

30-025-42009

BC  PERATING, INC.

B.C Operating, Inc.

Lea County NM

Battle #2H

Survey: Survey #1

MOJO Survey

23 February, 2015

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Company:	B.C. Operating, Inc.	Local Co-ordinate Reference:	Well Battle #2H
Project:	Lea County NM	TVD Reference:	WELL @ 3694.0usft (Original Well Elev)
Site:	Battle #2H	MD Reference:	WELL @ 3694.0usft (Original Well Elev)
Well:	Battle #2H	North Reference:	Grid
Wellbore:	Battle #2H	Survey Calculation Method:	Minimum Curvature
Design:	Battle #2H	Database:	EDM 5000.1 Single User Db

Project	Lea County NM	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Battle #2H	Northings:	525,784.11 usft	Latitude:	32° 26' 35.154 N
Site Position:	Map	Easting:	739,601.04 usft	Longitude:	103° 33' 23.996 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.3/16 "	Grid Convergence:	0.42 °

Well	Battle #2H	Northings:	525,784.11 usft	Latitude:	32° 26' 35.154 N
Well Position	+N/-S	Easting:	739,601.04 usft	Longitude:	103° 33' 23.996 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,672.0 usft

Wellbore	Battle #2H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	02/07/15	7.14	60.30	48,382

Design	Battle #2H				
Audit Notes:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	180.51	

Survey Program	Date	02/23/15			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
153.0	16,949.0	Survey #1 (Battle #2H)			

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Well Battle #2H
 WELL @ 3694.0usft (Original Well Elev)
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 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
	0.0	0.00	0.00	0.0	-3,694.0	0.0	0.0	0.00	0.0	525,784.11	739,601.04
	153.0	1.00	205.00	153.0	-3,541.0	-1.2	-0.6	0.65	1.2	525,782.90	739,600.48
	245.0	1.00	208.40	245.0	-3,449.0	-2.6	-1.3	0.06	2.7	525,781.47	739,599.75
	331.0	1.00	211.20	331.0	-3,363.0	-3.9	-2.0	0.06	4.0	525,780.16	739,599.01
	401.0	1.00	215.80	401.0	-3,293.0	-5.0	-2.7	0.11	5.0	525,779.15	739,598.34
	464.0	1.10	217.70	463.9	-3,230.1	-5.9	-3.4	0.17	5.9	525,778.22	739,597.64
	551.0	1.10	223.00	550.9	-3,143.1	-7.2	-4.5	0.12	7.2	525,776.95	739,596.56
	644.0	1.30	218.90	643.9	-3,050.1	-8.6	-5.7	0.23	8.7	525,775.48	739,595.29
	734.0	1.70	219.50	733.9	-2,960.1	-10.5	-7.2	0.44	10.5	525,773.65	739,593.80
	823.0	1.80	235.30	822.8	-2,871.2	-12.3	-9.2	0.55	12.4	525,771.84	739,591.81
	915.0	1.90	246.20	914.8	-2,779.2	-13.7	-11.8	0.40	13.8	525,770.40	739,589.23
	977.0	1.60	247.10	976.8	-2,717.2	-14.5	-13.5	0.49	14.6	525,769.65	739,587.49
	1,045.0	1.50	241.70	1,044.7	-2,649.3	-15.3	-15.2	0.26	15.4	525,768.86	739,585.83
	1,137.0	1.00	246.20	1,136.7	-2,567.3	-16.1	-17.0	0.55	16.3	525,767.96	739,584.04
	1,232.0	1.00	229.40	1,231.7	-2,482.3	-17.0	-18.4	0.31	17.2	525,767.09	739,582.65
	1,327.0	0.90	237.20	1,326.7	-2,367.3	-18.0	-19.6	0.17	18.1	525,766.14	739,581.39
	1,422.0	0.90	214.70	1,421.7	-2,272.3	-19.0	-20.7	0.37	19.2	525,765.13	739,580.34
	1,517.0	0.90	215.70	1,516.7	-2,177.3	-20.2	-21.6	0.02	20.4	525,763.91	739,579.48
	1,530.0	0.90	215.70	1,529.7	-2,164.3	-20.4	-21.7	0.00	20.6	525,763.74	739,579.36
Ruster											
	1,615.0	0.90	215.60	1,614.6	-2,079.4	-21.5	-22.5	0.00	21.7	525,762.66	739,578.59
	1,654.0	1.00	216.70	1,653.6	-2,040.4	-22.0	-22.8	0.26	22.2	525,762.13	739,578.20
	1,711.0	0.99	221.83	1,710.6	-1,983.4	-22.7	-23.5	0.16	22.9	525,761.37	739,577.58
13 3/8"											
	1,784.0	1.00	228.40	1,783.6	-1,910.4	-23.6	-24.4	0.16	23.9	525,760.47	739,576.68
	1,880.0	0.90	193.10	1,879.6	-1,814.4	-24.9	-25.2	0.61	25.1	525,759.18	739,575.88
	1,977.0	0.60	153.70	1,976.6	-1,717.4	-26.1	-25.1	0.60	26.3	525,757.98	739,575.93

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Well Battle #2H
 WELL @ 3694.0usft (Original Well Elev)
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Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
	2,073.0	0.60	175.10	2,072.6	-1,621.4	-27.1	-24.8	0.23	27.3	525,757.03	739,576.20
	2,167.0	0.80	181.00	2,166.6	-1,527.4	-28.2	-24.8	0.23	28.4	525,755.89	739,576.23
	2,262.0	0.70	180.30	2,261.6	-1,432.4	-29.5	-24.8	0.11	29.7	525,754.64	739,576.21
	2,359.0	0.60	148.60	2,358.6	-1,335.4	-30.5	-24.6	0.38	30.7	525,753.62	739,576.48
	2,454.0	0.80	116.20	2,453.6	-1,240.4	-31.2	-23.7	0.46	31.4	525,752.90	739,577.33
	2,549.0	0.70	109.80	2,548.6	-1,145.4	-31.7	-22.6	0.14	31.9	525,752.41	739,578.47
	2,645.0	0.90	96.20	2,644.6	-1,049.4	-32.0	-21.3	0.29	32.2	525,752.13	739,579.77
	2,740.0	1.40	87.60	2,739.5	-954.5	-32.0	-19.4	0.56	32.2	525,752.10	739,581.67
	2,835.0	0.80	68.40	2,834.5	-859.5	-31.7	-17.6	0.73	31.9	525,752.39	739,583.45
	2,931.0	1.20	37.70	2,930.5	-763.5	-30.7	-16.4	0.68	30.8	525,753.43	739,584.69
	3,026.0	1.00	66.20	3,025.5	-668.5	-29.6	-15.0	0.61	29.7	525,754.55	739,586.05
	3,122.0	0.80	71.90	3,121.5	-572.5	-29.0	-13.6	0.23	29.1	525,755.10	739,587.46
	3,217.0	1.50	72.30	3,270.4	-423.6	-28.1	-10.7	0.47	28.2	525,756.02	739,590.30
	3,313.0	1.20	64.10	3,312.4	-381.6	-27.7	-9.8	0.85	27.8	525,756.38	739,591.22
	3,408.0	0.80	35.00	3,407.4	-286.6	-26.8	-8.5	0.67	26.8	525,757.35	739,592.50
	3,504.0	0.70	24.90	3,503.4	-190.6	-25.7	-7.9	0.17	25.7	525,758.43	739,593.13
	3,599.0	0.60	15.50	3,598.4	-95.6	-24.7	-7.5	0.15	24.7	525,759.44	739,593.51
	3,695.0	0.80	28.30	3,694.4	0.4	-23.6	-7.1	0.26	23.7	525,760.51	739,593.96
	3,790.0	0.60	17.50	3,789.4	95.4	-22.5	-6.6	0.25	22.6	525,761.57	739,594.42
	3,885.0	0.80	28.70	3,884.4	190.4	-21.5	-6.1	0.25	21.5	525,762.63	739,594.89
	3,980.0	0.70	44.30	3,979.4	285.4	-20.5	-5.4	0.24	20.5	525,763.63	739,595.62
	4,076.0	0.80	48.60	4,075.4	381.4	-19.6	-4.5	0.12	19.7	525,764.49	739,596.53
	4,172.0	0.70	41.30	4,171.4	477.4	-18.7	-3.6	0.14	18.8	525,765.37	739,597.42
	4,267.0	0.40	61.80	4,266.4	572.4	-18.1	-2.9	0.37	18.2	525,765.97	739,598.09
	4,363.0	0.50	8.00	4,362.3	668.3	-17.6	-2.6	0.43	17.6	525,766.54	739,598.45
	4,459.0	0.90	342.10	4,458.3	764.3	-16.4	-2.8	0.52	16.5	525,767.67	739,598.27
	4,553.0	0.80	350.40	4,552.3	858.3	-15.1	-3.1	0.17	15.1	525,768.02	739,597.94

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	4,649.0	1.00	351.40	4,648.3	964.3	-13.6	-3.3	0.21	13.6	525,770.51	739,597.70
	4,745.0	1.30	344.40	4,744.3	1,050.3	-11.7	-3.8	0.34	11.8	525,772.39	739,597.28
	4,840.0	1.20	333.00	4,839.3	1,145.3	-9.8	-4.5	0.28	9.8	525,774.31	739,596.54
	4,936.0	1.40	328.20	4,935.3	1,241.3	-7.9	-5.6	0.24	8.0	525,776.20	739,595.47
	5,031.0	1.00	321.10	5,030.2	1,336.2	-6.3	-6.7	0.45	6.3	525,777.83	739,594.33
	5,126.0	1.10	327.50	5,125.2	1,431.2	-4.9	-7.7	0.16	4.9	525,779.25	739,593.32
	5,221.0	1.10	316.00	5,220.2	1,526.2	-3.4	-8.8	0.23	3.5	525,780.67	739,592.20
	5,300.0	1.22	323.32	5,299.2	1,605.2	-2.2	-9.9	0.24	2.3	525,781.89	739,591.17
Lamar	5,330.0	1.27	325.73	5,329.2	1,635.2	-1.7	-10.2	0.24	1.8	525,782.42	739,590.79
9 5/8"	5,404.0	1.40	330.90	5,403.2	1,709.2	-0.2	-11.1	0.24	0.3	525,783.89	739,589.89
	5,498.0	0.50	6.40	5,497.1	1,803.1	1.2	-11.7	1.10	-1.1	525,785.30	739,589.38
	5,570.0	0.50	20.76	5,569.1	1,875.1	1.8	-11.5	0.17	-1.7	525,785.90	739,589.52
Bell Canyon	5,593.0	0.50	25.30	5,592.1	1,898.1	2.0	-11.4	0.17	-1.9	525,786.09	739,589.60
	5,679.0	0.30	25.20	5,678.1	1,984.1	2.5	-11.2	0.23	-2.4	525,786.63	739,589.86
	5,784.0	0.30	3.60	5,783.1	2,089.1	3.0	-11.0	0.11	-2.9	525,787.15	739,589.99
	5,840.0	0.30	359.57	5,839.1	2,145.1	3.3	-11.0	0.04	-3.2	525,787.45	739,590.00
Cherry Canyon	5,880.0	0.30	356.70	5,879.1	2,185.1	3.5	-11.0	0.04	-3.4	525,787.66	739,589.99
	5,975.0	0.40	324.30	5,974.1	2,280.1	4.1	-11.3	0.23	-4.0	525,788.17	739,589.79
	6,071.0	0.50	305.80	6,070.1	2,376.1	4.6	-11.8	0.18	-4.5	525,788.69	739,589.25
	6,166.0	0.60	307.80	6,165.1	2,471.1	5.1	-12.5	0.11	-5.0	525,789.24	739,588.52
	6,262.0	0.50	310.40	6,261.1	2,567.1	5.7	-13.2	0.11	-5.6	525,789.82	739,587.81
	6,358.0	0.60	314.30	6,357.1	2,663.1	6.3	-13.9	0.11	-6.2	525,790.44	739,587.13
	6,453.0	0.50	307.20	6,452.1	2,758.1	6.9	-14.6	0.13	-6.8	525,791.04	739,586.44

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	6,549.0	0.60	316.50	6,548.1	2,854.1	7.5	-15.3	0.14	-7.4	525,791.66	739,585.76
	6,644.0	0.50	325.20	6,643.1	2,949.1	8.2	-15.9	0.14	-8.1	525,792.36	739,585.18
	6,739.0	0.50	320.20	6,738.1	3,044.1	8.9	-16.4	0.05	-8.8	525,793.02	739,584.68
	6,834.0	0.60	321.20	6,833.1	3,139.1	9.6	-16.9	0.11	-9.5	525,793.72	739,584.10
	6,930.0	0.60	322.60	6,929.1	3,235.1	10.4	-17.6	0.02	-10.2	525,794.51	739,583.48
	7,025.0	0.50	310.30	7,024.1	3,330.1	11.1	-18.2	0.16	-10.9	525,795.18	739,582.87
	7,075.0	0.39	300.67	7,074.1	3,380.1	11.3	-18.5	0.27	-11.1	525,795.40	739,582.55
Brushy Canyon											
	7,121.0	0.30	285.80	7,120.1	3,426.1	11.4	-18.7	0.27	-11.2	525,795.52	739,582.30
	7,216.0	0.40	284.10	7,215.1	3,521.1	11.6	-19.3	0.11	-11.4	525,795.66	739,581.74
	7,310.0	0.50	276.90	7,309.1	3,615.1	11.7	-20.0	0.12	-11.5	525,795.79	739,581.02
	7,405.0	0.40	259.40	7,404.1	3,710.1	11.7	-20.8	0.18	-11.5	525,795.78	739,580.28
	7,501.0	0.50	238.70	7,500.1	3,806.1	11.4	-21.5	0.19	-11.2	525,795.51	739,579.59
	7,596.0	0.60	229.10	7,595.1	3,901.1	10.9	-22.2	0.15	-10.7	525,794.67	739,578.86
	7,692.0	0.70	224.00	7,691.1	3,997.1	10.1	-23.0	0.12	-9.9	525,794.22	739,578.07
	7,787.0	0.70	209.90	7,786.1	4,092.1	9.2	-23.7	0.18	-9.0	525,793.30	739,577.38
	7,883.0	0.70	207.40	7,882.0	4,188.0	8.2	-24.2	0.03	-8.0	525,792.27	739,576.81
	7,979.0	0.70	199.90	7,978.0	4,284.0	7.1	-24.7	0.10	-6.9	525,791.20	739,576.34
	8,074.0	0.80	191.50	8,073.0	4,379.0	5.9	-25.0	0.16	-5.7	525,790.01	739,576.01
	8,170.0	0.80	182.80	8,169.0	4,475.0	4.6	-25.2	0.13	-4.3	525,788.68	739,575.85
	8,265.0	0.90	182.00	8,264.0	4,570.0	3.2	-25.3	0.11	-2.9	525,787.27	739,575.79
	8,360.0	1.00	183.50	8,359.0	4,665.0	1.6	-25.3	0.11	-1.4	525,785.70	739,575.71
	8,455.0	1.10	191.20	8,454.0	4,760.0	-0.1	-25.6	0.18	0.4	525,783.98	739,575.48
	8,550.0	1.10	195.40	8,549.0	4,855.0	-1.9	-26.0	0.08	2.1	525,782.20	739,575.07
	8,644.0	0.50	155.20	8,643.0	4,949.0	-3.1	-26.0	0.84	3.4	525,780.96	739,575.00
	8,740.0	0.50	158.30	8,739.0	5,045.0	-3.9	-25.7	0.03	4.1	525,780.19	739,575.33
Bone Spring Lime											

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	8,835.0	0.70	184.30	8,833.9	5,139.9	-4.9	-25.6	0.35	5.1	525,779.23	739,575.44
	8,931.0	0.90	194.70	8,929.9	5,235.9	-6.2	-25.8	0.26	6.4	525,777.91	739,575.20
	9,026.0	1.10	199.20	9,024.9	5,330.9	-7.8	-26.3	0.23	8.0	525,776.33	739,574.71
	9,122.0	1.00	187.70	9,120.9	5,426.9	-9.5	-26.7	0.24	9.7	525,774.63	739,574.30
	9,218.0	0.70	177.40	9,216.9	5,522.9	-10.9	-26.8	0.35	11.1	525,773.22	739,574.21
	9,313.0	0.90	169.70	9,311.9	5,617.9	-12.2	-26.7	0.24	12.4	525,771.90	739,574.37
	9,409.0	1.10	161.90	9,407.9	5,713.9	-13.8	-26.2	0.25	14.1	525,770.28	739,574.79
	9,504.0	0.20	102.10	9,502.9	5,808.9	-14.7	-25.8	1.07	15.0	525,769.38	739,575.24
	9,600.0	0.30	91.10	9,598.9	5,904.9	-14.8	-25.4	0.12	15.0	525,769.34	739,575.65
	9,695.0	1.30	125.80	9,693.9	5,999.9	-15.4	-24.3	1.12	15.6	525,768.71	739,576.78
	9,791.0	1.10	155.80	9,789.8	6,095.8	-16.9	-23.0	0.68	17.1	525,767.23	739,578.04
	9,886.0	0.80	26.70	9,884.8	6,190.8	-17.1	-22.3	1.81	17.3	525,766.99	739,578.71
	9,981.0	1.60	11.50	9,979.8	6,285.8	-15.2	-21.8	0.90	15.4	525,766.88	739,579.27
	10,000.0	1.39	9.75	9,998.8	6,304.8	-14.7	-21.7	1.12	14.9	525,769.37	739,579.36
First Bone Spring											
	10,076.0	0.60	350.80	10,074.8	6,380.8	-13.4	-21.6	1.12	13.6	525,770.67	739,579.46
	10,171.0	0.50	332.70	10,169.8	6,475.8	-12.6	-21.9	0.21	12.8	525,771.53	739,579.19
	10,267.0	0.40	325.40	10,265.8	6,571.8	-11.9	-22.2	0.12	12.1	525,772.18	739,578.81
	10,363.0	0.30	317.70	10,361.8	6,667.8	-11.5	-22.6	0.11	11.7	525,772.64	739,578.45
	10,458.0	0.30	332.40	10,456.8	6,762.8	-11.1	-22.9	0.08	11.3	525,773.05	739,578.16
	10,552.0	0.50	347.50	10,550.8	6,856.8	-10.4	-23.1	0.24	10.6	525,773.67	739,577.96
	10,575.0	0.57	350.98	10,573.8	6,879.8	-10.2	-23.1	0.33	10.4	525,773.88	739,577.92
Second Bone Spring											
	10,648.0	0.80	357.90	10,646.8	6,962.8	-9.4	-23.2	0.33	9.6	525,774.74	739,577.85
	10,744.0	0.70	6.10	10,742.8	7,048.8	-8.1	-23.2	0.15	8.3	525,776.00	739,577.88
	10,839.0	0.40	17.30	10,837.8	7,143.8	-7.2	-23.0	0.33	7.4	525,776.89	739,578.04
	10,935.0	0.30	21.10	10,933.8	7,239.8	-6.7	-22.8	0.11	6.9	525,777.44	739,578.23

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Well Battle #2H
 WELL @ 3694.0usft (Original Well Elev)
 WELL @ 3694.0usft (Original Well Elev)
 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
	11,030.0	0.40	110.90	11,028.8	7,334.8	-6.6	-22.4	0.53	6.7	525,777.56	739,578.63
	11,125.0	0.80	113.80	11,123.8	7,429.8	-6.9	-21.5	0.42	7.1	525,777.17	739,579.55
	11,221.0	0.60	122.30	11,219.7	7,525.7	-7.5	-20.5	0.23	7.7	525,776.53	739,580.59
	11,316.0	0.60	120.50	11,314.7	7,620.7	-8.0	-19.6	0.02	8.2	525,776.12	739,581.44
	11,407.0	8.90	160.70	11,405.4	7,711.4	-14.9	-16.9	9.29	15.0	525,769.22	739,584.18
	11,439.0	10.20	163.00	11,436.9	7,742.9	-19.9	-15.2	4.23	20.1	525,764.17	739,585.83
	11,471.0	13.20	163.70	11,468.2	7,774.2	-26.2	-13.4	9.39	26.3	525,757.95	739,587.68
	11,502.0	17.30	162.80	11,498.1	7,804.1	-34.0	-11.0	13.25	34.1	525,750.15	739,590.04
	11,534.0	21.20	164.30	11,528.3	7,834.3	-44.1	-8.0	12.28	44.1	525,740.03	739,593.01
	11,566.0	24.80	167.90	11,557.8	7,863.8	-56.2	-5.1	12.07	56.3	525,727.89	739,595.98
	11,598.0	28.10	170.90	11,586.4	7,892.4	-70.2	-2.5	11.12	70.2	525,713.89	739,598.58
	11,609.0	29.00	170.80	11,596.1	7,902.1	-75.4	-1.6	8.19	75.4	525,708.70	739,599.42
	11,662.0	34.10	173.40	11,641.3	7,947.3	-102.9	2.1	9.96	102.9	525,681.24	739,603.18
	11,700.0	36.44	174.96	11,672.3	7,978.3	-124.7	4.4	6.60	124.7	525,659.41	739,605.40
Third Bone Spring											
	11,709.0	37.00	175.30	11,679.5	7,985.5	-130.1	4.8	6.60	130.0	525,654.05	739,605.86
	11,757.0	40.90	177.00	11,716.8	8,022.8	-160.2	6.8	8.42	160.1	525,623.95	739,607.86
	11,804.0	44.90	178.30	11,751.2	8,057.2	-192.1	8.1	8.72	192.0	525,591.99	739,609.16
	11,853.0	48.50	178.60	11,784.8	8,090.8	-227.8	9.1	7.36	227.7	525,556.34	739,610.12
	11,900.0	51.60	179.50	11,815.0	8,121.0	-263.8	9.7	6.76	263.7	525,520.32	739,610.72
	11,947.0	55.40	180.20	11,843.0	8,149.0	-301.6	9.8	8.17	301.5	525,482.55	739,610.81
	11,994.0	59.70	180.40	11,868.2	8,174.2	-341.2	9.6	9.16	341.1	525,442.90	739,610.60
	12,043.0	63.50	181.00	11,891.5	8,197.5	-384.3	9.0	7.83	384.2	525,399.81	739,610.07
	12,090.0	68.10	180.90	11,910.7	8,216.7	-427.2	8.3	9.79	427.1	525,356.86	739,609.36
	12,138.0	73.00	181.20	11,926.7	8,232.7	-472.4	7.5	10.23	472.3	525,311.72	739,608.53
	12,185.0	77.80	182.00	11,938.6	8,244.6	-517.8	6.2	10.34	517.8	525,266.27	739,607.25
	12,234.0	79.70	182.70	11,948.1	8,254.1	-565.9	4.2	4.12	565.8	525,218.25	739,605.28

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 Well Battle #2H
 WELL @ 3694.0usft (Original Well Elev)
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Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Dleg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
Cross Hard North Boundary @ 12239ftMD											
	12,239.0	80.02	182.64	11,949.0	8,255.0	-570.8	4.0	6.51	570.7	525,213.33	739,605.05
	12,281.0	82.70	182.10	11,955.3	8,261.3	-612.3	2.3	6.51	612.2	525,171.85	739,603.34
	12,329.0	87.80	181.00	11,959.3	8,265.3	-660.1	1.0	10.87	660.0	525,124.05	739,602.05
	12,376.0	89.60	180.90	11,960.4	8,266.4	-707.0	0.2	3.84	707.0	525,077.07	739,601.27
	12,425.0	90.60	180.70	11,960.3	8,266.3	-756.0	-0.5	2.08	756.0	525,028.07	739,600.58
	12,472.0	89.10	181.50	11,960.4	8,266.4	-803.0	-1.4	3.62	803.0	524,981.08	739,599.68
	12,521.0	87.70	182.10	11,961.8	8,267.8	-852.0	-2.9	3.11	852.0	524,932.13	739,598.14
	12,569.0	88.30	182.40	11,963.4	8,269.4	-899.9	-4.8	1.40	899.9	524,884.20	739,596.26
	12,616.0	89.00	181.80	11,964.5	8,270.5	-946.9	-6.5	1.96	946.9	524,837.24	739,594.54
	12,664.0	89.60	181.80	11,965.1	8,271.1	-994.8	-8.0	1.25	994.9	524,789.27	739,593.03
	12,712.0	90.40	181.30	11,965.1	8,271.1	-1,042.8	-9.3	1.97	1,042.9	524,741.29	739,591.73
	12,760.0	91.00	181.50	11,964.5	8,270.5	-1,090.8	-10.5	1.32	1,090.9	524,693.30	739,590.56
	12,807.0	90.40	183.20	11,964.0	8,270.0	-1,137.8	-12.4	3.84	1,137.8	524,646.35	739,588.63
	12,859.0	88.70	182.90	11,964.2	8,270.2	-1,169.7	-14.1	5.39	1,169.8	524,614.40	739,586.93
	12,902.0	87.80	183.20	11,966.1	8,272.1	-1,232.6	-17.5	1.51	1,232.7	524,551.52	739,583.58
	12,949.0	87.60	183.40	11,968.0	8,274.0	-1,279.5	-20.2	0.60	1,279.6	524,504.63	739,580.88
	12,998.0	87.70	183.40	11,970.0	8,276.0	-1,328.4	-23.1	0.20	1,328.5	524,455.76	739,577.97
	13,045.0	88.10	184.00	11,971.8	8,277.8	-1,375.2	-26.1	1.53	1,375.4	524,408.89	739,574.94
	13,094.0	87.90	184.10	11,973.5	8,279.5	-1,424.1	-29.6	0.46	1,424.3	524,360.04	739,571.48
	13,141.0	87.00	183.00	11,975.6	8,281.6	-1,470.9	-32.5	3.02	1,471.2	524,313.18	739,568.58
	13,189.0	87.20	182.80	11,978.0	8,284.0	-1,518.8	-34.9	0.59	1,519.1	524,265.30	739,566.15
	13,237.0	87.90	182.80	11,980.0	8,286.0	-1,566.7	-37.2	1.46	1,567.0	524,217.40	739,563.81
	13,285.0	88.80	182.80	11,981.4	8,287.4	-1,614.6	-39.6	1.87	1,614.9	524,169.48	739,561.46
	13,333.0	87.30	182.10	11,983.1	8,289.1	-1,662.6	-41.6	3.45	1,662.9	524,121.55	739,559.41
	13,380.0	88.10	182.90	11,984.9	8,290.9	-1,709.5	-43.7	2.41	1,709.8	524,074.64	739,557.37
	13,428.0	87.70	181.10	11,986.7	8,292.7	-1,757.4	-45.3	3.84	1,757.7	524,026.70	739,555.69

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Well Battle #2H
 WELL @ 3694.0usft (Original Well Elev)
 WELL @ 3694.0usft (Original Well Elev)
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Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
	13,476.0	86.80	180.20	11,989.0	8,295.0	-1,805.3	-45.9	2.65	1,805.7	523,978.76	739,555.15
	13,524.0	87.70	180.00	11,991.3	8,297.3	-1,853.3	-46.0	1.92	1,853.6	523,930.82	739,555.06
	13,572.0	88.60	179.50	11,992.9	8,298.9	-1,901.3	-45.8	2.14	1,901.6	523,882.84	739,555.27
	13,619.0	89.10	179.50	11,993.8	8,299.8	-1,948.3	-45.4	1.06	1,948.6	523,835.85	739,555.68
	13,667.0	89.20	179.60	11,994.5	8,300.5	-1,996.2	-45.0	0.29	1,996.6	523,787.86	739,556.06
	13,714.0	89.80	179.70	11,994.9	8,300.9	-2,043.2	-44.7	1.29	2,043.6	523,740.86	739,556.35
	13,762.0	90.10	179.90	11,995.0	8,301.0	-2,091.2	-44.5	0.75	2,091.6	523,692.86	739,556.51
	13,809.0	88.80	179.90	11,995.4	8,301.4	-2,138.2	-44.0	3.49	2,138.5	523,645.87	739,557.01
	13,858.0	88.70	178.60	11,996.5	8,302.5	-2,187.2	-43.0	0.65	2,187.5	523,596.89	739,556.08
	13,906.0	89.00	178.90	11,997.5	8,303.5	-2,235.2	-41.9	0.88	2,235.5	523,548.92	739,559.12
	13,954.0	89.60	178.80	11,998.0	8,304.0	-2,283.2	-41.0	1.27	2,283.5	523,500.93	739,560.09
	14,049.0	88.30	179.30	11,999.8	8,305.8	-2,378.1	-39.4	1.47	2,378.4	523,405.96	739,561.66
	14,144.0	89.10	178.80	12,001.9	8,307.9	-2,473.1	-37.8	0.99	2,473.3	523,311.00	739,563.24
	14,240.0	87.70	178.50	12,004.6	8,310.6	-2,569.0	-35.5	1.49	2,569.3	523,215.07	739,565.50
	14,336.0	89.60	179.30	12,006.9	8,312.9	-2,665.0	-33.7	2.15	2,665.2	523,119.11	739,567.34
	14,431.0	89.20	179.80	12,007.9	8,313.9	-2,760.0	-33.0	0.67	2,760.2	523,024.12	739,568.08
	14,527.0	90.00	180.30	12,008.5	8,314.5	-2,856.0	-33.0	0.98	2,856.2	522,928.13	739,568.00
	14,622.0	88.90	178.60	12,009.5	8,315.5	-2,951.0	-32.1	2.13	2,951.1	522,833.14	739,568.91
	14,717.0	90.00	179.00	12,010.4	8,316.4	-3,045.9	-30.1	1.23	3,046.1	522,738.17	739,570.90
	14,813.0	89.10	178.10	12,011.1	8,317.1	-3,141.9	-27.7	1.33	3,142.0	522,642.20	739,573.33
	14,906.0	88.00	178.60	12,013.5	8,319.5	-3,234.8	-25.0	1.30	3,234.9	522,549.27	739,576.01
	15,001.0	89.10	178.70	12,015.9	8,321.9	-3,329.8	-22.8	1.16	3,329.9	522,454.33	739,578.24
	15,097.0	90.80	178.70	12,016.0	8,322.0	-3,425.8	-20.6	1.77	3,425.8	522,358.36	739,580.42
	15,142.0	90.30	178.70	12,015.5	8,321.5	-3,470.7	-19.6	1.11	3,470.8	522,313.37	739,581.44
	15,182.0	90.00	178.70	12,015.4	8,321.4	-3,520.7	-18.5	0.60	3,520.7	522,263.39	739,582.58
	15,237.0	90.70	178.40	12,015.1	8,321.1	-3,565.7	-17.3	1.69	3,565.7	522,218.40	739,583.72
	15,288.0	91.10	178.90	12,014.3	8,320.3	-3,616.7	-16.1	1.26	3,616.7	522,167.42	739,584.92

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	15,316.0	90.20	178.30	12,014.0	8,320.0	-3,644.7	-15.4	3.86	3,644.7	522,139.43	739,595.60
	15,383.0	89.10	178.50	12,014.4	8,320.4	-3,711.6	-13.6	1.67	3,711.6	522,072.46	739,587.47
	15,478.0	89.90	178.20	12,015.2	8,321.2	-3,806.6	-10.8	0.90	3,806.6	521,977.51	739,590.21
	15,573.0	91.60	178.10	12,014.0	8,320.0	-3,901.5	-7.8	1.79	3,901.5	521,882.57	739,593.27
	15,669.0	90.90	178.20	12,011.9	8,317.9	-3,997.5	-4.7	0.74	3,997.4	521,786.64	739,596.37
	15,764.0	89.70	179.10	12,011.4	8,317.4	-4,092.4	-2.4	1.58	4,092.3	521,691.67	739,598.61
	15,860.0	88.50	179.70	12,012.9	8,318.9	-4,188.4	-1.4	1.40	4,188.3	521,595.69	739,599.62
	15,956.0	89.10	179.40	12,014.9	8,320.9	-4,284.4	-0.7	0.70	4,284.2	521,499.71	739,600.37
	16,051.0	89.70	179.30	12,015.9	8,321.9	-4,379.4	0.4	0.64	4,379.2	521,404.73	739,601.45
	16,147.0	90.70	178.80	12,015.6	8,321.6	-4,475.4	2.0	1.16	4,475.2	521,308.74	739,603.04
	16,242.0	89.00	179.00	12,015.8	8,321.8	-4,570.3	3.8	1.80	4,570.1	521,213.76	739,604.86
	16,338.0	89.80	178.50	12,016.8	8,322.8	-4,666.3	5.9	0.98	4,666.1	521,117.79	739,606.96
	16,433.0	90.40	177.90	12,016.7	8,322.7	-4,761.3	8.9	0.89	4,761.0	521,022.84	739,609.94
	16,528.0	89.10	178.20	12,017.1	8,323.1	-4,856.2	12.1	1.40	4,855.9	520,927.90	739,613.17
	16,623.0	89.00	178.10	12,018.7	8,324.7	-4,951.1	15.2	0.15	4,950.8	520,832.96	739,616.24
	16,719.0	90.00	177.50	12,019.5	8,325.5	-5,047.1	18.9	1.21	5,046.7	520,737.04	739,618.93
	16,814.0	90.60	177.40	12,019.0	8,325.0	-5,142.0	23.1	0.64	5,141.6	520,642.13	739,624.15
	16,859.0	90.94	177.06	12,018.4	8,324.4	-5,186.9	25.3	1.07	5,186.5	520,597.19	739,626.33
Gross South Hard Boundary @ 16859ftMD											
	16,893.0	91.20	176.80	12,017.8	8,323.8	-5,220.9	27.1	1.07	5,220.4	520,563.24	739,628.15
	16,949.0	91.20	176.80	12,016.6	8,322.6	-5,276.8	30.2	0.00	5,276.3	520,507.34	739,631.27

Company: B.C. Operating, Inc.
 Project: Lea County NM
 Site: Battle #2H
 Well: Battle #2H
 Wellbore: Battle #2H
 Design: Battle #2H

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Database:
 Well Battle #2H
 WELL @ 3694.0usft (Original Well Elev)
 WELL @ 3694.0usft (Original Well Elev)
 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,711.0	1,710.6	13 3/8"	13-3/8	16	
5,330.0	5,329.2	9 5/8"	9-5/8	12-1/4	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Dip (°)		
10,000.0	9,998.8	First Bone Spring	0.00		
1,530.0	1,529.7	Ruster	0.00		
5,300.0	5,299.2	Lamar	0.00		
5,840.0	5,839.1	Cherry Canyon	0.00		
8,740.0	8,739.0	Bone Spring Lime	0.00		
7,075.0	7,074.1	Brushy Canyon	0.00		
10,575.0	10,573.8	Second Bone Spring	0.00		
11,700.0	11,672.3	Third Bone Spring	0.00		
5,570.0	5,569.1	Bell Canyon	0.00		

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment	
12,239.0	11,949.0	-570.8	4.0	Cross Hard North Boundary @ 12239ftMD	
16,859.0	12,018.4	-5,186.9	25.3	Cross South Hard Boundary @ 16859ftMD	

Checked By: _____ Approved By: _____ Date: _____