

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 24bH-23-65 (Well No.)
Sec. 23 T. 6N R. 5W	Surveyed Coordinates (if directional, BHL & SHL): SHL; 976.5' North & 1256.3' East from the SW corner of section 23, T6N; R5W, BHL; 313' S & 543' E from surface location	
Wildcat:	(or) Field Name: Calvin Creek Storage Field	County: Columbia
Date: 12/18/00	Signature: <u><i>God Jones</i></u> Position: Construction Manager	

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	
6/8/00	Rig up to spud. Unload collars. Spud well with 17.5" bit to bottom of conductor barrel was 33'. Drill 17.5" hole to 429' K.B. Circulate hole clean. Circulate & POH. Rig up & run 13 5/8" casing. Run 10 joints 13 3/8". Casing string length = 431.96' K.B. Mud density = 9.1, viscosity = 47.
6/9/00	Finish running surface casing. Casing circulated & reciprocated. Cemented by Halliburton. Lead: 209 SXS, class III, 5% cal/seal, 2% CaCl2, .25% Versaset, 5% salt, 1/4 #/sx flocele, yield 1.77ft^3/sx. Tail: 111 SXS, class III, same additives as lead, yield 1.62 ft^3/sx. Good circulation throughout. 30 bbls clean cement to surface. Weld & test head weld to 1000 psi. Weld held ok. Nipple up BOPs. Pressure up accumulator and function test BOP. Mud density = 9.1, visc. = 47.
6/10/00	Test blind rams and casing to 1000 psi, ok. Trip in hole with 12.25" bit. Test BOP stack with DOGAMI rep. on location. Drill cement, float and shoe. Drill to 438'. Change out drilling fluid. Circulate hole clean. Drill ahead to 711'. POH, lay down drill collars and pick up directional tools. Mud density = 8.8, visc. = 36.
6/11/00	Trip in hole with directional equipment. Directionally drill 9.875" hole from 711' to 1622' K.B. Hole is cleaning well. Running with two pumps. MD=778', TVD=778', 6.8° AZM 123; MD=958', TVD=954', 15.4° AZM 85.2; MD=1108', TVD=1093', 29.5° AZM 93.9; MD=1385', TVD=1316', 43° AZM 116.3; MD=1541', TVD=1420', 52.4° AZM 124.4. Mud density = 8.9, visc. = 40.
6/12/00	Directionally drilling ahead with 9.875" bit. Building angle to 70°. TD build section at 1838' MD, 1561' TVD. Circulate hole clean. Trip out of hole and lay down drill pipe and directional tools. Make up 12.25" hole opener. Trip in hole and start cleaning and opening hole at 445'. Open hole to 1250' with 12.25" hole opener. MD=1665', TVD=1489', 59.3° AZM 132.5; MD=1758', TVD=1533', 64.7° AZM 138.4; MD=1838', TVD=1561', 72.2° AZM 140. Mud density = 8.8, visc. = 42.
6/13/00	Open hole 10 12.25" from 1250' to 1838'. Circulate and wipe hole to casing shoe three times. Trip out to log well with Schlumberger. Log well with Schlumberger. Mud density = 9, visc. = 39.
6/14/00	Log well with Schlumberger. Trip in hole with 12.25" bit. Drill ahead to 1891'. Circulate samples, looking for Clark & Wilson top. Trip out to log. Pick up logging tools. RIH to 1400'. Tools not working. Work on tools. Log hole from 1462' to surface. Trip in hole with FMS tools on drill pipe. Log from 1883' to 1450'. Trip out of hole with tools. Mud density = 9, visc. = 39.
6/15/00	Trip out of hole with Schlumberger tools. Rig up to and run 8 5/8" casing. Circulate casing on bottom. Rig up Halliburton and cement as follows; lead slurry: 440 sx Type III, 35-65 Poz, 8.7#/sx Microbond, .43#/sx Halad-344, yield 1.60 ft^3/sx. Tail: 210 sx Type III, 1.14#/sx KCl, 9.4#/sx Microbond, .6% Halad-344, .2% CFR-5, yield 1.47 ft^3/sx. Cement using two pump trucks. Good returns. Inflate ECP. Float held. Set casing slips. Casing landed at

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Date	
6/15/00 cont.	1870'. Cut off casing, install spool and nipple up BOPs.
6/16/00	Test tubing spool connection to 1000 psi, ok. Nipple up BOP. Function test BOPs. Test blind rams and BOPE equipment as per DOGAMI requirements. OK. Make up 7.875" bit trip in hole to drill out cement. Drill out cement to 1849'. Circulate & condition mud. Trip out to log.
6/17/00	Rig up Schlumberger and run CBL and USI log. Trip in hole with drill string and 7 7/8" bit. Drill out cement and shoe. Clean out rat hole to 1892'. Circulate hole clean and pull into shoe. Mix KCl/Polymer fluid to drill sand. Displace hole with drill out fluid. Trip out to pick up directional tools. Mud density = 8.6, visc. = 38.
6/18/00	Make up directional equipment & trip in hole. Drill ahead to 2770'. Build hole angle from 71° to 91°. Circulate and clean hole. Dummy trip to casing shoe. Circulate and trip out to lay down directional tools. MD=1946', TVD=1595', 74.9° AZM 139.7; MD=2314', TVD=1645', 87.9° AZM 142.7; MD=2594', TVD=1648', 90.1° AZM 137.2; ; MD=2770', TVD=1642', 92.3° AZM 138.3. Mud density = 8.6, visc. = 38.
6/19/00	Trip out and lay down directional tools. Unload screen. Make up BHA with near bit stablizer and drill string. Trip in hole and ream out directional hole from 1891' to 2770'. Circulate and POH for logs. Make up Schlumberger tools and RIH on drill pipe. Mud density = 8.6, visc. = 38.
6/20/00	Logging with Schlumberger. Trip in hole with drill string. Circulate and trip out. Lay down excess drill pipe. Mud density = 8.6, visc. = 38.
6/21/00	Lay down excess drill pipe. Rig up to run and run 5.5" liner and liner setting tools. Make up packer assembly. Install KOIV valve. KOIV damaged. Unable to use. Wait on new valve from Baker Oil Tools, Bakersfield, CA. Mud density = 8.6, visc. = 38.
6/22/00	Wait on new KOIV valve. Change out KOIV and trip in hole with screen. Circulate liner on bottom. Mix and filter 120 bbls KCl water and breaker. Drop closing ball and attempt to set SLR Packer with Halliburton pump truck. Unable to get positive packer set. Spot 120 bbl clean fluid in screen annulus. Pull stinger out of liner and attempt to test KOIV valve and annulus. No test. Mud density = 8.6, visc. = 38.
6/23/00	Unable to get Baker SLR packer and/or sliding sleeve to test properly. Wait on Baker. Load out equipment. Make several attempts to close sliding sleeve or set packer. No success. Wait on Baker to correct problem. Mud density = 8.6, visc. = 38.
6/24/00	Wait on Baker remedial tools. Lay down drill string. Baker on location. Make up tools and RIH with 5.5" tubing string. Sting into SLR packer. Test annulus. No test. Set remedial packer with full string weight. Good annulus test. Space out tubing and land doughnut with string in full compression. Good annulus test. Nipple down BOP's. Nipple up wellhead. Release rig.

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