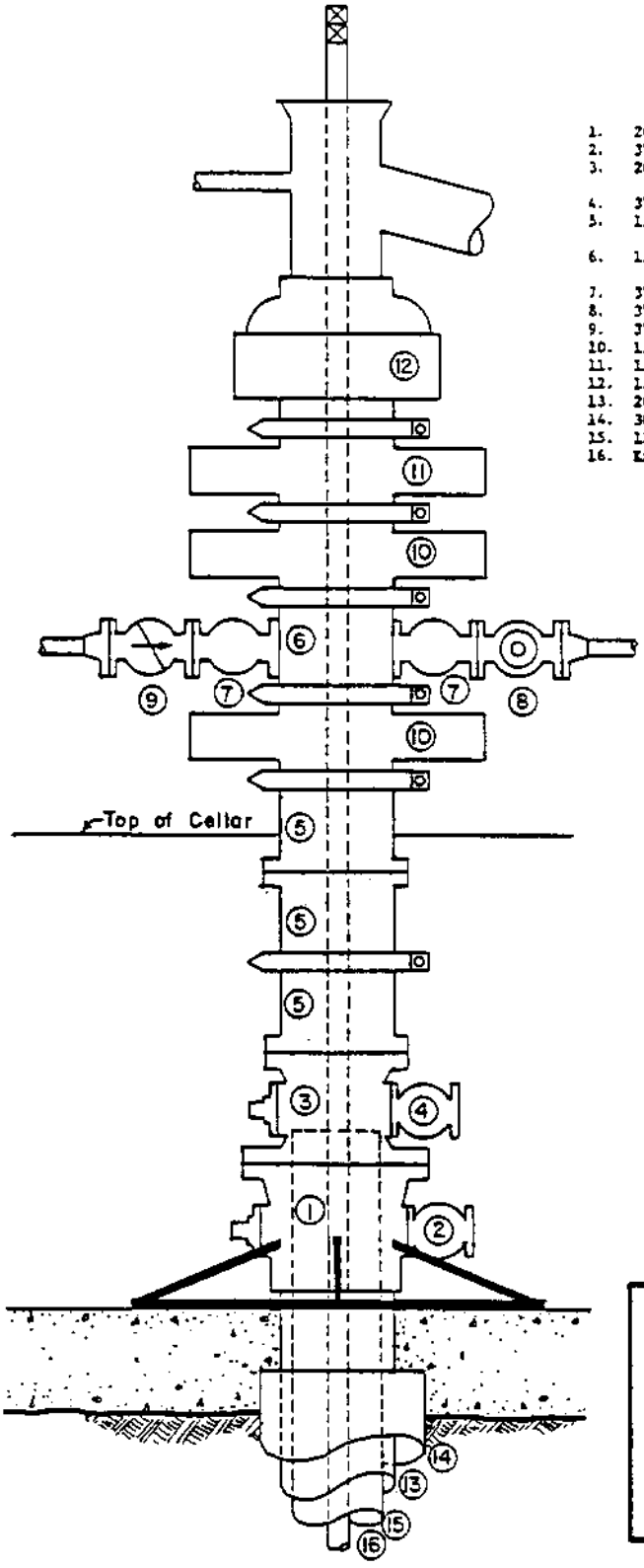
AWUNA TEST WELL No. 1

2519' FSL and 1936' FEL
Sec 30, T.3S., R.25W., U.M.
Pad Level 1103' K.B. Level 1127'

HUSKY OIL *N.P.R. Operations*

NATIONAL PETROLEUM RESERVE in ALASKA

SUMMER SUSPENSION WELLBORE SCHEMATIC

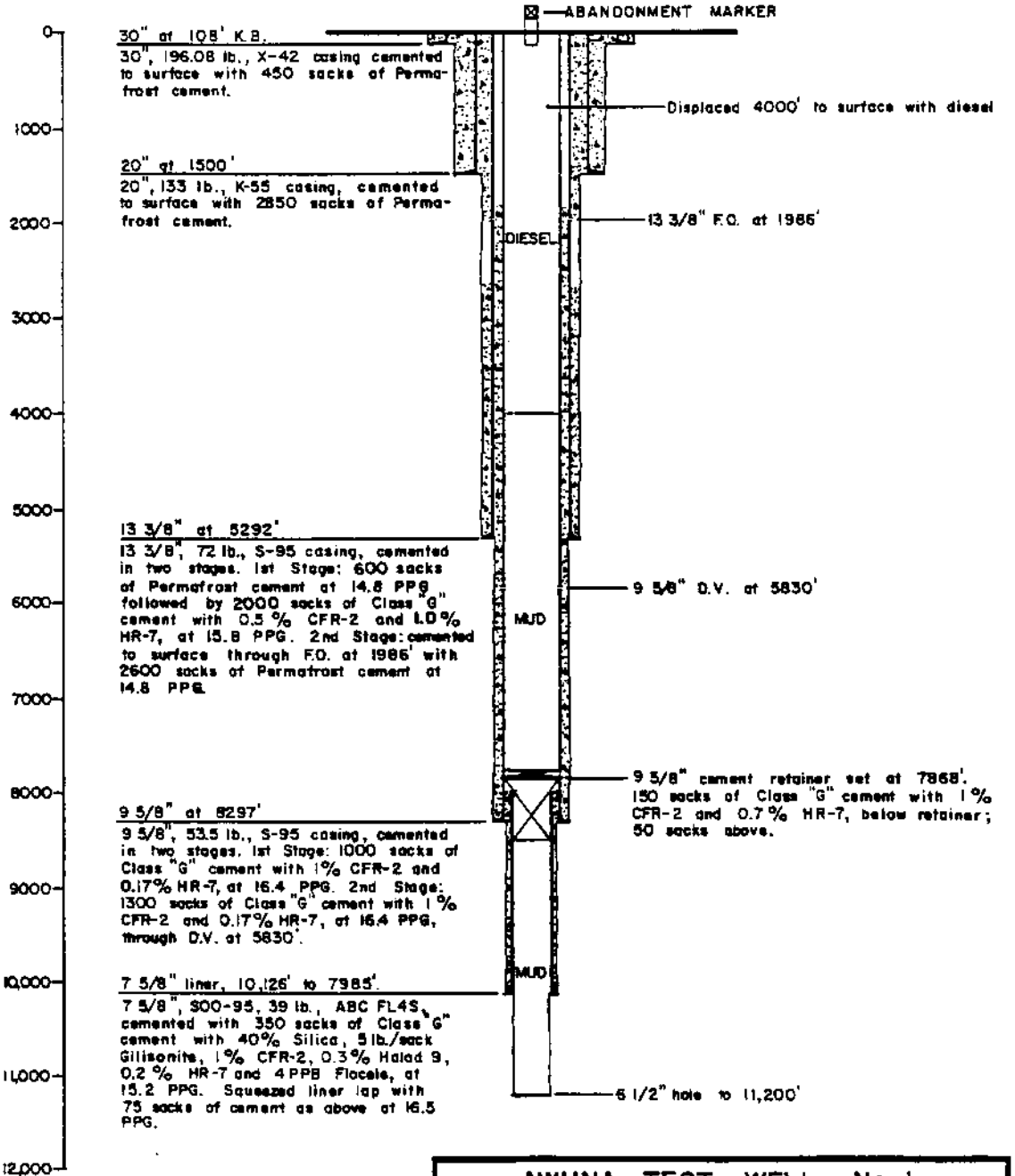


1. 20", 3000 psi McEvoy Slip-on Head.
2. 3", 3000 psi McEvoy Model "C" Gate Valve.
3. 20", 3000 psi X 13 5/8", 5000 psi McEvoy Head.
4. 3", 3000 psi McEvoy Model "C" Gate Valve.
5. 13 5/8", 5000 psi X 13 5/8", 5000 psi Spacer Spools.
6. 13 5/8", 5000 psi Flange X Rub Drilling Spool.
7. 3", 5000 psi Cameron Gate Valve.
8. 3", 5000 psi Cameron Hydraulic Gate Valve.
9. 3", 5000 psi Cameron Check Valve.
10. 13 5/8", 5000 psi Shaffer LWS Poslock BOP.
11. 13 5/8", 5000 psi Shaffer LWS Poslock BOP.
12. 13 5/8", 5000 psi Shaffer Spherical BOP.
13. 20", 133# Casing.
14. 30" Conductor.
15. 13 3/8", 72# Casing.
16. Kill String, Pipe Rams Locked Closed and Hanging on Slips in Rotary Table with Double Surface Valve and Inside BOP Ram One Stand from Surface.

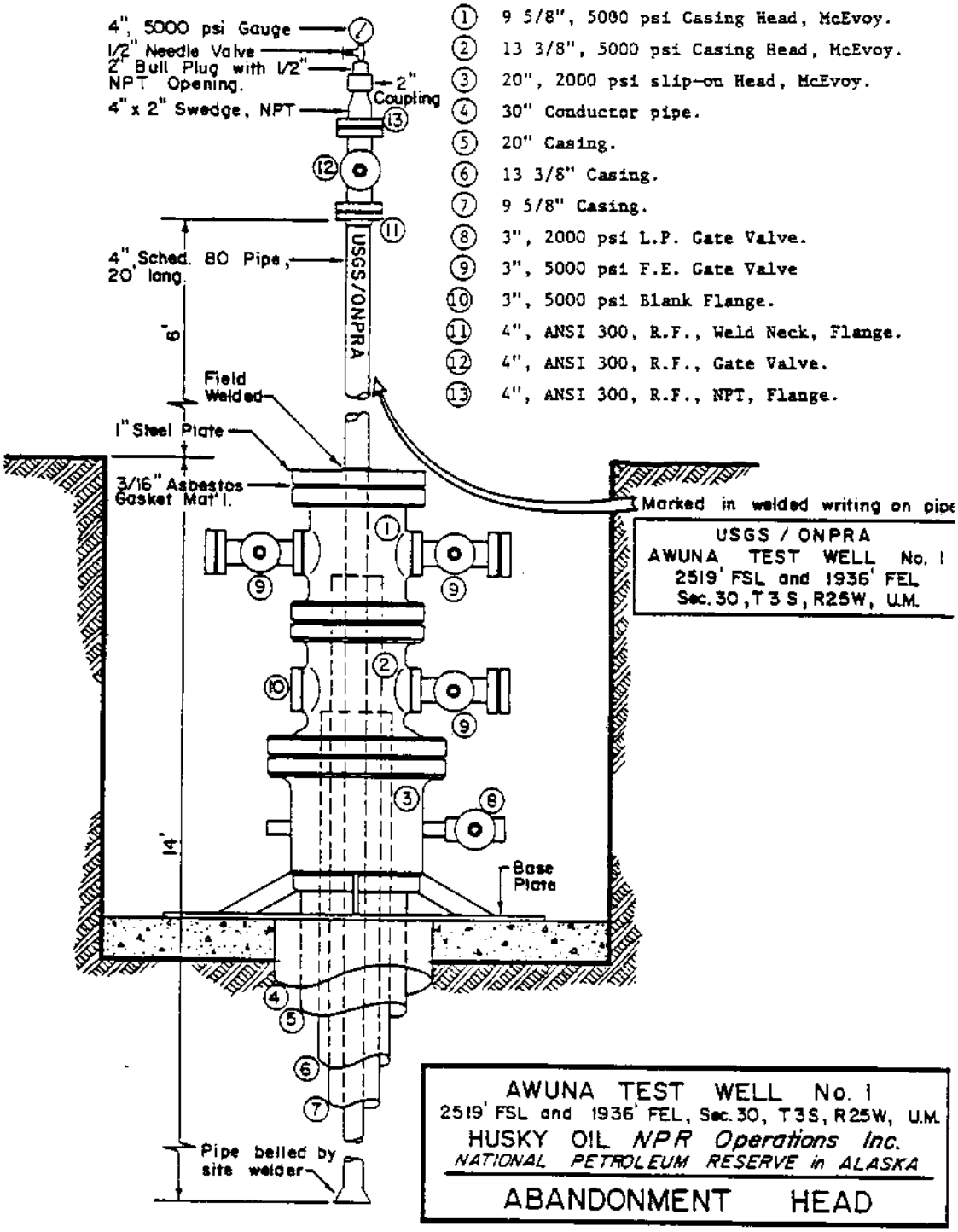
AWUNA Test Well No. 1

PARCO RIG 95

13 5/8", 5000 psi BOP Suspension Schematic



AWUNA TEST WELL No. 1
2519' FSL and 1936' FEL, Sec. 30, T 3S, R25W, U.M.
HUSKY OIL *NPR Operations Inc.*
NATIONAL PETROLEUM RESERVE in ALASKA
WELLBORE SCHEMATIC



Part No.	EQUIPMENT LIST
1	9 5/8", 5000 psi Casing Head, McEvoy.
2	13 3/8", 5000 psi Casing Head, McEvoy.
3	20", 2000 psi slip-on Head, McEvoy.
4	30" Conductor pipe.
5	20" Casing.
6	13 3/8" Casing.
7	9 5/8" Casing.
8	3", 2000 psi L.P. Gate Valve.
9	3", 5000 psi F.E. Gate Valve
10	3", 5000 psi Blank Flange.
11	4", ANSI 300, R.F., Weld Neck, Flange.
12	4", ANSI 300, R.F., Gate Valve.
13	4", ANSI 300, R.F., NPT, Flange.

AWUNA TEST WELL No. 1
2519' FSL and 1936' FEL, Sec. 30, T3S, R25W, U.M.
HUSKY OIL *NPR Operations Inc.*
NATIONAL PETROLEUM RESERVE in ALASKA

ABANDONMENT HEAD

RIG INVENTORY

Draw Works

National 130, 25,000 pound, Serial No. 615648.

Hydromatic Brakes

Parkersburg, hydromatic, 60", Serial No. 48173.

Catworks Unit

National 130, Serial No. 438-3.

Compound and Rig Drive

National, B Sec., three engine, 2,000 HP with gyro drive.

Drilling Engines

Caterpillar, diesel turbo, D-398, 750 HP, Serial No. 66B2440.
Caterpillar, diesel turbo, D-398, 750 HP, Serial No. 66B2436.
Caterpillar, diesel turbo, D-398, 750 HP, Serial No. 66B2439.

Starting Engines:
Three Switzer, air, 40 HP.

Sheds:
Parker, steel, 8' x 30'.

Skids.

Transmissions

Torque Converters.

Rig Lights

GE, vapor proof, 500 watt to 1500 watt.

No. 1 Light Plant

Caterpillar, diesel turbo, AC, 250 KW.

No. 1 Engine:
Caterpillar, diesel turbo, D353, 450 HP, AC power plant, Serial No. 46B2997.

No. 1 AC Generator:
Caterpillar, AC electric, 250 KW, AC power plant, Serial No. 250TH1550.

No. 2 Light Plant

Caterpillar, turbo diesel, 250 KW.

No. 2 Engine:
Caterpillar, turbo diesel, D-353, 450 HP, Serial No. 46B2999.

No. 2 AC Generator:
Caterpillar/GE, AC electric, 250 KW, Serial No. 250TH1549.

No. 3 Light Plant

Caterpillar/GE.

No. 3 Engine:
Caterpillar, turbo diesel, D-353, 450 HP.

No. 3 AC Generator:
Caterpillar/GE, AC electric, 250 KW.

Mast and Substructure

L. C. Moore, jackknife, 142' x 1,025M, Serial No. T-2560.
L. C. Moore, box type, 18' x 34' x 32' with engine sub 8' x 32' draw works and engine sub.

Crown:
L. C. Moore, 7 x 54", 1 x 60" fast line, 500 ton.

Wire Line Anchor

National, 500 ton, 1-3/8", sub structure.

Windwalls

Parker, steel, 25' x 8'.

Catwalks

Parker, steel, 6' x 54'.

Pipe Racks:
Parker, drill pipe, triangular, 4' x 20'.

Pumps

No. 1 Pump:
EMSCO, D-1000 duplex, 100 HP.

Power End:
EMSCO, steel, 1,000 HP.

Fluid End:
EMSCO, steel, 7" x 18", 1,000 HP.

Pulsation Dampener:
EMSCO, PD2, 20 gallon.

No. 2 Pump:
EMSCO, DB700 duplex, 700 HP.

Power End:
EMSCO, steel, 700 HP, 7" x 16".

Pulsation Dampener:
EMSCO, PD2, 20 gallon.

Mud Mixing Equipment

Mud Mixing Unit:
Mission/Caterpillar/Parker.

Engine:
Caterpillar, diesel turbo, D-330, 130 HP.

Pump:
ASH, B-65 centrifugal, 6' x 8'.

Mud Mixing Unit:
Caterpillar, diesel turbo.

Pump:
ASH, B-65, centrifugal, 6' x 8'.

Lightening Mixers:
Lightening, 73Q80, 7.5" x 32".

Utility Skid

Shale Shaker

Milchem, single decks, 6' x 8'.

Motor:
U. S. electric, 10 HP.

Desander

Dorcone, 12".

Pump:
Harrisburg, centrifugal, 5' x 6'.

Motor:
Newman, electric, 60 HP, with No. 5 starter and switchgear.

Desilter

DEMCO, 4", 8 cone.

Pump:
Harrisburg, centrifugal, 5' x 6'.

Motor:
Pacemaker, CJ48, electric, 60 HP, with No. 5 starter and switchgear.

Degasser

Oliver Door, FAC, 6' x 6'.

Pump:
Gorman Rupp, Model No. 1682B, centrifugal, 6' x 6'.

Traveling Block

Hook

IDECO, Big Shorty, 525 ton.

Swivel

National, N-815, 400 ton.

Tongs-Nonpower

BJ, 2-3/8" x 13-5/8".

Elevators

BJ, MGG, 5", 500 ton.
BJ, MG, 4-1/2", 350 ton.
BJ, side door, A, 6-1/2".
BJ, side door, A, 8-5/8".

Casing Tools-Nonpower

Tubing Tools-Nonpower

Elevator Bails

BJ, forged steel, 106", 350 ton.
BJ, forged steel, 96", 350 ton.

Rotary Table

National, roller bearing, 350 ton, 27-1/2.
National, roller bearing, 20.5.

Master Bushing

Varco, forged steel, 27.5 Wt.

Kelly Drive Bushing:
Baash Ross, IRH 56, 2' x 5' Hex.

Kelly

Drilco, Hex, 4-1/2" IF x 6-5/8" Reg., 5-1/4" x 45'.

Kelly Cock

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

Air Compressor

Quincy, piston 390.
Quincy, piston 350.

Motor:
U.S. Electric, 10 HP.

Air Hoist

Ingersoll Rand, air.
Ingersoll Rand, hoist, K6U.

Drilling Lines

U. S. Steel, Tiger brand WRC, 1-3/8" x 6,000.
Oilwell, WRC, 1-3/8" x 7,500.

Steam Heater

Modene, steam, HL 1250, V-419.

Stove.

Hot Air Blower.

Safety Heater.

Boilers

Cleaver Brooks, steam, 100 HP.

Hot Air Heaters:
T109A, IDF 600,000, BTU 600,000.

Motors.

Boiler House:
Parker, steel, 7.5' x 34'.

Rotary Hose

Hewett Robbins, rubber steel, 55" x 7,500 psi.

Vibrator Hose

Hewett Robbins, rubber steel, 12' x 7,500 psi.

Tool House

Parker, wood and steel, 8' x 40'.

Dog House

Parker, steel.

Sanitary Facility House

Parker, steel insulated, 16' x 40'.

Sewage Unit:
MetPro, 1 PC 140,000, 7,000 GPD.

Clothes House

Light Plant House

Parker, steel, 8' x 34'.

Mud House

Mud Sample House

Parts Storage House

Blowout Preventers

Shaffer, hubbed LWS, 13-5/8" - 5,000#.
Shaffer, LWS, 13-5/8" - 5,000#.

Annular Spherical Preventer:
Shaffer, hubbed LW, 13-5/8" - 5,000#.

Choke Manifold:
Cameron, 2" - 5,000#.
Cameron, 4" - 5,000#.

Tees:
Cameron, 4" with 2" outlets.
Cameron, 4 way T with one 4" outlet and two 2" outlets.
Cameron, positive choke.
Cameron, adjustable choke.
Two spacer spools.
One spool, 2" - 10,000# to 2" - 5,000#.

Flanges:
Shaffer, 2" - 5,000#.

Drilling Spools:
Cameron, 13-5/8" - 5,000#.
Shaffer, clamp to hub, 13-5/8" - 5,000#.
Shaffer, hub to hub.
Double studded 13-5/8" to 12".
Shaffer double, 10" - 1,500# to 13-5/8" - 5,000#.
Shaffer, 13-5/8" - 5,000# x 13-5/8" - 5,000#.

Adapters.

Rams:
Shaffer, Type 70, 4-1/2" rams.
Shaffer, Type 70, blind rams.
Shaffer, Type 70, 9-5/8" rams.
Shaffer, Type 70, 7" rams.

Kill Line:
Steel, 4-1/2" drill pipe.

Gate Valves:
Demco, 4" - 5,000#.
Demco, 2" - 5,000#.

Accumulator

Koomey, T315-15-3, 160 gallon.

Water Tanks

PDC, steel, 17,500 gallon.

Tong Torque Gauge

Martin Decker.

Rotary Torque Gauge

Martin Decker

Mud Pressure Gauge

Cameron.

Drilling Recorder

Totco, 61-A, 4 Pen.

Weight Indicator

Cameron C.
Martin Decker, E, with Type E sensator.

Welding Machine

Lincoln, diesel, 300 AMP.

Motor:
GMC, diesel, 2/53.

Wire Line Unit

Halliburton, XLD, 18,000 with Ramsey gear box.

Drill Pipe Slips

Varco, SDL, 4-1/2".

Drill Collar Slips

Baash/Ross.

Clamps:
Baash/Ross.

Subs

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.

Fishing Tools

Overshots:
- Top Subs.
- Grapples.
- Jars.
- Basket Subs.
- Bumper Subs.

Rat Hole

Parker, 8-5/8" x 30'.

Mouse Hole:
- Parker, 7" x 30'.

Wire Line Guides

Oteco, roller.

Crownomatics

Stewart Stevenson, TCB.

Fire Extinguishers

General, powder, 30#.