Submit I Copy To Appropriate District Office	State of New Mexico	Form C-103
District 1 - (575) 393-6161	Energy, Minerals and Natural Resources	Revised July 18, 2013
1625 N. French Dr., Hobbs, NM 88240 <u>District II</u> – (575) 748-1283		WELL API NO. 30-007-20580
811 S. First St., Artesia, NM 88210	OIL CONSERVATION DIVISION	5. Indicate Type of Lease
<u>District III</u> – (505) 334-6178 1000 Rio Brazos Rd., Aztee, NM 87410	1220 South St. Francis Dr.	STATE FEE X
District IV – (505) 476-3460 1220 S. St. Francis Dr., Santa Fe, NM 87505	Santa Fe, NM 87505	6. State Oil & Gas Lease No.
	S AND REPORTS ON WELLS	7. Lease Name or Unit Agreement Name
	LS TO DRILL OR TO DEEPEN OR PLUG BACK TO A TION FOR PERMIT" (FORM C-101) FOR SUCH	VPR D
1. Type of Well: Oil Well Ga	s Well X	8. Well Number 180
2. Name of Operator		9. OGRID Number
ARP Production Company, LLC  3. Address of Operator		300097 10. Pool name or Wildcat
	fl, 1000 Commerce Drive, Pittsburgh PA 15275	Castle Rock Park – Vermejo Gas
4. Well Location		
	2473feet from theFNL line and	
Section 20	Township 30N Range 19E	NMPM NW/160 County Colfax
	1. Elevation <i>(Show whether DR, RKB, RT, GR, etc</i> GL 7570	
12. Check App	propriate Box to Indicate Nature of Notice	, Report or Other Data
NOTICE OF INTE	ENTION TO: SUE	SSEQUENT REPORT OF:
	PLUG AND ABANDON   REMEDIAL WOR	
TEMPORARILY ABANDON 🔲 (	CHANGE PLANS 🔲 COMMENCE DF	RILLING OPNS. P AND A
•	MULTIPLE COMPL	IT JOB
DOWNHOLE COMMINGLE		
CLOSED-LOOP SYSTEM  OTHER:	RECOMPLETION X OTHER:	П
13. Describe proposed or complete	ed operations. (Clearly state all pertinent details, ar	
	SEE RULE 19.15.7.14 NMAC. For Multiple Co	ompletions: Attach wellbore diagram of
proposed completion or recom	pietion.	
See attached Recompletion Procedure for	or description of work proposed. Well bore diagra	m attached. Anticipated start of work between
August 18 and August 30, 2014 depend	ent upon vendor availability.	
		oil cons. Div dist. 3
		JUL 22 2014
Filocini	1401/2 for 0 0200	oal to include new
File CIDE	14.C103 101 applied	24.00
3/30/2005	Rig Release Date: Not Applica	able
Spud Date: 3730/2003	Rig Release Date:	July 10000
		Leter WING
I hereby certify that the information abo	ove is true and complete to the best of my knowledge	pe and belief.
	A A	g
SIGNATURE AUD HOSS	TITLE_Dir. Of Environmental an	nd Regulatory Affairs_DATE7/17/14
Type or print nameCarla L. Suszkow For State Use Only	ski E-mail address:csuszkowski@atlas	energy.com PHONE:412.489.0311
APPROVED BY: Charle 120	TITLE STREET TITLE	DATE AUG 01 2014
Conditions of Approval (if any):	₩ <u>.</u>	



# ARP Production Company, LLC Vermejo Park Ranch D-180 Colfax County, NM Recomplete Raton Coals

# 7/17/14

**WELL DATA:** 

**FORMATION:** 

Raton Coal

CASING:

8-5/8", 24# set @ 315'.

**CASING:** 

5-1/2", 15.5# set @ 1899'.

TOC:

60' (CBL)

PERFORATE:

1106' – 1112'	6'	24 holes
1132' – 1134'	2'	8 holes
1146' – 1150'	4'	16 holes
1184' – 1186'	2'	8 holes
1194' – 1196'	2'	8 holes
1246' – 1248'	2'	8 holes
1258' - 1262'	4'	16 holes
1288' – 1290'	2'	8 holes
1337' – 1340'	3'	12 holes
1530' – 1534'	4' .	16 holes
1556' – 1560'	4'	16 holes

TD/PBTD:

2015' / 1886"

**CURRENT STATUS:** 

Active producer - 135 mcfd + 25 bwpd (July 2014)

**OBJECTIVE:** 

Complete Raton coal intervals with nitrogen foam-

### NOTES:

This well was drilled and completed in the Vermejo coals. Additional coal seams have been identified in the Upper Vermejo and Lower Raton coals as value adding with a combined 481 MMSCF Rec GIP. These coals will be perfed and stimulated with nitrogen foam and sand. All zones are above existing perfs. 18.2 total feet of coal will be stimulated.

#### Vermejo Park Ranch D-180

## PROCEDURE:

- 1. Test anchors. MIRU pulling unit. Pull rods and pump. ND wellhead. NU BOPs.
- 2. POOH and stand back tubing in derrick. PU bit and scraper on 2-7/8" tubing. RIH to PBTD @ 1886'. POOH. If more rathole is needed, clean out well to original TD @ 2015'. POOH. RDMO.
- 3. Install frac valve and frac head.
- 4. Set flow through BP @ +/- 1610' to isolate lower completed zones.

# 1<sup>st</sup> Stage

5. MIRU perforators. MU 3-1/8" or 4" perf gun with 23 gram charges, .56 dia., and 120° phasing. RIH with gun and CCL-GR log. Correlate depths to CBL. Perforate the target coal intervals as follows:

1530' – 1534'	· <b>4</b> '	16 holes
1556' – 1560'	4'	16 holes

POOH and LD perforating gun.

- 6. MIRU Basic Energy Services. Lay injection lines and pressure test to 1000 psi above maximum anticipated pressure. Hold safety meeting. Establish injection rate down 5-1/2" casing, then acidize interval with 500 gallons of 7.5% HCl acid. Flush with 1000 gallons clean fluid. Frac target interval @ 1530' 1560' with 12,200 gallons of 70Q N<sub>2</sub> foam and 25,600 lbs of 16/30 proppant. Treat at 20 35 bpm. Max sand concentration at 4 ppg. Flush to top perf, then overflush by 0.5-2 bbls of water. See frac proposal for details approx. 22,309 gallons.
- 7. Set flow through BP @ +/- 1400'.

# 2<sup>nd</sup> Stage

8. RU perforators. MU 3-1/8" or 4" perf gun with 19 gram charges and 120° phasing. RIH with gun and CCL-GR log. Correlate depths to CBL. Perforate the target coal intervals as follows:

2'	8 holes
4'	16 holes
2'	8 holes
3'	12 holes
	4' 2'

POOH and LD perforating gun.

- 9. RU Basic Energy Services. Establish injection rate down 5-1/2" casing, then acidize interval with 500 gallons of 7.5% HCl acid. Flush with 1000 gallons clean fluid. Frac target interval @ 1246' 1340' with 21,100 gallons of 70Q N<sub>2</sub> foam and 48,000 lbs of 16/30 proppant. Treat at 20-35 bpm. Max sand concentration at 4 ppg. Flush to top perf, then overflush by 0.5-2 bbls of water. See frac proposal for details approx. 34,702 gallons.
- 10. Set flow through BP @ +/- 1225'.

#### Vermejo Park Ranch D-180

# 3rd Stage

11. RU perforators. MU 3-1/8" or 4" perf gun with 19 gram charges and 120° phasing. RIH with gun and CCL-GR log. Correlate depths to CBL. Perforate the target coal intervals as follows:

1106' – 1112'	6'	24 holes
1132' – 1134'	2'	8 holes
1146' 1150'	4'	16 holes
1184' – 1186'	2'	8 holes
1194' – 1196'	2'	8 holes

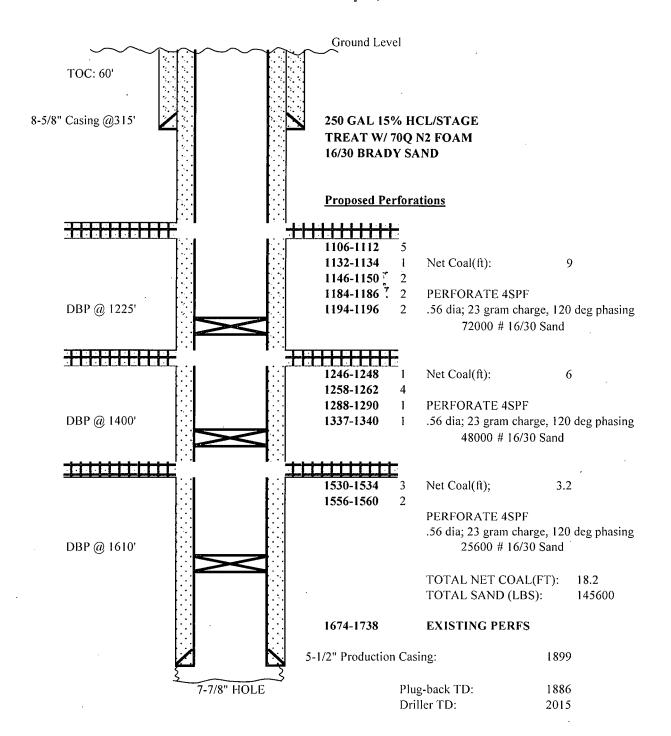
POOH and LD perforating gun.

- 12. RU Basic Energy Services. Establish injection rate down 5-1/2" casing, then acidize interval with 500 gallons of 7.5% HCl acid. Flush with 1000 gallons clean fluid. Frac target interval @ 1106' 1196' with 32,000 gallons of 70Q N<sub>2</sub> foam and **72,000** lbs of 16/30 proppant. Treat at 20-35 bpm. Max sand concentration at 4 ppg. Flush to top perf, then overflush by 0.5-2 bbls of water. See frac proposal for details approx. 48,762 gallons.
- 13. RDMO Basic Energy Services & the wireline unit.
- 14. Shut the well in for 2 hrs and flow to the pit to clean up on 12 to 16/64<sup>th</sup> choke.
- 15. MIRU workover rig.
- 16. PU bit on 2-7/8" tbg. Drill out plugs and clean out hole to PBTD. POOH and LD bit. TIH and land 2-7/8" production tbg approx. 70' below perfs (or deeper if possible). Run 1.75" pump and rods.
- 17. RD workover rig.
- 18. Put well on pump. Pump to pit until water de-foams. Vent gas to pit until clean to send to sales.

# ARP Production Company, LLC

# VPR D-180 RATON FIELD 3 STAGE: ALL STAGES ABOVE EXISTING PERFS

July 12, 2014





# ATLAS ENERGY VPR D-180 RATON, NM

3 STAGE 145,600 LBS 16/30 BROWN SAND 70 QUAILITY FOAM

Prepared for CELESTE HAGLER / MATT BERRY 309 SILVER Raton, NM 87740 505.652.8275

Prepared by MATTHEW HOFFMAN 970.867.2766

Service Point - Ft Morgan, Colorado Contact: Jake Cuckow (970) 867-2766

7/15/2014

# 7/15/2014

Celeste Hagler / Matt Berry Atlas Energy 309 Silver Raton, Nm 87740

Thank you for the opportunity to present the following treatment proposal. This recommendation is submitted for your consideration.

# Well Data

Casing: 5 1/2 in 15.5 lb/ft, N-80 Tubing: None

Stage Info	Stage 1	Stage 2	Stage 3
Formation:	COAL	COAL	COAL
Packer/ EOT Depth:			
TVD:			
Perf. Top:	1530	1246	1106
Perf. Btm:	1560	1340	1196
SPF:	4	4	4
Total Shots:	32	44	72
Perf Diam:	0.42	0.42	0.42
Bht (deg F)	90	85	80
Frac Gradient:	0.75	0.75	0.75

# Treatment Summary

Primary Fluid SpGr:	0.4	0.4	0.4
Treat Via:	Casing	Casing	Casing
Primary Fluid Type:	MavFoam 70	MavFoam 70	MavFoam 70
· CO2 (y/n):	No	No	No
Estimated Treat psi:	960	850	750
Estimated Perf Fric (psi):	18	24	9
Acid Volume (gls):	250	250	250
Total Clean Fluid/Foam (gls):	20,780	33,456	47,656
Pad Volume (gls):	6,800	10,860	14,300
SLF Volume (gls):	12,200	21,100	32,000
Estimated Flush Volume (gls):	1,529	1,246	1,106
Proppant Volume (lbs):	25,600	48,000	72,000
Estimated Pump Time (min):	26.7	· 27.6	37.9

\*NOTE: Total clean fluid/foam volume does not include flush volume.

ATLAS VPR D-180 PROPOSAL 071414.xls

Page 2A

Bottomhole Treating Pressure:

Bottomhole Temp:

Calculated X2 Volume Factor:

Bottomhole CO2 Volume Factor:

Proppant Specific Gravity:

2000 psi 90.0 deg. F 713 set/bbl 3060.0 set/bbl 2.65

ENERGY SERVICES

15-Jul-14 ATLAS ENERGY VPR D-180 STG 1

HCI%/ Prop Mesh Down! Clean Foam/ Clean Fluid gals 20,780 Prop Conc Constant Internat Phase Bindr Conc PP9 Rate lb/min Total lbs Stage lbs N2 Stage scf CO2 Stage tons DH Foam Slurry Stage bbls Surf Slurry bbls Surf Clean bbls

Clean Foam/
Clean Fluid
gals
1,600
250
5,200
2,000
2,000
3,500
3,500
1,500
1,500
1,500 Prop Conc ppg N2% CO2% N2 Rate scfm CO2 Rate sci N2 CO2 Tons Surf Clean bbis



15-Jul-14 ATLAS ENERGY VPR D-180 STG 2

Bottomhole Treating Pressure:

Bottomhole Temp:

Celculated N2 Volume Factor:

Bottomhole CO2 Volume Factor:

Proppant Specific Gravity: o gel Dowr Clean Foam/ Clean Fluid gals Clean Foam/ Clean Fluid gals , Prop Conc Prop Conc Bindr Conc PPg N2% CO2% Total lbs Stage lbs CO2 Rate Slurry Rate Clean Rate bpm bpm bpm 100 100 N2 Stage scf CO2 Stage tons DH Foam Slurry Stage bbls 102.281 123.813 160.419 229.324 298.229 329.452 scf Surf Slurry Surf Clean CO2 Surf Slurry bbis Surf Clean bbls

15-Jul-14 ATLAS ENERGY VPR D-180



						FLUSH	SAND	SAND	SAND	SAND	SAND	PAD	HCL	PAO	Stage	•		
		-				-	16/30	16/30	16/30	16/30	16/30		· ~ 15	100	Mesh	HCI%/		
	l			İ		0	28	28	28	28	28	28	l	0	ppg	gel		
47,658						1,106	4,100	9,700	9,700	5,700	2,800	13,000	250	1,300	gals	Clean Foam/ Clean Fluid		
					·		4.0	3.0	2.0	1.0	0.5		:	. y.	ppg	Prop Conc		
																	Downhole (design)	
						35.0	35.0	35.0	35.0	35.0	35.0	35.0	5.0:	10.0	bpm	Rate	gn)	
. :							70%	70%	70 <b>%</b>	70%	70%	70%	-			N2%		
<< mas Totals mas >>							ŀ									CO2%		
) S ==== >>							11.269	11,718	12,204	12,731	13,013	13,307		Ŀ	scfm	N2 Rate		
															bpm	CO2 Rate	Surfa	
				ŀ		35.0	14.3	13.4	12.5	11.6	11.0	10.5	5.0	10.0	bpm	CO2 Rate   Slurry Rate   Clean Rate	Surface (calc)	
				Ŀ		35.0	8.9	9.2	9.6	100	10.3	10.5	5.0	10.0	bpm	Clean Rate		
407,354	ŀ			Ŀ			407,354	370,240	282,432	194,625	143,027	117,680			scf	N2		Est. STP: 750 psi
															Tons	CO2	Cumulative	750 psi
462			Ŀ		ŀ	462	436	389	288	198	151	130	37	31	bbls	Surf Slurry Surf Clean	ative	
365					-	385	358	329	260	190	150	130	37	31	bbis	Surf Clean		

462		37.9	*	=== Totals ==:		72,000					i			
													-	
26.3	26.3	0.8				72,000					1,106	100 0%		HSL
	115.3	3.3		37,114	16,400	72,000	Γ	13.33	74.6%	۵.	4,100	91.7%	16/30	ē
		7.5		87,807	29,100	55,600		10.00	73.6%	3	9,700	93 6%	16/30	ō
		7.2		87,807	19,400	26,500	Γ	6 87	72.5%	2	9,700	95.7%	16/30	Ą
	141.8	4.1			5,700	7,100		3.33	71.3%	_	5,700	97.8%	16/30	P
		1.9		25,346	1,400	1,400		1.67	70.7%	0.5	2,800	98.9%	16/30	ě
		8.8		117,680					70.0%		13,000	100.0%		0
		1.2									250	100 0%	3	_
	31.0	3.1									1,300	100 0%		٥
bbls	bbls		tons	scf	ibs	lbs	lb/min	ppg	Phase	ppg	gais	Fluid	Mesh	Stage
Surf Slurry	Slurry Stage		Stage	Stage	Stage	Total	Rate	Conc	Internal	Prop Conc	Clean Fluid	음	Prop	
	DH Foam		C02	N2				Blndr	Constant		Clean Foam/	*	нсі%/	
Stage						Proppant				hole	Down			
	Surf Slur bbls	DH Foam Siury Stage bbls 310 60 2095 68.2 141.8 251.8 262.3 1115.3 76.3	DH Foam Siury Stage bbls 310 60 2095 68.2 141.8 251.8 262.3 1115.3 76.3	CO2 Time DH Foam Stage Stage Shage Shury Stage bbs bbs 12 292 292 292 292 292 292 292 292 292	N2 CO2 Time DH Foam Stage DH Foam bbls Stage Stage DH Foam DH Stage DH Stag	N2   CO2   Time   DH Foam   Stage   Stage	Total   Stage   Stag	Proppant   N2   CO2   Time   DH Foam   Stage   Stage	Proppant         N2         CO2         Time         DH Foam           Total         Stage         Stage	Proppant   Proppant	Constant   Bindr   Conc   Frada   Stage   St	ownholes         Constant of Proppent         N2 CO2         Time of Stage         DH Foam of Stage         Proppent of Stage         Stage of Stage of Stage of Stage of Stage         Stage of	Downhole   Downhole	No.   Clean Fold   Property   Clean Fold   Property   Clean Fold   Property   Clean Fold   Prop Conc   Indianal   Conc   Rado   Rado   Stage   Stage

PAD PAD SANI SANI SANI SANI SANI SANI

bodomhole (reating Pressure: 1500 let Bottomhole Temp: 900 let Calculated N2 Volume Factor: 5-3 set to lottomhole CO2 Volume Factor: 3050.0 sc Proppant Specific Gravity; 2.55

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# FLUID SPECIFICATIONS AND REQUIREMENTS

Tank Require	ments: 2	500 bbl tanks	Tank Bottoms:	30 bbl/tank
Fluid1: Additives:	28 lb	Gelled Water		27,900 Gallons
	0%			
RM2003	28 ppt	GEL-100, Cmhpg Gel		
RM141	0.05 qpt	BREAKER-503L, Liquid Enzyme	Breaker	
RM142	0.3 ppt	GB-3, Oxidative Breaker		
RM323	2 gpt	S-3, Surfactant		
RM411	4 gpt	WF-1, Foamer		
RM582	0.15 ppt	BIO-II, Dry Biocide		
RM631	165 gpt	SI-1, Scale Inhibitor	•	

Fluid Required (Not Including Tank Bottoms):

27,900 Gallons

664 Bbls

Tank Bottoms:

60 Bbls

Total Fluid Required:

724 Bbls

# **ACID REQUIREMENTS**

Acid Requirements:

Acid 1: 15 %

%

HCL

750 Gallons

Additives:

RM303

4 gpt

Acid Inhib-3, Acid Inhibitor (Moderate Temp)

# **CO2 AND N2 REQUIREMENTS**

Nitrogen Nitrogen Cooldown

943,590 Scf

100,000 Scf Total Nitrogen Required:

1,043,590 Scf

PROPPANT REQUIREMENTS

SAND

16/30

Texas Gold

Total:

145,600 lbs 145,600 lbs