REMARKS FOR 24 HOURS ENDING AT 0700
Move in wireline core rig.

Rigging down Tonto core rig #002. Moved rig to PV 66-22A.
Installed cellar. Prepared to move the remaining parts of rig.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66–22A DATE: 10/08/93
CONTRACTOR: Tonto Drilling Services RIG #: 002
REPORT NO.: 2 RIG DAYS: 2 DRLD. DAYS:
DEPTH @ 0700: FT: ROCKBIT CORE
HOURS: DRLD TRPD REPAIR OTHER
SUPERVISOR: J.H. Moss FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

CASING

CND: 
CSG: 
CSG: 
DATUM: GL 1 KB(1) x

KB = GL + 8'

MUD

YP: ___________ PV: ___________ GELS: ___________ SND%: ___________ SOL%: ___________ CHL: ___________
LCM: ___________ #/BBL: ___________

FORMATION DRLD: ___________

LOST–CIRCULATION AND FLUID ENTRY ZONES: ___________

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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<th>IN</th>
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MECHANICAL


DRLG ASSY: ___________

STRING WT: ___________ PICKUP WT: ___________ TORQUE: ___________

REMARKS FOR 24 HOURS ENDING AT 0700
Rigging down, moved all of rig #002 from PV25–22A to PV 66–22A.
Pumped 1000 gallons fresh water into well bore of 25–22A.
PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A  DATE: 10/09/93
CONTRACTOR: Tonto Drilling Services  RIG #: 002
REPORT NO.:  3  RIG DAYS:  3  DRLD. DAYS: 0
DEPTH @ 0700:  3 FT: ROCKBIT  CORE
HOURS: DRLD  TRPD  REPAIR  OTHER
SUPERVISOR: J.H. Moss  FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

CASING

DATUM: GL \(1\) KB \((x)\)
\(KB = GL + 8'\)

MUD

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FORMATION DRLD:

LOST—CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD—IN, MUD—OUT, BOTTOMHOLE)

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<th>WT</th>
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<th>STROKE</th>
<th>SPM</th>
<th>GPM</th>
<th>PSI</th>
<th>TOTAL GPM</th>
<th>NOZ. VEL</th>
<th>ANN. VEL</th>
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DRLG ASSY:

STRING WT:  PICKUP WT:  TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
Rigging up Tonto core rig #002 on PV 66-22A.
PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 4
DEPTH @ 0700: 48
HOURS: DRLD 3
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McKracken

CASING

DATE: 10/10/93
RIG #: 002
DRLD. DAYS: 1
FT: ROCKBIT 48
CORE

REPORT DAYS: 4
DRLD. DAYS: 1

HOURS: DRLD 3
TRPD REPAIR OTHER 9

DATUM: GL


MUD

WT: 
PV: 
GELS: 
SND%: 
SOL%:

pH: 
CHL: 


FORMATION DRLD:


LOST—CIRCULATION AND FLUID ENTRY ZONES:


TEMPERATURES, °F (MUD—IN, MUD—OUT, BOTTOMHOLE)

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MECHANICAL

BIT # | SIZE | MAKE | TYPE | SER. NO. | JETS | IN | OUT | FT | HRS | WT | RPM | COND |
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PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL ANN. VEL

DRLG ASSY:

STRING WT: 
PICKUP WT: 
TORQUE: 

REMARKS FOR 24 HOURS ENDING AT 0700

Rigging up Tonto core rig #002. Drilled 12-1/4" hole from 0 to 48'.
Rigged up and ran 45' of 9-5/8" conductor pipe cemented in place with 44 sks cement.
Good cement returns to surface.
Anadarko Petroleum Corporation
Geothermal Drilling Report

**PROPRIETARY DATA**

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<td>SOL%</td>
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<td>#/BBL:</td>
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**FORMATION DRLD:** Interbedded sand and claystone.

**LOST-CIRCULATION AND FLUID ENTRY ZONES:**

**TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)**

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**PUMP**

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**DRLG ASSY:**

<table>
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<tr>
<th>STRING WT:</th>
<th>PICKUP WT:</th>
<th>TORQUE:</th>
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</table>

**REMARKS FOR 24 HOURS ENDING AT 0700**
Drilled 8-1/2’ hole from 48’ to 308’ with good returns to surface.
Cir. hole clean. Pulled out of hole for wiper run. Ran bit back to bottom. Cir. hole clean.
Pulled out of hole, cut off conductor pipe. Rig up to run 7” casing.

CO₂: 330 ppm. H₂S: 0 ppm.
### PROPRIETARY DATA

**WELL NAME:** Pueblo Valley Federal 66-22A  
**DATE:** 10/12/93  
**CONTRACTOR:** Tonto Drilling Services  
**RIG #:** 002  
**REPORT NO.:** 6  
**RIG DAYS:** 6  
**DRLD. DAYS:** 3  
**DEPTH @ 0700:** 306  
**FT:** ROCKBIT  
**CORE:** 0  
**HOURS: DRLD:** 0  
**TRPD:** 0  
**REPAIR:** 0  
**OTHER:** 24  
**SUPERVISOR:** J.H. Moss  
**FOREMAN:** Mike LaOrange  
**DRILLERS:** G. Behunin, C. McKracken

### CASING

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**DATUM:** GL[x]  
**KB = GL + 8'**

### MUD

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### FORMATION DRLD:


### LOST–CIRCULATION AND FLUID ENTRY ZONES:


### TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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### DRLG ASSY:

**STRING WT:**  
**PICKUP WT:**  
**TORQUE:**

### REMARKS FOR 24 HOURS ENDING AT 0700

On bank with bit. Rig up and run 7" surface casing. Ran 14 Jts 7", 8 round 23 # casing for a total of 303.8'. Ran centralizers on first 3 Jts. Hung Howco locked guide shoe at 308'GLM. Cemented casing with 62 sks class B cement, displaced with 410 gal water. Good returns to surface throughout job. Good cement to surface, did not run wiper plug. Cement in place at 1700 hrs. WOC to 1200, remove landing it. Install WH. Prepare to nipple up BOPs.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66–22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 7
DEPTH @ 0700: 308 FT
HOURS: DRLD: 24
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McIlraken

CASING

DATE: 10/13/93
RIG #: 002
RIG DAYS: 7
DRLD DAYS: 3
FT: ROCKBIT 0
0 CORE

7" CSG: 308

DATUM: GL[X] KBI
KB = GL + 8'

MUD


FORMATION DRLD:

LOST–CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

DEEPH IN OUT BH DEEPH IN OUT BH DEEPH IN OUT BH

MECHANICAL

BIT # SIZE MAKE TYPE SER. NO. JETS IN OUT FT HRS WT RPM COND

PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL. ANN. VEL.

DRLG ASSY:

STRING WT: PICKUP WT: TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700

WOC, Nipple up BOP. Start pressure test at 1700 hrs or 24 hrs after cement in place.
Unable to hold pressure for a complete test. Ran in hole with 6–1/8" bit. Found firm cement at 300 ft.
When testing 7" casing and blind rams, lost 200# in 10 min. When testing pipe rams and casing,
lost 150# in 10 min. Unable to find any leaks at surface.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 8
DEP HT @ 0700: 482
HOURS DRLD: 13
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McEwen

MUD
WT: _______  VIG: 38  W.L.: _______  CK: _______
YP: _______  PV: _______  GELS: _______  SND%: _______
SOL%: _______  pH: _______
LCM: _______  CHL: _______

FORMATION DRLD: Samples to be logged on 10/15.

LOST-CIRCULATION AND FLUID ENTRY ZONES: None.

TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)

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<td>22</td>
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<td>Out</td>
<td>323</td>
<td>159</td>
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PUMP

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<th>GPM</th>
<th>PSI</th>
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DRLG ASSY:

STRING WT: ______________________  PICKUP WT: ______________________  TORQUE: ______________________

REMARKS FOR 24 HOURS ENDING AT 0700

WOC: Check all bolts in BOP stack. Halliburton test tool on location at 0800. Set Howco Rts Packer at 15', closed pipe rams and tested BOP. Held ok. Ran Packer to 147', tested casing with 1,000 psi, held ok. Ran Packer to 230', tested casing and BOP to 1,000 psi, held ok. Tested hydridl with 700 psi, held ok. Pulled packer out of hole. Tested blind rams to 1,000 psi, held ok. Tested accumulator closing unit. Accuated pipe rams and blind rams 3 times with 1,200 psi left on unit. THW w/5-1/8" drtl to 313'. Ran FM integrity test to 202 psi at 313' (65 psi/lft). WH pres dropped from 67 to 62 psi in 8 min. Drdl 5-1/8" hole to 323', TOH for new bit. THW, drtl to 482'.
Anadarko Petroleum Corporation  
Geothermal Drilling Report

**PROPRIETARY DATA**

<table>
<thead>
<tr>
<th>WELL NAME</th>
<th>Pueblo Valley Federal 66-22A</th>
<th>DATE: 10/15/93</th>
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<td>J.H. Moss</td>
<td>FOREMAN: Mike LaOrange</td>
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<td>DRILLERS:</td>
<td>G. Behunin, C. McKracken</td>
<td></td>
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**CASING**

- 9 - 5/8" CND: 45
- 7" CSG: 308

**MUD**

- WT: 
- VIS: 45
- W.L.: 
- OK: 
- pH: 
- CHL: 

**FORMATION DRLD:**

**LOST-CIRCULATION AND FLUID ENTRY ZONES:**

**TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)**

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**MECHANICAL**

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**PUMP**

- LINER: 
- STROKE: 48-53
- SPM: 41-45
- GPM: 48-53
- PSI: 
- TOTAL GPM: 
- NCZ_VEL: 
- ANN. VEL: 

**DRLG ASSY:**

- 6 - 1/8" bit.

**STRING WT:**

**PICKUP WT:**

**TORQUE:**

**REMARKS FOR 24 HOURS ENDING AT 0700**

Drilled 6-1/8" hole from 482' to 780'.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A  DATE: 10/16/93
CONTRACTOR: Tonto Drilling Services  RIG #: 002
REPORT NO.: 10  RIG DAYS: 10  DRIL. DAYS: 7
DEPTH @ 0700: 1,000  FT: ROCKBIT 220  CORE 0
HOURS: DRILD TRPD REPAIR OTHER
SUPERVISOR: J.H. Moss  FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

CASING
9-5/8" CND: 45
7" CSG: 308
CB: 4

DATUM: GL 1 KB1 x1
KB = GL + 8'

MUD
WT:  VIS: 45  W.L.:  CK:
YP:  PV:  GELS:  SND%  SOL%  LCM:  #/BBL:

FORMATION DRILD: Siltstone and claystone.

LOST—CIRCULATION AND FLUID ENTRY ZONES: None.

TEMPERATURES, °F (MUD—IN, MUD—OUT, BOTTOMHOLE)

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PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL. ANN. VEL.

DRLG ASSY: 6-1/8" bit, bit sub.

STRING WT: PICKUP WT: TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
Drilled 6-1/8" hole from 780' to 1,000'.
Cir hole clean. Pulled out of hole. Closed and locked blind rams.
Installed survey flag on top of Hydrill, closed 2,000# test valve. Installed safety fence around mud pump.
Rig shut down due to heavy rain and muddy roads. Unable to get Howco trucks to location.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66–22A DATED: 10/17/93
CONTRACTOR: Tonto Drilling Services RIG #: 002
REPORT NO.: 11 RIG DAYS: 11 DRIL. DAYS: 7
MUD HOURS: DRLD: TRPD REPAIR OTHER
SUPERVISOR: J.H. Moss FOREMAN: Mike L. Orange
DRILLERS: G. Behunin, C. McKracken

CASING
9–5/8” CND: 45
7” CSG: 308

DATUM: GL [x] KB [ ]
KB = GL + 8'

MUD
WT: V/S: W.L.: CK: pH:
YP: PV: GELS: SND%: SOL%: LCM: #/BBL:

FORMATION DRLD:

LOST–CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL. ANN. VEL.

DRLG ASSY:

STRING WT: PICKUP WT: TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
On bank. Rig not in operation due to road too muddy to get Howco trucks over.
Proprietary Data

Well Name: Pueblo Valley Federal 66-22A
Contractor: Tonto Drilling Services
Report No.: 12
Date: 10/18/93
Rig #: 002
Rig Days: 12
Drill Days: 7

Casing

9-5/8' CND: 45
7' CSG: 308

Formation Drilled:

Lost-Circulation and Fluid Entry Zones:

Temperatures, °F (Mud In, Mud Out, Bottomhole)

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Pump

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<th>Ann Vel</th>
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Drill Assy:

String Wt:

Pickup Wt:

Torque:

Remarks for 24 Hours Ending at 0700
On bank. Rig not in operation due to road conditions to rig.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A  DATE: 10/19/93
CONTRACTOR: Tonto Drilling Services  RIG #: 002
REPORT NO.: 13 RIG DAYS: 13 DRLD. DAYS: 7
DEPTH @ 0700: 1,000 FT: ROCKETT CORE
HOURS: DRLD: TRPD REPAIR OTHER
SUPERVISOR: J.H. Moss  FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McRae

MUD
WT:  PV:  VIS:  W.L.:  CK:  pH:
YP:  GELS:  SND%  SOL%  LCM:  #/BBL:

FORMATION DRLD:

LOST-CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)

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PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL. ANN. VEL.

DRLG ASSY:

STRING WT:  PICKUP WT:  TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
On bank. Rig not in operation due to road conditions to rig. No rain.
Spread 50 yards dry sand and dirt over the wettest parts of road. Graded road to rig.
Anadarko Petroleum Corporation
Geothermal Drilling Report

**PROPRIETARY DATA**

**WELL NAME:** Pueblo Valley Federal 66-22A  **DATE:** 10/20/93

**CONTRACTOR:** Tonto Drilling Services  **RIG #:** 002

**REPORT NO.:** 14  **RIG DAYS:** 14  **DRLD. DAYS:** 8

**DEPTH @ 0700:** 1,008  **FT:** ROCKETBIT  **CORE**

**HOURS: DRLD:** 0.5  **TRPD:** 2.5  **REPAIR**  **OTHER:** 21

**SUPERVISOR:** J.H. Moss  **FOREMAN:** Mike LaOrange

**DRILLERS:** G. Behunin, C. McKracken

**CASING**

| 9-5/8" | CND: | 45 |
| 7" | CSG: | 308 |
| 4-1/2" | CSG: | 1,007 |

**DATUM:** GL x 1  **KB:** 1

**KB = GL + 8"**

**MUD**

| WT: | VIS: | 45 |
| YP: | PV: | GELS: |
| pH: | CHL: |
| LCM: | #/BBL: |

**FORMATION DRLD:**

**LOST—CIRCULATION AND FLUID ENTRY ZONES:**

**TEMPERATURES, °F (MUD—IN, MUD—OUT, BOTTOMHOLE)**

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<thead>
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---

**PUMP**

**LINER**

**STROKE**

**SPM**

**GPM**

**PSI**

**TOTAL GPM**

**NOZ. VEL.**

**ANN. VEL.**

---

**DRLG ASSY:**

**STRING WT:**

**PICKUP WT:**

**TORQUE:**

**REMARKS FOR 24 HOURS ENDING AT 0700**

Worked Howco cement and pump trucks to location over soft road, ran in hole with 6-1/8" bit.

Drilled 6-1/8" hole from 1,000' to 1,008'. Cir. hole clean, pulled out of hole. Changed pipe rams in BOPS.

Rigged up and ran 49' 4-1/2' 11.60# flush jet casing for a total of 1,005.83. Hung shoe at 1,007'.

With Howco, mixed and pumped through shoe at 1,007', 56 sks class G cmt w/1-1/2 perlite, 40% silca flour, 3" gel and 65% CFR3. Followed with 34 sks class G cmt w/40% silca flour, 65% CFR3, displaced with 650 gal fresh water. Bumped plug with 500#. Released press. Float held ok.

Pumped app 1 bbl cement to pit. CIP 20:30 hrs. WOC to 0700 hrs.
**PROPRIETARY DATA**

WELL NAME: Pueblo Valley Federal 66–22A  
CONTRACTOR: Tonto Drilling Services  
REPORT NO.: 15  
RIG DAYS: 15  
DEPT @ 0700: 1,013  
HOURS: DRLD: 3  
SUPEVISOR: J.H. Moss  
DRILLERS: G. Behunin, C. McKracken

**CASING**

CASING

| 9–5/8" | CND: 45 |
| 7" | CSG: 308 |
| 4–1/2" | CSG: 1,007 |

**MUD**

<table>
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<tr>
<th>WT:</th>
<th>VIS:</th>
<th>W.L.:</th>
<th>CK:</th>
<th>pH:</th>
<th>CHL:</th>
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**FORMATION DRLD:**

---

**LOST–CIRCULATION AND FLUID ENTRY ZONES:**

---

**TEMPERATURES, °F (MUD—IN, MUD—OUT, BOTTOMHOLE)**

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<tr>
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<th>OUT</th>
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**MECHANICAL**

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**PUMP**

LINER

STROKE

SPM

GPM

PSI

TOTAL GPM

NOZ. VEL.

ANN. VEL.

---

**DRLG ASSY:**

---

**STRING WT:**

---

**PICKUP WT:**

---

**TORQUE:**

---

**REMARKS FOR 24 HOURS ENDING AT 0700**

WOC to 20:30 hrs. Tested BOPs. Tested blind rams with 1,000 psi for 30 min., lost 50 psi. Tested pipe rams with 1,000 psi for 21 min., lost 20 psi. Tested Hydrill with 700 psi for 25 min., lost 60 psi. Tested 4–1/2 casing with 1,000 psi for 20 min., lost 60 psi. Tested choke manifold for 20 min., lost 60 psi. Ran in hole with 3–7/8 Tricone bit. Found top of cement at 983', wiper plug at 988', float collar at 999', guide shoe at 1,008'. Drilled formation to 1,013', cir hole clean. Formation and cement shoe integrity tested with 220 psi, bled off to 170 psi in 5 min. All tests witnessed by BLM (Dennis Simontacchi), and State of Oregon, DOGMI (Dennis Olmstead), TOH to pick up core bit and BBL. TIH to core.

---

= 16 psi/ft for integrity.
# Anadarko Petroleum Corporation
## Geothermal Drilling Report

### PROPRIETARY DATA

- **Well Name:** Pueblo Valley Federal 66–22A
- **Date:** 10/22/93
- **Contractor:** Tonto Drilling Services
- **RIG #:** 002
- **Report No.:** 16
- **HOURS: DRLD:** 20
- **Supervisor:** J.H. Moss
- **Drillers:** G. Behunin, C. McKraken

### CASING

- **9-5/8” CND:** 45
- **7” CSG:** 308
- **4-1/2” CSG:** 1007
- **DATUM:** GL (x)
- **KB:** 1

### MUD

- **WT:** 8.7
- **Vis:** 38
- **W.L.:**
- **Ck:**
- **pH:**
- **CHL:**

**FORMATION DRLD:** Siltstone & claystone w/ ss & clay interbeds.

### LOST–CIRCULATION AND FLUID ENTRY ZONES

None.

### TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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<th>In</th>
<th>Out</th>
<th>BH</th>
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<th>Out</th>
<th>FT</th>
<th>HRS</th>
<th>WT</th>
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<td>HG</td>
<td>Core</td>
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### PUMP

- **Liner:**
- **Stroke:**
- **SPM:** 140–200
- **GPM:** 9–15
- **PSI:**
- **TOTAL GPM:**
- **NOZ. VEL.:**
- **ANN. VEL.:**

### DRLG ASSY:

- **String WT:**
- **Pickup WT:**
- **Torque:**

### REMARKS FOR 24 HOURS ENDING AT 0700

Diamond cored from 1013 to 1260 with full returns to surface.

Bit #5 drilled cement, wiper, plug, float collar, shoe and 5' formation.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A  DATE: 10/23/93
CONTRACTOR: Tonto Drilling Services  RIG #: 002
REPORT NO.: 17  RIG DAYS: 17  DRLD. DAYS: 11
DEPTH @ 0700: 1436  FT: ROCKBIT  CORE 176
HOURS: DRLD 20  TRPD 2.5  REPAIR 2.5  OTHER 1.5
SUPERVISOR: J.H. Moss  FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

Casing

9-5/8" CND: 45
7" CSG: 303
4-1/2" CSG: 1007

DATUM: GL 1 x 1  KBL 1

MUD

WT: 8.9  VIS: 37  W.L.: 9.4  pH: 7
YP: 10  PV: 8  GELS: 2-8  SND% 1/2  CHL: 500

FORMATION DRLD: Siltstone & claystone, tuffaceous below 1401.

LOST-CIRCULATION AND FLUID ENTRY ZONES: None.

TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)

<table>
<thead>
<tr>
<th>DEPTH</th>
<th>IN</th>
<th>OUT</th>
<th>BH</th>
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<td>1290</td>
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<td>1310</td>
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PUMP

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<th>LINER</th>
<th>STROKE</th>
<th>SPM</th>
<th>GPM</th>
<th>PSI</th>
<th>TOTAL GPM</th>
<th>NOZ. VEL.</th>
<th>ANN. VEL.</th>
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DRLG ASSY:

STRING WT:  PICKUP WT:  TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
Diamond cored from 1260 to 1436 with full returns to surface.
Water pump located near 25-22A site moved by unknown party. Attempted vandalism or theft
probably interrupted by traffic on road to Borax lake.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A   DATE: 10/24/93
CONTRACTOR: Tonto Drilling Services   RIG #: 002
REPORT NO.: 18   RIG DAYS: 18   DRLD. DAYS: 12
DEPTH @ 0700: 1652   FT: ROCKBIT   CORE 216
HOURS: DRLD: 20   TRPD: REPAIR: OTHER 4
SUPERVISOR: J.H. Moss   FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

CASING

9-5/8" CND: 45
7" CSG: 308
4-1/2" CSG: 1007

DATUM: GL[x1] KBL[1]

MUD

WT: 8.7   VIS: 49   W.L.:   CK:   pH:   CHL:
YP:   FV:   GELS:   SAND%:   SOL%:   LCM:   #/BRL:


LOST-CIRCULATION AND FLUID ENTRY ZONES: None. Good returns, no pressure increase with 8.7 ppg mud.

TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)

<table>
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<tr>
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PUMP

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<th>GPM</th>
<th>PSI</th>
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DRLG ASSY:

STRING WT:   PICKUP WT:   TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
Diamond cored from 1436 to 1652 with good returns to surface.
Bottom hole temperatures measured during core recovery: 1560 - 250°, 1580 - 259°,
1601 - 262°, 1621 - 264°, 1642 - 264°. (Time on bottom approx. 1 minute).
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 19
DEPTH @ 0700: 1842 FT
HOURS: DRDL: 20
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McKracken

DATE: 10/25/93
RIG #: 002
RIG DAYS: 19
DRLD. DAYS: 13
FT: ROCKBIT
CORE: 190
20 TRP
REPAIR 4
FOREMAN: Mike LaOrange

CASING
9-5/8" CND: 45
7" CSG: 303
4-1/2" CSG: 1007

DATUM: GL x 1 KB 1
KB = GL + 8'

MUD
WT: 8.6
YP: 
PV: 
GELS: 
SND% 
SOL%

W.L.: 
CK: 

pH: 
CHL: 

FORMATION DRLD: Ash tuff: 1652' - 1690'. Mudstone: 1690' - 1842'.

LOST-CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOM-HOLE)

<table>
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<tr>
<th>DEPTH</th>
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PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL ANN. VEL
70-250 6-23 6-23

DRIL ASSY:

STRING WT: PICKUP WT: TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
Diamond cored from 1652' to 1842' with good returns to surface.
## PROPRIETARY DATA

**WELL NAME:** Pueblo Valley Federal 66-22A  
**CONTRACTOR:** Tonto Drilling Services  
**RIG #:** 002  
**Rig Days:** 20  
**DRILL. DAYS:** 14  
**DEPTH @ 0700:** 1983  
**FT: ROCKBIT**  
**CORE:** 141  
**HOURS: DRLD:** 19  
**TRPD:** 5  
**SUPERVISOR:** J.H. Moss  
**FOREMAN:** Mike LaOrange  
**DRILLERS:** G. Behunin, C. McKracken  
**DATE:** 10/26/93  
**CND:** 45  
**CSG:** 308  
**CSP:** 1007  
**DATUM:** GL[x] KBI [ ]  

**MUD**

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<td>SND%:</td>
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<td>SOL%:</td>
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<td>LCM:</td>
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<td>#/BBL:</td>
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**LOST–CIRCULATION AND FLUID ENTRY ZONES:** None.

## TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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<tr>
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<th>BH</th>
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<th>OUT</th>
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## PUMP

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<th>SPM</th>
<th>GPM</th>
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<th>NOZ. VEL.</th>
<th>ANN. VEL.</th>
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## DRLG ASSY:

**STRING WT:__________**  
**PICKUP WT:__________**  
**TORQUE:__________**

## REMARKS FOR 24 HOURS ENDING AT 0700

Diamond cored from 1842 to 1983 with good returns to surface.  
**Core very broken, jamming in core bbl. Having to make some short core runs.**
PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A  DATE: 10/27/93
CONTRACTOR: Tonto Drilling Services  RIG #: 002
REPORT NO.: 21  RIG DAYS: 21  DRLD. DAYS: 15
DEPT @ 0700: 2093  FT: ROCKBIT  CORE 110
HOURS: DRLD: 21  TRPD  REPAIR  OTHER 3
SUPERVISOR: J.H. Moss  FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

CASING
9-5/8" CND: 45
7" CSG: 308
4-1/2" CSG: 1007

DATUM: GL(1) KBI 1
KB = GL + 8'

MUD
WT: 8.9 - 9.3  VIS: 36-40  W.L.: 10  CK: 2
YP: 8  PV: 8  GELS: 2/6  SND% 1/4  SOL% 5
pH: 7  CHL: 3000

FORMATION DRLD: Ash tuff: 1983' - 2050'. Welded tuff: 2050' - 2093'. Open silica-lined frac @ 2074'.

LOST-CIRCULATION AND FLUID ENTRY ZONES: Lost circulation followed by fluid entry at 2073'.

TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)

<table>
<thead>
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<th>DEPTH</th>
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PUMP  LINER  STROKE  SPM  GPM  PSI  TOTAL GPM  NOZ. VEL.  ANN. VEL.

DRLG ASSY: 

STRING WT: 

PICKUP WT: 

TORQUE: 

REMARKS FOR 24 HOURS ENDING AT 0700
Function tested pipe rams and hydriull. Diamond cored from 1983' to 2073' with good returns to surface. Lost returns at 2073'. Cored with no returns to surface to 2093'. Well trying to flow while recovering core.

CO₂: 210 - 1380 ppm. H₂S: 0 ppm.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66–22A
CONTRACTOR: Tonto Drilling Services
RIG #: 002

REPORT NO.: 22
RIG DAYS: 22
DRLD. DAYS: 16

DEPTH @ 0700: 2160
FT: ROCKBIT
CORE: 67

HOURS: DRLD: 16
TRPD: 4
REPAIR: 0
OTHER: 4

SUPERVISOR: J.H. Moss
FOREMAN: Mike LaOrange

DRILLERS: G. Behunin, C. McKracken

CASING

9–5/8" CND: 45
7" CSG: 308
4–1/2" CSG: 1007

DATUM: GL [x1] KB [1]

MUD

WT: 8.8–9.4
VIS: 44
W.L.: 10.4
CK: 2/32
pH: 8.5
CHL: 500

YP: 12
PV: 10
GELS: 2/8
SND: Tr
SOL: 3.5

LCM: #/BBL:


LOST–CIRCULATION AND FLUID ENTRY ZONES: No mud return below 2073.

TEMPERATURES, ºF (MUD–IN, MUD–OUT, BOTTOMHOLE)

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PUMP

LINER

STROKE

SPM

GPM

PSI

TOTAL GPM

9–23

NOZ. VEL.

ANN. VEL.

DRLG ASSY:

STRING WT:       PICKUP WT:       TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700

Function tested blind and pipe rams. Diamond cored from 2093 to 2122 with no mud returns to surface.
TOH for new core bit. TIH, cored from 2122 to 2160 with no mud returns to surface. No hole problems during trip.

Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 23
DEPTH @ 0700: 2209' FT: ROCKBIT
HOURS: DRLD: 13.5 TRPD: 5.5 REPAIR
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McKracken

CASING

9-1/2" CND: 45
7" CSG: 308
4-1/2" CSG: 1007

MUD

WT: 8.8 - 9.4 VIS: 41 W.L.: 9.6 CK: 2
YP: 10 PV: 8 GELS: 2 - 7 SND% tr SOL% LCM: 8.5 CHL: 400

FORMATION DRLD: Ash tuff. Open frac: 2170' - 2177', 2182' - 2188', 2192.5' - 2195', 2201'.

LOST - CIRCULATION AND FLUID ENTRY ZONES: No mud return below 2073'.

TEMPERATURES, °F (MUD - IN, MUD - OUT, BOTTOMHOLE)

<table>
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PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL. ANN. VEL.

DRLG ASSY: Core barrel.

STRING WT: _______ PICKUP WT: _______ TORQUE: _______

REMARKS FOR 24 HOURS ENDING AT 0700
Diamond cored from 2160' to 2195' with no returns to surface. Formation very broken. Trip for new bit. Diamond cored from 2195' to 2209' with no returns to surface.

CO₂: 250 - 1470 ppm H₂: 0 ppm
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A  DATE: 10/30/93
CONTRACTOR: Tonto Drilling Services  RIG #: 002
REPORT NO.: 24  RIG DAYS: 24  DRLD. DAYS: 18
DEPTH @ 0700: 2279  FT: ROCKBIT  CORE 70
HOURS: DRLLD: 16  TRPD 5  REPAIR  OTHER 3
SUPERVISOR: J.H. Moss  FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

CASING

9-5/8" CND: 45
7" CSG: 308
4-1/2" CSG: 1007

DATUM: GL [x] KBI [x]
KB = GL + 8'

MUD

WT: 8.9 – 9.5  VSP: 54  W.I.: 8.4  CK: 1
YP: 15  PV: 10  GELS:  SND%: tr  SOL%: 4
pH: 8.5  CHL: 400
LCM: #/BBL:

FORMATION DRLD: Welded tuff. Open fracs: 2209' – 2223', 2253'.

LOST–CIRCULATION AND FLUID ENTRY ZONES: No mud return while drilling below 2073'.

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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PUMP  LINER  STROKE  SPM  GPM  PSI  TOTAL GPM  NOZ. VEL.  ANN. VEL.

Activated BOPS pipe rams & blind rams.

DRLG ASSY:

STRING WT: ___________  PICKUP WT: ___________  TORQUE: ___________

REMARKS FOR 24 HOURS ENDING AT 0700

Activated BOPS pipe rams & blind rams. Diamond cored 2209' to 2253' with no returns to surface. Dropped 5" core out of core bbl while retrieving. Could not get core bbl to latch in at bit. Trip to clean out outer bbl, changed bit. TIH washed and reamed from 2200' to 2253'. Diamond cored from 2253' to 2279' with no returns to surface. Well attempted to flow at times on trip. Slipped core @ 2279'.

CO₂: 180 – 1480 ppm  H₂S: 0 ppm
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 25
DEPTH @ 0700: 2362
HOURS: DRDL: 20
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McIlraken

CASING

DATE: 10/31/93
RIG #: 002
DRDL. DAYS: 19
FT: ROCKBIT
CORE 83

7"
7" csg: 308
4-1/2"
csg: 1007

9-5/8"
CND: 45

DATUM: GL(x1)
KB[1]

MUD

WT: 8.9 - 9.4
VISC: 54
W.L.: 8.8
CK: 1
pH: 8.5
CHL: 400

YP: 18
PV: 12
GELS: 3-9
SND% TR
SOL% 4
LCM:

FORMATION DRDL: Tuff and welded tuff. Rubble zones: 2273', 2292' - 2293', 2296' - 2305'.

LOST-CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD-IN, MUD-OUT, BOTTOMHOLE)

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PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL. ANN. VEL.

DRLG ASSY:

STRING WT: PICKUP WT: TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
Function tested pipe rams and hydriil.
Diamond cored from 2279' to 2362' with no returns to surface. Core very broken in places.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66–22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 26
DEPTH @ 0700: 2376
HOURS: DRLD 4, TRPD 5, REPAIR OTHER 15
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McKracken

DATE: 11/01/93
RIG #: 002
DRLD. DAYS: 20
FT: ROCKBIT
CORE 14

CASING
9–5/8" CND: 45
7" CSG: 308
4–1/2" CSG: 1007

DATUM: GL (x) KB ( )
KB = GL + 5'

MUD
WT: 8.7 – 9.2
VIS: 45
W.L.: CK: pH: CHL:
YP: PV: GELS: SND% SOL%
LCM: #/BBL:

FORMATION DRLD: Welded tuff.

LOST–CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

<table>
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PUMP  LINER  STROKE  SPM  GPM  PSI  TOTAL GPM  NOZ. VEL.  ANN. VEL.

DRLG ASSY:

STRING WT:  PICKUP WT:  TORQUE:

REMARKS FOR 24 HOURS ENDING AT 0700
Diamond cored from 2362' to 2376'. Pumped 9.3 ppg mud in hole. Pullout of hole. Nipped down BOP stack. Installed flow test equipment on master valve. Rigged up Tasco wire line service equipment on well, checked bottom hole temp, 322°F @ 2100'. Well not attempting to flow. Pumped 600 gal fresh water in hole. Shut–in for 2 hrs. Well head pressure 25 psi. Opened choke manifold. Well attempting to flow. Opened well through test equipment. Well flowed through partly open valve at 200 gpm, for approx. 10 min. Checked test equipment, shut well in for temp build up.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 27
DEPTH @ 0700: 2375
HOURS: DRLD: TRPD: REPAIR: OTHER: 24
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McKracken

DATE: 11/02/93
RIG #: 002
FT: ROCKBITCORE
DRLD. DAYS: 21

CASK
9-5/8" CND: 45
7" CSG: 308
4-1/2" CSG: 1007

DATUM: GL( x1) KB( x1)

MUD

WT: __________ VIS: __________ W.L.: __________ CK: __________
YP: __________ PV: __________ GELS: __________ SND% __________ SOL% __________
pH: __________ CHL: __________
LCM: __________ #/BBL: __________

FORMATION DRLD: __________________________

LOST–CIRCULATION AND FLUID ENTRY ZONES: __________________________

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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| DRMG ASSY: | |
|------------||
| STRING WT: |    |
| PICKUP WT: |    |
| TORQUE:    | |

REMARKS FOR 24 HOURS ENDING AT 0700

Checked out flow test equipment. Riggged up Tesco wire line service equipment. Opened well for test. Well on stream 10:15. Shut well in @ 14:15 hrs. Pre–test shut–in press: 932 psia @ 2100'. Flow rate: 258 gpm of water. Flowing bottom hole temp: 316° @ 2100'. Flowing bottom hole pressure: 924 psia @ 2100'. Post–test shut–in well head pressure: 105 psig. Unable to get stable bottom hole pressure due to bridge @ 1250'. Riggged down logging equipment. Nipple up BOP stack. Tested blind rams with 1000 psi for 20 min. Tested pipe rams with 1000 psi for 20 min. Tested hydrrill with 700 psi for 20 min. All held ok. BOP test witnessed by BLM representative Dennis Simontacchi. Water samples of well and Borax Lake collect by Beak Consultants and Don Michels.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66-22A
CONTRACTOR: Tonto Drilling Services
REPORT NO.: 28
DEPT @ 0700: 2376 td
HOURS: DRDL: 0
SUPERVISOR: J.H. Moss
DRILLERS: G. Behunin, C. McRacken

DATE: 11/03/93
RIG #: 002
RIG DAYS: 28
DRLD. DAYS: 22
FT: ROCKBIT
CORE
TRPD: 0
REPAIR: 0
OTHER: 24

CASING

9-5/8" CND: 45
7" CSG: 309
4-1/2" CSG: 1007

DATUM: QL[x] KB[ ]

MUD

WT: 8.9 - 10
YP: 
PV: 
GELS: 
SND%: 
SOL%: 
pH: 
CHL: 
LCM: 
#/BBL:

FORMATION DRLD:

LOST–CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

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MECHANICAL

BIT #: 
SIZE: 
MAKE: 
TYPE: 
SER. NO.: 
JETS: IN OUT FT HRS WT RPM COND

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DRLG ASSY:

STRING WT: 
PICKUP WT: 
TORQUE: 

REMARKS FOR 24 HOURS ENDING AT 0700

Pumped approx 1000 gal of produced water from frac tanks to well to cool well bore.
Pumped 6400 gal of mud with weight up to 10.0 ppg to compensate 105 psig WHP for wiper run.
WHP held at 50 psig after 6 hrs. Further operations postponed until well temperatures and pressures stabilize. Layed down drillpipe. Nipple down BOPS. Prepare to RD.
Anadarko Petroleum Corporation
Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 66–22A  DATE: 11/04/93
CONTRACTOR: Tonto Drilling Services  RIG #: 002
REPORT NO.: 29  RIG DAYS: 29  DRLD. DAYS: 22
DEPTH @ 0700:  FT: ROCKBIT  CORE
HOURS: DRLD TRPD REPAIR OTHER 24
SUPERVISOR: J.H. Moss  FOREMAN: Mike LaOrange
DRILLERS: G. Behunin, C. McKracken

CASING

9–5/8"  CND: 45
7"  CSG: 308
4–1/2"  CSG: 1007

DATUM: GL[x1]  KB[1]

KB = GL + 8'

MUD

WT:  VIS:  W.L.:  CK:  pH:  CHL:
YP:  PV:  GELS:  SND%  SOL%  LCM:  #/BBL:

FORMATION DRLD:

LOST–CIRCULATION AND FLUID ENTRY ZONES:

TEMPERATURES, °F (MUD–IN, MUD–OUT, BOTTOMHOLE)

DEPTH IN OUT BH DEPTH IN OUT BH DEPTH IN OUT BH

MECHANICAL

BIT # SIZE MAKE TYPE SER. NO. JETS IN OUT FT HRS WT RPM COND

PUMP LINER STROKE SPM GPM PSI TOTAL GPM NOZ. VEL. ANN. VEL.

DRLG ASSY:  

STRING WT:  PICKUP WT:  TORQUE:  

REMARKS FOR 24 HOURS ENDING AT 0700

Lost well for 1993 program

Rig down, equipment to move from 66–22A to 52–22A. Pumped 8000 gal of water into 66–22A to displace heavy mud in wellbore and provide more accurate wellhead pressures. WHP: 38 psig. Moved part of rig to 52–22A.