

12/09/2014 DATE IN	SUSPENSE	PRG ENGINEER	12/11/2014 LOGGED IN	IPI TYPE	PMAM1434541545 APP NO.
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ABOVE THIS LINE FOR DIVISION USE ONLY

received  
December 9

## NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



### ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

#### Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]  
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]  
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]  
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]  
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]  
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

#### [1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication  
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☐ SWD ☒ IPI ☐ EOR ☐ PPR

[D] Other: Specify \_\_\_\_\_

#### [2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☒ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☐ Offset Operators, Leaseholders or Surface Owner

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

#### [3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is accurate and complete to the best of my knowledge. I also understand that no action will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Tyler Woodruff  
Print or Type Name

Signature

Senior Landman  
Title

12/11/14  
Date

twodruff@alamoresources.com  
e-mail Address

~ IPI  
- Alamo Permian Resources, LLC  
274841  
well  
- West Artesia Grayburg  
Unit #18  
30-015-01899  
Pool  
- Artesia, Graca-  
Grayburg - San  
Andres  
3230



December 1, 2014

Energy, Minerals and Natural Resources Department  
Oil Conservation Division  
1220 South St. Francis drive  
Santa Fe, New Mexico 87505

Attention: Ms. Jami Bailey, CPG  
Division Director

Re: **Injection Pressure Increase Application**  
Alamo Permian Resources, LLC  
West Artesia Grayburg Unit Well No. 18  
Pool: Artesia-Queen-Grayburg-San Andres Pool (3230)  
Eddy County, New Mexico

Dear Ms. Bailey,

Alamo Permian Resources, LLC ("Alamo"; OGRID No. 274841), as current operator of the West Artesia Grayburg Unit Waterflood Project, located in portions of Sections 7, 8, & 17, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico, hereby requests administrative approval to increase the surface injection pressure for the West Artesia Grayburg Unit Well No. 18, API # 30-015-01899, ("WAGU Well No. 18").

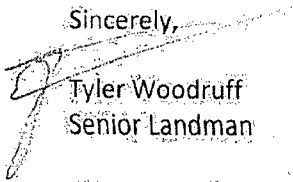
The WAGU Well No. 18 was approved for injection under Ordering Paragraph (1) of Division Order No. R-3357-C dated March 17, 2011. Pursuant to Ordering Paragraph (12) of Division Order No. R-3357-C, Alamo was approved a maximum surface injection pressure of 423 psi for the abovementioned well.

On November 5, 2014, Alamo conducted a step rate injection test on the WAGU Well No. 18. The performed step rate test indicates a surface fracture pressure of 1158 psi for the abovementioned well. Attached for your use and review is the Cardinal Surveys Company report on the step rate test performed on the WAGU Well No. 18.

Based on the results of the step rate test, Alamo, hereby requests authority to increase the maximum surface injection pressure to 1108 psi for the WAGU Well No. 18. The WAGU Well No. 18 will not take a sufficient volume of fluid at the current pressure limit and an approval of the proposed pressure increase will allow Alamo to effectively and efficiently conduct secondary recovery operations within the West Artesia Grayburg Unit Waterflood Project, thereby increasing the recovery of hydrocarbons from the Artesia-Queen-Grayburg-San Andres Pool (3230).

Should you have any questions or need any additional data, please do not hesitate to contact me.

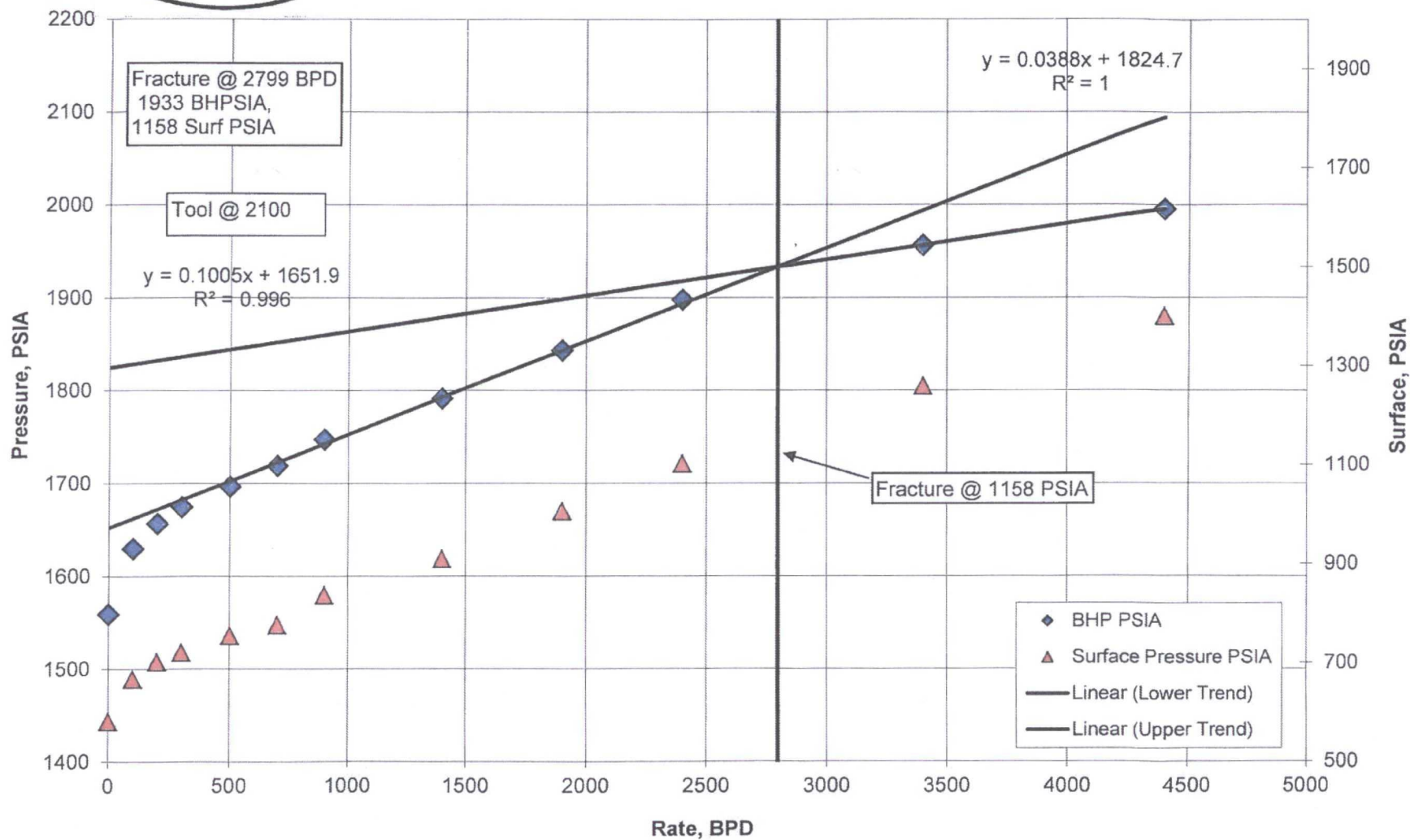
Sincerely,

 Tyler Woodruff  
Senior Landman

CC: Randy Dade, OCD District II Supervisor



Alamo Resources WAGU # 18  
Step Rate Test 11-05-2014

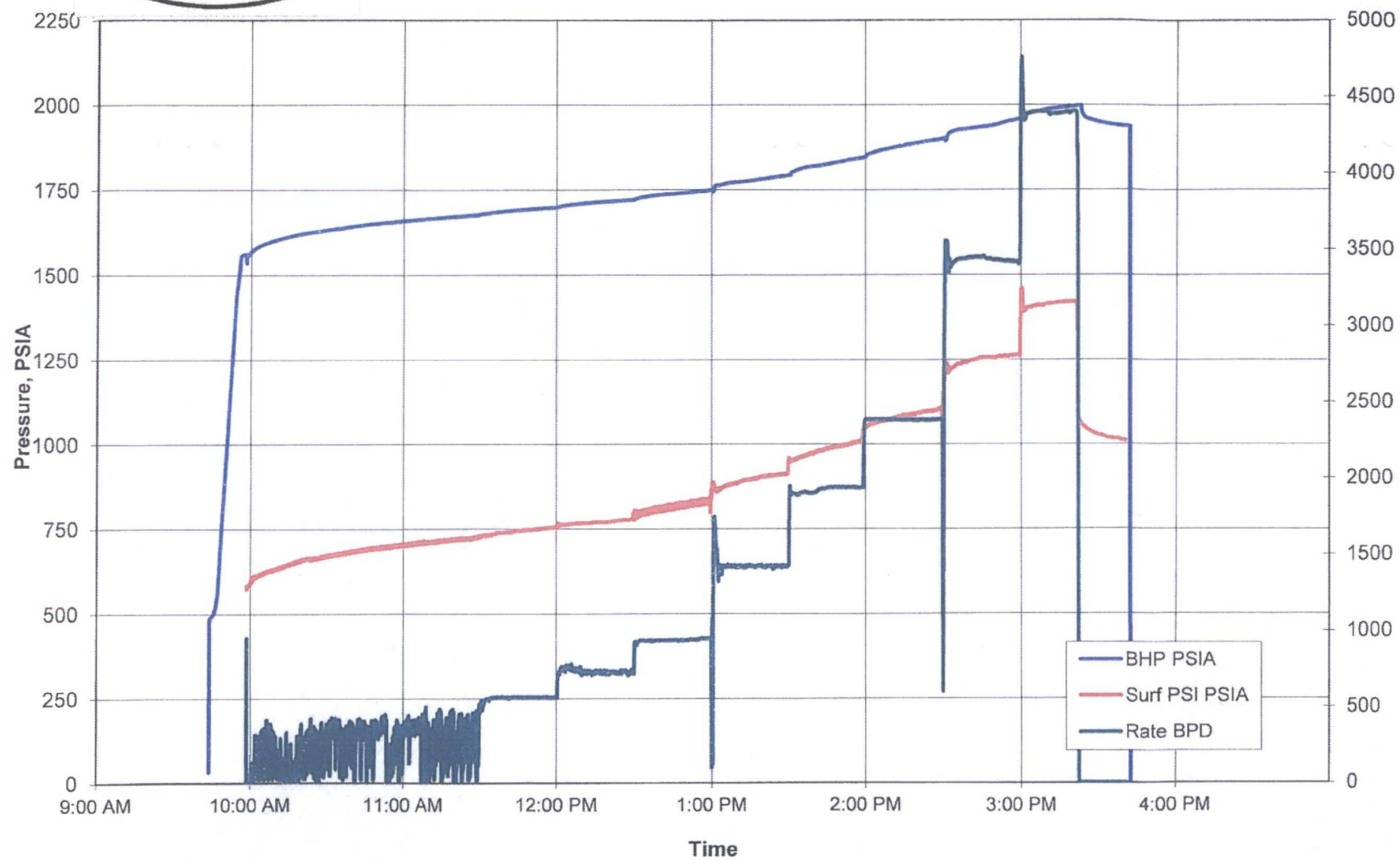


$$\begin{array}{r} 1158 \text{ psi} \\ - 50 \text{ psi} \\ \hline 1108 \text{ psi} \end{array}$$

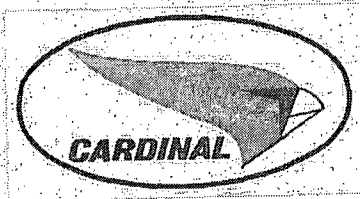
$$\frac{1108 \text{ psi}}{2009 \text{ ft}} = 0.55 \text{ psi/ft}$$



Alamo Resources WAGU # 18  
Step Rate Test 11-05-2014



# Step Rate Test



Cardinal Surveys Company

11/5/2014

Fracture @ 2799 BPD  
1933 BHPSIA,  
1158 Surf PSIA

Alamo Resources

WAGU # 18

N/A

Eddy County, New Mexico

File # 21957 Reprint

Tool # 202

Downhole PSI Tool Ser. No.

Surface PSI Gauge Ser. No.

Tool @ 2100

Start Time	End Time	Rate BPD	Comments
1	9:56 AM	10:00 AM	0 On Bottom
2	10:00 AM	10:30 AM	100
3	10:30 AM	11:00 AM	200
4	11:00 AM	11:30 AM	300
5	11:30 AM	12:00 PM	500
6	12:00 PM	12:30 PM	700
7	12:30 PM	1:00 PM	900
8	1:00 PM	1:30 PM	1400
9	1:30 PM	2:00 PM	1900
10	2:00 PM	2:30 PM	2400
11	2:30 PM	3:00 PM	3400
12	3:00 PM	3:25 PM	4400
13	3:25 PM	3:40 PM	0 Fall Off

# Step Rate Test

Alamo Resources

WAGU #18

N/A

Eddy County, New Mexico



	S Time	E Time	D Time	Last Rate	Step 1	Pressure	Surf	Cum	Delta	Avg	Avg From	Lower	Upper
			Min	BPD	BPD	PSIA	PSIA	BBL	BBL	BPD	Raw Data	Trend	Trend
1	9:56 AM	10:00 AM	4	0	0	1558.9	582	0	0	0	48.15086		
2	10:00 AM	10:30 AM	30	100	100	1629.4	667	3	3	144	145.269		
3	10:30 AM	11:00 AM	30	200	100	1656.4	702	8.7	5.7	273.6	272.6348		
4	11:00 AM	11:30 AM	30	300	100	1674.4	721	14.5	5.8	278.4	277.3122		
5	11:30 AM	12:00 PM	30	500	200	1696.5	755	26	11.5	552	554.4766		
6	12:00 PM	12:30 PM	30	700	200	1718.9	777	40.8	14.8	710.4	728.7567	1718.9	
7	12:30 PM	1:00 PM	30	900	200	1747.1	837	60.3	19.5	936	932.1757	1747.1	
8	1:00 PM	1:30 PM	30	1400	500	1791.3	910	89.7	29.4	1411.2	1414.081	1791.3	
9	1:30 PM	2:00 PM	30	1900	500	1842.9	1006	128.1	38.4	1843.2	1923.428	1842.9	
10	2:00 PM	2:30 PM	30	2400	500	1897.6	1102	178.4	50.3	2414.4	2371.811		
11	2:30 PM	3:00 PM	30	3400	1000	1956.6	1259	248.5	70.1	3364.8	3411.239		1956.6
12	3:00 PM	3:25 PM	25	4400	1000	1995.4	1400	319.7	71.2	4101.12	3974.207		1995.4
13	3:25 PM	3:40 PM	15	0	-4400				-319.7	-30691.2	0		

0:1005 1651.907

0.0388 1824.68

int point: 2799.091 BPD

1933.285 Psia

# ALAMO PERMIAN RESOURCES, LLC

## WELLBORE DIAGRAM

Lease/Well No.: **WAGU No. 018 WIW**

ELEVATION, GL: 3,611 ft

Location: 330' FNL & 990' FWL  
UL: D, SEC: 17, T: 18-S, R: 28-E  
EDDY County, NM

FIELD: ARTESIA: QN-GB-SA

LEASE No.: Fee Lease

Spudded: 3/26/1960

API No.: 30-015-01899

Drlg Stopped: 5/12/1960

Completed: 7/15/1960

LAT:

LONG:

### CABLE TOOLS

10" HOLE

Surface Csg:

8-5/8" 24#

Csg Set @ 506'

Cmt'd w/ 50 sx

8" HOLE

2-3/8" 4.7# J-55  
IPC Tubing - 59 jts  
Baker Model AD-1  
Tension Packer  
Set @ 1,918.13'  
16,000# Tension  
3/21/2014

Production Csg:

5 1/2" 14# J-55

Csg Set @ 2,317'

Cmt'd w/ 100 sx

TOC Est'd @ 152'

Calc'd (75% SF)

TOPS

DEPTH, ft

YATES	526
SEVEN RIVERS	850
QUEEN	1,490
LOCO HILLS	1,998
GRAYBURG	2,016
SAN ANDRES	2,295

TOC Est'd @ 1,919'

Calculated (75% SF)

PROPOSED INJECTION INTERVAL for WAGU #018 WIW:

1,998' - 2,295'

INJECTION ZONES: LOCO HILLS, GRAYBURG, METEX, & PREMIER.

PERFS	Zone	SPF - # Holes	Date
2009 - 2014'	GB - Zone 12	5' 10 spf - 52 holes	01/15/69
2068 - 2071'	GB - Zone 11	3' 2 spf - 6 holes	11/16/10
	GB - Zone 10		
2115 - 2117'	GB - Zone 9	2' 6 spf - 12 holes	07/15/60
2132 - 2146'	GB - Zone 8	14' 2 spf - 28 holes	11/16/10
2167 - 2179'	GB - Zone 7	12' 2 spf - 24 holes	11/16/10
	GB - Zone 6		
	GB - Zone 5		
	GB - Zone 4		
2231 - 2235'	GB - Zone 3	4' 4 spf - 16 holes	07/15/60
	GB - Zone 2		
2269 - 2275'	GB - Zone 1	6' 4 spf - 24 holes	07/15/60
2277 - 2279'	GB - Zone 1	2' 4 spf - 8 holes	07/15/60
TOTALS:		48' - 170 holes	

2,317'

2,317' PBTD (11/16/2010)

2,415' TD

Cumulative Prod. (4/30/14):

OIL	5,592 MBO
GAS	10,830 MMCF
WATER	0.000 MBW
INJECT.	741.062 MBW

Originally Drilled as the LEONARD #1 by C.E. Roach Drilling Company

Renamed WAGU Tract 11 #18 - 03/21/68.

Initial Water Injection: 01/26/69. Injection down Tubing (WAGU): 2115-17', 2231-35',

2267-69', & 2277-79'. Injection down Annulus ("Old Field"): 2009-14'. Pkr @ 2056.5'.

HPS: 06/26/2014