

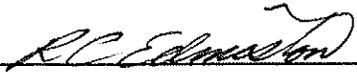
STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
910 State Office Building Portland, Oregon 97201

Permit No. 155

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. 66-22A, Sec. 22 T. 37S R. 33E W.B. & M.

Signed 

Date January 7, 1993 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 66-22A
WELL HISTORY**

PROPRIETARY DATA

10/07/93 MI WLCT.

10/08/93 MIRU WLCT.

10/09/93 RU WLCT.

10/10/93 WOC: 48 (48). DRLD 12-1/4" HOLE FR 0 TO 48. RAN 45' 9-5/8" CSG AS CONDR, CIP 44 SXS CMT.

10/11/93 DRLG: 308 (263). DRLD 8-1/2" HOLE FR 48 TO 308. CIR HOLE CLN, MADE WIPER RUN. CIRC HOLE CLN, POH. CUT OFF CONDR.

10/12/93 WOC: 308 (0). RAN 14 JTS 7" 23# J-55 CSG W/CENT ON FIRST 3 JTS. HUNG SHOE AT 308 GM AND CMTD W/62 SXS CLASS B CMT. DISPL CMT W/410 GAL MUD. GOOD CMT RET TO SURF. CIP 1700. INSTALL WH. WOC.

10/13/93 TSTG BOPS: 308 (0). WOC, NUBOPS. START BOPE TST AT 1700 HRS. TSTD BLIND RAMS TO 1000 PSI, LOST 200 PSI IN 10 MIN. TSTD PIPE RAMS TO 1000 PSI, LOST 150 PSI IN 10 MIN. TIH AND TAGGED FIRM CMT AT 300, TOH. WO PKR.

10/14/93 DRLG: 482 (174). SET HOWCO RTTS PKR AT 15, CLOSED PIPE RAMS, TSTD BOP TO 1000 PSI, HELD OK. SET PKR AT 147, TSTD CSG TO 1000 PSI, HELD OK. SET PKR AT 290, TSTD CSG TO 1000 PSI, HELD OK. TSTD HD TO 700 PSI, HELD OK. TOH W/PKR, TSTD BLIND RAMS TO 1000 PSI, HELD OK. TIH W/6-1/8" BIT, DRLD TO 313. RAN FM INTEGRITY TST TO 202 PSI AT 313 FT PER BLM (.65 PSI/FT). DRLD TO 323, TOH FOR NEW BIT, TIH, DRLD TO 482.

10/15/93 DRLG: 780 (298). DRLD 6-1/8" HOLE FROM 482 TO 780.

10/16/93 SUSP: 1000 (220). DRLD 6-1/8" HOLE FROM 780 TO 1000. ACCESS ROAD CLOSED BY HEAVY RAINS, UNABLE TO GET CMT TRUCKS TO SITE. CIRC HOLE CLN, POH, CLOSED AND LOCKED BLIND RAMS. INST SURVEY FLANGE ON HD. SUSP OPERATIONS AT 1600.

10/17/93 SUSP: 1000 (0). WO ROAD CONDITION, CONTINUING RAIN SHOWERS. LOCATING PLANKS TO USE ON ROAD AS NEEDED.

10/18/93 SUSP: 1000 (0). WO ROAD CONDITION, ROAD TOO MUDDY FOR REPAIRS. NO RAIN.

10/19/93 SUSP: 1000 (0). WO ROAD CONDITION TO MI HOWCO CMT TRKS. SPREAD 50 YDS DRY SAND & GRVL ON LOW SPOTS IN ROAD AND GRADED ROAD. TSTD ROAD W/WTR TRK.

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- 10/20/93 WOC: 1008 (8). RIH W/6-1/8" BIT, DRLD FROM 1000 TO 1008, CIRC HOLE CLN, POH. RAN 49 JTS 4-1/2" 11.35# C-75 FJ CSG. HUNG SHOE AT 1007. PMPD 56 SXS CLASS G CMT MIXED W/1:1 PERLITE, 40% SILICA FLOUR, 3% GEL FOLLOWED BY 34 SXS CLASS G CMT W/40% SILICA FLOUR. DISP W/650 GAL WTR. PMPD 1 BBL CMT TO PIT. CIP 2030 HRS. WOC.
- 10/21/93 DRLG: 1013 (5). WOC TO 2030 HRS. TSTD BOPS AND CSG TO 1000 PSI. RIH W/3-7/8" RB, TOC AT 983, WPR PLUG AT 988. DRLD CMT TO 1007. DRLD NEW HOLE TO 1013. RAN FM INTEGRITY TEST TO 650 PSI AT 1007, LOST 50 PSI IN 5 MIN. ALL TSTS WITNESSED BY BLM AND STATE. TOH FOR DCB, TIH TO CORE.
- 10/22/93 CORING: 1260 (246), MW 8.7, V 38. CORED FROM 1013 TO 1260 IN SLTST & CLYST W/FULL MUD RETURNS. FL TEMP: 105-116°F.
- 10/23/93 CORING: 1436 (176), MW 8.9, V 37. CORED FROM 1260 TO 1436 IN SLTST & CLYST W/FULL MUD RETURNS. FL TEMP: 99-127°F.
- 10/24/93 CORING: 1652 (216), MW 8.7, V 49. CORED MUDST FROM 1436 TO 1476 AND TUFFS FROM 1476 TO 1652 W/GOOD MUD RETURNS. FRACS: 1476, 1608, 1613. FL TEMP: 99-125°F. BHT: 264°F @ 1642 (NOT EQUIL).
- 10/25/93 CORING: 1842 (190), MW 8.6, V 42. CORED ASH TUFF FROM 1652 TO 1690 AND MUDST FROM 1690 TO 1842 W/GOOD MUD RETURNS. FRACD INTVS IN TUFF & MUDST. FL TEMP: 98-124°F. BHTS: 272-276°F.
- 10/26/93 CORING: 1983 (141), MW 8.7, V 47. CORED FRACD MUDST FROM 1842 TO 1935 AND XTAL TUFF FROM 1935 TO 1983 W/GOOD MUD RETURNS. SOME SHORT CORE RUNS DUE TO JAMMING OF FRACD CORE IN TUBE. FL TEMP: 98-116°F. BHTS: 272-286°F.
- 10/27/93 CORING: 2093 (110), MW 8.9-9.3, V 36-40. TSTD BOPE. CORED FROM 1983 TO 2050 IN ASH TUFF W/GOOD RETURNS. CORED FROM 2050 TO 2073 IN WELDED TUFF W/GOOD RETURNS. LC @ 2073. CORED FROM 2073 TO 2093 IN WELDED TUFF WITH NO MUD RETURNS. WELL TRYING TO FLOW DURING CORE REC. FL TEMP: 98-116°F. BHTS: 270-290°F (NOT EQUIL).
- 10/28/93 CORING: 2160 (67), MW 8.8-9.4, V 44. CORED FROM 2093 TO 2099 IN ASH TUFF AND FROM 2099 TO 2122 IN WELDED TUFF W/NO MUD RETURNS. TOH FOR NEW DCB. TIH, CORED FROM 2122 TO 2160 IN WELDED TUFF. OPEN FRACS @ 2136, 2148, 2149-2153. BHTS: 250-264°F (NOT EQUIL).
- 10/29/93 CORING: 2204 (49), MW 8.8-9.4, V 41. CORED FROM 2160 TO 2195 IN FRACD WELDED TUFF. TOH FOR NEW DCB. TIH, CORED FROM 2195 TO 2209 IN FRACD WELDED TUFF. BHTS: 248-264°F.

**ANADARKO PETROLEUM CORPORATION
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PROPRIETARY DATA

- 10/30/93 CORING: 2279 (70), MW 8.9-9.5, V 54. CORED FROM 2209 TO 2253 IN WELDED TUFF. DRPD 5' CORE OUT OF REC TUBE. TOH TO CLN OUTER BBL. CHGD BIT, TIH. RMD FROM 2200 TO 2253 IN WELDED TUFF. CORED FROM 2253 TO 2279 IN WELDED TUFF. BHTS: 250-271°F.
- 10/31/93 CORING: 2362 (83), MW 8.9-9.4, V 54. CORED FROM 2279 TO 2362 IN V. FRACD TUFF AND WELDED TUFF. BHTS: 234-250°F.
- 11/01/93 TSTG: 2376 (14). CORED FROM 2362 TO 2376 IN WELDED TUFF. TOH, RU TST LINE, SEP, AND TANKS. CONDUCTED PRE-TEST FLOW OF WELL AT APPROX 200 GPM. WHT: 295°F, BHT: 322°F. TOTAL VOL APPROX 2000 GAL.
- 11/02/93 **TSTG: 2376 (0). TSTD WELL FROM 1015 TO 1415 HRS. PRE-TEST SIBHT: 322°F @ 2100, 325°F @ 2070, SIBHP: 932 PSIA @ 2100. FLOW RATE: 258 GPM (WTR), FBHT: 316°F, FBHP: 924 PSIA @ 2100, FWHT: 296°F. POST-TEST SIWHP: 105 PSIG. UNABLE TO GET STABLE BHP DUE TO OBS @ 1250. TOTAL VOL: 68000 GAL. RD LOGGING TOOLS, NU BOPS. PREP TO MAKE WPR RUN TO CLR OBS AND COMPLETE AS OBS WELL.**
- 11/03/93 RD: 2376 (0), MW 8.9-10., V 46. PMPD 1000 GAL PARTLY COOLED FM WTR INTO WELL FOR COOLING. **PMPD 6400 GAL 8.9-10.0 PPG MUD TO BALANCE 105 PSIG SIWHP FOR WPR RUN TO CLR OBS @ 1250 & 2210. WHP HELD @ 50 PSIG. SUSP UNTIL WELL TEMP & PRESS STABILIZE. LDDP. NDBOPS.**
- 11/04/93 RD: 2376 (0). RD WLCT ON 66-22A AND PREPARE TO MOVE TO 52-22A. WHP: 38 PSIG.