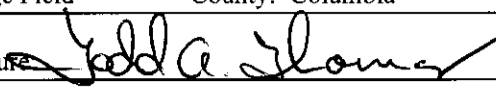


STATE OF OREGON  
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES  
800 NE Oregon Street #28, Portland OR 97232

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)	IW 22H-22-65 (Well No.)
Sec. 22 T. 6N R. 5W	Surveyed Coordinates (if directional, BHL & SHL): SHL; N03°03'15"E 2291.54' & S86°56'45"E 1907.87' BHL; 695.1' S & 648.91' E from surface location	
Wildcat:	(or) Field Name: Calvin Creek Storage Field	County: Columbia
Date: 2/20/98	Signature:  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	
10/14/97	Rig up, make up bit, mix mud. Pick up drill collars, spud well with 17 1/2" bit. Drilling f/ 35' t/ 108'.
10/15/97	Drilling 17 1/2" hole f/ 108' t/ 167'. Wipe hole to surface & clean bit. Drilling f/ 167' t/ 279'. Unplug flowline. POH to change shaker screen. Drilling f/ 279' t/ 345'. Circulate & wipe hole. POH for casing. Rig up and run 8 jts, 336' of 13 3/8", 48#/ft, H-40 casing to 332'. Circulate hole clean. Cement casing w/ 142 sx type III cement w/ 2% sodium metasilicate. Tail with 74 sx of type III cement w/ 2% sodium metasilicate + 3% CaCl. Bump plug @ 11 pm. WOC.
10/16/97	WOC. Cut off casing and weld on wellhead. Test weld to 1000 psi. Nipple up BOPE. Test BOPE with State Rep witnessing.
10/17/97	Drill plug, baffle, cement & shoe. Drilling 12 1/4" hole f/ 345' t/ 413'. POH and pick up directional drilling assembly. RIH. Directional drilling f/ 413' t/ 595'. Mud weight = 9.2 MD=484', TVD=483', 9.1° N50.3E; MD=544', TVD=542', 15.9° N48.2E
10/18/97	Wipe hole to shoe. Directional drilling f/ 595' t/ 836'. Circulate and wipe hole to surface. Change jets in bit. RIH. Directional drilling f/ 836' t/ 896'. Work tight hole @ 872'. Directional drilling f/ 896' t/ 958'. Circulate, survey, wipe hole. Directional drilling f/ 958' t/ 1019'. Mud weight = 9.9 MD=664', TVD=656', 18.6° N46.1E; MD=785', TVD=768', 25.8° N45.4E; MD=937', TVD=899', 36.4° N41.1E; MD=998', TVD=947', 40.8° N41.2E
10/19/98	Directional drilling f/ 1019' t/ 1050'. Circulate and wipe hole to 680'. Tight at 1 <sup>st</sup> & 2 <sup>nd</sup> tool jts. Directional drilling f/ 1050' t/ 1143'. Wipe hole to surface. Ream f/ 1013' t/ 1143'. Directional drilling f/ 1143' t/ 1205'. Wipe hole 3 stds. Ream f/ 1075' t/ 1115'. Drilling f/ 1205' t/ 1268'. Circulate & wipe hole 3stds. Directional drilling f/ 1268' t/ 1315'. Mud weight = 10.0 MD=1121', TVD=1035', 49.2° N42.5E; MD=1217', TVD=1091', 57.5° N44.4E
10/20/97	Directional drilling f/ 1315' t/ 1330'. Circulate and wipe hole 2 stds. Drilling f/ 1330' t/ 1391'. Circulate and wipe hole 2 stds. Directional drilling f/ 1391' t/ 1485'. Circulate and wipe hole to 1166'. Directional drilling f/ 1485' t/ 1548'. Circulate and survey. Directional drilling f/ 1548' t/ 1579'. Circulate and survey. POH to move drill pipe, check bit. RIH, orient tool. Directional drilling f/ 1579' t/ 1734'. Circulate and survey. Wipe hole t/ 1322' Directional drilling f/ 1734' t/ 1765'. Mud weight = 10.0 MD=1433', TVD=1187', 68.4° N41.8E; MD=1620', TVD=1246', 75.1° N42.5E; MD=1713', TVD=1266', 79.3° N42.5E
10/21/97	Directional drilling f/ 1765' t/ 1825'. Circulate for loggers. POH, lay down directional tools. Make up hole opener and RIH. Wash 90' to bottom. POH for logs. Rig up loggers & run DIL, Sonic, GR, SP, FDCN. Mud weight = 10.0+.

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Date	
10/22/97	Run wireline logs. RIH for clean out run. POH & pick up logging tools and run in hole on drill pipe. Log f/ 1138' t/ 1820'. POH & lay down Schlumberger tools. Pick up hole opener, RIH, and circulate. POH & lay down hole opener. Rig up to run casing, make up packer assembly. Mud weight = 9.9
10/23/97	Run 41 jts (1740') 8 5/8", 32#, J-55, modified LT&C casing with guide shoe, float collar, and annulus casing packer to 1763'. Cement casing with lead slurry, 627 cu. ft. type III + 2% metasilicate + 2 ghs FP-12L and tail with 389 cu. ft. type III + 3% KCl + 0.7% FL-62 + 0.4% CD-32 + 0.9% BA-61. Inflate casing packer w/ .5 bbl of class "G" cement w/ 0.3% FL-52 + 0.65% CD-32 + 0.2% SM. Pressure test ACP. Nipple down BOP, prepare to set casing slips. Well flowing in annulus. Nipple up BOPE & shut annular preventer and monitor pressure. WOC. Monitor pressure, WOC. Rig up Schlumberger and run CET. Wait on squeeze tools, perforating guns.
10/24/97	Transfer mud, clean mud pits. Rig up Schlumberger and run CET. Cut off casing, nipple up & test upper annular BOP.
10/26/97	Rig up Schlumberger and perforate 540' - 541', 4 shots/ft. Make up packer & RIH to 495' & set. Rig up BJ Services. Circulate annulus, cement annulus w/ 36 bbls. Displace to clear tool. WOC.
10/27/97	WOC. Unseat packer, POH and lay down packer. Pick up bit & RIH. Circulate @ 618'. No cement. RIH to bottom & circulate. Rig up Schlumberger and perforate 1040' - 1041', 4 shots/ft. Rig up packer & RIH. Establish squeeze rate of .5 bbl @ 680 psi. RIH to 1020' and set packer to squeeze cement. Pump & displace 10 bbls of cement. Unseat packer & POH. Well swabbing, attempt to reverse circulate. POH, stopping to fill pipe. Pipe stuck. Attempt to work pipe. Unscrew from packer leaving 7 jts of drill pipe and cement tools in hole. Pick up jars & 4 stds of HWDP & RIH. Circulate at fish.
10/28/97	Jar on stuck pipe. Unscrew from fish, POH and pick up drill pipe. RIH, circulate and wait on fishing tools. Rig up DiaLog and run free point. Stuck @ 432'. Wait on wash pipe.
10/29/97	RIH with wash pipe. Wash over f/ 432' t/ 492'. POH. Twisted off 1 jt above wash shoe. RIH & screw into drill pipe. Jar on fish. Rig up & run free point. Tools won't go because of fill inside drill pipe. Circulate drill pipe by pressuring up and bleeding off several times. Rig up & shoot fish off @ 490'. POH & lay down fish (3 jts of drill pipe). RIH & screw into wash pipe. POH and lay down.
10/30/97	RIH, mix high viscous pill and circulate. Attempt to screw into fish. POH & pick up bit. RIH & circulate on fish. POH, lay down bit. RIH & attempt to screw into fish. POH. Rig up and run magnet on wireline. RIH with wash pipe and wash over @ 490'.
10/31/97	POH and lay down wash pipe. Pick up spear & RIH. Spear fish, POH & lay down fish (1 jt of wash pipe & wash over shoe) and spear. Rig up and run wireline magnet. RIH & reverse circulate. POH & rig up new wash over shoe & RIH. Wash over tool joint @ 490'. POH and rebuild shoe. RIH & wash over tool joint @ 490'. POH & pick up new shoe & RIH. Washing over tool joint @ 490'.
11/1/97	Washing over tool joint @ 490'. POH, change shoe, RIH. Washing over tool joint @ 490'. POH, change shoe, RIH. Washing over tool joint @ 490'. POH, change shoe, RIH. Washing over tool joint @ 490'. POH, pick up mill. RIH w/ mill f/ 490' t/ 493'. POH, lay down mill, junk basket. Pick up magnet, RIH & work magnet. Make up junk basket, new mill & RIH.
11/2/97	Milling @ 493'. POH, change out mill, RIH. Milling @ 493'. POH, lay down mill, junk basket. Pick up magnet & RIH. Work magnet. POH, lay down magnet, pick up impression block & RIH. POH & pick up junk sub. Circulate & work junk sub. POH, lay down junk sub, pick up mill & RIH. Milling f/ 493' t/ 495'. POH & pick up wash pipe & shoe. Washing over drill pipe f/ 492' t/ 494'. POH, change shoe, RIH. Washing over f/ 494' t/ 496'. Washing over f/ 496' t/ 498'. POH, lay down wash pipe. Make up mill & RIH. Milling drill pipe f/ 494' t/ 498'. Milled outside the 8 5/8" casing. POH & lay down fishing tools. RIH open ended. Circulate & monitor well. Rig secured & temporarily released.
11/6/97	Circulate well. POH. Nipple down upper BOPE. Pressure up on 8 5/8" X 13 3/8" annulus, no circulation. Nipple down BOPE. Weld pup joint on 8 5/8" casing. Stretch test casing. Cut off casing. Nipple up BOPE & RIH. Secure rig for night.

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11/7/97	Unload wash pipe, tools. Unload & install #1 pump. POH & pick up section mill. RIH & cut casing @ 299' & 200'. Pick up spear, RIH & pull on fish. Pick up section mill & RIH. Make cut @ 43'. Pick up spear, RIH & pull on fish. RIH with section mill and recut @ 43'. Pick up spear, RIH & pull on fish. Lay down spear, pick up wash pipe. Washing over 8 5/8" casing f/ surface. Mud weight = 8.5
11/8/97	Washing over 8 5/8" casing to 43'. Circulate, lay down wash pipe, pick up spear. Lay down cut off casing. RIH to 498' & circulate. POH & pick up wash pipe. Washing over 8 5/8" casing f/ 43' t/ 120'. Circulate & POH. RIH open ended to 498' and circulate. POH & pick up wash pipe & RIH. Washing over 8 5/8" casing f/ 120' t/ 127'. POH & lay down bottom joint of wash pipe, make up new wash shoe, RIH. Unable to wash over fish. POH & lay down 10 3/4" wash pipe. Mud weight = 8.5+
11/9/97	Pick up 11 3/4" wash pipe. Work over fish & wash f/ 126' t/ 127'. POH & inspect wash over shoe. RIH & wash over f/ 127' t/ 216'. Circulate & POH. Wait on break out tongs. RIH open ended to 498'. Mud weight = 8.5+
11/10/97	Circulate gas out. POH & pick up spear & RIH. Stab fish, POH and lay down 160' of fish. Lay down bad wash pipe and pick up new & RIH. POH, unable to wash over fish. POH & change shoe. RIH & wash over fish. Wash over 8 5/8" casing f/ 200' t/ 297'. POH, pick up spear, RIH & stab fish. POH & lay down fish. RIH open ended & circulate. POH & pick up wash pipe & RIH. Wash over 8 5/8" casing f/ 297' t/ 318'. POH, lay down 3jts of 11 3/4" wash pipe, make up 11 3/4" wash shoe & RIH. Mud weight = 8.5+
11/11/97	Pick up 5 jts of 10 3/4" wash pipe, drive sub & RIH. Wash over 8 5/8" casing f/ 318' t/ 329'. POH & make up new shoe & RIH. Work over stub & wash f/ 328'. Could not get back to previous depth because of excessive torque. POH, lay down wash pipe, Baker tools, BHA.
11/12/97	Lay down heavy-wate drill pipe, drill pipe. RIH to 495'. Rig up BJ Services and circulate well. Lay cement plug f/ 495' t/ 200'. WOC. Tag plug @ 200'. Rig up BJ and cement to surface. Lay down drill pipe. Nipple down upper BOP. Tag top plug @ 20'. Nipple down lower stack. Load out mud, junk pipe.
11/13/97	Clean mud pits. Rig down. Break Kelly, load trucks. Release Taylor Drilling Rig #4.

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