

Anadarko Petroleum Corporation Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 25-22A DATE: 09/24/93
 CONTRACTOR: Tonto Drilling Services RIG #: 002
 REPORT NO.: 3 RIG DAYS: 3 DRLD. DAYS: _____
 DEPTH @ 0700: 1481 OTD FT: ROCKBIT CORE _____
 HOURS: DRLD _____ TRPD _____ REPAIR _____ OTHER 12
 SUPERVISOR: J.H. Moss FOREMAN: R. Fierbach
 DRILLERS: _____

CASING

8-5/8"	CND:	35'
6-5/8"	CSG:	304'
4-1/2"	CSG:	1089'
DATUM: GL [] KB [x]		
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

Reset BOPS with two ft spacer spool between master valve and BOPS. Tested BOPS and support equipment with BLM representative Dennis Davis and R. Edmiston on location.
Tested pipe rams with 1000 psi for 20 min.
Tested blind rams with 1000 psi for 25 min.
Tested hydrill with 700 psi for 30 min.
Tested choke manifold 1000 psi for 20 min.
 All Equipment tested okay. Shut rig down at 1900 hrs.

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WELL NAME: Pueblo Valley Federal 25-22A DATE: 09/25/93
 CONTRACTOR: Tonto Drilling Services RIG #: 002
 REPORT NO.: 4 RIG DAYS: 4 DRLD. DAYS: 1
 DEPTH @ 0700: 1530 FT: ROCKBIT _____ CORE 4.8
 HOURS: DRLD 6 TRPD 6 REPAIR _____ OTHER 12
 SUPERVISOR: J.H. Moss FOREMAN: R. Fierbach
 DRILLERS: _____

CASING

8-5/8"	CND:	35'
6-5/8"	CSG:	304'
4-1/2"	CSG:	1089'
DATUM: GL [] KB [x]		
KB = GL + 8'		

MUD

WT: 9.5 VIS: 45 W.L.: 26.4 CK: 2/32 pH: 9 CHL: 400
 YP: 8 PV: _____ GELS: _____ SND% _____ SOL% 2 LCM: 0 #/BBL: _____

FORMATION DRLD: Silicic tuffs, local rubble zones.

LOST-CIRCULATION AND FLUID ENTRY ZONES: Drilling with partial to no returns.

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

DEPTH	IN	OUT	BH	DEPTH	IN	OUT	BH	DEPTH	IN	OUT	BH
1485	72	50	_____	_____	_____	_____	_____	_____	_____	_____	_____
1529	68	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

MECHANICAL

BIT #	SIZE	MAKE	TYPE	SER. NO.	JETS	IN	OUT	FT	HRS	WT	RPM	COND
1	3.65	_____	Diamond	_____	_____	1485	_____	_____	_____	_____	_____	_____

PUMP	LINER	STROKE	SPM	GPM	PSI	TOTAL GPM	NOZ. VEL.	ANN. VEL.
Bean pump	_____	_____	_____	_____	_____	_____	_____	_____

DRLG ASSY: 10' diamond core barrel on HQ rods.

STRING WT: _____ PICKUP WT: _____ TORQUE: _____

REMARKS FOR 24 HOURS ENDING AT 0700

Rig in operation at 0700 hrs, trip in hole with Guiberson retrieving tool on HQ core rods. Displaced water with 9.5 ppg mud. Tested casing with 280 psi. Held okay. Test witnessed by Dennis Simontacchi, BLM, and R. Edmiston. Engaged Guiberson shorty packer. Worked packer loose, pulled out of hole. Well trying to flow with 9.5 ppg mud. Recovered Guiberson packer. Trip in hole with wire line core barrel. Washed and reamed to 1481 (New KB height). Cored from 1481' to 1530' with partial to no returns. Circulating mud during core retrieval.

CO₂: 500 - 11000 ppm. H₂S: 0 ppm.

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PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 25-22A DATE: 09/26/93
 CONTRACTOR: Tonto Drilling Services RIG #: 002
 REPORT NO.: 5 RIG DAYS: 5 DRLD. DAYS: 2
 DEPTH @ 0700: 1,601 FT: ROCKBIT _____ CORE 72
 HOURS: DRLD 10.5 TRPD 0 REPAIR 1 OTHER 12.5
 SUPERVISOR: J.H. Moss FOREMAN: R. Fierbach
 DRILLERS: _____

CASING

8-5/8"	CND: <u>35'</u>
6-5/8"	CSG: <u>304'</u>
4-1/2"	CSG: <u>1,089'</u>
DATUM: GL [] KB [x]	
KB = GL + 8'	

MUD

WT: 8.6 - 9.6 VIS: 41 W.L.: 18.8 CK: 2/32 pH: 8.5 CHL: 400
 YP: 12 PV: _____ GELS: 3/9 SND% _____ SOL% _____ LCM: _____ #/BBL: _____

FORMATION DRLD: Silicic tuffs, 2 cm silica lined cavity @ 1,554', local open fractures.

LOST-CIRCULATION AND FLUID ENTRY ZONES: Water entry @ 1,554'.

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

DEPTH	IN	OUT	BH	DEPTH	IN	OUT	BH	DEPTH	IN	OUT	BH
1,560	70	--	_____	_____	_____	_____	_____	_____	_____	_____	_____
1,600	66	--	_____	_____	_____	_____	_____	_____	_____	_____	_____

MECHANICAL

BIT #	SIZE	MAKE	TYPE	SER. NO.	JETS	IN	OUT	FT	HRS	WT	RPM	COND
1	3.65		Core	A 207-8	HQ	1,481						

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

DRLG ASSY: 10' core barrel.

STRING WT: _____ PICKUP WT: _____ TORQUE: _____

REMARKS FOR 24 HOURS ENDING AT 0700

Cored with no returns from 1,530' to 1,601'. Had water entry at 1,554'. Well trying to flow on annulus side. Pump 9.5 to 9.6 ppg mud. Drilling with 8.6 to 9.5 ppg mud. Circulating mud during core recovery.

CO₂: 500 - 8,000 ppm. H₂S: 0 ppm.

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PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 25-22A DATE: 9/27/93
 CONTRACTOR: Tonto Drilling Services RIG #: 002
 REPORT NO.: 6 RIG DAYS: 6 DRLD. DAYS: 3
 DEPTH @ 0700: 1,663 FT: ROCKBIT _____ CORE 62
 HOURS: DRLD 10 TRPD 5 REPAIR _____ OTHER 9
 SUPERVISOR: J.H. Moss FOREMAN: R. Fierbach
 DRILLERS: _____

CASING

8-5/8"	CND: 35'
6-5/8"	CSG: 304'
4-1/2"	CSG: 1089'
DATUM: GL [] KB [x]	
KB = GL + 8'	

MUD

WT: 8.9 - 9.8 vis: 47 W.L.: 18.4 ck: 2/32 pH: 8.5 CHL: 400
 YP: _____ PV: 9 GELS: 3/10 SND% _____ SOL% _____ LCM: _____ #/BBL: _____

FORMATION DRLD: Silicic tuffs, densely welded, with local open fractures lined with silica.

LOST-CIRCULATION AND FLUID ENTRY ZONES: Water entry at 1,616'.

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

DEPTH	IN	OUT	BH	DEPTH	IN	OUT	BH	DEPTH	IN	OUT	BH
1,601	67	-									
1,663	64	-									

MECHANICAL

BIT #	SIZE	MAKE	TYPE	SER. NO.	JETS	IN	OUT	FT	HRS	WT	RPM	COND
2	3-21/32		Core	L 21932	-	1,616		47				
1	3-21/32		Core	A 207-8	HQ	1,481	1,616	135				

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

DRLG ASSY: 10' Core barrel.

STRING WT: _____ PICKUP WT: _____ TORQUE: _____

REMARKS FOR 24 HOURS ENDING AT 0700

Diamond cored from 1,601 to 1,616 with no returns. Trip for new bit. Well trying to flow.
 Used mud wt 9.8 to control. Cored from 1,616 to 1,663 with no returns using mud wt 8.9.
 Pumped through drill rods with no problems. Pumping mud down both drill pipe and annulus during core recovery.

CO₂: 200 - 900 ppm. H₂S: 0 ppm.

Anadarko Petroleum Corporation Geothermal Drilling Report

PROPRIETARY DATA

WELL NAME: Pueblo Valley Federal 25-22A DATE: 09/28/93
 CONTRACTOR: Tonto Drilling Services RIG #: 002
 REPORT NO.: 7 RIG DAYS: 7 DRLD. DAYS: 4
 DEPTH @ 0700: 1,749 FT: ROCKBIT _____ CORE 86
 HOURS: DRLD 19.25 TRPD _____ REPAIR _____ OTHER 4.75
 SUPERVISOR: J.H. Moss FOREMAN: R. Fierbach
 DRILLERS: _____

CASING

8-5/8"	CND: 35'
6-5/8"	CSG: 304'
4-1/2"	CSG: 1,089'
DATUM: GL 1 KB x	

KB = GL + 8'

MUD

WT: 8.7 VIS: 43 W.L.: 19.6 CK: 2/32 pH: 8.5 CHL: _____
 YP: 12 PV: 7 GELS: 3/8 SMD% tr SOL% 6 LCM: _____ #/BBL: _____

FORMATION DRLD: Silicic tuffs, densely welded with fractures filled with silica. Fewer fractures than above.

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
1,675	63	-									
1,700	68	-									
1,749	67	-									

MECHANICAL

BIT #	SIZE	MAKE	TYPE	SER. NO.	JETS	IN	OUT	FT	HRS	WT	RPM	COND
2	3.782		core	L 21932	-	1,616		133	23			

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

DRLG ASSY: 10' core barrel.

STRING WT: _____ PICKUP WT: _____ TORQUE: _____

REMARKS FOR 24 HOURS ENDING AT 0700

Diamond cored with HQ tools from 1,663' to 1,749' with no returns to surface. No problem with well trying to flow while recovering cores. Pumped mud during core recovery.

CO₂: 160 - 960 ppm. H₂S: 0 ppm.