

Proposed Advertisement Pogo Producing Company Mobil Fed. No. 8 Well

Application of Pogo Producing Company for directional drilling and an unorthodox oil well location, Eddy County, New Mexico. Applicant seeks authority to directionally drill its proposed Mobil Fed. No. 8 Well from a surface location 1380 feet from the East line and 330 feet from the South line (Unit O) of Section 29, Township 23 South, Range 31 East, N.M.P.M., in such a manner as to bottom the well in the Brushy Canyon formation of the Delaware Mountain Group, at a standard location approximately 1,897 feet from East line and 413 feet from the South line (Unit O) of said Section 29. Applicant also seeks approval of an unorthodox location in the Bell Canyon formation of the Delaware Mountain Group, with the directional wellbore entering the Bell Canyon formation at an unorthodox location 1,381 feet from the East line and 330 feet from the South line, and exiting the Bell Canyon formation at an unorthodox location 1,526 feet from the East line and 353 feet from the South line of said Section 29. Further, applicant seeks approval for an unorthodox location in the Cherry Canyon formation of the Delaware Mountain Group, with the directional wellbore entering the Cherry Canyon formation at an unorthodox location 1,526 feet from the East line

and 353 feet from the South line, and exiting the Cherry Canyon formation at an orthodox 1,829 feet from the East line and 402 feet from the South line of said Section 29. The SW\(\frac{1}{3}\)SW\(\frac{1}{3}\) of said Section 29 will be dedicated to the well to form a standard 40 acre spacing and proration unit for said formations. This well is located approximately ______ miles ______ of Carlsbad, New Mexico.

BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION

APPLICATION OF POGO PRODUCING COMPANY FOR AN UNORTHODOX OIL WELL LOCATION AND DIRECTIONAL DRILLING, EDDY COUNTY, NEW MEXICO.



Pogo Producing Company hereby applies for approval of an unorthodox location and for directional drilling of the well described below, and in support thereof states:

- 1. Applicant is the operator of the SW\sets SE\square of Section 29, Township 23 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, which is federal land located within the Oil-Potash Area.
- 2. Applicant desires to drill its Mobil Fed. No. 8 well in the SW\(\frac{1}{3}\)SE\(\frac{1}{4}\) of Section 29 to test the Delaware formation. The Bureau of Land Management (BLM) has denied approval of all standard surface locations because, according to the BLM, drilling a vertical well at a standard surface location will cause an undue waste of potash. The BLM has approved a surface location 1380 feet from the East line and 330 from the South line of Section 29, which is the surface location requested herein by applicant. Although applicant prefers not to drill directionally due to engineering, economic, and other reasons, applicant is filing this application due to drainage occurring from an offsetting well.
- 3. Applicant seeks approval to directionally drill its well vertically to a depth of approximately 4,100 feet subsurface (below the base of the Salado formation), to kick off the well in a west-

northwesterly direction, build angle to approximately 14°, and drill to a depth sufficient to test the Brushy Canyon formation of the Delaware Mountain Group, which is the primary zone of interest (approximately 7,600-7,900 feet subsurface). The bottomhole location in the Brushy Canyon formation will be orthodox, as allowed by Division Rule 111(E), at approximately 1,897 feet FEL and 413 feet FSL. In addition, the wellbore within the entire Brushy Canyon formation will be no closer than 330 feet to the quarter-quarter section line.

4. The wellbore will be unorthodox at all depths in the Bell Canyon formation of the Delaware Mountain Group. The wellbore will enter the Bell Canyon formation (estimated top of formation at 4,188 feet subsurface) at an unorthodox location approximately 1,381 feet FEL and 330 feet FSL, and leave the Bell Canyon formation (estimated bottom of formation at 5,046 feet subsurface) at an unorthodox location approximately 1,526 feet FEL and 353 feet FSL.

The wellbore will be unorthodox at certain depths in the Cherry Canyon formation of the Delaware Mountain Group. The wellbore will enter the Cherry Canyon formation (estimated top of formation at 5,046 feet subsurface) at an unorthodox location approximately 1,526 feet FEL and 353 feet FSL, and leave the Cherry Canyon formation (estimated bottom of formation at 6,368 feet subsurface) at an orthodox location approximately 1,829 feet FEL and 402 feet FSL. The wellbore will become standard in the Cherry Canyon formation at a depth of approximately 5,550 feet subsurface.

DIRECTIONAL PROPOSAL

Pogo Producing Company

Mobil Federal No. 8 Section 29, T-23-S, R-31-E Eddy County, New Mexico

Mobil Federal No. 8

Recommended Procedure

- 1. Stake surface location 1380' FEL & 330' FSL, Section 29, T-23-S, R-31-E.
- 2. Build location set 40' 20" conductor and grout cement same.
- 3. MIRU Rotary tools.
- 4. Drill 17-1/2" hole to ±550', set 13-3/8" 54.5# casing to T.D., cement casing with Lite weight cement. Tail with 200 sx Premium, circulate cement as per R-111-P.
- 5. Drill 11" hole to ±4050' (100' Basal Anhydrite) set 8-5/8" 32# casing to T.D. Cement with lite weight cement. Tail with 200 sx Premium, circ cement as per R-111-P.
- 6. While waiting on cement run cased hole Gyro Survey.
- 7. Drill out 8-5/8" casing with 7-7/8" bit + 6-1/2" X 30' non-magnetic drill collar + (29) 6-1/2" X 30' steel drill collars. Drill to 4100', survey, POOH for deflecting assembly.
- 8. Go in hole with 7-7/8" bit + 6-1/2" high speed motor + 1-1/2° bent sub + 6-1/2" X 30' non-magnetic drill collar + steel drill collars. Orient tool face, deflect wellbore with proper direction and angle. POOH for angle building assembly.
- 9. Go in hole with 7-7/8" bit + 7-7/8" IB stabilizer + 6-1/2" X 30' non-magnetic drill collar + (1) 6-1/2" steel drill collar + IB stabilizer + (1) 6-1/2" steel drill collar + IB stabilizer + (28) steel drill collars + (1) roller reamer. Drill with this assembly building approximately 2°/100' hole until a maximum deflection of 14.00° is established. POOH for packed hole assmebly.
- 10. GIH with 7-7/8" bit + 7-7/8" IB stabilizer + 6-1/2" non-magnetic drill collar + IB stabilizer + (1) 6-1/2" steel drill collar + 7-7/8" IB stabilizer + (29) steel drill collars + roller reamer. Drill with this assembly holding 14° deviation to ±5911' M.D. POOH for angle dropping assembly.
- 11. Go in hole with 7-7/8" bit + 6-1/2" non-magnetic drill collar + 7-7/8" IB stabilizer + 6-1/2" steel drill collar + 7-7/8" IB stabilizer + (29) steel drill collars + 7-7/8" roller reamer. Drill with this assembly and drop angle at the rate of 1-1/2°/100' of true vertical depth until a vertical hole is obtained (±7000' TVD, 7041' M.D.) @ ±7041 should be ±7000'. Make corrective motor run if needed in this section. Drill to TD 100' into Bone Springs.
- 12. Upon reaching TD, drop magnetic multi shot survey and check surveys back to 4050' TVD.

Mobil Federal No. 8 Recommended Procedures Page Two

Anticipated Formation Tops Based on Mobil Federal No. 7

Basal Anhydrite Delaware Lime Bell Canyon Cherry Canyon	3914' 4140' 4188' 5046' 6368'
Cherry Canyon Brushy Canyon Bone Spring	6368' 7960'

File: POGO_ED2.DAT Mor Oct 19 19 POGO PRODUCING CO. MOBIL FEDERAL # 8 SEC. 29, T23S, R31E EDDY COUNTY, NEW MEXICO VERTICAL SECTION SCALE: 100 FEET/DIVISION REFERENCE: WELL HEAD 4100 + KITP 0.0* AT 4100' MB RUILD 2.0*/100' 1.8" AT 4188' MD BELL CANYON DISPLACEMENT 1381.34' FEL N 330.21' FSL 4300 4400 4500 4600 4700 14.0" AT 4800" MD END OF CURVE 4900 5000 5046 14.0° AT 5061' MD CHERRY CANYON 148 5100 DISPLACEMENT 1526.32' FEL N 353' FSL 5200 5300 5400 5500 5600 5700 5800 14.0° AT 5911' MB DROP 1.0*/100' START OF CURVE 5871 5900 354 6000 12.7" AT 6044' MB Interpolated CRITICAL POINT DISPLACEMENT 6100 1759.65' FEL N 390.54' FSL 6200 6300 BRUSHY CANYON 8.9" AT 6418" HD 6368 6400 455 HORIZONTAL PLAN DISPLACEMENT 1828.97' FEL N 401.59' FSL 6500 SCALE: 50 FEET/DIVISION REFERENCE: WELL HEAD 댎 딢 1650' 1980 | 7860, TVD N 411.52. FEL. 1897.49. FEL ^FVB N 401.59° FSL | 1828.97° FEL 6700 HARDLINE HARDLINE 6800 400 Ä 6900 350 2.6° AT 7054' ND Interpolated CRITICAL POINT 300-7000 518 DISPLACEMENT 1891.8' FEL N 411.61' FSL 7100 250 7200 200-330.21 0.0° AT 7311' MD TARGET 7257 524 DISPLACEMENT 1897.49' FEL N 412.52' FSL 150 7400 100 5046, 7500 DIRECTION N 80.94 W 7600 700 650 600 550 500 450 400 350 300 250 200 150 100 7700 7800 BONE SPRING 0.0° AT 8014' MD 0.0° AT 8054' MD 7960 8000 Interpolated CRITICAL POINT 8100 100 200 300 400 500 600 VERTICAL SECTION PLANE: N 80.94 W

DIRECTIONAL INVESTMENT GUIDANCE

POGO PRODUCING CO.
MOBIL FEDERAL # 8
SEC. 29, T23S, R31E
EDDY COUNTY, NEW MEXICO

Calculated by Minimum Curvature Method Vert Sect Plane: N 80.94 W

- DIRECTIONAL WELLPLAN -

MEASURED	INCL	DRIFT	COURSE	TRUE	то	TAL	VERTICAL		SURE	BUILD	DOGLEG
DEPTH	ANGLE	DIRECTION	LENGTH	VERTICAL	RECTANGULAR	COORDINATES	SECTION	DISTANCE	DIRECTION	RATE	SEVERITY
(FT)	(DEG)	(DEG)	(FT)	DEPTH	(F	1)	(FT)	(FT)	(DEG)	(DG/100')	(DG/100')
4100.00		N 0.00 E	0.00	4100.00	0.00 N	0.00 E	0.00	0.00	N 0.00 E	0.00	0.00
Interpolat	ted CRIT	ICAL POINT									
4188.01	1.76	N 80.94 W	88.01	4188.00	0.21 N	1.34 W	1.35	1.35	N 80.94 W	2.00	2.00
4200.00	2.00	N 80.94 W	11.99	4199.98	0.27 N	1.72 W	1.75	1.75	N 80.94 W	2.00	2.00
4300.00	4.00	N 80.94 W	100.00	4299.84	1.10 N	6.89 W	6.98	6.98	N 80.94 W	2.00	2.00
4400.00	6.00	N 80.94 W	100.00	4399.45	2.47 N	15.50 W	15.69	15.69	N 80.94 W	2.00	2.00
4500.00	8.00	N 80.94 W	100.00	4498.70	4.39 N	27.53 W	27.88	27.88	N 80.94 W	2.00	2.00
4600.00	10.00	N 80.94 W	100.00	4597.47	6.85 N	42.98 W	43.52	43.52	N 80.94 W	2.00	2.00
4700.00	12.00	N 80.94 W	100.00	4695.62	9.86 N	61.82 W	62.60	62.60	N 80.94 W	2.00	2.00
4800.00	14.00	N 80.94 W	100.00	4793.06	13.40 N	84.03 W	85.10	85.10	N 80.94 W	2.00	2.00
END OF CUE	RVE										
4800.02	14.00	N 80.94 W	0.02	4793.07	13.40 N	84.04 W	85.10	85.10	N 80.94 W	2.00	2.00
Interpolat	ted CRIT	ICAL POINT									
5060.69	14.00	N 80.94 W	260.67	5046.00	23.33 N	146.32 W	148.16	148.16	N 80.94 W	0.00	0.00
START OF											
5910.80	14.00	N 80.94 W	850.11	5870.86	55.72 N	349.42 W	353.83	353.83	N 80.94 W	0.00	0.00
6010.80		N 80.94 W	100.00	5968.09	59.39 N	372.47 W	377.17	377.17	N 80.94 W	-1.00	1.00
•		ICAL POINT									
6043.52		N 80.94 W	32.72	6000.00	60.54 N	379.65 W	384.44	384.44		-1.00	1.00
6110.80	12.00	N 80.94 W	67.28	6065.72	62.80 N	393.84 W	398.82	398.82	N 80.94 W	-1.00	1.00
6210.80	11.00	N 80.94 W	100.00	6163.71	65.94 N	413.53 W	418.76	418.76	N 80.94 W	-1.00	1.00
6310.80	10.00	N 80.94 W	100.00	6262.04	68.81 N	431.53 W	436.98	436.98		-1.00	1.00
6410.80		N 80.94 W	100.00	6360.67	71.41 N	447.83 W	453.48		N 80.94 W	-1.00	1.00
Interpolar	ted CRIT	ICAL POINT									
6418.23	8.93	N 80.94 W	7.43	6368.00	71.59 N	448.97 W	454.64	454.64	N 80.94 W	-1.00	1.00
6510.80	8.00	N 80.94 W	92.57	6459.57	73.74 N	462.42 W	468.27		N 80.94 W	-1.00	1.00
6610.80		N 80.94 W	100.00	6558.71	75.79 N	475.31 W	481.32		N 80.94 W	-1.00	1.00
6710.80	6.00	N 80.94 W	100.00	6658.06	77.58 N	486.49 W	492.64	492.64	N 80.94 W	-1.00	1.00
6810.80	5.00	N 80.94 W	100.00	6757.60	79.08 N	495.96 W	502.22	502.22	N 80.94 W	-1.00	1.00
6910.80	4.00	N 80.94 W	100.00	6857.29	80.32 N	503.71 W	510.07		N 80.94 W	-1.00	1.00
7010.80	3.00	N 80.94 W	100.00	6957.11	81.28 N	509.74 W	516.18	516.18	N 80.94 W	-1.00	1.00
Interpolat	ted CRIT	ICAL POINT									
7053.75		N 80.94 W	42.95	7000.00	81.61 N	511.80 W	518.26	518.26	N 80.94 W	-1.00	1.00
7110.80		N 80.94 W	57.05	7057.01	81.97 N	514.04 W	520.54		N 80.94 W	-1.00	1.00

Survey Ref: Well Head Closure Ref: Well Head Vert Sect Ref: Well Head

Mon Oct 19 1992 17:21:39 File: pogo_ed2.dat Page 0

DIRECTIONAL INVESTMENT GUIDANCE

POGO PRODUCING CO.

MOBIL FEDERAL # 8

SEC. 29, T23S, R31E

EDDY COUNTY, NEW MEXICO

Calculated by Minimum Curvature Method Vert Sect Plane: N 80.94 W

- DIRECTIONAL WELLPLAN -

MEASURED DEPTH (FT)	INCL ANGLE (DEG)	DIR	R I F T RECTION (DEG)	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH			A L COORDINATES)	VERTICAL SECTION (FT)	C L O DISTANCE (FT)	SURE DIRECTION (DEG)	BUILD RATE (DG/100')	DOGLEG SEVERITY (DG/100')
7210.80	1.00	N 8	30.94 W	100.00	7156.97	82.38	N	516.63 W	523.16	523.16	N 80.94 W	-1.00	1.00
7310.80	0.00	N	0.00 E	100.00	7256.97	82.52	N	517.49 W	524.03	524.03	N 80.94 W	-1.00	1.00
TARGET													
7310.83	0.00	N	0.00 E	0.03	7257.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	-1.00	1.00
Interpolat	ted CRIT	ICAL	POINT										
8013.83	0.00	N	0.00 E	703.00	7960.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00
Interpolat	ted CRIT	ICAL	POINT										
8053.83	0.00	N	0.00 E	40.00	8000.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00
TARGET													
8153.83	0.00	N	0.00 E	100.00	8100.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00

Survey Ref: Well Head Closure Ref: Well Head Vert Sect Ref: Well Head
Mon Oct 19 1992 17:21:39 File: pogo_ed2.dat

Submit to Appropriate District Office State Lease - 4 copies Fee Lease - 3 copies

DISTRICT III

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-102 Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

All Distances must be from the outer boundaries of the section

RECEIVED

OCT 2 6 1992

DISTRICT II P.O. Drawer DD, Artesia, NM 88210

1000 Rio Brazos Rd., Aztec, NM 67410

DISTRICT I P.O. Rox 1980, Hobbs, NM 88240

WELL LOCATION AND ACREAGE DEDICATION PLAT

Operator	OGO PRODUCIN	NG COMPANY	Lease	MOBIL F		Well No. 8		
Unit Letter	Section	Township	Range			County	<u> </u>	
0	29	23 SOUTH		31 EAST	NMPM		EDDY	
Actual Footage Loc								
		OUTH line and	1380		feet from	the EAS		
Ground Level Elev	Producing F	ormation	Pool				Dedicated Acreage:	
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Yes Yes	□ №	If answer is "yes" type	of consolidat	ion			· · · · · · · · · · · · · · · · · · ·	
If answer is "no	" list of owners a	nd tract descriptions which	have actually	been consolidat	ed. (Use reve	rse side of		
this form necess	ary.	- 43			·	14141	144 A 1 1 11	
otherwise) or u	ui de assigned t ntil a non-stands	o the well unit all interest and unit, eliminating such	ns nave beer interest, has	been approved l	by the Division	nuzauon, un on.	udzation, forced-pooling,	
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BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION

APPLICATION OF POGO PRODUCING COMPANY FOR AN UNORTHODOX OIL WELL LOCATION AND DIRECTIONAL DRILLING, EDDY COUNTY, NEW MEXICO.



APPLICATION

Pogo Producing Company hereby applies for approval of an unorthodox location and for directional drilling of the well described below, and in support thereof states:

- 1. Applicant is the operator of the SW\setaSE\square of Section 29, Township 23 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, which is federal land located within the Oil-Potash Area.
- 2. Applicant desires to drill its Mobil Fed. No. 8 well in the SW\(\frac{1}{2}\)Section 29 to test the Delaware formation. The Bureau of Land Management (BLM) has denied approval of all standard surface locations because, according to the BLM, drilling a vertical well at a standard surface location will cause an undue waste of potash. The BLM has approved a surface location 1380 feet from the East line and 330 from the South line of Section 29, which is the surface location requested herein by applicant. Although applicant prefers not to drill directionally due to engineering, economic, and other reasons, applicant is filing this application due to drainage occurring from an offsetting well.
- 3. Applicant seeks approval to directionally drill its well vertically to a depth of approximately 4,100 feet subsurface (below the base of the Salado formation), to kick off the well in a west-

northwesterly direction, build angle to approximately 14°, and drill to a depth sufficient to test the Brushy Canyon formation of the Delaware Mountain Group, which is the primary zone of interest (approximately 7,600-7,900 feet subsurface). The bottomhole location in the Brushy Canyon formation will be orthodox, as allowed by Division Rule 111(E), at approximately 1,897 feet FEL and 413 feet FSL. In addition, the wellbore within the entire Brushy Canyon formation will be no closer than 330 feet to the quarter-quarter section line.

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The wellbore will be unorthodox at certain depths in the Cherry Canyon formation of the Delaware Mountain Group. The wellbore will enter the Cherry Canyon formation (estimated top of formation at 5,046 feet subsurface) at an unorthodox location approximately 1,526 feet FEL and 353 feet FSL, and leave the Cherry Canyon formation (estimated bottom of formation at 6,368 feet subsurface) at an orthodox location approximately 1,829 feet FEL and 402 feet FSL. The wellbore will become standard in the Cherry Canyon formation at a depth of approximately 5,550 feet subsurface.

The proposed well is or may be prospective in the Bell Canyon and Cherry Canyon formations, and applicant requests approval of the above unorthodox locations. A drilling prognosis, indicating the angle and direction of drilling, is attached hereto as Exhibit A.

- 5. The granting of this application is in the interests of conservation and the prevention of waste.
- 6. Applicant requests that this matter be set for the January 7, 1993 Examiner hearing.

WHEREFORE, applicant requests that, after hearing, the relief requested above be granted.

DATED: 12/15/92

Respectfully submitted,

HINKLE, COX, EATON, COFFIELD & HENSLEY

James Bruce

Post Office Box 2068

Santa Fe, New Mexico 87504-2068

(505) 982-4554

Attorneys for Pogo Producing Company

DIRECTIONAL PROPOSAL

Pogo Producing Company

Mobil Federal No. 8 Section 29, T-23-S, R-31-E Eddy County, New Mexico

Mobil Federal No. 8

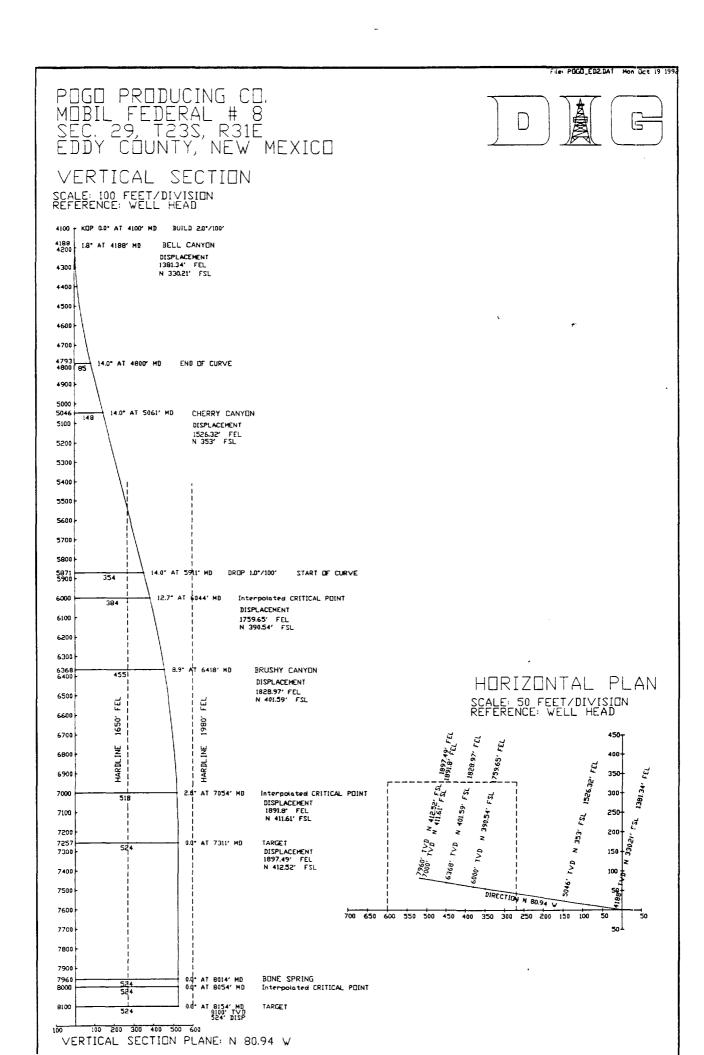
Recommended Procedure

- 1. Stake surface location 1380' FEL & 330' FSL, Section 29, T-23-S, R-31-E.
- 2. Build location set 40' 20" conductor and grout cement same.
- 3. MIRU Rotary tools.
- 4. Drill 17-1/2" hole to ± 550 ', set 13-3/8" 54.5# casing to T.D., cement casing with Lite weight cement. Tail with 200 sx Premium, circulate cement as per R-111-P.
- 5. Drill 11" hole to ±4050' (100' Basal Anhydrite) set 8-5/8" 32# casing to T.D. Cement with lite weight cement. Tail with 200 sx Premium, circ cement as per R-111-P.
- 6. While waiting on cement run cased hole Gyro Survey.
- 7. Drill out 8-5/8" casing with 7-7/8" bit + 6-1/2" X 30' non-magnetic drill collar + (29) 6-1/2" X 30' steel drill collars. Drill to 4100', survey, POOH for deflecting assembly.
- 8. Go in hole with 7-7/8" bit + 6-1/2" high speed motor + 1-1/2° bent sub + 6-1/2" X 30' non-magnetic drill collar + steel drill collars. Orient tool face, deflect wellbore with proper direction and angle. POOH for angle building assembly.
- 9. Go in hole with 7-7/8" bit + 7-7/8" IB stabilizer + 6-1/2" X 30' non-magnetic drill collar + (1) 6-1/2" steel drill collar + IB stabilizer + (1) 6-1/2" steel drill collar + IB stabilizer + (28) steel drill collars + (1) roller reamer. Drill with this assembly building approximately 2°/100' hole until a maximum deflection of 14.00° is established. POOH for packed hole assmebly.
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- 11. Go in hole with 7-7/8" bit + 6-1/2" non-magnetic drill collar + 7-7/8" IB stabilizer + 6-1/2" steel drill collar + 7-7/8" IB stabilizer + (29) steel drill collars + 7-7/8" roller reamer. Drill with this assembly and drop angle at the rate of 1-1/2°/100' of true vertical depth until a vertical hole is obtained (±7000' TVD, 7041' M.D.) @ ±7041 should be ±7000'. Make corrective motor run if needed in this section. Drill to TD 100' into Bone Springs.
- 12. Upon reaching TD, drop magnetic multi shot survey and check surveys back to 4050' TVD.

Mobil Federal No. 8 Recommended Procedures Page Two

Anticipated Formation Tops Based on Mobil Federal No. 7

Basal Anhydrite	3914'
Delaware Lime	4140'
Bell Canyon	4188'
Cherry Canyon	5046'
Brushy Canyon	6368'
Bone Spring	7960'



DIRECTIONAL INVESTMENT GUIDANCE

POGO PRODUCING CO. MOBIL FEDERAL # 8 SEC. 29, T23S, R31E EDDY COUNTY, NEW MEXICO Calculated by Minimum Curvature Method Vert Sect Plane: N 80.94 W

- DIRECTIONAL WELLPLAN -

MEASURED		DRIFT	COURSE	TRUE		TAL	VERTICAL		SURE	BUILD	DOGLEG
DEPTH	ANGLE	DIRECTION	LENGTH	VERTICAL		R COORDINATES	SECTION		DIRECTION	RATE	SEVERITY
(FT)	(DEG)	(DEG)	(FT)	DEPTH	(FT)	(FT)	(FT)	(DEG)	(PG/100')	(DG/1001)
4100.00	0.00		0.00	4100.00	0.00 N	0.00 E	0.00	0.00	N 0.00 E	0.00	0.00
		ICAL POINT									
4188.01	1.76	N 80.94 W	88.01	4188.00	0.21 N	1.34 W	1.35	1.35	N 80.94 W	2.00	2.00
4200.00	2.00	N 80.94 W	11.99	4199.98	0.27 N	1.72 W	1.75	1.75	N 80.94 W	2.00	2.00
4300.00	4.00	N 80.94 W	100.00	4299.84	1.10 N		6.98	6.98	N 80.94 W	2.00	2.00
4400.00	6.00	N 80.94 W	100.00	4399.45	2.47 N	15.50 W	15.69	15.69	N 80.94 W	2.00	2.00
4500.00	8.00	N 80.94 W	100.00	4498.70	4.39 N	27.53 W	27.88	27.88	N 80.94 W	2.00	2.00
4600.00	10.00	N 80.94 W	100.00	4597.47	6.85 N	42.98 W	43.52	43.52	N 80.94 W	2.00	2.00
4700.00	12.00	N 80.94 W	100.00	4695.62	9.86 N	61.82 W	62.60	62.60	N 80.94 W	2.00	2.00
4800.00	14.00	N 80.94 W	100.00	4793.06	13.40 N	84.03 W	85.10	85.10	N 80.94 W	2.00	2.00
END OF CUF	RVE										
4800.02	14.00	N 80.94 W	0.02	4793.07	13.40 N	84.04 W	85.10	85.10	N 80.94 W	2.00	2.00
Interpolat	ted CRIT	ICAL POINT									
5060.69	14.00	N 80.94 W	260.67	5046.00	23.33 N	146.32 W	148.16	148.16	N 80.94 W	0.00	0.00
START OF	CURVE										
5910.80	14.00	N 80.94 W	850.11	5870.86	55.72 N	349.42 W	353.83	353.83	N 80.94 W	0.00	0.00
6010.80	13.00		100.00	5968.09	59 .3 9 N	372.47 W	377.17	377.17	N 80.94 W	-1.00	1.00
•		ICAL POINT									
6043.52		N 80.94 W	32.72	6000.00	60.54 N		384.44	384.44		-1.00	1.00
6110.80	12.00	N 80.94 W	67.28	6065.72	62.80 N	393.84 W	398.82	398.82	N 80.94 W	-1.00	1.00
6210.80	11.00	N 80.94 W	100.00	6163.71	65.94 N	413.53 W	418.76	418.76	N 80.94 W	-1.00	1.00
6310.80	10.00	N 80.94 W	100.00	6262.04	68.81 N	431.53 W	436.98	436.98		-1.00	1.00
6410.80	9.00	N 80.94 W	100.00	6360.67	71.41 N		453.48		N 80.94 W	-1.00	1.00
Interpolat	ted CRIT	ICAL POINT									
6418.23		N 80.94 W	7.43	6368.00	71.59 N	448.97 W	454.64	454.64	N 80.94 W	-1.00	1.00
6510.80	8.00	N 80.94 W	92.57	6459.57	73.74 N		468.27	468.27	N 80.94 W	-1.00	1.00
6610.80	7.00	N 80.94 W	100.00	6558.71	75.79 N	475.31 W	481.32	481.32	N 80.94 W	-1.00	1.00
6710.80	6.00	N 80.94 W	100.00	6658.06	77.58 N	486.49 W	492.64	492.64	N 80.94 W	-1.00	1.00
6810.80	5.00	N 80.94 W	100.00	6757.60	79.08 N		502.22	502.22	N 80.94 W	-1.00	1.00
6910.80	4.00	N 80.94 W	100.00	6857.29	80.32 N		510.07		N 80.94 W	-1.00	1.00
7010.80	3.00	N 80.94 W	100.00	6957.11	81.28 N	509.74 W	516.18	516.18	N 80.94 W	-1.00	1.00
		ICAL POINT								- · ·	
7053.75		N 80.94 W	42.95	7000.00	81.61 N	511.80 W	518.26	518.26	N 80.94 W	-1.00	1.00
7110.80		N 80.94 W	57.05	7057.01	81.97 N		520.54		N 80.94 W	-1.00	1.00
		· · · · · · · · ·									

Survey Ref: Well Head Closure Ref: Well Head Vert Sect Ref: Well Head

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DIRECTIONAL INVESTMENT GUIDANCE

POGO PRODUCING CO.

MOBIL FEDERAL # 8

SEC. 29, T23S, R31E

EDDY COUNTY, NEW MEXICO

Calculated by Minimum Curvature Method Vert Sect Plane: N 80,94 W

- DIRECTIONAL WELLPLAN -

MEASURED DEPTH (FT)	INCL ANGLE (DEG)	D R I I DIRECT: (DEG)	ION	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH	T O T RECTANGULAR ((FT)	COORDINATES	VERTICAL SECTION (FT)	C L O DISTANCE (FT)	SURE DIRECTION (DEG)	BUILD RATE (DG/100')	DOGLEG SEVERITY (DG/100')
7210.80	1.00	N 80.94	4 W	100.00	7156.97	82.38 N	516.63 W	523.16	523.16	N 80.94 W	-1.00	1.00
7310.80	0.00	N 0.00	3 E	100.00	7256.97	82.52 N	517.49 W	524.03	524.03	N 80.94 W	-1.00	1.00
TARGET												
7310.83	0.00	N 0-00	DE	0.03	7257.00	82.52 N	517.49 W	524.03	524.03	N 80.94 W	-1.00	1.00
Interpolat	ed CRIT	ICAL PO	INT									
8013.83	0.00	N 0.00	Œ	703.00	7960.00	82.52 N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00
Interpolat	ed CRIT	ICAL PO	INT									
8053.83	0.00	N 0.00	Œ	40.00	8000.00	82.52 N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00
TARGET												
8153,83	0.00	N 0.00) E	100.00	8100.00	82.52 N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00

Survey Ref: Well Head Closure Ref: Well Head Vert Sect Ref: Well Head

Mon Oct 19 1992 17:21:39 File: pogo_ed2.dat

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ISTRICT I

State of New Mexico Energy, Minerals and Natural Resources Department

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OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

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O. Box 1980, Hobbs, NM 88240

ISTRICT III

660 990 1320 1650 1980 2310 2640

WELL LOCATION AND ACREAGE DEDICATION PLAT MOLAND)00 Rio Brazos Rd., Aztac, NM 87410 All Distances must be from the outer boundaries of the section Lease Well No. perator MOBIL FEDERAL POGO PRODUCING COMPANY 8 County Section nit Letter 31 EAST EDDY 23 SOUTH NMPM ctual Footage Location of Well: SOUTH 1380 330 feet from the line feet from the line and Producing Formation Dedicated Acreage: round Level Elev. 3357.1 Acres 1. Outline the acreage dedicated to the subject well by colored pencil or hachurs marks on the plat below. 2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). 3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.? If answer is "yes" type of consolidation If answer is "no" list of owners and tract descriptions which have actually been consolidated. (Use reverse side of this form necessary. No allowable will be assigned to the well unit all interests have been consolidated (by communitization, unitization, forced-pooling, otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division OPERATOR CERTIFICATION I hereby certify the the information ed herein is true and complete to the best of my knowledge and beilet. Signature Printed Name Position Company SURVEYOR CERTIFICATION I hereby certify that the well location sh on this plat was plotted from field notes of under my actual surveys made by me or supervison, and that the same is true and cerreat to the best of my knowledge an belief. Date Surveyed OCTOBER 19, 1992 Signature & Seal of Professional Surveyor GARY L. JONES 3356.6 1380

3357.3

1000

1500

2000

500

BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION

APPLICATION OF POGO PRODUCING COMPANY FOR AN UNORTHODOX OIL WELL LOCATION AND DIRECTIONAL DRILLING, EDDY COUNTY NEW MEXICO.



APPLICATION

Pogo Producing Company hereby applies for approval of an unorthodox location and for directional drilling of the well described below, and in support thereof states:

- 1. Applicant is the operator of the SW\sE\ of Section 29, Township 23 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, which is federal land located within the Oil-Potash Area.
- 2. Applicant desires to drill its Mobil Fed. No. 8 well in the SW\(\frac{1}{2}\)Section 29 to test the Delaware formation. The Bureau of Land Management (BLM) has denied approval of all standard surface locations because, according to the BLM, drilling a vertical well at a standard surface location will cause an undue waste of potash. The BLM has approved a surface location 1380 feet from the East line and 330 from the South line of Section 29, which is the surface location requested herein by applicant. Although applicant prefers not to drill directionally due to engineering, economic, and other reasons, applicant is filing this application due to drainage occurring from an offsetting well.
- 3. Applicant seeks approval to directionally drill its well vertically to a depth of approximately 4,100 feet subsurface (below the base of the Salado formation), to kick off the well in a west-

northwesterly direction, build angle to approximately 14°, and drill to a depth sufficient to test the Brushy Canyon formation of the Delaware Mountain Group, which is the primary zone of interest (approximately 7,600-7,900 feet subsurface). The bottomhole location in the Brushy Canyon formation will be orthodox, as allowed by Division Rule 111(E), at approximately 1,897 feet FEL and 413 feet FSL. In addition, the wellbore within the entire Brushy Canyon formation will be no closer than 330 feet to the quarter-quarter section line.

4. The wellbore will be unorthodox at all depths in the Bell Canyon formation of the Delaware Mountain Group. The wellbore will enter the Bell Canyon formation (estimated top of formation at 4,188 feet subsurface) at an unorthodox location approximately 1,381 feet FEL and 330 feet FSL, and leave the Bell Canyon formation (estimated bottom of formation at 5,046 feet subsurface) at an unorthodox location approximately 1,526 feet FEL and 353 feet FSL.

The wellbore will be unorthodox at certain depths in the Cherry Canyon formation of the Delaware Mountain Group. The wellbore will enter the Cherry Canyon formation (estimated top of formation at 5,046 feet subsurface) at an unorthodox location approximately 1,526 feet FEL and 353 feet FSL, and leave the Cherry Canyon formation (estimated bottom of formation at 6,368 feet subsurface) at an orthodox location approximately 1,829 feet FEL and 402 feet FSL. The wellbore will become standard in the Cherry Canyon formation at a depth of approximately 5,550 feet subsurface.

The proposed well is or may be prospective in the Bell Canyon and Cherry Canyon formations, and applicant requests approval of the above unorthodox locations. A drilling prognosis, indicating the angle and direction of drilling, is attached hereto as Exhibit A.

- 5. The granting of this application is in the interests of conservation and the prevention of waste.
- 6. Applicant requests that this matter be set for the January 7, 1993 Examiner hearing.

WHEREFORE, applicant requests that, after hearing, the relief requested above be granted.

DATED: 12/15/92

Respectfully submitted,

HINKLE, COX, EATON, COFFIELD & HENSLEY

James Bruce

Post Office Box 2068

Santa Fe, New Mexico 87504-2068

(505) 982-4554

Attorneys for Pogo Producing Company

DIRECTIONAL PROPOSAL

Pogo Producing Company

Mobil Federal No. 8 Section 29, T-23-S, R-31-E Eddy County, New Mexico

Mobil Federal No. 8

Recommended Procedure

- 1. Stake surface location 1380' FEL & 330' FSL, Section 29, T-23-S, R-31-E.
- 2. Build location set 40' 20" conductor and grout cement same.
- 3. MIRU Rotary tools.
- 4. Drill 17-1/2" hole to ± 550 ', set 13-3/8" 54.5# casing to T.D., cement casing with Lite weight cement. Tail with 200 sx Premium, circulate cement as per R-111-P.
- 5. Drill 11" hole to ±4050' (100' Basal Anhydrite) set 8-5/8" 32# casing to T.D. Cement with lite weight cement. Tail with 200 sx Premium, circ cement as per R-111-P.
- 6. While waiting on cement run cased hole Gyro Survey.
- 7. Drill out 8-5/8" casing with 7-7/8" bit + 6-1/2" X 30' non-magnetic drill collar + (29) 6-1/2" X 30' steel drill collars. Drill to 4100', survey, POOH for deflecting assembly.
- 8. Go in hole with 7-7/8" bit + 6-1/2" high speed motor + 1-1/2° bent sub + 6-1/2" X 30' non-magnetic drill collar + steel drill collars. Orient tool face, deflect wellbore with proper direction and angle. POOH for angle building assembly.
- 9. Go in hole with 7-7/8" bit + 7-7/8" IB stabilizer + 6-1/2" X 30' non-magnetic drill collar + (1) 6-1/2" steel drill collar + IB stabilizer + (1) 6-1/2" steel drill collar + IB stabilizer + (28) steel drill collars + (1) roller reamer. Drill with this assembly building approximately 2°/100' hole until a maximum deflection of 14.00° is established. POOH for packed hole assmebly.
- 10. GIH with 7-7/8" bit + 7-7/8" IB stabilizer + 6-1/2" non-magnetic drill collar + IB stabilizer + (1) 6-1/2" steel drill collar + 7-7/8" IB stabilizer + (29) steel drill collars + roller reamer. Drill with this assembly holding 14° deviation to ±5911' M.D. POOH for angle dropping assembly.
- 11. Go in hole with 7-7/8" bit + 6-1/2" non-magnetic drill collar + 7-7/8" IB stabilizer + 6-1/2" steel drill collar + 7-7/8" IB stabilizer + (29) steel drill collars + 7-7/8" roller reamer. Drill with this assembly and drop angle at the rate of 1-1/2°/100' of true vertical depth until a vertical hole is obtained (±7000' TVD, 7041' M.D.) @ ±7041 should be ±7000'. Make corrective motor run if needed in this section. Drill to TD 100' into Bone Springs.
- 12. Upon reaching TD, drop magnetic multi shot survey and check surveys back to 4050' TVD.

Mobil Federal No. 8 Recommended Procedures Page Two

Anticipated Formation Tops Based on Mobil Federal No. 7

Basal Anhydrite	3914'
Delaware Lime	4140'
Bell Canyon	4188'
Cherry Canyon	5046'
Brushy Canyon	6368'
Bone Spring	7960'

File: POGD_ED2.DAT Mon Oct 19 19 POGO PRODUCING CO. MOBIL FEDERAL # 8 SEC. 29, T23S, R31E EDDY COUNTY, NEW MEXICO کا VERTICAL SECTION SCALE: 100 FEET/DIVISION REFERENCE: WELL HEAD 4100 + KDP 0.0" AT 4100" MD BUILD 2.0*/100* 1.8" AT 4188" MD BELL CANYON DISPLACEMENT 1381.34' FEL N 330.21' FSL 4300 4400 4500 4600 4700 4793 4800 14.0" AT 4800" MD END OF CURVE 5000 14.0° AT 5061' MD CHERRY CANYON 148 5100 DISPLACEMENT 1526.32' FEL N 353' FSL 5200 5300 5400 5500 5600 5700 5800 14.0° AT 5911' MD DRDP 1.0°/100' START OF CURVE 5871 5900 6000 12.7" AT \$044' MD Interpolated CRITICAL POINT DISPLACEMENT 6100 1759.65' FEL N 390.54' FSL 6200 6300 BRUSHY CANYON 8.9° AT 6418' HD 6368 6400 4551 HORIZONTAL PLAN DISPLACEMENT 1828.97' FEL N 401.59' FSL 6500 SCALE: 50 FEET/DIVISION REFERENCE: WELL HEAD 댎 Ę 6600 1650' 1980, 0 TVD N 4185 FSL 1987.49. FEL L | 1828.97" FEL 6700 450 Ħ HARDLINE 6800 460 Ħ 6900 350 6368" TVD N 401.59" FSL 300 2.6" AT 7054" MD Interpolated CRITICAL POINT 7000 518 DISPLACEMENT 1891.8' FEL N 411.61' FSL 7100 250 200 7200 333 0.0° AT 7311' MD TARCET 7257 DISPLACEMENT 1897.49' FEL N 412.52' FSL 7300 150 7400 100 7500 DIRECTION N 80.94 7600 700 650 600 550 500 450 400 350 300 250 200 150 7700 7800 7900 0.0" AT 8014" MD BONE SPRING 7960 Interpolated CRITICAL POINT 8100 100 200 300 400 500 600 100 VERTICAL SECTION PLANE: N 80.94 W

DIRECTIONAL INVESTMENT GUIDANCE

POGO PRODUCING CO.
MOBIL FEDERAL # 8
SEC. 29, T23S, R31E
EDDY COUNTY, NEW MEXICO

Calculated by Minimum Curvature Method Vert Sect Plane: N 80.94 W

- DIRECTIONAL WELLPLAN -

MEASURED	INCL	DRIFT	COURSE	TRUE	т	0 Т #	A L	VERTICAL		SURE	BUILD	DOGLEG
DEPTH	ANGLE	DIRECTION	LENGTH	VERTICAL	RECTANGUL	AR CO	OCRDINATES	SECTION	DISTANCE	DIRECTION	RATE	SEVERITY
(FT)	(DEG)	(DEG)	(F T)	DEPTH		(FT)		(FT)	(FT)	(DEG)	(DG/100')	(DG/100')
4100.00		N 0.00 E	0.00	4100.00	0.00	N	0.00 E	0.00	0.00	N 0.00 E	0.00	0.00
Interpolat	ted CRIT	ICAL POINT										
4188.01	1.76	N 80.94 W	88.01	4188.00	0.21	N	1.34 W	1.35	1.35		2.00	2.00
4200.00	2.00	N 80.94 W	11.99	4199.98	0.27	N	1.72 W	1.75	1.75	N 80.94 W	2.00	2.00
4300.00	4.00	N 80.94 W	100.00	4299.84	1.10		6.89 W	6.98	6.98	N 80.94 W	2.00	2.00
4400.00	6.00	N 80.94 W	100.00	4399.45	2.47	N	15.50 W	15.69	15.69	N 80.94 W	2.00	2.00
4500.00	8.00	N 80.94 W	100.00	449 8.7 0	4.39	N	27.53 W	27.88	27.88	N 80.94 W	2.00	2.00
4600.00	10.00	N 80.94 W	100.00	4597.47	6.85	N	42.98 W	43.52	43.52	N 80.94 W	2.00	2.00
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Interpolat	ted CRIT	ICAL POINT										
5060.69	14.00	N 80.94 W	260.67	5046.00	23.33	N	146.32 W	148.16	148.16	N 80.94 W	0.00	0.00
START OF C	CURVE											
5910.80	14.00	N 80.94 W	850.11	5870.86	55.72	N	349.42 W	353.83	353.83	N 80.94 W	0.00	0.00
6010.80		N 80.94 W	100.00	5968.09	59.39	N	372.47 W	377.17	377.17	N 80.94 W	-1.00	1.00
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6610.80	7.00	N 80.94 W	100.00	65 58. 71	75.79		475.31 W	481.32		N 80.94 W	-1.00	1.00
6710.80	6.00	N 80.94 W	100.00	6658.06	<i>7</i> 7.58	N	486.49 W	492.64	492.64	N 80.94 W	-1.00	1.00
6810.80	5.00	N 80.94 W	100.00	6757.60	79.08	N	495.96 W	502.22	502.22	N 80.94 W	-1.00	1.00
6910.80	4.00		100.00	6857.29	80.32		503.71 W	510.07		N 80.94 W	-1.00	1.00
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Interpolat	ted CRIT	ICAL POINT										
7053.75	2.57		42.95	7000.00	81.61	N	511.80 W	518.26	518.26	N 80.94 W	-1.00	1.00
7110.80		N 80,94 W	57.05	7057.01	81.97		514.04 W	520.54		N 80.94 W	-1.00	1.00

Survey Ref: Well Head Closure Ref: Well Head Vert Sect Ref: Well Head Mon Oct 19 1992 17:21:39 File: pogo_ed2

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DIRECTIONAL INVESTMENT GUIDANCE

POGO PRODUCING CO.
MOBIL FEDERAL # 8
SEC. 29, T23S, R31E
EDDY COUNTY, NEW MEXICO

Calculated by Minimum Curvature Method Vert Sect Plane: N 80.94 W

- DIRECTIONAL WELLPLAN -

MEASURED DEPTH (FT)	INCL ANGLE (DEG)	DII	R I F T RECTION (DEG)	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH	-		A L COORDINATES	VERTICAL SECTION (FT)	C L O DISTANCE (FT)	SURE DIRECTION (DEG)	BUILD RATE (DG/100')	DOGLEG SEVERITY (DG/100')
7210.80	1.00	N 8	30.94 W	100.00	7156.97	82.38	N	516.63 W	523.16	523.16	N 80.94 W	-1.00	1.00
7310.80	0.00	N	0.00 E	100.00	7256.97	82.52	N	517.49 W	524.03	524.03	N 80.94 W	-1.00	1.00
TARGET													
7310.83	0.00	N	0.00 E	0.03	7257.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	-1.00	1.00
Interpolat	ed CRIT	CAL	POINT										
8013.83	0.00	N	0.00 E	703.00	7960.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00
Interpolat	ed CRIT	ICAL	POINT										
8053.83	0.00	N	0.00 E	40.00	8000.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00
TARGET													
8153.83	0.00	N	0.00 E	100.00	8100.00	82.52	N	517.49 W	524.03	524.03	N 80.94 W	0.00	0.00

82.5

82.3. W

68100. 21.2.2 M

273.41

1380'FEL

524.03' NBO. 14 - Nd

330'FSC

330' PSC

330

330

1980'FEC

1650' FEL

modic fea + 8

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ISTRICT II O. Drawer DD, Artosia, NM 88210

AAN 990 1320 1650 1980 2310 2640

O. Box 1980, Hobbs, NM 88240

WELL LOCATION AND ACREAGE DEDICATION PLAT

)00 Rio Brazos Rd., Artec, NM 87410 All Distances must be from the outer boundaries of the section Lease Well No. POGO PRODUCING COMPANY MOBIL FEDERAL 8 Township Section Range County nit Letter 23 SOUTH 31 EAST **EDDY МИРМ** ctual Footage Location of Well: SOUTH 1380 EAST feet from the feet from the line line and round Level Elev. Producing Formation Dedicated Acreage: 3357.11 Acres i. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below. 2, If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). 3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.? No If answer is "yes" type of consolidation If answer is "no" list of owners and tract descriptions which have actually been consolidated. (Use reverse side of this form necessary. No allowable will be assigned to the well unit all interests have been consolidated (by communitization, unitization, forced-pooling, otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division. OPERATOR CERTIFICATION I hereby certify the the information contained herein is true and complete to the best of my knewledge and bellef. Signature Printed Name Position Company Date SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the some is true an correct to the best of my knowledge an Date Surveyed OCTOBER 19, 1992 Signature & Seal of Professional Surveyor ____3356.6 3357.5 1380'-3358.91 3357.3 3239

2000

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