

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
910 State Office Building Portland, OR 97201

HISTORY OF OIL OR GAS WELL
(In compliance with rules and regulations pursuant to ORS 520)

| | | |
|--|--------------------------------------|-------------------------|
| Northwest Natural Gas Co. (Company or Operator) | Northwest Natural Gas Co. (Lease) | IW 33ac-3 (Well No.) |
| Sec. 10 T: 6N R: 5W Surveyed Coordinate (if directional, BHL & SHL): SHL= 1706' W & 1470' N from the SE corner Sec 3; T6N; R5W--BHL=340' N & 292' W of SHL @ 2603' MD | | |
| Wildcat: _____ (or Field Name): Mist Storage County: Columbia | | |
| Date: 5-Mar-91 Signature: <u>Yed A. Thomas</u> | | |
| Position: Senior Operations Superintendent | | |

Use this form in reporting the daily operations at the well. (Operator may use his own forms, but heading of this form must also be completed and submitted.) Please submit a complete history of the well. Include such information as bit sizes, mud weights, casing sizes and depths set, amount of cement used, drilling depths, fishing, logging, perforating, and plugging procedures, and anything else pertinent to the operation. Do not include lithology.

| Date | |
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| 11/19/90 | Weld conductor, mix spud mud. Spud well with 17 1/2" bit. Drilling to 127' |
| 11/20/90 | Drilling to 311'. Circulate and survey. Lose circulation at 370'. Drilling to 577'. |
| 11/21/90 | Drilling to 584'. Circulate and survey. Wipe hole to conductor. POH to run casing. Rig up and run 14 jts (574') 13 3/8", 54.5#, K-55, casing. Cement casing with lead 100 sx 1:1 perlite with tail 396 sx Premium mixed with .25% Flocele + 3% CaCl. No cement to surface. Run down annulus with 1" PVC and tag cement at 110'. Pump top job 75sx premium mixed with .25% Flocele + 3% CaCl. Good returns. WOC. |
| 11/22/90 | Cut off conductor and casing. Weld on wellhead and test to 1500 psi. Nipple up BOPE. RIH and test BOP with state representative witnessing. Drilling plug, float, and cement. Mud weight=9.0 |
| 11/23/90 | Drill cement and shoe. Drilling 12 1/4" hole to 593'. POH for plugged jets. RIH and drill to 653'. POH and PU mud motor. RIH. Drilling, circulate and survey to 1097'. POH and LD mud motor. Mud weight=9.8 |
| 11/24/90 | PU stabilizers. RIH. Ream to bottom. Unplug flowline. Drilling and survey to 1231'. Wipe hole to shoe. Circulate. Drilling and survey to 1383'. Wipe hole to 1133'. Drilling to 1535'. Mud weight=9.8 |
| 11/25/90 | Drilling to 1567'. Circulate and survey. Wipe hole to 1317'. Drilling to 1722' Wipe hole to 1350'. Drilling to 1846'. POH to inspect bit. Tight hole @ 1100' Replace pump packing. RIH with same bit, wash 30' to bottom. Drilling to 1877'. Mud weight=9.8 |

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| Date | |
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| 11/26/90 | Drilling to 1907'. Circulate and survey. Drilling to 1939'. Wiper trip to shoe. (tight hole 1939'-1690') Repair rotary clutch. RIH and ream 80' to bottom. Drilling to 1970'. 8 std wiper trip. Ream 90' to bottom. Raise mud weight to 10.5. Drilling to 2000'. 5 std wiper trip. Drilling to 2060'. 6 std wiper trip. Drilling to 2122'. Unplug flowline. Drilling to 2146'. Mud weight=10.7 |
| 11/27/90 | Drilling to 2153'. Wipe hole to 1830'. Drilling to 2264'. POH for new BHA. PU mudmotor, RIH, orientate tool. Drilling, circulate and survey to 2325' Unplug flowline. Drilling to 2392'. Mud weight=10.4 |
| 11/28/90 | Drilling to 2539'. Circulate and ream tight hole. Drilling to 2560'. Unplug flowline. Drilling to 2600'. Circulate for loggers. Drilling to 2611' and 2621'. Circulate for loggers. Survey, POH for rotating assembly. RIH, circulate. Wipe hole to shoe. Mud weight=10.4 |
| 11/29/90 | POH for logs. Rig up and run DIL, AVL, Density Neutron, GR, Dipmeter. RIH and circulate. Change pipe rams, rig up to run casing. Mud weight=10.5 |
| 11/30/90 | Run and hydrotest to 2000 psi, 61 jts (2605') of 8 5/8", 32#, K-55, smls casing to 2603'. Losing circulation. Build volume. Cement casing with lead slurry of 600 sx 1:1 perlite mixed with 2% gel + 2% CaCl+.75% Halad 4. Pump tail slurry of 442 sx Premium cement mixed with 2% KCl +2% microbond + 1.1% Gas Ban. Set slips. WOC. Cut off 8 5/8" casing. Mud weight=10.4 |
| 12/1/90 | Install and test tubing head. Nipple up BOPE. RIH. WO state man. Test BOP with state representative witnessing. Drilling plug, float, and cement to 2600'. POH and PU casing scraper. RIH and circulate. POH for logs. |
| 12/2/90 | Rig up Atlas and run CBL and Vertilog. Clean mud tanks and fill with KCl HEC-10. RIH and displace hole with KCl HEC-10. Drilling cement and shoe. Drilling 7 7/8" hole to 2897'. Circulate. Wipe hole to shoe. Mud weight=8.9 |
| 12/3/90 | Tight hole. Wipe hole to shoe. Circulate and survey. POH for logs. Rig up Atlas and run DIL, AVL, GR, Neutron-Density, Dipmeter logs. RIH and LD BHA. PU DP and RIH to 2738'. Set 40" cement plug. Won't set, reverse out. Run to bottom and circulate. Pump 50 sx cement plug. WOC. RIH and tag plug at 2765'. Circulate and wash. Mud weight=8.5 |
| 12/4/90 | Set 25 sx plug at 2765'. WOC. RIH and tag plug at 1670'. Drill out cement to 2698. POH and PU under reamer. Under ream 15" hole f/2604'-2698'. Pull to shoe and wait 15 minutes. Ream to bottom. Circulate and POH for caliper log. Mud weight=8.9 |
| 12/5/90 | Rig up Atlas and run 4-Arm Caliper Log. RIH with under reamer to shoe. Clean mud tanks. Mix KCl HEC-10 polymer system. Run to bottom and displace hole. POH and LD DC'S, HWDP and under reamer. PU 3 jts, (117' total-97' of screen) of 5 1/2" wire wrapped liner and RIH to 2694'. Mud weight=8.5 |

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| 12/6/90 | Rig up and gravel pack liner with 105 sx 20/40 sand. Reverse out excess. Wait 15 minutes, pressure up on pack. POH and LD gravel packing tools. Rig up Atlas, run Photon log. RIH with lead seal and set at 2574' POH. PU wireline re-entry guide, No-Go nipple (with plug installed) 1 jt 4 1/2", 11.6 # tubing and packer. RIH on wireline and set packer at 2530'. RIH with test overshot and test packer to 1000 psi. POH and LD pipe. |
| 12/7/90 | Install 5 1/2" pipe rams. RIH and LD hydrotest tubing. Make up tubing string which consists of; overshot, 1 jt 4 1/2" tubing, sliding sleeve, 1 jt 4 1/2" tubing, gas lift mandrel, x/o (4 1/2" 8rd X 5 1/2" 8rd), 75 jts 5 1/2", 17#, K-55 tubing. Hydrotest tubing to 2000 psi. Space out tubing, test packer to 500 psi. Mix and displace hole with C.A.P. Nipple down BOPE. Install tree. |
| 12/8/90 | Install and test tree. Release Taylor Drilling Rig #5. |
| 12/20/90 | Rig up Otis. Open sliding sleeve. Displace fluid from tubing. Close sliding sleeve. RIH with retrieving tool and pull plug from No-Go. Blow well to atmosphere. Release Otis. |