

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

Permit No. 154

HISTORY OF GEOTHERMAL WELL
(Submit in duplicate)

In compliance with rules and regulations adopted pursuant to ORS 522.355 (Chapter 522 OL 1975)

Operator Anadarko Petroleum Corporation Field Pueblo Valley
Well No. 52-22A, Sec. 22 T. 37S R. 33E W.B. & M.

Signed 
Date January 18, 1994 Title Atty-in-Fact
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production. Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date | A three-page well history accompanies this form.

**ANADARKO PETROLEUM CORPORATION
PUEBLO VALLEY FEDERAL 52-22A
WELL HISTORY**

PROPRIETARY DATA

11/05/93 MI WLCT.

11/06/93 RU WLCT.

11/07/93 CREW ON SCHEDULED BREAK.

11/15/93 WOC: 46 (46). DRLD 12-1/4" HOLE FR 0 TO 46. RAN 46' 9-5/8" 40# J-55 CSG AS CONDR, CIP W/35 SXS CMT.

11/16/93 DRLG: 333 (287), MW 8.4, V 45. DRLD 8-1/2" HOLE FR 46 TO 333 IN CLAYST & SLTST W/GOOD MUD RET. CIRC HOLE CLN.

11/17/93 WOC: 333 (0). MADE WIPER RUN, CIR HOLE CLN, POH. RAN 15 JTS 7" 23# J-55 ST&C 8 RD CSG. HUNG SHOE AT 332 GM W/FLT AT 311. PMPD 63 SXS CLASS B CMT. DISPL CMT W/510 GAL WTR. PMPD 30 GAL CMT TO PIT. CIP AT 1715. WOC.

11/18/93 TSTG BOPS: 333 (0). WOC, NUBOPS. TSTD BLIND RAMS AT 1730 WITH 1000 PSI FOR 25 MIN, HELD OK. UNABLE TO TST PIPE RAMS, BOP STACK NOT CNTRD. REM BOPS AND WH AND INSP THDS, OK. NUBOPS, CNTRD OK. UNABLE TO CONT TST DUE TO FRZNG OF SUCT & PRESS LINES AT AIR TEMP OF 5°F. TST SUSP AT 0430 PENDING WARMER TEMP.

11/19/93 REP: 333 (0). KILL PUMP UNABLE TO HOLD 1,000 PSI DURING BOP TESTS, ONE PISTON LKG. WO REPL PARTS AND NEW PUMP.

11/20/93 DRLG: 471 (138), MW 8.4, V 40. RU NEW KILL PUMP. TSTD BLIND AND PIPE RAMS TO 1,000 PSI FOR 20 MIN. TSTD HD TO 700 PSI FOR 15 MIN. TSTD CSG AND CK MAN TO 700 PSI FOR 20 MIN. TIH W/6-1/8" BIT, DRLD WPR PLUG AND FLT AT 310, FIRM CMT FROM 312 TO 327, SHOE AT 328 AND FM FROM 333 TO 338. RAN FM INTEGRITY TST TO 218 PSI OR .65 PSI/FT, LOST 16 PSI IN 10 MIN. ALL TSTS OK AT 2000 HRS. DRLD 6-1/8" HOLE FROM 338 TO 471 IN CLAY AND SAND W/GOOD RET.

11/21/93 DRLG: 865 (394), MW 8.5, V 40. DRLD 6-1/8" HOLE FROM 471 TO 865 IN CLAY, MUDST, AND SAND W/GOOD RET.

11/22/93 DRLG: 1265 (400), MW 8.9, V 35. DRLD 6-1/8" HOLE FROM 865 TO 1265 IN SLTST AND CLAYST W/GOOD RET. COND HOLE AT 1000 FOR 45 MIN. PREP TO RUN 4-1/2" CSG AT 1315.

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- 11/23/93 WOC: 1325 (60), MW 9.0, V 38-42. DRLD 6-1/8" HOLE FROM 1265 TO 1281. POH TO CHK BIT, PLGD W/BLUE CLAY. RIH, DRLD FROM 1281 TO 1325 IN SILTST AND CLAYST. CIRC HOLE CLN, COND MUD AND HOLE, POH. RAN 67 JTS, 4-1/2", 11.6#, WC-75, FJ CSG. HUNG SHOE AT 1322, CIRC FOR 1/2 HR. MIXED AND PMPD 72 SXS CLASS G CMT MIXED W/1:1 PERLITE, 40% SILICA FLOUR, 3% GEL FOLLOWED BY 37 SXS CLASS G CMT W/40% SILICA FLOUR. DISP 20 W/BBL WTR, BUMPED PLUG W/400 PSI. THIN CMT TO SURF AT END OF DISP. CIP AT 2315 HRS. WOC.
- 11/24/93 WOC: 1325 (0). REM BOP STACK AND 7" WH. INST 4-1/2" WH, NUBOPS. AIR TEMP: 0°F.
- 11/25/93 CORING: 1367 (42), MW 8.4, V 45. TSTD BOPS AT -4°F USING NON-TOXIC ANTI-FRZE. TSTD RAMS AT 1000 PSI FOR 20 MIN, NO PRESS DROP. TSTD HD AT 700 PSI, LOST 25 PSI IN 20 MIN. TSTD CSG AND CHK MF AT 1000 PSI, LOST 60 PSI IN 21 MIN. RIH W/3-7/8" RB, DRLD WPR PLUG AND FLT AT 1300, CMT FROM 1302 TO SHOE AT 1321. CLND HOLE TO 1325 AND COND INTEGRITY TST AT WH PRESS OF 290 PSIG (.65 PSI/FT), NO PRESS DROP IN 5 MIN. POH, RU FOR CORING. RIH W/DCB, CORED FROM 1325 TO 1367 W/GOOD RET.
- 11/26/93 CORING: 1519 (152), MW 8.6, V 42. CORED MUDST FROM 1367 TO 1507 AND ASH TUFF FROM 1507 TO 1519 W/GOOD MUD RET. WL FRZNG TO DRUM IN SUB-ZERO TEMPS.
- 11/27/93 CORING: 1723 (206), MW 8.8-9.1, V 42-46. CORED TUFFS FROM 1519 TO 1648 AND ASHY SILTST FROM 1648 TO 1723 W/GOOD MUD RET.
- 11/28/93 CORING: 1893 (170), MW 9.0, V 42-46. CORED ASHY SILTST FROM 1723 TO 1893 W/GOOD MUD RET. BH TEMP: 210°F AT 1803.
- 11/29/93 CORING: 2062 (169), MW 8.9, V 42-44. CORED ASHY SILTST FROM 1893 TO 2062 W/GOOD MUD RET. BH TEMP: 248°F AT 2062.
- 11/30/93 CORING: 2203 (141), MW 8.5, V 52. CORED ASHY SILTST FROM 2062 TO 2067 AND UNWELDED TUFFS FROM 2067 TO 2191 W/GOOD MUD RET. CORED FRACD WELDED TUFF FROM 2191 TO 2203, LC IN FRAC AT 2195. BH TEMPS: 266°F AT 2180, 260° AT 2193.

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- 12/01/93 CORING: 2263 (60), MW 8.6-8.8, V 74. TOH FOR NEW BIT. WORKED ALL BOPS. TIH W/BIT #5 (DCB #2) AND CORED FROM 2203 TO 2263 IN WELDED TUFFS W/NO MUD RET AND HIGH TORQUE. OPEN FRACS: 2203-2213, 2229-2233. TOH FOR NEW BIT DUE TO TORQUE, TIH W/BIT #6. BH TEMP: 222°F (LOW DUE TO LC).
- 12/02/93 CORING: 2323 (60), MW 8.5, V 65. TIH W/BIT #6, CORED FROM 2263 TO 2323 IN BRECD TUFFS W/NO MUD RET. FLT ZONE: 2264-2303; OPEN FRAC AT 2307. BH TEMPS: 206-269°F.
- 12/03/93 CORING: 2423 (100), MW 8.5, V 65. CORED FROM 2323 TO 2423 IN WELDED XTAL TUFF W/NO MUD RET. BH TEMP: 212°F.
- 12/04/93 CORING: 2520 (97), MW 8.5-8.8, V 52. CORED FROM 2423 TO 2520 (TD) IN TUFF AND VOLC BX W/NO MUD RET. CLND HOLE FROM 2280 TO 2350, ATT TO BRIDGE. POH, HOLE ATT TO FLOW W/BIT AT 1750. PMPD 50 GAL 8.8 PPG MUD, POH.
- 12/05/93 TSTG: 2520 (TD). RU FOR FLOW TST. RAN STATIC T&P LOGS W/AMERADA TOOL AND CAP TBG. OPND WELL FOR PRE-TST FLOW AT 1830, FLWD 1700 GAL WTR IN 15 MIN. SI WELL. FWHT: 274°F. SIWHP: 75 PSIG. AMB TEMP: 18°F.
- 12/06/93 TSTG: 2520 (TD). RIH W/CAP TBG TO 2150. OPND WELL AT 1015 HRS, FLWD FOR 4 HRS. INIT FR: 240 GPM WTR. FIN FR: 173 GPM AT 1415. FBHP: 939.7 PSIA. FWHP: 50 PSIG. SIBHP: 942.5 PSIA. SIWHP: 100 PSIG. FWHT: 290°F. RD TST EQUIP. LD DP.
- 12/07/93 RD: 2520 (TD). RD WLCT. REL FRAC TANKS. REM APC SEP AND WEIR. WNTR STRM IN PROG.
- 12/08/93 RD: 2520 (TD). RD WLCT. CRANE DELAYED BY WNTR STRM W/HIGH WINDS, ROAD CLOSURES.
- 12/09/93 RD: 2520 (TD). RD AND RLSD TONTO DRILLING #002.