		NM OIL CO	NSERV	ATION		
Form 3160-5 (August 2007) BI BI	UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT			FORM OMB N Expires	APPROVED IO. 1004-0135 : July 31, 2010	
SUNDRY	NOTICES AND REPORTS ON		EIVED	5. Lease Serial No. NMLC029418E	<b>3</b> .	
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.				6. If Indian, Allottee	ottee or Tribe Name	
SUBMIT IN TRI	PLICATE - Other instructions or	n reverse side.		7. If Unit or CA/Agro	cement, Name and/or No.	
1. Type of Well		1		8. Well Name and No LEA C FEDERAL		
2. Name of Operator CAPSTONE NATURAL RESC	Contact: CLINT A	A BRIAN		9. API Well No. 30-015-05132		
3a. Address 2250 E. 73RD ST. STE 500 TULSA. OK 74136-6834	3b. Pho Ph: 91	nc No. (include area 18-236-3800	code)	10. Field and Pool, of GRAYBURG	r Exploratory	
4. Location of Well <i>(Footage, Sec., T)</i>	, R., M., or Survey Description)			11. County or Parish,	and State	
Sec 11 T17S R31E 1980FSL	1980FEL				Y, NM	
12. CHECK APPI	ROPRIATE BOX(ES) TO INDIC	ATE NATURE	OF NOȚI	CE, REPORT, OR ÖTHE	ER DATA	
TYPE OF SUBMISSION		TYP	E OF ACT	ION		
Notice of Intent		] Deepen	01	Production (Start/Resume)	□ Water Shut-Off	
Subsequent Report	Alter Casing	Fracture Treat	<b>D</b> I	Reclamation	U Well Integrity	
Einel Abenderment Nation	Casing Repair	New Construction	1 <b>D</b> F	Recomplete	Other .	
	Convert to Injection	Plug Back		Vater Disposal		
13. Describe Proposed or Completed Ope If the proposal is to deepen directiona Attach the Bond under which the wor following completion of the involved testing has been completed. Final Ab determined that the site is ready for fi	ration (clearly state all pertinent details, i illy or recomplete horizontally, give subsi k will be performed or provide the Bond operations. If the operation results in a n andonment Notices shall be filed only aft nal inspection.)	including estimated s urface locations and r No. on file with BLN nultiple completion o ter all requirements, i	tarting date on neasured and MBIA. Requ r recompleti ncluding rec	of any proposed work and appro 1 true vertical depths of all perti- ired subsequent reports shall be on in a new interval, a Form 31 lamation, have been completed,	ximate duration thereof. nent markers and zones. 6 filed within 30 days 60-4 shall be filed once and the operator has	
Conditions of Approval Capstone Natural Resources Lea C -04, API 3001515132 T17S-R31E, Sec 11, 1980 FS 13 Jan 2015	L & 1980 FEL		· /	HD 3/13/15 RECEIPTING MAINSCOM NUMOCO	d	
<ol> <li>Submit PDF of CBL: Attach</li> <li>Submit Injection Profile PDI</li> <li>Well?s stabilized current ps</li> </ol>	ned. 5: Attached. ig/ft surface pressure to the top p	erf: 540 psi/3443	;? = .1568	x		
4. Anticipated BH frac pressur 5. State the targeted maximum	e: (Estimated frac gradient of .75 n bbl/min injection rate: Originally	i) 3443*.75 = 258 v this was .4 BPM	2 psi BHP but the st	eps	۲ ۲ ۲	
14. I hereby certify that the foregoing is	truc and correct. Electronic Submission #293637 v For CAPSTONE NATURAL	erified by the BLM . RESOURCES, se	Well Infor ent to the C	mation System Carlsbad	<u></u>	
Namc (Printed/Typed) CLINT A E	RIAN	Title VIC	E PRESI	DENT OF OPERATIONS	<u></u>	
Signature (Electronic S	ubmission)	Date 03/	03/2015			
	THIS SPACE FOR FED	ERAL OR STA	TE OFFI	CE USE		
· · · · · · · · · · · · · · · · · · ·	· · ·					
Approved By	d. Approval of this notice does not warran	Title			Date	
certify that the applicant holds legal or equivient would entitle the applicant to condu	itable title to those rights in the subject le ct operations thereon.	office				
Fitle 18 U.S.C. Section 1001 and Title 43 States any false, fictitious or fraudulent s	U.S.C. Section 1212, make it a crime for a statements or representations as to any ma	any person knowingl atter within its jurisdie	y and willful	ly to make to any department o	r agency of the United	
** OPERAT	OR-SUBMITTED ** OPERAT	OR-SUBMITTI	ED ** OP	ERATOR-SUBMITTED	) **	

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#### Additional data for EC transaction #293637 that would not fit on the form

#### 32. Additional remarks, continued

were so low at this rate that a pump truck could not inject this slowly. The maximum injection rate was increased to 5 BPM to accommodate the required 7 steps at a minimum rate within the range of a pump truck.

6. Injection fluid #/gal = 8.9 #/gal.

Anticipated formation breakdown pressure @ top perf: (assuming .75 frac gradient)

2582-(3443\*.052\*8.9) = 989 psi at surface.

8. Stop injection a minimum of 48 hours (we did 71 hours, weather delay) before the step rate test and record the pressure drop: Attached.

and record the pressure drop: Attached.
9. Calculate seven injection rates by multiplying the targeted maximum bbl/min injection by .05 for step 1, .10 for step 2, .2 for step 3, .4 for step 4, .6 for step 5, .8 for step 6 and 1.0 for step 7. Our adjusted maximum injection rate was 5 BPM: Step 1 = .25 BPM (360 BPD), Step 2 = .5 BPM(720 BPD), Step 3 = 1 BPM (1440 BPD), Step 4 = 2 BPM(2880 BPD), Step 5 = 3 BPM(4320 BPD), Step 6 = 4 BPM(5760 BPD), Step 7 = 5 BPM(7,200 BPD).
10. The step rate fluid was produced water from the battery, the same water that would be used for

water flood injection.

11. We employed Cardinal?s instrument skid with a constant flow regulator& turbine flow meter, these rates were recorded along with pressures and are attached.

12. Cardinal also ran a real time down hole pressure gauge and surface pressure gauge. These

pressures are included in 5 minute increments and are attached as well. 13. Paul Swartz with BLM was notified at 8:33 AM on 18 Feb 2015 of the anticipated pump date of 23 Feb 2015. Then Paul was notified again on the 23rd of a weather delay and that the job would pump

on the 24th. Mr. Swartz was able to make the job and witnessed it for the BLM. 14. The test was concluded at step 6, 4 BPM(5760 BPD) when the surface treating pressure approached the working pressure of the valve (3,000 psi)

15. Formation frac pressure was not exceeded due to shutting down at max pressure.

16. Record with each 5 minute interval the corresponding rate (BBL/min), down hole & surface pressure: Attached.

17. File a sundry subsequent report with the data collected, requesting your proposed wellhead injection pressure: Capstone Natural Resources has requested an increased injection pressure of 2500 psi and injection volume increase of 750 BPD from the New Mexico OCD.

# Notified Richard Inge, OCD, 2/23/15.

This Sundry being submitted to the OCD 'For Record Only'



### Step Rate Test

CARCIN

# **Cardinal Surveys Company**

24-Feb-15

Capstone Natural Resources, LLC Well: Lee C Federal No. 4 Field; Grayburg County: Eddy County, New Mexico API No. 30-015-05132 SC70521 File No. 22108

No Parting Pressure Indicated

Downhole PSI Tool Ser. No.CSC2604Surface PSI Gauge Ser. No.CSC 2701Tool @3,500'

	Start	End	Rate-BPD	
1	8:38 AM	9:00 AM	0	3,500'
2	9:00 AM	9:30 AM	360	
3	9:30 AM	10:00 AM	720	
4	10:00 AM	10:30 AM	1440	
5	10:30 AM	11:00 AM	2880	
6	11:00 AM	11:30 AM	4320	
7	11:30 AM	11:32 AM	5760	
8	11:32 AM	11:45 AM	· · 0	FALL OFF
9				

10 NOTE: TEST SHUT DOWN 2 MINUTES INTO STEP NO. 7 11 DUE TO SURFACE PRESSURE LIMIT

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13 MAXIMUM SURFACE PRESSURE REACHED DURING THE TEST WAS 2,828 PSI

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# Step Rate Test > 24-Feb-15

	Capstone N	atural Reso	urces, LL	C ·			<u>،</u>		•			
	Well:	Lee C Fede	eral No. 4		ear	cover J	•				·	
	Field:	Grayburg										
	Location:	Eddy Coun	ty, New N	lexico ·								
	API No.	30-015-051	32			۲.						
			D Time	Last Rate	Step	BHP	Surf	Cum	Delta	Avg.	Lower	Upper
	S Time	E Time	Min	BPD	BPD	PSIA	PSIA	BBL	BBL	BPD	Trend	Trend
1	8:38 AM	9:00 AM	. 22	. 0	0	2058.8	356	0	· 0	0		
2	9:00 AM	9:30 AM	30	360	360	2626	949	4.1	4.1	197		. /
3	9:30 AM	10:00 AM	30	720	360	2782.1	1101	18.4	14.3	686		•
4	10:00 AM	10:30 AM	30	1440	720	3029.1	1411	49.6	31.2	1498		
5	10:30 AM	11:00 AM	30	2880	1440 -	3369	1933	108.1	58.5	2808		
6	11:00 AM	11:30 AM	30	4320	1440	3614.9	2517	195.4	87.3	4190		
7	11:30 AM	11:32 AM	2	5760	1440	3651.2	2822	203.4	8	5760	· #	
8	11:32 AM	11:45 AM	13	Ó	0	3394.7	1702	203.4	0	• 0 •		
9											·	
10	NOTE: TES	T SHUT DOV	NN 2 MIN	UTES INTO S	TEP NO.	7 DUE TO S	URFACE	PRESSURE	LIMIT			
4.4				· · ·			·					

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upper trend		
lower trend		
intersect	#DIV/0!	BPD
BHP PSI	#DIV/0!	PSIA



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		Rate	Surface	BHP	
	Time	bpm	psi	psi	
	8:54 AM	0.0	<sup>,</sup> 356.1	2058.8	
·	8:59 AM	0.7	617.4	2297.6	
	9:04 AM	0.3	719.9	2388.2	
· .	9:09 AM	\ 0.1	777.3	2445.6	
	9:14 AM	0.1	831.4	2506.8	
	9:19 AM	0.1	878.9	2553.6	
	9:24 AM	0.0	918.6	2593.7	
	9:29 AM	.0.1	957.1	2629.0	
	9:34 AM	0.4	992.6	2667.5	
	9:39 AM	0.4	1032.5	2696.3	
	9:44 AM	0.5	1061.0	2722.3	
	9:49 AM	0.6	1082.3	2745.6	
	9:54 AM	, 0.5	1097.7	2767.0	
	9:59 AM	0.9	1160.9	2797.8	
	10:04 AM	1.1	1241.8	2863.6	
	10:09 AM	1.0	1290.4	2909.3	
	10:14 AM	· 1.1	1324.3	2945.7	
	10:19 AM	1.1	1361.4	2976.6	
	10:24 AM	1.1	1388.0	3004.1	
	10:29 AM	1.1	1452.4	3029.1	
	10:34 AM	2.0	/1751.3	3156.9	
	10:39 AM	2.0	1829.3	3228.7	
	10:44 AM	2.2	1882.6	3280.6	
	10:49 AM	1.9	1878.9	3311.1	
•	10:54 AM	1.9	1912.5	3341.0	
	10:59 AM	1.9	1997.7	3368.0	
	11:04 AM	. 3.0	2353.3	3429.7	
	11:09 AM	3.0	2414.3	3499.0	
	11:14 AM	3.1	2469.0	3540.8	
	11:19 AM	3.0	2480.2	3571.0	
	11:24 AM	3.0	2502.1	3595.3	
	11:29 AM	. 3.0	2673.0	3615.5	
1 ^	11:34 AM	0.0	1854.1	3564.9	
ι	11:39 AM	0.0	1759.7	3466.0	
	11:44 AM	0.0	0.0	3404.5	
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