

Results of Directional Survey

API number:	30-025-41364		
OGRID:		Operator:	BC OPERATING, INC.
		Property:	BATTLE # 1H

surface	ULSTR:	A	34	T 21S	R 33E
				160 FNL	360 FEL

BH Loc	ULSTR:	P	34	T 21S	R 33E
15561	MD	11011.4	TVD	239 FSL	308 FEL
5041 FNL					

Top Perf/OH	ULSTR:	A	34	T 21S	R 33E
11033	MD	10922.7	TVD	524 FNL	342 FEL

Bot Perf/OH	ULSTR:	P	34	T 21S	R 33E
15362	MD	11015.0	TVD	438 FSL	316 FEL
4842 FNL					

	MD	N/S	E/W	VD
	11013	-345.40	18.72	10914.35
TOP PERFS/OH	11033	-363.58	18.18	10922.68
	11045	-374.48	17.86	10927.67
	15317	-4637.40	42.13	11015.72
BOT PERFS/OH	15362	-4682.37	43.74	11015.01
	15412	-4732.33	45.53	11014.22

NEXT TO LAST	15468.00	-4788.27	47.97	11013.15
LAST READING	15561.00	-4881.16	52.30	11011.36
TD	15561	-4881.16	52.30	11011.36

Surface Location	160	FN	360	FE
Projected BHL	5041	FN	308	FE
Location of				
Top Perfs/OH	524	FN	342	FE
Bottom Perfs/OH	4842	FN	316	FE

SUMMARY of Subsurface Locations

Surface Location	A-34-21S-33E	160	FN	360	FE	Vert. Depth
Top Perfs/OH	A-34-21S-33E	524	FN	342	FE	10922.68
Bottom Perfs/OH	P-34-21S-33E	4842	FN	316	FE	11015.01
Projected TD	P-34-21S-33E	5041	FN	308	FE	11011.36

Well:	Battle #1H	Engineer:	Nick Klopp
Field	Lea County	Date:	9/8/2014
Formation	Bone Springs		

Perforation Details & Schedule

# Stages	14	Shoe @	15,559
Cluster/Stg	5	PBTD @	15,403
Cluster Total	70	KOP @	10,500
Total Perfs	420	EOC @	11,330
TVD	11,500	Mkr Jt@	

Treatable Lateral	4,073
Perforated Interval	4,028
Percent Treated	98.9%
Feet per Stage	227

Perf Spec: 3-1/8" 6 spf 60 deg guns, Owen 19g Chg #3375-311L 0.44" EHC
 Plug Spec: 5-1/2" 20# 10k "Ball Drop" frac plug



Stage	Cluster	Depth	# Perfs	Description	Spacing	Stress Gradient	Stage	Cluster	Depth	# Perfs	Description	Spacing	Stress Gradient
1	CBP @	15,403		.44" @ 6 SPF 60 deg	Set		6	CBP @	13,980				
		15,361	6	.44" @ 6 SPF 60 deg	Already Shot	0.67			13,939	6	.44" @ 6 SPF 60 deg	41	0.67
		15,321	6	.44" @ 6 SPF 60 deg	Already Shot	0.67			13,884	6	.44" @ 6 SPF 60 deg	55	0.66
		15,256	6	.44" @ 6 SPF 60 deg	Already Shot	0.68			13,824	6	.44" @ 6 SPF 60 deg	60	0.65
		15,205	6	.44" @ 6 SPF 60 deg	Already Shot	0.69			13,781	6	.44" @ 6 SPF 60 deg	43	0.66
		15,146	6	.44" @ 6 SPF 60 deg	Already Shot	0.68			13,736	6	.44" @ 6 SPF 60 deg	45	0.67
Total Holes		30					Total Holes		30				
2	CBP @	15,117			29		7	CBP @	13,701			35	
		15,087	6	.44" @ 6 SPF 60 deg	30	0.68			13,665	6	.44" @ 6 SPF 60 deg	36	0.67
		15,031	6	.44" @ 6 SPF 60 deg	56	0.67			13,612	6	.44" @ 6 SPF 60 deg	53	0.67
		14,979	6	.44" @ 6 SPF 60 deg	52	0.66			13,555	6	.44" @ 6 SPF 60 deg	57	0.68
		14,914	6	.44" @ 6 SPF 60 deg	65	0.67			13,494	6	.44" @ 6 SPF 60 deg	61	0.67
		14,858	6	.44" @ 6 SPF 60 deg	56	0.68			13,430	6	.44" @ 6 SPF 60 deg	64	0.68
Total Holes		30					Total Holes		30				
3	CBP @	14,827			31		8	CBP @	13,397			33	
		14,796	6	.44" @ 6 SPF 60 deg	31	0.65			13,363	6	.44" @ 6 SPF 60 deg	34	0.68
		14,735	6	.44" @ 6 SPF 60 deg	61	0.66			13,302	6	.44" @ 6 SPF 60 deg	61	0.67
		14,675	6	.44" @ 6 SPF 60 deg	60	0.65			13,247	6	.44" @ 6 SPF 60 deg	55	0.67
		14,624	6	.44" @ 6 SPF 60 deg	51	0.65			13,197	6	.44" @ 6 SPF 60 deg	50	0.69
		14,574	6	.44" @ 6 SPF 60 deg	50	0.65			13,149	6	.44" @ 6 SPF 60 deg	48	0.68
Total Holes		30					Total Holes		30				
4	CBP @	14,543			31		9	CBP @	13,120			29	
		14,511	6	.44" @ 6 SPF 60 deg	32	0.66			13,085	6	.44" @ 6 SPF 60 deg	35	0.67
		14,464	6	.44" @ 6 SPF 60 deg	47	0.66			13,026	6	.44" @ 6 SPF 60 deg	59	0.68
		14,415	6	.44" @ 6 SPF 60 deg	49	0.64			12,966	6	.44" @ 6 SPF 60 deg	60	0.67
		14,370	6	.44" @ 6 SPF 60 deg	45	0.65			12,888	6	.44" @ 6 SPF 60 deg	78	0.67
		14,320	6	.44" @ 6 SPF 60 deg	50	0.65			12,812	6	.44" @ 6 SPF 60 deg	76	0.68
Total Holes		30					Total Holes		30				
5	CBP @	14,300			20		10	CBP @	12,768			44	
		14,275	6	.44" @ 6 SPF 60 deg	25	0.67			12,723	6	.44" @ 6 SPF 60 deg	45	0.65
		14,209	6	.44" @ 6 SPF 60 deg	66	0.69			12,663	6	.44" @ 6 SPF 60 deg	60	0.64
		14,145	6	.44" @ 6 SPF 60 deg	64	0.69			12,601	6	.44" @ 6 SPF 60 deg	62	0.63
		14,080	6	.44" @ 6 SPF 60 deg	65	0.68			12,544	6	.44" @ 6 SPF 60 deg	57	0.63
		14,018	6	.44" @ 6 SPF 60 deg	62	0.68			12,468	6	.44" @ 6 SPF 60 deg	76	0.64
Total Holes		30					Total Holes		30				

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Stage	Cluster	Depth	# Perfs	Description	Spacing	Stage	Cluster	Depth	# Perfs	Description	Spacing	
11	CBP @	12,430			38							
		12,385	6	.44" @ 6 SPF 60 deg	45							0.64
		12,338	6	.44" @ 6 SPF 60 deg	47							0.64
		12,280	6	.44" @ 6 SPF 60 deg	58							0.64
		12,227	6	.44" @ 6 SPF 60 deg	53							0.65
		12,174	6	.44" @ 6 SPF 60 deg	53							0.66
Total Holes		30										
12	CBP @	12,151			23							
		12,127	6	.44" @ 6 SPF 60 deg	24							0.67
		12,071	6	.44" @ 6 SPF 60 deg	56							0.67
		12,016	6	.44" @ 6 SPF 60 deg	55							0.67
		11,952	6	.44" @ 6 SPF 60 deg	64							0.67
		11,892	6	.44" @ 6 SPF 60 deg	60							0.66
Total Holes		30										
13	CBP @	11,870			22							
		11,840	6	.44" @ 6 SPF 60 deg	30							0.71
		11,770	6	.44" @ 6 SPF 60 deg	70							0.71
		11,722	6	.44" @ 6 SPF 60 deg	48							0.71
		11,670	6	.44" @ 6 SPF 60 deg	52							0.71
		11,623	6	.44" @ 6 SPF 60 deg	47							0.70
Total Holes		30										
14	CBP @	11,590			33							
		11,549	6	.44" @ 6 SPF 60 deg	41							0.67
		11,486	6	.44" @ 6 SPF 60 deg	63							0.67
		11,436	6	.44" @ 6 SPF 60 deg	50							0.68
		11,385	6	.44" @ 6 SPF 60 deg	51							0.68
		11,333	6	.44" @ 6 SPF 60 deg	52							0.67
Total Holes		30										