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

HISTORY
OF
DRILLING OPERATIONS

INIGOK TEST WELL NO. 1

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

For the

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

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INIGOK TEST WELL NO. 1

INTRODUCTION

Inigok Test Well No. 1 is located in the National Petroleum Reserve in Alaska, formerly designated Naval Petroleum Reserve No. 4 (Figure 1). The well is located 2,713 feet from the south line and 1,843 feet from the east line of Section 34, Township 8 North, Range 5 West, Umiat Meridian (Latitude: 70°00'17.483" North; Longitude: 153°05'56.916" West). Alaska State Plane Coordinates are X = 612,826 and Y = 5,852,099, Zone 5. Drilling related operations commenced with rig up on April 25, 1978, and terminated on May 22, 1979. Elevations: Kelly Bushing 108', Pad 80', Ground Level 76'. As-Built 11/1/78: Kelly Bushing 163', Pad 135'.

The well was drilled to a total depth of 20,102 feet measured depth (20,004.76 feet true vertical depth). The primary objectives of the well were to test a structural/stratigraphic trap within the Sadlerochit and Lisburne Groups. The primary zones of interest included the Sadlerochit and Lisburne Groups and the possible Kuparuk River Sandstone. At the conclusion of the drilling and evaluation operations, the well was left plugged and abandoned with cement and mechanical plugs set at selected intervals.

Husky Oil NPR Operations, Inc. supervised and directed the drilling and support operations as prime contractor to the U. S. Geological Survey, Department of the Interior. Nabors Alaska Drilling, Inc. was the drilling contractor; and Nabors Rig 25, a National 110, was the drilling rig used.

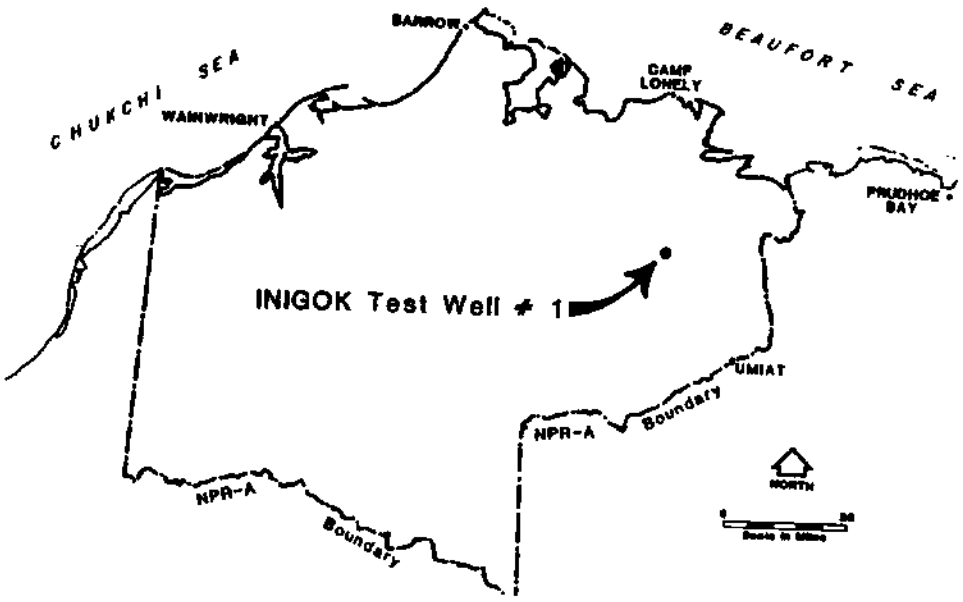

FIGURE 1 - WELL LOCATION MAP - INIGOK NO. 1

DRILLING SUMMARY

Field operations at the Inigok Test Well No. 1 location commenced on January 24, 1978, with the mobilization of construction crews and equipment required to build the drilling pad and permanent airstrip. Construction work was completed on the drilling pad on May 2, 1978, and the permanent airstrip was completed on June 1, 1978.

Rig modification and rig up began at Inigok on April 25. The rig had previously been moved from Drew Point and stacked pending completion of the drill site. Rig work continued through May 22, 1978. The ice airstrip was then closed to heavy aircraft. Operations were halted until June 1, 1978, while Husky's Construction Department finished the permanent airstrip. The well was spudded June 7, 1978.

A 42" conductor was set at 110' and cemented with ArcticSet cement. A 17-1/2" hole was drilled to 520', opened to 26", and to 36". Thirteen joints of 30", 196.08#, X-42 casing with Vetco "ST" connectors were run and landed at 508'. The 30" was cemented with 1740 sacks of ArcticSet II cement on 6/10/78. A 30" base flange and 29-1/2" annular blowout preventer was nippled up and the blowout preventer tested to 250 psi. A 17-1/2" hole was drilled to 2625'. The hole was logged with the DIL/SP/GR and BHC-Sonic/GR logs. The 17-1/2" hole was opened to 26" and conditioned for casing. After having run 54 joints, the casing parted between the 51st and 52nd joints, leaving 1,959.86 feet of fish in the hole. The top of the fish was at 665'. After laying down three joints of 20" casing, the duplex stinger and drill pipe were run to the float collar. The collar was stabbed into and the fish circulated. A fishing assembly was run and the fish recovered. After conditioning the hole, 55 joints of new 20", 133#, K-55, STC 8RD and 9 joints of new 20", 169#, K-55, STC 8RD casing were run and landed at 2594'. The casing was cemented with 5,400 sacks of ArcticSet II cement. The cement was in place 6/23/78 at 8:40 p.m. A 20" National casing head was welded onto the 20" casing. The first weld did not test and had to be ground out and rewelded. The second weld tested to 200 psi. A 20", 3,000 psi SRRA blowout preventer stack was nippled up and tested; rams were tested to 3,000 psi and Hydril to 1,500 psi. Casing was drilled out after testing to 2,400 psi. The shoe bond and formation were tested to 0.53 psi/ft. with no leak off.

Core No. 1 was cut from 2632' to 2662' with full recovery. Core No. 2 was cut from 3072' to 3082' with full recovery. Drilling of 17-1/2" hole resumed to 4206', where Core No. 3 was cut to 4216' with full recovery. A 17-1/2" hole was drilled to 5000', where Core No. 4 was cut to 5010' with full recovery. Drilling resumed to 5767', with minor tight hole on trips. Short tripping once during each bit run eliminated the problem. While testing blowout preventer equipment, the Hydril inner support sleeve came loose and warped out of shape. The sleeve was removed from the Hydril and tested. Variance was requested and received from the USGS Conservation Division to continue drilling until a replacement could be installed. Drilling resumed, and a 17-1/2" hole was drilled to 7054'.

The Hydril was repaired. Core No. 5 was cut from 7054' to 7064' with full recovery. Drilling continued to 7522' where the drill string backed off while drilling, leaving a fish in the hole. A fishing assembly was run and the fish recovered on the first attempt. The bottom hole assembly was inspected while tripping in to drill. Drilling continued to 7762'. While testing blowout preventer equipment, the Hydril rubber burst and was replaced; drilling resumed.

A 17-1/2" hole was drilled to 8210', where Core No. 6 was cut to 8240', recovering 30 feet. While drilling 17-1/2" hole at 8286', a fish was lost in the hole, consisting of a 17-1/2" bit, bit sub, shock sub, 17-1/2" stabilizer, 7-3/4" monel drill collar. Fishing assembly was run and the fish recovered. After conditioning the hole, drilling resumed to 8315'. The hole was logged with the DLL (2 runs), FDC/CNL/GR (2 runs) and BHC-Sonic/GR. After conditioning, 215 joints of 13-3/8", 72#, S-95 Buttress casing were run and landed at 8286' KB. The casing was cemented, with the first stage consisting of 3,400 sacks of Class "G" cement with 0.75% D-65 and 0.15% D-13, mixed at 16.4 ppg. The cement was in place on 8/9/78 at 6:45 p.m. While waiting on cement, a Sperry Sun Gyro Survey was run. A CBL/VDL log was run to determine the quality and height of the cement job. Landing conditions were calculated and the 13-3/8" casing was landed with 600,000 pounds. The 20" blowout preventer equipment was nippled down. The packoff assembly was installed and tested to 2,500 psi. Thirteen and five-eighths inch, 5,000 psi blowout preventer equipment was nippled up and tested to 5,000 psi, the Hydril to 2,500 psi. The top and bottom FOs were tested to 2,500 psi. The 13-3/8" second stage was cemented through the lower FO at 3593' with 5,200 sacks of ArcticSet II cement mixed at 15.2 ppg. The final returns weighed 14.9 ppg. The cement was in place on 8/12/78 at 5:00 p.m. The FO would not shift closed. The drill pipe was displaced and 1,000 psi held on the cement for 12 hours. After several attempts, the FO shifted closed and was tested to 2,500 psi. A 12-1/4" drilling assembly was run and the 13-3/8" casing was tested to 2,500 psi. The float collar and shoe were drilled out and the hole cleaned out to 8317'. The formation was tested to a leak off of 1,400 psi over 9.7 ppg mud. Static pressure of 1,350 psi over 9.7 ppg mud was noted.

A 12-1/4" hole was drilled to 8842', where Core No. 7 was cut to 8852' with full recovery. Drilling resumed to 9338', where Core No. 8 was cut to 9348' with full recovery. Drilling resumed to 9448'. The rig was jacked up and leveled. Core No. 9 was cut from 9448' to 9458' with 9-1/2' recovered. Drilling resumed to 10,295'. Core No. 10 was cut from 10,295' to 10,305' with full recovery. A 12-1/4" hole was drilled to 10,998', where Core No. 11 was cut to 11,008' with full recovery. Drilling continued to 11,704', where Core No. 12 was cut to 11,714' with full recovery. Drilling resumed to 12,273' with minor tight hole and fill. Short trips, with some reaming and washing, were required to keep the hole in good condition. Core No. 13 was cut from 12,273' to 12,283', recovering 9-1/2 feet. After reaming out, the hole was deepened to 12,311' and conditioned for logs. The hole was logged with the DLL (misrun) and FDC/CNL/GR. While rerunning the DLL, the tool stuck at 10,580'. After pulling free, a trip

was made with a bit and drilling assembly and the hole conditioned. The BHC-Sonic, Dipmeter, and Velocity Survey were run. Forty-four sidewall cores were shot and 43 recovered. The hole was cleaned out and conditioned for casing. The following casing was run: 36 joints of 9-3/4", 59.2#, S-95, BTC casing; 269 joints of 9-5/8", 53.5#, S-95, BTC casing. It was washed 15 feet to bottom, landing the 9-5/8" shoe at 12,283'. The hole was conditioned for cementing. The first stage was cemented with 2,800 sacks Class "G" with 1.25% D-65, 0.15% D-28, slurry 15.8 ppg. The second stage was cemented with 1,600 sacks Class "G" with 0.75% D-65, 0.3% D-13, mixed at 15.8 ppg. The cement was in place 9/19/78 at 7:20 a.m. The plug did not bump. A pressure of 2,000 psi was held until 2:00 a.m., 9/20/78, while the cement set. The Temperature Survey was run. The top of the cement was at 8110'. The National casing slips were set with 375,000 pounds. The 9-5/8" casing was cut off. The 11", 10,000 psi blowout preventer equipment was nippled up. It was tested to 10,000 psi and the Hydril to 5,000 psi. The choke manifold was tested to to 10,000 psi. The FO shifting assembly was tripped into the hole. The 13-3/8" x 9-5/8" annulus was arctic packed through the FO at 2294'. The FO was tested to 3,000 psi. The bottom hole assembly was picked up and the cement and differential valve cleaned out. The differential valve and casing were tested to 3,000 psi. New mud was mixed and the hole circulated. The casing was cleaned out to the float collar at 12,198'. The casing was tested to 3,000 psi. The shoe and 10 feet of new hole were drilled out. The formation was tested to 0.676 psi/ft. equivalent gradient.

The 8-1/2" hole was drilled to 12,500', where Core No. 14 was cut (12,500-12,530'). Drilling resumed to 12,705'. Core No. 15 was cut to 12,735', recovering 30 feet. Drilling continued to 13,480', where Core No. 16 was cut to 13,510' with full recovery. Drilling resumed to 13,659'. A RTTS packer was run to check for a casing leak. The leak was isolated between 10,198' and 10,167'. The leak rate was noted at 0.72 gallons per minute at 3,000 psi. Drilling resumed to 13,767', where three bit cones were left in the hole. A reverse circulating junk basket was run, recovering one cone and several bearings. A junk bit was run to break up remaining junk, with a boot basket above the bit. A bit and drilling assembly were run and drilling resumed. Drilling of 8-1/2" hole continued to 13,831'. Core No. 17 was cut from 13,831' to 13,880' (49 feet) where the barrel jammed. Core recovery was 49 feet. Drilling resumed to 14,020' where Core No. 18 was cut to 14,066' with 46-foot recovery. Drilling continued to 15,185'. Repairs were made to the 11", 10,000 psi blowout preventer stack. Core No. 19 was cut from 15,185' to 15,215', recovering 30 feet. Drilling resumed to 15,564'. Drilling of 8-1/2" hole continued to 16,185', where Core No. 20 was cut to 16,198', recovering 13 feet. Drilling continued to 17,053', where Core No. 21 was cut to 17,083', recovering 30 feet. Drilling resumed to 17,570'. The decision was made to run intermediate logs at 17,570' on the dull bit.

While circulating and conditioning for logs on 12/26/78, bottoms up surfaced containing H_2S gas (saturated detectors at 200 ppm). Properly functioning H_2S detection equipment and quick and prudent action by all personnel on or near the rig prevented loss of life. Problems resulting from the high pressure concentration of the H_2S included the well flowing, lost circulation, stuck pipe, and several fish left in the hole. All these were overcome and the zone eventually plugged off and drilling resumed without loss of the hole.

Emergency procedures to control the H_2S were implemented immediately. These are detailed below. Returns were diverted through the choke and gas buster. H_2S scavenger material was ordered and received. The mud was conditioned to raise weight, $_pH$, and treat out the H_2S. After conditioning mud to 11.3 ppg, the well showed no sign of flow. While continuing to condition mud, 750 psi pump pressure was lost. Flow was again checked and found negative. Pipe was tripped to the 9-5/8" casing shoe, looking for a washout. At the shoe, the mud was conditioned. The mud was weighted up and conditioned to 11.4 ppg in and 11.4 ppg out with bar, Q-Broxin, lime, and caustic. There was no show of H_2S. The flow was again checked. The well flowed at a very small rate. Circulation and conditioning of the mud continued. The weight was raised to 11.6 ppg and Sulf-X content to 6 PPB. The H_2S equipment and team, Garrett Gas Train, and the Mil-Guard were received. The equipment was rigged up. The mud weight was built to 11.8 ppg. A check for flow was negative. The pipe was tripped in 15 stands to 13,511'. The mud was circulated and conditioned. There was 50 ppm H_2S and 700 units gas on bottoms up. The pipe was staged in the hole three stands and circulated 30 minutes at 13,775', 14,052', 14,339', 14,621' and 14,903'. The mud was conditioned. There was 40 ppm H_2S on bottoms up, with the mud cut to 10.8 ppg. The mud was conditioned to 11.8 ppg and zero sulfides. The pipe was staged in as above to 15,185', 15,467', 15,749', 16,031' and 16,313'. There was 50 ppm H_2S on bottoms up. The mud was conditioned to 11.8 ppg, with $_pH$ of 12, and the sulfides treated out. A check for flow was negative.

The pipe was staged into the hole to 17,553' and the mud conditioned. Returns were lost and the pipe stuck. The pipe was worked free and picked up to 16,049'. A lost circulation material pill was spotted and the pipe pulled to 14,433'. Returns were regained and the pipe pulled up to 13,340'. The well flowed through the drill pipe and the annulus could not be circulated. The pipe was picked up to 13,107'. The pipe stuck with 824 feet of bottom hole assembly in the open hole. A free pipe pill was spotted and the pipe soaked and worked. A free point and string shot were rigged up and an attempt made to back off at 13,040'. A manual backoff occurred at 12,831' and the recovery pulled out of the hole, leaving bit, bit sub, roller reamer, monel collar, 3 STBs, and 8 drill collars in the hole.

Fishing operations were started. A fishing string was picked up and screwed into the fish at 12,831'. After jarring on the fish, a free point and backoff shot was run. Backoff occurred at 12,949' and four drill collars were recovered. The fish was screwed into at 12,926' (steel line measurement) and the fish jarred on with no movement. The fish was again backed off at 12,926' after attempts at 13,068' and 13,040' failed. The mud was conditioned at 12,080' and the bottom hole assembly and blowout preventer equipment was checked. A washover string was tripped into the hole and washed over the fish at 13,004'. After tripping at 13,004', the mud was gas cut from 11.6 ppg to 11.0 ppg with no H_2S. The fish was washed over to 13,014' and a fishing string tripped into the hole. The fish was shot and backed off at 12,955'.

After backing off at 12,955', flow occurred through both the drill pipe and the annulus with large amounts of crystalline sulfur coming over the shakers. A 50 barrel pill of 17 ppg mud was spotted at 13,000' and the pipe picked up to 12,170'. While conditioning the mud and raising the weight to 12.4 ppg, 60 barrels were lost to the hole. Two drill collars were recovered and a fishing string run into 12,170'. The mud was conditioned to 12.8 ppg and a 50 barrel lost circulation material mixed and spotted. Ten barrels of 9.6 ppg mud were pumped ahead of 12.6 ppg mud and full returns were regained. The pipe was staged in and screwed into the fish and circulation established through it.

While jarring on the fish, the tools parted at the bumper sub, leaving an additional 22 feet of fish in the hole. This 22 feet of tools was shot off and recovered. The fish was washed over and the stabilizer blades milled on. A fishing string was run, screwed into the fish, the pipe torqued and back off attempted. Manual backoff occurred in the heavy walled drill pipe and the drilled string had to be retorqued. Connection with the fish could not be maintained and a washover string was run. The fish was washed over to 13,081', and an inside mill run to dress the top of the fish. An overshot was run but the grapples slipped off the fish at 70,000 pound pull. The overshot was redressed and worked over the fish. Manual backoff occurred in the fish and a stabilizer and one drill collar were recovered.

A washover string was again run and while washing at 13,105', the fish fell free. A bit was run and the mud circulated and conditioned at 13,081'. 14,102', 15,200', 16,240' and 17,240'. Returns were lost and the pipe stuck after 45 minutes of circulating at 17,240'. Free point at 10,997'.

The pipe was backed off at 10,997' and fishing operations started. Large amounts of crystalline sulfur were circulated out of the hole. The top of the fish (352 joints of drill pipe) was recovered to 11,036'. After jarring and working pipe, the fish was backed off at 11,127'. The fish was washed over to 11,316' and jarred on with no results. The pipe was then backed off at 11,314' (recovering 6 joints of drill pipe) and the fish washed over to 11,499'. Again, large amounts of crystalline sulfur were

circulated out while washing over. After jarring on the fish with no results, the fish was backed off at 11,499'. Washing over the fish continued to 11,692' where it was screwed into and pulled loose and recovered. When the fish was laid down, the bottom 1109' was plugged solid with crystalline sulfur. The H_2S concentration in the mud reached 600 ppm while laying down the fish.

Conditioning and circulation of the mud system continued in an attempt to control the H_2S influx. A bit was run and the hole conditioned at 12,202', 12,487' and 12,796'. The hole was tight from 13,052' to 13,745' and bridges were drilled out from 13,618' to 13,713' and at 13,745'. A trip was made to check the drill pipe and it was staged back into the hole to 16,832' with some crystalline sulfur returns (heavy below 16,165'). Returns were lost at 16,821' and the pipe pulled to the shoe where they were regained. The pipe was staged back into the hole to 16,832', pulled to 16,736' and a 58 barrel pill of 17.2 ppg mud pumped to the bit. The annular preventer was closed and 56 barrels of the pill squeezed away at 500 psi; to 700 psi last nine barrels. The pipe was pulled out of the hole for wireline logging.

Wireline logs were run as follows: DIL/SP/GR, BHC Sonic/GR, FDC/CNL/GR, and HDT-Dipmeter. DIL stuck at 16,900 - worked loose. HDT stuck at 14,206'. A clean out trip was made, a Velocity Survey run, and Sidewall Cores shot (47 shot, 8 bullets left in hole).

Fishing resumed for the remaining drilling assembly in the hole. An overshot was run and an attempt made to wash over fish with no success. The pipe had to be pulled wet as the overshot was plugged with crystalline sulfur. The pipe was staged back into the hole, conditioning and raising the weight of the mud on the way in. Partial returns were lost at 16,775', regained, and the pipe run into 17,504', tagged fish. Large amounts of sulfur were circulated out, a trip made to pick up an overshot, and the overshot worked onto the fish. The fish was recovered to bottom (77' of fish) and laid down. After conditioning mud, a 100 sack, 15.4 ppg, Class "J" cement plug was spotted from 17,481'. The cement was in place on 3/1/79. A clean out run to 17,503' encountered cement stringers in the hole but no plug.

The hole was conditioned and a 7-5/8" liner run (135 joints 7-5/8", 39#, S-95, AB-FL4S casing with BOT 7-5/8" x 9-5/8" MC hanger and 6-foot tie back extension). An attempt to set the liner hanger was unsuccessful and the first stage cementing was completed with 600 sacks Class "J" cement mixed to 15.4 ppg.

Cement was pumped around the shoe at 2 BPM for plug flow displacement. The plugs were bumped and an attempt made to reset the hanger with no success. After rotating off the hanger, a cement retainer was set at 11,720' and breakdown into the lap was established at 2 BPM. The liner lap was squeezed with 400 sacks of Class "G" cement with a final squeeze pressure of 2,000 psi.

The casing string was tested to insure integrity. The 9-5/8" casing was tested to 1,500 psi. The hanger and liner were drilled out to 17,093' and both the 9-5/8" casing and 7-5/8" liner were tested to 1,500 psi. A negative flow liner lap shut-off test was run with cased hole drill stem test tools with a 2,800 psi differential across the lap. Test results were satisfactory and the liner was cleaned out to 17341'. A CBL/VDL log was run from 17,315' across the liner lap and indicated a good cement job. The shoe was drilled out at 17,432', the hole reamed to 17,571', and 6-1/4" hole drilled to 17,786'. The mud was H_2S cut from 13.8 ppg to 13.5 ppg. The mud weight was raised to 14.5 ppg, and a leak off test successfully run to 16.15 ppg equivalent. The mud weight was raised to 15.5 ppg to control H_2S influx and the formation tested to 17.15 ppg equivalent with no leak off. Mud weight was raised to 16.0 ppg and preparations made to drill ahead. At this point all major problems associated with the H_2S occurrence at 17,570' had been overcome.

Drilling of 6-1/4" hole continued to 18,047' while gradually raising the mud weight to 16.7 ppg. The formation was tested to 18.4 ppg equivalent with a possible leak off at 18.4 ppg. Drilling continued to 19,274' with an increase in the mud weight to 16.9 ppg.

Wireline logs were run at 19,274' as follows: DLL/GR, FDC/CNL/GR, HRD-Dipmeter (3 attempts required); Velocity Survey.

Drilling resumed to 19,360' and Core No. 22 cut from 19,360' to 19,372'. The mud weight was increased to 17.0 ppg and 6-1/4" hole drilled to 20,091'. Due to the increased hole and circulation problems, a decision was made to total depth the well. Logs were run (DLL/GR, FDC/CNL/GR, BHC-Sonic/GR, HRD-Dipmeter, and Velocity Survey). A termination core, No. 23, was cut from 20,091' to 20,102', 2 feet recovered.

After log evaluation, plug back and abandonment procedures were started. The following plugs were placed in the well:

Plug No. 1: 19,200-18,250', 200 sacks Class "J" cement spotted through open-ended drill pipe. Slurry weight was 17.8 ppg.

Plug No. 2: 17,978-17,008', 200 sacks Class "J" cement spotted through open-ended drill pipe. Slurry weight was 17.8 ppg.

Plug No. 3: 16,600-15,500', 250 sacks Class "J" cement on top of retainer in the 7-5/8" liner at 16,600'. Slurry weight was 17.5 ppg.

Plug No. 4: 12,251-11,576', 200 sacks of Class "G" cement across the 7-5/8" liner lap. Slurry weight was 17.0 ppg.

Plug No. 5: 11,450-10,950', 200 sacks of Class "G" cement on a 9-5/8" retainer at 11,450'. Slurry weight was 17.0 ppg.

Plug No. 6: 7981-7481', 200 sacks Class "G" cement on a 9-5/8" retainer at 7981'. Slurry weight was 17.0 ppg.

Plug No. 7: 2003-1409', 250 sacks ArcticSet II cement in a 9-5/8" cement retainer at 2003'. Slurry weight was 15.2 ppg.

Plug No. 8: 1409-940', 250 sacks ArcticSet II cement. Slurry weight was 15.2 ppg.

Plug No. 9: 940-490', 200 sacks ArcticSet II cement. Slurry weight was 15.2 ppg.

Plug No. 10: 490-40', 234 sacks ArcticSet II cement. Slurry weight was 15.2 ppg.

After setting the above plug, the upper 40 feet of the hole was filled with Glycol and water and the blowout preventers nippled down. The abandonment head with a dry hole marker was nippled up and the rig released at 12:00 noon on May 22, 1979.

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

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

RECEIVED
MAR 29 1978
OIL & GAS CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

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.: Inigok 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: 2713' FSL; 1843' FEL
At proposed prod. zone: Same (straight hole)

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 34, T8N, R5W, UM

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 50 miles northwest of Umiat, Alaska

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
266,110'	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**
168,960	19,775'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 76' GR, 80' Pad, 108' KB

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

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
60"	42" Conductor	330.41#	± 100' KB	SEE
36"	30"	196.08 (X-42)	± 500' KB	DRILLING
26"	20"	133# (K-55)	± 2600' KB	PROGRAM
17 1/2"	13 3/8"	72# (S-95)	± 8300' KB	FOR
12 1/4"	9 5/8" & 9 3/4"	53.5# & 59.2# (S-95)	± 12,550' KB	DETAILS AND AMOUNTS
8 1/2"	7"	38# (S-95)	Liner to TD	

See Drilling Program for detailed drilling plan.

BOP Program

From ±500' to ± 2600'
29 1/2", 500 psi annular diverter
From ± 2600' to ± 8300'
20", 3000 psi SRRA
w/5000 psi choke manifold
From ± 8300' to ± 12,550'
13 5/8", 5000 psi SRRA
w/5000 psi choke manifold
From ± 12,550' to ± 19,775' (TD)
11", 10,000 psi SRSRRA
w/10,000 psi choke manifold

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

24.
SIGNED Max Brewer TITLE Chief of Operations, NPRA DATE 28 March 78

(This space for Federal or State office use)

CONFORMS WITH PERTINENT PROVISIONS 30 CFR 221

APPROVAL DATE

APPROVED WITH Robert A. Luff ACTING TITLE OIL AND GAS SUPERVISOR DATE 18 [illegible]

CONDITIONS OF CONCURRENCE ATTACHED

*See Instructions On Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
~~ONSHORE DIST. OFFICE~~
JUN 12 1978
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ 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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

12. COUNTY OR PARISH
North Slope

13. STATE
Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
76' GL, 80' Pad, 108 KB

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

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

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

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

This well was spudded at 9:30 AM, June 7, 1978. Hole size at spud is 17 1/2".

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

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

SIGNED Max Brewer TITLE Chief of Operation DATE 9 June 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

TITLE DISTRICT SUPERVISOR DATE JUN 12 1978

*See Instructions on Reverse Side

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ONSHORE DIST. OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

JUN 28 1978
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ 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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
76' GL; 80' Pad; 108' KB

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

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent Notice of Running and Cementing 30" Shallow Surface Casing			

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

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

On June 9-10, 1978, 13 joints of 30", 196.08#, X-42 casing with Vetco "ST" connectors were run and landed with the 30" float shoe at 508' KB. TD of the 36" hole was 524'. The casing was cemented with 1740 sacks of Dowell Arctic Set cement using the duplex method. The slurry weight was 15.2 - 15.6 ppg. Cement to surface with return weight of 15.0 ppg. Good returns during job. Cement was in place at 9:15 AM 6/10/78. Welded on the 30" base flange. Nippled up 29 1/2", 500 psi Hydril and tested to 250 psi.

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

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

SIGNED J. Mark Brewer TITLE Chief of Operations DATE 15 June 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED James Wahle DISTRICT SUPERVISOR DATE 7/18/78

*See Instructions on Reverse Side

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JUL 12 1978
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 [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: 2713' FSL; 1843' 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. Inigok Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 34, T8N, R5W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB, AND WD) 76' GL, 80' Pad, 108' KB

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

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

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

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

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

A 17 1/2" hole was drilled to 2625' and logged. Opened hole to 26". Ran 55 joints of 20", 133#, K-55, 8rd casing and 9 joints of 20", 169#, K-55, 8rd 20" casing. Landed with float shoe at 2594' KB with float collar at 2503' KB. Installed centralizers 10 feet above shoe, first collar above shoe, first collar above float collar, and on every other collar through the fifteenth joint. (Total of 9 centralizers.) Cemented with 5400 sacks of Arctic Set II cement at 15.2 ppg slurry weight. Had 15.0 ppg slurry weight in returns. Good returns throughout job. Cement in place at 8:40 PM, 6/23/78. Installed National NSB 20", 3000 psi landing flange and tested weld to 200 psi. Nippled up 20", 3000 psi BOP stack, choke manifold, and kill line. Tested rams to 3000 psi and Hydril to 1500 psi. Tested choke manifold to 3000 psi. Tested 20" casing to 2400 psi. Drilled out float collar and float shoe. Tested formation to 0.53 psi/ft gradient with no observed leak off.

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

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

SIGNED [signature] TITLE (acting) Chief of Operations DATE 11 JUL 1978

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

[signature] TITLE ~~DISTRICT SUPERVISOR~~ DATE 7/13/78

*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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

12. COUNTY OR PARISH North Slope

13. STATE Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
76' GL; 80' Pad; 108' 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) Request for Variance - 20" Annular BOP			

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(NOTE: Report results of multiple completion or zone change on Form 9-330.)
JUL 24 1978
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.)*

The "Conditions of Drilling Concurrence" requires that the rated working pressure of any blowout preventer system shall exceed the maximum anticipated surface pressure to which it may be subjected. A 20", 2000 psi annular BOP meets the requirement and variance is requested for use in lieu of a 20", 3000 psi annular BOP as specified on Form 9-331C, Notice of Intent to Drill, Deepen, or Plug Back. Future testing will be to 50% of rated working pressure.

While preparing to test BOP on 7/13/78, the inner support sleeve of the 20", 2000 psi annular BOP came loose and was warped out of shape. The manufacturer verified that the preventer is 100% functional without the inner support sleeve in place. Variance is requested to continue drilling without the inner support sleeve in place until a replacement sleeve can be installed. The new sleeve has been ordered and should be received by 7/17/78.

Verbal concurrence was received from Mr. Jim Weber on 7/13/78.

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 21 July 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

[signature] TITLE DISTRICT SUPERVISOR DATE JUL 24 1978

*See Instructions on Reverse Side

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

JUL 28 1978
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ 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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
76' GL; 80' Pad; 108' KB

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

NOTICE OF INTENT TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	☐		☐
FRACTURE TREAT	☐		☐
SHOOT OR ACIDIZE	☐		☐
REPAIR WELL	☐		☐
PULL OR ALTER CASING	☐		☐
MULTIPLE COMPLETE	☐		☐
CHANGE ZONES	☐		☐
ABANDON*	☐		☐
(other) Subsequent Report - Repair of 20" Annular BOP			

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

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

Replacement of the inner support sleeve in the 20", 2000 psi annular BOP was completed on 7/21/78. The BOP was functionally tested and pressure tested to 1000 psi on 7/21/78 upon completion of repairs.

Verbal notification of the repair was given to Jim Weber, 7/24/78.

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 27 July 78

(this space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED BY James Weber TITLE DISTRICT SUPERVISOR DATE JUL 28 1978

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well [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: 2713' FSL; 1843' 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
NPRA

9. WELL NO.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M. OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

12. COUNTY OR PARISH
North Slope

13. STATE
Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
76' GL; 80' Pad; 108' KB

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

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

(other) Subsequent Notice of Running and 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.)

A 17 1/2" hole was drilled to 8315' and logged with the DLL, FDC/CNL/GR, and BHC-Sonic/GR. The DLL and FDC/CNL/GR were rerun. After logging, the hole was conditioned for casing. Ran 215 joints of 13 3/8", 72#, S-95, BTC casing; shoe @ 8286', FO @ 3593', FO @ 2308'. Centralizers were installed 10 feet above shoe, first collar, first 3 collars above duplex collar, every other collar for 10 joints, two above and below each FO. (Total of 18 centralizers.) Cemented first stage with 3400 sacks of Class "G" cement w/0.75% D-65, 0.15% D13 @ 16.4 ppg. Preceded cement with 50 bbls of water and followed cement with 2 bbls of water. Had full returns during job. CIP @ 6:45 PM, 8/9/78. Opened FO @ 3593' and conditioned mud. Ran Sperry Sun Gyro Survey inside 13 3/8" casing. Ran CBL/VDL/GR log. Found top of cement @ 5400' w/2887' of rise from the shoe. Adjusted landing tension for buckling criteria and landed 13 3/8" casing w/600,000#. Nippled down 20" BOPE and installed packoff assembly. Tested packoff and flange to 2500 psi OK. Nippled up 13 5/8", 5000 psi BOPE. Tested rams to 5000 psi,
(See attached for continuation.)

Subsurface Safety Valve: Manu. and Type ____________ Set @ ______ Ft.

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

SIGNED Max [signature] TITLE Chief of Operations DATE 5 September 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

[signature] Acting TITLE DISTRICT SUPERVISOR DATE SEP 12 1978

*See Instructions on Reverse Side

Hydril to 2500 psi, choke manifold and kill lines to 5000 psi OK. Tripped in w/ shifting assembly. Tested top FO to 2500 psi OK. Tested bottom FO to 2500 psi OK. Opened FO, conditioned annulus for cementing. Cemented second stage from FO @ 3593' to surface w/5200 sacks of Arcticset II cement @ 15.2 ppg. Preceded cement w/30 bbls of water and followed cement w/2 bbls of water. Had full returns during job w/final returns weighing 14.9 ppg. CIP at 5:00 PM, 8/12/78. FO would not shift closed. Held 1000 psi on cement for 12 hours. Released pressure. Attempted to close FO, would not close. Ran new shifting assembly. Closed FO. Tested FO to 2500 psi OK. Cleaned out cement to float collar. Tested casing to 2500 psi OK. Drilled out float collar and shoe and cleaned out rat hole to 8315'. Drilled new hole to 8317' and conditioned mud. Tested formation, using PIT technique. Leak off pressure 1400 psi over 9.7 ppg mud. Static pressure 1350 psi over 9.7 ppg mud. Fracture gradient @ 8286' tested at 12.8 ppg equivalent or 0.67 psi/ft. Drilling ahead, 12 1/4" hole.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
OCT 5 1978
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ 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: 2713' FSL; 1843' 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.: Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 34, T8N, R5W; UM

12. COUNTY OR PARISH: North Slope

13. STATE: Alaska

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB, AND WD): 76' GL; 80' Pad; 108' KB

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

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

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

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

A 12 1/4" hole was drilled to 12,311' and logged with the DLL, FDC/CNL/GR, BHC-Sonic/GR, Dipmeter, and Velocity Survey. Forty-five sidewall cores were shot and 44 recovered. Tripped in, strung 12 lines and conditioned for casing. Changed rams to 9 5/8" and prepared to run casing. Ran 36 joints of 9 3/4", 59.2#, S-95, BTC casing and 269 joints of 9 5/8", 53.5#, S-95, BTC casing. Shoe at 12,283', float collar at 12,207', MF collar at 12,165', DV collar at 9555', FO at 2294'. Centralizers were run per the drilling program. Cemented first stage w/2800 sacks Class "G" w/1.25% D-65, 0.15% D-28 at 15.8 ppg. Preceded cement with 50 bbls water, and followed cement w/2 bbls water. Lost 110 bbls mud while displacing cement but had full to partial returns throughout job. Did not bump plug. CIP at 9:35 PM, 9/18/78. Dropped bomb, opened DV at 9555'. Cemented second stage w/1600 sacks Class "G" w/0.75% D-65, 0.3% D-13 at 15.8 ppg. Preceded cement w/50 bbls water, followed cement w/2 bbls water.

(Continued on attached page.)

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

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

SIGNED Max V. Brewer TITLE Chief of Operations DATE 4 October 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Acting
TITLE Onshore Supervisor DATE OCT 6 1978

*See Instructions on Reverse Side

Dropped closing plug. Lost 90 bbls mud while displacing cement but had full to partial returns throughout job. Did not bump plug. CIP at 7:20 AM, 9/19/78. Held 2000 psi while cement set. Released pressure at 2:00 AM, 9/20/78. Ran temperature survey. Found top of cement at 8110'. Set casing slips w/375,000#. Installed FO and tested FO and flange to 5000 psi OK. Nippled up 11", 10,000 psi BOP stack. Tested pipe rams to 10,000 psi BOP stack. Tested pipe rams to 10,000 psi OK. Tested choke manifold to 10,000 psi OK. Tripped in w/shifting assembly. Opened FO at 2294' and set RTTS at 2283'. Conditioned 13 3/8" X 9 5/8" annulus with mud. Displaced mud and washed annulus with 590 bbls water. Arctic Packed annulus with 195 bbls Arctic Casing Pack. Had 0% water contamination at end of job. Closed FO and tested to 3000 psi OK. Cleaned out DV collar. Tested DV and casing to 3000 psi OK. Cleaned mud pits and changed over mud system. Cleaned out cement to float collar. Tested casing to 3000 psi OK. Drilled out shoe and 10 feet of new hole. Tested formation to 0.676 psi/ft gradient with no leak off observed. Drilled ahead 8 1/2" hole.

RECEIVED
ONSHORE DIST. OFFICE

NOV 3 1978

DEPARTMENT OF THE INTERIOR
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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

12. COUNTY OR PARISH
North Slope

13. STATE
Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
135' Pad; 163' 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 Revised As-Built Pad and KB Elevations			

(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.)*

Corrected as-built pad elevation of 135' and corresponding KB elevation of 163' are hereby provided. Verbal notification of this change was given to Dale Roberts on November 1, 1978.

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

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

SIGNED James L Stout Acting, TITLE Chief of Operations DATE Nov 3, 1978

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED
TITLE DISTRICT SUPERVISOR DATE NOV 3 1978

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ gas well ☐ other

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: 2713 FSL; 1843' FEL
AT TOP PROD. INTERVAL
AT TOTAL DEPTH: Straight hole.

5. LEASE
N/A

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

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

12. COUNTY OR PARISH North Slope

13. STATE Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
135' Pad; 163' 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) Request for Variance - 11", 10,000 psi BOP Test Pressure			

(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.)*

While testing BOPE on 11/15/78, a leak was discovered in the API flange between the lower drilling spool and lower ram BOP. On inspection, the ring grove on the ram BOP and API ring were found to be washed. Variance is requested to test the flange to 70% of working pressure and if successfully tested, continue drilling operations until a replacement ram preventer can be obtained. It is anticipated that a replacement should be received by 11/29/78.

This variance was discussed with and verbal concurrence received from Mr. Jim Weber on 11/15/78.

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 22 November 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

TITLE DISTRICT SUPERVISOR DATE 11/24/78

*See Instructions on Reverse Side

RECEIVED
ONSHORE DIST. OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEC 1 1978

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ 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: 2317' FSL; 1843' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Straight Hole

5. LEASE: N/A

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

7. UNIT AGREEMENT NAME: N/A

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

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

10. FIELD OR WILDCAT NAME: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 34, T8N, R5W, UM.

12. COUNTY OR PARISH: North Slope

13. STATE: Alaska

14. API NO.:

15. ELEVATIONS (SHOW DF, KDB, AND WD): 135' Pad; 163'KB

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

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

(other) Subsequent Report-Repair 10,000 psi BOP Flange

(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.)*

Repair of the 11", 10,000 psi BOP flange was accomplished on 11/22/78. The BOP stack and flanges were tested to 10,000 psi on completion of the repairs and nipple up.

Verbal notification of the repair was given to Jim Weber on 11/22/78.

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 30 November 78

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221

Robert A. Hoff TITLE DISTRICT SUPERVISOR DATE 12/4/78

*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: 2317' FSL; 1843' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Straight hole

5. LEASE
N/A

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

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME National Petroleum Reserve in Alaska

9. WELL NO.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD)
135' Pad; 163' 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) Request for Variance - BOP Test			

(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.)*

While tripping out of the hole on January 1, the drill string stuck with the bit at 13,107', leaving 824 feet of BHA in open hole. The 9 5/8" shoe is at 12,283'. Spotting fluid failed to free the string. Free point indicates string stuck below 13,084', below the monel DC. The current operation is attempting to back off and commence fishing operations.

The Conditions for Drilling Concurrence for this well require that BOPE be routinely tested once each week while drilling. Variance is requested in order that fishing operations be commenced as soon as possible. BOPE will be tested at the first opportunity when hole conditions will allow.

This variance was discussed with and verbal concurrence received from Mr. Jim Weber on January 3, 1979.

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

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

SIGNED Max Brewer TITLE Chief of Operations DATE 5 January 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

TITLE DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

RECEIVED
ONSHORE DIST. OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ 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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

12. COUNTY OR PARISH
North Slope

13. STATE
Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
135' Pad; 163' 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 Run 7 5/8" Drilling Liner			

(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 subject well was drilled to 17,570' TD. An H_2S zone has been penetrated, and several days have been required to clean up the well. In addition, several days of fishing operations have been required to recover drilling equipment left in the hole. Fishing operations have been completed, with full recovery of lost equipment.

As the 9 5/8" casing shoe is at 12,283', 5287' of open hole is exposed. It is the operator's intention to temporarily plug back to ± 17,300' and run 7 5/8" drilling liner to ± 17,150'. After testing, drilling would be resumed with 6 1/4" hole to TD.

Attached is the detailed procedure to be used.

This procedure was discussed with Mr. Jim Weber on February 26, 1979.

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

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

SIGNED Max Brewer TITLE Chief of Operations DATE 3 March 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

DISTRICT SUPERVISOR DATE _____

*See Instructions on Reverse Side

INIGOK TEST WELL NO. 1
SUPPLEMENTAL PROCEDURE
February 26, 1979

1. After fishing, stage in hole open ended with 5" drill pipe to ± 17,500'. Do not run any HWDP or DCs. Condition mud to uniform weight and viscosity for plugging back.

2. Spot a 100 sack Class "J" cement plug with 0.25% D-28, and 0.5% D-65, mixed at 15.4 ppg. The slurry yield is 1.17 cu ft/sack. This is a ± 200' plug in this section of open hole. Spot a balanced plug, with 5 bbls water ahead and 2 bbls water behind slurry. Displace cement with Dowell unit.

3. Pick up out of cement. POH 20 stands. If pipe pulls dry, trip out. If pipe pulls wet for 20 stands, circulate bottoms up. Report any cement contamination. POH with caution, checking hole for correct fill and flow.

4. Trip in with bit and slick drilling assembly to shoe. After WOC 18 hours, circulate and condition at shoe. Stage in hole to 16,000'. WOC at 16,000' until CIP for 24 hours. Stage in and tag plug.

5. Tag top of plug and dress off 5'. Report top of plug and quality of cement. Pending orders, proceed to 7 5/8" liner procedure below.

7 5/8" LINER PROCEDURE

6. After dressing top of plug, condition hole as required.

7. Pick up an 8 1/2" bit and 9 5/8", 53.5# casing scraper. Trip in to ± 12,100'. (9 5/8" shoe @ 12,283'.) POH and lay down scraper.

8. Trip in with bit and tag top of plug. Condition hole for liner. (Note: After scraper run in Step 7, check with office. This step may be omitted if not required.) -Stand back 12,000' of 5' drill pipe to run liner. No HWDP or drill collars will be used.

9. Rig up and run 7 5/8" liner as follows:

   a. Set Shoe - BOT 7 5/8", 39#, AB-FL4S to land at ± 17,150'.
   b. 1-Joint - 7 5/8", 39#, S-95, AB-FL4S casing.
   c. Catcher Sub - BOT 7 5/8", 39#, AB-FL4S.
   d. 1-Joint - 7 5/8", 39#, S-95, AB-FL4S casing.
   e. Landing Collar - BOT 7 5/8", 39#, AB-FL4S, with shear out pinned for 2500 psi.
   f. Liner - 7 5/8", 39#, S-95, AB-FL4S from landing collar to ± 11,783'. (This allows for ± 500' of lap above the 9 5/8" shoe.)
   g. Crossover Bushing - BOT 7 5/8" 8rd box X 7 5/8", 39#, AB-FL4S pin (be sure the XO is correctly made up on the liner hanger), with centralizer.
   h. Liner Hanger - BOT 7 5/8", 39#, 8rd X 9 5/8", 53.5# MC Hydraulic Set Hanger.
   i. Setting Sleeve - BOT 7 5/8", 39#, 8rd X 9 5/8", 53.5#, with 6' extension tie-back sleeve.
   j. Setting Tool - BOT type C-2.
   k. Running String - 5", 19.5#, grade E and G drill pipe to surface.

Special Instructions

1. Use API modified, high pressure, Arctic Grade thread compound on all liner connections.
2. Have Atlas Bradford hand inspect all liner connections in rotary for seal ring placement and condition.
3. Check with BOT hand to be sure the drill pipe wiper plug is for 5", 19.5#, and that a 1 3/4" OD setting ball is on location prior to the job.

10. Run liner. Fill liner every 5 joints and drill pipe every 10 stands. Break circulation after running first stand of drill pipe, at 7500', at 10,000', and prior to going into the open hole. Break circulation at 13,000', 14,000', 15,000', and 16,000'. Circulate more often if required. With the shoe at ± 17,150', make up the BOT plug dropping manifold and circulate the complete volume of the 7 5/8" liner and the 5" running string.

11. Hang the liner with shoe at ± 17,150' and hanger at ± 11,783' as follows:

    a. Drop the 1 3/4" OD setting ball. When the ball lands on seat, pressure down the drill pipe to 1800 psi. Hold this pressure, slack off liner weight and 20,000# drill pipe weight. Continue to pressure up to 2500 psi or until seat shears.
    b. Rotate drill pipe 10 rounds to the right at the hanger to disengage the setting tool from the liner.

12. Condition the hole for cementing.

13. Mix up 12 bbls of Spacer 1000 at 14.0 ppg in the tub and one displacement tank. This will require 9.35 bbl water, 10 sx D104, and 33 sx barite.

14. Cement the 7 5/8" liner with 600 sx of Class "J" cement, with 0.25% D-28, 0.5% D-65, and 1 gallon/sack D-108 added to 4.46 gallons water/sack of cement. (This gives a total liquid requirement of 5.46 gallons per sack.) Slurry yield is 1.21 cu. ft/sack, for a volume of 130 bbl of slurry.

Special Instructions

1. Pump the slurry at rates required for plug flow, as directed by the drilling engineer on location.
2. Displace cement through the Dowell unit.
3. While displacing cement, do not slow pump rates once plug flow rate is established.
4. Prior to the job, calculate the volumes required to shear the wiper plug, and bump the plugs in the landing collar.

15. Drop the pump down plug and displace with mud. Report volume required to shear wiper plug and bump the plugs in the landing collar. Bump the plugs with 1000 psi over final displacement pressure. DO NOT EXCEED 3000 psi. DO NOT overdisplace the calculated volume to bump the plugs by more than 15 bbls. Release pressure and check the floats.

16. Pull out of hanger with the setting tool. Reverse out any channeled cement above the hanger. Limit pressure to 500 psi. If mud was gas cut or showed high background gas while conditioning to cement, continue to circulate holding 500 psi pressure for 4 hours while cement takes initial set. Trip out with setting tool and WOC 24 hours. Report any sign of cement contamination.

17. After WOC 24 hours, trip in with bit and 9 5/8", 53.5# casing scraper. Run in to the top of the liner hanger. DO NOT rotate on tie-back sleeve. Close pipe rams and test lap to 1500 psi. If test is satisfactory, proceed to Step 23. If test is not satisfactory, proceed with Step 18.

18. Pick up Howco 9 5/8", 53.5#, EZ-Drill retainer on drill pipe. Trip in and set retainer ± 100' above the top of the liner hanger.

19. Pump into lap and establish injection rate and pressure. Limit pressure to 5000 psi. Cycle retainer valve to assure proper operation. Unsting from retainer.

20. Mix and pump 400 sacks of Class "G" cement with 0.25% D-28 and 1.0% D-65 mixed at 15.8 ppg. Pump 10 bbl water ahead and 5 bbl water behind slurry. If injection rate was less than 2 BPM @ 2500 psi, cement volume may be reduced. Displace cement to within 500' of the retainer and sting in. Squeeze lap, limiting pressure to 5000 psi. Watch the 9 5/8" X 5" annulus for any sign of a leak. Shut down, leaving 5 bbls of cement in the drill pipe. Unsting and spot cement on top of retainer. Pick up 3 stands and clear drill pipe. Trip out with stinger.

21. Pick up 8 1/2" bit and 9 5/8", 53.5# casing scraper. Trip in to ± 9000'. Circulate and WOC 18 hours total time. Clean out to the top of the liner. DO NOT rotate on tie-back sleeve. Test lap and casing to 1500 psi. If test is satisfactory, clean out and run the negative flow lap test as follows. If test was unsatisfactory, squeeze lap as directed.

22. Pick up 6 1/4" bit, 4 3/4" drill collars, and 3 1/2" drill pipe required. Strap in hole. Check tally to the liner hanger. Clean out to the landing collar. Test liner and casing to 1500 psi. Pressure up slowly and plot the data as before.

23. Run negative flow lap test as follows:

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

        (1) Howco HT-500 Temperature Recorder.
        (2) Howco BT Pressure Recorder (BP-- outside)
        (3) Howco BT Pressure Recorder (BP - outside)
        (4) Howco Perforated Anchor Pipe (2 - joints)
        (5) Howco 9 5/8", 53.5# Hookwall Packer
        (6) Howco V-R Safety Joint
        (7) Howco Hydraulic Jars
        (8) Howco Hydrospring Tester
        (9) Howco Dual CIP valve
        (10) Crossover to 5" 19.5# DP w/4 1/2" IF T.J.

(11) 1 - stand 5" 19.5# drill pipe
(12) Howco Impact Reversing Sub
(13) 5" drill pipe to surface

b. Run water cushion to give 1500 psi across the liner lap.

c. Open tools for three hours. Close tools for 2 hours. (If there was a strong flow during the open period, close tools for 4 hours.)

d. Trip out to water cushion and determine fluid rise and volume. If there was any indication of gas flow during test, drop bar and reverse out prior to tripping out. Note fluid rise and volume.

e. Read pressure charts and determine integrity of liner lap. If lap does not test, squeeze as directed. If lap test is satisfactory, resume drilling program with Step 24 below.

24. Rig up Schlumberger. Run CBL/VDL/GR/CCL log from landing collar to the top of the liner hanger. A multi-shot gyro survey may be run at this time also.

25. Drilling Procedures for 6 1/4" hole will be furnished as required.

J.M. McCarthy 2/26/79

J. M. McCarthy
Drilling Manager

RECEIVED
ONSHORE DIST. OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MAR 23 1979
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ 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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W UM

12. COUNTY OR PARISH North Slope

13. STATE Alaska

14. API NO.

15. ELEVATIONS (SHOW DF, KDB AND WD)
135' Pad; 163' KB

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

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

(other) Subsequent Report of Running and Cementing 7 5/8" Liner

(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.)*

Circulated and conditioned mud to 17,500'. Spotted 100 sx Class J cement with .25% D28 and .5% D65 mixed slurry to 15.4 ppg. Displaced with 5 bbls water ahead and 2 bbls water behind. CIP at 1:45 AM, 3/1/79. Plug set at 17,481'. RIH to 17,503', no cement, circulated bottoms up. POH, picked up 9 5/8" casing scraper. Staged in to 17,430', circulated and conditioned for running 7 5/8" liner. Installed 7 5/8" rams in BOPE. Ran 5614' of 7 5/8" casing, ran in with liner to 17,432', circulated bottoms up. Dropped ball and attempted to hang Brown Oil Tool hydraulic set MC hanger. Did not set. Mixed 14 ppg spacer, cement liner with 600 sx Class J cement with .25% D28 and .5% D65, added 1 gal/sk D108 to 15.4 ppg cement slurry. Displaced with 10 bbls water and 450 bbls mud, final pressure 950 psi. Pumped away at 5 1/2 BPM, first 400 bbls, slowed to 2 BPM for plug flow. Attempted to set liner, would not set. CIP at 5:30 PM, 3/6/79. WOC. Backed DP off liner hanger, circulated

(See continuation)

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 22 March 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Robert A. Luff DISTRICT SUPERVISOR DATE 3/23/79

*See Instructions on Reverse Side

bottoms up. POH, picked up bit and casing scraper. RIH, tagged liner, circulated bottoms up. Top of liner at 11,818'. POH, picked up 9 5/8" cement retainer, RIH and set at 11,720'. Established formation break down at 2 BPM at 2000 psi, at 4 BPM at 2300 psi, at 5 BPM at 2300 psi. Unstung from retainer, pumped 30 bbls water, mixed and pumped 400 sacks Class "G" with .25% D28 and .75% D-65 at 15.8 ppg and 5 bbls water. Displaced with 108 bbls mud. Stabbed into retainer after displacing 88 bbls of mud and finished displacing. CIP at 7:00 PM, 3/8/79. POH three stands and circulated pipe clean, POH. WOC. RIH, found cement at 11,502' and retainer at 11,722'. Drilled cement, tagged liner at 11,818'. Tested 9 5/8" casing to 1500 psi. Drilled through top of hanger. Drilled cement 17,050' to 17,093', tested 7 5/8" casing to 1500 psi. POH, picked up 8 1/2" BHA, RIH with casing scraper, circulated and conditioned mud at 11,818'. POH and picked up Howco DST tools. Ran negative flow lap test to 2500 psi, good test. RIH with 6 1/4" BHA, drilled cement to 17,341'. Ran CBL to 17,315'. RIH, drilled cement and shoe at 17,432'. Reamed to bottom. Drilled on junk and cleaned out to 17,645'. Ran leakoff test to 14.5 ppg equivalent gradient. No observed leak off. Drilling ahead.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☒ gas well ☐ other Wildcat
2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)
3. ADDRESS OF OPERATOR 2525 C Street, Suite 400, Anchorage, AK 99503
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
   AT SURFACE: 2713' FSL; 1843' 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. Inigok Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 34, T8N, R5W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDB, AND WD) 135' Pad; 163' KD

RECEIVED
ONSHORE DIST. OFFICE
MAY 10 19[illegible]
CONSERVATION [illegible]
U.S. GEOLOGICAL SURVEY
ALASKA

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

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

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

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

The original Notice of Intent to Drill indicated the proposed TVD to be 19,775'. Due to thickened geologic sequences, the objective TVD is expected to be deeper. The operator plans to continue drilling. It is expected that final TVD will be at or near 20,500'.

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

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

SIGNED Max C. Brewer TITLE Chief of Operations DATE 9 May 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Robert E. Luff DISTRICT SUPERVISOR DATE 5/14/79

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
[illegible] DIST. OFFICE
MAY 1979
CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

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

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: 2713' FSL; 1843' 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.
Inigok Test Well No. 1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 34, T8N, R5W, UM

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

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)
135' Pad; 163' KB

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

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

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

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

This is a confirming notice to abandon Inigok Test Well No. 1. The plan was discussed with Jim Weber on May 15, 1979. This well was drilled to 20,091' and logged. After evaluation of logs, an 11 foot core was cut and a decision to abandon the well was made. The abandonment procedure is attached.

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

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

SIGNED Max Brewer TITLE Chief of Operations DATE 16 May 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

Robert E. Hoff TITLE DISTRICT SUPERVISOR DATE 5/23/79

*See Instructions on Reverse Side

ABANDONMENT PROCEDURE
Inigok Test Well No. 1

1. Trip in with open ended drill pipe to ± 19,200'.

2. Condition mud to uniform weight and viscosity for plugging. While conditioning mud, drop wiper plug and observe if any unusual pressures occur while being pumped out the tapered string of drill pipe.

3. Spot Plug No. 1, a 200-sack Class "J" plug containing 60#/sk Barite, 0.75% D65, 0.25% D28, and 0.25% D46. Yield 1.55 ft 3/sk. Mix water 6 gal/sk. Mix weight 17.8 ppg. This is a 950' plug in this section of open hole from the Caliper Log. Spot a balanced plug with 8 3/4 bbl 17.5 ppg Spacer 1000 ahead of cement. Drop the wiper plug. Mix and pump cement. Pump 1 1/4 bbl 17.5 ppg Spacer 1000 behind cement. Displaced with mud using cement unit for a balanced plug.

4. Pull up to ± 18,000'. Condition mud.

5. Spot Plug No. 2, a 200' sack Class "J" plug containing 60#/sack Barite, 0.75% D65, 0.25% D28, and 0.25% D46. Yield 1.55 ft 3/sk. Mix water 6 gal/sk. Mix weight 17.8 ppg. This is a 400' plug in 7 5/8" liner plus 570' plug in this section of open hole from Caliper Log. Spot a balanced plug with 8.5 bbl 17.5 ppg Spacer 1000. Drop the wiper plug. Mix and pump cement. Pump 1.5 bbl 17.5 ppg Spacer 1000 behind cement. Displace with mud, using cement unit for a balanced plug.

6. Pull up to ± 16,750'. Circulate and condition mud. POH.

7. Pick up 6 1/4" bit and 7 5/8" 39# scraper. Trip in to ± 16,750'. Circulate and condition mud to remove any cutting. POH.

8. Pick up a Halliburton 7 5/8", 39#, EZ Drill cement retainer. Trip in and set at ± 16,700'. Condition mud.

9. Spot Plug No. 3, a 250 sack Class J plug containing 0.75% D65, 0.25% D28. Yield .95 ft 3/sk. Mix water 3.3 gal/sk. Mix weight 17.0 ppg. This is a 1050' plug in 7 5/8" liner. Pump 8.0 bbls 17.0 ppg Spacer 1000. Mix and pump cement. Pump 2.0 bbls 17.0 ppg Spacer 1000. Displace with mud, using cement unit for a balanced plug.

10. Pull up to ± 12,300'. Condition mud.

11. Spot Plug No. 4, a 200 sack Class "G" plug containing 0.75% D65, 0.25% D28. Yield .99 ft 3/sk. Mix water 3.8 gal/sk. Mix weight 17.0 ppg. This is 200' of plug in 9 5/8" casing and 500' of plug in 7 5/8" liner. Pump 9 bbls 17.0 ppg Spacer 1000. Mix and pump cement. Pump 1 bbl 17.0 ppg Spacer 1000. Displace with mud using cement unit for a balanced plug.

12. Pull up to ± 11,500'. Reverse out drill pipe volume. POH. Lay down 3 1/2" DP.

13. Pick up an 8 1/2" bit and 9 5/8" 53.5# scraper on 5" DP. Trip in to ± 11,475'. Circulate and condition mud to remove any cuttings. POH.

14. Pick up a Halliburton 9 5/8", 53.5# EZ Drill cement retainer. Trip in and set at ± 11,450'. Unsting and circulate and condition mud back to 16.5 ppg.

15. Spot Plug No. 5, a 200 sack Class "G" plug containing 0.75% D65, 0.25% D28. Yield .99 ft 3/sk. Mix water 3.8 gal/sk. Mix weight 17.0 ppg. This is a 500' plug in 9 5/8" casing. Pump 7 bbls 17.0 ppg Spacer 1000. Mix and pump cement. Pump 3 bbls 17.0 ppg Spacer 1000. Displace with mud using cement unit for a balanced plug. POH. If pulls wet, pull 7 stands and reverse DP.

16. Pick up a Halliburton 9 5/8", 53.5# EZ Drill cement retainer. Trip in and set at ± 8000'. Unsting and circulate and condition mud.

17. Spot Plug No. 6, a 200 sack Class "G" plug containing 0.75% D65, 0.25% D28. Yield .99 ft 3/sk. Mix water 3.8 gal/sk. Mix weight 17.0 ppg. This is a 500' plug in 9 5/8" casing. Pump 10 bbl water spacer. Mix and pump cement. Pump 4 bbl water spacer. Displace with mud using cement unit for a balanced plug. POH.

18. Pick up a Halliburton 9 5/8", 53.5# EZ Drill cement retainer. Trip in and set at ± 2000'. Unsting and circulate and condition mud back to 14.5 ppg.

19. Spot Plug No. 7, a 250 sack Arctic Set II plug mixed at 15.2 ppg. Yield .93 ft 3/sk. Mix water 3.5 gal/sk. This is a 575' plug in 9 5/8" casing. Pump 20 bbl water spacer. Mix and pump cement. Pump 8 bbl water spacer. Displace with mud using cement unit for a balanced plug.

20. Pull up to ± 1425'. Circulate and condition to spot Plug No. 8, a 250 sack Arctic Set II plug mixed at 15.2 ppg. Yield .93 ft 3/sk. Mix water 3.5 gal/sk. This is a 575' plug in 9 5/8" casing. Pump 20 bbl water spacer. Mix and pump cement. Pump 8 bbl water spacer. Displace with mud using cement unit for a balanced plug.

21. Pull up to ± 950'. Circulate and condition to spot Plug No. 9, a 200 sack Arctic Set II plug mixed at 15.2 ppg. Yield .93 ft 3/sk. Mix water 3.5 gal/sk. This is a 450' plug in 9 5/8" casing. Pump 20 bbl water spacer. Mix and pump cement. Pump 8 bbl water spacer. Displace with mud using cement unit for a balanced plug.

22. Pull up to ± 425'. Circulate and condition to spot Plug No. 10, a 200 sack Arctic Set II plug mixed at 15.2 ppg. Yield .93 ft 3/sk. Mix water 3.5 gal/sk. This is more than enough volume to fill the top section of 9 5/8" casing. Pump 20 bbl water spacer. Mix and pump cement until returns are +14.5 ppg cement. POH. (DP volume 2.7 bbl or 40' 9 5/8" casing.) Do not fill hole on trip out. Dump 10 gals glycol into hole, then fill with diesel to ± 20' from KB.

23. Run tubing hanger with one joint 3 1/2" PH6 tubing 20' long with bell guide on one joint 3 1/2" OD EUE 8rd tubing. Have all control lines plugged. Run and test tubing hanger as per running procedure. Nipple down BOP stack. Install packing and supports. Land bonnet with one 10,000 psi master valve attached. Test as per running procedure. Land abandonment marker on top of master valve as per attached schematic. Pack API ring with grease.

24. Release rig and rig down to move to Seabee Test Well No. 1.

Spacer 1000 Information

Batch mix to pump 10 bbls into hole. (That is, mix 1-2 bbls excess.)

Suggested mix volume:

*Mix water 7.5 bbl
8 sacks D104 viscosifier
55 sacks Barite
Mix in this order through tornado tub. This should yield 11.6 bbls spacer at 17.5 ppg tolerance of weight ± 1/4 ppg.

Pump mixed Spacer 1000 into displacement tank for one full 10 bbls measurable. If much is left in mixing tube, dump or pump off.

*For 17.0 ppg, use only 48 sacks Barite.
Mix should yield 11.2 bbls 17.0 ppg spacer.

*Wts to be used.

JMM 5/16/79

RECEIVED
ONSHORE DIST. OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

JUN 11 1979

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well [X] gas well [ ] other Wildcat
2. NAME OF OPERATOR National Petroleum Reserve in Alaska (through Husky Oil NPR Operations, Inc.)
3. ADDRESS OF OPERATOR 2525 C Street, Suite 400, Anchorage, AK 99503
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
   AT SURFACE: 2713' FSL; 1843' FEL
   AT TOP PROD. INTERVAL:
   AT TOTAL DEPTH: 3105.68' FSL; 1244.13' FEL
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. Inigok Test Well No. 1
10. FIELD OR WILDCAT NAME Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 34, T8N, R5W, UM
12. COUNTY OR PARISH North Slope
13. STATE Alaska
14. API NO.
15. ELEVATIONS (SHOW DF, KDF AND WD) 135' Pad; 163' KB
16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

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

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

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

This well has been plugged and abandoned. The well was drilled to a total depth of 20,004.76' TVD (20,102' MD) and logged. After the logs were evaluated, the well was plugged and abandoned as follows: Trip in open ended to 19,200', circulated and conditioned mud. Spotted Plug No. 1, 200 sx Class J cement containing 60 #/sx Barite, 0.75% D65, 0.25% D28, and 0.25% D46 at 17.8 ppg. CIP at 10:45 AM, May 17, 1979. Picked up to 17,978', circulated and conditioned mud. Spotted Plug No. 2, 200 sx Class J cement containing 60 #/sx Barite, 0.75% D65, 0.25% D28, and 0.25% D46 at 17.8 ppg. CIP at 4:10 PM, May 17, 1979. Picked up to 16,762' and circulated. POH, picked up 6 1/4" bit and 7 5/8" casing scraper. Tripped in hole to 16,646', circulated and conditioned mud. POH, layed down casing scraper and picked up 7 5/8" EZ Drill cement retainer. Tripped in hole to 16,600', circulated and set retainer. Spotted Plug No. 3 at 16,600', 250 sx Class J cement containing 0.75% D65, 0.25% D28

(Continued on Page 2)

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

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

SIGNED Max Brewer TITLE Chief of Operations DATE 8 June 79

(This space for Federal or State office use)

Conforms with pertinent provisions of 30 CFR 221.

APPROVED James Wilson TITLE DISTRICT SUPERVISOR ACTING DATE 7/23/79

*See Instructions on Reverse Side

at 17.5 ppg. CIP at 10:00 AM, May 18, 1979. This is a 1050' plug in 7 5/8" liner. Picked up to 12,251', circulated mud. Spotted Plug No. 4, 200 sx Class G cement containing 0.75% D65, 0.25% D28 at 17.0 ppg. This is 433' of plug in the 7 5/8" liner and 242' of plug in the 9 5/8" casing. CIP at 3:30 AM, May 19, 1979. Picked up to 11,500', reversed out drill pipe volume. POH, picked up 8 1/2" bit and 9 5/8" casing scraper. Tripped in hole to 11,484', circulated and conditioned mud. POH, layed down casing scraper and picked up 9 5/8" EZ Drill cement retainer. Tripped in hole to 11,450' and set retainer. Spotted Plug No. 5 at 11,450', 200 sx Class G cement containing 0.75% D65, 0.25% D28 at 17.0 ppg. This is a 500' plug in 9 5/8" casing. CIP at 5:00 AM, May 20, 1979. Picked up and reversed out drill pipe volume. POH, picked up 9 5/8" Howco retainer. Tripped in hole to 7981' and set retainer. Circulated and conditioned mud, spotted Plug No. 6 at 7981', 200 sx Class G cement containing 0.75% D65, 0.25% D28 at 17.0 ppg. This is a 500' plug in 9 5/8" casing. CIP at 2:20 PM, May 21, 1979. POH, picked up 9 5/8" cement retainer. Tripped in hole to 2003' and set retainer. Displaced 9 5/8" casing with water. Spotted Plug No. 7 at 2003', 250 sx Arctic Set II cement at 15.2 ppg. This is a 575' plug in 9 5/8" casing. CIP at 10:15 PM, May 20, 1979. Picked up to 1409', circulated and conditioned mud. Spotted Plug No. 8 at 1409', 250 sx Arctic Set II cement at 15.2 ppg. This is a 575' plug in 9 5/8" casing. CIP at 11:06 PM, May 20, 1979. Picked up to 940', circulated and conditioned mud. Spotted Plug No. 9 at 940', 200 sx Arctic Set II cement at 15.2 ppg. This is a 450' plug in 9 5/8" casing. CIP at 11:40 PM, May 20, 1979. Picked up to 425', spotted Plug No. 10 to surface, 234 sx Arctic Set II at 15.2 ppg. CIP at 1:10 AM, May 21, 1979. Filled hole with Glycol and water. Nippled down BOP stack. Nippled up abandonment head and dry hole marker. Rig released at 12:00 noon, May 22, 1979.

Attachment
(Abandonment Head)

Form 9-331
(Rev. 5-63)

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

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
ONSHORE DIST. OFFICE

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

JUN 11 1979

CONSERVATION DIVISION
U.S. GEOLOGICAL SURVEY
ANCHORAGE, ALASKA

5. LEASE DESIGNATION AND SERIAL NO.	N/A
6. IF INDIAN, ALLOTTEE OR TRIBE NAME	N/A
7. UNIT AGREEMENT NAME	N/A
8. FARM OR LEASE NAME	National Petroleum Reserve in Alaska
9. WELL NO.	Inigok Test Well No. 1
10. FIELD AND POOL, OR WILDCAT	Wildcat
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA	Sec 34, T8N, R5W, UM
12. COUNTY OR PARISH	North Slope
13. STATE	Alaska

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

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

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

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

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface: 2713' FSL; 1843' FEL
At top prod. interval reported below
At total depth: 3105.68 FSL; 1244.13' FEL

14. PERMIT NO.	15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)	19. ELEV. CASINGHEAD
N/A	June 7, 1978	May 15, 1979	N/A	135' Pad; 163' KB	

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
20,004.76' TVD 20,102' MD	To Surface	N/A	⟶	All	None

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

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN
DIL/SP, BHC-Sonic/GR, FDC/CNL/GR, HRD, Velocity Survey, Temperature Survey

27. WAS WELL CORED: Yes

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

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
42"	230.41	110'	60"	Arctic Set(AS)II to Surface	None
30"	196.08(X-42)	508'	36"	1740 Sx AS II to Surface	None
20"	133 (K-55)	2,594'	26"	5400 Sx AS II to Surface	None
13 3/8"	72 (S-95)	8,286'	17 1/2"	3400 Sx Cl G/5200 Sx AS II to Sfc	None
9 5/8"/9 3/4"	53.5/59.2(S-95)	12,283'	12 1/4"	2800 Sx Cl G/1600 Sx Cl G	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
7 5/8"	11,818'	17,432'	1000	

30. TUBING RECORD

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

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

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

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

33.* PRODUCTION

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

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

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

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)
N/A

TEST WITNESSED BY:

35. LIST OF ATTACHMENTS
Sperry Sun Survey Tabulation; Wellbore Schematic

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

SIGNED Max C. Brewer TITLE Chief of Operations, ONPRA DATE 8 June 1979

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

INSTRUCTIONS

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

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

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

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

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

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

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

37. SUMMARY OF POROUS ZONES

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

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Porosity Zones			
Sadlerochit	12,964'	12,999'	Sandstone, average log porosity: 20%; calculated log water saturation: 80 - 100%.
Drill-Stem Tests			
None			
Cored Intervals			
See Attached			

38. GEOLOGIC MARKERS

NAME	DIL MEAS. DEPTH	TOP SKB TRUE VERT. DEPTH
Base Permafrost (DIL Log	850-900'	Vert. Hole
GR/Pebble Shale	9040'	"
Kuparuk Ss	9260'	"
Kingak Sh	9792'	"
Sag River Ss	12,165'	"
Shublik Fm	12,215'	
Sadlerochit/ Ivishak Sr	12,643'	
Kavik Sh	13,3211'	
Echooka Fm	13,360'	
Base Echooka	13,852'	
Lisburne Fm	13,963'	
Endicott Group	17,871'	
Kekiktuk	18,662'	18,648
Total Depth (Kekiktuk)	20,107	20,005'

U.S. GOVERNMENT PRINTING OFFICE: 1971—O-455050

871-233

Well Completion Report
National Petroleum Reserve in Alaska
Inigok Test Well No. 1
Continuation of Item 37

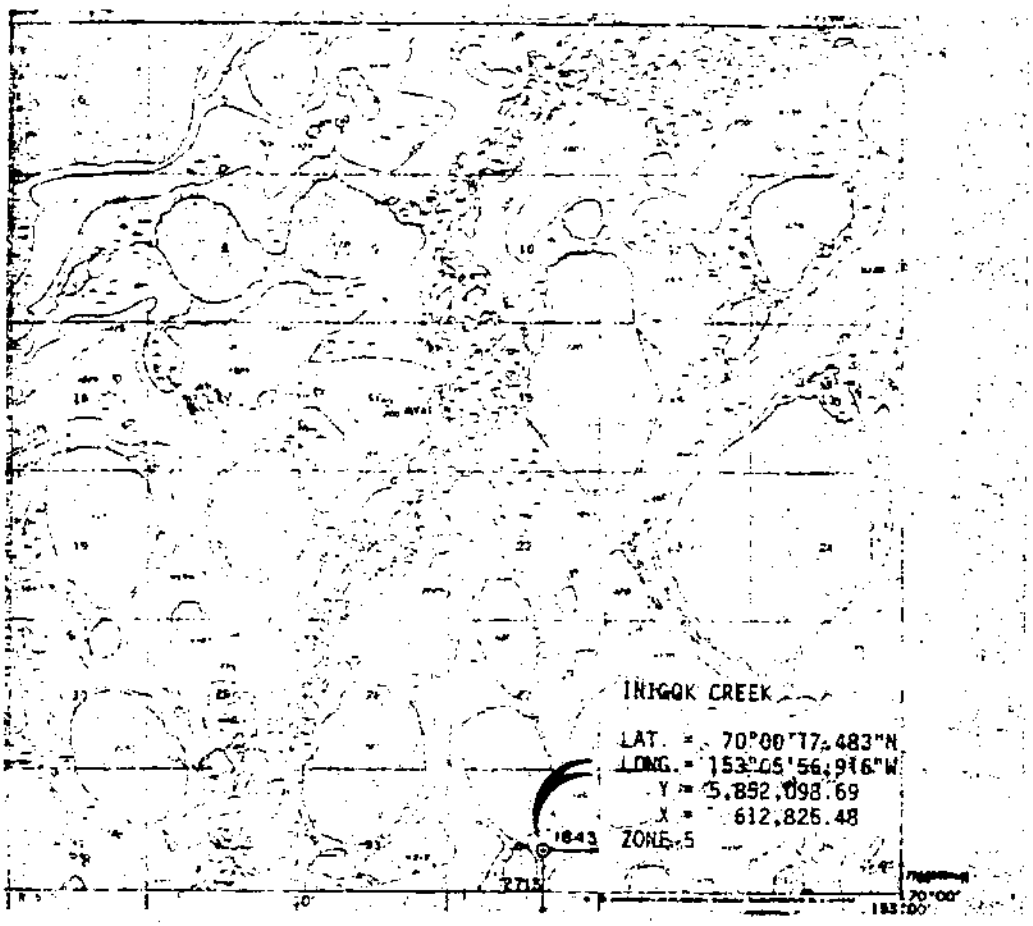
SUMMARY OF CORED INTERVALS

Core No.	Formation	Top	Bottom	Description, Contents, Etc.
1	Nanushuk	2632'	2662'	Pred Sh w/minor Sltst and Ss, nil porosity, no indications hydrocarbon.
2	Nanushuk	3072'	3082'	Sh grdg down to v.f. Ss, nil porosity, no indications hydrocarbon.
3	Torok	4206'	4216'	Sh w/trace Sltst, no porosity, no indications hydrocarbon.
4	Torok	5000'	5010'	Sh w/minor amount of Sltst and Ss, no porosity, no indications hydrocarbon.
5	Torok	7054'	7064'	Sh, no porosity, no indications hydrocarbon.
6	Torok	8210'	8240'	Ss, v.f. grained, silty, nil porosity, no indications hydrocarbon.
7	Torok	8842'	8852'	Sltst w/intbd Sh, no porosity, no indications hydrocarbon.
8	GR/Pebble Sh	9338'	9348'	Sh, blk, silty, w/thin Sltst, no porosity, no indications hydrocarbon.
9	GR/Pebble Sh	9448'	9458'	Sh, blk w/Ss nodules, no porosity, no indications hydrocarbon.
10	Kingak	10,295'	10,305'	Sh, hd, siliceous, no porosity, no indications hydrocarbon.
11	Kingak	10,998'	11,008'	Sh, w/trace pyrite and coal fragments, no porosity, no indications hydrocarbon.
12	Kingak	11,704'	11,714'	Sh, w/scat organic material, no porosity, no indications hydrocarbon.

Well Completion Report
National Petroleum Reserve in Alaska
Inigok Test Well No. 1
Continuation of Item 37

SUMMARY OF CORED INTERVALS

Core No.	Formation	Top	Bottom	Description, Contents, Etc.
13	Shublik	12,273'	12,283'	Ls, f. crystalline, dense, no porosity, no indications hydrocarbon.
14	Shublik	12,500'	12,530'	Sh, silty to slightly sdy, some small fractures, bleeding trace gas from fractures.
15	Sadlerochit	12,705'	12,735'	Ss, v.f. grained w/silica cement, nil porosity w/intbds Sh; trace of ? dead oil on fractures.
16	Kavik/Echooka	13,480'	13,510'	Sh, silty, siliceous, w/6" of Ss at top, no porosity, no indications hydrocarbon.
17	Echooka	13,831'	13,880'	Sh and Sltst; trace Ss, nil porosity, no indications hydrocarbon.
18	Lisburne	14,020	14,066'	Sh, Ls and Sltst; nil porosity, trace ? dead oil on some fractures.
19	Lisburne	15,185'	15,215'	Sh, dolomitic and Ls, fossiliferous, nil porosity, no indications hydrocarbon.
20	Lisburne	16,185'	16,198'	Ls, dolomitic, no porosity, no indications hydrocarbon.
21	Lisburne	17,053'	17,083'	Ls, Sh, Chert; some vertical fractures w/trace ? dead oil.
22	Kekiktuk	19,360'	19,372'	Ss and Cgl Ss; minor Sltst and Sh, no por, no hydrocarbon.
23	Kekiktuk	20,091' (Rec 2 feet)	20,102'	Ss and Sh, graphitic, w/trace anthracite, no porosity, no indications hydrocarbon.



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.

Feb. 2, 1978

STATE OF ALASKA 49TH JOHN H. HERRING No. 953-S REGISTERED PROFESSIONAL LAND SURVEYOR

SCALE: 1" = 1 MILE

AS STAKED

INIGOK CREEK

LOCATED IN

NE 1/4 PROTRACTED SEC. 34 T8 N., R5W UMIAT MERIDIAN, AK

Surveyed for

HUSKY OIL

N.P.R. OPERATIONS INC.

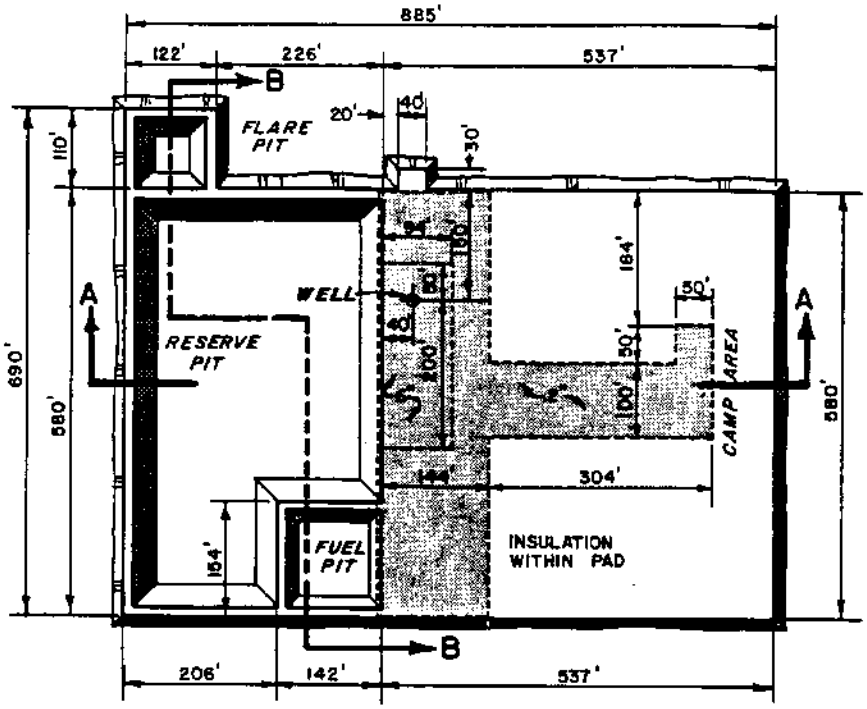
Surveyed by

Bell, Herring and Associates

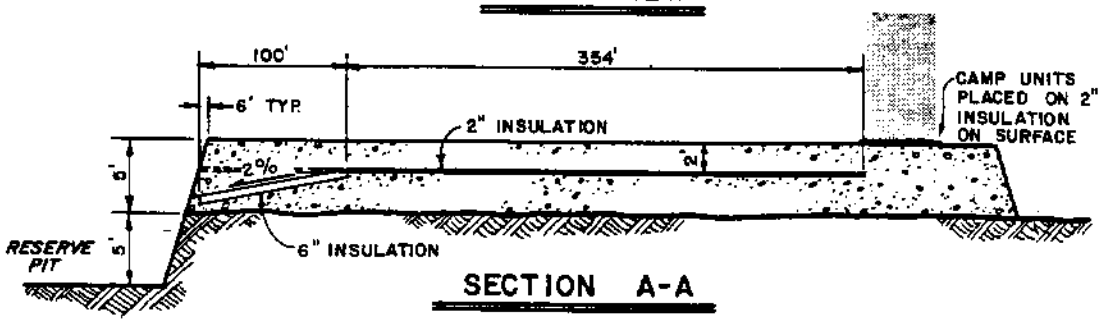
ENGINEERS AND LAND SURVEYORS

801 West Fireweed, Suite 102

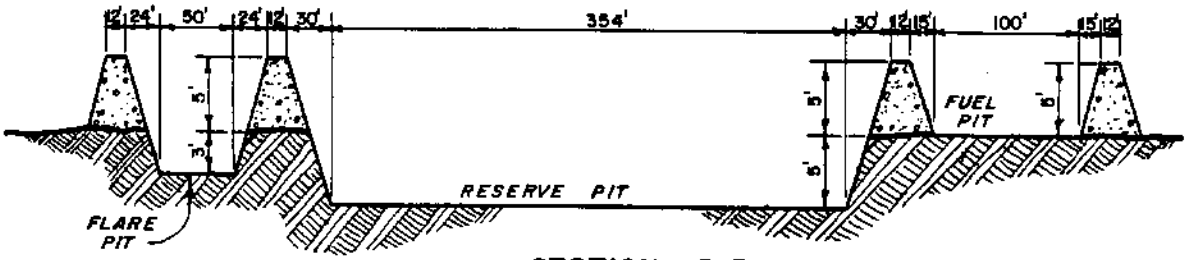
ANCHORAGE, ALASKA 99503



PLAN VIEW



SECTION A-A



SECTION B-B

INIGOK DRILLSITE

OPERATIONS HISTORY

DATE AND FOOTAGE DRILLED AS OF 6:00 A.M.	ACTIVITY
6/8/78 410'	Total Depth: 520'; Mud Weight: 9.3; Viscosity: 47. Completed rig up. Spudded well June 7, 1978, at 9:30 a.m. Drilled 17-1/2" hole. Surveyed at 524', 1/2°. Drilled 17-1/2" hole to 520'. Surveyed at 520', 0°. Pulled out of hole. Picked up 26" hole opener. Opened hole to 26" to 240'.
6/9/78 0'	TD: 520'; MW: 9.4; Vis: 46. Opened 17-1/2" hole to 26" to 520'. Tripped for bottom hole assembly. Repaired rotary torque cell hose. Opened hole to 36" at 390'.
6/10/78 4'	TD: 524'; MW: 9.5; Vis: 58. Opened 26" hole to 36". Picked up tandem 36" hole openers. Tripped in to total depth and conditioned hole for casing. Tripped out and laid down bottom hole assembly. Rigged up and ran 13 joints of 30", 196.08#, X-42 casing with Vetco 30" ST connectors to 508'. Rigged up and ran 5" drill pipe and stinger. Stabbed in and conditioned hole. Prepared to cement.
6/11/78 0'	TD: 524'; MW: 9.5; Vis: 54. Cemented 30" casing with 1,740 sacks of ArcticSet II cement at 15.2-15.6 ppg. Cement in place 6/10/78 at 9:15 a.m. Tripped out with drill pipe. Cut off 42" casing; cut off 30" casing. Welded on base flange.
6/12/78 489'	TD: 1013'; MW: 9.3; Vis: 39. Nippled up blowout preventers on 30" casing. Laid down six joints extra heavy weight drill pipe. Picked up bottom hole assembly. Tripped in. Tested casing and Hydril to 250 psi OK. Drilled shoe at 508' and cleaned out to 524'. Drilled to 796'; surveyed. Drilled to 1013'.
6/13/78 907'	TD: 1920'; MW: 9.9; Vis: 57. Drilled to 1455'. Surveyed and tripped for bit. Drilled 1455-1885'. Repaired unibolt on mud line. Drilled 1885' to 1920'.
6/14/78 686'	TD: 2606'; MW: 9.9; Vis: 75. Drilled to 1951'; surveyed. Drilled to 2014'; tripped for bit. Slipped and cut drilling line. Drilled. Repaired mud line. Drilled to 2452'; surveyed. Drilled to 2606'. Circulated and conditioned.

6/15/78 19'	TD: 2625'; MW: 9.9; Vis: 77. Drilled, circulated. Made wiper trip; circulated. Pulled out of hole to log. Log stopped at 590'. Tripped in; circulated. Pulled out of hole. Ran DIL log to 2616' and BHC Gamma Ray to 2599'.
6/16/78 0'	TD: 2625'; MW: 9.9; Vis: 77. Completed BHC-Sonic/GR log. Tripped in with drill pipe and laid down excess. Picked up 26" hole opener. Reamed shoe at 508' and cemented to 525'. Conditioned mud. Tripped out and removed jets. Tripped in and opened hole to 26" to 1385'.
6/17/78 0'	TD: 2625'; MW: 9.9; Vis: 71. Opened hole to 26" from 1385' to 1445'. Tripped for hole opener. Opened hole to 26" from 1445' to 1814'. Conditioned hole and tripped for hole opener. Opened hole to 26" from 1814' to 1905'.
6/18/78 0'	TD: 2625'; MW: 9.5; Vis: 58. Opened hole to 26" from 1905' to 2516'. Repaired pump.
6/19/78 0'	TD: 2625'; MW: 10.5; Vis: 100. Opened hole to 26" from 2516' to 2525'. Tripped for hole opener. Opened hole to 2560'. Repaired pump. Opened hole to 2625'. Tripped out. Ran 26" hole openers in tandem. Tripped in; no fill. Conditioned hole for casing. Tripped out to run 20" casing.
6/20/78 0'	TD: 2625'; MW: 10.5; Vis: 110'. Pulled out of hole. Rigged up to run 20" casing. Ran 34 joints of 133#, K-55, 8rd and 20 joints of 20", 169#, K-55, 8rd. Casing parted between 51st and 52nd joints. Total fish in hole: 1959.86'. Top of fish at 665'. Laid down three joints of 20" casing. Waited on fishing tools. Tripped in with Dowell stab-in tool.
6/21/78 0'	TD: 2625'; MW: 10.3; Vis: 90. Tripped in with stringer to 2536'. Stabbed into duplex float collar and broke circulation. Circulated and cleaned hole. Tripped out. Picked up 20" spear, jars, bumper sub, and bottom hole assembly for fishing. Tripped in to top of fish at 625'. Speared into fish and tripped out with 20" casing. Rigged up and laid down 20" casing.
6/22/78 0'	TD: 2625'; MW: 10.1; Vis: 99. Finished laying down 20" casing. Cleaned rig. Picked up 26" hole opener and bottom hole assembly. Tripped in to 2625' and conditioned mud. Made short trip to 30" shoe; no fill. Tripped out. Rigged up to run 20" casing. Made up new float shoe; ran two joints of 20", 133#, K-55, STC, 8rd casing. Ground out collar to fit 20" weld on float collar.

6/23/78 0'	TD: 2625'; MW: 10.1; Vis: 94. Welded on 20" float collar. Began running 20" casing.
6/24/78 0'	TD: 2625'. Ran 20" casing to 2594' KB. Tripped in with stinger to float collar at 2503'. Circulated 1,100 barrels mud. Rigged up Dowell and cemented with 5,400 sacks ArcticSet II cement at 15.2 ppg. Cement returns at 4,800 sacks pumped. Returns of 15 ppg at 5,100 sacks pumped. Cement in place 6/23/78 at 8:40 p.m. Pulled four stands of drill pipe and flushed blowout preventer stack. Tripped out with drill pipe. Nippled down blowout preventer equipment. Removed landing joint. Nippled down.
6/25/78 0'	TD: 2625'. Cut off 20" surface casing and 30" shallow surface casing. Welded on National 20", 3,000 psi base flange. Nippled up 20" blowout preventer equipment.
6/26/78 0'	TD: 2625'; MW: 8.7; Vis: 37. Cooled and tested weld on National 20" casing head. Outside weld had three pinhole leaks. Cut out 2" gussets and ground out weld. Rewelded outside weld.
6/27/78 0'	TD: 2625'; MW: 8.7; Vis: 40. Rewelded 20" base flange. Tested weld to 200 psi O.K. Topped off 20" x 30" annulus with cement and poured new cellar floor. Nippled up 20" blowout preventer equipment.
6/28/78 0'	TD: 2625'; MW: 8.7; Vis: 41. Nippled up blowout preventer equipment. Tested pipe rams and blind rams to 3,000 psi OK. Hydril leaked. Replaced Hydril rubber.
6/29/78 7'	TD: 2632'; MW: 8.7; Vis: 42. Tested Hydril to 1,500 psi OK. Installed bowl protector. Picked up bottom hole assembly. Tripped in to 2503'. Changed over mud to KC1/Polymer system. Built volume. Tested casing to 2,400 psi OK. Drilled float collar at 2503'; drilled cement 2507' to 2594'; drilled shoe. Cleaned out to 2625'. Conditioned mud and cleaned hole. Tested formation to 0.53 psi/ft. equivalent gradient OK. Drilled 2625' to 2632'. Conditioned hole to core. Steel line measured out; corrected to 2632'. Picked up core barrel; tripped in.
6/30/78 249'	TD: 2881'; MW: 8.8; Vis: 38. Cut Core No. 1: 2632-2662'. Tripped out and laid down core. Full recovery. Picked up drilling assembly; tripped in and reamed core hole. Drilled 2662' to 2881'.

7/1/78 308'	TD: 3189'; MW: 9.5; Vis: 37. Drilled to 3072'. Conditioned hole for core. Cut Core No. 2: 3072-3082'. Full recovery. Tripped in with new bit. Reamed core hole. Drilled to 3189'; surveyed 1° at 3072'.
7/2/78 363'	TD: 3552'; MW: 9.8; Vis: 53. Drilled to 3429'; tripped for bit. Washed 3400' to 3429'. Drilled from 3429' to 3552'.
7/3/78 255'	TD: 3807'; MW: 9.7; Vis: 43. Drilled to 3798'. Tripped for bit. Washed from 3768' to 3798'. Drilled to 3807'.
7/4/78 303'	TD: 4110'; MW: 9.4; Vis: 37. Drilled from 3807' to 4110'. Drilled ahead.
7/5/78 106'	TD: 4216'; MW: 9.4; Vis: 37. Drilled to 4206'. Tripped out. Magnafluxed bottom hole assembly. Laid down one joint heavy weight drill pipe and six 7-3/4" drill collars. Tripped in with core barrel. Cut Core No. 3: 4206-4216'. Tripped out with core.
7/6/78 156'	TD: 4372'; MW: 9.5; Vis: 37. Laid down core; full recovery. Tested blowout preventer, Hydril, upper and lower kelly cocks. Replaced lower kelly cock. Changed bottom hole assembly. Tripped in; tight hole 4136' to 4206'. Reamed 4206' to 4216'.
7/7/78 229'	TD: 4601'; MW: 9.5; Vis: 38. Pulled out of hole for bit. Cleaned and doped all drill collars.
7/8/78 222'	TD: 4823; MW: 9.6; Vis: 39. Tripped for bit at 4601'. Washed to bottom from 4571' to 4601'. Had washout in drill pipe while drilling at 4713'. Dropped carbide lag. Tripped out to washout. Found washout in drill pipe, 37 stands plus one single out; eight inches from box. Tripped in. Drilled to 4823'.
7/9/78 181'	TD: 5004'; MW: 9.7; Vis: 38. Drilled to 5000'; circulated. Tripped for core barrel. Tripped in with core barrel.
7/10/78 237'	TD: 5241'; MW: 9.8; Vis: 40. Cut Core No. 4: 5000-5010'. Had full recovery. Tripped in with bit. Washed and reamed 4940' to 5000'; had 20 feet of fill. Reamed 5000' to 5010' to 17-1/2". Drilled 5010' to 5241'.
7/11/78 168'	TD: 5409'; MW: 9.9; Vis: 39. Drilled to 5255'. Made five-stand trip to wipe hole. Pulled 55,000 pounds over string weight first three stands. Reamed 5195' to 5296'; had 10 feet of fill. Drilled to 5409'. Tripped for bit.

7/12/78 252'	TD: 5661'; MW: 9.9; Vis: 54. Finished trip in. Drilled to 5559'. Made short trip. Drilled to 5661'.
7/13/78 106'	TD: 5767'; MW: 9.8; Vis: 43. Drilled to 5767'. Tripped out. Laid down 6-1/2" drill collars. Attempted to pull wear bushing. Bushing hung up in Hydril. Worked bushing through Hydril. Set test plug. Tested blowout preventer rams to 3,000 psi, Hydril to 1,000 psi OK. Test plug hung up in Hydril. Worked test plug through Hydril. Removed drilling nipple and worked on Hydril.
7/14/78 176'	TD: 5943'; MW: 9.9; Vis: 46. Removed top of Hydril. Took out inner support sleeve. Replaced top of Hydril. Tested blind rams to 3,000 psi. Tested choke manifold, upper and lower kelly cocks to 3,000 psi. Pulled test plug, installed wear bushing. Picked up bottom hole assembly. Tripped in. Drilled to 5943'.
7/15/78 230'	TD: 6173'; MW: 9.9; Vis: 44. Drilled to 6173'. Tripped out. Tight hole first three stands and fifth stand. Tripped in. Reamed to bottom.
7/16/78 217'	TD: 6390'; MW: 10.0; Vis: 47. Drilled to 6299'; made short trip. Tight hole at 6315'. Drilled out bridge; had 15 feet of fill.
7/17/78 130'	TD: 6520'; MW: 10.1; Vis: 46. Drilled to 6478'. Tripped for bit. Tight first two stands. Had 18 feet of fill.
7/18/78 190'	TD: 6710'; MW: 10.1; Vis: 44. Repaired No. 2 pump. Repaired rotary chain.
7/19/78 110'	TD: 6820'; MW: 10.0; Vis: 44. Repaired rotary chain and mud pump. Drilled to 6738'. Tripped for bit. Drilled to 6820'.
7/20/78 130'	TD: 6950'; MW: 10.0; Vis: 54. Drilled to 6831'. Lost pump pressure. Tripped out, looking for leak. Found washout in shock sub. Tested blowout preventer rams to 3,000 psi, Hydril to 1,000 psi OK. Repaired rotary chain. Picked up new shock sub. Tripped in.
7/21/78 104'	TD: 7054'; MW: 10; Vis: 46. Drilled to 7028'. Made short trip. Hole in good condition. Drilled to 7054'. Dropped survey; tripped out. Repaired Hydril.

7/22/78 10'	TD: 7064'; MW: 10.0; Vis: 47. Installed new body sleeve in Hydril. Tested Hydril to 1,000 psi OK. Nippled up drilling nipple. Tripped in with core barrel. Washed 10 feet to bottom. Cut Core No. 5: 7054-7064'. Tripped out; tight 3790' to 3500'. Laid down core; full recovery. Tripped in with drilling assembly. Cut drilling line. Tripped to 7054'; reamed core hole to 7064'.
7/23/78 214'	TD: 7268'; MW: 10.0; Vis: 40. Reamed out core hole. Drilled to 7141'; circulated samples. Drilled to 7193'. Made short trip OK. Repaired mud line. Drilled to 7268'.
7/24/78 102'	TD: 7370'; MW: 9.9; Vis: 43. Drilled to 7297'. Dropped survey and tripped out. Tripped in; washed 30 feet to bottom. Repaired mud manifold and torque gauge.
7/25/78 137'	TD: 7507'; MW: 9.9; Vis: 40. Drilled to 7421'; made short trip. Drilled to 7498'; dropped survey; tripped for bit. Tripped in; had 19 feet of fill. Washed to bottom. Drilled to 7507'.
7/26/78 15'	TD: 7522'; MW: 9.9; Vis: 41. Drilled to 7522'. Backed off. Attempted to get back on fish. Tripped out. Left fish in hole. Fish consisted of 17-1/2" bit, bit sub, 9" shock sub, 17-1/2" stabilizer, one monel drill collar, one 8" drill collar, one 17-1/2" stabilizer, three 8-11/16" drill collars; seventeen 7-3/4" drill collars, Jarco jars, four 7-3/4" drill collars, crossover, and 10 joints of heavy weight drill pipe. Made up fishing assembly: 14-1/4" oversize guide, 10-5/8" overshot, jar, crossover, nine 6-1/2" drill collars, 5" drill pipe. Tripped in. Worked over fish; picked up and circulated. Tripped out with fish. Laid down fishing assembly. Inspected bottom hole assembly while tripping in.
7/27/78 96'	TD: 7618'; MW: 9.8; Vis: 41. Finished inspecting bottom hole assembly and heavy weight drill pipe. Tripped in. Washed 30 feet of fill to bottom. Drilled to 7618'.
7/28/78 144'	TD: 7762'; MW: 9.7; Vis: 40. Drilled to 7655'. Made five-stand wiper trip OK. Drilled to 7762'. Tripped out. Tested blowout preventer; tested rams and choke manifold to 3,000 psi OK. Attempted to test Hydril; rubber burst. Waited on new rubber.

7/29/78 66'	TD: 7828'; MW: 9.6; Vis: 43. Installed Hydril rubber. Tested Hydril to 100 psi OK. Nippled up drilling nipple and ran wear bushing. Tripped in. Washed 20 feet to bottom.
7/30/78 162'	TD: 7990'; MW: 9.7; Vis: 40. Drilled to 7856'. Made wiper trip OK. Drilled to 7959'; circulated samples. Drilled to 7990'. Dropped survey and tripped out.
7/31/78 142'	TD: 8132'; MW: 9.6; Vis: 39. Tripped in with new bit. Washed 12 feet of fill to bottom. Drilled to 8080'. Made five-stand wiper trip OK. Drilled to 8132'.
8/1/78 79'	TD: 8210'; MW: 9.6; Vis: 40. Drilled to 8210'; dropped survey and tripped out. Cleaned and repaired suction tank. Tripped in with core barrel to 6220'. Rotary clutch went out. Tripped out to 20" shoe. Repaired rotary clutch.
8/2/78 76'	TD: 8286'; MW: 9.6; Vis: 39. Finished repairing rotary clutch. Tripped in with core barrel. Cut Core No. 6: 8210-8240'. Tripped out with full recovery. Tripped in with bit. Reamed core hole; drilled to 8286'. Lost 700 psi pressure. Tripped out, checking for leak in drill pipe.
8/3/78 0'	TD: 8286'; MW: 9.6; Vis: 41. Tripped out. Left fish (17-1/2" bit, bit sub, shock sub, 17-1/2" stabilizer, 7-3/4" monel drill collar) in hole. Picked up 10-5/8" Bowen overshot, dressed with 7-3/4" basket grapple and control. Tripped in, washed 80 feet to top of fish; worked over and caught fish. Jarred fish loose. Tripped out with fish. Tight hole 5467-5400', 3950-3890'. Laid down fish and fishing assembly. Picked up drilling assembly. Worked through tight hole at 3850'. Washed 60 feet of fill to bottom.
8/4/78 29'	TD: 8315'; MW: 9.7; Vis: 44. Drilled to 8315'; conditioned hole. Made short trip to 20" shoe; tight at 5500-5400', 3950-3850'. Twenty feet of fill on bottom. Washed to bottom; circulated and conditioned hole for logs. Tripped out to log. Rigged up Schlumberger. Ran DLL.
8/5/78 0'	TD: 8315'; MW: 9.7; Vis: 41. Finished DLL No. 1. Reran DLL. Ran FDC/CNL/GR, BHC-Sonic/GR; reran FDC/CNL/GR.

8/6/78
0'

TD: 8315'; MW: 9.7; Vis: 45. Finished FDC/CNL/GR No. 2. Picked up bottom hole assembly; tripped in to 2594'. Strung up 12 lines. Repaired hook. Tripped in; washed 25 feet of fill to bottom. Conditioned hole for casing. Tripped out steel line measure. Began rigging up to run 13-3/8" casing.

8/7/78
0'

TD: 8315'; MW: 9.7; Vis: 45. Finished rigging up to run casing. Changed pipe rams. Ran 215 joints of 13-3/8", 72#, S-95 Buttress casing; landed at 8286' KB. Rigged up and circulated casing.

8/8/78
0'

TD: 8315'; MW: 9.7; Vis: 40. Circulated 13-3/8" casing. Laid down handling joint and casing tools. Picked up stab-in sub and tripped in to float collar. Circulated and conditioned mud to cement. Had leak in drill pipe or stab-in sub. Tripped out, checking for leaks. Inspected tool and changed seals. Tripped in with stab in tool.

8/9/78
0'

TD: 8315'; MW: 9.6; Vis: 41. Tripped in with stinger and shifting assembly. Stabbed into duplex collar. Fluid leaked by. Tripped out. Moved shifting assembly down in string. Ran five stands above and set packer; bypass valve would not close. Tripped out. Picked up new bypass. Ran in and checked bypass. Checked OK. Tripped in. Stabbed into duplex collar; fluid leaked by. Pulled three stands; set packer. Fluid continued to leak by. Tripped out.

8/10/78
0'

TD: 8315'; MW: 9.9; Vis: 39. Tripped out with shifting assembly and laid down. Tripped in with stinger and stabbed into duplex collar. Conditioned hole for cementing. Cemented with 3,400 sacks Class "G" with 0.75% D-65, 0.15% D-13 at 16.4 ppg. Preceded cement with 50 barrels of water and followed with two barrels of water. Displaced cement with mud at 5 BPM. Final pumping pressure: 1,300 psi. Shut in pressure: 950 psi. Cement in place 8/9/78 at 6:45 p.m. Tripped out with stinger. Picked up shifting assembly. Tripped in to lower FO at 3593'. Opened FO and set RTTS. Circulated through FO at 3593'.

8/11/78
0'

TD: 8315'; MW: 9.9; Vis: 39. Circulated through FO at 3543'. Tripped out. Rigged up and ran Sperry Sun Gyro survey. Rigged up Schlumberger and ran CBL/VDL. Line shorted out. Reran log. Hung blowout preventer stack. Hung 13-3/8" casing with 600,000 pounds. Cut off and nippled down. Top of cement at 5400' with 2887' of rise from the shoe. Nippled down blowout preventer.

8/12/78 0'	TD: 8315'; MW: 9.8; Vis: 38. Nippled down 20" blowout preventer. Installed packoff assembly and tested to 2,500 psi OK. Nippled up 13-5/8", 5,000 psi blowout preventer. Tested blowout preventer to 5,000 psi, choke manifold to 5,000 psi, Hydril to 2,500 psi. OK. Installed wear ring. Picked up FO shifting assembly.
8/13/78 0'	TD: 8315'. Tripped in with FO shifting assembly. Tested top FO to 2,500 psi OK. Tripped in to bottom FO. Set packer and tested to 2,500 psi OK. Opened FO, set packer. Circulated and conditioned hole. Closed FO and tested to 2,500 psi OK. Opened FO and cemented with 5,200 sacks of ArcticSet II cement at 15.2 ppg. Preceded slurry with 30 barrels of water and followed with two barrels of water. Final returns at 14.9 ppg. Mixed and displaced cement at 5 BPM. Pumping pressure: 1,250 psi. Shut in pressure: 1,000 psi. Cement in place 8/12/78 at 5:00 p.m. FO would not shift closed. Held 1,000 psi on cement for 12 hours. Released pressure; attempted to close FO. FO would not close.
8/14/78 0'	TD: 8315'; MW: 9.7; Vis: 38. Tripped out with shifting assembly. Broke down tools. Strung back to 10 lines. Picked up new shifting (closing) fingers and RTTS. Attempted to close bottom FO. Closed FO. Tripped in 70 feet below FO. Tested FO and casing to 2,500 psi OK. Tripped out and laid down shifting assembly. Rigged up air slips. Picked up and tripped in with 12-1/4" bit and drilling assembly.
8/15/78 75'	TD: 8390'; MW: 9.8; Vis: 40. Tripped in to cement at 8171'. Drilled to top of float collar. Tested casing to 2,500 psi OK. Drilled float collar, cement, and shoe. Cleaned out to 8315'. Drilled two feet of new hole. Conditioned mud. Tested formation, using PIT technique. Leak off pressure: 1,400 psi; static pressure: 1,350 psi over 9.7 ppg. Drilled ahead to 8390'. Tripped for bit. Laid down 27 joints of drill pipe with worn tool joints. Changed bottom hole assembly.
8/16/78 280'	TD: 8670'; MW: 10; Vis: 40. Tripped in with new bit. Drilled ahead. Lost pump pressure. Tripped out, looking for washout. Found washout in tool joint nine stands out. Tripped in; drilled ahead.
8/17/78 182'	TD: 8852'; MW: 10.3; Vis: 40. Drilled to 8783'. Circulated gas cut mud. Drilled to 8841'; lost pump pressure. Tripped out, looking for leak. Found broken box on drill collar, 15th drill collar out. Picked up core barrel; tripped in to 8841'. Cut Core No. 7: 8842-8852'. Tripped out with core.

8/18/78 177'	TD: 9029'; MW: 10.2; Vis: 39. Laid down core and core barrel. Full recovery. Reamed out rat hole. Drilled to 8902'; circulated gas cut mud. Tripped out, looking for pressure loss. Found broken box on stabilizer. Tripped in with bit.
8/19/78 309'	TD: 9338'; MW: 10.5; Vis: 58. Drilled to 9338'. Tripped for core barrel.
8/20/78 10'	TD: 9348'; MW: 10.5; Vis: 59. Tripped out. Tested blowout preventer equipment. Tested rams to 5,000 psi, Hydril to 2,500 psi, choke manifold and kill line to 5,000 psi. Tested OK. Picked up core barrel and bottom hole assembly. Cut 100-foot drilling line. Inspected crown assembly. Tripped in. Cut Core No. 8: 9338-9348'. Tripped out; full recovery. Tripped in with bit.
8/21/78 110'	TD: 9458'; MW: 10.4; Vis: 47. Reamed core hole 9388-9348'. Drilled to 9448'. Jacked up sub and leveled rig. Dropped survey and tripped out. Picked up core barrel and tripped in. Cut Core No. 9: 9448-9458'. Tripped out with core.
8/22/78 262'	TD: 9720'; MW: 10.2; Vis: 59. Laid down core barrel. Recovered 9.5 foot core. Tripped in; reamed core hole. Drilled to 9720'. Drilled ahead.
8/23/78 194'	TD: 9914'; MW: 10.2; Vis: 59. Drilled to 9731'. Tripped for new bit. Changed sheaves on fast line. Cut drilling line. Drilled to 9914'.
8/24/78 163'	TD: 10,077'; MW: 10.2; Vis: 52. Dropped survey and tripped for bit. Drilled to 10,077'.
8/25/78 73'	TD: 10,150'; MW: 10.2; Vis: 63. Drilled 12-1/4" hole to 10,150'. Tripped out of hole. Magnafluxed bottom hole assembly. Laid down 10 drill collars, jars, and monel.
8/26/78 107'	TD: 10,257'; MW: 10.1; Vis: 51. Finished inspecting bottom hole assembly. Picked up drill collars. Tripped in. Worked on rotary clutch. Washed 35 feet to bottom. Drilled to 10,210'; shale sloughed in. Drilled to 10,257'.
8/27/78 48'	TD: 10,305'; MW: 10.2; Vis: 53. Drilled to 10,295'. Tripped out for core barrel. Tested blowout preventer equipment OK. Cut drilling line. Tripped in with core barrel. Cut Core No. 10: 10,295-10,305'. Repaired mud line.

8/28/78 115'	TD: 10,420'; MW: 10.3; Vis: 48. Tripped out and laid down core; full recovery. Serviced rig. Picked up monel and tripped in with bit. Washed 45 feet to top of core hole. Reamed core hole. Drilled to 10,342'; circulated a drilling break. Drilled ahead.
8/29/78 180'	TD: 10,600'; MW: 10.4; Vis: 50. Drilled ahead.
8/30/78 145'	TD: 10,745'; MW: 10.4; Vis: 52. Drilled 12-1/4" hole from 10,600' to 10,745'. Repaired pump. Drilled ahead.
8/31/78 75'	TD: 10,820'; MW: 10.5; Vis: 62. Drilled to 10,767'. Dropped survey; tripped out. Changed out 66 joints of drill pipe. Reamed 30 feet to bottom; drilled to 10,788'. Surveyed and drilled to 10,820'.
9/1/78 178'	TD: 10,998'; MW: 10.5; Vis: 68. Drilled ahead. Repaired rotary chain. Drilled to 10,998'. Tripped out for core barrel.
9/2/78 10'	TD: 11,008'; MW: 10.5; Vis: 66. Tripped out. Picked up core barrel. Tripped in. Cut drilling line. Washed 30 feet to bottom. Cut Core No. 11: 10,998-11,008'. Full recovery. Changed out 22 joints of drill pipe. Tested blowout preventer equipment OK. Tripped in with bit.
9/3/78 112'	TD: 11,120'; MW: 10.7; Vis: 65. Tripped in. Cleaned out 15 feet of fill. Repaired rotary chain. Drilled to 11,120'.
9/4/78 168'	TD: 11,288'; MW: 10.7; Vis: 69. Replaced rotary chain. Drilled to 11,288'.
9/5/78 216'	TD: 11,504'; MW: 10.7; Vis: 63. Drilled ahead.
9/6/78 200'	TD: 11,704'; MW: 10.6; Vis: 66. Drilled to 11,704'. Dropped survey and tripped for core barrel. Tight five stands to 11,250'.
9/7/78 5'	TD: 11,709'; MW: 10.6; Vis: 65. Finished trip out, steel line measured; no correction. Laid down 21 joints of drill pipe. Serviced rig. Picked up core barrel, twelve 7-3/4" drill collars, and 26 joints of drill pipe. Tripped in. Washed and reamed 11,385' to 11,704'. Cut Core No. 12: 11,704-11,714'.

9/8/78 11'	TD: 11,715'; MW: 10.8; Vis: 60. Tripped out with core; full recovery. Tripped in, steel line measured, checking all connections on bottom hole assembly. Cut drilling line. Washed and reamed 11,645' to 11,704'. Reamed out core hole to 11,714'. Drilled to 11,715'.
9/9/78 125'	TD: 11,840'; MW: 10.8; Vis: 70. Drilled to 11,792'; made short trip. Drilled ahead.
9/10/78 155'	TD: 11,995'; MW: 10.8; Vis: 52. Drilled to 11,872'. Made short trip; no drag; had six feet of fill. Drilled to 11,968'. Circulated.
9/11/78 179'	TD: 12,174'; MW: 10.9; Vis: 52. Drilled to T2,004'. Made short trip; tight hole to 11,800'; had 20 feet of fill. Drilled to 12,149'. Made short trip; tight hole to 11,500'; had 120 feet of fill. Drilled ahead.
9/12/78 99'	TD: 12,273'; MW: 11.0; Vis: 50. Drilled to 12,273'. Made short trip; tight to 12,150'; had 45 feet of fill. Circulated samples. Dropped survey; tripped out. Tight to 12,180'. Tested blowout preventer OK. Picked up core barrel; tripped in with core barrel.
9/13/78 25'	TD: 12,298'; MW: 11.0; Vis: 80. Washed and reamed 12,233' to 12,273'. Cut Core No. 13: 12,273-12,283'; circulated; pulled out of hole. Tight hole to 12,100'. Recovered 9.5 feet of core. Tripped in with bottom hole assembly; washed and reamed 12,183' to 12,283'.
9/14/78 13'	TD: 12,311'; MW: 11.0; Vis: 70. Drilled to 12,311'. Circulated and conditioned mud. Made short trip; had 45 feet of fill. Circulated and conditioned for logs. Tripped out steel line measure; no correction. Rigged up to log.
9/15/78 0'	TD: 12,311'; MW: 11.0; Vis: 61. Ran DLL to 12,255'; misrun. Ran FDC/CNL/GR to 12,253'. Reran DLL to 12,254'; tool stuck at 10,580'. Pulled tool free and tripped out. Tripped in with bit. Slipped and cut drilling line. Tripped in. Logged fill at 12,250'.
9/16/78 0'	TD: 12,311'; MW: 11.0; Vis: 70. Reamed 12,255' to 12,311'. Circulated and conditioned hole. Made wiper trip to 12,125'. Tight at 12,220'; had 20 feet of fill. Circulated and conditioned. Tripped out to log. Ran BHC Sonic to 12,285'; ran Dipmeter to 12,262'.
9/17/78 0'	TD: 12,311'; MW: 11.0; Vis: 70. Logged with velocity survey to 12,285'. Shot 44 sidewall cores; recovered 43. Tripped in with drilling assembly to

8100'. Strung 12 lines. Tripped in; had 50 feet of fill. Cleaned out 12,261-12,311'. Circulated and conditioned hole. Made short trip; had 25 feet of fill.

9/18/78
0'

TD: 12,311'; MW: 11.0; Vis: 60. Circulated at 12,311'. Tripped out and laid down bottom hole assembly. Pulled wear bushing and changed to 9-5/8" rams. Rigged up to run casing. Ran float shoe, two joints of 9-3/4" casing, float collar with bypass insert, one joint of 9-3/4" casing, M-F collar, 33 joints of 9-3/4" casing, and 134 joints of 9-5/8" casing.

9/19/78
0'

TD: 12,311'; MW: 10.8; Vis: 55. Ran 36 joints of 9-3/4", 59.2#, S-95 Buttress casing (305 joints total) with 43 feet of fill. Washed 15 feet of fill with shoe at 12,283'. Conditioned hole for cementing. Pumped in 50-barrel water spacer. Dropped bottom plug. Cemented with 2,800 sacks Class "G" with 1.25% D-65, 0.15% D-28. Slurry volume: 575 barrels at 15.8 ppg. Dropped first-stage top plug and displaced with two barrels water and 870 barrels mud. Overdisplaced with 10 barrels mud; plug did not bump. Cement in place 9/18/78 at 9:35 p.m. Checked floats OK. Dropped opening bomb and opened stage collar. Circulated off 70 barrels cement and conditioned hole. Pumped in 50 barrels water and 1,600 sacks Class "G" with 0.75% D-65 and 0.3% D-13. Slurry volume: 330 barrels at 15.8 ppg. Dropped closing plug and displaced cement with two barrels water and 700 barrels mud. Overdisplaced with 25 barrels mud; plug did not bump. Cement in place 9/19/78 at 7:20 a.m. Holding 2,000 psi while second stage cement sets.

9/20/78
0'

TD: 12,311'; MW: 10.6; Vis: 46. Waited on cement. Cleaned mud tanks. Worked on choke manifold. Released casing pressure at 2:00 a.m. Rigged up Schlumberger to run temperature log for cement top. Ran temperature survey. Top of cement at 8110'.

9/21/78
0'

TD: 12,311'; MW: 10.6; Vis: 46. Rigged down Schlumberger. Picked up blowout preventer stack. Set National casing slips with 375,000 pounds. Cut off 9-5/8" casing. Tested packoff and flange to 5,000 psi OK. Nippled up 13-5/8", 5,000 psi blowout preventer. Nippled up 11", 10,000 psi blowout preventer.

9/22/78
0'

TD: 12,311'; MW: 10.6; Vis: 46. Worked on 10,000 psi choke manifold.

9/23/78 0'	TD: 12,311'; MW: 10.6; Vis: 46. Completed rigging up 10,000 psi choke manifold. Set in choke house. Rigged up flow lines. Tested blowout preventer equipment and mixed Arctic Pack.
9/24/78 0'	TD: 12,311'; MW: 9.4. Began preparing to change over mud system. Tested upper and lower pipe rams to 10,000 psi OK. Tested Hydril to 5,000 psi OK. Tested choke manifold. Repaired valves and leaks. Mixed Arctic Pack.
9/25/78 0'	TD: 12,311'; MW: 9.4. Tested blind rams to 10,000 psi OK. Tested choke manifold to 10,000 psi OK. Replaced upper kelly cock and tested to 10,000 psi OK. Tested lower kelly cock and safety valve to 5,000 psi OK. Laid down 7-3/4" drill collars. Tripped in with shifting assembly. Opened FO at 2294'. Set RTTS at 2283'. Conditioned 13-3/8" x 9-5/8" annulus with mud. Displaced mud with water.
9/26/78 0'	TD: 12,311'; MW: 10.2; Vis: 42. Pumped Arctic Pack. Closed FO and reversed out. Tested FO to 3,000 psi OK. Tripped out and laid down shifting tools. Left four centralizer springs from RTTS in hole. Restrung to 10 lines. Cleaned mud pits that were used for Arctic Pack. Picked up bottom hole assembly. Steel line measure in hole. Found top of cement at 9538'. Drilled cement, 9538' to 9553'. Differential valve at 9551'. Tested differential valve and casing to 3,000 psi OK. Tripped in; tagged cement top at 11,853'. Cleaned mud tanks.
9/27/78 0'	TD: 12,311'; MW: 10.8; Vis: 40. Cleaned pits. Mixed new mud. Displaced 550 barrels mud in hole. Mixed mud and built volume.
9/28/78 34'	TD: 12,355'; MW: 10.8; Vis: 43. Drilled cement 11,853' to 12,198'; float collar at 12,198'. Tested casing to 3,000 psi OK. Drilled cement to shoe at 12,275'. Cleaned out old hole; found bottom at 12,321'. Drilled 12,321' to 12,331'. Tested formation to 0.676 psi/ft. gradient OK. Drilled to 12,355'.
9/29/78 133'	TD: 12,488'; MW: 10.8; Vis: 45. Drilled to 12,368'. Tripped for bit. Washed and reamed 12,336' to 12,368'. Drilled to 12,488'.
9/30/78 36'	TD: 12,524'; MW: 10.8; Vis: 40. Drilled to 12,500'. Circulated. Tripped out steel line measure; no correction. Picked up core barrel. Tripped in. Cut Core No. 14: 12,500-12,530'.

10/1/78 69'	TD: 12,593'; MW: 10.8; Vis: 46. Tripped out with core. Recovered 29 feet. Tripped in. Reamed 12,500' to 12,530'. Drilled ahead.
10/2/78 87'	TD: 12,680'; MW: 10.8; Vis: 44. Drilled to 12,630'; circulated samples. Made short trip at 12,659'. Drilled ahead.
10/3/78 3'	TD: 12,683'; MW: 10.8; Vis: 44. Circulated samples at 12,683'. Tripped out, lost one cone in hole. Tested blowout preventer equipment to 10,000 psi; tested Hydril to 5,000 psi OK. Tripped in to 3000'. Repaired and relined brakes. Tripped in.
10/4/78 22'	TD: 12,705'; MW: 10.4; Vis: 47. Milled on junk. Tripped out. Cleaned out junk basket. Tripped in; installed 60 drill pipe rubbers. Reamed 40 feet to bottom. Worked by junk. Drilled to 12,705'; circulated samples.
10/5/78 30'	TD: 12,735'; MW: 10.9; Vis: 45. Tripped out for core barrel. Tripped in. Cut drilling line. Conditioned hole. Cut Core No. 15: 12,705-12,735'. Tripped out.
10/6/78 18'	TD: 12,753'; MW: 11; Vis: 48. Tripped out with core barrel; recovered 30 feet of core. Tripped in hole. Worked on brakes. Reamed 90 feet to bottom.
10/7/78 32'	TD: 12,785'; MW: 10.9; Vis: 60. Drilled to 12,785'. Surveyed and tripped out. Changed bit and two bottom stabilizers. Tripped in. Thawed standpipe. Washed and reamed 60 feet to bottom.
10/8/78 40'	TD: 12,825'; MW: 11; Vis: 58. Drilled to 12,785'. Tripped out for bit. Tripped in with bottom hole assembly and cut drilling line. Drilled ahead.
10/9/78 59'	TD: 12,884'; MW: 10.6; Vis: 46. Drilled to 12,884'. Tripped for bit.
10/10/78 28'	TD: 12,912'; MW: 10.7; Vis: 47. Finished trip in. Reamed to bottom. Drilled to 12,912'. Tripped for bit. Reamed to bottom.
10/11/78 108'	TD: 13,020'; MW: 10.6; Vis: 47. Drilled to 13,020'. Tripped out for bit.
10/12/78 12'	TD: 13,032'; MW: 10.6; Vis: 44. Tested blowout preventer. Ran in hole. Cut drilling line. Changed shock sub. Reamed 12,900' to 13,020'. Drilled ahead.

10/13/78 81'	TD: 13,113'; MW: 10.6; Vis: 43. Drilled to 13,113'. Repaired 4" valve on vibrator hose. Drilled ahead.
10/14/78 39'	TD: 13,152'; MW: 10.7; Vis: 43. Drilled to 13,119'. Tripped for bit. Changed cutters in reamer. Reamed 12,912' to 12,930' and 13,085' to 13,119'. Drilled ahead.
10/15/78 27'	TD: 13,179'; MW: 10.7; Vis: 49. Drilled to 13,179'. Tripped for bit. Reamed to bottom.
10/16/78 28'	TD: 13,207'; MW: 10.7; Vis: 47. Reamed 12,899' to 13,179'. Drilled to 13,207'. Tripped for bit. Tested blowout preventer equipment.
10/17/78 58'	TD: 13,265'; MW: 10.6; Vis: 52. Tested blowout preventer equipment. Tripped in with new bit. Cut drilling line. Reamed six feet to bottom. Drilled ahead.
10/18/78 38'	TD: 13,303'; MW: 10.7; Vis: 50. Drilled to 13,303'. Tripped out for bit. Changed jars and reamer. Tripped in. Reamed 13,250' to 13,303'. Drilled ahead.
10/19/78 56'	TD: 13,359'; MW: 10.8; Vis: 48. Drilled to 13,359'.
10/20/78 34'	TD: 13,393'; MW: 10.7; Vis: 54. Drilled to 13,388'. Tripped for bit. Changed reamer. Tripped in. Cut drilling line. Tripped in; reamed 13,350' to 13,388'. Drilled ahead.
10/21/78 66'	TD: 13,459'; MW: 10.8; Vis: 48. Drilled to 13,459'.
10/22/78 31'	TD: 13,480'; MW: 10.8; Vis: 23. Drilled to 13,480'. Tripped for core barrel. Laid down reamer and junk sub. Picked up core barrel. Tripped in to 11,500'; circulated. Tripped in to core.
10/23/78 29'	TD: 13,509'; MW: 10.8; Vis: 48. Cut Core No. 16: 13,480-13,510'; full recovery.
10/24/78 17'	TD: 13,528'; MW: 10.8; Vis: 48. Tested blowout preventer equipment to 10,000 psi OK. Tested Hydril to 5,000 psi OK. Changed Strip-o-matic rubbers. Changed out kelly saver sub. Tripped in with bit and drilling assembly. Reamed 13,496' to 13,509'. Drilled ahead.

10/25/78 72'	TD: 13,600'; MW: 10.7; Vis: 46. Drilled to 13,600'.
10/26/78 59'	TD: 13,659'; MW: 10.7; Vis: 47. Drilled to 13,659'. Tripped out. Tight hole 13,209' to 13,000'. Checked bottom hole assembly on trip out.
10/27/78 0'	TD: 13,659'; MW: 10.7; Vis: 52. Finished checking bottom hole assembly. Found one sub and one drill collar in need of repair. Picked up RTTS tools; tripped in to 11,500'. Pressure tested casing to 3,000 psi, checking for leaks.
10/28/78 44'	TD: 13,703'; MW: 10.7; Vis: 44. Finished testing casing. Found minor leak between 10,167' and 10,198'. Tested pressure to 3,200 psi; leaked off to 3,050 psi in 30 minutes. Volume rate: 0.72 gallons/minute at 3,100 psi differential average. Tripped out with RTTS. Picked up bit and drilling assembly. Tripped in; cut drilling line. Drilled to 13,703'. Circulated samples.
10/29/78 64'	TD: 13,767'; MW: 10.7; Vis: 41. Drilled to 13,759'. Circulated samples. Drilled to 13,767'. Surveyed and tripped out. Left three bit cones in hole. Tested blowout preventer equipment.
10/30/78 0'	TD: 13,767'; MW: 10.6; Vis: 42. Finished testing blowout preventer equipment OK. Tripped in with reverse circulating junk basket. Circulated and fished. Tripped out; recovered one cone shell and some bearings.
10/31/78 27'	TD: 13,794'; MW: 10.7; Vis: 40. Tripped in. Reamed 13,250' to 13,220'; tight spot. Reamed 40 feet to bottom. Drilled on junk. Tripped out. Cleaned junk basket. Tripped in. Washed 50 feet to bottom. Drilled ahead.
11/1/78 37'	TD: 13,831'; MW: 10.7; Vis: 43. Drilled to 13,831'. Dropped survey and tripped out for core barrel. Picked up core barrel; tripped in.
11/2/78 49'	TD: 13,880'; MW: 10.8; Vis: 42. Tripped in with core barrel. Washed 30 feet to bottom. Cut Core No. 17: 13,831' to 13,880'.
11/3/78 15'	TD: 13,895'; MW: 10.8; Vis: 43. Cut core; core barrel jammed at 13,880'. Tripped out; laid down core. Recovered 49 feet. Tripped in; reamed tight hole; reamed core hole. Drilled ahead.

11/4/78 61	TD: 13,941'; MW: 10.8; Vis: 46. Drilled to 13,927'. Circulated samples. Drilled to 13,930'; circulated samples. Drilled to 13,941'; circulated bottoms up. Dropped survey; tripped out.
11/5/78 37'	TD: 13,978'; MW: 10.8; Vis: 45. Finished trip for bit. Tripped in to 13,870'. Reamed to bottom. Drilled to 13,978'; circulated a drilling break. Drilled ahead.
11/6/78 42'	TD: 14,020'; MW: 10.8; Vis: 42. Drilled to 14,020'; circulated samples at 13,978', 13,983', 13,986', 13,992', 13,995', and 14,020'. Dropped survey and tripped out.
11/7/78 46'	TD: 14,066'; MW: 10.8; Vis: 43. Tripped out with bit. Tested blowout preventer equipment. Picked up core barrel. Tripped in for Core No. 18: 14,020-14,066'. Core barrel jammed. Tripped out. Recovered 45.5 feet of core.
11/8/78 66'	TD: 14,132'; MW: 10.9; Vis: 41. Laid down core barrel. Tripped in with bit; cut drilling line. Reamed 14,000' to 14,066'. Drilled ahead.
11/9/78 44'	TD: 14,176'; MW: 10.9; Vis: 40. Drilled to 14,171'. Circulated samples. Drilled to 14,176'. Had 1,300 psi pressure loss. Checked surface mud system. Tripped out. Laid down shock sub. Tripped in. Circulated with 800 psi pressure loss. Tripped out looking for leak.
11/10/78 59'	TD: 14,235'; MW: 10.9; Vis: 42. Found hole in drill pipe 44 stands out. Tripped in. Dropped blocks when 22 stands off bottom. Caught pipe with slips. Jerked fast line off of drum. Restrung fast line. Laid down joint of pipe in rotary. Checked string weight OK. Circulated bottoms up OK. Inspected all traveling equipment for damage. Repaired draw works guard. Cut 80 feet of drilling line. Tripped in. Washed 14,146-14,176'. Drilled to 14,204'. Circulated samples.
11/11/78 47'	TD: 14,282'; MW: 11.1; Vis: 43. Drilled to 14,282'. Dropped survey; tripped for bit. Changed out jars. Dressed reamer. Tripped in.
11/12/78 85'	TD: 14,367'; MW: 11.1; Vis: 45. Reamed 40 feet to bottom. Drilled to 14,367'. Dropped survey and tripped for bit.

11/13/78 72'	TD: 14,439'; MW: 11.1; Vis: 46. Tripped out for bit. Cut drilling line. Tripped in. Washed and reamed 14,300' to 14,367'. Drilled ahead.
11/14/78 141'	TD: 14,580'; MW: 11.0; Vis: 49. Drilled to 14,532'; circulated samples. Drilled to 14,565'; circulated samples. Drilled ahead.
11/15/78 18'	TD: 14,598' MW: 11.1; Vis: 55. Drilled to 14,598'; dropped survey and tripped out. Tested blowout preventer equipment. Found leak in flange between lower drilling spool and lower ram body. Set Baker retrievable bridge plug at 2232'. Nippled down flowline and flow nipple. Picked up stack. Found ring groove and API ring washed.
11/16/78 34'	TD: 14,632'; MW: 11.0; Vis: 53. Replaced API ring bottom lower ram blowout preventer and lower drilling spool. Nippled up blowout preventer. Tested blowout preventer to 7,000 psi OK. Tripped in to 2250' for bridge plug. Tripped out; no plug. Found rubber in catcher. Tripped for bridge plug. Installed wear bushing. Tripped in; reamed 30 feet to bottom. Drilled ahead.
11/17/78 132'	TD: 14,764'; MW: 11.0; Vis: 47. Drilled ahead.
11/18/78 70'	TD: 14,834'; MW: 11.0; Vis: 55. Drilled to 14,778'; circulated samples. Drilled to 14,823'; surveyed and tripped out for bit. Tripped in with bottom hole assembly; cut drilling line. Tripped in; washed 30 feet to bottom. Drilled ahead.
11/19/78 116'	TD: 14,950'; MW: 11.1; Vis: 45. Drilled to 14,862'; circulated samples. Drilled ahead.
11/20/78 73'	TD: 15,023'; MW: 11.0; Vis: 54. Drilled to 15,020'; tripped for bit. Tripped in with new bit. Drilled ahead.
11/21/78 107'	TD: 15,130'; MW: 11; Vis: 47. Drilled to 15,130'. Drilled ahead.
11/22/78 55'	TD: 15,185'; MW: 11.0; Vis: 52. Drilled to 15,185'; surveyed; tripped out. Tripped in and set Baker bridge plug at 1450'. Tripped out. Nippled down.
11/23/78 0'	TD: 15,185'; MW: 11.1; Vis: 59. Repaired blowout preventer stack. Changed Hydril rubber. Tested blowout preventer rams to 10,000 psi, Hydril to 5,000

	psi OK. Tripped in and retrieved bridge plug. Picked up core barrel. Laid down monel drill collar and one 8-1/2" stabilizer.
11/24/78 30'	TD: 15,215'; MW: 11.1; Vis: 47. Tripped in with core barrel. Cut Core No. 19: 15,185-15,215'.
11/25/78 15'	TD: 15,230'; MW: 11.1; Vis: 55. Tripped out with core. Recovered 30 feet. Tripped in; washed 30 feet to bottom. Drilled to 15,230'; lost 250 psi pressure. Tripped out looking for washout. Hole tight 13,245' to 13,057'. Tested jars OK. Tripped in with bottom hole assembly. Found washout in pin of HWSP. Tripped in.
11/26/78 41'	TD: 15,271'; MW: 11.1; Vis: 55. Tripped in; drilled to 15,268'. Tripped out. Changed bit and bottom hole assembly. Tripped in; drilled ahead.
11/27/78 95'	TD: 15,366'; MW: 11.1; Vis: 47. Drilled ahead.
11/28/78 59'	TD: 15,425'; MW: 11.1; Vis: 47. Drilled to 15,368'. Dropped survey and tripped for bit. Tripped in; cut drilling line. Drilled ahead.
11/29/78 110'	TD: 15,535'; MW: 11.1; Vis: 48. Drilled ahead.
11/30/78 29'	TD: 15,564'; MW: 11.1; Vis: 50. Drilled to 15,541'; tripped for bit. Tested blowout preventer equipment OK. Dumped and cleaned sand trap. Tripped in; washed and reamed 30 feet to bottom. Drilled ahead.
12/1/78 91'	TD: 15,655'; MW: 11.1; Vis: 46. Drilled to 15,655'.
12/2/78 13'	TD: 15,668'; MW: 11.1; Vis: 49. Drilled to 15,668'; dropped survey and tripped out. Magnafluxed bottom hole assembly. Found cracked pin on monel drill collar and cracked box on bottom of kelly. Laid down same. Picked up spare kelly.
12/3/78 87'	TD: 15,755'; MW: 11.1; Vis: 43. Cut drilling line. Tripped in. Washed to bottom. Drilled to 15,755'.
12/4/78 150'	TD: 15,905'; MW: 11.1; Vis: 43. Drilled ahead.
12/5/78 69'	TD: 15,974'; MW: 11.1; Vis: 49. Drilled to 15,985'. Tripped out; picked up monel drill collar. Changed out kelly. Tripped in to 14,920'; reamed and washed to 15,958'.

12/6/78 102'	TD: 16,076'; MW: 11.1; Vis: 48. Drilled ahead.
12/7/78 109'	TD: 16,185'; MW: 11.1; Vis: 47. Drilled to 16,185'. Ran survey; tripped out.
12/8/78 13'	TD: 16,198'; MW: 11.1; Vis: 55. Tripped out; tested blowout preventer equipment. Picked up core barrel. Ran in hole to bottom; circulated. Cut Core No. 20: 16,185-16,198'.
12/9/78 55'	TD: 16,253'; MW: 11.1; Vis: 46. Tripped out. Recovered 12.8 feet of core. Tripped in with bit and reamed core hole. Drilled ahead.
12/10/78 113'	TD: 16,366'; MW: 11.1; Vis: 45. Drilled ahead.
12/11/78 86'	TD: 16,452'; MW: 11.1; Vis: 47. Drilled to 16,452'. Dropped survey and tripped for bit.
12/12/78 67'	TD: 16,519'; MW: 11.1; Vis: 47. Tripped out. Tripped in. Picked up new kelly saver sub and kelly cock. Tripped in and reamed at 16,414' and 16,452'. Drilled ahead.
12/13/78 101'	TD: 16,620'; MW: 11.1; Vis: 47. Drilled to 16,620'. Tripped out.
12/14/78 32'	TD: 16,652'; MW: 11.1; Vis: 48. Tripped out. Tested blowout preventer equipment. Tripped in; reamed 16,590' to 16,620'. Drilled ahead.
12/15/78 105'	TD: 16,756'; MW: 11.1; Vis: 46. Drilled ahead.
12/16/78 44'	TD: 16,800'; MW: 11.1; Vis: 47. Tripped out. Repaired Strip-o-matic. Tripped in. Drilled ahead.
12/17/78 86'	TD: 16,886'; MW: 11.1; Vis: 49. Drilled ahead.
12/18/78 20'	TD: 16,906'; MW: 11.1; Vis: 51. Drilled to 16,893'. Tripped for washout in drill string. Changed out jars on roller reamer. Tripped in. Drilled ahead.
12/19/78 103'	TD: 17,009'; MW: 11; Vis: 48. Drilled ahead.
12/20/78 44'	TD: 17,053'; MW: 11.1; Vis: 47. Drilled to 17,053'. Tripped out. Tested blowout preventer equipment.

12/21/78 30'	TD: 17,083'; MW: 11.1; Vis: 47. Tripped in with core barrel. Cut Core No. 21: 17,053-17,083'. Tripped out. Recovered 30-foot core.
12/22/78 84'	TD: 17,167'; MW: 11; Vis: 46. Tripped in. Drilled ahead.
12/23/78 125'	TD: 17,292'; MW: 11.1; Vis: 48. Drilled ahead.
12/24/78 53'	TD: 17,345'; MW: 11.1; Vis: 46. Drilled to 17,345'. Tripped for bit. Tripped in.
12/25/78 63'	TD: 17,408'; MW: 11.1; Vis: 48. Tripped out. Changed rotary reamer and bit. Tripped in; drilled ahead.
12/26/78 100'	TD: 17,508'; MW: 11.1; Vis: 47. Drilled ahead.
12/27/78 62'	TD: 17,570'; MW: 11.2; Vis: 52. Drilled to 17,570'. Circulated and conditioned for logs. H_2S surfaced at two hours circulating time. Bottoms up time: 125 minutes. Shut down pump. Well flowed 18 barrels per minute due to gas expansion in top ±1,000 feet of hole. No formation gas entry. Diverted through choke and gas buster. Mixed bar and chemicals to raise weight and $_PH$. Checked H_2S content in shaker tank at 300 ppm. Received and started mixing Sulf-X-H_2S scavenger. Mixed chemicals in mud.
12/28/78 0'	TD: 17,570'; MW: 11.3; Vis: 47. Mixed, circulated, and conditioned mud to 11.2 ppg. Checked for flow. Conditioned mud to 11.3 ppg. Tested pump pressure to 750 psi. Checked for flow; no flow. Tripped out, looking for washout. With 81 stands out, well started flowing. Appeared to be gas expansion; formation did not kick. Tripped in to shoe. Conditioned mud, adding Sulf-X, lime caustic, Q Broxin, and bar.
12/29/78 0'	TD: 17,570'; MW: 11.4; Vis: 45. Conditioned mud. Stabilized mud weight to 11.4 in and 11.4 out. No show of H_2S on detectors. Shut pumps down; checked for flow. Flowed at small rate. Circulated and conditioned mud.
12/30/78 0'	TD: 17,570'; MW: 11.7; Vis: 42. Circulated and conditioned mud at 12,200'. Waited on H_2S equipment and team. Raised Sulf-X content to 6 ppb.

Raised mud weight to 11.6 ppg. Sulfide content tested on Garrett Gas Train. Received H_2S equipment and team. Rigged up equipment. Prepared to go in hole.

12/31/78
0'

TD: 17,570'; MW: 11.8; Vis: 46. Built mud weight to 11.8 ppg. Tripped in to 13,511'. Shut in and circulated through choke. On bottoms up, had 50 ppm H_2S, 700 units gas. Conditioned mud to sulfide check; check was negative. Staged in hole three stands and circulated at 30 minute intervals at 13,775'; 14,052'; 14,339'; 14,621'; and 14,903'. Circulated and conditioned mud. Had 40 ppm sulfide; mud cut to 10.8 ppg. Circulated and conditioned mud to sulfide check; check was negative. Balance weight to 11.8 ppg. Staged in as above 15,185', 15,467', 15,749'; 16,031'; 16,313'. Had 50 ppm H_2S. Carbonate check showed 840 ppm. Circulated and conditioned mud; raised $_PH$ weight and treated out sulfides. Well did not flow while shut down.

1/1/79
0'

TD: 17,570'; MW: 11.6; Vis: 49. Staged in hole. Circulated 30 minutes at intervals 16,595', 16,877', 17,253', and 17,553'. While circulating at 17,553', pipe pressured up to 1,000 psi. Lost circulation; pipe stuck. Worked pipe loose. Pulled one stand; no circulation. Picked up to 16,049'. Mixed and pumped lost circulation material pill. Tripped out to 14,433'. Mixed and built volume. Total mud loss: 575 barrels. Hole stands full when not pumping. Prepared to trip out.

1/2/79
0'

TD: 17,570'; MW: 11.5; Vis: 43. Tripped out to 13,340'. Had flow back in drill pipe. Picked up kelly; no circulation. Picked up to 13,107'. Pipe stuck, with 824 feet of bottom hole assembly in open hole. Picked up kelly; circulated with full returns. Continued circulation, lowering mud weight to 11.5. Conditioned contaminated mud. Mixed and spotted a 50-barrel Free Pipe-diesel pill weighted to 11.0 ppg. Left 20 barrels in drill pipe. Soaked for four hours. Pumped 1/2 barrel every 30 minutes for seven hours while working pipe.

1/3/79
0'

TD: 17,570'; MW: 11.5; Vis: 44. Moved pill 1/2 barrel every 30 minutes and worked pipe. Moved pill up the hole to balance the mud column. Picked up one joint of Grade "G" pipe. Rigged up Dia-Log. Tripped in with free point and string shot. Free point

reading: 54 at 12,450'; 54 at 12,543'; 40 at 13,020'; 38 at 12,994'; 36-30 at 13,084'. Indication is that stuck point is below monel drill collar.

1/4/79
0'

TD: 17,570'; MW: 11.6; Vis: 45. Attempted to back off at 13,040'. Tripped with wireline to reload string shot. Worked torque back into string. Tripped in with Shot No. 2. Set 290,000 pounds on slips; 7-1/2 rounds left torque on string. Worked torque down with 349,000 pounds up and 260,000 pounds down. Lost torque at table. Found backoff at 12,831'. Tripped out with pipe, checking for leaks. Found one HWDP connection backed off 1/2 inch. Laid down jars and drill collars. Picked up fishing tools. Tripped in, magnafluxing assembly.

1/5/79
0'

TD: 17,570'; MW: 11.5; Vis: 42. Tripped in, checking string. Broke and doped all connections. Strung new drilling line. Repaired water leak on brake drum. Underbalanced free pipe pill, circulated same. Replaced one joint HWDP and one joint Grade E drill pipe. Tripped in and screwed into fish at 12,831'. Jarred down on fish.

1/6/79
0'

TD: 17,570'; MW: 11.6; Vis: 44. Continued jarring on fish. Rigged up Dia-Log with junk shot. Tripped in. Attempted to blow out baffle plate. Resumed jarring. Circulated and conditioned mud; waited on SFT spotting material. Mixed 50 barrels Free Pipe pill at 11.8 ppg. Spotted pill. Let pill set and soak four hours. Ran free point and back-off shot. Free point indicated at 12,949'. Free pointed and backed off. Shot off four drill collars of fish.

1/7/79
0'

TD: 17,570'; MW: 11.6; Vis: 43. Tripped out. Recovered four drill collars of fish. Inspected recovery. Made up fishing tools. Tripped in. Screwed into fish at 12,926'. Jarred down one hour; jarred up; no movement. Rigged up Dia-Log. Tripped in with free point and string shot. Had manual back off; lost 2,500 pounds. Tripped out with wireline. Screwed back into fish. Lost 10 feet of free point tool and shot probe. Tripped in with string shot and free point. Shot at 13,086'. Did not back off. Tripped out with Dia-Log.

1/8/79
0'

TD: 17,570'; MW: 10.5; Vis: 47. Tripped out with free point. Made up string shot. Tripped in to 13,005'. Torqued pipe; had manual backoff. Made up string. Attempted to shoot off. Shot failed. Tripped out; checked tools. Tripped in. Shot at 13,038'; no backoff. Tripped out. Made up string shot.

Attempted to backoff at 13,040'; no backoff. Made up string shot. Attempted to backoff at 12,946'. Had manual backoff. Lost 50,000 pounds. Made up string. Jarred down 10 minutes. Tripped in with string shot. Shot off at 12,946'. Tripped out to shoe. Conditioned mud. Tripped out. Top of fish at 12,926'.

1/9/79
0'

TD: 17,570'; MW: 11.6; Vis: 56. Conditioned mud at 12,080'. Tripped out. Checked torque on bottom hole assembly. Numbers 3 and 10 drill collars had backed off. Changed out upper and lower pipe ram rubbers. Changed out two ram blocks. Tested blowout preventer equipment OK. Pulled test plug. Installed wear ring. Made service breaks on jars. Picked up two joints of wash pipe. Tripped in to shoe. Cut drilling line.

1/10/79
0'

TD: 17,570'; MW: 11.6; Vis: 55. Washed over drill collars at 12,955' to 12,983'. Tripped out. Replaced washover shoe. Tripped in. Washed over 12,983' to 13,004'. On bottoms up, first trip had 3,600 units of gas with 100 ppm H_2S in mud. On second trip, had 1,400 units of gas with no H_2S in mud. Top of fish at 12,955'. Top stabilizer at 13,018'.

1/11/79
0'

TD: 17,570'; MW: 11.6; Vis: 50. Washed over to 13,014'. Circulated bottoms up; worked wash pipe. Tripped out with washover string. Tripped in with fishing string. Repaired low clutch chain. Picked up kelly. Tagged fish at 12,955'; set back kelly. Screwed into fish. Rigged up Dia-Log and ran free point and string shot to 12,935' wireline measure. Hit bridge. Tripped out with wireline tools. Circulated 20 barrels through fish and backed off. Ran in with free point and string shot.

1/12/79
0'

TD: 17,570'; MW: 11.5 to 11.7; Vis: 47. Shot off at top of stabilizer. Tripped out to shoe; conditioned mud. Hole started to flow with 20 stands out. Well flowed through drill pipe and annulus. Tripped in to 12,890'. Circulated and conditioned mud. Raised weight, treated with scavenger and inhibiter; maintained $_pH$. Trip gas peaked at 4,050 units with no H_2S. Mud circulation at shoe showed 2,040 ppm sulfides. Free sulfur crystals over the shaker while conditioning at shoe. Mud check showed 4,320 ppm sulfides with sulfur crystals over the shaker. Treated with zinc oxide, caustic, and bar.

1/13/79
0'

TD: 17,570'; MW: 11.9; Vis: 47. Circulated and mixed mud. Sulfides: 4,128 ppm (no H_2S) at 6:00 a.m.; 3,800 ppm at 8:30 a.m.; 3,070 ppm at 3:00 p.m.; 3,576 ppm at 6:00 p.m.; 840 ppm at 10:00 p.m.; 3,240 ppm at 1:00 a.m.; 2,992 ppm at 3:00 a.m. Treated up to 20 ppb with scavenger at 3:00 a.m. Mud weight: 12.1 in, 11.9+ out at 6:00 a.m. No H_2S.

Top of fish at 13,015'.

1/14/79
0'

TD: 17,570'; MW: 12.4; Vis: 49. Pumped 50-barrel pill at 17 ppg and spotted at 13,000'. Tripped out to 12,170'. Lost 60 barrels of mud. Conditioned mud, raised weight to 12.4 ppg. Sulfide check 0 after complete circulation. After two complete circulations and two one-hour observations, well was dead. Tripped out, checking for flow every ten stands. Laid down two drill collars of fish. Tripped in with fishing string.

1/15/79
0'

TD: 17,570'; MW: 12.7; Vis: 45. Conditioned mud at 12,170'. Tripped in to 12,640'. Conditioned mud. Pulled up to 12,170'. Raised weight to 12.8 ppg. Lost returns. Mixed lost circulation material pill and displaced with 280 barrels mud. Column setting 50 feet down the hole. Sulfides checks 1/14 & 15/79: At 11:00 a.m., 120 ppm in filtrate, 2,808 in mud, no H_2S; at 12:00 noon: 0 in filtrate, 2,760 ppm in mud; at 3:15 p.m., 0 in filtrate, 2,520 ppm in mud; at 9:00 p.m., 0 in filtrate, 2,400 ppm in mud; at 4:00 a.m., 0 in filtrate, 1,680 ppm in mud. No H_2S.

1/16/79
0'

TD: 17,570'; MW: 12.6; Vis: 46. Built mud volume. Repaired leak in mud tank. Pumped in 10 barrels at 9.6 ppg. Regained full circulation. Staged in hole to top of fish. Circulated around twice, conditioned mud. Returns showed no excess mud weight or lost circulation material at 13,015'. Circulated 360 units of gas to surface with 6 ppm sulfides. Conditioned mud. Screwed into fish and circulated bottoms up with 127 units of gas. Could be circulating through fish or pump-out sub in fishing string.

1/17/79
0'

TD: 17,570'; MW: 12.6; Vis: 43. Sulfides: 0 ppm. Circulated through fish. Rigged up Schlumberger. Ran in hole with Dia-Log to 13,087'. Fish open. Pulled out of hole with Dia-log. Jarred on fish; tools parted. Pulled out of hole. Left 22 feet of fish on top of fish. Parted in top bumper sub.

	Tested blowout preventer; ran in hole. Broke and doped all drill collars; laid down one drill collar. Cut drilling line. Changed oil in draw works.
1/18/79 0'	TD: 17,570'; MW: 12.6; Vis: 45. Sulfides: negative ppm. Tripped in. Circulated; latched onto fish. Ran in with string shot; shot one drill collar below stabilizer. Did not back off. Ran in hole with string shot. Shot and backed off at top stabilizer. Only original bottom hole assembly fish left in hole. Tripped out. Laid down fish. Tripped in with wash pipe.
1/19/79 0'	TD: 17,570'; MW: 12.6; Vis: 44. Worked over fish. Milled on stabilizer blades. Circulated bottoms up with 8 ppm sulfides; tripped out. Laid down bent joints, one Grade "E" drill pipe, one HW drill pipe, and one drill collar. Tripped in. Trip gas: 2,300 units. Milled on stabilizer blades. Tripped out for washover shoe.
1/20/79 0'	TD: 17,570'; MW: 12.6; Vis: 50. Tripped out. Changed washover shoe. Tripped in. Cut drilling line. Tripped in. Milled on stabilizer. Circulated bottoms up. Tripped out. Changed washover shoe. Laid down two joints of wash pipe. Tripped in.
1/21/79 0'	TD: 17,570'; MW: 12.6; Vis: 46. Tripped in with washover shoe. Worked over fish. Milled on stabilizer. Circulated and conditioned mud. Tripped out. Laid down washover string. Picked up screw-in sub, oil jars, and bumper sub. Tripped in. Screwed into fish. Worked pipe. Circulated with little pressure increase. Ran freepoint. Found stabilizer free. Shot stabilizer. Did not back off at stabilizer. Had manual back off in heavy weight drill pipe. Stabbed in. Rotated and worked until free. Picked up 370,000 pounds. Pulled free with 290,000 pound hook weight. Laid down wireline equipment.
1/22/79 0'	TD: 17,570'; MW: 12.6; Vis: 43. Pulled out of hole; found screw-in sub in good shape. Laid down screw-in sub, jars, and bumper sub. Picked up two joints of wash pipe with Johnson jars and bumper sub. Ran in hole; cut drilling line. Worked over fish; milled on fish; circulated and conditioned mud. Washed over fish to 13,017.5'. Pulled out of hole.
1/23/79 0'	TD: 17,570'; MW: 12.6; Vis: 50. Pulled out of hole with washover shoe No. 7. Ran in hole with diamond

shoe; worked over fish; milled on stabilizer; circulated bottoms up. Pulled out of hole; checked diamond shoe and ran in hole with same.

1/24/79
0'

TD: 17,570'; MW: 12.6; Vis: 56. Milled on stabilizer blade with diamond shoe, made 8'. Pulled out of hole; shoe OK. Tested blowout preventer equipment OK. Installed new wear bushing; changed rubber in Strip-o-matic. Cut drilling line. Ran in hole with washover string. Washed over fish 13,015' to 13,081'. Circulated bottoms up. Pulled out of hole.

1/25/79
0'

TD: 17,570'; MW: 12.6; Vis: 60. Pulled out of hole with washover string. Tripped in hole with inside mill; dressed top of fish at 13,015'. Pulled out of hole; picked up overshot with fishing string. Ran in hole to fish; grapples slipped off with 70,000 pounds over string weight. Pulled out of hole.

1/26/79
0'

TD: 17,570'; MW: 12.6; Vis: 45. Pulled out of hole with fishing string. Found part of grapple gone in overshot. Redressed overshot with 6-3/8" grapple. Ran in hole with fishing string to 12,200'; cut drilling line. Installed chain in compound. Ran in hole to 13,013'; circulated and conditioned mud. Caught fish; worked fish to 370,000 pounds. Rigged up and ran wireline collar locator to 13,003'. Pulled out of hole with wireline. Pulled out of hole with fishing string; recovered stabilizer and one drill collar.

1/27/79
0'

TD: 17,570'; MW: 12.6; Vis: 47. Laid down fish and overshot. Picked up three joints of washover pipe, seven drill collars, and diamond shoe. Ran in hole; washed over fish 13,050'; to 13,079'; milled on stabilizer blade 13,079' to 13,080'. Washed 13,080' to 13,105'. Fish fell through. Ran in hole to 13,153'. Did not tag fish. Circulated; pulled out of hole.

1/28/79
0'

TD: 17,570'; MW: 12.4; Vis: 48. Laid down wash pipe and washover tools. Picked up bit and bottom hole assembly. Tripped in to 13,081'. Circulated and conditioned mud. Tripped in to 14,102', 15,200', and 16,240', circulating and conditioning mud at each point. Tripped in to 17,240'; circulated and conditioned mud 45 minutes. Lost circulation.

1/29/79
0'

TD: 17,570'; MW: 12.4; Vis: 64. Worked stuck pipe. Rigged up and ran free point; pipe stuck at 11,050'. String loosened up while running free point. Worked pipe; put 500 psi on annulus and worked pipe.

Pressure held with no leak off. Ran free point and backed off at 10,997'. Pulled free point and circulated bottoms up. Large amounts of sulfur came over shaker. Laid down 15 joints of Grade "G" drill pipe. Recovered 352 joints of drill pipe. Top of fish at 11,036' (DP measure). Picked up Tri-State tools and bottom hole assembly. Ran in hole.

1/30/79
0'

TD: 17,570'; MW: 12.4; Vis: 65. Tripped in with fishing assembly. Screwed into fish; jarred and worked pipe. Ran freepoint. Shot off three joints of drill pipe at 11,096'. Tripped out; laid down fishing assembly and fish. Picked up new fishing tools. Tripped in, removing drill pipe rubbers. Screwed in and jarred on fish. Ran freepoint. Shot off at 11,127'. Conditioned mud and hole.

1/31/79
0'

TD: 17,570'; MW: 12.3; Vis: 52. Tripped out with part of fish. Recovered one joint of drill pipe. Picked up six joints of wash pipe. Tripped in; tagged fish at 11,127'. Washed over 40 feet. Could not work back over fish on connection. Tripped out. Tapered washover shoe and cut three teeth off.

2/1/79
0'

TD: 17,570'; MW: 12.2; Vis: 46. Tripped in with washover string. Tagged fish 11,127'. Washed over to 11,316' (six joints). Circulated bottoms up. Tripped out. Tested blowout preventer equipment OK. Tripped in with fishing string.

2/2/79
0'

TD: 17,570'; MW: 12.2; Vis: 60. Tripped in with fishing string. Screwed into fish at 11,127' and jarred on same. No movement. Ran free point and shot. Backed off at 11,314'. Recovered six joints of drill pipe. Tripped in with washover string. Washed over 11,314' to 11,499'. Recovered a large amount of sulfur while circulating.

2/3/79
0'

TD: 17,570'; MW: 12.2; Vis: 55. Washed over and circulated at 11,499'. Tripped out with washover string. Tripped in with fishing string. Screwed into fish at 11,314'. Jarred on fish. Ran freepoint. Shot at 11,499'; no backoff. Shot No. 2 misfired; Shot No. 3 backed off at 11,499'. Circulated out a large amount of sulfur. Tripped out.

2/4/79
0'

TD: 17,570'; MW: 12.4; Vis: 48. Tripped out with fishing string. Recovered 6 joints of drill pipe. Tripped in, washed over fish at 11,499' to 11,692'. Eased kelly down to 11,702' without rotating. Tripped out with washpipe. Tripped in with fishing string. Jarred on fish. Fish jarred loose while hitting up.

2/5/79
0'

TD: 17,570'; MW: 12.4; Vis: 54. Pulled out of hole with fish, pulling wet. Stood back fishing assembly in derrick; laid down jars and bumper sub. Pulled out of hole to 5690'; dropped blocks; restrung and repaired damage. Pulled out of hole to 1109'; fish plugged with sulfur. Laid down fish. Had 600 ppm on H_2S on floor.

2/6/79
0'

TD: 17,570'; MW: 12.4; Vis: 56. Cleaned sulfur off rig floor, blowout preventer, and cellar. Repaired steam leaks on heater system and thawed out floor equipment. Picked up bottom hole assembly with Jarco jars and 33 joints of Grade "E" drill pipe. Ran in hole slowly.

2/7/79
0'

TD: 17,570'; MW: 12.4; Vis: 48. Tripped in to 12,202'; circulated and conditioned mud. Ran in hole; circulated 20 minutes at 12,487' and 12,769'. Circulated and worked tight hole at 13,052'; 13,127'; 13,242'; 13,335'; 13,524'; 13,713'; 13,745'. Hit bridges 13,618' to 13,713'. Circulated out shale and 3,000 units gas at 13,713'. Pump pressure went to 2,000 psi; presently at 1,260 psi. Drilled on bridge at 13,745'.

2/8/79
0'

TD: 17,570'; MW: 12.3; Vis: 42. Pulled out of hole to shoe; checked pressure on pump. Ran in hole; lost pressure, 100 psi to 600 psi. Ran in hole to 13,904'; circulated; pulled out of hole to inspect drill string. Stopped at shoe; repaired master chain. Pulled out of hole; found rock in bit. Tested blowout preventer; changed bit; ran in hole.

2/9/79
0'

TD: 17,570'; MW: 12.4; Vis: 43. Ran in hole. Found washed out pen and box on drill pipe at 6265'; laid down drill pipe. Ran in hole; circulated at 12,202' and 13,054'. Circulated bottoms up at 13,904', 14,093', 14,185', 14,280', 14,374', 14,469', 14,563', 14,658', and 14,750'.

2/10/79
0'

TD: 17,570'; MW: 12.4; Vis: 40. Tripped in hole; circulated bottoms up at 14,844', 14,938', 15,033', 15,128', 15,272', 15,315', 15,410', 15,504', 15,599', 15,693', 15,787', and 15,883'.

2/11/79
0'

TD: 17,570'; MW: 12.4; Vis: 49. Tripped in and circulated bottoms up at 15,977', 16,070', 16,165'; 16,260', 16,354', 16,449', 16,545', 16,639', 16,725', and 16,832'. Sulfur increased at 16,165', requiring 25 minutes to clean shaker of sulfur with bottoms up.

2/12/79
0'

TD: 17,570'; MW: 12.2; Vis: 44. Lost returns at 16,821'. Tripped out to shoe at 12,202'. Circulated with full returns. Conditioned mud back to 12.2 ppg. Staged in hole 13,903'. Circulated with 2,000 units gas, 100 ppm H_2S. Soluble sulfides: 12; $_pH$: 10. Staged in 13,903', 14,749', 15,222', 15,404', 15,599', 15,694', 15,798'. Circulated with no sulfur returns.

2/13/79
0'

TD: 17,570'; MW: 12.2; Vis: 45. Tripped in; circulated bottoms up at 15,883', 15,978', 16,071', 16,166', 16,261', 16,355', 16,451', 16,546', 16,640' and 16,736'.

2/14/79
0'

TD: 17,570'; MW: 12.2; Vis: 55. Circulated out sulfur at 16,832'; pulled out of hole to 16,736'. Circulated bottoms up. Mixed 58-barrel pill at 17.2 ppg. Pumped pill to bit; closed Hydril and squeezed away 56 barrels of 17.2 ppg pill. Squeeze pressure: 500 psi, increased to 700 psi. Last nine barrels. Pulled out of hole to shoe. Hole stayed full for 22 stands out; took normal amount afterwards. Hole tight at 13,150'. Circulated bottoms up at 12,102'. Pulled out of hole; rigged up Schlumberger and began logging.

2/15/79
0'

TD: 17,570'; MW: 12.2; Vis: 58. Ran DIL, BHC-Sonic, and DLL logs. DLL stuck at 16,900'; worked loose. Rigged up to run FDC/CNC.

2/16/79
0'

TD: 17,570'; MW: 12.2; Vis: 60. One recorder did not work; received new one from Deadhorse. Repaired damaged logging cable due to gas under cable coating. Repaired leak in connection. Ran FDC/CNL, DLL, and reran FDC/CNL to 16,000'.

2/17/79
0'

TD: 17,570'; MW: 12.2; Vis: 44. Ran FDC/CNL/GR/CAL. Ran HDT three times. Repaired Schlumberger equipment. Reran HDT; stuck at 14,200'. Pulled loose with 10,000 pounds. Logged out.

2/18/79
0'

TD: 17570'; MW: 12.2; Vis: 44. Tested blowout preventer equipment OK. Tripped in to shoe. Hole would not circulate. Pulled out of hole 15 stands. Broke circulation. Tripped in to shoe and conditioned mud. Tripped in. Bridge at 13,005' to 13,040'. Conditioned mud and hole. Conditioned at 14,281' and 15,223'.

2/19/79
0'

TD: 17570'; MW: 12.2; Vis: 46. Tripped in to 15,882'. Circulated bridge. Pulled out of hole.

Rigged up and ran Velocity Survey. Attempted 47 sidewall cores; lost eight bullets in the hole. Picked up fishing tools and tripped in.

2/20/79
0'

TD: 17,570'; MW: 12.3; Vis: 48. Ran in hole with Bowen overshot to 17,503'. Attempted to work over fish. Pulled out of hole with wet string. Tried to break circulation at 15,084' and 12,283'. Pulled out of hole with wet string; laid down fishing tools. Sulfur in overshot and pump-out sub: 600 ppm H_2S. Marks on overshot indicated we were past fish. Picked up bottom hole assembly; ran in hole to 7000'; broke circulation. Cut drilling line; ran in hole to 12,202'. Circulated and conditioned mud.

2/21/79
0'

TD: 17,570'; MW: 12.6; Vis: 50. Circulated and conditioned mud at 12,202'. MW: 12.2. Ran in hole to 15,075'; circulated and conditioned mud. MW: 12.4. Ran in hole to 16,077'; circulated and conditioned mud. MW: 12.6. Ran in hole to 16,775'; circulated; lost partial returns. Pulled out of hole to 12,207'; circulated with partial returns. Pulled out of hole to 10,153'; regained full returns. Circulated bottoms up with sulfur to surface: 30 ppm H_2S. Ran in hole to 11,185'; circulated bottoms up with some mud at 12.7 ppg. Ran in hole to 12,205'; circulated bottoms up with 100 ppm H_2S. Ran in hole to 14,000' with 100 ppm H_2S. Circulated and conditioned mud.

2/22/79
0'

TD: 17,570'; MW: 12.6; Vis: 43. Circulated and conditioned mud at 14,750', 15,170', 15,264', 15,356', 15,451', 15,545', 15,640', 15,734', 15,828', 15,924', 16,018', 16,111' and 16,207'.

2/23/79
0'

TD: 17,570'; MW: 12.6; Vis: 42. Circulated at 16,395', 16,490', 16,549', 16,640', 16,735', 16,831', 16,925', 17,061' and 17,124'. Circulated sulfur at 16,925' through 17,124'. Highest H_2S reading: 35 ppm.

2/24/79
0'

TD: 17,570'; MW: 12.8; Vis: 44. Circulated and conditioned mud at 17,218', 17,250', 17,310', 17,332', 17,395' and 17,458'. Large amount of sulfur at 17,458'. Ran in hole to fish at 17,504'. Tagged fish; circulated and conditioned mud. Pulled out of hole to 12,200'; cut drilling line. Pulled out of hole.

2/25/79
0'

TD: 17,570'; MW: 13; Vis: 42. Pulled out of hole. Checked bit; picked up Bowen overshot

dressed with 6-1/8" grapple, bumper jars, and oil jars. Ran in hole to 12,122'; circulated bottoms up, staging in 14,011', 15,991', 16,463', 17,034', 17,260', 17,350 and 17,406'.

2/26/79
0'

TD: 17,570'; MW: 13; Vis: 43. Staged in hole; circulated and conditioned mud at 17,440', 17,499' and 17,504'. Attempted to get over fish. Caught fish; circulated bottoms up. Pulled out of hole; hole tight 13,280' to 12,970'. Laid down 77-foot fish. Broke and serviced jars; laid down 7-5/8" wash pipe. Tested blowout preventer equipment.

2/27/79
0'

TD: 17,570'; MW: 12.8; Vis: 48. Tested blowout preventers. Ran inhole to 12,109'. Circulated and conditioned mud; cut drilling line. Staged in hole 13,998', 15,977', 16,545', 17,022' and 17,208'. Circulated and conditioned mud.

2/28/79
0'

TD: 17,570'; MW: 12.8; Vis: 47. Circulated and conditioned mud at 17,208', 17,342', 17,432', and 17,500'. Heavy sulfur returns at 17,500'. Pulled out of hole. Stood back bottom hole assembly. Ran in hole open ended. Broke circulation at 12,000'. Ran in hole to 15,000'. Circulated bottoms up.

3/1/79
0'

TD: 17,570'; MW: 12.8; Vis: 40. Circulated bottoms up at 15,000'. Staged in hole; circulated at 16,000', 17,007', 17,111', 17,203', 17,295', 17,390', 17,500'. Rigged up Dowell; spotted 100 sacks Class J cement with 0.25% D-28 and 0.5% D-65; mixed slurry to 15.4 ppg at 17,481'. Preceded cement with five barrels water and two barrels of water behind. Started mixing at 11:30 p.m.; started displacing at 11:40 p.m. Cement in place 3/1/79 at 1:45 a.m. Pumped with 650 psi on completion of displacement at 2.5 BPM. Pulled out of hole; pulled dry 14 stands; pipe came wet. Pulled out of hole 20 stands; broke circulation with 1,250 psi; circulated bottoms up. Pulled out of hole.

3/2/79
0'

TD: 17,570'; MW: 12.8; Vis: 47. Pulled out of hole. Laid down nine 6-3/4" drill collars and 14 joints of HWDP. Changed stripper rubber. Ran in hole to 12,141', 15,000'. Conditioned mud. Ran in hole to 15,442'; hit stringer. Circulated and washed through. Conditioned mud.

3/3/79
0'

TD: 17,570'; MW: 12.8; Vis: 44. Drilled cement stringer at 15,442'. Drilled bridge at 15,787'. Circulated bottoms up at 16,011'. Tripped in, broke

circulation at 16,200'. 16,484', 16,595'; bottoms up at 16,769'. Tripped in to 16,878'; drilled five-foot cement stringer to 16,883'. Tripped in to 17,503'; no cement. Conditioned mud at 17,503'. Pulled out of hole. Picked up 9-5/8" casing scraper and tripped in.

3/4/79
0'

TD: 17,570'; MW: 12.8; Vis: 41. Tripped in with casing scraper. Circulated bottoms up at 12,112'. Tripped out six stands and ran in hole to 12,112'. Scraped 124th stand six times from 11,817' to 11,723'. Pulled out of hole. Tripped in with bit to shoe. Ran in hole to 13,378'; hit bridge. Drilled out bridge. Ran in hole to 14,031'; circulated bottoms up. Had 200 ppm H_2S from bridge above. Pulled out of hole 10 stands to wipe bridge area. Ran in hole to 14,972'; circulated bottoms up OK. Staged in.

3/5/79
0'

TD: 17,570'; MW: 12.8; Vis: 41. Staged in and conditioned hole. Circulated bottoms up at 16,011', 17,055', 17,150', 17,337', 17,430'. Pulled out of hole. Installed 7-5/8" rams in blowout preventer equipment. Rigged up casing equipment.

3/6/79
0'

TD: 17,570'; MW: 12.7; Vis: 40. Rigged up and ran 5,614 feet of 7-5/8" casing. Picked up Brown Oil Tool hanger. Circulated at 5707'. Tripped in with drill pipe; fill every 10 stands. Circulated at 7418', 10,000', 12,000', 14,000', 15,000' and 16,000'. Had casing drag (60,000 pounds) from 13,100' to 13,400'. Recovered full returns.

3/7/79
0'

TD: 17,570'; MW: 12.5; Vis: 44. Ran in with liner to 17,400'; circulated bottoms up. Dropped ball and attempted to hang liner; did not hang. Mixed 14 ppg spacer, tested surface lines to 3,500 psi. Cemented liner with 600 sacks Class J cement, 0.25% D-28 and 0.5% D-65, and one gallon/sack D-108 to 15.4 ppg. Displaced with 10 barrels of water and 450 barrels of mud. Circulated pressure: 500 psi with 370 barrels away; 750 psi with 400 barrels away; 850 psi with 420 barrels away. Final pressure: 950 psi. First 400 barrels pumped away at 5-1/2 BPM; slowed to 2 BPM for plug flow. Attempted to set liner; would not set. Waited on cement. Cement in place 3/6/79 at 5:30 p.m.

3/8/79
0'

TD: 17,570'; MW: 12.4; Vis: 43. Waited on cement. Slacked off weight of DP; backed off hanger. Circulated bottoms up. Pulled out of hole. Picked up bit and casing scraper. Ran in hole; tagged liner. Circulated bottoms up.

3/9/79
0'

TD: 17,570'; MW: 12.4; Vis: 43. Circulated at 11,800'. Pulled out of hole; steel line measured liner top at 11,818'. Laid down casing scraper. Picked up Howco 9-5/8" cement retainer; ran in hole and set at 11,720'. Established break down at 2 BPM at 2,000 psi; 4 BPM at 2,300 psi; 5 BPM at 2,300 psi. Pumped 30 barrels water and 400 sacks Class "G", 15.8 with 25% D-28 and 1.0% D-65; pumped water behind. Displaced with 108 barrels of mud; stabbed in; pumped 88 barrels of mud, leaving 5 barrels of water and 5 barrels of cement on top of retainer. Displaced with 2.5 BPM. Starting pressure: 1,300 psi; increased to 2,000 psi on completion of job. Cement in place 3/8/79 at 7:00 p.m. Pulled out of hole three stands and circulated pipe clean. Pulled out of hole. Ran in hole with 5" drill pipe to 6500' and laid down drill pipe.

3/10/79
0'

TD: 17,570'; MW: 12.4; Vis: 43. Laid down excess 5" drill pipe. Picked up four 6-1/4" drill collars; eighteen 4-3/4" drill collars; 180 joints of 3-1/2", 15.5# drill pipe. Changed 5" rams to 3-1/2" rams in top blowout preventer. Tested blowout preventer equipment and cleaned sand trap.

3/11/79
0'

TD: 17,570'; MW: 12.4; Vis: 41. Ran in hole. Found top of cement at 11,502'. Cement firm; drilled at 30 feet per hour. Found cement retainer at 11,722'.

3/12/79
0'

TD: 17,570'; MW: 12.3; Vis: 40. Drilled cement; tagged hanger at 11,818'. Tested 9-5/8" casing to 1,500 psi. Circulated bottoms up. Pulled out of hole; changed bottom hole assembly. Ran in hole; drilled through top of hanger. Ran in hole; drilled cement 17,050' to 17,093'. Tested 7-5/8" casing to 1,500 psi. Circulated bottoms up. Pulled out of hole.

3/13/79
0'

TD: 17,570'; MW: 12.7; Vis: 44. Pulled out of hole; picked up 8-1/2" bottom hole assembly; ran in hole with casing scraper. Conditioned and circulated mud at 11,818'. Pulled out of hole; picked up Howco drill stem test tools. Ran in hole; filled 38 stands of pipe with water for cushion. Cut drilling line. Ran in hole.

3/14/79
0'

TD: 17,570'; MW: 12.5; Vis: 46. Ran in hole with drill stem test tools to 11,756'; filled drill pipe with water; set packer. Opened tool three hours; shut in two hours. Unseated packer. Dropped bar; bar failed to open circulating sub. Opened bypass; reversed out water cushion. Pulled out of hole; laid

down test tool. Replaced brake band on drawworks. Ran in hole with 6-1/4" bit; tagged cement at 17,063'. Drilled cement.

3/15/79
0'

TD: 17,570'; MW: 12.5; Vis: 46. Drilled cement in 7-5/8" liner to 17,341'; circulated. Pulled out of hole; laid down 33 joints of 5" drill pipe. Rigged up Schlumberger. Ran CBL to 17,315'. Laid down logging tools. Picked up bottom hole assembly and ran in hole.

3/16/79
1'

TD: 17,571'; MW: 13.2; Vis: 46. Ran in hole; cut drilling line. Ran in hole; drilled cement to 17,383'; circulated and conditoned mud. Drilled cement and shoe at 17,432'; reamed to bottom, 17,580'. Drilled on junk. Drilled one foot. Circulated bottoms up. Pulled out of hole.

3/17/79
20'

TD: 17,598'; MW: 13.2; Vis: 52. Tested blowout preventer equipment OK. Ran in hole; made 7' steel line measure correction. Drilled on junk. Pulled out of hole 12 stands; hole not taking correct fill. Ran in hole to bottom. Circulated bottoms up.

3/18/79
47'

TD: 17,645'; MW: 13.5; Vis: 65. Pulled out of hole; changed bit and cleaned junk basket. Picked up monel drill collar. Ran in hole to 6000'; cut drilling line. Ran in hole to 17,400'. Ran leak off test to 14.5 ppg; no leak off. Ran in hole to bottom; drilled. Small junk on bottom.

3/19/79
34'

TD: 17,679'; MW: 13.5; Vis: 50. Drilled; pulled out of hole. Cleaned junk basket. Changed bottom hole assembly; ran in hole. Reamed to bottom.

3/20/79
100'

TD: 17,779'; MW: 13.8; Vis: 52. Reamed to bottom. Drilled ahead.

3/21/79
7'

TD: 17,786'; MW: 14.7; Vis: 48. Drilled until H_2S started increasing. Mud weight: 13.8 ppg in; 13.5 ppg out. H_2S in mud: 600 ppm. Pulled out of hole to shoe. Raised mud weight to 14 ppg; ditch gas 400 to 600 ppm H_2S. Raised mud weight to 14.2 ppg; ditch gas 400 to 600 ppm H_2S. Raised mud weight to 14.5 ppg; ditch gas 400 ppm H_2S. Ran leak off test to 1,500 psi with 14.5 ppg mud in hole. Tested to

equivalent gradient of 16.15 ppg; formation held. Circulated and raised weight to 15 ppg. Ditch gas: 300 to 400 ppm H_2S.

3/22/79
0'

TD: 17,786'; MW: 16; Vis: 5. Circulated and conditioned mud, raising weight to 15 ppg. Tested formation with 1,500 psi on the surface (equivalent gradient 16.65 ppg). Formation held. Circulated and conditioned mud; raised weight to 15.5 ppg, 40 ppm H_2S in mud, 1,253 mg/liter sulfides. H_2S reduced to 0 ppm in mud, sulfides to 55 mg/liter. Tested formation to 17.15 equivalent mud weight; formation held. Raised mud weight to 16 ppg; 0 ppm H_2S in mud; 240 mg/liter filtrate sulfides. Staged to bottom one stand at a time; circulated 1/2 hour per stand. Circulated bottoms up at 17,786'.

3/23/79
43'

TD: 17,829'; MW: 16; Vis: 46. Circulated; drilled to 17,829'. Surveyed. Pulled out of hole to 12,000'. Cut drilling line; changed brake band. Pulled out of hole.

3/24/79
39'

TD: 17,868'; MW: 16; Vis: 55. Pulled out of hole; tested blowout preventer equipment. Ran in hole to 13,400'; circulated. Ran in hole to 17,800'; reamed to bottom. Drilled with 16 ppg mud in, 15.8 ppg mud out. No H_2S.

3/25/79
19'

TD: 17,887'; MW: 16.3; Vis: 50. Drilled and raised mud weight to 16.2 ppg. H_2S: 10 ppm with returns; mud: 15.8 ppg. Raised mud to 16.3 ppg while drilling; H_2S: 0 ppm; mud cut to 16.1 ppg. Surveyed; pulled out of hole; replaced wear ring. Ran in hole; broke circulation at 12,300' and 17,300'. Drilled ahead.

3/26/79
58'

TD: 17,945'; MW: 16.4; Vis: 48. Drilled to 17,945'; surveyed, pulled out of hole.

3/27/79
44'

TD: 17,989'; MW: 16.4; Vis: 46. Pulled out of hole to 12,000', cut drilling line. Pulled out of hole; changed bit; ran in hole. Broke circulation at 12,000' and 17,300'. Ran in hole. Drilled ahead. Bottoms up H_2S: 190 ppm; weight cut to 12.2 ppg. While drilling, H_2S ranged 20 ppm to 180 ppm. Mud weight: 16.4 ppg in; 15.8 to 16.3 ppg out.

3/28/79
61'

TD: 18,050'; MW: 16.7; Vis: 47. Drilled ahead. Raised mud weight 16.4 to 16.7 ppg at 18,047'. Soluble sulfides: 0; mud: 16.6+ ppg in, 16.7 ppg out; H_2S: 0 ppm; chlorides: up 2,000 ppm.

3/29/79 29'	TD: 18,079'; MW: 16.7; Vis: 46. Pulled out of hole; changed roller reamer. Picked up six joints of 3-1/2" drill pipe, total of 186 joints. Ran in hole; circulated at 12,000' and 17,300'. Ran in hole. Drilled ahead. Bottoms up: 80 ppm H_2S; mud cut to 13.5 ppg; soluble sulfides: 34 mg/1. Drilled ahead with 0 H_2S. Mud out: 16.4 to 16.5 ppg; soluble sulfides: 0 to 3 mg/1.
3/30/79 12'	TD: 18,091'; MW: 16.7; Vis: 46. Drilled to 18,091'. Pulled out of hole; tested blowout preventer equipment. Ran in hole; circulated at 12,000'; cut drilling line. Ran in hole to 17,211'; circulated.
3/31/79 55'	TD: 18,146'; MW: 16.7; Vis: 46. Formation tested at 17,430' to 18.4 ppg equivalent weight. Ran in hole; drilled. Bottoms up H_2S: 80 ppm; mud out: to 12.2 ppg; soluble sulfides: 12 mg/1.
4/1/79 34'	TD: 18,180'; MW: 16.7; Vis: 46. Drilled to 18,180'. Surveyed. Tripped out; changed jars. Picked up six joints of 3-1/2" drill pipe and tripped in.
4/2/79 70'	TD: 18,250'; MW: 16.7; Vis: 43. Ran in hole; broke circulation at 17,400'. Ran in hole; washed 18,140' to 18,180'. Drilled; repaired; drilled. Bottoms up mud cut to 15.9 ppg; H_2S: 100 ppm; soluble sulfides: 24 mg/1 at 18,200'; H_2S: 0 to 150 ppm.
4/3/79 51'	TD: 18,301'; MW: 16.6+; Vis: 44. Drilled to 18,300'; made short trip. Drilled ahead.
4/4/79 21'	TD: 18,322; MW: 16.7; Vis: 43. Drilled; surveyed; pulled out of hole; cut drilling line; changed bottom hole assembly. Ran in hole; picked up six joints of 3-1/2" drill pipe; laid down 10 joints of 5" drill pipe. Broke circulation at 12,300'. Ran in hole; reamed diamond bit run. Drilled ahead.
4/5/79 71'	TD: 18,393'; MW: 16.8; Vis: 43. Drilled; surveyed.
4/6/79 13'	TD: 18,406'; MW: 16.8; Vis: 42. Pulled out of hole; repaired. Tested blowout preventer equipment. Ran in hole; circulated at 12,300'; reamed 40 feet. Drilled ahead.

4/7/79 52'	TD: 18,458'; MW: 16.6; Vis: 41. Drilled ahead. Had 120 units of gas from coal stringers; no H_2S.
4/8/79 47'	TD: 18,495'; MW: 16.5; Vis: 49. Drilled; tripped; cut drilling line. Drilled ahead.
4/9/79 91'	TD: 18,586'; MW: 16.8; Vis: 43. Drilled, surveyed; pulled out of hole.
4/10/79 42'	TD: 18,642'; MW: 16.7+; Vis: 46. Ran in hole; broke circulation at 12,300'. Drilled ahead.
4/11/79 53'	TD: 18,694'; MW: 16.7; Vis: 43. Drilled; surveyed; cut drilling line. Pulled out of hole.
4/12/79 69'	TD: 18,763'; MW: 16.7; Vis: 40. Made short trip; circulated at 11,800'. Ran in hole; drilled ahead.
4/13/79 35'	TD: 18,798'; MW: 16.7; Vis: 44. Drilled; surveyed; pulled out of hole. Tested blowout preventer equipment.
4/14/79 44'	TD: 18,842'; MW: 16.7; Vis: 42. Pulled out of hole. Ran in hole; reamed 44 feet. Drilled ahead.
4/15/79 32'	TD: 18,874'; MW: 16.7; Vis: 41. Drilled ahead. Pulled out of hole. Cut drilling line; pulled out of hole. Picked up junk basket. Ran in hole; circulated 12,000'; reamed 16 feet. Drilled ahead.
4/16/79 73'	TD: 18,947'; MW: 16.7; Vis: 41. Drilled ahead.
4/17/79 6'	TD: 18,953'; MW: 16.7; Vis: 44. Drilled ahead. Pulled out of hole. Picked up 18 joints of 3-1/2" drill pipe; laid down 18 joints of 5" drill pipe. Reamed 40 feet to bottom; drilled ahead. Pulled out of hole.
4/18/79 39'	TD: 18,992'; MW: 16.7; Vis: 48. Worked blowout preventer; ran in hole to 11,200'. Broke circulation; repaired. Ran in hole; washed to bottom: 18,920' to 18,953'. Drilled ahead.
4/19/79 39'	TD: 19,031'; MW: 16.7; Vis: 47. Drilled to 19,031'. Circulated out gas; peaked at 73 units. Surveyed; pulled out of hole to check bottom hole assembly.
4/20/79 19'	TD: 19,050'; MW: 16.7; Vis: 50. Magnafluxed bottom hole assembly. Tested blowout preventer

	equipment; changed lower kelly cock; dressed stabilizer. Ran in hole to 13,000'; circulated cut drilling line. Ran in hole to 19,003'; washed to bottom. Drilled ahead.
4/21/79 62'	TD: 19,112'; MW: 16.7; Vis: 45. Tripped out; changed reamer. Picked up stabilizer. Tripped in to 13,000'. Broke circulation. Ran in to 18,690'; circulated; surveyed. Reamed 18,690' to 18,953'. Circulated; surveyed; reamed 18,890' to 19,087'.
4/22/79 0'	TD: 19,112'; MW: 16.7; Vis: 45. Drilled to 19,112'; circulated up samples. Surveyed; pulled out of hole.
4/23/79 63'	TD: 19,175'; MW: 16.9; Vis: 46. Reamed 19,087' to 19,112'. Drilled ahead. On bottoms up, had 50 units of gas and 50 units of H_2S. Cut mud to 16.5 ppg.
4/24/79 25'	TD: 19,200'; MW: 16.9; Vis: 46. Drilled; Pulled out of hole; cut drilling line. Checked reamer and stabilizer for gauge. Picked up stabilizer. Ran in hole to 13,000'. Broke circulation.
4/25/79 47'	TD: 19,247'; MW: 17.0; Vis: 47. Drilled ahead.
4/26/79 27'	TD: 19,274'; MW: 16.9; Vis: 45. Drilled to 19,274'. Surveyed; tripped out to log. Ran DLL; misrun. Ran in hole and logged. Pulled out of hole.
4/27/79 0'	TD: 19,274'; MW: 16.9; Vis: 47. Finished DLL/GR. Ran FDC/CNL/GR. Bottom hole temperature on both runs: 348°. Ran in hole to 14,100'; broke circulation and cut drilling line. Ran in hole to bottom. Conditioned mud; pulled out of hole. Rigged up to log. Ran in hole with HDT.
4/28/79 4'	TD: 19,278'; MW: 16.9; Vis: 45. Ran Dipmeter. Had problems due to temperature. Pulled out of hole. Ran second dipmeter. Had electrical failure. Pulled out of hole. Ran BHC-Sonic/GR. Maximum bottom hole temperature: 350°. Ran third Dipmeter. Ran Velocity Survey. Maximum bottom hole temperature: 358°. Tripped in to 12,200'; broke circulation. Tripped to 19,234'; washed to bottom. Drilled to 19,278'. Cleaned bottom for junk. Circulated and conditioned mud. On bottoms up, had 1,915 units of gas; 500 ppm H_2S.

4/29/79 82'	TD: 19,360'; MW: 16.7; Vis: 47. Circulated and conditioned mud. Drilled to 19,360'. Surveyed and pulled out of hole.
4/30/79 12'	TD: 19,372'; MW: 16.9; Vis: 47. Pulled wear ring and tested blowout preventer to 10,000 psi. Picked up core barrel. Ran in hole to 14,100'; broke circulation and cut drilling line. Ran in hole; reamed and washed 19,330' to 19,360'. Circulated; dropped ball. Cut Core No. 22: 19,360-19,372', recovered 10.5'.
5/1/79 54'	TD: 19,426'; MW: 17.0; Vis: 48. Pulled out of hole with core barrel; recovered 10.5 feet of core. Dressed stabilizer to gauge. Ran in hole to 14,000'; broke circulation. Ran in hole; reamed core hole. Drilled ahead.
5/2/79 33'	TD: 19,459'; MW: 17.0; Vis: 46. Drilled to 19,459'; surveyed. Pulled out of hole; changed bit; repaired Strip-o-matic; changed blades on numbers 1 and 2 stabilizers. Dressed reamer; ran in hole to 12,500'; broke circulation. Picked up six joints of 3-1/2" drill pipe; cut drilling line.
5/3/79 104'	TD: 19,563'; MW: 17.0; Vis: 46. Ran in hole; reamed 31 feet to bottom. Drilled 6-1/4" hole.
5/4/79 35'	TD: 19,598'; MW: 17.0; Vis: 48. Drilled to 19,577'; tripped out. Changed bits, two stabilizer blades and jars. Tripped in; circulated at 13,000'; reamed 19,547' to 19,577'. Installed corrosion ring between E and G pipe. Evidence of some pitting in E grade pipe.
5/5/79 92'	TD: 19,690'; MW: 17.0; Vis: 46. Drilled; surveyed; tripped out.
5/6/79 64'	TD: 19,754'; MW: 17.0; Vis: 48. Finished trip out; changed all stabilizers. Cut drilling line; broke circulation at 12,300'. Laid down six joints of 5" drill pipe. Picked up six joints of 3-1/2". Drilled ahead. Had drilling break: 19,723-19,728'. Checked for flow. OK. Drilled ahead.
5/7/79 30'	TD: 19,784'; MW: 17.0; Vis: 47. Drilled; surveyed; tripped out. Changed bit. Laid down six joints of 5" drill pipe. Picked up six joints of 3-1/2" drill pipe. Tested blowout preventer equipment OK. Tripped in hole.

5/8/79 93'	TD: 19,877'; MW: 17; Vis: 48. Ran in hole; reamed 30 feet to bottom; drilled ahead. Bottoms up H_2S: 120 ppm; gas: 3,710 units. Mud weight cut to 2.1 ppg; normal after bottoms up.
5/9/79 27'	TD: 19,904'; MW: 17.0; Vis: 50. Drilled; surveyed. Pulled out of hole; changed out two joints of Grade E drill pipe. Ran wear bushing. Changed blades on two bottom stabilizers. Ran in hole; cut drilling line and broke circulation at 14,000'. Ran in hole; reamed 30 feet to bottom. Drilled ahead.
5/10/79 84'	TD: 19,988'; MW: 17; Vis: 47. Drilled; circulated samples; surveyed; pulled out of hole.
5/11/79 0'	TD: 19,988'; MW: 16.5; Vis: 47. Ran in hole; circulated at 15,800'; reamed 19,860' to 19,988'. Attempted to drill; high torque. Circulated bottoms up; pulled out of hole. Bit locked with iron from iron roughneck. Ran in hole; circulated at 15,800'. Changed drilling line. Ran in hole.
5/12/79 100'	TD: 20,088'; MW: 17.1; Vis: 49. Ran in hole; drilled ahead.
5/13/79 3'	TD: 20,091'; MW: 17.1; Vis: 48. Drilled; circulated; pulled out of hole. Ran two logs with Schlumberger DLL and Density. Ran in hole. Maximum temperature on logs 365°F.
5/14/79 0'	TD: 20,091'; MW: 17.1; Vis: 52. Tripped in; circulated bottoms up. Mud unbalanced. Circulated; tripped out. Rigged up and ran Dipmeter/Sonic. Ran Velocity Survey. Maximum temperature on logs 369°F.
5/15/79 0'	TD: 20,091'; MW: 17.1; Vis: 47. Finished velocity survey. Ran in hole to 14,000'; circulated and cut drilling line. Ran in hole; mud flowed over drill pipe at 19,000'. Picked up kelly and circulated. Ran in hole to 20,091'; circulated. Pulled out of hole. Picked up core barrel. Ran in hole.
5/16/79 11'	TD: 20,102'; MW: 17.1; Vis: 50. Broke circulation at 15,000'; mud flowed back at 19,700'. Ran in hole; circulated; dropped ball. Cut Core No. 23: 20,091-20,102'. Pulled out of hole; recovered two-foot core. Laid down core barrel; tested blowout preventer equipment. Ran in hole; thawed kelly hose, breaking circulation at 12,000'.

5/17/79 TD: 20,102'; MW: 17; Vis: 46. Cut drilling line. Ran in hole; mud flowed back through drill pipe. Circulated and conditioned mud. Pulled out of hole; laid down eight joints of 3-1/2" drill pipe and bottom hole assembly. Serviced rig and ran in hole to 19,208'; circulated and conditioned mud.

5/18/79 TD: 20,102'; PBTD: 16,646'; MW: 17; Vis: 43. Circulated at 19,200'. Pumped Plug No. 1: 8-3/4 barrels spacer at 17.5 ppg ahead, 200 sacks Class "J" slurry at 17.8 ppg and 1-3/4 barrels spacer behind. Displaced with 250 barrels mud. Cement in place 5/17/79 at 10:45 a.m. Pulled out of hole to 17,982'; circulated and conditioned mud. Pumped Plug No. 2 at 17,978': 8-1/2 barrels Barite spacer at 17.5 ppg ahead, 200 sacks Class "J" slurry at 17.8 ppg, and 1-1/2 barrels spacer behind. Displaced with 228 barrels of mud. Cement in place 5/17/79 at 4:10 p.m. Pulled out of hole to 16,762'; circulated; pulled out of hole. Picked up 6-1/4" bit, 7-5/8" casing scraper, and one drill collar. Ran in hole to 16,646'; scraper stopped. Circulated and conditioned mud.

5/19/79 TD: 20,102'; PBTD: 11,500'; MW: 16.6; Vis: 41. Circulated and conditioned mud at 16,646'. Pulled out of hole. Laid down scraper; picked up 7-5/8" EZ Drill retainer. Ran in hole to 16,600'. Circulated and set retainer at 16,600'. Circulated; had 4,300 units of gas and 100 ppm H_2S. Tested Dowell line and spotted Plug No. 3: 250 sacks Class "J" cement, eight barrels of 16.8 ppg spacer, 42 barrels of 17.5 ppg cement, and two barrels of spacer. Displaced with 201 barrels mud at 4 BPM. Plug (1,050 feet) down at 10:00 p.m. Pulled out of hole to 12,251'; circulated. Set Plug No. 4: 200 sacks Class "G"; nine barrels 16.6 spacer; 36 barrels cement, 17.0 ppg; and one barrel spacer. Displaced with 130 barrels mud at 4 BPM. Plug (675 feet) down at 3:30 a.m. Pulled out of hole to 11,500'. Reverse circulated 150 barrels mud. Pulled out of hole.

5/20/79 TD: 20,102'; PBTD: 11,450'; MW: 16.5; Vis: 43. Pulled out of hole with 5" drill pipe. Laid down all 3-1/2" drill pipe. Picked up 9-5/8" EZ drill retainer. Ran in hole to 11,450' and set. Pulled out of retainer. Circulated and conditioned mud. Set Plug No. 5 at 11,450': 200 sacks Class "G", seven barrels 16.6 ppg spacer, 35 barrels cement, three barrels spacer, 190 barrels mud to displace. Final pressure: 600 psi at 5 BPM. Plug down at 5:00 a.m. Pulled out of hole seven stands. Laid down 5" drill pipe.

5/21/79

TD: 20,102'; PBTD: Surface. Picked up 9-5/8" EZ drill retainer. Ran in hole to 7981'. Set retainer; circulated. Set Plug No. 6: 200 sacks Class "G" cement, 10 barrels water, 34 barrels 17 ppg slurry, four barrels water. Displaced with 125 barrels mud. Final 200 psi at 5 BPM. Plug down at 2:20 p.m. Laid down 5" drill pipe. Picked up 9-5/8" retainer; ran in hole to 2003'. Set retainer. Displaced 9-5/8" casing with water. Cemented with 250 sacks ArcticSet II cement with 41 barrels slurry at 15.2 ppg. Displaced with 12 barrels water at 3 BPM. Plug down at 11:06 p.m. Laid down 5" drill pipe. Set Plug No. 9 at 940': 200 sacks ArcticSet II cement with 33 barrels slurry, 15.2 ppg at 3 BPM. Plug down at 11:40 p.m. Set Plug No. 10 to surface: 234 sacks ArcticSet II at 15.2 ppg. Plug down at 11:10 a.m. Laid down 5" drill pipe. Broke kelly and cleaned blowout preventer.

5/22/79

Cleaned mud pits and prepared to rig down. Set blowout preventer test plug. Cleaned and nippled down blowout preventer stack. Changed pipe rams. Nippled up hanger assembly, bonnet, and master valve. Tested to 10,000 psi OK. Installed dry hole marker. Filled top of hole with 50/50 glycol/water mixture. Cleaned mud pits and rigged down floor.

5/23/79

Released rig May 22, 1979, at 12:00 noon. Set out floor equipment. Set out front of rig. Took down wind walls. Finished cleaning mud pits and pumps. Dismantled Dowell unit. Set out mud logging unit and manifold house. Continued with rig down.

DRILLING TIME ANALYSIS

INIGOK TEST WELL NO. 1

NABORS ALASKA DRILLING, INC., RIG 25

Spud 6/7/78; Rig Released 5/22/79

Total Depth: 20,102 Feet

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 1 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
1978 3-28																							24		Setting Up Camp
3-29																							24		Setting Up Camp
3-30																							24		Setting Up Camp
3-31																							24		Setting Up Camp
4-1																							24		Setting Up Camp
4-2																							24		Setting Up Camp
4-3																							24		Setting Up Camp
4-4																							24		Setting Up Camp
4-5																							24		Setting Up Camp
4-6																							24		Setting Up Camp
4-7																							24		Setting Up Camp
4-8																							24		Setting Up Camp
4-9																							24		Setting Up Camp
4-10																							24		Setting Up Camp
4-11																							24		Setting Up Camp

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 2 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
4-12																							24		Setting Up Camp
4-13																							24		Setting Up Camp
4-14																							24		Setting Up Camp
4-15																							24		Setting Up Camp
4-16																							24		Setting Up Camp
4-17																							24		Setting Up Camp
4-18																							24		Setting Up Camp
4-19																							24		Setting Up Camp
4-20																							24		Setting Up Camp
4-21																							24		Setting Up Camp
4-22																							24		Setting Up Camp
4-23																							24		Setting Up Camp
4-24																							24		Setting Up Camp
4-25																							24		Setting Up Camp
4-26																							24		Setting Up Camp

06

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 3 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
4-27																							24		Setting Up Camp
4-28																							24		Setting Up Camp
4-29																							24		Setting Up Camp
4-30																							24		Setting Up Camp
5-1																							24		Setting Up Camp
5-2																							24		Setting Up Camp
5-3																							24		Setting Up Camp
5-4																							24		Setting Up Camp
5-5																							24		Setting Up Camp
5-6	24																								Rigging Up
5-7	24																								Rigging Up
5-8	24																								Rigging Up
5-9	24																								Rigging Up
5-10	24																								Rigging Up
5-11	24																								Rigging Up

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 4 of 30

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
5-12	24																								Rigging Up
5-13	24																								Rigging Up
5-14	24																								Rigging Up
5-15	24																								Rigging Up
5-16	24																								Rigging Up
5-17	24																								Rigging Up
5-18	24																								Rigging Up
5-19	24																								Rigging Up
5-20	24																								Rigging Up
5-21	24																								Rigging Up
5-22	24																								Rigging Up
5-23	24																								Rigging Up
5-24	24																								Rigging Up
5-25	24																								Rigging Up
5-26	24																								Rigging Up

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 5 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
5-27	24																								Rigging Up
5-28	24																								Rigging Up
5-29	24																								Rigging Up
5-30	24																								Rigging Up
5-31	24																								Rigging Up
6-1	24																								Rigging Up
6-2	24																								Rigging Up
6-3	24																								Rigging Up
6-4	24																								Rigging Up
6-5	24																								Rigging Up
6-6	9							3																	Rigging Up
6-7	9½	11½			½	¼	2½																Preparing to Spud	Spudded 9:30 a. m.
6-8			14½	7	½		1½															1	Reaming	
6-9			8 ½	6½				2¾		5												1	Opened Hole to 36"	
6-10								2		5	5½	9										2½	Preparing to Cement	Ran 30" Casing

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 6 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
6-11		1½		2½								20												Nippling Up 30" BOPE	
6-12		19		3½	1	½																		Drilling	
6-13		15		3½	1		3¾	¼															½	Drilling	
6-14		6½		9	¼			6¼	2															Circulate & Condition	
6-15			8	8¼				1	6¾															Logging	Ran Schlumberger Wireline Logs
6-16			18¼	4¾				1																Reaming	
6-17			17		3¼			3¾																Reaming	
6-18			8¼	6½			6	3¼																Reaming	
6-19				4¼					2¼		17½													Trip Out	
6-20				8					4		7¼					½						4½		Tripping In/Dowell Stinger	WO Fishing Tools
6-21				7				3½		9													4½	Casing	Ran 20" Casing
6-22				1						23														Casing	
6-23				4				3¼		16¾														Casing	
6-24											3	21												Nippling Down	
6-25												24												Nippling Up BOP	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 7 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
6-26												24												Nippling Up BOP	
6-27												24												Nippling Up BOP	
6-28		2 3/4						4 3/4					13½										3	Testing BOP	
6-29		3¼	2½	10 3/4			1	1¼					¼				4						1	Coring	Core No. 1: 2632' - 2662'
6-30		13½		6½		¼	1 3/4	1¼									1							Drilling	
7-1		16	1¼	3½	½	¼	1										2							Drilling	Core No. 2: 3072' - 3082'
7-2		22½		½	½			1																Drilling	
7-3		17 3/4	¼	4			1																1	Drilling	
7-4		12½		3/4	½			1½									1½						7¼	Drilling	
7-5		6¼	1 3/4	9½		½	¼	½					3 3/4										1½	Trip Out	Core No. 3: 4206' - 4216'
7-6		23½				¼	½																	Drilling	
7-7		11	½		8 3/4		1	1¼															1½	Trip Out	
7-8		20 1/4		1¼	¼	¼	¼	1½																Drilling	
7-9		10	1¼	9½		½		½									1 3/4						½	Coring	Core No. 4: 5000' - 5010'
7-10		20	3/4	3/4			2½																	Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 8 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
7-11		17		4½	¼	½		1¾																Drilling	
7-12		15½		4½	¾			2					1½											Drilling	
7-13		3½		5									14										1½	Working on Hydril	
7-14		20¾		2½	¼			¼																Drilling	
7-15		13		5½	2																		3½	Trip In	Tight Hole
7-16		17½		5	1	½																		Drilling	Tight Hole/Drilled Bridge
7-17		22	¼	1¼		½																		Drilling	Tight Hole
7-18		13¾	¼	6½	1	1	1½																	Drilling	
7-19		12½	½	7									4											Drilling	
7-20		18¾		4½	¾																			Drilling	
7-21			½	4¾				¾					13½				4½							Repairing Hydril	Core No. 5: 7054' -7064'
7-22		14½	2	4¾				2															¾	Reaming	
7-23		11¼	¼	7	¼	½	4¼																	Drilling	
7-24		21½		1¼	¾		½																	Drilling	
7-25		2½	¼	14¼												6							1	Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 9 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
7-26		4	3/4	2 1/4																			17	Trip In	Inspected BHA & HWDP
7-27		22 1/2		1		1/2																		Drilling	
7-28		5 1/2	1/2	5 1/2	1/4							2 1/2	9 3/4											Testing BOPE	
7-29		21 1/2		1/2				2																Drilling	
7-30		16 1/2	1/2	6 1/2	1/4			1/2																Trip For Bit	
7-31		14 3/4		5 1/2	1/4		3	1/2																Drilling	
8-1			2 3/4	10 1/2		1/2	5	3/4									3 1/2						1 1/2	Repair Rotary Clutch	Core No. 6: 8210' - 8240'
8-2		4		14 3/4											1 1/2								3 3/4	Trip Out	Jarred & Tripped Out w/Fish
8-3		4	3	10 1/2	1/2			6																Wash to Bottom	
8-4				3				21																Logging	Running Schlumberger Logs
8-5			1/2	8			1	3	9														2 1/2	Logging	
8-6				5						17													2	Changing Rams	13-3/8" Casing
8-7				10				8 1/2		5 1/2														Circulate & Condition	
8-8				20																	1 1/2	2 1/2	Trip In	
8-9				13 3/4				4		3 3/4													2 1/2	Trip Out	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 10 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
8-10				2½				6	14														1½	Circulating Through FO	Ran CBL Log
8-11									1			23												Nipple Down BOP Stack	
8-12				2½				1½		5	7	2	4										2	Pick Up Tools	
8-13				12½				2½		6½												2	½	Trip Out	
8-14		10¼		8				1½															4¾	Trip In	
8-15		12¼	¾	10¾																				Trip In	Tested Formation
8-16		15½			7¾			1																Drilling	
8-17		7½	1	9¼				4½									1¾							Trip Out	Core No. 7: 8842' - 8852'
8-18		16		7		1																		Trip In	
8-19		5		8¼	¾		1¼	1½					5				1¾						½	Trip Out w/Core	Core No. 8: 9338' - 9348'
8-20		6½	¾	9½	¼		6¼										1							Trip In	
8-21		11¼	½	8			¼	1									2¾							Trip Out w/Core	Core No. 9: 9448' - 9458'
8-22		12		8¾				1															1½	Drilling	
8-23		14	1	7¼	1¼	½																		Drilling	
8-24		14		7½		½		2																Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 11 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
8-25		7	1	6			1½																8½	Magna Flux BHA	
8-26		12½		7				½					3										1	Drilling	
8-27		6½	3	7¼	3¼	½											3½							Trip Out w/Core	Core No. 10: 10295' - 10305'
8-28		23¼		¾																				Drilling	
8-29		22¾		¾			½																	Drilling	
8-30		9¼	¼	11¼	1	½	1	½																Drilling	
8-31		20			2		2																	Drilling	
9-1		2½	¼	15¼	¾	½		1									2½						1	Trip Out	Core No. 11: 10998' - 11008'
9-2		12¼	1¼	6			¼						2										2	Drilling	
9-3		23½					½																	Drilling	
9-4		24																						Drilling	
9-5		24																						Drilling	
9-6		3¼	4¼	14	¾	½											1							Trip Out	
9-7			6	14				1½															2½	Coring	Core No. 12: 11704' - 11714'
9-8		18	2¾	2½																				Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 12 of 30

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
9-9		23½		¾																				Drilling	
9-10		19½		2				2½																Drilling	
9-11		12	2	6	½			3½																Drilling	
9-12			¾	16¼				½					4				2½							Trip In	Core No. 13: 12273 - 12283'
9-13		5½	3½	9				6																Drilling	
9-14				1					23															Logging	Running Schlumberger Wireline Logs
9-15			1½	10½				6	5														1	Wiper Trip	
9-16			1	5¼				1	14¼														2¼	Logging	
9-17				8½				5		9		1½												Circulate & Condition Hole	
9-18								4		20														Casing	9-5/8" Casing
9-19								3		4	17													Cementing	
9-20									5		2	17												Logging	
9-21												24												Nipple Up	BOPE
9-22												24												Nipple Up	
9-23													24											Testing	BOPE

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 13 of 30

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
9-24				5½									18½											Testing	
9-25				2½																			21½	Arctic Pack Preparation	
9-26				1				12															11	Cleaning Mud Tanks	
9-27								2															22	Mixing Mud	Tested Casing
9-28		12½	½	10																			1	Drilling	
9-29		9½	¾	9				1									3¾							Drilling	Core No. 14: 12500' - 12530'
9-30		4½	½	8													10¼						¾	Drilling	
10-1		21¼		¼				2¼																Drilling	
10-2		8¼		5½	¾		2¾	1¼					5½											Drilling	
10-3			1½	13¼	½	1	3¼																4½	Trip In	
10-4		3¾	1	9		½		2¾									6						1	Circulate Samples	Core No. 15: 12705' - 12735'
10-5				6¾			12½	½									4¼							Trip Out	
10-6		11¾	1	9¼	½	¾																		Drilling	
10-7		12½	2	5½		½		½															3	Drilling	
10-8		19¼		3¼																			1½	Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 14 of 30

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
10-9		11½	¾	9 ¾	½	1		½																Trip In	
10-10		12		5½	½								5										1	Trip Out	
10-11		16¼	2	4				1¾																Reaming at Bottom	
10-12		17½	2¼	½			3¾																	Drilling	
10-13		12½	2	9	½																			Drilling	
10-14		18¾		4¾	½																			Drilling	
10-15		10	6	7½				½																Reaming	Tight Hole
10-16		12	1½	5½									5											Trip Out	
10-17		19		4¼	¾																			Drilling	
10-18		16	1	5																				Drilling	
10-19		18½		5	¾																			Drilling	
10-20		19¾	¼	3½																			¼	Drilling	
10-21		13¾		8½	¾											1								Drilling	
10-22				1¾				6¼								16								Trip In w/Core Barrel	Core No. 16: 13480' - 13510'
10-23		1	1	9			3½						7½			⅜							1¼	Test BOPE	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 15 of 30

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
10-24		24																						Drilling	
10-25		27½		1¾	¾																			Drilling	
10-26				7																			16	Trip Out	Magnaflux BHA
10-27		1½	½	10				2															10	Testing Casing	
10-28		21¾						2¼																Drilling	
10-29			2	12½	½			1¼					5			2¼							½	Testing BOP	
10-30		2½	2½	14¼			1½	¼								2							1	Trip In	
10-31		16¼	1	5½	½			¾																Drilling	
11-1			1½	5¾		¾		¼									14						1½	Trip In	
11-2			7¼	7¾				¼									8½							Coring	Core No. 17: 13831' - 13880'
11-3		20½	1¼					2¼																Drilling	
11-4		11	¾	9	¼			1¾															1	Trip Out	
11-5		15						9																Drilling	
11-6		4		8½	¼	¼		1¾					3¼				5½							Trip Out	
11-7		7¼	¾	10													5½						¼	Trip Out	Core No. 18: 14020' -14066'

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 16 of 30

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
11-8		14½		8				1½																Drilling	
11-9		6¼	½	7½			7¼	2½																Trip Out	
11-10		19¼		3¾	½			¼																Drilling	
11-11		16¾	1¼	6																				Drilling	
11-12		12¼	½	9¾				¾															3	Trip Out	
11-13		23¼						¾																Drilling	
11-14		8½		5¾	¾								8										1	Drilling	
11-15			1¾	8¾								7½	4										2	Nipple Up BOP	
11-16		24																						Drilling	
11-17		16		5	½	½		2																Drilling	
11-18		7¾	¼	13				2															1	Drilling	
11-19		19½		3½	½			½																Drilling	
11-20		18½	¾	4		¾																		Drilling	
11-21		20		3¼	¾																			Drilling	
11-22				3¼									20¾											Test BOPE	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 17 of 30

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
11-23				6¼				1½									16							Coring	Core No. 19: 15185' - 15215'
11-24		4½	½	16½				½									2½							Trip Out	
11-25		12		10	¾			½															¾	Trip In	
11-26		19	¾	4¼																				Drilling	
11-27		12½	½	9½	½																		1	Drilling	
11-28		24																						Drilling	
11-29		7½	½	7 ¾	¾		½						7											Drilling	
11-30		24																						Drilling	
12-1		12		6½	½																		5	Drilling	
12-2		20½	½	1½																			1½	Pick Up Spare Kelley	
12-3		15	½	3½				1½															3½	Drilling	
12-4		24																						Drilling	
12-5		15		8½				½																Drilling	
12-6		24																						Drilling	
12-7		1½		11½	¾	½							7½										2½	Trip Out	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 18 of 30

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
12-8		3 3/4	3/4	10 3/4		1/4		1									7 1/2							Coring	Core No. 20: 16185' - 16198'
12-9		24																						Drilling	
12-10		24																						Drilling	
12-11		9 3/4	3/4	10 3/4	1/2	1/2		1/2															1 1/4	Trip Out	
12-12		24																						Drilling	
12-13		7 3/4	1/4	9 3/4	3/4		1						3											Trip	
12-14		24																						Drilling	
12-15		8 1/2	1/2	10 1/2			1	1/2															3	Drilling	
12-16		24																						Drilling	
12-17		9 1/2		14				1/2																Drilling	
12-18		23 1/4	1/4	1/2																				Drilling	
12-19		18 1/2		5	1/2																			Drilling	
12-20		8 1/4											5				6 3/4						4	Test BOPE	Core No. 21: 17053' - 17083'
12-21		10 1/4	3/4	10									2										1	Trip Out	
12-22		24																						Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 19 of 30

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
12-23		18½		5	½																			Drilling	
12-24		14½	½	8																			1	Trip In	
12-25		24																						Drilling	
12-26		17½						6½																Drilling	
12-27				4½				19½																Mixing Bar, Sulfx & Chemicals	H_2S Gas to Surface
12-28				¾				18¾															5	Conditioning Mud	
12-29							¾	20⅛															3	Circulate & Condition Mud	
12-30			1¾					20¾															1½	Circulate & Condition Mud	
12-31			5½					8⅛															10⅛	Circulate & Condition Mud	
1979 1-1			2					9 ⅝															12⅛	Preparing to Trip Out	
1-2																							24	Stage Pill-Work Pipe	
1-3			8½												3½								12	Running Freepoint	
1-4			12¼					¾															11	Magnafluz HWDP	
1-5								5							12½								6½	Fishing	
1-6			6						2¾						15⅛									Fishing	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 20 of 30

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
1-7																24								Fishing	Using Dia-Log
1-8				5½				6½					9			3								Fishing	
1-9				17½		½		4½															1½	Fishing	
1-10				15		½	1¾	3½	1														1¾	Fishing	
1-11				5¾				7								11½								Fishing	Running Free Point
1-12				1½				22½																Circulate & Condition	
1-13				3¾				20¼																Circulate & Condition	
1-14				8½				15½																Circulate & Condition	
1-15				1½				22½																Circulate & Condition	
1-16				8				4¾					3½			7¾								Fishing	
1-17				16¾				3								3½							¾	Tripping Out	
1-18				19				1½								3½								Tripping In	Using Washover Pipe
1-19				17½				2								4½								Tripping Out	
1-20				20¼				2¾								1								Tripping In	
1-21				10									8½			5½								Fishing	

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DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 21 of 30

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
1-22				16				5								2½							½	Tripping Out	
1-23				9		1½							3½			9½							¾	Tripping In	Using Diamond Shoe
1-24				7				1½								15½								Fishing	
1-25				7				6¼								6¾							4	Tripping Out w/ Overshot	
1-26				12												10							2	Tripping Out	
1-27				8				9								1½							5½	Tripping Out w/Washover	
1-28				3½				4½								12							4	Fishing	Fish at 17240' Pipe Stuck
1-29				13			½	1½								7½							1¾	Tripping in w/Tri State Tools	Second Fish in Hole
1-30				5				1½								17½								Fishing	
1-31				16				1½					2½			4								Tripping In	
2-1				14									1			7							2	Tripping In	
2-2				10½				5								8½								Condition & Circulate Mud	
2-3				17¾				3¼								2¼							¾	Tripping Out	
2-4				12½			10									½							1	Tripping Out	Dropped Blocks
2-5				12			4																8	Tripping Out	Fish Full of Sulfur

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 22 of 30

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
2-6				6½				14															3½	Tripping In	
2-7				10			1½	11½															1	Tripping In & Circulating	
2-8				9¾				8½					5¼											Tripping In & Circulating	
2-9								24																Circulating	
2-10								24																Circulating	
2-11								24																Circulating	
2-12				8				16																Circulating	
2-13				6				18																Circulating	
2-14										24														Logging	Running Schlumberger Wireline Logs
2-15										24														Logging	
2-16									24															Logging	
2-17				6¾				6	6½				4										¾	Logging	
2-18				7				8	9															Circulating	
2-19				18½				2	2½							1								Tripping In w/Overshot	
2-20				7¾		½		15¼																Tripping In & Conditioning	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 23 of 30

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
2-21								24																Tripping In & Conditioning	
2-22								24																Tripping In & Conditioning	
2-23								24																Tripping In & Conditioning	
2-24							2¼		21¾															Tripping Out	
2-25									18								6							Circulating	
2-26					10½		1		8½								4							Testing BOPE	Caught Fish
2-27					12				12															Tripping In & Circulating	
2-28					14				9		1													Tripping In & Circulating	
3-1					19½				2		1½												1	Circulating	
3-2				2	8¾				13¼															Circulating	
3-3					18½				4½														1	Trip In	
3-4					13¾				10½															Staging In	
3-5					7½				1		15½													Rig Up to Run Liner	
3-6					7¼						11½	5½												Running Liner	
3-7					3½				2		1	17½												WOC	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 24 of 30

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				17½				1½												4½			½	Circulating	
3-9				22½				1															½	Lay Down Drill Pipe	
3-10		6¼	2	5¼									10										½	Test BOPE	
3-11		9½		11½			½	2															½	Drilling Out Cement	
3-12		½		16				7½																Trip Out	
3-13				14														5					5	RIH W/DST Tools	
3-14		7		11½				2½	2		1													Drilling	RAN CBL Log
3-15		2	2½	5½			1½	6	6														¾	Trip In	
3-16		1½		11¼				2¾					4¼										4¼	Trip Out	
3-17		3¼	1	13½				4¼															1½	Circulating	
3-18		17		7																				Drilling	
3-19		17	2	5																				Reaming to Bottom	
3-20		8½		½				15																Drilling	
3-21								22															2	Circulating & Raising MW	
3-22		13½		¼	1	½		5¾															2¾	Circulating	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 25 of 30

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		3	1	13½			1	1					4										½	Trip Out	
3-24		13½		8	1																		1½	Drilling	
3-25		18½		4				1½																Drilling	
3-26		8½		12½	1¼			1															¾	Trip Out	
3-27		24																						Drilling	
3-28		9		14				1																Trip Out	
3-29		13½		6½									4											Drilling	
3-30		16½		5½			½																1¾	Test Formation	
3-31		18½		4 ¾	1																			Drilling	
4-1		15	¾	7 ¾				¼																Trip In	
4-2		22½			1½																			Drilling	
4-3		5¼		12¼	½		1	1½															3½	Drilling	
4-4		23¼	¼																					Drilling	
4-5		5¾		10¼			1⅛	1					5											Trip Out	
4-6		23	¼	¾																				Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 26 of 30

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		12 3/4	1/4	8 3/4		1		1/2															3/4	Drilling	
4-8		24																						Drilling	
4-9		12 1/2	1/2	10	3/4			1/2																Trip Out	
4-10		20		2 1/2	1																		1/2	Drilling	
4-11		11	1/2	12 1/4				1/2																Trip Out	
4-12		17 3/4		5 1/4	1																			Drilling	
4-13		9	3/4	7 3/4									6 1/2											Testing BOP	
4-14		11	1	10 1/2		3/4		1/2															1/2	Drilling	
4-15		24																						Drilling	
4-16		8 1/2	1	13	1			1/2																Drilling	
4-17		9 1/4	1/4	13				1															1/2	Trip Out	
4-18		21		1	3/4			1 1/4																Drilling	
4-19		4	3/4	10 1/4				1/2					4										4 1/2	Checking BHA	
4-20		24																						Drilling	
4-21		2	1 3/4	13 1/4	4 3/4			2 1/4																Trip Out	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 27 of 30

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		17½	2½		3½			½																Drilling	
4-23		15½		7½	1																	½		Drilling	
4-24		18		5½				½																Drilling	
4-25		16½		4¾				3¼																Drilling	
4-26				5¾				6	11¾														½	Trip Out	
4-27				7¾					16¼															Logging	Running Schlumberger Wireline Logs
4-28		16½	½	1½				5½																Condition Mud	
4-29		2½	1	9½	1								4				3						3½	Tripping	
4-30		4¾	½	12				½									6½							Coring	Core No. 22: 19360' - 19372'
5-1		15		7	1																		1	Drilling	
5-2		15¼	1	5½		1½		½															½	Trip In	
5-3		8¾		13¾	1			½																Drilling	
5-4		23	1																					Drilling	
5-5		9¼	½	12	1			¾															½	Trip Out	
5-6		15½		7½	1																			Drilling	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 28 of 30

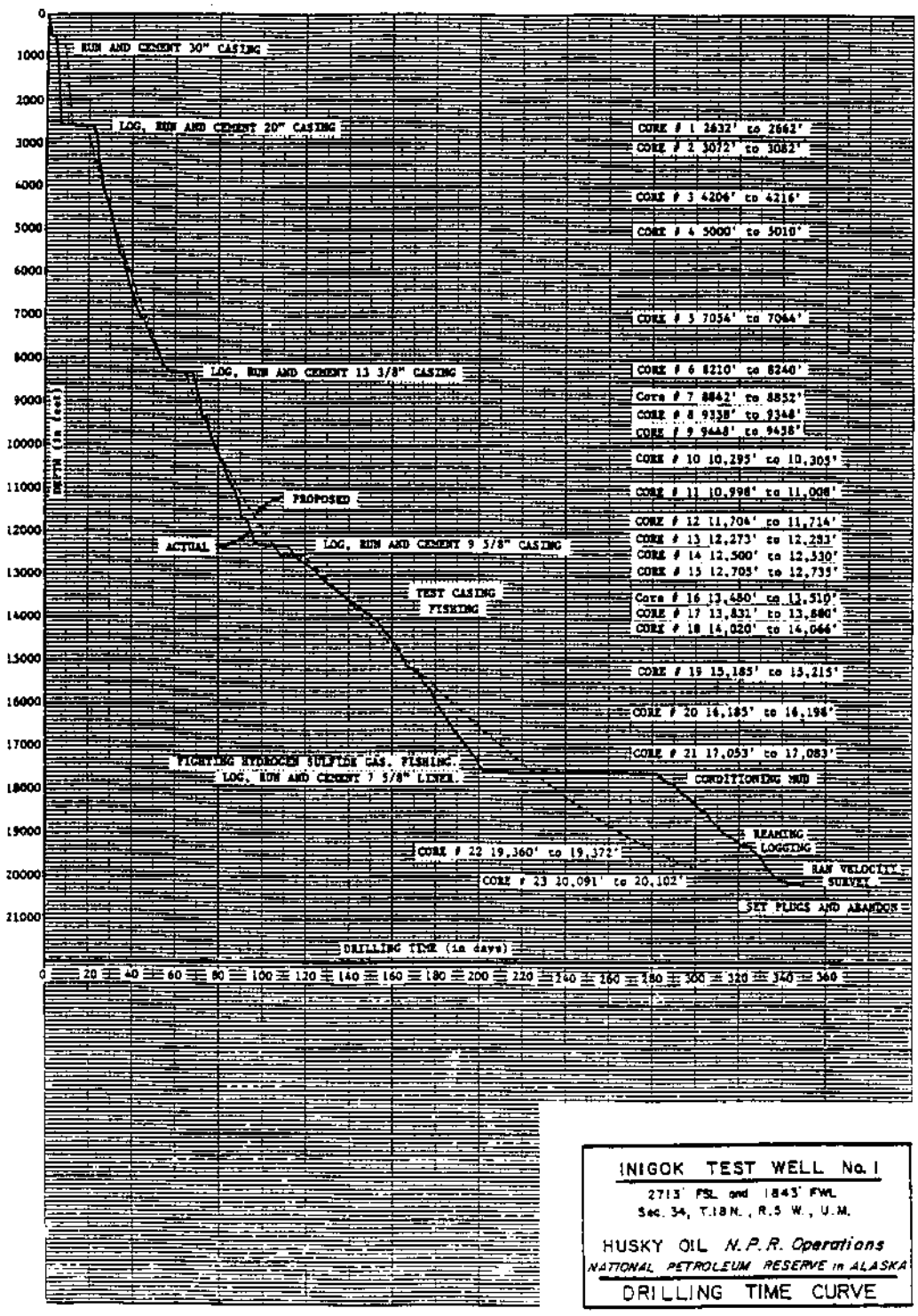
DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
5-7		14½	½	5½		½		½					3											Trip In	
5-8		10½		11½	1																		1	Drilling	
5-9		17¾	½	3¼	1			¾															¾	Drilling	
5-10		1½	1	15½				4															2	Trip Out	
5-11		14½		7				½															2	Trip In	
5-12		7		7¼				3¼	6½															Drilling	
5-13				12½				5½	6															Trip In	Ran Schlumberger Wireline Logs
5-14				10½				5½	7½														½	Logging	
5-15				13½				1½					1½				7¾							Trip In	
5-16				14		½		5½					2¾										1¼	Breaking Circulation	Core No. 23: 20091' - 29102'
5-17				7				11¼												5 ¾				Circulate & Condition Mud	
5-18				14½				7½												2			½	Circulate & Condition Mud	
5-19				17		½		5½												1½				Trip Out	
5-20				20				3												1				Trip Out	
5-21																				1¼			22¾	Clean BOP Stack	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 29 of 30

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
5-22	24																							Rig Down	Rig Released at 12:00 Noon
5-23	24																							Rig Down	
5-24	24																							Rig Down	
5-25	24																							Rig Down	
5-26	24																							Rig Down	
5-27	24																							Rig Down	
5-28	24																							Rig Down	
5-29	24																							Rig Down	
5-30	24																							Rig Down	
5-31	24																							Rig Down	
6-1	24																							Rig Down	
6-2	24																							Rig Down	
6-3	24																							Rig Down	
6-4	24																							Rig Down	
6-5	24																							Rig Down	

DRILLING TIME ANALYSIS (HOURS) - HUSKY NPR OPERATIONS, INC. INIGOK TEST WELL NO. 1 Page 30 of 30

DATE	RIG UP/RIG DOWN	DRILLING	REAMING	TRIP	DEV. SURVEY	RIG MAINT.	RIG REPAIR	CIRC. & COND. MUD	LOGGING	CASING & CEMENT	W O C	NIPPLE UP/DOWN BOP	TEST BOP	CHANGE BHA	LOST CIRC.	FISHING	CORING	DST	PLUG BACK	SQUEEZE CEMENT	DIR. WORK	W O MAT./EQUIP.	OTHER	Operations at 6:00 a.m.	Comments
6-6	24																							Rig Down	
6-7	24																							Rig Down	
TOTAL HOURS	1170½	210¼		87¾		114		181		58½		296		-0-		159¾		-0-		-0-		1354			
	2872½		2235½		28¾		999		232½		223½		-0-		223		5		15¾		8				



INIGOK TEST WELL No. 1

2713' FSL and 1843' FWL
Sec. 34, T.18N., R.5 W., U.M.

HUSKY OIL *N.P.R. Operations*

NATIONAL PETROLEUM RESERVE in ALASKA

DRILLING TIME CURVE

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations STATE Alaska

WELL Inigok Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling LOCATION 2713' FSL, 1843' FEL SEC 34 TWP 8N RNG 5W

STOCKPOINT Lonely DATE

ENGINEER Douville/Monroe/Rintoul TOTAL DEPTH ft.

CASING PROGRAM: 20 inch at 2594 ft.
13 3/8 inch at 8286 ft.
9 5/8 inch at 12,283 ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Y_p	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
1978-79	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec/ 10 min	Strip □ Meter □	ml API	HTHP @ °F	Cake 32nds	P_m	P_f/M_f	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	
6/7	80	8.5	33																	Mixed gel/gelex, spud mud
6/8	420	8.8	37	11	13	6/12	7.0			2			300	Tr	Tr					Drilled 17 1/2" hole.
6/9	420	9.2	43	12	16	11/27	7.0			2			400	Tr	1/4	6		94		Opened 26" hole to 36".
6/10	520	9.5	58	21	18	7/23	7.0			2			800	Tr	1/4	8		92		Opened hole to 36". Ran 30" csg.
6/11	520	9.5	54	20	17	6/18	7.0			2			800	Tr	1/4	8		92		Cemented 30". WOC.
6/12	885	9.3	39	14	12	6/24	8.5			2			700	20	1/4	6		94		Drilled out 30" shoe.
6/13	1889	9.9	57	26	23	9/37	8.0			2			1000	16	1/2	10		90		Drilled ahead.
6/14	2580	9.9	75	40	30	9/23	7.5			2			750	4	1/2	9		91		
6/15	2625	9.9	77	38	34	9/30	7.5			2			700	Tr	1/2	9		91		Conditioned hole & mud for logs.
6/16	1350	9.9	77	40	35	7/23	8.0			2			600	Tr	1/2	9		91		Ran "g" logs.
6/17	1870	9.9	71	33	29	8/18	7.5			2			550	Tr	1/2	10		90		Opened hole to 26".
6/18	2400	10.0	78	38	31	10/27	7.5			2			500	Tr	1/2	11		89		
6/19	2625	10.5	100	43	57	8/18	7.5			2			400	80	1 1/2	14		86		Conditioned hole for 20" casing.
6/20	2565	10.5	110	57	44	9/27	7.5			2			400	60	1 1/2	14		86		Ran 20" casing. Casing parted.
6/21	2625	10.3	90	48	34	4/11	7.5			2			400	60	1	14		86		Fished for 20" casing
6/22	2565	10.1	99	58	46	5/15	7.5			2			400	60	3/4	11		89		Ran 20" casing.
6/23	2565	10.1	94	50	40	5/13	7.5			2			400	60	3/4	11		89		Ran 20" casing.
6/24	2625	10.1	89	40	30	4/16	7.5			2			320	40	1	12		88		Cemented 20". WOC.
6/26	2625	8.7	37	14	20	6/10	11.0			2			18200	Tr	-	5		95		Converted to KCL-Polymer mud.
6/27	2625	8.7	42	12	20	6/10	11.0			1			31000	Tr	-	6		94		Mixed KCL-Polymer.
6/28	2625	8.7	41	10	18	5/10	11.0			2			31000	Tr	-	6		94		
6/29	2635	8.7	42	12	17	4/6	12.0			2			24000	70	Tr	5		95		Drilled out shoe.
6/30	2860	8.8	38	11	9	2/12	12.0			2			24000	64	1	5		95		Cut Core No. 1.
7/1	3125	9.5	37	10	10	4/16	11.0			2			25800	70	1/2	8		92		Cut Core No. 2.
7/2	3530	9.8	53	17	21	14/42	8.5			3			27000	160	Tr	11		89		Drilled ahead.
7/3	3798	9.7	43	10	25	18/40	9.0			3			26500	210	1/2	10		90		Added 800 bbls thru premix tank.
7/4	4096	9.4	37	10	10	6/27	9.5			2			26000	240	Tr	8		92		Added 800 bbls to system.
7/5	4205	9.4	37	13	24	12/42	9.5			3			26000	280	Tr	8		92		Mixed 800 bbls mud. Added 600.
7/6	4350	9.5	37	10	10	5/25	9.0			2			25000	200	Tr	10		90		Mixed and added 400 bbls.
7/7	4601	9.5	38	10	11	7/32	9.5			2			29000	160	Tr	9		91		Mixed and added 900 bbls.
7/8	4805	9.6	39	11	11	8/34	9.5			2			36000	100	Tr	9		91		Mixed and added 400 bbls.
7/9	5000	9.7	38	10	10	4/22	9.5			2			35500	80	Tr	10		90		Cut Core No. 4.
7/10	5220	9.8	40	12	11	5/25	9.0			2			36000	80	Tr	10		90		Drilled ahead.
7/11	5409	9.9	39	11	12	5/25	10.0			2			37000	60	Tr	11		89		
7/12	5640	9.9	43	18	18	5/18	9.0			2			37000	50	Tr	10		90		

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

3139 Denali Street

COMPANY Husky Oil NPR Operations STATE Alaska

WELL Inigok Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling LOCATION 2713' FSL SEC 34 TWP 8N RNG 5W

STOCKPOINT Lonely DATE ENGINEER Douville/Monroe/Rintoul

CASING PROGRAM: 20 inch at 2594 ft.; 13 3/8 inch at 8286 ft.; 9 5/8 inch at 12,283 ft.

TOTAL DEPTH ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	VISCOSITY PV @ °F	Yp	GELS 10 sec/10 min	pH Strip ☐ Meter ☐	FILTRATION ml API	FILTRATION HTHP @ °F	FILTRATE ANALYSIS Cake 32nds	FILTRATE ANALYSIS Pm	FILTRATE ANALYSIS Pf/Mf	FILTRATE ANALYSIS Cl ppm	FILTRATE ANALYSIS Ca ppm	SAND %	RETORT Solids %	RETORT Oil %	RETORT Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
7/13	5768	9.8	43	14	18	5/17	9.0			2			31000	60	Tr	9		91		
7/14	5884	9.9	46	15	20	7/21	8.5			2			30000	60	Tr	9		91		
7/15	6173	9.9	44	13	22	12/22	8.5			2			28000	60	Tr	9		91		
7/16	6373	10.0	47	12	18	14/35	9.0			2			27000	50	Tr	11		89		Sweco pumps not operating.
7/17	6500	10.1	46	13	18	14/35	8.0			2			33000	60	Tr	11		89		
7/18	6684	10.1	44	10	17	13/40	8.0			2			29000	60	Tr	11		89		
7/19	6820	10.0	44	10	22	10/42	8.0			2			27000	60	Tr	11		89		
7/20	6850	10.1	44	10	20	13/41	8.0			2			29000	40	Tr	11		89		
7/21	7050	10.0	46	12	24	14/29	8.0			3			30000	40	Tr	12		88		
7/22	7064	10.0	44	14	38	12/24	8.0			2			30000	40	Tr	11		88		Cut Core No. 5.
7/23	7268	10.0	40	11	16	3/27	9.8			2			28000	40	Tr	11		89		Sweco pumps not operating.
7/24	7370	9.9	43	13	18	7/32	9.0			2			26000	40	Tr	12		88		Rigged up centrifuge.
7/25	7500	9.9	40	11	14	3/17	8.5			2			25000	40	Tr	12		88		Centrifuge operating.
7/26	7522	9.9	41	11	15	3/21	8.5			2			25000	40	Tr	12		88		
7/27	7600	9.8	41	11	14	6/24	8.5			2			31500	60	Tr	11		89		
7/28	7758	9.7	40	10	10	6/21	8.3			2			28000	60	Tr	9		91		
7/29	7820	9.6	43	10	17	6/24	8.3			2			26500	60	Tr	8		92		
7/30	7990	9.7	40	10	15	7/19	8.3			2			27000	40	Tr	9		91		
7/31	8125	9.6	39	10	14	7/21	8.3			2			28000	40	Tr	8		92		Lost 250-300 bbls due to leak.
8/1	8211	9.6	40	10	15	7/20	8.3			2			26000	40	Tr	8		92		Repaired leak. Clnd sand trap.
8/2	8287	9.6	39	11	13	7/17	8.5			2			27000	40	Tr	8		92		Had wash out in drill string.
8/3	8287	9.6	41	11	14	7/19	8.0			2			25000	40	Tr	9		91		Fished for monel drill collar.
8/4	8315	9.7	44	14	18	11/26	8.5			2			25000	60	Tr	10		90		Conditioned mud for logs.
8/5	8313	9.7	41	12	15	7/17	8.5			2			24500	40	Tr	10		90		Ran logs. Cleaned pits.
8/6	8313	9.7	45	16	18	6/20	8.5			2			24500	80	Tr	10		90		Conditioned mud for 13 3/8".
8/7	8313	9.7	45	15	18	7/24	8.5			2			24500	80	Tr	10		90		
8/8	8313	9.7	40	12	12	6/17	8.0			2			24500	80	Tr	10		90		
8/9	8313	9.6	41	12	14	6/17	8.0			2			28000	Tr	Tr	8		92		
8/10	3600	9.9	34	7	8	3/6	8.0			2			23000	Tr	Tr	10		90		
8/11	8313	9.8	39	8	8	2/6	8.0			2			23000	Tr	Tr	10		90		
8/12	8313	9.7	38	8	7	2/6	8.0			2			23000	Tr	Tr	8		92		
8/13	8313	9.6	38	7	7	2/5	8.0			2			23000	Tr	Tr	7		93		
8/14	8313	9.6	38	8	5	1/5	8.5			2			23000	100	Tr	8		92		
8/15	8341	9.8	40	8	7	2/6	12.0			2			21000	1600	1/4	9		91		Had cement contamination.
8/16	8500	9.8	35	8	5	3/10	12.0			3			20000	400	Tr	9		91		Washout in drill pipe.

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD — 3139 Dennli Street

COMPANY Husky Oil NPR Operations — STATE Alaska

WELL Inigok Test Well No. 1 — COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling — LOCATION 2713' FSL 1843FEL — SEC 34 TWP 8N RNG 5W

STOCKPOINT Lonely — DATE — ENGINEER Douville/Monroe/Rintoul

CASING PROGRAM: 20 inch at 2594 ft.
13 3/8 inch at 8286 ft.
9 5/8 inch at 12,283 ft.

TOTAL DEPTH ____ ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	PV @ °F	Yp	GELS 10 sec/10 min	pH Strip Ø Meter Ø	FILTRATION ml API	HTHP @ °F	Cake 32nd.	FILTRATE ANALYSIS Pm	Pf/Mf	Cl ppm	Ca ppm	SAND %	RETORT Solids %	Oil %	Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
8/17	8851	10.3	40	14	14	3/10	9.5			2			23000	400	Tr	11		89		Cut Core No. 7.
8/18	9028	10.3	39	13	8	2/10	9.5			2			26000	450	Tr	11		89		
8/19	9338	10.5	58	16	21	8/18	9.0			2			29000	300	Tr	16		84		
8/20	9348	10.5	59	15	20	10/20	9.2			2			29500	350	Tr	15		85		Cut Core No. 8.
8/21	9458	10.4	47	15	15	10/25	8.0			2			27000	400	Tr	15		85		Cut Core No. 9.
8/22	9720	10.2	59	11	27	18/46	8.0			2			27000	350	Tr	16		84		
8/23	9890	10.2	64	15	28	24/66	9.0			2			26500	400	Tr	17		83		
8/24	10000	10.2	52	15	16	9/39	8.5			2			26000	440	Tr	16		84		
8/25	10150	10.2	59	13	20	12/38	9.0			2			26500	380	Tr	14		86		
8/26	10250	10.0	55	17	13	9/32	10.0			2			27000	200	Tr	13		87		
8/27	10303	10.3	58	20	20	8/32	9.5			2			27000	180	Tr	14		86		Shale sloughing.
8/28	10400	10.3	46	12	13	6/26	10.0			2			26000	200	Tr	14		86		Cut Core No. 10.
8/29	10590	10.4	48	13	17	8/38	10.0			2			26000	160	Tr	15		85		
8/30	10746	10.4	52	14	17	6/34	10.5			2			26000	180	Tr	15		85		
8/31	10815	10.5	62	14	20	7/36	10.0			2			26000	160	Tr	16		84		
9/1	10992	10.5	68	14	21	8/38	10.5			2			26000	200	Tr	16		84		
9/2	11008	10.5	66	14	22	10/37	10.5			2			26000	200	Tr	16		84		Cut Core No. 11.
9/3	11112	10.7	65	13	21	8/41	10.0			2			28000	200	Tr	17		83		Shale sloughing.
9/4	11260	10.7	69	14	23	9/42	9.5			2			29000	200	Tr	17		83		
9/5	11475	10.7	63	14	22	7/45	10.5			2			28000	200	Tr	17		83		
9/6	11695	10.6	66	19	31	16/52	10.5			2			29500	200	Tr	17		83		
9/7	11705	10.6	65	20	28	15/52	10.0			2			30000	160	Tr	17		83		
9/8	11718	10.8	60	18	22	10/40	9.5			2			30000	200	Tr	17		83		Cut Core No. 12.
9/9	11850	10.8	70	25	30	20/68	9.0			2			39000	400	Tr	18		82		Increased chlorides.
9/10	11975	10.8	52	16	21	18/58	11.8			2			41000	380	Tr	18		82		
9/11	12158	10.9	52	18	22	18/58	8.5			2			41000	400	Tr	18		82		
9/12	12273	11.0	50	17	21	16/57	8.5			2			41500	380	Tr	18		82		
9/13	12290	11.0	80	27	24	16/52	8.5			2			39500	420	Tr	18		82		Cut Core No. 13.
9/14	12311	11.0	70	19	20	15/50	8.5			2			39500	400	Tr	18		82		Conditioned mud for E logs.
9/15	12311	11.0	61	19	16	9/45	8.5			2			39500	400	Tr	18		82		Logging.
9/16	12311	11.0	70	20	24	10/35	8.5			2			39000	400	Tr	18		82		Logging.
9/17	12311	11.0	70	20	25	11/49	8.5			2			39000	350	Tr	18		82		Conditioned hole & mud for csg.
9/18	12311	11.0	60	19	14	9/41	8.5			2			39000	350	Tr	19		81		Ran 9 5/8" casing.
9/19	12261	11.0	55	18	12	9/38	8.5			2			36000	600	1/2	20		80		Cemented 9 5/8" casing.
9/20	12261	10.6	46	16	8	4/12	9.5			2			34000	400	Tr	18		82		Waited on cement.

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

3139 Denali Street

COMPANY Husky Oil NPR Operations — STATE Alaska

WELL Inigok Test Well No. 1 — COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling — LOCATION 2713' FSL 1843' FEL — SEC 34 TWP 8N RNG 5W

STOCKPOINT Lonely — DATE — ENGINEER Douville/Monroe/Rintoul

CASING PROGRAM: 20 inch @ 2594 ft.
13 3/8 inch @ 8286 ft.
9 5/8 inch @ 12,283 ft.

TOTAL DEPTH ____ ft.

DATE	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 32nd	FILTRATE ANALYSIS Pm	Pf/Mf	Cl ppm	Ca ppm	SAND %	RETORT Solids %	Oil %	Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
9/21	12311	10.6	46	16	8	4/12	9.5			2			34000	400	Tr	18		82		
9/22	12311	10.6	46	16	10	3/10	9.0			2			34000	400	Tr	16		84		
9/23	12311	10.6	46	16	10	3/10	9.0			2			34000	400	Tr	16		84		
9/24	Pit	9.4		25	25	7/5										8	87	5		Arctic pack.
9/25	Pit	9.2														8	86	6		Arctic pack.
9/26	12311	10.2	42	12	6	2/6	8.0			2			30000		Tr	16		84		KCl-Polymer
9/27	12283	10.8	40	12	7	1/4	9.5			2			500	20	Tr	11		89		Converted to lignosulfonate mud.
9/28	12345	10.8	43	23	5	1/4	11.5			2			1900	400	1/2	12		88		Cement contamination.
9/29	12450	10.8	45	17	7	2/4	11.5			2			1800	320	1/2	12		88		
9/30	12512	10.8	46	18	7	2/4	11.0			2			1700	280	1/4	12		88		Cut Core No. 14.
10/1	12588	10.8	46	18	7	2/5	11.0			2			1800	300	1/4	12		88		
10/2	12641	10.8	44	17	6	2/5	11.0			2			1800	320	1/4	12		88		
10/3	12683	10.8	44	18	6	2/4	11.0			2			1800	320	Tr	12		88		Lost cone in hole.
10/4	12683	10.8	47	26	9	1/3	11.0			2			1800	340	Tr	12		88		
10/5	12725	10.9	45	30	11	1/4	11.0			2			1800	300	Tr	12		88		Cut Core No. 15.
10/6	12725	11.0	48	32	15	2/5	11.0			2			1800	300	Tr	12		88		Cut Core No. 15.
10/7	12785	11.0	60	43	12	4/4	11.5			2			1800	220	Tr	12		88		
10/8	12800	11.0	56	38	8	2/4	11.5			2			1800	160	Tr	11		89		
10/9	12850	10.9	32	10	10	1/4	11.5			2			1400	160	Tr	11		89		
10/10	12912	10.7	47	30	12	1/2	11.5			2			1400	160	Tr	11		89		
10/11	13014	10.6	46	29	10	1/4	11.5			2			1400	140	Tr	11		89		
10/12	13020	10.7	44	22	8	1/4	10.5			2			1500	140	Tr	11		89		
10/13	13107	10.6	43	19	7	1/4	10.5			2			1500	140	Tr	11		89		
10/14	13143	10.7	43	20	8	2/5	11.0			2			1500	180	Tr	11		89		
10/15	13163	10.7	49	20	7	1/5	11.0			2			1500	180	Tr	11		89		
10/16	13207	10.7	47	18	7	1/4	11.0			2			1500	120	Tr	11		89		
10/17	13244	10.7	52	19	8	2/5	11.0			2			1500	120	Tr	11		89		
10/18	13303	10.7	50	28	8	4/6	11.0			2			1400	80	Tr	11		89		
10/19	13357	10.8	48	21	7	4/6	11.0			2			1500	120	Tr	11		89		
10/20	13388	10.7	54	21	8	4/6	11.0			2			1600	120	Tr	11		89		
10/21	13455	10.8	48	19	7	3/6	11.0			2			1600	140	Tr	12		88		
10/22	13480	10.8	48	23	7	4/7	10.5			2			1600	160	Tr	12		88		
10/23	13508	10.8	48	19	5	3/6	10.0			2			1600	160	Tr	12		88		
10/24	13525	10.8	48	17	4	2/5	10.5			2			1600	140	Tr	12		88		Cut Core No. 16.
10/25	13593	10.7	46	20	5	3/6	3.9			2			1600	160	Tr	12		88		

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations STATE Alaska CASING PROGRAM: 20 inch 2594 ft.

WELL Inigok Test Well No. 1 COUNTY North Slope Borough 13 3/8 inch 8286 ft.

CONTRACTOR Nabors Alaska Drilling LOCATION 2713' FSL SEC 34 TWP 8N RNG 5W 9 5/8 inch 12,283 ft.

STOCKPOINT Lonely DATE ENGINEER 1843' FEL Douville/Monroe/Rintoul TOTAL DEPTH ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS				SAND	RETORT			CEC	REMARKS AND TREATMENT
	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec/10 min Strip ☐ Motor ☐		ml API	HTHP ? °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, me/ml	
10/26	13659	10.7	47	18	5	3/6	10.5			2			1600	160	Tr	12		88	25	
10/27	13659	10.7	52	18	5	3/6	10.5			2			1600	150	Tr	12		88		
10/28	13695	10.7	44	15	5	2/5	10.0			2			1500	150	½	12		88		
10/29	13769	10.7	41	18	5	2/6	10.0			2			1500	150	½	12		88		
10/30	13760	10.6	42	18	4	2/5	10.0			2			1500	150	Tr	11		89		
10/31	13790	10.7	40	20	5	3/6	10.0			2			1300	150	Tr	11		89		
11/1	13831	10.7	43	20	4	3/6	10.0			2			1300	150	Tr	11		89		
11/2	13875	10.8	42	20	5	3/6	10.0			2			1300	150	Tr	12		88		Cut Core No. 17
11/3	13880	10.8	43	20	5	3/6	9.5			2			1300	80	Tr	12		88		
11/4	13942	10.8	46	19	6	3/6	10.0			2			1400	40	Tr	12		88		
11/5	13978	10.8	45	20	6	3/9	10.0			2			1400	Tr	Tr	12		88		
11/6	14020	10.8	42	18	8	3/7	9.5			2			1400	Tr	Tr	12		88		
11/7	14066	10.8	43	17	5	3/7	10.0			2			1300	Tr	½	12		88		Cut Core No. 18
11/8	14130	10.9	41	20	4	2/6	10.5			2			1300	Tr	½	12		88		
11/9	14177	10.9	40	20	4	3/7	10.0			2			1300	Tr	Tr	12		88		
11/10	14230	10.9	42	20	4	2/6	10.0			2			1200	Tr	Tr	12		88		
11/11	14275	11.1	42	22	4	2/8	10.5			2			1100	Tr	Tr	13		87		Raised weight to 11.0 ppg
11/12	14367	11.1	45	26	6	3/7	10.0			2			1100	Tr	Tr	13		87		
11/13	14440	11.1	40	24	10	3/7	10.0			2			1100	Tr	Tr	13		87		
11/14	14570	11.0	49	30	12	5/9	10.5			2			1100	Tr	Tr	13		87		
11/15	14598	11.1	55	28	13	5/12	10.5			2			1200	Tr	Tr	13		87		
11/16	14620	11.0	53	23	10	5/11	9.4			2			1200	Tr	Tr	13		87		
11/17	14755	11.0	47	21	10	5/11	9.8			2			1200	Tr	Tr	13		87		
11/18	14823	11.0	55	26	12	6/12	9.9			2			1200	Tr	Tr	14		86		
11/19	14870	11.0	45	21	9	5/10	9.7			2			1200	Tr	Tr	14		86		
11/20	15000	11.0	44	21	9	5/9	9.7			2			1200	Tr	Tr	14		86		
11/21	15060	11.0	48	20	10	5/10	9.8			2			1200	Tr	Tr	14		86		
11/22	15165	11.0	45	22	10	5/10	9.8			2			1200	Tr	Tr	14		86		
11/23	15185	11.1	59	35	15	7/12	9.7			2			1200	Tr	Tr	14		86		
11/24	15200	11.1	50	22	10	6/10	9.5			2			1200	Tr	Tr	14		86		Cut Core No. 19
11/25	15226	11.1	51	20	8	5/9	9.5			2			1200	Tr	Tr	14		86		
11/26	15260	11.1	50	20	10	5/9	9.5			2			1200	Tr	Tr	16		84		Wash out in drill pipe
11/27	15315	11.1	47	19	9	5/8	9.4			2			1200	Tr	Tr	14		86		
11/28	15380	11.1	50	22	9	5/10	10.1			2			1200	Tr	Tr	14		86		
11/29	15530	11.1	48	23	9	5/10	10.0			2			1200	Tr	Tr	14		86		

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

3139 Denali Street

COMPANY Husky Oil NPR Operations STATE Alaska

WELL Inigok Test WEll No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling LOCATION 2713 FSL 1843' FEL SEC 34 TWP 8N RNG 5W

STOCKPOINT Lonely DATE ENGINEER Douville/Monroe/Rintoul

CASING PROGRAM: 20 inch @ 2594 ft.
13 3/8 inch @ 8286 ft.
9 5/8 inch @ 12,283 ft.

TOTAL DEPTH ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	PV @ °F	Yp	GELS 10 sec/10 min	pH Strip (1 decimal)	FILTRATION ml API	HTHP @ °F	Cake 32nds	Pm	Pf/Mf	FILTRATE ANALYSIS Cl ppm	Ca ppm	%	SAND %	RETORT Solids %	Oil %	Water %	CEC lbs/bbl	REMARKS AND TREATMENT
11/30	15558	11.1	50	23	10	5/11	9.8	3.8		2			1200	Tr	Tr	14		86			
12/1	15650	11.1	49	22	10	5/11	9.6	3.7		2			1200	Tr	Tr	15		85			
12/2	15668	11.1	49	17	9	4/9	9.6	3.8		2			1200	Tr	Tr	14		86			
12/3	15749	11.1	41	16	8	4/8	9.5	3.7		2			1200	Tr	Tr	14		86			
12/4	15900	11.1	44	19	9	5/9	9.5	3.7		2			1200	Tr	Tr	14		86			
12/5	15965	11.1	49	21	10	5/10	9.5	3.7		2			1200	Tr	Tr	14		86			
12/6	16048	11.1	48	21	12	3/10	10	3.2		2			1800	120	Tr	14		86			
12/7	16185	11.1	47	21	10	3/9	10	3		2			1500	120	Tr	14		86			
12/8	16195	11.1	55	27	11	3/12	9.5	3		2			1500	120	1.4	15		85			Coring.
12/9	16243	11.0	46	20	7	3/8	10	2.6		2			1400	120	Tr	13		87			
12/10	16365	11.1	45	20	7	3/9	10	2.8		2			1500	100	Tr	13		87			
12/11	16452	11.1	47	23	11	3/10	10	2.8		2			1800	120	Tr	14		86			
12/12	16516	11.1	47	21	10	3/10	10	3		2			1800	100	Tr	14		86			
12/13	16620	11.1	47	21	11	3/10	10	3		2			1700	120	Tr	14		86			
12/14	16647	11.1	48	21	12	3/13	10	2.6		2			2000	160	Tr	14		86			
12/15	16753	11.0	46	21	10	2/11	11.5	3.2		2			2500	160	Tr	13		87			
12/16	16792	11.1	47	18	11	2/13	10.5	3.4		2			2000	120	Tr	13		87			
12/17	16885	11.1	49	23	11	3/13	11.5	3.4		2			2000	200	Tr	14		86			
12/18	16902	11.1	51	21	11	2/14	11	3.6		2			2000	200	Tr	14		86			
12/19	17000	11.0	48	22	12	3/14	11	3.2		2			2000	120	Tr	14		86			
12/20	17053	11.1	47	20	10	2/13	11	3.4		2			1500	100	Tr	13		87			
12/21	17083	11.1	47	21	9	2/11	11	3.2		2			1500	80	Tr	13		87			Coring.
12/22	17160	11.0	46	18	8	2/8	11	3		2			1500	80	Tr	13		87			
12/23	17283	11.1	48	16	8	2/10	11	4		2			1800	80	Tr	13		87			
12/24	17346	11.1	48	16	9	2/11	11	3.6		2			1500	80	Tr	13		87			
12/25	17403	11.1	48	20	10	3/12	11	3.8		2			1600	80	Tr	14		86			
12/26	17500	11.1	47	17	9	2/10	11	4		2			1500	120	Tr	13		87			
12/27	17571	11.2	52	29	14	3/17	10.5	4.8		2			1200	80	Tr	15		85			Circulating to log.
12/28	17571	11.3	47	23	15	4/18	11	7.2		2			1500	Tr	Tr	15		85			Increased density to 11.4.
12/29	17571	11.4	45	21	10	1/10	10.5	5		2			5000	280	Tr	14		86			Raised weight to 11.5.
12/30	17571	11.7	42	20	10	1/8	11.8	5		2			1200	140	Tr	14		86			Raised weight to 11.8.
12/31	17571	11.6	60	30	34	8/25	9.8	6		2			1000	140	Tr						
1979																					
1/1	17571	11.6	49	29	10	2/12	12.5	3.6		2			800	120	Tr						Lost returns.

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

3139 Denali Street

COMPANY Husky Oil NPR Operations STATE Alaska

WELL Inigok Test WEll No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling LOCATION 2713' FSL SEC 34 TWP 8N RNG 5W

STOCKPOINT Lonely DATE ENGINEER 1843' FEL Douville/Monroe/Rintoul

CASING PROGRAM: 20 inch at 2594 ft.
13 3/8 inch at 8286 ft.
9 5/8 inch at 12,283 ft.

TOTAL DEPTH ft.

DATE	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 Pm	FILTRATE Pf/Mf	FILTRATE ANALYSIS Cl ppm	FILTRATE ANALYSIS Ca ppm	SAND %	RETORT Solids %	RETORT Oil %	RETORT Water %	CEC Mud, me/ml	REMARKS AND TREATMENT
1/2	17571	11.5	43	20	6	1/8	11.5	3.2		2			1100	80	Tr					Regained circulation. H_2S.
1/3	17571	11.5	44	20	8	1/6	11.5	4.2		2			1000	80	Tr	14		86		
1/4	17571	11.6	45	18	8	1/7	11.5	4		2			1000	80	Tr	14		86		
1/5	17571	11.5	42	20	7	1/8	10.5	4		2			1200	80	Tr	15		85		
1/6	17571	11.6	44	18	7	1/8	12	4.4		2			3000	80	Tr	15		85		
1/7	17571	11.6	43	20	8	1/8	11.5	4.2		2			3000	80	Tr	15		85		
1/8	17571	11.6	47	19	11	1/13	12.2	4.0		2			3000	80	Tr	15	Tr	85		
1/9	17571	11.6	56	25	11	2/15	12	3.8		2			2800	80	Tr	15	Tr	85		
1/10	17571	11.6	55	25	23	4/28	11.5	4.6		2			1800	80	Tr	16	Tr	84		
1/11	17571	11.6	50	23	15	2/18	11.5	4.2		2			1500	80	Tr	16	Tr	84		
1/12	17571	11.5	47	18	9	1/15	12.5	5		2			1800	40	Tr	15	Tr	85		
1/13	17571	11.9	47	18	9	1/17	12.5	5.6		2			1200	36	Tr	16	Tr	84		
1/14	17571	12.4	49	22	13	2/17	12	6.2		2			1000	32	Tr	18		84		
1/15	17571	12.7	45	23	7	1/15	11.8	9		2			1200	90		16		84		
1/16	17571	12.6	46	20	6	1/15	12.5	7		2			5000	200	Tr	16	Tr	84		
1/17	17571	12.6	43	16	10	1/8	12.5	7.8		2			5000	120	Tr	16	Tr	84		
1/18	17571	12.6	45	24	7	1/12	12	8		2			5500	120	Tr	16	Tr	84		
1/19	17571	12.6	44	30	7	2/12	12.5	8		2			3600	160	Tr	17	Tr	83		
1/20	17571	12.6	50	32	8	2/20	12.2	6		2			2600	120		16	Tr	84		
1/21	17571	12.6	46	31	9	3/24	11.5	7.2		2			1300	120	Tr	17		83		
1/22	17571	12.5	43	25	7	1/17	11.6	7.7		2			2000	120	Tr	16		84		
1/23	17571	12.6	50	29	6	3/14	11.6	5.8		2			1800	80		16		84		
1/24	17571	12.6	56	31	16	3/21	11.6	6		2			3500	80		16		84		
1/25	17571	12.6	60	32	18	6/26	11.8	4.8		2			2750	60		16		84		
1/26	17571	12.6	45	30	8	2/8	12.3	4.0		2			3100	80		16		84		
1/27	17571	12.6	47	28	11	4/12	12.5	5.6		2			3000	80		16		84		
1/28	17571	12.4	48	20	14	4/12	11	7		2			3200	80		16		84		
1/29	17571	12.4	64	35	24	14/32	10.5	6.2		2			3100	80		16		84		
1/30	17571	12.4	65	32	18	10/20	12.5	6.4		2			3100	80		15		85		
1/31	17571	12.3	52	24	24	9/16	12.3	5.6		2			2800	80		14		86		
2/1	17571	12.2	46	20	14	8/14	12.4	6		2			2800	80	Tr	14		86		
2/2	17571	12.2	60	30	18	10/18	12.2	7.2		2			3000	80	Tr	14		86		
2/3	17571	12.2	55	23	21	9/15	12.0	5.8		2			2700	80	Tr	14		86		
2/4	17571	12.4	48	24	11	2/10	11.4	3.4		2			2700	80	Tr	13		87		
2/5	17571	12.4	54	28	18	3/18	11.8	3.6		2			2700	80	Tr	13		87		

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

3139 Denali Street

COMPANY Husky Oil NPR Operations STATE Alaska CASING PROGRAM: 20 inch at 2594 ft.

WELL Inigok Test Well No. 1 COUNTY North Slope Borough 13 3/8 inch at 8286 ft.

CONTRACTOR Nabors Alaska Drilling LOCATION 2713' FSL SEC 34 TWP 8N RNG 5W ____ inch at ____ ft.

STOCKPOINT Lonely DATE ____ ENGINEER 1843' FEL Douville/Monreo/Rintoul TOTAL DEPTH ____ ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	VISCOSITY PV @ °F	Yp	GELS 10 sec / 10 min	pH	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
2/6	17571	12.4	56	28	18	3/16	11.8	3.8		2			2700	80	Tr	13		87		
2/5	17571	12.4	54	28	18	3/18	11.8	3.6		2			2700	80	Tr	13		87		
2/6	17571	12.4	56	28	18	3/16	11.8	3.8		2			2700	80	Tr	13		87		
2/7	17571	12.4	48	22	13	3/10	11.8	5.6		2			2600	80	1/4	14		86		
2/8	17571	12.3	42	22	6	2/8	11.6	4.8		2			3000	60	1/4	15		85		
2/9	17571	12.4	43	22	12	2/10	12.2	5		2			4000	20	1/4	17		83		
2/10	17571	12.4	40	25	12	4/26	12.5	6.5		2			6500	60	1/4	17		83		
2/11	17571	12.4	49	18	29	12/42	11.5	6		2			8000	60	1/2	18		82		
2/12	17571	12.1	44	22	18	3/24	12	4.5		2			11000	120	1/4	16		84		Lost circ at 16,823', Reduced MW
2/13	17571	12.2	45	26	23	5/22	12.7	4.0		2			11000	120	1/4	16		84		
2/14	17571	12.2	55	24	13	10/44	12.7	5.8		2			10000	120	1/4	17		83		
2/15	17571	12.2	58	24	38	12/50	12.7	6.5		3			10000	120	1/4	17		83		
2/16	17571	12.2	60	24	40	12/50	12.7	6.5		3			10000	60	1/4	17		83		
2/17	17571	12.2	44	17	23	7/27	12.4	6.5		2			17000	12	1/4	17		83		
2/18	17571	12.2	44	20	14	2/10	12.2	5		2			10000	60	1/4	17		83		
2/19	17571	12.2	46	24	16	2/14	12.2	5		2			10000	80	1/4	17		83		
2/20	17571	12.3	48	20	18	2/10	12	6.4		2			12000	60	1/4	17		83		
2/21	17571	12.6	50	24	18	5/18	12.2	6.4		3			12000	60	1/4	17		83		Lost circ with 12.7 mud.
2/22	17571	12.6	43	18	14	8/10	12.4	5.2		2			14000	80	1/4	18		82		Staging in hole.
2/23	17571	12.6	45	19	22	12/22	12.8	6.0		2			14000	60	Tr	18		82		
2/24	17571	12.8	44	23	12	10/12	10.4	4		2			10000		1/4	19		81		
2/25	17571	13	42	21	17	10/12	10.4	3.6		2			12000		1/2	21		79		
2/26	17571	13	42	12	19	14/22	10.4	4.2		2			10000		3/4	21		79		
2/27	17571	12.8	48	18	20	15/15	11.5	3.4		2			10000		3/4	21		79		
2/28	17571	12.8	47	19	16	2/12	11.5	4		2			12000		3/4	22		78		
3/1	17571	12.8	40	18	9	3/8	12	3.4		2			14000		3/4	21		79		
3/2	17571	12.8	47	18	10	8/15	11.2	3.6		2			12000		3/4	21		79		
3/3	17571	12.8	44	18	12	4/14	11	3.6		2			12000		3/4	21		79		
3/4	17571	12.8	41	15	8	2/6	11.4	3.6		2			14000		3/4	21		79		
3/5	17571	12.8	41	15	8	2/6	11.6	4		2			16000		1/4	20		80		
3/6	17571	12.7	40	11	10	2/4	11.2	4.6		2			16000		1/4	20		80		
3/7	17571	12.5	44	19	7	2/10	10.6	5		2			20000		Tr	20		80		
3/8	17571	12.4	43	17	9	2/12	10.5	5.4		2			3000		Tr	20		80		
3/9	17571	12.4	43				10.2	5		2			3000							
3/10	17571	12.4	43	18	7	2/10	10.3	5.2		2			35000		Tr	20		80		

ARCTIC DRILLING SERVICES

3139 Denali Street

DRILLING MUD RECORD

COMPANY Husky Oil NPR Operations STATE Alaska CASING PROGRAM: 20 inch at 2594 ft.

WELL Inigok Test Well NO. 1 COUNTY North Slope Borough 13 3/8 inch at 8286 ft.

CONTRACTOR Nabors Alaska Drilling LOCATION 2713' FSL SEC 34 TWP 8N RNG 5W 9 5/8 inch at 12,283 ft.

STOCKPOINT Lonely DATE ENGINEER 1843' FEL Douville/Monroe/Rintoul TOTAL DEPTH ft.

DATE	DEPTH	WEIGHT	VISCOSITY		Yp	GELS	pH	FILTRATION			FILTRATE ANALYSIS			SAND	RETORT			CEC	REMARKS AND TREATMENT
	feet	lb/gal	Sec API @ °F	PV @ °F		10 sec/10 min Strip ☐ Motor ☐		ml API	HTHP @ °F	Cake 32nds	Pm	Pf/Mf	Cl ppm	Ca ppm	%	Solids %	Oil %	Water %	Mud, lbs/bbl	
3/11	17571	12.4	41	12	6	1/6	11.5	4.6		2			4500	220	1/4	20		80		
3/12	17571	12.3	40	13	7	1/6	11.5	4.8		2			5000	240	1/4	20		80		
3/13	17571	12.7	44	18	7	1/8	11.5	10		2			16000	300	1/4	20		80		
3/14	17571	12.5	46	16	10	2/12	11.2	11		2			15000	200	1/4	20		80		
3/15	17571	12.5	46	19	10	2/18	11.2	13		2			18000	200	1/4	20		80		
3/16	17571	13.2	46	21	8	1/9	11.2	6		2			23000	200	Tr	22		78		
3/17	17600	13.2	52	22	11	2/16	10.2	6		2			14000	200	1/4	22		78		
3/18	17640	13.5	65	31	22	12/52	10	14		2			1000	280	1/4	25		75		Treating mud for H_2S.
3/19	17679	13.5	50	24	10	3/31	10	14		2			1000	280	1/4	26		74		
3/20	17773	13.8	52	31	20	11/38	10	8.2		2			1000	400	Tr	28		72		
3/21	17786	14.5	48	28	15	2/23	12.5	8		2			1000	200	Tr	26		74		
3/22	17786	16.0	51	39	20	4/31	12.4	5.6		2			1000	Tr	Tr	32		68		Increasing mud wt to control H_2S
3/23	17829	16.0	46	44	16	3/24	11.8	7.2		2			1000	Tr	Tr	31		69		
3/24	17853	16.0	55	42	20	6/27	11.5	4.8		2			1000	Tr	Tr	32		68		
3/25	17887	16.4	50	40	20	4/23	11	3.4		2			56000	Tr	Tr	32		68		
3/26	17945	16.4	48	36	20	4/20	11	2.5		2			60000	Tr	Tr	32		68		
3/27	17982	16.4	46	30	14	3/21	11	2.4		2			60000	Tr	1/2	32		68		
3/28	18048	16.7	47	30	17	4/24	11	2.2		2			62000	Tr	1/4	32		68		
3/29	18076	16.7	46	37	13	4/25	11.2	2.8		1.8			60000	Tr	1/4	32		68		
3/30	18091	16.7	46	36	11	6/28	11	2.4		2			60000	Tr	1/4	26		74		
3/31	18140	16.7	46	24	19	4/22	11.5	2.8		2			60000	Tr	1/4	32		68		
4/1	18185	16.7	46	26	15	3/20	11.3	3		2			60000	Tr	1/2	33		67		
4/2	18247	16.7	43	23	21	6/22	11.6	2.8		2			58000	Tr	1/2	33		67		
4/3	18300	16.6	36	18	9	3/16	11	3.2		2			56000	Tr	3/4	33		67		
4/4	18319	16.7	43	25	16	2/10	10.4	3.2		2			56000	Tr	3/4	33		67		
4/5	18392	16.8	43	22	23	4/15	10.4	3.8		2			54000	Tr	1/2	33		67		
4/6	18405	16.8	42	24	21	3/15	10.2	3.6		2			54000	Tr	1/2	33		67		
4/7	18455	16.6	41	23	25	7/15	10.3	3.2		2			54000	Tr	1/2	34		66		
4/8	18490	16.5	49	25	30	8/12	9.8	4		2			54000	Tr	1/2	34		66		
4/9	18586	16.8	43	22	18	4/10	11.4	3.6		2			54000	Tr	1/2	33		67		
4/10	18640	16.7	46	26	30	8/20	10.8	3.4		2			54000	Tr	1/2	34		66		
4/11	18694	16.7	43	20	24	5/19	10.4	3.6		2			54000	Tr	1/4	34		66	17	
4/12	18758	16.7	40	18	14	4/14	10.7	3.8		2			52000	0	1/2	34		66	16	
4/13	18798	16.7	44	22	10	5/15	10.9	4.3		2			50000	0	1/4	34		66	15.5	
4/14	18842	16.7	42	19	11	4/26	11.2	4.4		2			50000	0	1/4	33		67	15.5	

ARCTIC DRILLING SERVICES

DRILLING MUD RECORD

3139 Denali Street

COMPANY Husky Oil NPR Operations STATE Alaska

WELL Inigok Test Well No. 1 COUNTY North Slope Borough

CONTRACTOR Nabors Alaska Drilling LOCATION 2713' FSL 1843' FEL SEC 34 TWP 8N RNG 5W

STOCKPOINT Lonely DATE ENGINEER Douville/Monroe/Rintoul

CASING PROGRAM: 20 inch at 2594 ft.
13 3/8 inch at 8286 ft.
9 5/8 inch at 12,283 ft.

TOTAL DEPTH ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec API @ °F	PV @ °F	Yp	GELS 10 sec/10 min	pH Strip Ø Meter Ø	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	18866	16.7	41	19	9	4/19	11	4.1		2			60000	0	1/4	33		67	15.5	
4/16	18944	16.7	41	19	10	5/25	11.1	4.5		2			60000	0	1/2	33		67	15	
4/17	18953	16.7	44	18	12	5/29	11.5	4.2		2			56000	0	3/4	33		67	16	
4/18	18990	16.7	48	30	15	5/36	11	4.2		2			59000	Tr	1/2	34		66	17.5	
4/19	19031	16.7	47	29	18	5/35	11	4.5		2			60000	Tr	1/2	32		68		
4/20	19047	16.7	50	34	20	5/37	11.4	4		2			62000	Tr	1/2	33		67	20	
4/21	19112	16.7	45	31	13	4/26	10.8	3.4		2			61000	Tr	1/2	33		67	15	
4/22	19112	16.7	45	33	13	4/28	10.8	3.2		2			61000	Tr	1/4	33		67		
4/23	19172	16.9	46	32	17	5/26	10.8	3.0		2			60000	Tr	1/2	33		68	15	
4/24	19200	16.9	46	36	18	4/24	10.8	3.4		2			62000	Tr	1/4	33		68		
4/25	19242	17.0	47	34	20	4/26	10.5	3.2		2			62000	Tr	1/4	34		66		
4/26	19274	16.9	45	35	11	2/14	11.4	3.8		2			61000	Tr	1/2	34		66		
4/27	19274	16.9	47	39	17	4/22	11.5	4		2			61000	Tr	1/2	34		66		
4/28	19278	16.9	45	38	10	3/17	11.5	3.2		2			61000	Tr	1/2	34		66		
4/29	19361	16.9	47	31	15	3/18	11	3.5		2			61000	Tr	1/2	33		67		
4/30	19372	16.9	47	34	18	5/24	11	3.5		2			61000	Tr	1/2	34		66		
5/1	19417	17	48	40	23	5/30	10.8	3.6		2			61000	Tr	1/2	34		66		
5/2	19459	17	46	40	20	4/22	11	3.5		2			61000	Tr	1/2	34		66		
5/3	19554	17	46	38	12	2/11	11.2	3.0		2			62000	Tr	1/2	34		66		
5/4	19589	17	48	40	20	3/21	10.8	3.4		2			64000	Tr	1/2	34		66		
5/5	19620	17	46	38	11	2/14	11	4.2		2			61000	Tr	1/2	34		66		
5/6	19748	17	48	36	18	4/21	11	3.2		2			63000	Tr	1/2	34		66		
5/7	19784	17	46	36	12	2/18	11.2	3.4		2			62000	Tr	1/2	34		66	15	
5/8	19870	17	48	34	17	3/24	11	3.2		2			62000	Tr	1/2	34		66		
5/9	19900	17	50	33	17	4/24	10.8	3		2			63000	Tr	1/2	33		67		
5/10	19988	17	47	38	15	2/20	10.8	3.6		2			60000	Tr	1/2	34		66		
5/11	12988	16.5	47	23	11	4/21	10.5	3.2		2			60000	Tr	1/2	32		68		
5/12	20085	17.1	49	35	24	10/20	10.5	3.6		2			63000	Tr	1/2	34		66		
5/13	20091	17.1	48	34	23	8/20	10.5	3.6		2			60000	Tr	1/2	34		66		
5/14	20091	17.1	52	36	25	10/22	10.5	3.8		2			60000	Tr	1/2	34		66		
5/15	20091	17.1	47	30	18	8/16	10.5	3.8		2			62000	Tr	1/2	35		65		
5/16	20100	17.1	50	32	22	10/20	10.5	4.0		2			61000	Tr	1/2	35		65		
5/17	20102	16.9	46	30	18	6/15	10.0	4.0		2			60000	Tr	1/2	35		65		
5/18	20102	17.0	43	26	15	6/12	10.0	4.2		2			60000	Tr	1/2	35		65		

BIT RECORD

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

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Reserve	Inigok Test Well No. 1	34	8 North	5 West		

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 (000 LBS)	ROTARY R P M	VERT DEV	PUMP PRESS	PUMPS No	Liner	SPM	MUD Wt	Vis	DULL CODE T	B	G	REMARKS FORMATION, CIRC FLUID, ETC	DATE
1	17½	Reed	Y11J	100295	16	16	16	520	410	11.25	11.25	36.4	25	120	0	500	2	7½	32	9.2	47	1	1	I		
HO1	26	STC		427	16	16	16	520	410	3.75			15/20	90		500									Opening hole.	
HO2	36	STC		101650				520	410	7.5															Opening hole.	
HO3	36	STC		103899				520																		
2	17½	Sec	S3SJ	619181	13	14	14	1456	936	14.5	25.75	64.5	30	150	1°	1500	2	7½	36	9.5	55	4	3	I		
3	17½	Sec	S3SJ	780448	16	16	16	2014	559	11	36.75	50.8	35	150	2°	1500	2	7½	36	9.7	55	1	1	I	Pulled to drop jets.	
4	17½	Sec	S3SJ	623712	0	0	0	2625	611	15.5	52.25	39.4	30	150	1°	1500	½	6/7½	96/29	9.9	77	4	4	I		
RR1	17½	Reed	Y11J	100295	0	0	16	2625		Laid	down	pipe	to	ream.												
HO	26	STC		516	1	1	1	1454	946	22.25		42.5										5	5	I	Reaming.	
HO	26	STC		427	1	1	1	1814	360	10		36										6	6	I		
HO	26	STC		516	1	1	1	2525	711	21		33.8										7	7	I	Dressed w/cutters.	
HO	26	STC		427	1	1	1	2625	100	4.25		23.5														
RR1	17½	Reed	Y11J	100295				2632	7	.5	52.75		Ran	in	hole	to	circulate		for	casing.						
5	17½	HTC	OSC1G	VA302	18	18	18	3072	410	16	68.75	25.6	60/70	100	1°	1400	6		9.5	38		3	7	I		
6	17½	Sec	S3SJ	623818	16	16	16	3429	347	15	83.75	23.1	70	100		1800	1/2	5½/6	110/589	9.6	38	5	5	I		
7	17½	HTC	OSC1G	HV529	15	15	15	3798	369	23.25	107	15.8	70	100	2¼°	2500	1/2	5½/6	115/649	9.7	49	4	4	I		
8	17½	HTC	OSC3J	PH255	15	15	15	4206	408	30.25	132/25	13.4	70	110	2°	2250	1/2	5½/6	116/629	9.6	40	3	6	I		
9	17½	Sec	S3SJ	552285	15	15	15	4601	395	30.25	167.5	13	60	100	2°	2400	1/2	5½/6	105/589	9.5	37	3	6	I		
10	17½	Sec	S3SJ	615398	15	15	15	5000	399	31.75	199/25	12.5	60	100	2°	2400	1/2	5½/6	105/569	9.7	37	3	7	I		
11	17½	Sec	S3SJ	617247	15	15	15	5409	399	30.25	229.5	13.1	60	100		240	1/2	5½/6	105/589	9.7	39	3	6	I		
12	17½	HTC	OSC1G	HT691	15	15	16	5767	358	32	261.5	11.1	60	100		2480	1/2	5½/6	105/589	9.9	43	3	7	I		

BIT RECORD

COMPANY: Husky Oil Company | CONTRACTOR: Nabors Ak.Drilling Company | COUNTY: North Slope | STATE: Alaska

LEASE: National Petroleum Res. | WELL NO: Inigok No. 1 | SEC: 34 | TOWNSHIP: 8 North | RANGE: 5 West | BLOCK: | FIELD:

TOOL PUSHER | DRILL PIPE | DRAW WORKS | UNDES SURF

DAY DRILLER | TOOL JOINT: MAKE / SIZE / TYPE | POWER: H P | UNDES 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 T	B	G	REMARKS FORMATION CIRC FLUID, ETC	DATE
13	17½	Sec	S3SJ	780699	15	15	16	6173	406	24.25	285 3/4	16.9	80	100		2400	1	5½	100	9.9	43	3	5	1/8		
14	17½	Sec	S3SJ	659772	16	16	16	6478	305	30.5	316 1/4	10	60	100	2°	2400	1	5½	108	10	48	3	6	I		
15	17½	Sec	S3SJ	554084	16	16	16	6738	260	30.5	346 3/4	8.5	70	100	1°	2400	2	5½ 6	58	10.1	44	4	6	I		
16	17½	Sec	S3SJ	780449	16	16	16	6831	93	12.25	360	7.5	70	100		2400	1 2	5½ 6	100 58	10.1	46	2	2	I		
17	17½	Sec	S3SJ	790687	16	16	16	7054	223	24.25	384 1/4	9.5	70	100	½°	2400	2	5½ 6	110 58	10.1	49	3	7	I		
18	17½	Sec	S3SJ	780452	16	16	16	7297	243	24	408.5	16.3	75	100	1°	2400	1 2	5½ 6	110 58	10.1	42	3	7	I		
19	17½	Sec	S3SJ	767165	16	16	16	7498	201	25.25	433 3/4	9.1	75	100	½°	2400	1 2	5½ 6	110 58							
20	17½	Sec	S3SJ	780450	16	16	16	7522	24	2.5	436 1/4	9.6	70	100		2400	1 2	5½ 6	110 58	10	42	4	7	I		
21	17½	Sec	S3SJ	786744	16	16	16	7762	240	26.5	462 3/4	8.1	70	100		2400	1 2	5½ 6	110 58	10	42	4	7	I		
22	17½	Sec	S3SJ	789613	16	16	16	7990	228	28	490 3/4	9.1	70	100		2400	1 2	5½ 6	110 58	10	42	4	7	I		
23	17½	Sec	S3SJ	789600	16	16	16	8210	220	28.75	519.5	7.6	70	100		2400	1 2	5½ 6	108 54	9.6	40	4	8			
24	12¼	STC	DSJ	70262	12	12	12	8390	75	9.75	529 1/4	7.6	65	75		2200	1	6	133	9.8	40	5	4	I		
25	12¼	HTC	X3A	KX361	12	12	12	8841	457	27.75	557	16.0	70	100		2200	1	6	134	10 3	40	6	4	I		
26	12¼	HTC	X3A	KZ963	12	12	12	9338	486	26	585 1/4	18.7	70	100	1°	2200	1	6	126	10 4	49	8	3	1/16		
27	12¼	HTC	X3A	LA982	12	12	12	9448	100	6.25	691 1/2	16	65	100		2200	1	6	126	10 4	47	4	4	I		
28	12¼	STC	SDT	610180	12	12	12	9731	273	16	707 1/2	17	70	100		2200	1	6	121	10 2	59	3	7	I		
29	12¼	STC	SDT	4448D	12	12	12	9960	229	15.5	723	14.8	65	100		2200	1	6	120	10 2	58	3	7	I		
30	12¼	HTC	X3A	KW997	12	12	12	10150	190	19	742	10	65	100		2200	1	6	120	10 2	63	5	3	I		
31	12¼	HTC	X3A	KX256	12	12	12	10295	145	19.5	761.5	7.4	65/70	100		2200	1	6	129	10 2	53	7	3	I		
32	12¼	STC	F2	632NT	12	12	12	10762	467	61.75	823 1/2	7.5	50	50		2450	1	6	129	10 4	52	3	3	I		
33	12¼	HTC	X1G	LK032	12	12	12	10998	236	24.5	847 3/4	9.6	60	90		2400	1	6	128	10 5	68	4	3	I		

SMITH REPRESENTATIVE _____ PHONE _____

BIT RECORD

COMPANY: Husky Oil Company | CONTRACTOR: Nabors Alaska Drilling Company | COUNTY: North Slope | STATE: Alaska

LEASE: National Petroleum Res | WELL NO: Inigok No. 1 | SEC: 34 | TOWNSHIP: 8 North | RANGE: 5 W | BLOCK | FIELD

TOOL PUSHER | DRILL PIPE | DRAW WORKS | UNDER SURF

DAY DRILLER | TOOL JOINT: MAKE / SIZE / TYPE | POWER / H P

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	NOZ 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	Liners	SPM	SWB Wt	Vis	DULL CODE T	B	G	REMARKS FORMATION CIRC FLUID, ETC	DATE
34	12¼	HTC	J-22	LK702	12	12	12	11704	696	86.25	934	8	50	70		2400	1	6	127	10.6	66					
35	12¼	STC	F-2	335NS	12	12	12	12273	559	73.5	1007.5	7.6	50	50	2½°	2400	1	6	126	11	55	3	4	1		
RR 32	12¼	STC	F-2	632NT	12	12	12	12311	28	5.5	1013	5	50	50	2½°	2300	1	6	126	11	70	3	3	1		
36	8½	STC	OSC	HX418	14	14	14	12368	47	7.75	1020.75	6.2	40	45		2200	1	5½	120	10.8	45	8	7	1		
37	8½	HTC	J22	HM655	11	11	11	12500	132	12	1032.75	11	40	45	2°	2200	1	5½	120	10.8	46	3	2	1		
CH2	8½	Chr	D1a	8W1222				12530	30	13		2.3	25	50	–	850	1	5½	83	10.8	46					
38	8½	HTC	J-22	AW364	11	11	11	12683	153	34	1066.75		45	45		2300	1	5½	120	10.8	44	8	8	3/8		
39	8½	STC	W-4	505NE	0	P	E	N	12683	0	4.5			MILLED ON	JUNK							8	8	1/4		
40	8½	STC	F-3	666PR	11	11	11	12705	22	6.25	1073	3.5	15	50		1450	1	5½	100	10.9	45	6	1	1/8		
41	8½	STC	F-3	AN105	11	11	11	12785	80	11.75	1084.75	7.2	40	40	1½°	2300	1	5½	115	10.9	60	7	6	1/8		
42	8½	HTC	J-44	ZP451	11	11	11	12820	36	12.5	1097.25	3	30	40		2250	1	5½	117	11	5.8	5	5	1/8		
43	8½	STC	F-3	419NE	11	11	11	12884	64	20.5	1117.75	3	30/40	30/40		2200	1	5½	118	10.6	46	5	5	1/16		
44	8½	STC	F-3	AC040	11	11	11	12912	28	10.25	1129	2.8	30/40	30/40	2°	2200	1	5½	117	10.7	45	5	5	1/4		
45	8½	STC	F-5	020PK	10	11	12	13020	108	22.25	1151.25	4.9	50	35	2°	2250	1	5½	117	10.6	47					
46	8½	STC	F-4	190DF	10	10	10	13119	99	24.5	1175.75	4.1	45/50	35	2½°	2350	1	5½	109	10.7	43	8	5	1/4		
47	8½	HTC	V55	CN1106	10	10	10	13179	60	24.5	1200.25	2.5	45/50	35	2½°	2350	1	5½	109	10.7	49	8	5	1/4		
48	8½	STC	FS	923JP	10	10	10	13207	28	10	1210.25	2.8	40/50	35		2400	1	5½	109	10.7	47	5	4	1/8		
49	8½	HTC	J77	PM334	10	10	10	13303	96	31	1241.25	3	50	35	2½°	2400	1	5½	108	10.7	50	5	6	1/8		
50	8½	HTC	J77	JR143	10	10	10	13388	85	36.25	1277.5	2.2	50	35	2½°	2400	1	5½	108	10.7	54	2	4	1		
51	8½	HTC	J55	JS376	10	10	10	13480	92	32	1309.5	3	50	34	2½°	2400	1	5½	104	10.7	54	2	2	1		
52	8½	HTC	J44	WD448	10	10	10	13659	150	46.5	1356	3.2	40	45	2½°	2350	1	5½	108	10.7	52	2	4	1		

BIT RECORD

COMPANY: Husky Oil Company
CONTRACTOR: Nabors Alaska Drilling Company
COUNTY: North Slope
STATE: Alaska
LEASE: National Petroleum Res.
WELL NO: Inigok No. 1
SEC: 34
TOWNSHIP: 8 North
RANGE: 5 West
BLOCK:
FIELD:

TOOL PUSHER:
DAY DRILLER:
EVENING DRILLER:
MORNING DRILLER:
DRILL PIPE: MAKE / SIZE / TYPE
TOOL JOINT:
DRILL COLLAR: NO / O D / I D / LENGTH
DRILL COLLAR: NO / O D / I D / LENGTH
DRAW WORKS:
POWER: H P
PUMP NO 1: MAKE / MODEL / STROKE
PUMP NO 2: MAKE / MODEL / STROKE
UNDER SURF:
INT DATE:
T D DATE:

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	2	3	DEPTH OUT	FTGE	HOURS RUN	ACC HOURS	FT/HR	WEIGHT 1000 LBS	ROTARY R P M	VERT DEV	PUMP PRESS	PUMPS No	Liner	SPM	MUD Wt	Vis	DULL CODE I	B	G	REMARKS FORMATION, CIRC FLUID, ETC	DATE
53	8½	STC	F3	627NF	10	10	10	13767	108	23.25	1379.25	4.5	50	54/55	2°	2300	1	5½	106	10.7	41	8	8	0	Lost three cones.	
54	8½	STC	W4IIS	KE457	10	10	10	13772	5	4.5	1383.75	1	36	45		2300	1	5½	108	10.7	40	8	7	1/16		
55	8½	HTC	J44	ZN233	10	10	10	13831	59	15.5	1399.25	3.8	45	45	2°	2300	1	5½	108	10.7	42	8	2	I		
CH2	8½	Chr	D1a	BW1222				13880	49	20		2.4	25	45/65		1400	1	5½	99	10.8	42					
56	8½	HTC	J55	BR378	10	10	11	13941	61	23.25	1422.5	2.6	45	40		2320	1	5½	111	10.8	46	1	4	1/16		
57	8½	HTC	J44	WP446	10	10	10	14020	79	27	1449.5	2.9	45	40	2°	2400	1	5½	108	10.8	43	1	3	I		
CH3	8½	Chr1	MG201	BR1117				14066	46	11		4.1	24	65		1450	1	5½	106	10.8	43					
58	8½	STC	F3	896PH	10	10	10	14176	110	22	1471.5	5	36/45	38		2400	1	5½	106	10.9	40	4	4	W32		
59	8½	STC	F3	284NF	10	10	10	14282	106	25.25	1496.75	4.2	35/40	40	2°	2400	1	5½	107	11	43	7	4	1/16		
60	8½	STC	F3	AH808	10	10	10	14367	85	10.5	1517.25	4.1	40	38		2400	1	5½	106	11.1	45	7	5	I		
61	8½	HTC	J44	ZP493	10	10	10	14598	231	39.5	1556.75	5.8	40/45	40		2400	1	5½	106	11	49	8	5	1/4		
62	8½	HTC	J55	FA616	10	10	10	14823	225	40	1596.75	5.6	36/40	36/58	2½°	2400	1	5½	107	11	55	4	8	0		
63	8½	HTC	J55	HX273	10	10	10	15020	197	37.25	1634	5.2	36/40	36/38	2½°	2400	1	5½	107	11	54	8	8	1/4		
64	8½	HTC	J55	BW871	10	10	10	15185	165	38.5	1672.5	4.2	36/40	36/38		2400	1	5½	107	11	52	2	4	I		
CH4	8½	Chr1	D1a	BW1442				15215	30	18.25		1.6														
65	8½	Chr1	HD17	BW1654				15268	53	16.5	1689	3.2	36	42		1700	1	5½	104	11.1	55					
66	8¼	HTC	J44	ZP042	10	10	10	15366	98	25	1714	3.9	46	40		2400	1	5½	102	11.1	47	8	5	1/4		
67	8½	HTC	J55	PJ380	10	10	10	15541	171	37	1751	4.6	40	40		2400	1	5½	102	11.1	48	5	4	I		
68	8½	HTC	J55	NW239	10	10	10	15668	127	36	1787	3.5	40	36	3°	2400	1	5½	105	11.1	49	7	5	I		
69	8½	HTC	J77	PM357	10	10	10	15958	290	54	1841	5.3	40	40		2400	1	5½	104	11.1	49	5	5	I		
70	8½	HTC	J77	JR734	10	10	10	16185	227	46	1887	4.9	40	38		2400	1	5½	105	11.1	47	4	5	I		

SMITH TOOL REPRESENTATIVE

PHONE

BIT RECORD

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

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Res	Inigok No. 1	34	8 North	5 West		

TOOL PUSHER	DRILL PIPE				DRAW WORKS				
DAY DRILLER	TOOL JOINT	MAKE		SIZE	TYPE	POWER		H P	UNDER SURF
EVENING DRILLER	DRILL COLLAR	NO	O D	I D	LENGTH	PUMP NO 1	MAKE	MODEL	STROKE	INT DATE
MORNING DRILLER	DRILL COLLAR	NO	O D	I D	LENGTH	PUMP NO 2	MAKE	MODEL	STROKE	I B DATE

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	JET SIZE 1	2	3	DEPTH OUT	FTGE	HOURS RUN	ACC HOURS	FT/HR	WEIGHT (1000 LBS	ROTARY R P M	VERT DEV	PUMP PRESS	PUMPS No	Liner	SPM	MUD Wt	Vis	DULL CODE T	B	G	REMARKS FORMATION, CIRC FLUID, ETC	DATE
CH3	8½	Chrl	CM201	8R1117				16185	13	4.5	1887	2.8	20/28	55	2¼°	1500	1	5½	99	11.1	55					
71	8½	HTC	J77	PN013	10	10	10	16452	254	55.25	1942.25	4.6	40	36	2¼°	2400	1	5½	104	11.1	49	8	6	5/8		
72	8½	HTC	J77	PM361	10	10	10	16620	168	34.75	1977	4.8	39	36		2400	1	5½	106	11.1	47	8	7	7/8		
73	8½	HTC	J77	LW032	10	10	10	16758	138	33.75	2010.75	4	36	36	4°	2400	1	5½	108	11.1	47	8	6	1/4		
74	8½	HTC	J99	VC184	10	10	10	16893	135	35.5	2046.25	3.8	36	36		2350	1	5½	98	11.1	51	2	4	I		
75	8½	HTC	J77	TR226	10	10	10	17053	160	41.75	2088	3.8	39	38	5°	2400	1	5½	101	11.1	47	2	4	I		
CH5	*	CDP	MC201	841362				17083	30	6.75		4.4	35	45		1400	1	5½	93	11.1	47					
76	8½	HTC	PV721	J77	10	10	10	17345	262	54.75	2033.25	4.8	40	40	4°	2400	1	5½	107	11.1	48	2	5	I		
77	8½	HTC	PW228					17570	224	56			40	36		2400	1	5½	110	11.2	52					
78	8½	STC	W4	504NE	R	E	G	13745																		
79	8½	STC	W4S	937KR	R	E	G	16736																		
80	8½	STC	W4S	286FP	O	U	T	17570																		
81	8½	HTC	OWV	JX001	O	U	T	17570																		
82	6¼	STC	V2	863PZ	11	11	11	17165									1	4½								
83	6¼	STC	V2	883PZ	11	11	11	17571	1	1.5							1	4½								
84	6¼	STC	H7J	845058	11	11	11	17598	20	5.5			20	45		2250	1	4½	95	12	52	5	6	I		
85	6½	HTC	J55	KR227	11	11	11	17679	81	20		4	20	35		2400	1	4½	109	13.5	50	1	1	I		
86	6¼	HTC	J55	KK228	11	11	11	17829	150	39	2092.25	3.8	20	35		2500	1	4½	100	16	53	6	8	I		
87	6½	HTC	J55	PV032	12	12	11	17887	58	16.5	2108.75	3.5	20	35	3½°	2500	1	4½	102	16.3	50	2	3	I		
88	6¼	STC	F3	896WH	10	10	10	17945	68	21.5	2130.25	3.2	20	35		2500	1	4½	95	16.4	48	2	3	I		
89	6¼	STC	F2	392N7	10	10	10	18050	105	34	2164.25	3.1	20	35		2400	1	4½	93	16.7	46	6	8	1/8		

BIT RECORD

COMPANY: Husky Oil Company
CONTRACTOR: Nabors Alaska Drilling Company
COUNTY: North Slope
STATE: Alaska
LEASE: National Petroleum Res.
WELL NO: Inigok No. 1
SEC: 34
TOWNSHIP: 8 North
RANGE: 5 West
BLOCK:
FIELD:

TOOL PUSHER:
DAY DRILLER:
EVENING DRILLER:
MORNING DRILLER:

DRILL PIPE — MAKE: SIZE: TYPE:
TOOL JOINT
DRILL COLLAR — NO: O D: I D: LENGTH:
DRILL COLLAR — NO: O D: I D: LENGTH:

DRAW WORKS:
POWER: H P
PUMP NO 1 — MAKE: MODEL: STROKE:
PUMP NO 2 — MAKE: MODEL: STROKE:

UNDER SURF:
INT DATE:
T D DATE:

BIT NO	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO OF BIT	BIT SIZE 1	2	3	DEPTH OUT	FTGE	HOURS RUN	ACC HOURS	FT/HR	WEIGHT 1000 LBS	ROTARY R P M	VERT DEV	PUMP PRESS	PUMPS No	Liner	SPM	MUD Wt	Vis	DULL CODE I	B	G	REMARKS FORMATION CIRC FLUID, ETC	DATE
90	6¼	STC	F-2	984NF	11	11	11	18091	41	18	2182.25	2.3	15/20	30/40		2400	1	4½	93	16.7	46	4	5	I		
91	6¼	HTC	J-55	PW305	11	11	11	18180	89	34.5	2216.75	2.6	24	35/40	4°	2270	1	4½	97	16.7	46	2	4	I		
92	6¼	Chrl	MD33	9L3194				18304	124	45.75	2262.5	2.7	20/25	32		2400	1	4½	100	16.7	43					
93	6¼	STC	990N	F3	12	12	12	18393	89	29.25	2291.75	3	20	38		2500	1	4½	102	16.8	43	5	6	I		
94	6¼	HTC	J-55	PW341	12	12	12	18468	72	35	2326.75	2.1	20	39		2470	1	4½	104	16.5	49	5	5	I		
95	6¼	STC	F-2	683LR	12	12	12	18586	118	28.75	2355.5	4.1	20	35		2500	1	4½	108	16.8	43	4	6	I		
96	6¼	STC	F-2	085NF	12	12	12	18694	108	28.5	2384	3.7	22	35		2400	1	4½	103	16.7	43	6	7	I		
97	6¼	STC	F-2	834NR	12	12	12	18798	104	28.75	2412.75	3.6	24	35		2400	1	4½	103	16.7	44	8	7	1/8		
98	6¼	STC	F-3	378NN	12	12	12	18856	58	20	2432.75	2.9	22	23		2400	1	4½	103	16.7	41	6	4	1/8		
99	6½	HTC	J-55	PX584	12	12	12	18949	93	31.5	2464.25	2.9	22	35		2400	1	4½	103	16.7	44	8	6	I		
100 RR92	6¼	Chrl	MD33	9L3194				18953	4	5	2469.25	.8	18/40	25		2700	1	4½	98	16.7	44					
101	6¼	HTC	J-55	PV240	12	12	12	19031	78	26.25	2495.5	2.9	20	40		2500	1	4½	102	16.7	50	8	5	I		
102	6¼	STC	F-7	AB6690	12	12	12	19112	81	30	2525.5	2.7	22	40		2400	1	4½	98	16.7	45	8	6	1/8		
103	6¼	HTC	J-55	PW275	12	12	12	19200	88	32.75	2558.25	2.6	15	45/48		2400	1	4½	100	16.9	46	6	6	I		
104	6¼	HTC	J-55	PV241	12	12	12	19274	74	34.5	2592.75	2.1	15/20	42		2400	1	4½	100	16.9	45	7	5	I		
105	6¼	STC	F-2	687RX	12	12	12	19360	86	19	2611.75	4.5	15/18	40		2500	1	4½	100	16.9	47	7	5	1/16		
CH6	6¼	Chrl	M620	9W1911				19372	12	9	2620.75	1.3	18/22	40/65		2500	1	4½	80	16.9	47					
106	6¼	STC	F-3	623KC	12	12	12	19459	87	19.75	2640.5	4.4	20	40		2000	1	4½	101	16.9	46	6	4	1/4		
107	6¼	STC	F-2	582RX	12	12	12	19577	118	24.5	2665	4.8	23	40		2500	1	4½	100	17	48	6	6	1/4		
108	6¼	STC	F-2	685KS	12	12	12	19690	113	23.25	2688.25	4.8	23	38		2500	1	4½	100	17	47	6	7	1/8		
109	6½	STC	F-2	776NX	12	12	12	19784	94	24.5	2712.75	3.8			2½°											

SMITH REPRESENTATIVE

PHONE

BIT RECORD

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

LEASE	WELL NO	SEC	TOWNSHIP	RANGE	BLOCK	FIELD
National Petroleum Res.	Inigok No. 1	34	8 North	5 West		

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 T	B	G	REMARKS FORMATION, CIRC FLUID, ETC.	DATE
110	6½	STC	F-2	SK047	12	12	12	19894	110	24.75	2737.5	4.4	23	38	29½	2500	1	4½	100	17.1	48	6	7	1/8		
111	6¼	STC	F-2	AE4026	12	12	12	19988	94	17.75	2755.25	5.3	24	40		2500	1	4½	100	17	48	6	7	I		
112	6¼	STC	F-2	AE3845	12	12	12	20091	103	21.5	2776.75	4.8	22	40	23°	2500	1	4½	98	17	48	7	7	1/4		
113 KR90	6½	STC	F-2	984NF	0	U	T	10091								2500	1	4½	100	17	48				Cleaning out.	

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.

The casing program for Inigok Test Well No. 1 was as follows: 42" conductor at ±100'; 30" surface casing at ±500'; 13-3/8" casing at 8300'; 9-5/8" casing at 12550'; 7" liner to a total depth of 19775' if needed for formation evaluation. Actual casing run was 42" at 110'; 30" at 508'; 20" at 2594'; 13-3/8" at 8226'; 9-5/8" at 12283'; and a 7-5/8" liner from 11818' to 17432'. The liner was run as a protective string to aid in controlling H_2S encountered at 17570'.

The well was plugged back to the surface because of the presence of H_2S down hole. Thus, the usual provision for future temperature measurements in the upper ±2000' of the well bore was not made.

CASING TALLY
SUMMARY SHEET

FIELD National Petroleum Reserve in AK LEASE & WELL NO. Inigok Test Well No. 1 DATE: June 11, 1978

TALLY FOR 30 " CASING

SUMMARY OF PAGE MEASUREMENTS

	NO. OF JOINTS	FEET	.00'S
PAGE 1	16	625	07
PAGE 2			
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	16	625	07

SUMMARY OF DEPTH CALCULATIONS

		NO. OF JOINTS	FOOTAGE FEET	FOOTAGE .00'S
1	TOTAL CASING ON RACKS	16	625	07
2	LESS CASING OUT (JTS NOS.	3	117	20
3	TOTAL (1 – 2)	13	507	87
4	SHOE LENGTH		2	80
6	FLOAT LENGTH			
6	MISCELLANEOUS EQUIPMENT LENGTH			
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 6 + 6)		510	67
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT			

Weight indicator before cementing: 100,000 ; after slack-off: 0 ; inches slacked off 0

SUMMARY OF STRING AS RUN

WEIGHT	GRADE	THREAD	MANUFACTURER	CONDITION NEW-USED	LOCATION IN STRING	NO. OF JOINTS	FOOTAGE	INTERVAL
196.08	X-42		Vetco	New	JT NO. 1 THRU NO. 13	13	510.27	' – '
					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: June 11, 1978

FIELD NPRA LEASE & WELL NO. Inigok Test Well No. 1 TALLY FOR 30 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	39	05	39	09	
2	39	07	39	05	
3	39	05	39	00	
4	39	08	39	08	
5	39	05	39	10	
6	39	08	39	08	
7	39	07	39	08	
8	39	06	39	06	
9	39	07	39	10	
0	39	09	39	06	
TOTAL A	390	67	390	70	

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	39	07	39	09	
2	39	06	39	05	
3	39	08	39	03	
4	39	06	39	08	
5	39	01	39	05	
6	39	08	39	07	
7					
8					
9					
0					
TOTAL B	234	36	234	37	

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	390	67	390	70
TOTAL B	234	36	234	37
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	625	03	625	07

CASING AND CEMENTING REPORT

WELL NAME Inigok Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

13	Jts	30"	196.08#	X-42			
	Jts						
	Jts						

Shoe @ 508' Float @ _____ DV @ _____

Centralizers _____

_____

FIRST STAGE

Sx of Cement 1740 Type AS II Additives - % Excess _____

Preflush 30 Barrels Water Initial Pressure 200

Displacement _____ bbls. Final Pressure _____

Plug Down 9:15 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: Mixed and pumped 30 barrels water ahead of 1500 sacks cement with 15.2 to 15.6 slurry with full returns. Had cement returns after 1500 sacks. Pumped 200 sacks until 15.0 returns. Pumped an additional 40 sacks and followed with 2 barrels of water and 6 barrels of mud.

CASING TALLY
SUMMARY SHEET

DATE: June 23, 1978

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

SUMMARY OF PAGE MEASUREMENTS			
	NO. OF JOINTS	FEET	.00'S
PAGE 1	50	2096	69
PAGE 2	14	492	57
PAGE 3			
PAGE 4			
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	64	2589	26

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	FOOTAGE 00'S
1	TOTAL CASING ON RACKS	90	3588	86
2	LESS CASING OUT IJTS NOS.	26	999	60
3	TOTAL (1 – 2)	64	2589	26
4	SHOE LENGTH		2	75
5	FLOAT LENGTH		2	40
6	MISCELLANEOUS EQUIPMENT LENGTH			
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		2594	41
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT			

Weight indicator before cementing: 240,000 ; 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. Shoe THRU NO.		2.75	2594.41 - 2591.66
133	K-55	8rd	USS	New	JT NO. 1 THRU NO 2		85.75	2591.66 - 2505.91
					JT NO Fl Collar THRU NO.		2.40	2505.91 - 2503.51
133	K-55	8rd	USS	New	JT NO. 3 THRU NO 55	53	2218.81	2503.51 - 284.70
169	K-55	8rd	USS	New	JT NO. 56 THRU NO. 64	9	284.70	284.70 - KB
					JT NO. THRU NO.			-
					JT NO. THRU NO.			-

PAGE 1 OF 2

CASING TALLY

DATE: June 23, 1978

FIELD NPRA LEASE & WELL NO. Inigok 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	43	75			
2	42	00			
3	43	23			
4	43	34			
5	42	98			
6	41	54			
7	42	55			
8	40	98			
9	42	20			
0	42	87			
TOTAL A	425	44			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	86			
2	42	59			
3	42	02			
4	41	50			
5	42	11			
6	42	62			
7	40	52			
8	44	31			
9	41	98			
0	40	80			
TOTAL D	420	31			

1	43	39			
2	42	66			
3	43	23			
4	41	70			
5	42	35			
6	40	95			
7	39	11			
8	41	42			
9	41	54			
0	41	46			
TOTAL B	417	81			

1	43	42			
2	41	55			
3	44	09			
4	41	63			
5	39	00			
6	42	11			
7	40	94			
8	42	35			
9	38	26			
0	42	59			
TOTAL E	415	94			

1	41	35			
2	42	87			
3	41	95			
4	41	71			
5	41	86			
6	43	36			
7	40	69			
8	41	00			
9	41	95			
0	40	45			
TOTAL C	417	19			

TOTAL A	425	44		
TOTAL B	417	81		
TOTAL C	417	19		
TOTAL D	420	31		
TOTAL E	415	94		
TOTAL PAGE	2096	69		

PAGE 2 OF 2

CASING TALLY

DATE: June 23, 1978

FIELD NPRA LEASE & WELL NO. Inigok 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	41	80			
2	42	06			
3	43	39			
4	41	62			
5	39	00			
6	31	90			
7	33	05			
8	31	47			
9	29	87			
0	30	99			
TOTAL A	365	15			

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	32	13			
2	30	94			
3	33	12			
4	31	23			
5					
6					
7					
8					
9					
0					
TOTAL B	127	42			

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	365	15		
TOTAL B	127	42		
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	492	57		

CASING AND CEMENTING REPORT

WELL NAME Inigok Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

55	Jts	20"	133#	K-55	STC	8rd
9	Jts	20"	169#	K-55	STC	8rd
	Jts					

Shoe @ 2594' Float @ 85 feet above shoe DV @ _____

Centralizers 10 feet above shoe, first collar above shoe, first collar above float collar, and on every other collar through the 15th joint.

FIRST STAGE

Sx of Cement 5400 Type AS II Additives _____ % Excess _____

Preflush 20 Barrels Water Initial Pressure _____

Displacement 45 bbls. Final Pressure 900 psi

Plug Down 8:40 ~~AM~~ PM

SECOND STAGE - Stage Collar @ _____

Sx of Cement _____ Type _____ Additives _____ % Excess _____

Preflush _____ Initial Pressure _____

Displacement _____ bbls. Final Pressure _____

Plug Down _____ 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: August 6, 1978

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

SUMMARY OF PAGE MEASUREMENTS

	NO. OF JOINTS	FEET	.00'S
PAGE 1	50	1946	28
PAGE 2	50	1938	78
PAGE 3	50	1928	18
PAGE 4	50	1931	11
PAGE 5	15	569	31
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	215	8313	66

SUMMARY OF DEPTH CALCULATIONS

		NO. OF JOINTS	FOOTAGE FEET	FOOTAGE .00'S
1	TOTAL CASING ON RACKS	215	8313	66
2	LESS CASING OUT (JTS NOS.	–	–	–
3	TOTAL (1 – 2)	215	8313	66
4	SHOE LENGTH		1	89
5	FLOAT LENGTH		1	94
6	MISCELLANEOUS EQUIPMENT LENGTH 2 FO Cementers		7	75
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		8325	24
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT		38	54

Weight indicator before cementing: 555,000 ; 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. Shoe THRU NO.		1.89	8286.70 – 8284.56
72	S-95	Buttress	Armco	New	JT NO. 1 THRU NO. 2	2	83.28	8284.56 – 8201.28
					JT NO. Float THRU NO.		1.94	8201.28 – 8199.34
72	S-95	Buttress	Armco	New	JT NO. 3 THRU NO. 121	119	4601.99	8199.34 – 3597.35
					JT NO. FO THRU NO.		3.90	3597.35 – 3593.45
72	S-95	Buttress	Armco	New	JT NO. 122 THRU NO. 154	33	1281.55	3593.45 – 2311.90
					JT NO. FO THRU NO.		3.85	2311.90 – 2308.50
72	S-95	Buttress	Armco	New	155 215	61	2347.04	2308.50 + 38.54 Up

PAGE 1 OF 5 CASING TALLY DATE: August 6, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	41	54			
2	41	74			
3	42	87			
4	36	19			
5	42	20			
6	38	15			
7	40	00			
8	37	41			
9	40	58			
0	36	97			
TOTAL A	397	75			

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	41	40			
2	41	55			
3	41	92			
4	37	92			
5	36	84			
6	38	38			
7	40	96			
8	38	75			
9	34	59			
0	34	41			
TOTAL D	386	72			

1	42	00			
2	39	00			
3	36	86			
4	39	37			
5	36	03			
6	37	77			
7	37	69			
8	39	60			
9	36	06			
0	36	00			
TOTAL B	380	38			

1	40	60			
2	37	37			
3	40	62			
4	41	28			
5	39	30			
6	40	28			
7	37	46			
8	42	20			
9	34	82			
0	39	30			
TOTAL E	393	23			

1	36	50			
2	40	74			
3	37	30			
4	36	93			
5	41	19			
6	40	34			
7	41	39			
8	36	32			
9	39	30			
0	39	19			
TOTAL C	388	20			

TOTAL A	397	75		
TOTAL B	380	38		
TOTAL C	388	20		
TOTAL D	386	72		
TOTAL E	393	23		
TOTAL PAGE	1946	28		

PAGE 2 OF 5 CASING TALLY DATE: August 6, 1978

FIELD NPRA LEASE & WELL NO. Inigok 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	36	63			
2	36	34			
3	38	67			
4	36	80			
5	38	85			
6	40	11			
7	43	41			
8	41	39			
9	41	00			
0	35	87			
TOTAL A	389	07			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	37	55			
2	34	24			
3	38	58			
4	41	95			
5	36	18			
6	35	68			
7	40	60			
8	37	72			
9	36	46			
0	38	09			
TOTAL D	377	05			

1	42	18			
2	40	64			
3	37	98			
4	39	75			
5	42	86			
6	42	03			
7	35	49			
8	42	18			
9	35	43			
0	35	91			
TOTAL B	394	45			

1	40	69			
2	38	70			
3	40	87			
4	38	00			
5	36	37			
6	38	06			
7	35	78			
8	38	50			
9	41	34			
0	38	20			
TOTAL E	386	51			

1	36	68			
2	34	98			
3	41	98			
4	39	89			
5	37	90			
6	42	41			
7	40	10			
8	41	47			
9	39	68			
0	36	61			
TOTAL C	391	70			

TOTAL A	389	07		
TOTAL B	394	45		
TOTAL C	391	70		
TOTAL D	377	05		
TOTAL E	386	51		
TOTAL PAGE	1938	78		

PAGE 3 OF 5

CASING TALLY

DATE: August 6, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	36	80			
2	34	82			
3	36	61			
4	38	70			
5	36	45			
6	37	04			
7	36	18			
8	37	11			
9	37	98			
0	42	29			
TOTAL A	373	98			

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	38	32			
2	40	98			
3	36	82			
4	35	08			
5	37	00			
6	39	52			
7	34	36			
8	34	00			
9	41	27			
0	39	46			
TOTAL D	376	81			

1	41	28			
2	36	98			
3	37	06			
4	36	00			
5	39	95			
6	38	63			
7	41	91			
8	37	65			
9	38	35			
0	40	86			
TOTAL B	388	67			

1	42	36			
2	42	36			
3	37	30			
4	41	57			
5	43	27			
6	43	14			
7	37	11			
8	38	72			
9	38	60			
0	39	89			
TOTAL E	404	32			

1	37	56			
2	36	15			
3	40	43			
4	41	62			
5	36	66			
6	36	55			
7	42	43			
8	37	66			
9	36	28			
0	39	06			
TOTAL C	384	40			

TOTAL A	373	98		
TOTAL B	388	67		
TOTAL C	384	40		
TOTAL D	376	81		
TOTAL E	404	32		
TOTAL PAGE	1928	18		

PAGE 4 OF 5 **CASING TALLY** DATE: August 6, 1979

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

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	34	09			
2	40	41			
3	40	83			
4	38	05			
5	40	08			
6	40	89			
7	38	53			
8	39	12			
9	40	70			
0	38	98			
TOTAL A	391	68			

1	40	41			
2	35	46			
3	39	89			
4	36	21			
5	38	48			
6	37	72			
7	37	30			
8	36	19			
9	36	73			
0	41	63			
TOTAL B	380	02			

1	39	00			
2	37	50			
3	39	04			
4	36	15			
5	36	75			
6	36	48			
7	38	08			
8	38	14			
9	41	67			
0	39	80			
TOTAL C	382	61			

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	36	94			
2	36	97			
3	39	51			
4	36	40			
5	34	38			
6	42	65			
7	41	69			
8	42	10			
9	36	40			
0	39	19			
TOTAL D	386	23			

1	40	28			
2	36	90			
3	36	95			
4	37	90			
5	39	20			
6	42	39			
7	41	90			
8	36	16			
9	37	51			
0	41	38			
TOTAL E	390	57			

TOTAL A	391	68		
TOTAL B	380	02		
TOTAL C	382	61		
TOTAL D	386	23		
TOTAL E	390	57		
TOTAL PAGE	1931	11		

PAGE 5 OF 5

CASING TALLY

DATE: August 6, 1978

FIELD NPRA LEASE & WELL NO. Inigok 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	39	83			
2	36	69			
3	41	53			
4	36	48			
5	37	18			
6	41	64			
7	37	38			
8	36	01			
9	42	17			
0	33	25			
TOTAL A	382	16			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	39	42			
2	41	32			
3	42	16			
4	38	60			
5	40	80			
6	37	08			
7	37	97			
8	36	67			
9	42	08			
0	37	54			
TOTAL D	393	64			

1	37	13			
2	38	10			
3	34	93			
4	39	85			
5	37	14			
6					
7					
8					
9					
0					
TOTAL B	187	15			

1	36	63			
2	36	06			
3	42	02			
4					
5					
6					
7					
8					
9					
0					
TOTAL E	114	71			

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

TOTAL A	382	16		
TOTAL B	187	15		
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	569	31		

CASING AND CEMENTING REPORT

WELL NAME Inigok Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

215	Jts	13 3/8"	72#	S-95	Buttress	
	Jts					
	Jts					

Shoe @ 8286' Float @ 8201' DV @ _____

Centralizers Ten feet above shoe; on the first collar and next three collars above float; every other joint for next 10 joints; two on collars below and above FOs.

FIRST STAGE

Sx of Cement 3400 Type Cl "G" Additives .75% D65 .15% D13 % Excess _____

Preflush 50 Barrels Water Initial Pressure _____

Displacement 145 bbls. Final Pressure 1300

Plug Down 6:45 ~~AM~~ PM

SECOND STAGE - Stage Collar @ _____

Sx of Cement 5200 Type AS II Additives - % Excess _____

Preflush 30 Barrels Water Initial Pressure _____

Displacement 2 Water 56 Mud bbls. Final Pressure 1000

Plug Down 11:00 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: Bottom FO would not close; pulled RTTS 20' above FO and displaced 3 barrels mud through drill pipe to clean pipe and packer of cement. Held 1000 pounds of back-pressure with Hydril for 12 hours for cement to set.

CASING TALLY
SUMMARY SHEET

DATE: September 18, 1978

FIELD National Petroleum Reserve in AK LEASE & WELL NO. Inigok Test Well No. 1 TALLY FOR 9 3/4" & 9 5/8"

SUMMARY OF PAGE MEASUREMENTS			
	NO. OF JOINTS	FEET	.00'S
PAGE 1	36	1386	
PAGE 2	50	2028	06
PAGE 3	50	2037	29
PAGE 4	50	2046	11
PAGE 5	50	2003	19
PAGE 6	50	2017	51
PAGE 7	35	1403	49
PAGE 8			
PAGE 9			
TOTAL	321	12921	65

SUMMARY OF DEPTH CALCULATIONS				
		NO. OF JOINTS	FOOTAGE FEET	FOOTAGE .00'S
1	TOTAL CASING ON RACKS	321	12,921	65
2	LESS CASING OUT (JTS NOS.	16	645	96
3	TOTAL (1 – 2)		12,275	69
4	SHOE LENGTH		1	86
5	FLOAT LENGTH		1	60
6	MISCELLANEOUS EQUIPMENT LENGTH		7	67
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		12,286	82
8	LESS WELL DEPTH (KB REFERENCE)			
9	"UP" ON LANDING JOINT		3	–

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. Shoe THRU NO.		1.86	12,283.82 '– 12,281.96'
59.2	S-95	Buttress	Armco	New	JT NO. 1 THRU NO. 2		74.93	12,281.96 '– 12,207.03
					JT NO. FI Collar THRU NO.		1.60	12,207.03 '– 12,205.43
59.2	S-95	Buttress	Armco	New	JT NO. 3 THRU NO.	1	40.68	12,205.43 '– 12,164.75
					JT NO. MF Collar THRU NO.		1.15	12,164.75 '– 12,163.60
59.2	S-95	Buttress	Armco	New	JT NO. 4 THRU NO. 36	33	1270.39	12,163.60 '– 10,893.21
53.5	S-95	Buttress	Armco	New	JT NO. 37 THRU NO. 69	33	1335.18	10,893.21 '– 9,558.03

Continued on Page 2

CASING TALLY
SUMMARY SHEET

DATE: _____

FIELD _____ LEASE & WELL NO. _____ TALLY FOR ____" 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			
2	LESS CASING OUT (JTS NOS.			
3	TOTAL (1 – 2)			
4	SHOE LENGTH			
5	FLOAT LENGTH			
6	MISCELLANEOUS EQUIPMENT LENGTH			
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)			
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. Stg Collar THRU NO.		2.62	9,558.03 ' - 9,555.41'
53.5	S-95	Buttress	Armco	New	JT NO. 70 THRU NO. 248	179	7257.19	9,555.41 ' - 2,298.22
					JT NO. FO Cementer THRU NO.		3.90	2,298.22 ' - 2,294.32
53.5	S-95	Buttress	Armco	New	JT NO. 249 THRU NO. 305	57	2297.32	2,294.32 ' - -3' KB '
					JT NO. THRU NO.			' - '
					JT NO. THRU NO.			' - '
					JT NO. THRU NO.			' - '

PAGE 1 OF 7

CASING TALLY

DATE: September 18, 1978

FIELD NPRA LEASE & WELL NO. Inigok Test Well No. 1 TALLY FOR 9 3/4 " CASING

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	35	81			
2	39	12			
3	33	55			
4	40	68			
5	38	01			
6	37	58			
7	40	52			
8	35	80			
9	35	55			
0	38	76			
TOTAL A	375	38			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	40	42			
2	39	86			
3	34	85			
4	39	37			
5	41	97			
6	37	54			
7					
8					
9					
0					
TOTAL D	234	01			

1	40	47			
2	40	09			
3	36	90			
4	36	65			
5	38	26			
6	37	68			
7	40	23			
8	39	96			
9	40	15			
0	40	15			
TOTAL B	390	54			

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

1	36	70			
2	40	22			
3	41	04			
4	36	77			
5	36	09			
6	41	02			
7	39	41			
8	39	81			
9	38	80			
0	36	21			
TOTAL C	386	07			

TOTAL A	375	38		
TOTAL B	390	54		
TOTAL C	386	07		
TOTAL D	234	01		
TOTAL E				
TOTAL PAGE	1386	00		

PAGE 2 OF 7 **CASING TALLY** DATE: September 18, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	41	50			
2	39	84			
3	41	29			
4	42	54			
5	41	56			
6	43	78			
7	40	32			
8	42	85			
9	41	44			
0	43	06			
TOTAL A	418	18			

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	41	68			
2	39	96			
3	40	39			
4	42	74			
5	42	92			
6	40	19			
7	40	17			
8	43	96			
9	41	13			
0	41	73			
TOTAL D	414	87			

1	39	65			
2	40	36			
3	36	76			
4	42	22			
5	40	67			
6	44	29			
7	38	70			
8	35	05			
9	41	02			
0	34	69			
TOTAL B	393	41			

1	36	47			
2	35	14			
3	41	30			
4	43	05			
5	38	64			
6	44	51			
7	38	49			
8	42	70			
9	41	65			
0	38	09			
TOTAL E	400	04			

1	36	55			
2	38	03			
3	40	31			
4	44	13			
5	39	80			
6	43	18			
7	41	55			
8	38	60			
9	39	39			
0	40	02			
TOTAL C	401	56			

TOTAL A	418	18		
TOTAL B	393	41		
TOTAL C	401	56		
TOTAL D	414	87		
TOTAL E	400	04		
TOTAL PAGE	2028	06		

PAGE 3 OF 7 CASING TALLY DATE: September 18, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	42	95			
2	40	95			
3	40	22			
4	41	02			
5	41	70			
6	37	91			
7	42	13			
8	40	90			
9	35	65			
0	41	68			
TOTAL A	405	11			

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	42	45			
2	41	66			
3	38	68			
4	39	50			
5	43	34			
6	40	76			
7	40	56			
8	42	04			
9	42	25			
0	43	12			
TOTAL D	414	36			

1	41	34			
2	39	07			
3	42	17			
4	41	18			
5	41	10			
6	43	18			
7	41	29			
8	38	73			
9	39	65			
0	39	84			
TOTAL B	407	55			

1	38	66			
2	34	05			
3	40	92			
4	41	50			
5	40	91			
6	38	86			
7	37	28			
8	40	17			
9	40	33			
0	42	66			
TOTAL E	395	34			

1	42	15			
2	41	52			
3	40	75			
4	40	89			
5	41	95			
6	42	40			
7	41	30			
8	43	40			
9	38	96			
0	41	61			
TOTAL C	414	93			

TOTAL A	405	11		
TOTAL B	407	55		
TOTAL C	414	93		
TOTAL D	414	36		
TOTAL E	395	34		
TOTAL PAGE	2037	29		

PAGE 4 OF 7

CASING TALLY

DATE: September 18, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	72			
2	39	68			
3	39	71			
4	45	07			
5	42	60			
6	41	12			
7	42	10			
8	41	78			
9	43	79			
0	42	38			
TOTAL A	419	95			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	39	59			
2	37	17			
3	40	07			
4	40	10			
5	36	36			
6	41	52			
7	42	08			
8	39	08			
9	42	23			
0	41	30			
TOTAL D	399	50			

1	42	46			
2	44	24			
3	42	32			
4	39	81			
5	37	37			
6	41	40			
7	43	91			
8	39	96			
9	35	35			
0	37	70			
TOTAL B	404	52			

1	40	77			
2	43	41			
3	40	14			
4	42	55			
5	39	50			
6	42	35			
7	35	67			
8	42	58			
9	41	92			
0	42	20			
TOTAL E	411	09			

1	41	13			
2	41	96			
3	43	58			
4	40	95			
5	41	52			
6	41	92			
7	35	14			
8	39	82			
9	43	08			
0	41	95			
TOTAL C	411	05			

TOTAL A	419	95			
TOTAL B	404	52			
TOTAL C	411	05			
TOTAL D	399	50			
TOTAL E	411	09			
TOTAL PAGE	2046	11			

PAGE 5 OF 7 CASING TALLY DATE: September 18, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	39	10			
2	35	35			
3	43	00			
4	42	64			
5	41	58			
6	42	40			
7	37	55			
8	42	25			
9	43	52			
0	40	86			
TOTAL A	408	25			

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	41	57			
2	36	92			
3	40	65			
4	42	44			
5	35	06			
6	40	60			
7	37	01			
8	40	97			
9	39	75			
0	42	94			
TOTAL D	397	91			

1	42	40			
2	41	43			
3	36	57			
4	40	28			
5	39	85			
6	37	10			
7	34	75			
8	40	17			
9	43	66			
0	41	82			
TOTAL B	398	03			

1	37	40			
2	43	58			
3	41	27			
4	38	03			
5	40	91			
6	45	22			
7	40	52			
8	40	24			
9	36	98			
0	35	93			
TOTAL E	400	08			

1	41	13			
2	37	80			
3	42	14			
4	38	00			
5	39	23			
6	39	40			
7	42	50			
8	43	00			
9	40	00			
0	35	72			
TOTAL C	398	92			

TOTAL A	408	25		
TOTAL B	398	03		
TOTAL C	398	92		
TOTAL D	397	91		
TOTAL E	400	08		
TOTAL PAGE	2003	19		

PAGE 6 OF 7 CASING TALLY DATE: September 18, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	56			
2	37	05			
3	41	19			
4	37	40			
5	40	60			
6	41	27			
7	40	22			
8	42	36			
9	35	80			
0	41	58			
TOTAL A	399	03			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	80			
2	37	56			
3	43	52			
4	39	38			
5	38	81			
6	41	09			
7	41	33			
8	41	55			
9	43	41			
0	43	77			
TOTAL D	412	22			

1	42	06			
2	36	63			
3	39	33			
4	37	71			
5	42	42			
6	41	70			
7	37	13			
8	43	34			
9	42	27			
0	42	00			
TOTAL B	404	59			

1	41	70			
2	38	39			
3	37	05			
4	41	30			
5	38	34			
6	43	11			
7	38	55			
8	40	70			
9	40	60			
0	37	32			
TOTAL E	397	06			

1	40	60			
2	42	48			
3	42	53			
4	37	95			
5	41	31			
6	43	17			
7	39	00			
8	42	27			
9	35	17			
0	40	13			
TOTAL C	404	61			

TOTAL A	399	03		
TOTAL B	404	59		
TOTAL C	404	61		
TOTAL D	412	22		
TOTAL E	397	06		
TOTAL PAGE	2017	51		

PAGE 7 OF 7 CASING TALLY DATE: September 18, 1978

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

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	39	33			
2	41	73			
3	43	04			
4	42	67			
5	40	55			
6	38	92			
7	43	02			
8	40	35			
9	42	46			
0	39	12			
TOTAL A	411	19			

JOINT NO.	FIRST MEASUREMENT FEET	.00'S	CHECK MEASUREMENT FEET	.00'S	WT GR.
1	42	50			
2	41	64			
3	41	63			
4	40	22			
5	42	60			
6	42	37			
7	39	07			
8	39	10			
9	38	80			
0	36	72			
TOTAL D	404	65			

1	40	22			
2	37	50			
3	39	11			
4	41	44			
5	35	31			
6	41	91			
7	41	71			
8	34	41			
9	34	73			
0					
TOTAL B	346	34			

1	40	93			
2	39	27			
3	42	35			
4	38	10			
5	38	32			
6	42	34			
7					
8					
9					
0					
TOTAL E	241	31			

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

TOTAL A	411	19		
TOTAL B	346	34		
TOTAL C				
TOTAL D	404	65		
TOTAL E	241	31		
TOTAL PAGE	1403	49		

CASING AND CEMENTING REPORT

WELL NAME Inigok Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

36	Jts	9 3/4"	59.2#	S-95	BTC	
269	Jts	9 5/8"	53.3#	S-95	BTC	
	Jts					

Shoe @ 12,283' Float @ 12,205' DV @

Centralizers Ten feet above shoe, on first collar, on next ten collars above MF collar, on every other collar through 29th joint, two above and two below stage collar and FO cementer.

FIRST STAGE

Sx of Cement 2800 Type Cl "G" Additives 1.25% D65 .15% D-28 % Excess

Preflush 50 Barrels Water Initial Pressure

Displacement 870 bbls. Final Pressure 1600

Plug Down 9:35 AM ~~PM~~

SECOND STAGE - Stage Collar @ 9555'

Sx of Cement 1600 Type Cl "G" Additives .75% D65 .3% DI3 % Excess

Preflush 50 Barrels Water Initial Pressure

Displacement 700 bbls. Final Pressure 2000

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:

LINER TALLY
SUMMARY SHEET

DATE: March 5, 1979

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

SUMMARY OF PAGE MEASUREMENTS

	NO OF JOINTS	FEET	00'S
PAGE 1	50	2092	39
PAGE 2	50	2073	44
PAGE 3	50	2060	20
PAGE 4	4	171	23
PAGE 5			
PAGE 6			
PAGE 7			
PAGE 8			
PAGE 9			
TOTAL	154	6397	26

SUMMARY OF DEPTH CALCULATIONS

		NO. OF JOINTS	FOOTAGE FEET	FOOTAGE 00'S
1	TOTAL CASING ON RACKS	154	6396	08
2	LESS CASING OUT (JTS NOS	19	803	69
3	TOTAL (1 - 2)		5592	39
4	SHOE LENGTH		1	85
5	~~FLOAT LENGTH~~ Type II Landing Collar			87
6	MISCELLANEOUS EQUIPMENT LENGTH Catcher Sub			87
7	TOTAL CASING AND EQUIPMENT FROM CEMENT HEAD (3 + 4 + 5 + 6)		5595	98
8	LESS WELL DEPTH (KB REFERENCE)		17570	
9	"UP" ON LANDING JOINT		30	

Landed at 17,400

Weight indicator before cementing: 385,000 ; 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
39	S-95	A-B	Armco	New	JT NO. THRU NO. Shoe		1.85	17,400 - 17,398.15'
					JT NO. 1 THRU NO.		42.96	17,398.15 - 17,355.19'
					JT NO. THRU NO. Catcher Sub		.87	17,355.19 - 17,354.32'
39	S-95	A-B	Armco	New	JT NO. 2 THRU NO.		34.41	17,354.32 - 17,319.91'
					JT NO. THRU NO. Landing Collar		.87	17,319.91 - 17,319.04
					JT NO. 3 THRU NO. 135		5515.02	17,319.04 - 11,804.02'
BOT Liner Hanger Setting Tool					JT NO. THRU NO.		27.42	11,804.02 - 11,776.09'

LINER TALLY

PAGE 1 OF 4 DATE: March 5, 1979

FIELD NPRA LEASE & WELL NO. Inigok 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	41	96			
2	34	41			
3	42	72			
4	44	48			
5	38	37			
6	43	43			
7	41	35			
8	43	77			
9	42	13			
0	44	65			
TOTAL A	417	27			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	41	83			
2	43	05			
3	40	91			
4	40	11			
5	42	62			
6	42	78			
7	43	74			
8	45	44			
9	41	82			
0	42	95			
TOTAL D	425	25			

1	40	33			
2	42	84			
3	40	88			
4	40	15			
5	41	61			
6	42	48			
7	40	22			
8	40	81			
9	43	00			
0	40	65			
TOTAL B	412	97			

1	41	19			
2	38	83			
3	39	44			
4	38	54			
5	39	52			
6	41	15			
7	41	75			
8	44	60			
9	43	61			
0	40	96			
TOTAL E	410	26			

1	42	09			
2	44	40			
3	40	62			
4	39	89			
5	40	99			
6	41	08			
7	44	74			
8	44	28			
9	44	02			
0	43	25			
TOTAL C	426	64			

TOTAL A	417	27		
TOTAL B	412	97		
TOTAL C	426	64		
TOTAL D	425	25		
TOTAL E	410	26		
TOTAL PAGE	2092	39		

LINER TALLY

PAGE 2 OF 4

DATE: March 5, 1979

FIELD NPRA LEASE & WELL NO. Inigok 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	41	84			
2	41	65			
3	40	66			
4	41	51			
5	41	13			
6	43	47			
7	43	72			
8	39	26			
9	42	82			
0	40	79			
TOTAL A	416	85			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	38	60			
2	44	11			
3	43	23			
4	43	27			
5	39	93			
6	43	19			
7	37	12			
8	41	12			
9	43	35			
0	41	96			
TOTAL D	415	68			

1	41	76			
2	42	23			
3	40	75			
4	40	44			
5	43	20			
6	37	74			
7	44	87			
8	42	00			
9	41	67			
0	37	30			
TOTAL B	411	96			

1	42	56			
2	39	58			
3	43	49			
4	39	28			
5	36	84			
6	44	27			
7	40	79			
8	38	45			
9	40	45			
0	38	66			
TOTAL E	404	87			

1	41	59			
2	44	26			
3	43	46			
4	43	49			
5	40	19			
6	42	59			
7	43	47			
8	41	20			
9	40	10			
0	43	73			
TOTAL C	424	08			

TOTAL A	416	85		
TOTAL B	411	96		
TOTAL C	424	08		
TOTAL D	415	68		
TOTAL E	404	87		
TOTAL PAGE	2073	44		

LINER TALLY

PAGE 3 OF 4 DATE: March 5, 1979

FIELD NPRA LEASE & WELL NO. Inigok 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	38	80			
2	41	22			
3	39	61			
4	39	83			
5	43	79			
6	37	58			
7	40	94			
8	40	68			
9	41	10			
0	37	73			
TOTAL A	401	28			

JOINT NO.	FIRST MEASUREMENT FEET	FIRST MEASUREMENT .00'S	CHECK MEASUREMENT FEET	CHECK MEASUREMENT .00'S	WT GR.
1	39	95			
2	39	76			
3	39	98			
4	40	40			
5	33	90			
6	42	95			
7	43	49			
8	44	79			
9	40	94			
0	40	86			
TOTAL D	407	02			

1	43	20			
2	45	03			
3	42	04			
4	40	07			
5	39	45			
6	42	95			
7	43	30			
8	44	34			
9	43	28			
0	41	33			
TOTAL B	424	99			

1	43	57			
2	44	60			
3	43	58			
4	43	96			
5	42	63			
6	40	30			
7	35	15			
8	40	04			
9	43	63			
0	43	94			
TOTAL E	421	40			

1	39	50			
2	40	29			
3	43	22			
4	38	34			
5	41	40			
6	41	70			
7	35	63			
8	42	85			
9	43	00			
0	39	58			
TOTAL C	405	51			

TOTAL A	401	28		
TOTAL B	424	99		
TOTAL C	405	51		
TOTAL D	407	02		
TOTAL E	421	40		
TOTAL PAGE	2060	20		

LINER TALLY

PAGE 4 OF 4

DATE: March 5, 1979

FIELD NPRA LEASE & WELL NO. Inigok 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	42	11			
2	43	37			
3	41	46			
4	44	29			
5					
6					
7					
8					
9					
0					
TOTAL A	171	23			

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	171	23		
TOTAL B				
TOTAL C				
TOTAL D				
TOTAL E				
TOTAL PAGE	171	23		

CASING AND CEMENTING REPORT

WELL NAME Inigok Test Well No. 1

LOCATION National Petroleum Reserve in Alaska

RAN CASING AS FOLLOWS:

135	Jts	7 5/8"	39#	S-95	AB-FL4S	Liner
	Jts					
	Jts					

Shoe @ _____ Float @ _____ DV @ _____

Centralizer @ _____

_____

FIRST STAGE

Sx of Cement 400 Type Dowell "G" Additives .25% D28 .75% D65 % 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 _____

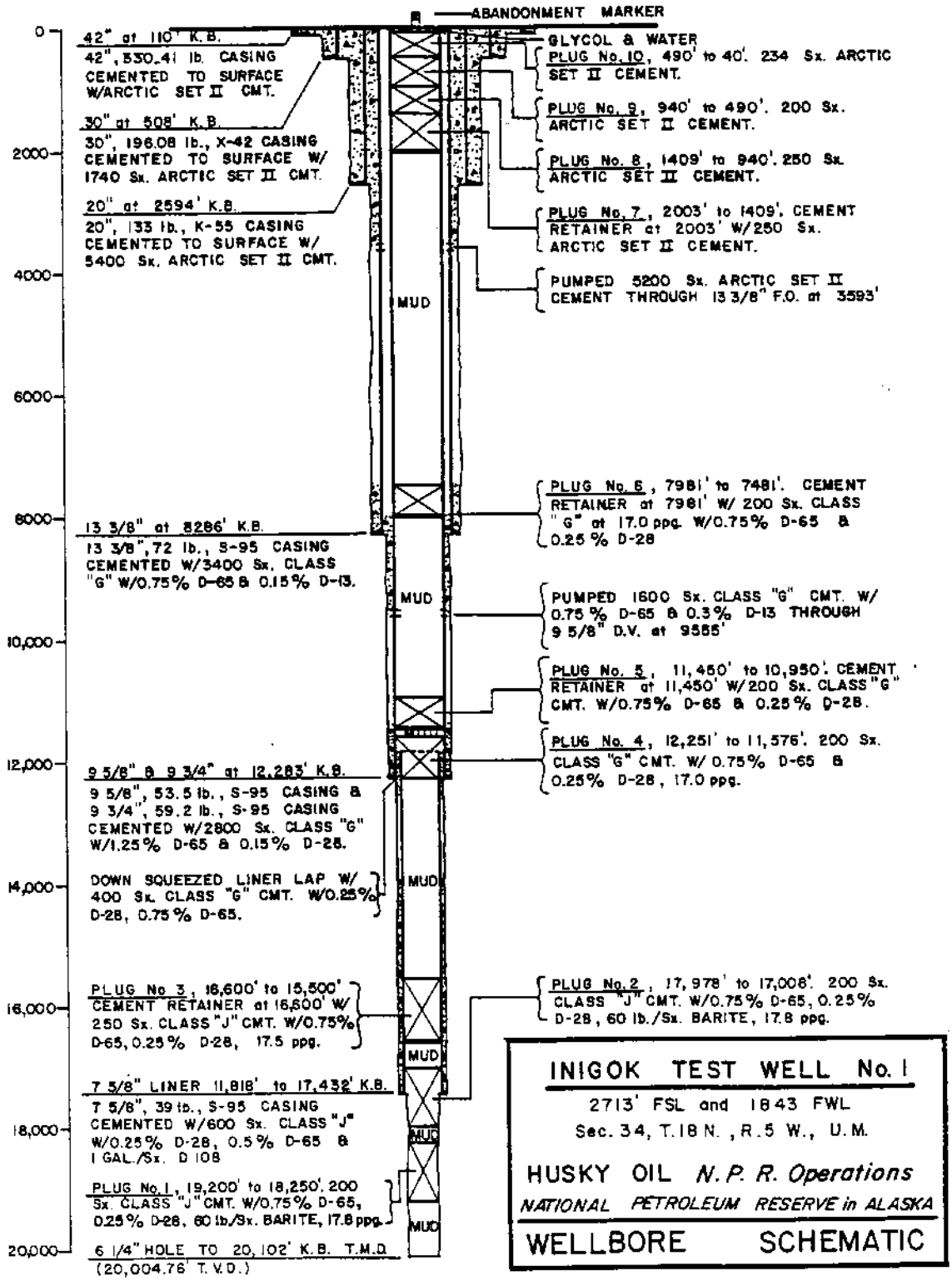
KB to Top of Cut Off Casing _____ Length of Landing Jt Removed _____

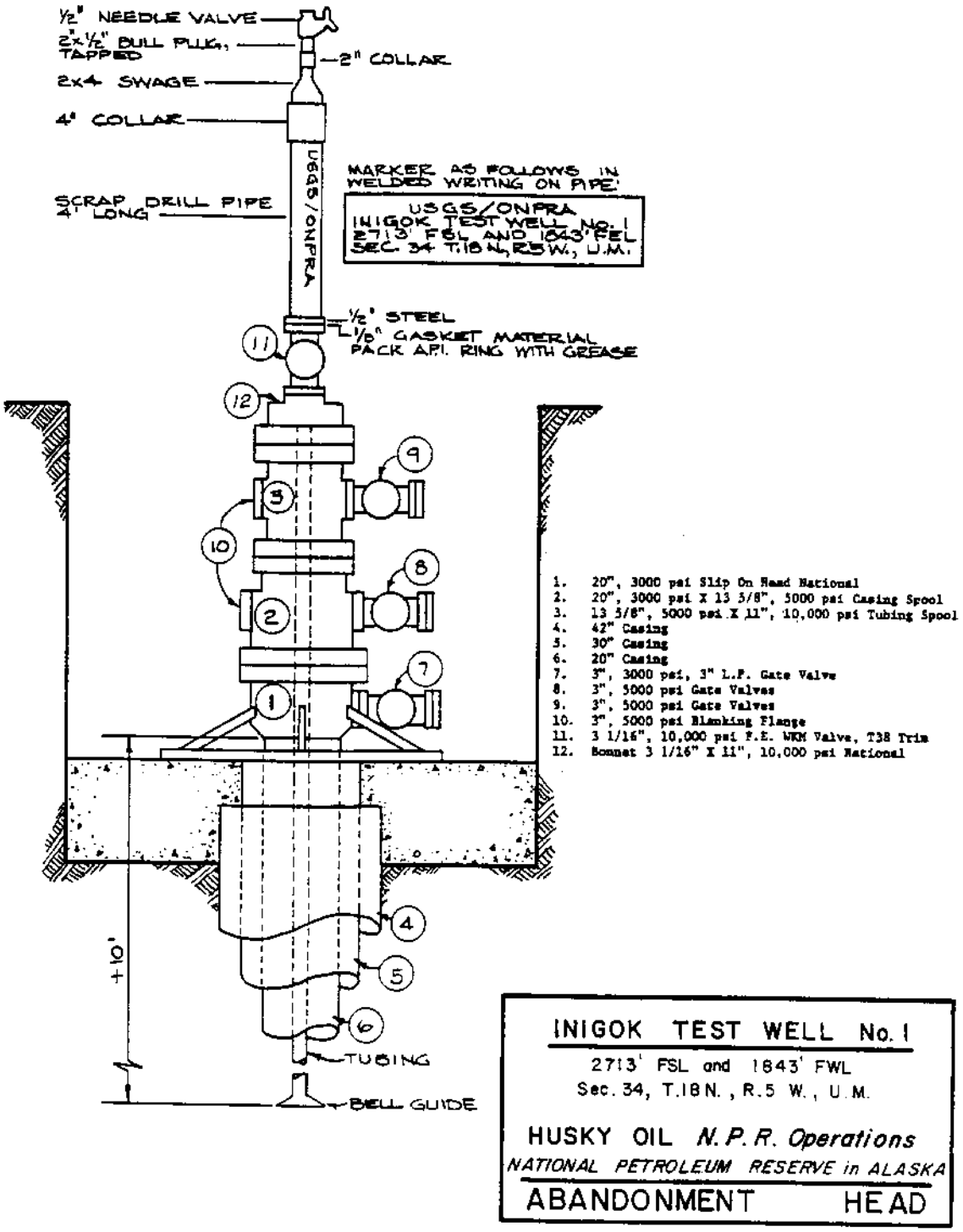
Weight Indicator Before Cementing _____ lbs.

Weight Indicator After Slacking Off _____ lbs.

Inches Slacked Off _____

Remarks: Squeezed through Howco E-Z Drill at 11,720'. Breakdown: 2 BPM at 2000 psi; 4 BPM at 2300 psi; 5 BPM at 2350 psi. Pumped 30 barrels water, 82 barrels 15.8 ppg cement, and 5 barrels water. Spotted with 10 barrels of cement from retainer. Squeezed 88 barrels; left 5 barrels cement in pipe. Pump pressures at 2.5 BPM: 1000 to 2000 psi. ISIP: 1800 psi; after 5 minutes: 1500 psi. Cement in place at 7:00 PM.


ABANDONMENT MARKER
0
2000
4000
6000
8000
10,000
12,000
14,000
16,000
18,000
20,000
42" at 110' K.B.
42", 530.41 lb. CASING CEMENTED TO SURFACE W/ARCTIC SET II CMT.
30" at 508' K.B.
30", 196.08 lb., X-42 CASING CEMENTED TO SURFACE W/ 1740 Sx. ARCTIC SET II CMT.
20" at 2594' K.B.
20", 133 lb., K-55 CASING CEMENTED TO SURFACE W/ 5400 Sx. ARCTIC SET II CMT.
13 3/8" at 8286' K.B.
13 3/8", 72 lb., S-95 CASING CEMENTED W/3400 Sx. CLASS "G" W/0.75% D-65 & 0.15% D-13.
9 5/8" & 9 3/4" at 12,283' K.B.
9 5/8", 53.5 lb., S-95 CASING & 9 3/4", 59.2 lb., S-95 CASING CEMENTED W/2800 Sx. CLASS "G" W/1.25% D-65 & 0.15% D-28.
DOWN SQUEEZED LINER LAP W/ 400 Sx. CLASS "G" CMT. W/0.25% D-28, 0.75% D-65.
PLUG No 3, 16,600' to 15,500' CEMENT RETAINER at 16,600' W/ 250 Sx. CLASS "J" CMT. W/0.75% D-65, 0.25% D-28, 17.5 ppg.
7 5/8" LINER 11,818' to 17,432' K.B.
7 5/8", 39 lb., S-95 CASING CEMENTED W/600 Sx. CLASS "J" W/0.25% D-28, 0.5% D-65 & 1 GAL./Sx. D 108
PLUG No. 1, 19,200' to 18,250', 200 Sx. CLASS "J" CMT. W/0.75% D-65, 0.25% D-28, 60 lb./Sx. BARITE, 17.8 ppg.
6 1/4" HOLE TO 20,102' K.B. T.M.D. (20,004.76' T.V.D.)
MUD
MUD
MUD
MUD
MUD
GLYCOL & WATER
PLUG No. 10, 490' to 40'. 234 Sx. ARCTIC SET II CEMENT.
PLUG No. 9, 940' to 490'. 200 Sx. ARCTIC SET II CEMENT.
PLUG No. 8, 1409' to 940'. 250 Sx. ARCTIC SET II CEMENT.
PLUG No. 7, 2003' to 1409'. CEMENT RETAINER at 2003' W/250 Sx. ARCTIC SET II CEMENT.
PUMPED 5200 Sx. ARCTIC SET II CEMENT THROUGH 13 3/8" F.O. at 3593'
PLUG No. 6, 7981' to 7481'. CEMENT RETAINER at 7981' W/ 200 Sx. CLASS "G" at 17.0 ppg. W/0.75% D-65 & 0.25 % D-28
PUMPED 1600 Sx. CLASS "G" CMT. W/ 0.75 % D-65 & 0.3% D-13 THROUGH 9 5/8" D.V. at 9585'
PLUG No. 5, 11,450' to 10,950'. CEMENT RETAINER at 11,450' W/200 Sx. CLASS "G" CMT. W/0.75% D-65 & 0.25% D-28.
PLUG No. 4, 12,251' to 11,576'. 200 Sx. CLASS "G" CMT. W/ 0.75% D-65 & 0.25% D-28, 17.0 ppg.
PLUG No. 2, 17,978' to 17,006'. 200 Sx. CLASS "J" CMT. W/0.75% D-65, 0.25% D-28, 60 lb./Sx. BARITE, 17.8 ppg.
INIGOK TEST WELL No. 1
2713' FSL and 1843 FWL
Sec. 34, T.18 N., R.5 W., U.M.
HUSKY OIL N.P.R. Operations
NATIONAL PETROLEUM RESERVE in ALASKA
WELLBORE SCHEMATIC


½" NEEDLE VALVE
2x½" BULL PLUG, TAPPED
2x4 SWAGE
4" COLLAR
SCRAP DRILL PIPE 4' LONG
2" COLLAR
MARKER AS FOLLOWS IN WELDED WRITING ON PIPE:
USGS/ONPRA
INIGOK TEST WELL No. 1
2713' FSL AND 1843' FEL
SEC. 34 T.18 N., R5W., U.M.
USGS/ONPRA
½" STEEL
⅛" GASKET MATERIAL
PACK API. RING WITH GREASE
+10'
TUBING
BELL GUIDE
1. 20", 3000 psi Slip On Head National
2. 20", 3000 psi X 13 5/8", 5000 psi Casing Spool
3. 13 5/8", 5000 psi X 11", 10,000 psi Tubing Spool
4. 42" Casing
5. 30" Casing
6. 20" Casing
7. 3", 3000 psi, 3" L.P. Gate Valve
8. 3", 5000 psi Gate Valves
9. 3", 5000 psi Gate Valves
10. 3", 5000 psi Blanking Flange
11. 3 1/16", 10,000 psi F.E. WKM Valve, T38 Trim
12. Bonnet 3 1/16" X 11", 10,000 psi National
INIGOK TEST WELL No. 1
2713' FSL and 1843' FWL
Sec. 34, T.18N., R.5 W., U.M.
HUSKY OIL N.P.R. Operations
NATIONAL PETROLEUM RESERVE in ALASKA
ABANDONMENT HEAD

RIG INVENTORY

The following inventory does not include these additional items:

Mud System

Additional pit to bring active system to 1,000 barrels.

Hoisting and Pipe Handling System

40 joints of heavy wall drill pipe.
"Iron Roughneck" or equivalent.
7000' of 5" Grade "G" drill pipe.
Blocks, hook, swivel, and rotary replaced with increased capacity units (500 tons).

Other

Forklift.
20" blowout preventer ram stack.

Draw Works

National 110, Serial No. T1866, grooved for 1-3/8" line. Equipped with Fluid Brake Company auxiliary brake, Model S501A, Serial No. 114-50; Crown-O-Matic Model TCB crown stopper; and National Micro-Matic automatic driller.

Rig Drive

National BT3, 3 section drive with 2 pump drives.

Engines

Three Caterpillars, D-398, with National C300 torque convertors. Engines equipped with heat exchangers and waste heat recovery system in substructure. Horsepower rating without fans is approximately 800 HP each.

Pumps

No. 1 - Emsco F1000 Triplex driven by compound.

No. 2 - National G1000, Serial No. 8298, with H1250 fluid end.

Substructure

Lee C. Moore Corporation.
Overall length - 56.10'.
Overall width- - 23.00'.
Floor height - 20.30'.
Motor height - 16.30'.

Mast

Lee C. Moore Corporation, Serial No. T 3013; 1,025,000 lb. GNC.

Blocks

National Model 548-F300 block hook assembly, grooved for 1-3/8" line, 300 ton capacity (Emsco RA 52-6-H500).

Swivel

National Type R, Serial No. T2985 with R.B. type wash pipe and packing (Emsco LB 500).

Rotary Table

Ideco, Model HS-275, 27-1/2", Serial No. 101 (Emsco T3750, 37-1/2").

Tongs

B.J., Type B.

Kelly Bushings Varco H.D. square drive.

Accumulator

Koomey, Model T, 20160-3S, Serial No. 4899, 3000 lb. wp with sixteen 10-gallon Greer hydraulic bottles.

Blowout Preventers

1 - 13-5/8", 5,000 lb. Hydril, Model GK, Serial No. 5103.

1 - 13-5/8", 5,000 lb. double Shaffer, Serial No. 2145.

1 - 13-5/8", 5,000 lb. single Shaffer, Serial No. 486-LA 80.

1 - 20", 2,000 lb. Hydril.

Boilers

2 - Williams and Davis, 150 HP oil fired boilers.

Mud Tanks

No. 1 - 30' x 8' x 5' 8" deep with four low-pressure guns, two high-pressure guns, and Rumba dual shale shakers.

No. 2 - 30' x 8' x 5' 8" deep with two low-pressure guns, two high-pressure guns, and one 5 hp lightening mixer.

No. 3 - 40' x 8' x 5' 8" deep with two low pressure guns, three high-pressure guns, 5 hp lightening mixer.

No. 4 - 30' x 9' x 5' 8" deep pre-mix tank with two mud hoppers and 5" x 6" mixing pump.

No. 5 - 30' x 8' x 5' 8" with lightening mixer.

Degasser

Clark Gas Hog, Serial No. 17.

Desander

Demco Model 123 with three 12" cones.

Desilter

Sweco Model 6T4 156 with twelve 4" cones.

Light Plants

Two Caterpillar, D3798, 400 KW Generator sets and necessary distribution system.

Overshots

1 - 10-5/8" Bowen Model 150, maximum catch 9".

1 - 7-5/8" OD Bowen Model 150, maximum catch 6-1/2".

Water-Fuel Tanks

2 - Combination water fuel tanks. Approximate capacity: 800 barrels water; 16,000 gallons fuel.

Drill Collars

20 approximately 7-3/4" OD x 2-7/8" ID drill collars with 6-5/8" regular connections.

Drill Pipe

100 joints, 5", 19.50 lb., Grade G drill pipe; 5", 19.50 lb., Grade E pipe as needed.

(Extra pipe as required for deep well.)

Air Heater

1 - 4,200,000 BTU air heater.

"Iron Roughneck"

Varco Model 50.