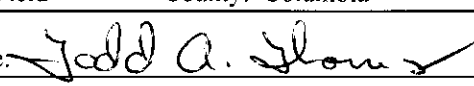


STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
800 NE Oregon Street #28, Portland OR 97232

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

| | | |
|-------------------------------------|---|--|
| NW Natural (Company or Operator) | Northwest Natural Gas (Lease) | OM 12-22-65 (Well No.) |
| Sec. 22 T. 6N R. 5W | Surveyed Coordinates (if directional, BHL & SHL): | SHL; S03°05'16"W 2267.48' & S86°54'44"E 1224.03' BHL; 110.97' N & 536.75' W from surface location |
| Wildcat: | (or) Field Name: Calvin Creek Storage Field | County: Columbia |
| | | Signature:  |
| Date: 2/5/98 | Position: Storage Development Engineer | |

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 | |
|---------|--|
| 8/25/97 | Rig up, pick up Kelly, make up bit, mix mud. Pick up drill collars, spud well with 12 1/4" bit. Drilling f/ 40' t/ 134' |
| 8/26/97 | Drilling 12 1/4" hole f/ 134' t/ 355'. Wipe hole to surface & circulate. POH for casing. Rig up and run 8 jts, 346' of 8 5/8", 24#/ft, J-55 casing and run to 343'. Cement casing w/ 120 sx type III cement w/ 2% sodium metasilicate. Tail with 100 sx of type III cement w/ 2% sodium metasilicate + 2% CaCl. Bump plug @ 12:45 pm. WOC. Cut Off casing and weld on wellhead. |
| 8/27/97 | Weld on wellhead. Test weld to 1000 psi. Nipple up BOPE. Test BOPE with State Rep witnessing. Drill plug Float, cement. Drilling 7 7/8" hole f/ 355' t/ 407'. |
| 8/28/97 | POH and pick up directional drilling assembly. Directional drilling f/ 407' t/ 728'. Circulate and wipe hole to shoe. Drilling f/ 728' t/ 916'. Circulate and POH. Mud weight = 9.0. MD=536', TVD=535.59, 7.5° N70W; MD=844', TVD=832.84, 19.5° N68W |
| 8/29/97 | RIH with new BHA. Ream f/ 700' t/ 916'. Rotary drilling, circulating and surveying f/ 916' t/ 1415'. Wipe hole to Shoe. Tight @ 1166'. Condition mud, circulate, POH for core bit. Pick up core bit, core barrel, RIH. Wash 50' To bottom. Coring w/ 7 5/8" core bit f/ 1415' t/ 1438'. Mud weight = 9.0. MD=1098', TVD=1069', 22° N74W; MD=1415', TVD=1361, 24.5° N73W |
| 8/30/97 | POH w/ core #1 due to slow penetration and excessive cuttings over shaker, lay down core barrel (cut 23', recover 15.5'). Pick up core barrel & RIH. Wash 30' to bottom. Coring f/ 1438' t/ 1467'. POH with core #2 and lay down (cut 29', recovered 27.4') Pick up core barrel & RIH. Wash 30' to bottom. Coring f/ 1467' t/ 1490'. Core jammed POH with core #3 and lay down (cut 23', recovered 4.5'). Pick up new inner barrel. Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1490' t/ 1519'. POH with core #4 and lay down (cut 29', recovered 20'). Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1519' t/ 1525'. Mud weight = 9.0 |
| 8/31/97 | Coring f/ 1525' t/ 1549'. POH with core #5 and lay down (cut 30', recovered 30'). Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1549' t/ 1579'. POH with core #6 and lay down (cut 30', recovered 11.8'). Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1579' t/ 1609'. POH with core #7 and lay down (cut 30', recovered 27.6'). Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1609' t/ 1639'. POH with core #8 and lay down (cut 30', recovered 5'). Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1639' t/ 1665'. Mud weight = 9.1 |
| 9/1/97 | POH with core #9 and lay down (cut 26', recovered 25.5'). Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1665' t/ 1695'. POH with core #10 and lay down (cut 30', recovered 17.8'). Make up new barrel & RIH. Coring f/ 1695' t/ 1725'. POH with core #11 and lay down (cut 30', recovered 30'). Pick up core barrel & RIH. |

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| Date | |
|----------------|---|
| 9/1/97 (cont.) | Coring f/ 1725' t/ 1755'. POH with core #12 and lay down (cut 30', recovered 20'). Pick up core barrel & RIH. Coring f/ 1755' t/ 1785'. POH with core #13. Mud weight = 9.1 |
| 9/2/97 | Lay down core #13 (cut 30', recovered 20'). Pick up core barrel & RIH. Wash 60' to bottom. Coring f/ 1785' t/ 1815'. POH with core #14. Lay down core #14 (cut 30', recovered 24.5'). RIH with rotary drilling assembly. Ream f/ 1415' t/ 1815'. Drilling 7 7/8" f/ 1815 t/ 2082'. Survey @ MD = 1834', TVD=1742', 24.5° N73W 143' N & 458' W. Wipe hole to 1723'. Stuck pipe at 1723'. Mud weight = 9.3 |
| 9/3/97 | Jar on pipe, pull 40K, not able to rotate. Rig up & circulate well. Spot light weight mud. |
| 9/4/97 | Work stuck pipe. Spot ½ bbl of light weight mud every 1 hour. Circulate to balance mud system. Rig up DiaLog & determine free point @ 1531'. Back off pipe at 1499'. Chain out of hole with fish. Make up screw in BHA & RIH to shoe. Slip 80' of drilling line. RIH to 1499' & screw into fish. Jar on pipe. Mud weight = 8.7 |
| 9/5/97 | Continue to jar up & down. Back out of fish, POH and lay down 1 jt of DP. RIH & screw into fish. Jar down on fish. Remove goose neck and rig up DiaLog. Run free point and shoot off @ 1581'. Chain out of hole w/ fish. Lay down drilling jars & 2 jts of heavy weight drill pipe. RIH with fishing tools & screw into fish. Jar on fish. Leave 130' (bit, stab, monel DC, stab, 2 DC, HWDP) of fish in hole. Mud weight = 8.7 |
| 9/6/97 | POH and lay down fishing tools. RIH open ended to 1551'. Circulate and rig up to lay whipstock plug. Lay 46 sx cement plug mixed with 2% CaCl. Lay plug f/ 1551' t/ 1391'. WOC. RIH & tag @ 1233'. Circulate & condition mud. Ream f/ 1233' t/ 1336'. Mud weight = 8.9 |
| 9/7/97 | Reaming f/ 1336' t/ 1484'. Polish cement f/ 1470' t/ 1484'. Circulate hole clean & POH for mud motor. RIH w/ mud motor & ream f/ 1408' t/ 1484'. Directional drilling f/ 1484' t/ 1605'. POH & make up new BHA. RIH and LD drill pipe. Mud weight = 9.0+ |
| 9/8/97 | Ream f/ 1532' t/ 1605'. Drilling 7 7/8" hole f/ 1605' t/ 1782'. Survey @ MD = 1650', 20.5°. Wipe hole 5 stds. Drilling f/ 1782' t/ 1968'. Wipe hole 8 stds. Drilling f/ 1968' t/ 2089'. Wipe hole 6 stds. Drilling f/ 2089' t/ 2177' Mud weight = 9.2+ |
| 9/9/97 | Drilling f/ 2177' t/ 2243'. Wipe hole 6 stds. Drilling f/ 2243' t/ 2337'. Circulate & wipe hole to surface. Clean off BHA & RIH. Ream f/ 1119' t/ 1179'. Circulate & POH for logs. Rig up Schlumberger run DIL, GR, SP, FMS, FDCN, Sonic, RIH Mud weight = 9.2 |
| 9/10/97 | Circulate and condition hole for casing. POH lay down drill pipe and BHA. Rig up and run 55 jts of 8 5/8", 24#, J-55 casing to 2291'. Circulate casing. Cement casing with lead slurry, 305 sx type III + 2% metasilicate + 2 ghs FP-12L and tail with 175 sx type III + 3% KCl + 0.7% FL-62 + 0.4% CD-32 + 0.9% BA-61 + 2 ghs FP-12L Cement in place @ 1:15 pm. Set slips, nipple down BOPE. Cut off casing, nipple up tree. |
| 9/11/97 | Rig down, clean mud pits, lay down Kelly. Release Taylor Rig #7. Rig up Schlumberger and perforate f/ 1502' t/ 1852' with 3 1/8" casing gun at 1 hole/foot. |