					Revised March 23, 2017
	RECEIVED: 091 26/2017	REVIEWER:	TYPE: IPI		1736533477
	12	NEW MEXICO (	DIL CONSERVATIO & Engineering Bui cis Drive, Santa Fe	<b>ON DIVISION</b> reau -	
	THIS CHECKUST	ADMINISTRATION IS MANDATORY FOR ALL ADM	VE APPLICATION OF		IVISION PHI ES AND
Ve O	Plicant: <u>Probity SWD</u> II Name: <u>Pardue 30</u> DI: <u>১৯০১ ভিন</u> ি	EGULATIONS WHICH REQUIRE  LLC  COM SWD No. 1  BAYON - CHEMY CONV	E PROCESSING AT THE DIVISION	ON LEVEL IN SANTA FE OGRID I API: 30- Pool Co	Number: <u>296278</u> 015-24144
1)	TYPE OF APPLICATION A. Location - Space		ous Dedication	ration unit)	
	□DHC (Ⅱ) Injection - [	ig <u>- Storage - Meas</u>	□PC □OLS ncreøse - Enhance	OLM ed Oil Recovery PPR	SWD - 1585
2)	B. Royalty, over C. Application of the policy of the polic	tors or lease holders rriding royalty owne requires published n and/or concurrent o and/or concurrent o er above, proof of no	rs, revenue owners otice approval by SLO approval by BLM	_	Notice Complete  Application lacked  Content  Complete
3)	CERTIFICATION: I here administrative approunderstand that no a notifications are subm	val is <b>accurate</b> and <b>iction</b> will be taken o	complete to the bon this application	est of my knowle	edge. I also
	Note: Stater	ment must be completed b	y an individual with mana	gerial and/or supervi	sory capacity.
			Ş	September 26, 2	017

Date

Phone Number

e-mail Address

Ben Stone, SOS Consulting, Agent

Print or Type Name

See attached e-mail

Signature





September 26, 2017

New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505

Attn: Mr. Phillip Goetze, Engineering Bureau

Re: Request of Probity SWD, LLC for an injection pressure increase on Pardue 30 Com SWD No.1 SWD located in Section 30, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico.

Dear Mr. Goetze,

Probity SWD, LLC recently conducted a step rate test on the subject well, permitted by SWD-1585 and is authorized for a surface injection pressure of 500 psi. After configuring and testing the well and otherwise preparing this facility, daily disposal operations at the site are imminent.

The step rate test was conducted on September 19, 2017 QES Wireline Company. This test was routine in application and the steps were even spaced in 30 minute increments and at 20% rate steps. The test went smoothly with no equipment issues and an adequate supply of water. The test concluded with a final step at 13.2 bpm and surface pressure of 1740 psi - a formation parting or fracture was never established in the course of the test. Pressure fell off quickly upon conclusion of the test. (See attachments...)

Other step rate tests on DMG salt water disposal wells in the area have resulted in increased pressures ranging from 800 psi to 1400 psi. In reviewing the SWD Workgroup's DMGRA map, the subject well is just outside the risk boundary but inside the 2 mile buffer area. There is no production in the immediate vicinity that we believe would be adversely impacted by increasing the injection pressure on this well.

Based on the results of the step rate test, we hereby request that maximum permitted surface injection pressure be increased to 1400 psi, which is in line with an apparent northwest to southeast trend of increases to the north and northeast of this well. We would note that there are 2 wells to the north that are at 800 and 880 psi however; we believe that the test resulted in quality data and should be relied upon as supporting evidence for this increase.

Included in this request is a copy of the delivered step rate presentation from QES Wireline and a current well-bore schematic. I respectfully request that the approval of this injection pressure increase proceed swiftly and if you require additional information or have any questions, please do not hesitate to call or email me.

Best regards,

Ben Stone, Partner SOS Consulting, LLC

Agent for Probity SWD, LLC

Cc:

Project file



charles.dugger@qeslp.com 432-553-2118

QES Wireline Service ran a Step Rate Test on the Probity SWD Purdue 1 SWD using the EPA Step-Rate Test Procedure using SRO down-hole gauges. Tool placement was 2500', steps were 30 minutes each. Rates were .6, 1.2, 2.4, 3.6, 4.8, 6, 7.2, 8.4, 9.6, 10.8, 12, 13.2 BPM. Spartek Systems 1 ½" 10K Sapphire Pressure gauges with SRO and battery backup were used for the test.

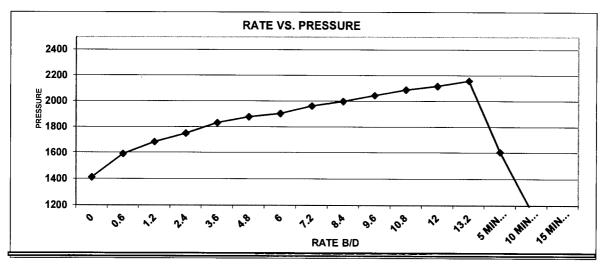
It is QES Wireline's opinion that no fracture of the well was indicated during the test. It is believed anomalies in the early points are due to displacing gas in production TBG, and produced fluid used in the early stages having a different weight than fluid used during the later stages of the job.

Sincerely,
Charles Dugger
Division Sales Representative
Q. E. S. Wireline LLC
(C) 432-553-2118
Charles.Dugger@QESLP.com



## STEP RATE TEST

RATE B/D	Date	Time	BH PRESS	SURF. PRESS	Comments
0	9/19/2017	9:45 AM	1411	200	
0.6	3/22/2017	10:15 AM	1589	330	
1.2	3/22/2017	10:45 AM	1682	440	Changed to large pump
2.4	3/22/2017	11:15 AM	1749	510	
3.6	3/22/2017	11:45 AM	1831	645	
4.8	3/22/2017	12:15 PM	1877	725	
6	3/22/2017	12:45 PM	1903	815	
7.2	3/22/2017	1:15 PM	1962	975	
8.4	3/22/2017	1:45 PM	1997	1105	***
9.6	3/22/2017	2:15 PM	2044	1225	
10.8	3/22/2017	2:45 PM	2088	1414	
12	3/22/2017	3:15 PM	2116	1565	
13.2		3:45 PM	2157	1740	
5 MIN. FALLOFF		3:50 PM	1604	492	
10 MIN. FALLOFF		3:55 PM	1163	75	
15 MIN. FALLOFF	3/22/2017	4:00 PM	574	0	
	Probity SWI			Recorded By:	T. STANCZAK
	Purdue 1 SV	<b>V</b> D		Witnessed By:	
Field:				Truck Number:	104
County:	LEA			District:	LEVELLAND
State:				Tool Number:	
Injector:				Test Type:	STEP RATE TESTS
Tubing Size:				NO FRAC WAS AC	CHIEVED
Seat Nipple Depth:	N/A			1	
Perforations:				1	
Plug Back Depth	N/A	• • •		1	



# **Step Rate Test Data**

Well:	Probity Purdue Step #1 Test F		) D (5% of max	_	<u>9/19/2017</u> 0.6 (BBL/mi		Operator:	Probity SWD		
Time (Min	<u>,                                    </u>	9:45	9:51	9:57	10:03	10:09	10:15	- <b></b>		
Pressure		1445	1520	1551	1568	1580	1589			
	Step #2 Test F	Rate	(10% of ma	ximum rate	) 1.2 (BBL/m	nin)				
Time (Min		10:15	10:21	10:27	10:33	10:39	10:45			
Pressure	(psi)	1589	1637	1654	1666	1675	1705	. <b></b> /		
	Step #3 Test I	Rate	(20% of ma	ximum rate	) 2.4 (BBL/m	nin)				
Time (Min		10:45	10:51	10:57	11:03	11:09	11:15			
Pressure	(psi)	1705	1735	1745	1740	1752	1773			
	Step #4 Test F	Rate	(30% of ma	ximum rate	) 3.6 (BBL/m	nin)				
Time (Min		11:15	11:21	11:27	11:33	11:39	11:45			
Pressure	(psi)	1773	1798	1807	1813	1829	1831			
	Step #5 Test F	Rate	(40% of ma	ximum rate	) 4.8 (BBL/m	nin)				
Time (Min	<del>,                                    </del>	11:45	11:51	11:57	12:03	12:09	12:15			
Pressure (	(psi)	1831	1852	1865	1869	1874	1876			
	Step #6 Test F	Rate	(50% of maximum rate) 6.0 (BBL/min)							
Time (Min		12:15	12:21	12:27	12:33	12:39	12:45			
Pressure (	(psi)	1876	<u> 1899</u> .	1897	1897	1901	1903	. =		
	Step #7 Test F	Rate	(60% of max	ximum rate	) 7.2 (BBL/m	nin)				
Time (Min	<del>,</del>	12:45	12:51	12:57	13:03	13:09	13:15			
Pressure (	(psi)	1903	1951	1964	1961	1962	1962			
	Step #8 Test F	Rate	(70% of max	ximum rate)	) 8.4 (BBL/m	nin)				
Time (Min	<del>,</del> -	13:15	13:21	13:27	13:33	13:39	13:45			
Pressure (	(psi)	1962	1985	1988	1992	1994	1997			
	Step #9 Test F	Rate	(80% of max	ximum rate)	) 9.6 (BBL/m	nin)				
Time (Min		13:45	13:51	13:57	14:03	14:09	14:15	·		
Pressure (	(psi)	1997	2034	2043	2046	2041	2044			
								<del></del> -		

## **Step Rate Test Data**

Well:

Probity Purdue 1 SWD

Date:

9/19/2017

Operator: Probity SWD

Step #10 Test Rate (90% of maximum rate) 10.8 (BBL/min)

Time (Min) Pressure (psi)	14:15 2044	14:21 2084	14:27 2086	14:33 2089	14:39 2092	14:45 2089	
Step #11 Te	est Rate (1	100% of ma	ximum rate	e) 12.0 (BBL	_/min)		
Time (Min) Pressure (psi)	14:45 2089	14:51 2123	14:57 2122	15:03 2113	15:09 2115	15:15 2117	
Step #12 Te	est Rate (1	10% of ma	iximum rate	e) 13.2 (BBL	_/min)		
Time (Min) Pressure (psi)	15:15 2117	15:21 2158	15:27 2158	15:33 2157	15:39 2158	15:45 2161	 

Fall Off

(0% of maximum rate) 0.0 (BBL/min)

Time (Min)	15:45	15:48	15:51	15:54	15:57	16:00	
Pressure (psi)	2161	1883	1604	1163	701	574	

ISP:

1914 (PSI)

Test Run / Witnessed by:

T. STANCZAK QES Wireline

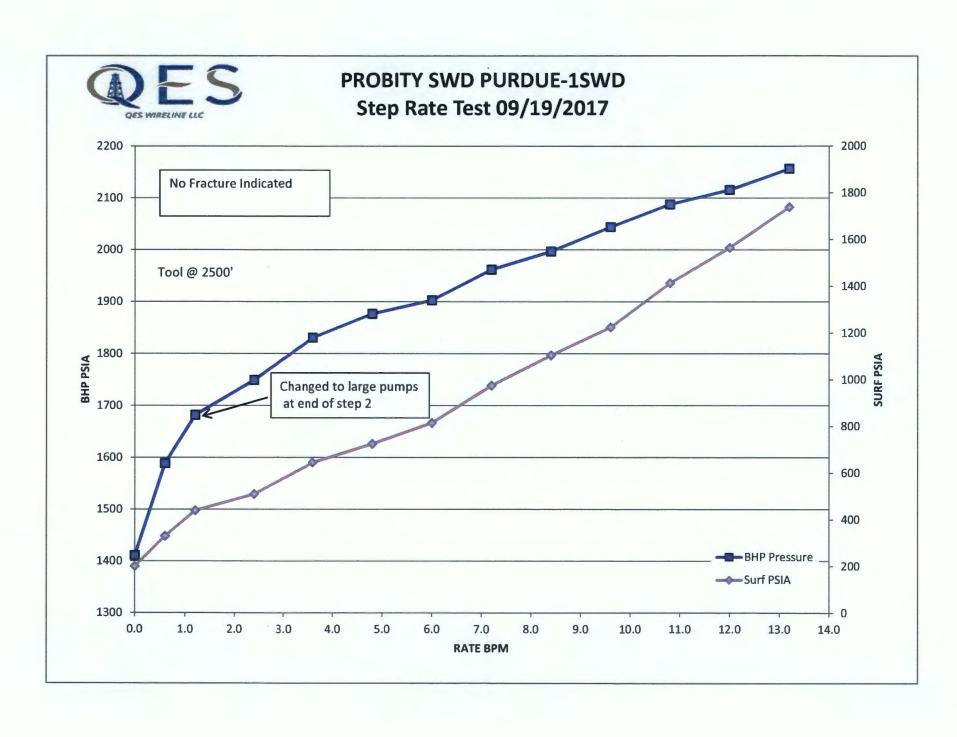
M. Taylor Probity SWD

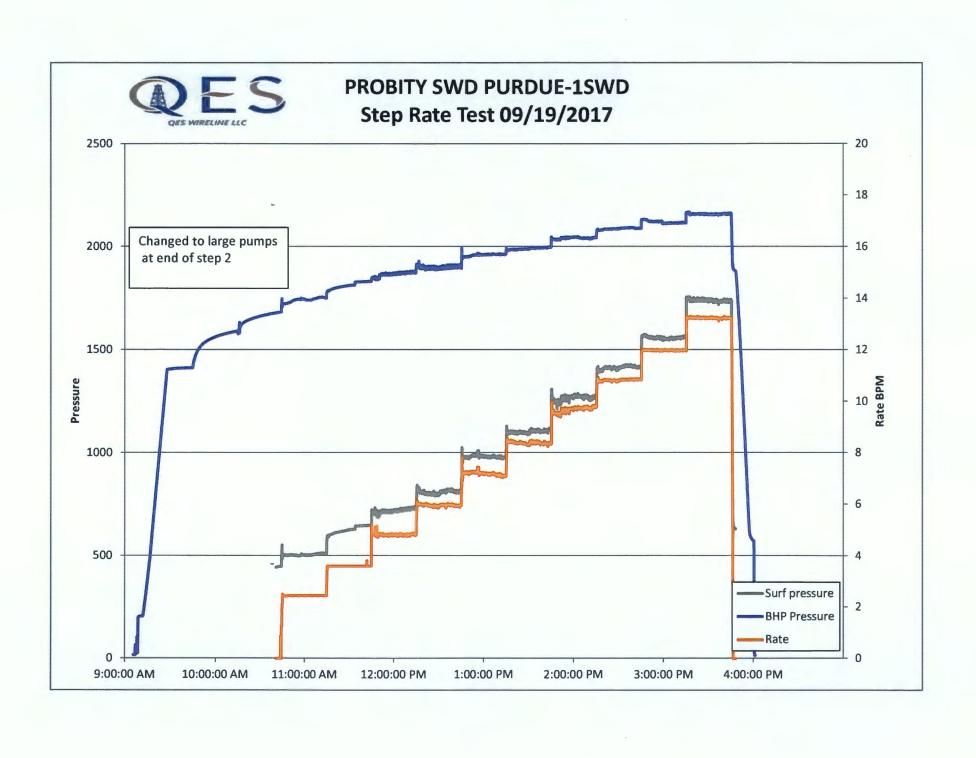
#### **Step Rate Test**

Probity SWD, LLC Pardue 30 SWD No.1 Eddy County, NM 9/19/2017



			D Time	Last Rate	Step I.	Pressure	Surf	Remarks
	S Time	E Time	Min	BPD	BPD	PSIA	PSIA	
1	9:40 AM	9:45 AM	5	0.0	0	1411	200	
2	9:45 AM	10:15 AM	30	0.6	0.6	1589	330	Changed to large pump
3	10:15 AM	10:45 AM	30	1.2	0.6	1682	440	
4	10:45 AM	11:15 AM	30	2.4	1.2	1749	510	
5	11:15 AM	11:45 AM	30	3.6	1.2	1831	645	
6	11:45 AM	12:15 PM	30	4.8	1.2	1877	725	
7	12:15 PM	12:45 PM	30	6.0	1.2	1903	815	
8	12:45 PM	1:15 PM	30	7.2	1.2	1962	975	
9	1:15 PM	1:45 PM	30	8.4	1.2	1997	1105	
10	1:45 PM	2:15 PM	30	9.6	1.2	2044	1225	
11	2:15 PM	2:45 PM	30	10.8	1.2	2088	1414	
12	2:45 PM	3:15 PM	30	12.0	1.2	2116	1565	
13	3:15 PM	3:45 PM	30	13.2	1.2	2157	1740	
14		3:50 PM		0.0		1911		
15		3:55 PM		0.0		1351		
16		4:00 PM		0.0		689		





#### **CURRENT CONFIGURATION**

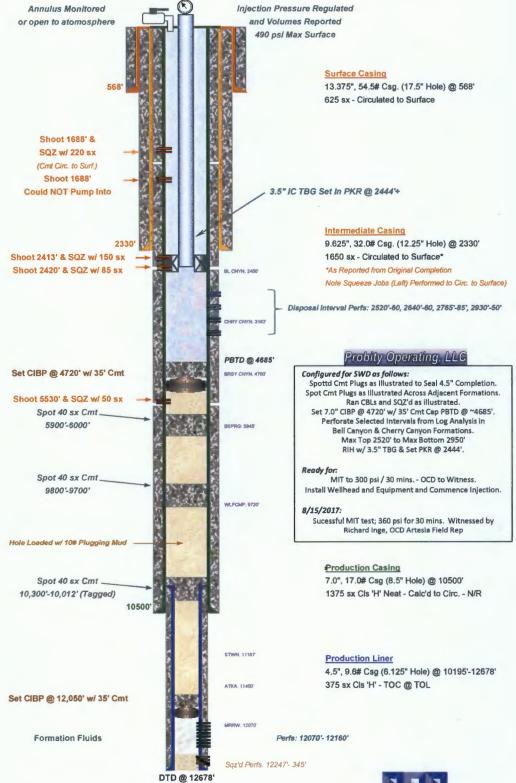


(Post SWD Configuration Workover)

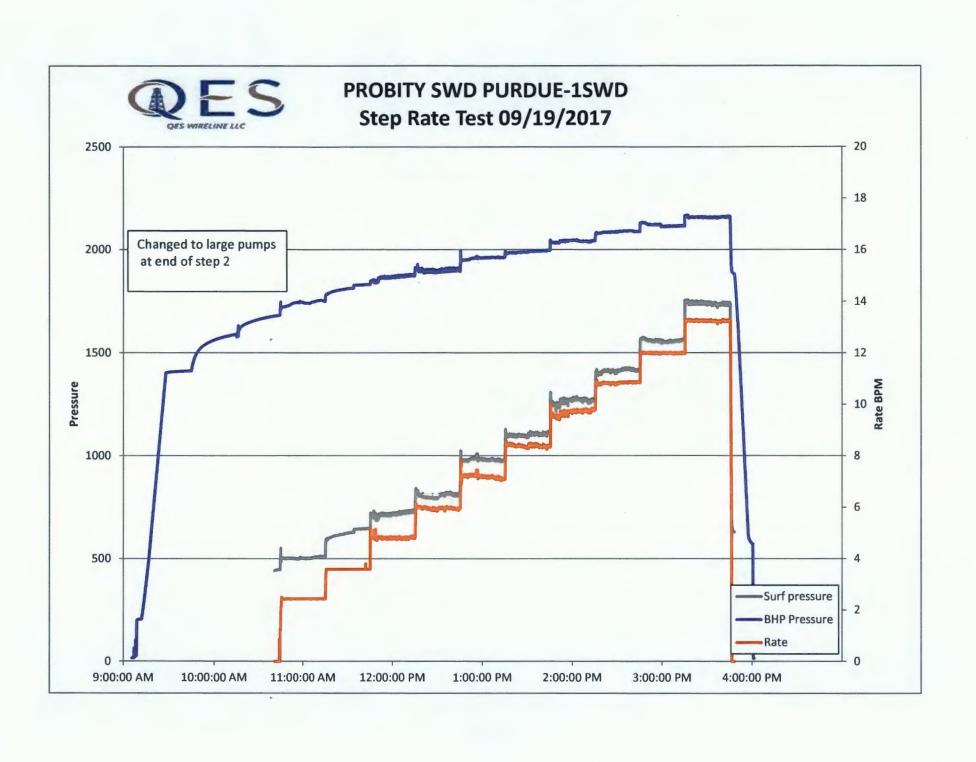
Pardue 30 SWD Well No.1

#### API 30-015-24144

1980' FNL & 983' FWL, SEC. 30-T23S-R28E EDDY COUNTY, NEW MEXICO Spud Date: 4/21/1981 Config Date: 7/19/2017



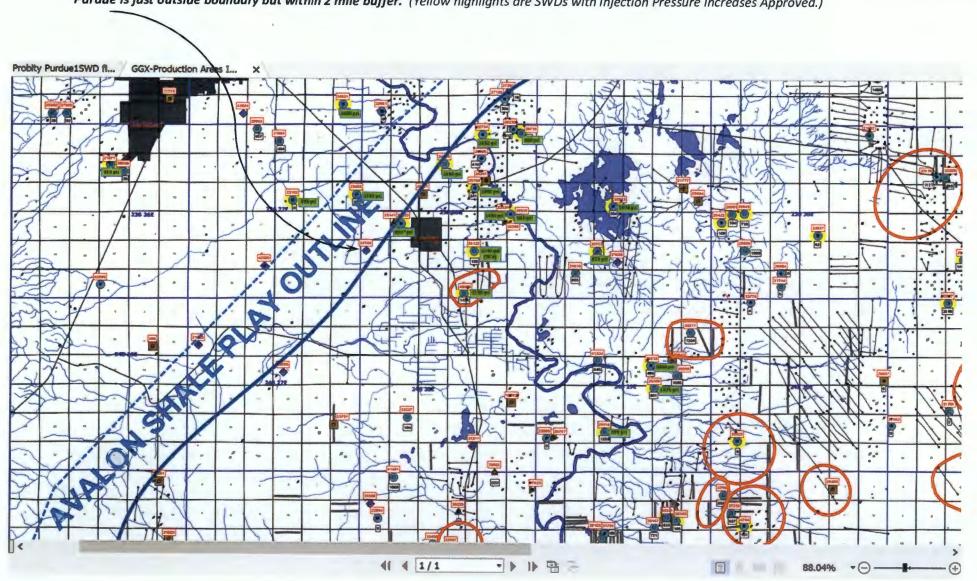




## **Delaware Mountain Group Risk Area (DMGRA)**

(Generated by Mewbourne Oil Co. for SWD Workgroup)

Pardue is just outside boundary but within 2 mile buffer. (Yellow highlights are SWDs with Injection Pressure Increases Approved.)



### Goetze, Phillip, EMNRD

From:

ben@sosconsulting.us

Sent:

Tuesday, September 26, 2017 1:31 PM

To:

Goetze, Phillip, EMNRD

Subject:

IPI Request on Probity's Pardue SWD...

**Attachments:** 

Pardue\_IPI-Rqst\_AsSubmitted\_20170926.pdf; Pardue relation to DMGRA\_wIPIs.pdf

Phillip,

Attached is a request for an injection pressure increase on the Pardue 30 Com SWD No.1 as permitted by SWD-1585.

I've also attached a map separately which shows area IPIs on the DMGRA map generated by Mewbourne - though this may help or save you a little time.

Please let me know if additional information is needed or if you have any questions.

Thank you, Ben



Visit us on the web at www.sosconsulting.us!

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#### **CURRENT CONFIGURATION**

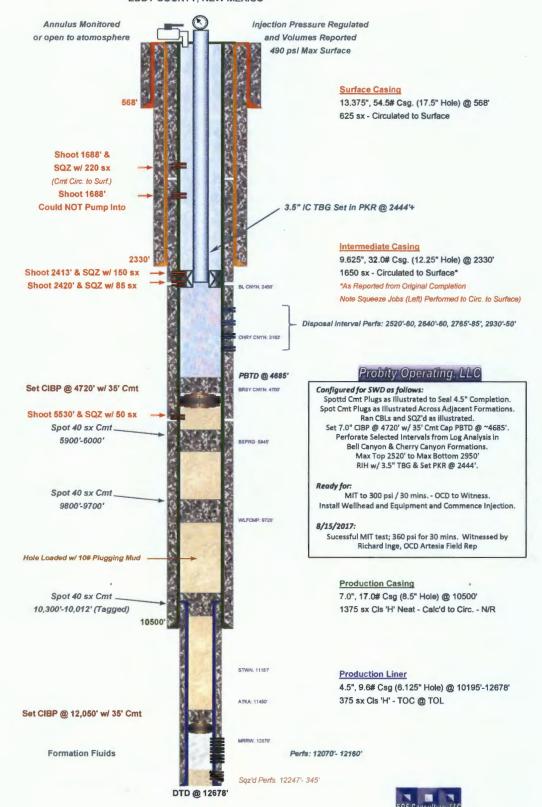


(Post SWD Configuration Workover)

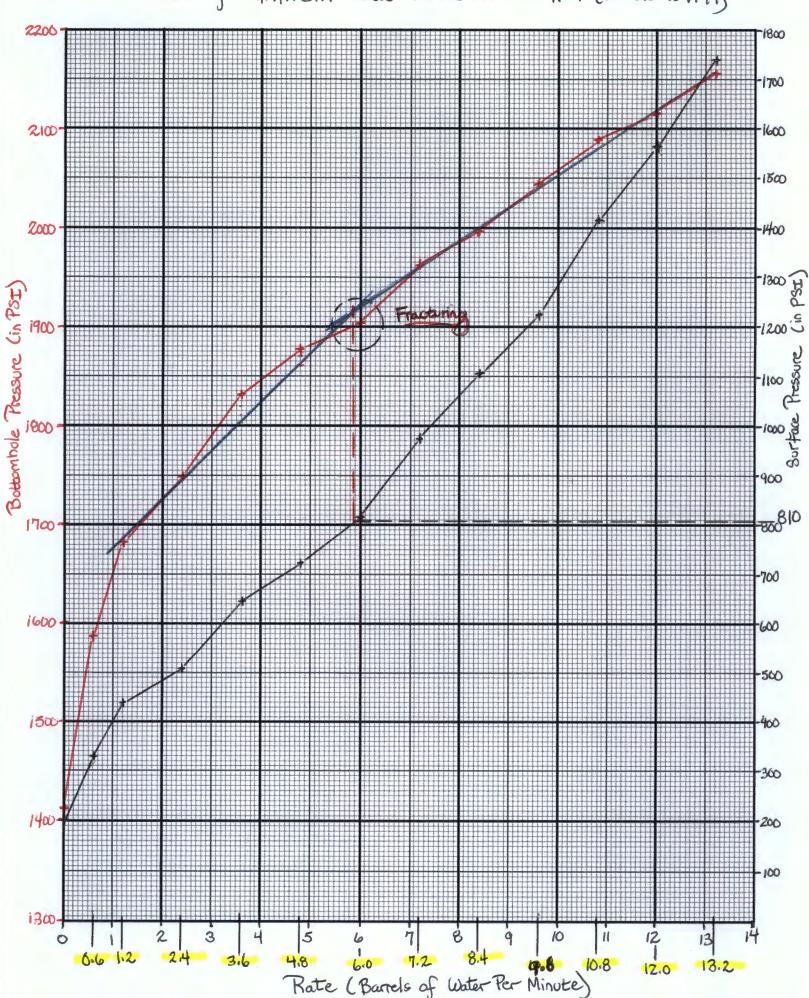
Pardue 30 SWD Well No.1

#### API 30-015-24144

1980' FNL & 983' FWL, SEC. 30-T23S-R28E EDDY COUNTY, NEW MEXICO Spud Date: 4/21/1981 Config Date: 7/19/2017



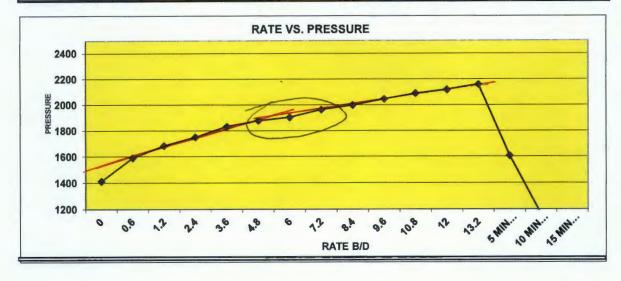
Plot of 9/19/17SRT Data-Pardue 30 SWD No.1 (30-015-24144)



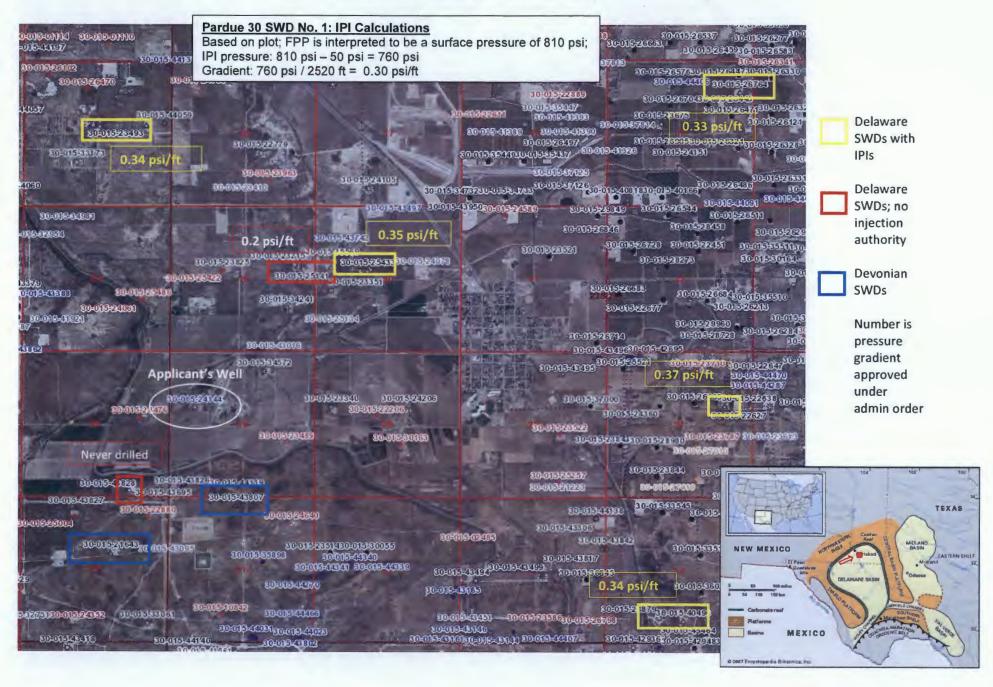


# STEP RATE TEST

RATE B/D	Date	Time	BH PRESS	SURF. PRESS	Comments
0	9/19/2017	9:45 AM	1411	200	
0.6	3/22/2017	10:15 AM	1589 🗸	330 /	
1.2	3/22/2017	10:45 AM	1682	440	Changed to large pump
2.4	3/22/2017	11:15 AM	1749	510	
3.6	3/22/2017	11:45 AM	1831 -	645	
4.8	3/22/2017	12:15 PM	1877	725	
6	3/22/2017	12:45 PM	1903 /	815 —	
7.2	3/22/2017	1:15 PM	1962 -	975	
8.4	3/22/2017	1:45 PM	1997 –	1105	
9.6	3/22/2017	2:15 PM	2044	1225	
10.8		2:45 PM	2088 /	1414	
12	3/22/2017	3:15 PM	2116	1565	
13.2	3/22/2017	3:45 PM	2157	1740	
5 MIN. FALLOFF	3/22/2017	3:50 PM	1604	492	
10 MIN. FALLOFF		3:55 PM	1163	75	
15 MIN. FALLOFF	3/22/2017	4:00 PM	574	0	
Company:	<b>Probity SW</b>	D			T. STANCZAK
Well:	Purdue 1 S	WD		Witnessed By:	
Field:	N/A			Truck Number:	
County:					LEVELLAND
State:				Tool Number:	
Injector:					STEP RATE TESTS
Tubing Size:				NO FRAC WAS A	CHIEVED
Seat Nipple Depth:					
Perforations:					
Plug Back Depth	N/A				



## IPI Request for Pardue 30 SWD No. 1 (30-015-24144)



### Delaware Mountain Group SWDs with IPIs [in T23S, R27E and R28E]

Order Number	Entity	Operator	Order Date	Well Name	API Number	Injection Authority	UL	Sec	Township	Range	Top Interval	Bottom Interval	Injection Interval Length	Admin Pressure	IPI Pressu
<u>IPI-477-0</u>	SWD;DELAWARE	ILC	1/14/2015	LVP SWD No. 1	30-015-42234	SWD-1457	T	4	23 S	28 E	3710	4640	930	680	1225
<u>IPI-463-0</u>	SWD;BELL CANYON-CHERRY CANYON	TREK OPERATING, LLC	2/11/2014	Pearl No. 1	30-015-40496	SWD-1339	0	34	23 S	28 E	3350	4900	1550	670	1150
<u>IPI-441-0</u>	SWD;BELL CANYON-CHERRY CANYON	OXY USA INC	9/18/2013	NEL Federal SWD No. 4	30-015-24424	SWD-518	Н	9	23 S	28 E	2956	3576	620	530	1084
<u>IPI-424-0</u>	SWD;CHERRY CANYON	CHEVRON U.S.A. INC.	8/30/2012	Pardue Farms 27 No. 8	30-015-26122	R-8930	Н	27	23 S	28 E	4394	4662	268	879	1100
<u>IPI-406-0</u>			9/19/2011	Belco State No. 2			F	20	23 S	28 E	2540	3680	1140	508	1056
<u>IPI-406-A</u>	SWD;DELAWARE	BASIC ENERGY SERVICES, LP	1/27/2016		30-015-25433	SWD-1292	F	20	23 S	28 E	2540	3680	1140	1056	880
<u>IPI-406-B</u>			3/8/2016				F	20	23 S	28 E	2540	3680	1140	1056	880
IPI-309-0	SWD;DELAWARE	CHESAPEAKE OPERATING, INC.	12/16/2008	Culebra Bluff SWD No. 1	30-015-22754	SWD-481	E	2	23 S	28 E	4300	4800	500	860	1452
<u>IPI-281</u>	SWD:CHERRY CANYON	CHESAPEAKE OPERATING, INC.	4/11/2007	Foot Louise CIAID No. 4		D 0500	Α	15	23 S	28 E	4216	4537	321	843	1150
IPI-281-A	SWD, CHERRY CANTON	CHEVRON U S A INC	3/23/2013	East Loving SWD No. 1	30-015-26764	R-9509	Α	15	23 S	28 E	4216	4537	321	[1150]	1400
<u>IPI-274</u>	SWD;CHERRY CANYON	RANGE OPERATING NEW MEXICO LLC	10/31/2006	Candelario No. 1	30-015-26536	R-12224	D	24	23 S	28 E	4304	4656	352	860	960
IPI-156-0	SWD; BELL CANYON	D; BELL CANYON CHEVRON U S A INC 7/18/2001 Lentini		Lentini 1 Federal No. 17	30-015-29735	SWD-659	F	1	23 S	28 E	2800	3000	200	600	800
IPI-267	SWD; DELAWARE	KEY ENERGY SERVICES,INC	4/18/2006	BKE No. 1	30-015-23493	SWD-495	Н	13	23 S	27 E	4014	4220	206	1110	1350
IPI-213	SWD; DELAWARE	RAY WESTALL	11/10/2003	Forehand No. 3	30-015-22192	SWD-719	J	15	23 S	27 E	3146	3974	828	629	800

### Delaware Mountain Group SWDs with IPIs [in T23S, R27E and R28E]

'ell Name	API Number	Injection Authority	UL	Sec	Township	Range	Top Interval	Bottom Interval	Injection Interval Length	Admin Pressure	IPI Pressure	IPI Gradient	Comments
No. 1	30-015-42234	SWD-1457	T	4	23 S	28 E	3710	4640	930	680	1225	0.33	FPP not achieved; poor SRT (few steps/data points)
1	30-015-40496	SWD-1339	0	34	23 S	28 E	3350	4900	1550	670	1150	0,34	FPP not achieved; max surf 1215 psi; poor SRT (well not permitted to equalize; data indicates at or past FPP)
eral SWD No. 4	30-015-24424	SWD-518	Н	9	23 S	28 E	2956	3576	620	530	1084	0.37	FPP (surf): 1134 psi (gradient: 0.38 psi/ft)
arms 27 No. 8	30-015-26122	R-8930	Н	27	23 S	28 E	4394	4662	268	879	1100	0.25	FPP (surf): 1156 psi (gradient: 0.26 psi/ft)
			F	20	23 S	28 E	2540	3680	1140	508	1056	0.42	FPP (surf): 930 psi (gradient: 0.36 psi/ft); vendor improperty plotted data set
te No. 2	30-015-25433	SWD-1292	F	20	23 S	28 E	2540	3680	1140	1056	880	0.35	Corrected order; BHP used for approved pressure
			F	20	23 S	28 E	2540	3680	1140	1056	880	0.35	Results same for third SRT
luff SWD No. 1	30-015-22754	SWD-481	E	2	23 S	28 E	4300	4800	500	860	1452	0.34	FPP (surf): 1502 psi (gradient: 0.35 psi/ft)
CIAID N- 4	20.045.20704	D 0500	Α	15	23 S	28 E	4216	4537	321	843	1150	0.27	FPP (surf): 1200 psi (gradient: 0.28 psi/ft)
ng SWD No. 1	30-015-26764	15-26764 R-9509		15	23 S	28 E	4216	4537	321	[1150]	1400	0.33	FPP not achieved; max surf 1447 psi
o No. 1	30-015-26536	R-12224	D	24	23 S	28 E	4304	4656	352	860	960	0.22	FPP (surf): 959 psi (gradient: 0.22 psi/ft); NOV issued for injection >1000 psi
ederal No. 17	30-015-29735	SWD-659	F	1	23 S	28 E	2800	3000	200	600	800	0.29	FPP (surf): 1000 psi (gradient: 0.36 psi/ft)
1	30-015-23493	SWD-495	Н	13	23 S	27 E	4014	4220	206	1110	1350	0.34	FPP (surf): 1397 psi (gradient: 0.35 psi/ft)
No. 3	30-015-22192	SWD-719	J	15	23 S	27 E	3146	3974	828	629	800	0.25	FPP (surf): 860 psi (gradient: 0.27 psi/ft); reported 1000 psi for 5/2013 to 4/2016