

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

PM

API 47-51-01597 County Marshall District Clay
Quad Businessburg 7.5' Pad Name Conner Field/Pool Name Fort Beeler
Farm name Conner Well Number 4H
Operator (as registered with the OOG) Chevron Appalachia, LLC
Address 800 Mountain View Drive City Smithfield State PA Zip 15478

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 505331.97 Easting 1617510.40
Landing Point of Curve Northing 504966.86 Easting 1618167.41
Bottom Hole Northing 499802.34 Easting 1623275.65

Elevation (ft) 1,220' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary
Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Oil base mud, base oil, emulsifier, water, barite, lime.

Date permit issued 2-19-2013 Date drilling commenced 4-13-2013 Date drilling ceased 10-11-2013
Date completion activities began 11-7-2013 Date completion activities ceased 1-16-2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 223' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None noted on Mudlogs Void(s) encountered (Y/N) depths N
Coal depth(s) ft 758' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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MAR 28 2014
WV Department of
Environmental Protection
Reviewed by:

04/18/2014

API 47- 51 - 01597 Farm name Conner Well number 4H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	36"	30"	65'	New			
Surface	26"	20"	335'	New	J-55, 94 lb/ft		Y, 15 bbls to surface
Coal	17-1/2"	13-3/8"	882'	New	J-55, 54.4 lb/ft	720	Y, 20 bbls to surface
Intermediate 1	12-1/4"	9-5/8"	3,361'	New	P-110, 40 lb/ft		Y, 41 bbls to surface
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	14,064'	New	P-110, 20 lb/ft		Y, 54 bbls to surface
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Class A	675	15.6	1.2	810	0	8
Coal	Class A	710	15.6	1.2	852	0	8
Intermediate 1	Class A	1,080	15.6	1.2	1,296	0	8
Intermediate 2							
Intermediate 3							
Production	Class A	2,430	15.2	1.2/1.8	3,573	0	8
Tubing							

Drillers TD (ft) 14,102' Loggers TD (ft) _____

Deepest formation penetrated Marcellus Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) 5,572'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

On the water string, coal string, and intermediate there was a bow spring centralizer installed every two joints.

The production string had one centralizer per joint in the lateral and curve and one every two joints from KOP to surface.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	11-19-2013	13934	13936	36	Marcellus Shale
2	11-20-2013	13934	13936	36	Marcellus Shale
3	11-20-2013	13634	13636	36	Marcellus Shale
4	11-21-2013	13034	13036	36	Marcellus Shale
5	11-21-2013	12734	12736	36	Marcellus Shale
6	11-21-2013	12434	12436	36	Marcellus Shale
7	11-21-2013	12134	12136	36	Marcellus Shale
8	11-22-2013	11834	11836	36	Marcellus Shale
9	11-22-2013	11534	11536	36	Marcellus Shale
10	11-22-2013	11234	11236	36	Marcellus Shale
11	11-22-2013	10934	10936	36	Marcellus Shale
12	11-22-2013	10634	10636	36	Marcellus Shale
13	11-23-2013	10334	10336	36	Marcellus Shale
14	11-23-2013	10034	10036	36	Marcellus Shale
15	11-23-2013	9734	9736	36	Marcellus Shale
16	11-23-2013	9434	9436	36	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	11-19-13	91.1	7996	9344	3662	305,922	7499	0
2	11-20-13	90.2	7672	8157	4515	301,846	7713	0
3	11-20-13	91.7	7669	8312	4290	301,841	7805	0
4	11-21-13	91.4	7526	8187	4327	300,996	8412	0
5	11-21-13	91.7	7837	8357	4304	301,754	7458	0
6	11-21-13	90.7	7758	9205	4200	302,618	7705	0
7	11-21-13	90.8	7577	8900	4137	301,504	7355	0
8	11-22-13	89.3	7636	8859	4338	302,886	7340	0
9	11-22-13	91.5	7454	8706	4483	303,323	7308	0
10	11-22-13	92.2	7719	8715	4467	302,184	7334	0
11	11-22-13	85.4	7056	8266	4211	301,867	7322	0
12	11-22-13	90.5	6905	7632	4084	301,575	7460	0
13	11-23-13	90.1	7247	8321	4340	301,046	7499	0
14	11-23-13	91.5	7378	7848	4426	301,685	7313	0
15	11-23-13	90.3	7795	9449	4326	302,166	7013	0
16	11-23-13	90.9	7175	7789	4230	304,020	7371	0

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6311	TVD	6710 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY
 Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	0		0		
Pittsburgh Coal	758	762	758	762	Coal
Big Lime	1800	1810	1800	1810	Limestone: brn, dkbrn, ltbrn, dns, crpxln
Burgoon (Big Injun)	1850	2107	1850	2107	SS:gy, grngy, hrd, vt-cmt, rnd, sbrnd, ang
Weir Sand	2252	2276	2252	2276	SLTST: gy, mgy, hrd,, t-cmt, slty. SS: off wh, gy, hrd, t-cmt, md, sbrnd, ang
Berea Sand	2449	2549	2450	2550	SH: gy, mgy, sbblky, frm, v-slty, non calc, tr pyr. tr SLTST: brn, gy, mgy, hrd, t-cmt, slty
Burket Shale	6222	6236	6390	6417	SH:drkgy,v.drkgy,frm,slty,grty, sbblky-sbfiss,modcalc,embd calc,lse calct
Tully Limestone	6236	6275	6417	6496	SH:drkgy,v.drkgy,frm,slty, grty,sbblky-sbfiss,carb, v.calc, lse xls calct, w/LS: ltgy,gy,mggy,frm-hrd,dns, chn,mic-fxn,v,arg
Hamilton Shale	6275	6330	6496	6689	SH:drkgy,v.drkgy,frm,slty, grty,sbblky-sbfiss,carb,modv. calc,lse calct,w/LS
Marcellus Shale	6330		6689		SH:drkgy,v.drkgy,frm,slty, grty,sbblky-sbfiss, non calc, lse calct,lse pyr,w/LS:gy, ltgy,hrd,,molt,mic,fxn,v,arg

Please insert additional pages as applicable.

Drilling Contractor Nabors Drilling USA
 Address 380 Southpointe Boulevard, Suite 210 City Canonsburg State PA Zip 15317

Logging Company Schlumberger
 Address 4600 JBarry Court, Suite 200 City Cannonsburg State PA Zip 15317

Cementing Company Schlumberger & Halliburton (301 Lucerne Road, Homer City, PA 15748)
 Address 4600 JBarry Court, Suite 200 City Cannonsburg State PA Zip 15317

Stimulating Company Universal
 Address 730 Braddock View Drive/P.O. Box 130 City Mt. Braddock State PA Zip 15465

Please insert additional pages as applicable.

Completed by Jenny Butchko Telephone 724-564-3894
 Signature Jenny Butchko Title Regulatory Reporting Team Leader Date 5-25-14

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/17/2013
Job End Date:	11/25/2013
State:	West Virginia
County:	Marshall
API Number:	47-051-01597-00-00
Operator Name:	Chevron USA Inc.
Well Name and Number:	Conner Unit 4H
Longitude:	-80.75094100
Latitude:	39.88064200
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,432
Total Base Water Volume (gal):	7,278,937
Total Base Non Water Volume:	



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Clean Volume	Chevron Appalachia, LLC	Carrier/Base Fluid	H2O	7732-18-5	100.00000	89.49027	
Proppant	US Sand Co	Proppant	Crystalline Silica	14808-60-7	100.00000	10.50973	
15% Hcl Acid	Reagent/PPG	Used to open perms	Hydrochloric Acid	7647-01-0	15.00000	0.10343	
Unislik ST 50	CESI	Friction Reducer	Hydrotreated Light Distillite	64742-47-8	30.00000	0.03095	
EC 6116a	Nalco	Biocide	Polyethylene Glycol	25322-68-3	60.00000	0.01602	
			1, 1-Dibromo-3-nitrilopropionamide	10222-01-2	30.00000	0.00801	
			Dibromoacetoneitrile	3252-43-5	5.00000	0.00134	
Scale Inhibitor A	Nalco	Scale Inhibitor	Ethylene Glycol	107-21-1	30.00000	0.00783	
EC6673W	Nalco	Iron Control	Ethylene Glycol	107-21-1	30.00000	0.00759	
CMHPG	Ashland	Water Viscosifier	Carboxymethyl Hydroxporoyl Guar Blend	68130-15-4	100.00000	0.00196	

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GBI	Clearwater	Gel Breaker					
			Ethylene Glycol	107-21-1	60.00000	0.00003	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

51.01597



Marshall County, WV
 Conner Pad
 Conner 4H
 GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
 As Drilled

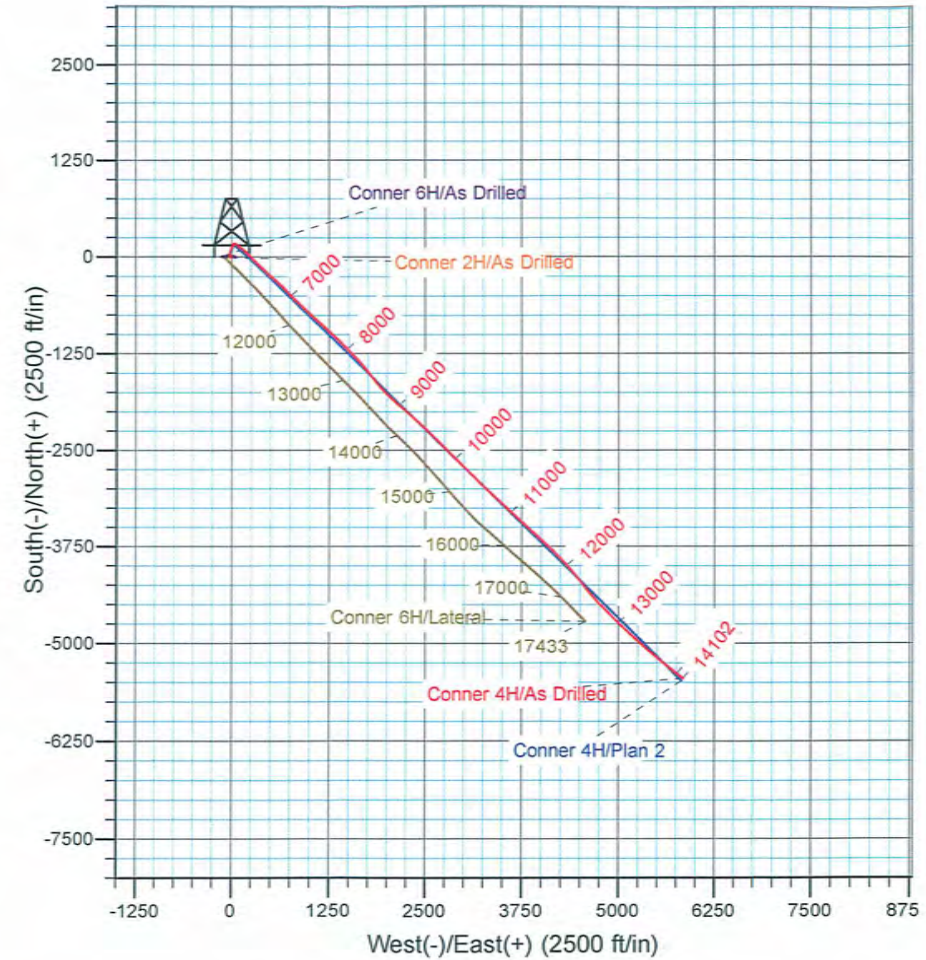
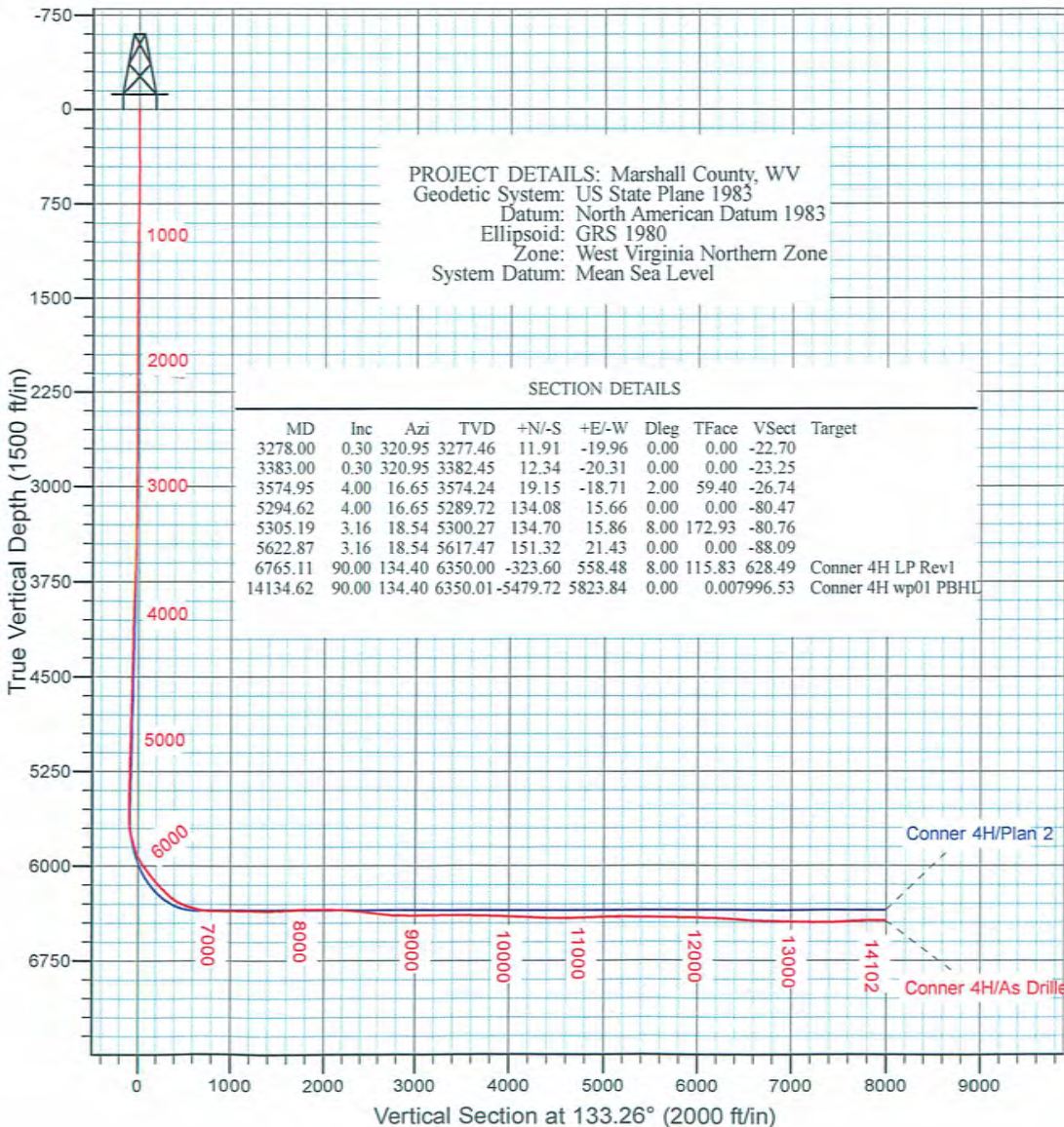
SITE DETAILS: Conner Pad
 Site Centre Northing: 505327.06
 Easting: 1617496.30
 Positional Uncertainty: 0.00
 Convergence: -0.80
 Local North: True



Azimuths to True North
 Magnetic North: -8.64°
 Magnetic Field
 Strength: 52622.4snT
 Dip Angle: 67.35°
 Date: 10/25/2013
 Model: BGM12013

WELL DETAILS: Conner 4H

+N/-S +E/-W Northing Easting Latitude Longitude
 0.00 0.00 505331.97 1617510.40 39° 52' 50.444 N 80° 45' 2.639 W



LEGEND

- Conner 4H, OH, Plan 2 V0
- ◇ Conner 6H, Lateral, Lateral V0
- ✕ Conner 6H, Pilot, As Drilled V0
- △ Conner 2H, OH, As Drilled V0
- As Drilled

Robert Ebbecke
 10:38, October 25 2013

Scientific Drilling International
 3475 Washington Ave
 Finleyville, PA 15332

5-1-015-47

51-01597



Chevron Appalachia, LLC

Marshall County, WV

Conner Pad

Conner 4H

OH

Design: As Drilled

Standard Survey Report

25 October, 2013

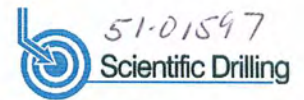


www.scientificdrilling.com

04/18/2014



Scientific Drilling International
Survey Report



Company:	Chevron Appalachia, LLC	Local Co-ordinate Reference:	Well Conner 4H
Project:	Marshall County, WV	TVD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Site:	Conner Pad	MD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Well:	Conner 4H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Northeast District

Project	Marshall County, WV		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	West Virginia Northern Zone		

Site	Conner Pad				
Site Position:		Northing:	505,327.06 usft	Latitude:	39° 52' 50.394 N
From:	Map	Easting:	1,617,496.30 usft	Longitude:	80° 45' 2.819 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.80 °

Well	Conner 4H					
Well Position	+N/-S	0.00 ft	Northing:	505,331.97 usft	Latitude:	39° 52' 50.444 N
	+E/-W	0.00 ft	Easting:	1,617,510.40 usft	Longitude:	80° 45' 2.639 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	1,220.00 ft	Ground Level:	1,220.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	9/20/2013	-8.63	67.36	52,635

Design	As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	133.26	

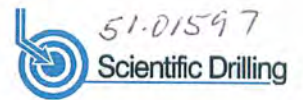
Survey Program	Date	10/25/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	3,278.00	Gyro Survey #3 (OH)	GYD_CT	Gyrodata continuous	
3,437.01	14,102.03	SDI MWD Survey #4 (OH)	MWD SDI	MWD - Standard ver 1.0.1	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.41	46.13	100.00	0.25	0.26	0.02	0.41	0.41	0.00	
First Gyro Data Gyro Survey										
200.00	0.79	64.34	199.99	0.79	1.14	0.28	0.42	0.38	18.21	
300.00	1.32	70.67	299.98	1.47	2.85	1.06	0.54	0.53	6.33	
400.00	1.90	71.59	399.94	2.38	5.51	2.38	0.58	0.58	0.92	
500.00	1.06	93.21	499.90	2.85	8.00	3.87	0.99	-0.84	21.62	
600.00	0.15	199.70	599.90	2.68	8.88	4.63	1.11	-0.91	106.49	
700.00	3.19	286.60	699.85	3.35	6.17	2.20	3.19	3.04	86.90	
800.00	2.79	288.58	799.71	4.92	1.20	-2.50	0.41	-0.40	1.98	



Scientific Drilling International

Survey Report



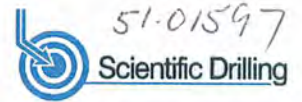
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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Northeast District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
900.00	2.36	289.88	899.61	6.39	-3.05	-6.60	0.43	-0.43	1.30	
1,000.00	1.73	286.74	999.54	7.53	-6.43	-9.84	0.64	-0.63	-3.14	
1,100.00	1.24	290.40	1,099.51	8.34	-8.89	-12.19	0.50	-0.49	3.66	
1,200.00	0.98	290.48	1,199.49	9.02	-10.70	-13.97	0.26	-0.26	0.08	
1,300.00	0.71	284.80	1,299.48	9.47	-12.10	-15.31	0.28	-0.27	-5.68	
1,400.00	0.62	293.03	1,399.47	9.84	-13.20	-16.36	0.13	-0.09	8.23	
1,500.00	0.38	277.15	1,499.47	10.10	-14.03	-17.13	0.27	-0.24	-15.88	
1,600.00	0.31	284.76	1,599.47	10.21	-14.62	-17.64	0.08	-0.07	7.61	
1,700.00	0.32	300.82	1,699.47	10.42	-15.12	-18.15	0.09	0.01	16.06	
1,800.00	0.42	279.40	1,799.46	10.62	-15.72	-18.73	0.17	0.10	-21.42	
1,900.00	0.13	238.37	1,899.46	10.62	-16.18	-19.06	0.33	-0.29	-41.03	
2,000.00	0.08	284.05	1,999.46	10.58	-16.34	-19.15	0.09	-0.05	45.68	
2,100.00	0.06	295.44	2,099.46	10.62	-16.46	-19.26	0.02	-0.02	11.39	
2,200.00	0.04	219.23	2,199.46	10.61	-16.53	-19.31	0.06	-0.02	-76.21	
2,300.00	0.12	290.96	2,299.46	10.63	-16.65	-19.41	0.11	0.08	71.73	
2,400.00	0.20	274.06	2,399.46	10.68	-16.92	-19.64	0.09	0.08	-16.90	
2,500.00	0.18	288.79	2,499.46	10.74	-17.24	-19.92	0.05	-0.02	14.73	
2,600.00	0.27	295.07	2,599.46	10.89	-17.60	-20.28	0.09	0.09	6.28	
2,700.00	0.26	306.64	2,699.46	11.12	-18.00	-20.73	0.05	-0.01	11.57	
2,800.00	0.27	282.24	2,799.46	11.31	-18.41	-21.16	0.11	0.01	-24.40	
2,900.00	0.21	284.68	2,899.46	11.41	-18.82	-21.52	0.06	-0.06	2.44	
3,000.00	0.12	325.58	2,999.46	11.54	-19.06	-21.78	0.14	-0.09	40.90	
3,100.00	0.19	264.86	3,099.46	11.61	-19.28	-22.00	0.17	0.07	-60.72	
3,200.00	0.27	292.22	3,199.46	11.68	-19.66	-22.33	0.13	0.08	27.36	
3,278.00	0.30	320.95	3,277.46	11.91	-19.96	-22.70	0.19	0.04	36.83	
Last Gyro Data Gyro Survey										
3,300.00	0.29	322.50	3,299.46	12.00	-20.03	-22.81	0.05	-0.03	7.03	
3,400.00	0.27	330.39	3,399.45	12.41	-20.30	-23.29	0.05	-0.03	7.89	
3,437.01	0.26	333.68	3,436.46	12.56	-20.38	-23.45	0.05	-0.02	8.89	
First SDI MWD Survey										
3,500.00	2.12	353.04	3,499.44	13.85	-20.59	-24.48	2.99	2.96	30.74	
3,600.00	4.03	355.54	3,599.27	19.49	-21.13	-28.75	1.91	1.91	2.50	
3,700.00	4.96	356.43	3,698.95	27.42	-21.67	-34.58	0.93	0.93	0.88	
3,800.00	5.51	1.30	3,798.53	36.57	-21.91	-41.02	0.70	0.55	4.87	
3,900.00	6.01	12.91	3,898.03	46.49	-20.73	-46.96	1.26	0.50	11.61	
4,000.00	5.68	13.91	3,997.50	56.45	-18.25	-51.98	0.34	-0.33	1.00	
4,100.00	5.06	24.09	4,097.07	65.31	-15.30	-55.90	1.14	-0.62	10.18	
4,200.00	4.45	22.03	4,196.72	72.92	-12.04	-58.74	0.63	-0.61	-2.06	
4,300.00	4.01	17.84	4,296.45	79.83	-9.60	-61.70	0.54	-0.45	-4.19	
4,400.00	3.98	22.84	4,396.20	86.40	-7.06	-64.35	0.35	-0.02	5.00	
4,500.00	3.42	17.92	4,496.00	92.42	-4.80	-66.83	0.65	-0.56	-4.93	
4,600.00	3.33	13.24	4,595.84	97.88	-3.34	-69.51	0.29	-0.09	-4.68	
4,700.00	4.15	14.84	4,695.62	104.27	-1.78	-72.75	0.83	0.82	1.60	



Scientific Drilling International

Survey Report



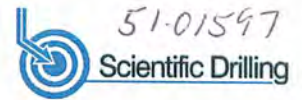
Company:	Chevron Appalachia, LLC	Local Co-ordinate Reference:	Well Conner 4H
Project:	Marshall County, WV	TVD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Site:	Conner Pad	MD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Well:	Conner 4H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Northeast District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	4.82	17.67	4,795.31	111.75	0.42	-76.28	0.71	0.67	2.83
4,900.00	5.80	23.17	4,894.89	120.35	3.48	-79.94	1.10	0.97	5.50
5,000.00	6.84	30.52	4,994.27	130.26	8.57	-83.02	1.32	1.04	7.35
5,100.00	6.57	31.95	5,093.54	140.46	15.03	-85.31	0.32	-0.27	1.43
5,200.00	5.53	28.81	5,192.98	149.51	20.35	-87.64	1.08	-1.03	-3.14
5,300.00	4.61	26.02	5,292.59	157.35	24.40	-90.07	0.95	-0.92	-2.79
5,400.00	3.71	19.90	5,392.33	163.99	27.31	-92.49	1.00	-0.90	-6.12
5,500.00	3.11	14.43	5,492.15	169.63	29.01	-95.12	0.68	-0.60	-5.46
5,600.00	2.85	52.41	5,592.01	174.56	30.72	-97.26	1.96	-0.27	37.98
5,700.00	8.62	112.30	5,691.57	173.36	39.25	-90.22	7.60	5.78	59.89
5,800.00	18.30	121.73	5,788.83	162.67	59.30	-68.30	9.89	9.67	9.43
5,900.00	29.31	125.39	5,880.14	140.02	92.73	-28.43	11.11	11.01	3.66
6,000.00	38.60	128.86	5,962.67	106.33	137.80	27.49	9.49	9.29	3.47
6,100.00	45.49	133.15	6,036.60	62.14	188.47	94.67	7.46	6.89	4.29
6,200.00	49.84	135.29	6,104.00	10.42	241.18	168.50	4.63	4.35	2.14
6,300.00	51.65	135.83	6,166.80	-45.28	295.52	246.24	1.86	1.81	0.54
6,400.00	55.79	134.82	6,226.52	-102.42	351.77	326.36	4.22	4.14	-1.02
6,500.00	65.18	132.99	6,276.33	-162.47	414.12	412.92	9.52	9.39	-1.83
6,600.00	75.40	132.45	6,310.00	-226.15	483.29	506.94	10.23	10.22	-0.54
6,700.00	77.92	132.34	6,332.62	-291.82	555.23	604.33	2.52	2.52	-0.11
6,800.00	82.67	132.06	6,349.81	-357.90	628.24	702.79	4.76	4.75	-0.28
6,900.00	89.52	136.25	6,356.19	-427.63	699.51	802.47	8.02	6.85	4.19
7,000.00	90.58	135.74	6,355.89	-499.52	769.02	902.36	1.18	1.06	-0.50
7,100.00	89.82	135.09	6,355.45	-571.04	838.90	1,002.27	1.01	-0.76	-0.66
7,200.00	88.77	132.73	6,356.86	-639.94	911.34	1,102.25	2.58	-1.04	-2.36
7,300.00	88.60	132.96	6,359.18	-708.01	984.57	1,202.22	0.29	-0.17	0.23
7,400.00	88.23	132.89	6,361.77	-776.05	1,057.81	1,302.18	0.38	-0.37	-0.07
7,500.00	90.04	133.36	6,364.69	-844.25	1,130.87	1,402.13	1.88	1.82	0.46
7,600.00	92.80	133.72	6,360.79	-913.26	1,203.12	1,502.04	2.78	2.76	0.36
7,700.00	92.58	133.19	6,356.33	-982.05	1,275.56	1,601.94	0.57	-0.22	-0.52
7,800.00	91.85	133.37	6,352.07	-1,050.29	1,348.53	1,701.85	0.75	-0.73	0.18
7,900.00	91.49	133.98	6,349.54	-1,119.39	1,420.77	1,801.81	0.70	-0.36	0.61
8,000.00	90.69	134.76	6,347.31	-1,189.24	1,492.30	1,901.77	1.12	-0.80	0.78
8,100.00	89.40	137.41	6,347.24	-1,261.00	1,561.93	2,001.65	2.94	-1.29	2.64
8,200.00	88.22	138.97	6,349.34	-1,335.72	1,628.34	2,101.23	1.96	-1.18	1.56
8,300.00	89.17	139.17	6,351.89	-1,411.32	1,693.74	2,200.67	0.97	0.95	0.19
8,400.00	85.73	140.76	6,355.96	-1,487.73	1,758.10	2,299.89	3.79	-3.44	1.59
8,500.00	85.56	140.66	6,363.69	-1,564.92	1,821.19	2,398.75	0.20	-0.17	-0.10
8,600.00	85.56	140.83	6,371.40	-1,642.30	1,884.07	2,497.56	0.17	0.00	0.17
8,700.00	85.05	136.46	6,379.64	-1,717.05	1,949.94	2,596.76	4.39	-0.50	-4.37
8,800.00	85.58	133.12	6,388.19	-1,786.96	2,020.91	2,696.35	3.37	0.52	-3.34
8,900.00	87.93	132.07	6,393.61	-1,854.47	2,094.47	2,796.19	2.57	2.35	-1.05
9,000.00	89.46	131.57	6,396.03	-1,921.03	2,169.06	2,896.12	1.61	1.53	-0.50
9,100.00	90.64	131.26	6,395.54	-1,987.26	2,243.98	2,996.07	1.22	1.18	-0.30



Scientific Drilling International

Survey Report

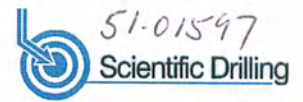


Company:	Chevron Appalachia, LLC	Local Co-ordinate Reference:	Well Conner 4H
Project:	Marshall County, WV	TVD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Site:	Conner Pad	MD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Well:	Conner 4H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Northeast District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
9,200.00	90.74	130.96	6,394.36	-2,052.91	2,319.40	3,095.99	0.32	0.10	-0.30	
9,300.00	91.02	131.11	6,392.88	-2,118.51	2,394.86	3,195.90	0.32	0.29	0.15	
9,400.00	91.09	133.74	6,390.92	-2,185.37	2,469.18	3,295.84	2.63	0.06	2.63	
9,500.00	89.76	134.85	6,389.87	-2,255.76	2,540.20	3,395.80	1.73	-1.33	1.11	
9,600.00	89.38	134.55	6,390.95	-2,326.11	2,611.26	3,495.76	0.48	-0.38	-0.30	
9,700.00	89.28	134.45	6,392.08	-2,396.17	2,682.61	3,595.73	0.14	-0.10	-0.10	
9,800.00	89.32	134.60	6,393.32	-2,466.26	2,753.92	3,695.70	0.16	0.04	0.15	
9,900.00	89.11	134.53	6,394.67	-2,536.44	2,825.15	3,795.66	0.23	-0.22	-0.06	
10,000.00	88.77	134.65	6,396.51	-2,606.62	2,896.36	3,895.62	0.35	-0.33	0.12	
10,100.00	88.28	135.29	6,399.11	-2,677.36	2,966.99	3,995.54	0.81	-0.49	0.64	
10,200.00	88.19	134.52	6,402.18	-2,747.82	3,037.89	4,095.45	0.78	-0.09	-0.77	
10,300.00	87.94	134.99	6,405.53	-2,818.17	3,108.87	4,195.36	0.53	-0.25	0.47	
10,400.00	87.90	135.08	6,409.41	-2,889.11	3,179.25	4,295.23	0.10	-0.03	0.09	
10,500.00	88.87	133.73	6,412.12	-2,959.02	3,250.70	4,395.17	1.65	0.96	-1.35	
10,600.00	89.08	132.81	6,413.72	-3,027.46	3,323.58	4,495.15	0.95	0.21	-0.93	
10,700.00	89.97	132.85	6,415.22	-3,095.22	3,397.11	4,595.14	0.89	0.89	0.04	
10,800.00	91.50	133.14	6,413.40	-3,163.59	3,470.06	4,695.12	1.55	1.53	0.29	
10,900.00	91.61	133.39	6,410.64	-3,231.94	3,543.00	4,795.08	0.28	0.11	0.25	
11,000.00	91.34	133.43	6,407.97	-3,300.82	3,615.45	4,895.04	0.27	-0.27	0.03	
11,100.00	90.70	132.84	6,406.12	-3,369.21	3,688.38	4,995.02	0.87	-0.64	-0.58	
11,200.00	91.16	132.19	6,404.83	-3,436.78	3,762.08	5,095.00	0.80	0.46	-0.65	
11,300.00	89.79	133.04	6,403.48	-3,504.24	3,835.88	5,194.98	1.61	-1.37	0.85	
11,400.00	89.25	132.72	6,404.57	-3,572.47	3,908.98	5,294.97	0.62	-0.54	-0.32	
11,500.00	89.14	133.15	6,405.98	-3,640.49	3,982.27	5,394.96	0.45	-0.11	0.43	
11,600.00	89.39	133.14	6,407.29	-3,708.90	4,055.20	5,494.95	0.26	0.26	-0.01	
11,700.00	90.13	134.03	6,407.66	-3,777.80	4,127.67	5,594.95	1.16	0.74	0.89	
11,800.00	88.97	136.22	6,408.50	-3,848.74	4,198.13	5,694.88	2.48	-1.16	2.19	
11,900.00	88.93	136.75	6,410.46	-3,921.22	4,267.00	5,794.70	0.53	-0.04	0.53	
12,000.00	89.76	137.76	6,411.41	-3,994.56	4,334.97	5,894.46	1.30	0.83	1.01	
12,100.00	89.10	139.41	6,412.23	-4,069.62	4,401.04	5,994.01	1.78	-0.66	1.65	
12,200.00	88.58	140.88	6,414.84	-4,146.23	4,465.25	6,093.28	1.56	-0.52	1.48	
12,300.00	89.00	142.23	6,416.13	-4,224.86	4,527.01	6,192.14	1.41	0.41	1.34	
12,400.00	87.40	141.72	6,419.69	-4,303.61	4,588.53	6,290.91	1.68	-1.60	-0.51	
12,500.00	86.43	138.74	6,424.93	-4,380.73	4,651.95	6,389.95	3.13	-0.96	-2.98	
12,600.00	86.76	136.94	6,431.16	-4,454.43	4,719.25	6,489.46	1.82	0.33	-1.80	
12,700.00	89.13	135.62	6,434.97	-4,526.65	4,788.29	6,589.24	2.72	2.37	-1.33	
12,800.00	89.46	135.41	6,436.00	-4,597.92	4,858.43	6,689.16	0.38	0.33	-0.20	
12,900.00	88.98	135.50	6,437.35	-4,669.23	4,928.53	6,789.08	0.48	-0.48	0.08	
13,000.00	88.65	133.23	6,439.41	-4,739.00	5,000.13	6,889.03	2.28	-0.33	-2.26	
13,100.00	88.17	133.18	6,442.17	-4,807.50	5,072.93	6,989.00	0.48	-0.47	-0.06	
13,200.00	88.18	132.54	6,445.75	-4,875.46	5,146.20	7,088.93	0.64	0.00	-0.64	
13,300.00	89.67	131.98	6,447.19	-4,942.70	5,220.20	7,188.90	1.60	1.50	-0.56	
13,400.00	89.15	130.91	6,448.12	-5,009.08	5,294.98	7,288.85	1.19	-0.52	-1.07	



Scientific Drilling International
Survey Report



Company:	Chevron Appalachia, LLC	Local Co-ordinate Reference:	Well Conner 4H
Project:	Marshall County, WV	TVD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Site:	Conner Pad	MD Reference:	GL 1220' & KB 32' @ 1252.00ft (Nabors X7)
Well:	Conner 4H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Northeast District

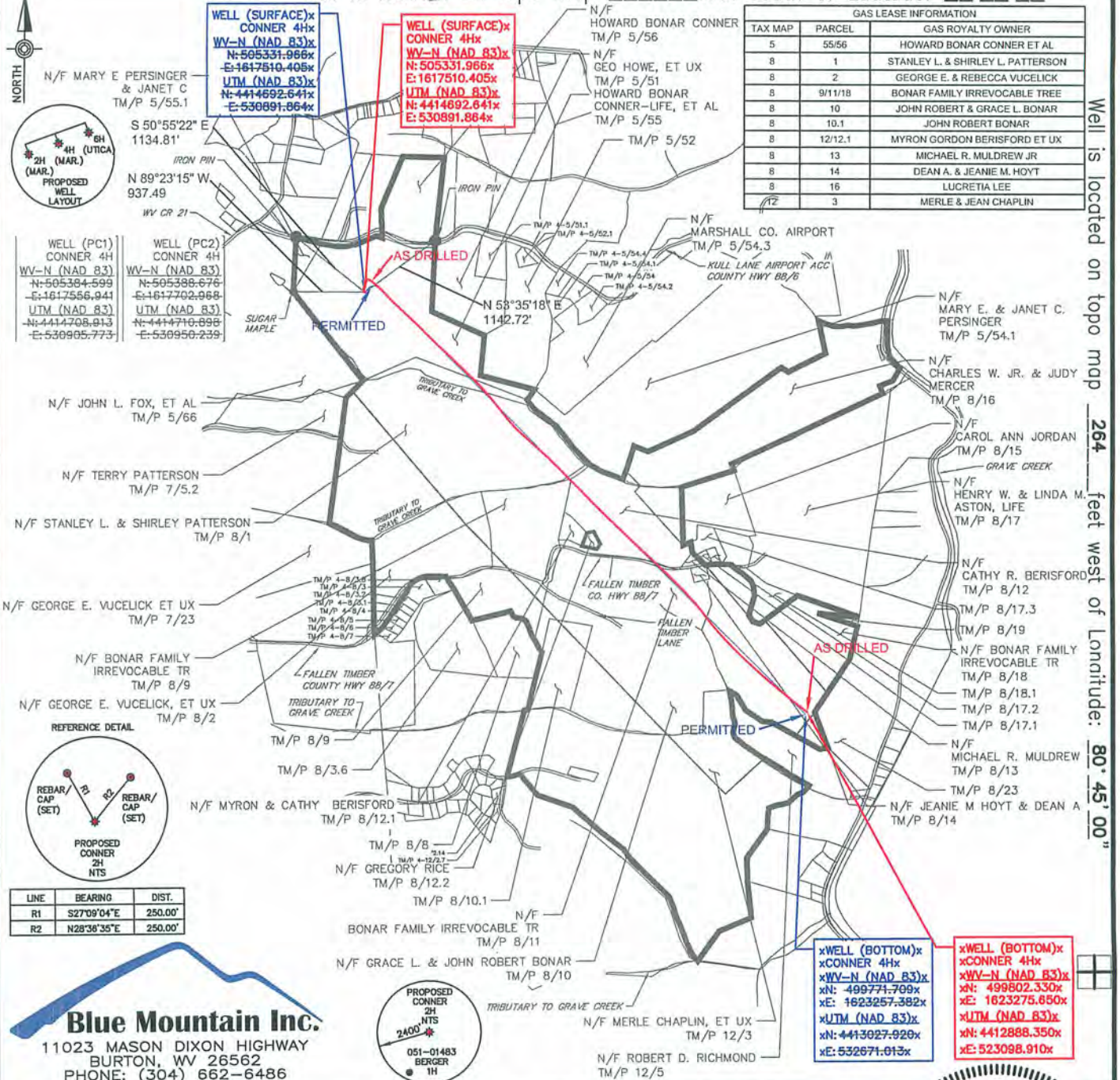
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,500.00	90.27	129.60	6,449.69	-5,073.39	5,371.54	7,388.67	1.72	1.12	-1.30
13,600.00	92.74	129.53	6,446.13	-5,137.03	5,448.58	7,488.39	2.47	2.47	-0.07
13,700.00	92.54	129.25	6,441.45	-5,200.50	5,525.71	7,588.06	0.34	-0.19	-0.28
13,800.00	91.87	128.41	6,437.47	-5,263.26	5,603.46	7,687.69	1.08	-0.68	-0.84
13,900.00	91.19	127.83	6,434.90	-5,324.82	5,682.22	7,787.24	0.90	-0.68	-0.59
14,000.00	90.71	127.89	6,433.26	-5,386.12	5,761.22	7,886.77	0.48	-0.48	0.06
14,050.03	90.44	127.95	6,432.75	-5,416.87	5,800.68	7,936.58	0.55	-0.53	0.12
Last SDI MWD Survey									
14,100.00	90.44	127.95	6,432.37	-5,447.60	5,840.08	7,986.34	0.00	0.00	0.00

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Coal Seam Target	0.00	0.00	784.00	0.00	0.00	505,331.97	1,617,510.40	39° 52' 50.444 N	80° 45' 2.639 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 5.06ft at 784.30ft MD (784.02 TVD, 4.67 N, 1.93 E)									
- Circle (radius 7.60)									
Conner 4H wp01 PBHL	0.00	0.00	6,350.01	-5,479.72	5,823.84	499,771.71	1,623,257.38	39° 51' 56.281 N	80° 43' 47.947 W
- actual wellpath misses target center by 89.88ft at 14100.00ft MD (6432.37 TVD, -5447.60 N, 5840.08 E)									
- Point									
Conner 4H LP	0.00	0.00	6,367.01	59.39	191.76	505,388.68	1,617,702.96	39° 52' 51.031 N	80° 45' 0.179 W
- actual wellpath misses target center by 248.56ft at 6301.38ft MD (6167.66 TVD, -46.06 N, 296.28 E)									
- Circle (radius 200.00)									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
100.00	100.00	0.25	0.26	First Gyro Data Gyro Survey
3,278.00	3,277.46	11.91	-19.96	Last Gyro Data Gyro Survey
3,437.01	3,436.46	12.56	-20.38	First SDI MWD Survey
14,050.03	6,432.75	-5,416.87	5,800.68	Last SDI MWD Survey
14,102.03	6,432.35	-5,448.85	5,841.68	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

Well is located on topo map 13,123 feet south of Latitude: 39° 55' 00"



Well is located on topo map 264 feet west of Longitude: 80° 45' 00"

Blue Mountain Inc.
 11023 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

FILE #: CONNER 4H-AS DRILLED
 DRAWING #: CONNER 4H-AS DRILLED
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: _____
 R.P.E.: _____ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

DATE: JANUARY 23, 2014
 OPERATOR'S WELL #: CONNER 4H-AS DRILLED
 API WELL #: 47 51 01597
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: GRAVE CREEK ELEVATION: 1222.00'
 COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: BUSINESSBURG, OH-WV 7.5'
 SURFACE OWNER: HOWARD BONAR CONNER - LIFE ACREAGE: 81.72±
 OIL & GAS ROYALTY OWNER: SEE ABOVE TABLE ACREAGE: 363.51±

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,351'

WELL OPERATOR: CHEVRON APPALACHIA, LLC DESIGNATED AGENT: KENNETH E. TAWNEY
 Address: 800 MOUNTAIN VIEW DRIVE Address: 500 LEE STREET, EAST SUITE 1600
 City: SMITHFIELD State: PA Zip Code: 15478 City: CHARLESTON State: WV Zip Code: 25301-3202

04/18/2014

RECEIVED
 Office of Oil and Gas