

APPROVED

NAME: *Julia Fink*

DATE: *2/10/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513344

API: 47 - 017 - 06573

Submission: Initial Amended

Notes: Correction to Production Cement Top (MD)

RECEIVED
Office of Oil and Gas

DEC 21 2015

WV Department of
Environmental Protection

02/12/2016

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

API 47 - 017 - 06573 County DODDRIDGE District WEST UNION
Quad WEST UNION 7.5' Pad Name WEU6 Field/Pool Name _____
Farm name FRANKLIN BUTLER & KEY OIL COMPANY Well Number 513344
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,349,011 Easting 521,256
Landing Point of Curve Northing 4,348,038 Easting 520,525
Bottom Hole Northing 4,346,928 Easting 520,842

Elevation (ft) 1260 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)
Water base Mud 13.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 10/21/2014 Date drilling commenced 10/28/2014 Date drilling ceased 01/23/2015
Date completion activities began 4/27/2015 Date completion activities ceased 5/2/2015
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 353',465',508',967',1031' Open mine(s) (Y/N) depths N
Salt water depth(s) ft NONE Void(s) encountered (Y/N) depths N
Coal depth(s) ft 188' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

02/12/2016

API 47-017 - 06573 Farm name FRANKLIN BUTLER & KEY OIL COMPANY Well number 513344

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	24"	20"	40'	NEW	A-500 40LB/FT	NONE	Y
Surface	17.5"	13.375"	1131'	NEW	J-55 54.5LB/FT	281',494'	Y
Coal							
Intermediate 1	12.375"	9.625"	3104'	NEW	A-500 40LB/FT	1202',1498'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	13,830'	NEW	P-110 20LB/FT	NONE	N
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	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	890	15.6	1.19	1059.1	0	8
Coal							
Intermediate 1	CLASS A	1128	15.6	1.18	1331.04	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	1225/645	15.2/15.6	1.07/1.86	2510.45	3,418'	72
Tubing							

Drillers TD (ft) 13,845 MD Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,100' MD

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 _____

CONDUCTOR- NONE
 SURFACE- JOINTS: 1,12,23
 INTERMEDIATE- RAN AT LEAST EVERY 500' FEET
 PRODUCTION- 226 Composite bodied centralizers on every joint from TD up to 4,000'

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 _____

API 47- 017 - 06573 Farm name FRANKLIN BUTLER & KEY OIL COMPANY Well number 513344

Drilling Contractor Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company HOSSCO SERVICES LLC
Address 614 TROTTERS LANE City CHARLESTON State WV Zip 25312

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company _____
Address _____ City _____ State _____ Zip _____

API 47 - 017 - 06573

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	0	0	1,034	1,034
SAND / SHALE	0	0	191	191
COAL	191	191	194	194
SAND / SHALE	194	194	2,307	2,307
BEREA	2,307	2,307	2,575	2,575
GANTZ	2,575	2,575	2,665	2,665
50F	2,665	2,665	2,763	2,763
30F	2,763	2,763	2,830	2,830
GORDON	2,830	2,830	2,899	2,899
4TH	2,899	2,899	3,051	3,051
5TH	3,051	3,051	3,441	3,441
WARREN	3,441	3,441	3,507	3,507
SPEECHLEY	3,507	3,507	4,371	4,371
BRADFORD	4,371	4,371	4,659	4,659
RILEY	4,659	4,659	5,116	5,116
BENSON	5,116	5,116	5,362	5,359
ALEXANDER	5,362	5,359	6,484	5,910
RHINESTREET	6,484	5,910	8,133	6,484
SONYEA	8,133	6,484	8,573	6,630
MIDDLESEX	8,573	6,630	8,735	6,684
GENESEE	8,735	6,684	8,976	6,764
GENESEO	8,976	6,764	9,080	6,794
TULLY	9,080	6,794	9,200	6,820
HAMILTON	9,200	6,820	9,380	6,845
MARCELLUS	9,380	6,845	13,845	6,871

02/12/2016

API 47 - 017 - 06573

EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 513344

Well #513344

Main Wellbore

Design: 513344 As Drilled Surveys

Standard Survey Report

23 January, 2015

02/12/2016

Phoenix Technologies

Survey Report

Database: Company: Project: Site: Well: Wellbore: Design:	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:
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Project		
Map System: US State Plane 1927 (Exact solution)	System Datum: Mean Sea Level	
Geo Datum: NAD 1927 (NADCON CONUS)		
Map Zone: West Virginia North 4701		Using geodetic scale factor

Site					
Site Position:		Northing:	290,256.10 usft	Latitude:	39.29
From:	Map	Easting:	1,645,169.40 usft	Longitude:	-80.75
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.80 °

Well					
Well Position	+N/-S	0.0 usft	Northing:	290,256.10 usft	Latitude:
	+E/-W	0.0 usft	Easting:	1,645,169.40 usft	Longitude:
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:
					1,250.0 usft

Wellbore					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	1/5/2015	-8.52	66.75	52,222

Design					
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	192.19	

Survey Program		Date 1/23/2015			
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	4,932.0	513344 Gyrodatta Gyro (Main Wellbore)	GYD_DP_MS	Gyrodatta gyro-compassing and drop	
0.00	13,845.0	513344 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3 standard declination	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	-1,276.0	0.0	0.0	0.0	0.00	0.00	0.00
103.0	0.23	248.35	103.0	-1,173.0	-0.1	-0.2	0.1	0.22	0.22	0.00
203.0	0.21	229.40	203.0	-1,073.0	-0.3	-0.5	0.4	0.08	-0.02	-18.95
303.0	0.22	234.67	303.0	-973.0	-0.5	-0.8	0.7	0.02	0.01	5.27
403.0	0.17	236.23	403.0	-873.0	-0.7	-1.1	0.9	0.05	-0.05	1.58
503.0	0.19	218.52	503.0	-773.0	-0.9	-1.3	1.2	0.06	0.02	-17.71
603.0	0.14	205.84	603.0	-673.0	-1.1	-1.5	1.4	0.06	-0.05	-12.08
703.0	0.13	205.98	703.0	-573.0	-1.4	-1.6	1.7	0.01	-0.01	0.14

02/12/2016

Phoenix Technologies
Survey Report

Database:	EBM 5000 1 Single User Db	Local Co-ordinate Reference:	'Site Doddridge County 513344
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513344	North Reference:	Grid
Well:	Well #513344	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513344 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
803.0	0.06	225.81	803.0	-473.0	-1.5	-1.7	1.8	0.08	-0.07	19.83
903.0	0.08	137.17	903.0	-373.0	-1.6	-1.7	1.9	0.10	0.02	-88.64
1,003.0	0.14	109.04	1,003.0	-273.0	-1.7	-1.5	2.0	0.08	0.06	-28.13
1,103.0	0.14	119.91	1,103.0	-173.0	-1.8	-1.3	2.0	0.03	0.00	10.87
1,203.0	0.17	35.04	1,203.0	-73.0	-1.7	-1.1	1.9	0.21	0.03	-84.87
1,303.0	0.14	62.95	1,303.0	27.0	-1.5	-0.9	1.7	0.08	-0.03	27.91
1,403.0	0.09	77.73	1,403.0	127.0	-1.5	-0.7	1.6	0.06	-0.05	14.78
1,503.0	0.18	69.97	1,503.0	227.0	-1.4	-0.5	1.5	0.09	0.09	-7.76
1,603.0	0.31	51.72	1,603.0	327.0	-1.2	-0.1	1.2	0.15	0.13	-18.25
1,703.0	0.51	71.35	1,703.0	427.0	-0.9	0.5	0.7	0.24	0.20	19.63
1,803.0	0.77	97.25	1,803.0	527.0	-0.8	1.6	0.4	0.38	0.26	25.90
1,903.0	0.98	112.51	1,903.0	627.0	-1.2	3.1	0.5	0.31	0.21	15.26
2,003.0	1.09	112.33	2,003.0	727.0	-1.9	4.7	0.9	0.11	0.11	-0.18
2,103.0	1.18	119.04	2,102.9	826.9	-2.8	6.5	1.3	0.16	0.09	6.71
2,203.0	1.17	118.36	2,202.9	926.9	-3.8	8.3	1.9	0.02	-0.01	-0.68
2,303.0	1.19	125.32	2,302.9	1,026.9	-4.8	10.1	2.6	0.14	0.02	6.96
2,403.0	1.18	131.69	2,402.9	1,126.9	-6.1	11.7	3.5	0.13	0.01	6.37
2,503.0	1.03	145.26	2,502.9	1,226.9	-7.5	13.0	4.6	0.30	-0.15	13.57
2,603.0	1.10	148.81	2,602.8	1,326.8	-9.1	14.0	6.0	0.10	0.07	3.55
2,703.0	1.19	152.95	2,702.8	1,426.8	-10.9	14.9	7.5	0.12	0.09	4.14
2,803.0	1.23	150.66	2,802.8	1,526.8	-12.7	15.9	9.1	0.06	0.04	-2.29
2,903.0	1.31	148.17	2,902.8	1,626.8	-14.6	17.1	10.7	0.10	0.08	-2.49
3,003.0	1.09	162.39	3,002.7	1,726.7	-16.5	17.9	12.3	0.37	-0.22	14.22
3,103.0	0.93	163.31	3,102.7	1,826.7	-18.2	18.5	13.9	0.16	-0.16	0.92
3,203.0	0.78	159.75	3,202.7	1,926.7	-19.6	18.9	15.2	0.16	-0.15	-3.56
3,303.0	0.76	156.09	3,302.7	2,026.7	-20.8	19.4	16.3	0.05	-0.02	-3.66
3,403.0	0.64	156.01	3,402.7	2,126.7	-22.0	19.9	17.3	0.12	-0.12	-0.08
3,503.0	0.59	163.80	3,502.7	2,226.7	-23.0	20.3	18.2	0.10	-0.05	7.79
3,603.0	0.50	156.06	3,602.7	2,326.7	-23.9	20.6	19.0	0.12	-0.09	-7.74
3,703.0	0.43	167.36	3,702.7	2,426.7	-24.6	20.9	19.7	0.12	-0.07	11.32
3,803.0	0.45	171.77	3,802.7	2,526.7	-25.4	21.0	20.4	0.04	0.02	4.39
3,903.0	0.49	171.56	3,902.7	2,626.7	-26.2	21.1	21.1	0.04	0.04	-0.21
4,003.0	0.38	196.95	4,002.7	2,726.7	-26.9	21.1	21.9	0.22	-0.11	25.39
4,103.0	0.35	187.50	4,102.7	2,826.7	-27.5	21.0	22.5	0.07	-0.03	-9.45
4,203.0	0.38	186.41	4,202.7	2,926.7	-28.2	20.9	23.1	0.03	0.03	-1.09
4,303.0	0.32	169.42	4,302.7	3,026.7	-28.8	20.9	23.7	0.12	-0.06	-16.99
4,403.0	0.30	147.52	4,402.7	3,126.7	-29.3	21.1	24.2	0.12	-0.02	-21.90
4,503.0	0.33	114.04	4,502.7	3,226.7	-29.6	21.5	24.4	0.18	0.03	-33.48
4,603.0	0.36	123.94	4,602.7	3,326.7	-29.9	22.0	24.6	0.07	0.03	9.90
4,703.0	0.38	129.86	4,702.7	3,426.7	-30.3	22.5	24.9	0.04	0.02	5.92
4,803.0	0.31	96.37	4,802.7	3,526.7	-30.5	23.1	25.0	0.21	-0.07	-33.49
4,903.0	0.43	94.23	4,902.7	3,626.7	-30.6	23.7	24.9	0.12	0.12	-2.14

Phoenix Technologies

Survey Report

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513344
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1275.0usft
Project:	Doddridge County WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513344	North Reference:	Grid
Well:	Well #513344	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513344 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Gyro Tie In=4932.0MD										
4,932.0	0.43	92.02	4,931.7	3,655.7	-30.6	23.9	24.9	0.06	0.00	-7.62
5,196.0	2.60	230.00	5,195.6	3,919.6	-34.5	20.3	29.4	1.11	0.82	52.27
5,228.0	4.50	232.90	5,227.5	3,951.5	-35.7	18.8	31.0	5.96	5.94	9.06
5,259.0	5.60	225.60	5,258.4	3,982.4	-37.5	16.7	33.1	4.10	3.55	-23.55
5,291.0	8.40	223.20	5,290.2	4,014.2	-40.3	14.0	36.4	8.80	8.75	-7.50
5,322.0	12.10	219.00	5,320.7	4,044.7	-44.5	10.4	41.3	12.17	11.94	-13.55
5,354.0	16.60	216.90	5,351.7	4,075.7	-50.8	5.6	48.4	14.15	14.06	-6.56
5,385.0	20.20	219.00	5,381.1	4,105.1	-58.5	-0.5	57.2	11.81	11.61	6.77
5,417.0	24.70	219.90	5,410.6	4,134.6	-67.9	-8.2	68.1	14.10	14.06	2.81
5,448.0	27.80	220.40	5,438.4	4,162.4	-78.4	-17.1	80.2	10.03	10.00	1.61
5,480.0	31.70	220.50	5,466.2	4,190.2	-90.4	-27.4	94.2	12.19	12.19	0.31
5,511.0	34.20	220.80	5,492.2	4,216.2	-103.2	-38.4	109.0	8.08	8.06	0.97
5,542.0	36.50	224.10	5,517.5	4,241.5	-116.4	-50.5	124.5	9.64	7.42	10.65
5,574.0	38.80	224.90	5,542.8	4,266.8	-130.4	-64.2	141.0	7.35	7.19	2.50
5,605.0	41.70	226.60	5,566.5	4,290.5	-144.4	-78.5	157.7	10.00	9.35	5.48
5,637.0	44.70	227.10	5,589.8	4,313.8	-159.3	-94.5	175.7	9.44	9.38	1.56
5,669.0	48.70	226.30	5,611.6	4,335.8	-175.3	-111.5	194.9	12.63	12.50	-2.50
5,700.0	52.00	225.80	5,631.5	4,355.5	-191.9	-128.6	214.7	10.72	10.65	-1.61
5,732.0	54.20	225.50	5,650.8	4,374.8	-209.8	-146.9	236.0	6.92	6.88	-0.94
5,763.0	57.90	224.60	5,668.1	4,392.1	-227.9	-165.1	257.6	12.18	11.94	-2.90
5,794.0	61.90	222.40	5,683.6	4,407.6	-247.4	-183.6	280.6	14.29	12.90	-7.10
5,826.0	65.80	220.50	5,697.7	4,421.7	-268.9	-202.6	305.6	13.30	12.19	-5.94
5,857.0	70.40	220.40	5,709.3	4,433.3	-290.8	-221.2	330.9	14.84	14.84	-0.32
5,920.0	73.00	220.50	5,729.1	4,453.1	-336.3	-260.0	383.6	4.13	4.13	0.16
5,982.0	73.10	219.70	5,747.1	4,471.1	-381.7	-298.2	436.0	1.24	0.16	-1.29
6,045.0	72.70	221.40	5,765.7	4,489.7	-427.4	-337.4	489.0	2.66	-0.63	2.70
6,108.0	71.80	222.30	5,784.9	4,508.9	-472.1	-377.4	541.1	1.97	-1.43	1.43
6,171.0	72.00	222.10	5,804.4	4,528.4	-516.5	-417.6	593.0	0.44	0.32	-0.32
6,234.0	71.50	222.60	5,824.2	4,548.2	-560.7	-457.9	644.7	1.09	-0.79	0.79
6,296.0	69.80	222.50	5,844.7	4,568.7	-603.8	-497.5	695.2	2.75	-2.74	-0.16
6,359.0	70.20	221.90	5,866.3	4,590.3	-647.6	-537.3	746.5	1.10	0.63	-0.95
6,422.0	70.00	224.10	5,887.7	4,611.7	-691.0	-577.7	797.3	3.30	-0.32	3.49
6,485.0	68.90	226.90	5,909.8	4,633.8	-732.3	-619.7	846.6	4.51	-1.75	4.44
6,548.0	68.10	228.70	5,932.9	4,656.9	-771.7	-663.1	894.3	2.95	-1.27	2.86
6,611.0	68.50	231.20	5,956.2	4,680.2	-809.3	-708.0	940.5	3.74	0.63	3.97
6,674.0	68.70	231.80	5,979.2	4,703.2	-845.9	-753.9	985.9	0.94	0.32	0.95
6,737.0	69.50	234.10	6,001.7	4,725.7	-881.3	-800.8	1,030.5	3.64	1.27	3.65
6,800.0	69.40	234.30	6,023.8	4,747.8	-915.8	-848.7	1,074.3	0.34	-0.16	0.32
6,863.0	70.00	233.90	6,045.6	4,769.6	-950.5	-896.5	1,118.3	1.12	0.95	-0.63
6,926.0	71.00	236.10	6,066.7	4,790.7	-984.5	-945.2	1,161.9	3.65	1.59	3.49
6,988.0	71.70	236.60	6,086.5	4,810.5	-1,017.1	-994.1	1,204.0	1.36	1.13	0.81
7,051.0	71.70	236.00	6,106.3	4,830.3	-1,050.3	-1,043.8	1,246.9	0.90	0.00	-0.95

Phoenix Technologies
Survey Report

Database:	EDM-5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513344
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276 (usft)
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1278 (usft)
Site:	Doddridge County 513344	North Reference:	Grid
Well:	Well #513344	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513344 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,114.0	71.50	236.50	6,126.2	4,850.2	-1,083.5	-1,093.5	1,289.9	0.82	-0.32	0.79
7,177.0	70.30	237.90	6,146.8	4,870.8	-1,115.7	-1,143.6	1,332.0	2.84	-1.90	2.22
7,240.0	68.90	234.80	6,168.7	4,892.7	-1,148.4	-1,192.7	1,374.3	5.12	-2.22	-4.92
7,303.0	69.30	233.30	6,191.2	4,915.2	-1,183.0	-1,240.4	1,418.2	2.31	0.63	-2.38
7,365.0	69.70	233.50	6,212.9	4,936.9	-1,217.6	-1,287.0	1,461.8	0.71	0.65	0.32
7,428.0	69.20	233.80	6,235.0	4,959.0	-1,252.6	-1,334.5	1,506.1	0.91	-0.79	0.48
7,491.0	69.30	234.10	6,257.4	4,981.4	-1,287.2	-1,382.1	1,550.0	0.47	0.16	0.48
7,554.0	68.80	232.70	6,279.9	5,003.9	-1,322.3	-1,429.4	1,594.3	2.22	-0.79	-2.22
7,616.0	69.50	234.10	6,302.0	5,026.0	-1,356.9	-1,475.9	1,637.8	2.39	1.13	2.26
7,679.0	69.60	234.10	6,324.0	5,048.0	-1,391.5	-1,523.7	1,681.8	0.16	0.16	0.00
7,742.0	69.40	233.30	6,346.0	5,070.0	-1,426.4	-1,571.3	1,725.9	1.23	-0.32	-1.27
7,805.0	69.30	232.30	6,368.3	5,092.3	-1,462.1	-1,618.2	1,770.7	1.49	-0.16	-1.59
7,894.0	68.80	232.20	6,400.1	5,124.1	-1,512.9	-1,683.9	1,834.3	0.57	-0.56	-0.11
7,957.0	69.70	232.50	6,422.4	5,146.4	-1,548.9	-1,730.6	1,879.3	1.50	1.43	0.48
8,020.0	69.90	233.40	6,444.2	5,168.2	-1,584.5	-1,777.8	1,924.1	1.38	0.32	1.43
8,082.0	69.40	233.50	6,465.7	5,189.7	-1,619.2	-1,824.5	1,967.8	0.82	-0.81	0.16
8,145.0	69.70	234.60	6,487.7	5,211.7	-1,653.8	-1,872.3	2,011.8	1.70	0.48	1.75
8,209.0	70.50	235.10	6,509.5	5,233.5	-1,688.5	-1,921.5	2,056.0	1.45	1.25	0.78
8,271.0	70.60	234.70	6,530.2	5,254.2	-1,722.1	-1,969.3	2,099.0	0.63	0.16	-0.65
8,334.0	70.70	234.40	6,551.0	5,275.0	-1,756.6	-2,017.7	2,142.9	0.48	0.16	-0.48
8,398.0	70.80	234.50	6,572.1	5,296.1	-1,791.7	-2,066.9	2,187.6	0.21	0.16	0.16
8,460.0	71.20	234.20	6,592.3	5,316.3	-1,825.8	-2,114.5	2,231.1	0.79	0.65	-0.48
8,524.0	69.90	234.30	6,613.6	5,337.6	-1,861.1	-2,163.5	2,275.9	2.04	-2.03	0.16
8,586.0	70.30	234.60	6,634.7	5,358.7	-1,895.0	-2,210.9	2,319.0	0.79	0.65	0.48
8,649.0	70.40	234.20	6,655.9	5,379.9	-1,929.5	-2,259.2	2,363.0	0.62	0.16	-0.63
8,712.0	70.90	234.20	6,676.8	5,400.8	-1,964.3	-2,307.4	2,407.1	0.79	0.79	0.00
8,775.0	71.50	234.50	6,697.1	5,421.1	-1,999.1	-2,355.8	2,451.3	1.05	0.95	0.48
8,839.0	71.00	230.40	6,717.7	5,441.7	-2,036.0	-2,403.9	2,497.6	6.12	-0.78	-6.41
8,870.0	70.60	226.70	6,727.9	5,451.9	-2,055.4	-2,425.8	2,521.1	11.34	-1.29	-11.94
8,902.0	70.00	222.50	6,738.7	5,462.7	-2,076.8	-2,447.0	2,546.5	12.50	-1.88	-13.13
8,933.0	69.70	218.40	6,749.3	5,473.3	-2,098.9	-2,465.8	2,572.2	12.45	-0.97	-13.23
8,964.0	70.30	214.90	6,759.9	5,483.9	-2,122.3	-2,483.2	2,598.7	10.78	1.94	-11.29
8,996.0	72.30	212.70	6,770.2	5,494.2	-2,147.5	-2,500.1	2,626.9	9.03	6.25	-6.88
9,027.0	73.60	211.10	6,779.3	5,503.3	-2,172.7	-2,515.7	2,654.8	6.48	4.19	-5.16
9,059.0	74.50	209.40	6,788.1	5,512.1	-2,199.2	-2,531.2	2,684.0	5.83	2.81	-5.31
9,090.0	75.80	206.70	6,796.0	5,520.0	-2,225.7	-2,545.3	2,712.8	9.41	4.19	-8.71
9,122.0	76.90	204.40	6,803.6	5,527.6	-2,253.7	-2,558.7	2,743.1	7.78	3.44	-7.19
9,153.0	77.70	202.10	6,810.4	5,534.4	-2,281.5	-2,570.7	2,772.8	7.68	2.58	-7.42
9,216.0	79.60	197.10	6,822.8	5,546.8	-2,339.7	-2,591.4	2,834.0	8.34	3.02	-7.94
9,279.0	81.80	191.80	6,833.0	5,557.0	-2,399.9	-2,606.9	2,896.1	9.01	3.49	-8.41
9,342.0	83.50	185.30	6,841.1	5,565.1	-2,461.6	-2,616.1	2,958.4	10.58	2.70	-10.32
9,405.0	84.80	178.10	6,847.5	5,571.5	-2,524.2	-2,618.0	3,020.0	11.55	2.06	-11.43
9,468.0	85.30	171.80	6,852.9	5,576.9	-2,586.7	-2,612.5	3,079.9	9.99	0.79	-10.00

Phoenix Technologies
Survey Report

Database:	FDM 5000-1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513344
Company:	EOT Production - Marcusus	TVD Reference:	KB @ 1278.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513344	North Reference:	Grid
Well:	Well #513344	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513344 As Drilled Surveys		

Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
9,531.0	85.30	164.20	6,858.1	5,582.1	-2,648.1	-2,599.4	3,137.1	12.02	0.00	-12.06	
9,594.0	84.90	163.30	6,863.5	5,587.5	-2,708.3	-2,581.9	3,192.3	1.56	-0.63	-1.43	
LP 9656 MD/6868 TVD											
9,656.0	86.00	163.50	6,868.4	5,592.4	-2,767.6	-2,564.2	3,246.5	1.80	1.77	0.32	
Deepstart Point of Well 9749 MD/6871 TVD											
9,719.0	90.20	164.10	6,870.5	5,594.5	-2,828.0	-2,546.6	3,301.9	6.73	6.67	0.95	
9,782.0	91.20	164.70	6,869.7	5,593.7	-2,888.7	-2,529.7	3,357.6	1.85	1.59	0.95	
9,845.0	91.40	164.30	6,868.3	5,592.3	-2,949.4	-2,512.9	3,413.4	0.71	0.32	-0.63	
9,907.0	91.40	163.50	6,866.8	5,590.8	-3,008.9	-2,495.7	3,468.0	1.29	0.00	-1.29	
9,970.0	91.60	163.60	6,865.1	5,589.1	-3,069.3	-2,477.8	3,523.2	0.35	0.32	0.16	
10,033.0	91.80	163.10	6,863.3	5,587.3	-3,129.7	-2,459.8	3,578.4	0.85	0.32	-0.79	
10,096.0	91.90	162.80	6,861.2	5,585.2	-3,189.9	-2,441.3	3,633.3	0.50	0.16	-0.48	
10,159.0	90.90	160.70	6,859.7	5,583.7	-3,249.7	-2,421.6	3,687.6	3.69	-1.59	-3.33	
10,222.0	91.30	160.00	6,858.5	5,582.5	-3,309.0	-2,400.4	3,741.2	1.28	0.63	-1.11	
10,285.0	90.90	161.00	6,857.3	5,581.3	-3,368.4	-2,379.4	3,794.8	1.71	-0.63	1.59	
10,348.0	92.30	164.50	6,855.5	5,579.5	-3,428.5	-2,360.7	3,849.6	5.98	2.22	5.56	
10,411.0	92.20	166.00	6,853.0	5,577.0	-3,489.4	-2,344.7	3,905.7	2.38	-0.16	2.38	
10,474.0	91.90	165.80	6,850.8	5,574.8	-3,550.4	-2,329.4	3,962.2	0.57	-0.48	-0.32	
10,536.0	91.70	165.20	6,848.8	5,572.8	-3,610.4	-2,313.9	4,017.5	1.02	-0.32	-0.97	
10,599.0	91.70	166.70	6,847.0	5,571.0	-3,671.5	-2,298.6	4,074.0	2.38	0.00	2.38	
10,662.0	91.20	167.50	6,845.4	5,569.4	-3,732.9	-2,284.5	4,131.0	1.50	-0.79	1.27	
10,725.0	89.50	167.70	6,845.0	5,569.0	-3,794.4	-2,271.0	4,188.3	2.72	-2.70	0.32	
10,788.0	88.50	167.50	6,846.1	5,570.1	-3,856.0	-2,257.5	4,245.6	1.62	-1.59	-0.32	
10,851.0	88.20	167.70	6,847.9	5,571.9	-3,917.5	-2,243.9	4,302.9	0.57	-0.48	0.32	
10,914.0	88.70	166.80	6,849.6	5,573.6	-3,978.9	-2,230.0	4,360.0	1.63	0.79	-1.43	
10,977.0	89.30	165.90	6,850.7	5,574.7	-4,040.1	-2,215.2	4,416.7	1.72	0.95	-1.43	
11,040.0	91.40	165.60	6,850.3	5,574.3	-4,101.2	-2,199.7	4,473.1	3.37	3.33	-0.48	
11,103.0	90.90	165.00	6,849.1	5,573.1	-4,162.1	-2,183.7	4,529.3	1.24	-0.79	-0.95	
11,166.0	90.90	164.50	6,848.1	5,572.1	-4,222.9	-2,167.1	4,585.2	0.79	0.00	-0.79	
11,229.0	90.40	163.30	6,847.4	5,571.4	-4,283.4	-2,149.6	4,640.6	2.06	-0.79	-1.90	
11,292.0	90.20	163.10	6,847.0	5,571.0	-4,343.7	-2,131.4	4,695.7	0.45	-0.32	-0.32	
11,355.0	90.70	163.70	6,846.5	5,570.5	-4,404.1	-2,113.4	4,751.0	1.24	0.79	0.95	
11,418.0	91.50	163.40	6,845.3	5,569.3	-4,464.5	-2,095.6	4,806.2	1.36	1.27	-0.48	
11,481.0	91.90	163.60	6,843.5	5,567.5	-4,524.9	-2,077.7	4,861.5	0.71	0.63	0.32	
11,544.0	91.60	163.90	6,841.5	5,565.5	-4,585.3	-2,060.1	4,916.9	0.67	-0.48	0.48	
11,607.0	91.60	165.30	6,839.8	5,563.8	-4,646.0	-2,043.4	4,972.7	2.22	0.00	2.22	
11,670.0	91.60	165.10	6,838.0	5,562.0	-4,706.9	-2,027.3	5,028.8	0.32	0.00	-0.32	
11,733.0	91.30	165.20	6,836.4	5,560.4	-4,767.8	-2,011.1	5,084.9	0.50	-0.48	0.16	
11,795.0	90.50	163.10	6,835.4	5,559.4	-4,827.4	-1,994.2	5,139.6	3.62	-1.29	-3.39	
11,858.0	90.30	163.00	6,835.0	5,559.0	-4,887.7	-1,975.8	5,194.6	0.35	-0.32	-0.16	
11,921.0	90.80	164.20	6,834.4	5,558.4	-4,948.1	-1,958.1	5,249.9	2.06	0.79	1.90	
11,984.0	91.10	165.10	6,833.4	5,557.4	-5,008.9	-1,941.4	5,305.8	1.51	0.48	1.43	

Phoenix Technologies

Survey Report

Database: EDM 5000.1 Single User Db Company: EMT Production - Marcellus Project: Doddridge County, WV Gas Site: Doddridge County 513344 Well: Well #513344 Wellbore: Main Wellbore Design: 513344 As Drilled Surveys	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Site Doddridge County 513344 KB @ 1776.0usft KB @ 1276.0usft Grid Minimum Curvature
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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
12,047.0	91.10	165.20	6,832.1	5,556.1	-5,069.7	-1,925.2	5,361.9	0.16	0.00	0.16
12,110.0	91.60	166.80	6,830.7	5,554.7	-5,130.8	-1,910.0	5,418.4	2.66	0.79	2.54
12,173.0	91.30	166.00	6,829.1	5,553.1	-5,192.1	-1,895.2	5,475.1	1.36	-0.48	-1.27
12,236.0	89.70	163.20	6,828.5	5,552.5	-5,252.8	-1,878.5	5,531.0	5.12	-2.54	-4.44
12,299.0	89.80	163.10	6,828.8	5,552.8	-5,313.1	-1,860.2	5,588.0	0.22	0.16	-0.16
12,361.0	89.80	163.00	6,829.0	5,553.0	-5,372.4	-1,842.1	5,640.2	0.16	0.00	-0.16
12,424.0	89.80	162.90	6,829.2	5,553.2	-5,432.6	-1,823.7	5,695.2	0.16	0.00	-0.16
12,487.0	91.20	164.50	6,828.7	5,552.7	-5,493.1	-1,806.0	5,750.5	3.37	2.22	2.54
12,549.0	91.10	167.90	6,827.4	5,551.4	-5,553.3	-1,791.2	5,806.2	5.49	-0.16	5.48
12,612.0	91.40	167.70	6,826.1	5,550.1	-5,614.8	-1,777.9	5,863.6	0.57	0.48	-0.32
12,675.0	91.60	167.30	6,824.4	5,548.4	-5,676.3	-1,764.3	5,920.8	0.71	0.32	-0.63
12,737.0	91.60	167.70	6,822.7	5,546.7	-5,736.8	-1,750.8	5,977.1	0.64	0.00	0.65
12,800.0	91.40	168.50	6,821.0	5,545.0	-5,798.5	-1,737.9	6,034.6	1.31	-0.32	1.27
12,863.0	90.20	166.20	6,820.1	5,544.1	-5,859.9	-1,724.1	6,091.8	4.12	-1.90	-3.65
12,926.0	90.20	165.90	6,819.9	5,543.9	-5,921.1	-1,708.9	6,148.4	0.48	0.00	-0.48
12,989.0	90.20	166.00	6,819.7	5,543.7	-5,982.2	693.6	6,204.9	0.16	0.00	0.16
13,052.0	90.10	166.00	6,819.5	5,543.5	-6,043.3	678.3	6,261.4	0.16	-0.16	0.00
13,115.0	90.00	166.10	6,819.5	5,543.5	-6,104.4	-1,663.2	6,318.0	0.22	-0.16	0.16
13,178.0	90.20	166.40	6,819.4	5,543.4	-6,165.6	-1,648.2	6,374.6	0.57	0.32	0.48
13,241.0	91.00	167.40	6,818.7	5,542.7	-6,227.0	-1,633.9	6,431.6	2.03	1.27	1.59
13,304.0	91.00	166.60	6,817.6	5,541.6	-6,288.4	-1,619.7	6,488.6	1.27	0.00	-1.27
13,366.0	90.70	166.00	6,816.7	5,540.7	-6,350.5	-1,604.6	6,546.1	1.05	-0.47	-0.94
13,431.0	90.60	165.80	6,816.0	5,540.0	-6,411.6	-1,589.2	6,602.6	0.35	-0.16	-0.32
13,494.0	90.40	164.50	6,815.4	5,539.4	-6,472.5	-1,573.1	6,658.7	2.09	-0.32	-2.08
13,557.0	90.80	164.30	6,814.7	5,538.7	-6,533.2	-1,556.1	6,714.5	0.71	0.63	-0.32
13,620.0	92.00	166.00	6,813.2	5,537.2	-6,594.1	-1,540.0	6,770.6	3.30	1.90	2.70
13,683.0	92.10	166.00	6,811.0	5,535.0	-6,655.2	-1,524.8	6,827.1	0.16	0.16	0.00
13,746.0	91.70	165.70	6,808.9	5,532.9	-6,716.2	-1,509.4	6,883.5	0.79	-0.63	-0.48
Final Survey= 13792' MD/6808' TVD										
13,792.0	91.80	165.90	6,807.5	5,531.5	-6,760.8	-1,498.1	6,924.7	0.49	0.22	0.43
Projection to TD= 13845' MD/6808' TVD										
13,845.0	91.80	165.90	6,805.8	5,529.8	-6,812.2	-1,485.2	6,972.2	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,932.0	4,931.7	-30.6	23.9	Gyro Tie In=4932' MD
9,656.0	6,868.4	-2,767.6	-2,564.2	LP= 9656' MD/ 6868' TVD
9,719.0	6,870.5	-2,828.0	-2,546.6	Deepest Point of Well= 9719' MD/6871' TVD
13,792.0	6,807.5	-6,760.8	-1,498.1	Final Survey= 13792' MD/6808' TVD
13,845.0	6,805.8	-6,812.2	-1,485.2	Projection to TD= 13845' MD/6808' TVD

Phoenix Technologies

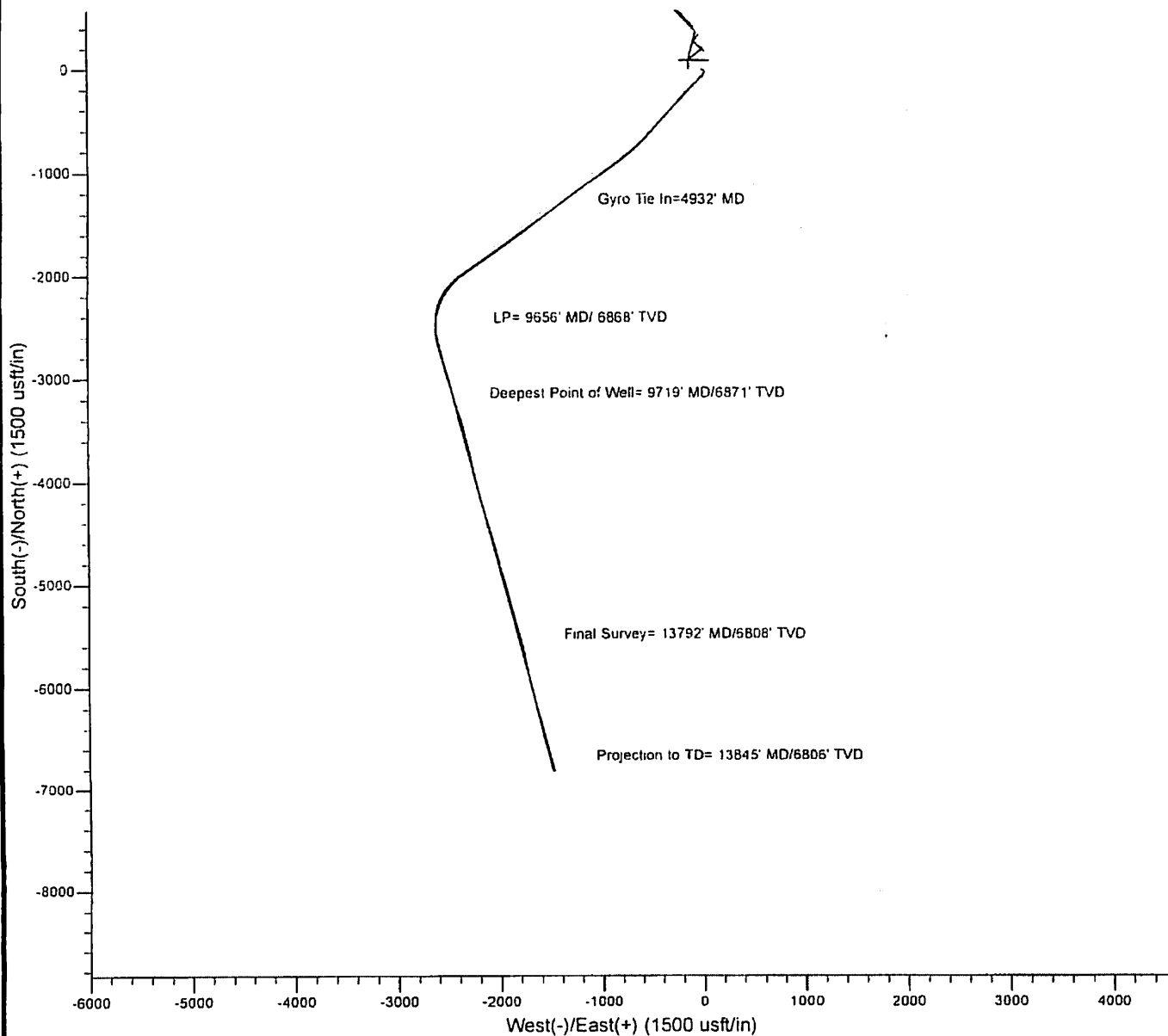
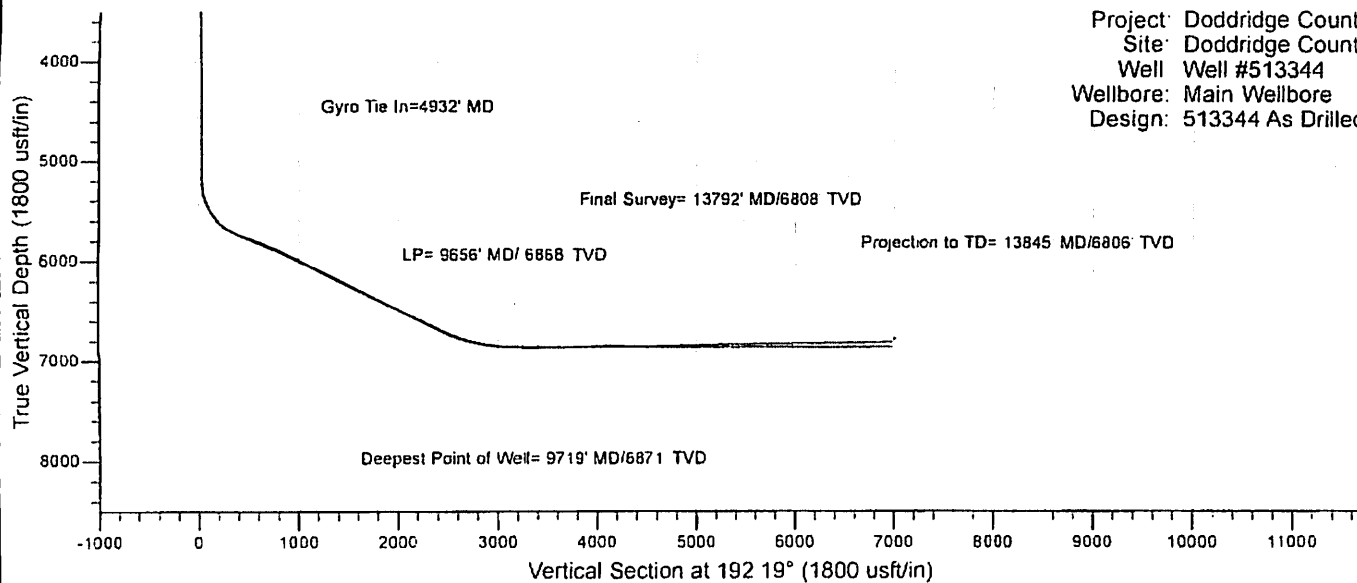
Survey Report

Database: EDM 5000.1 Single User: DB	Local Co-ordinate Reference:	Site: Doddridge County 513344
Company: EQT Production - Marcellus	TVD Reference:	KB @ 1276 Gusti
Project: Doddridge County, WV Gnd	MD Reference:	KB @ 1276 Gusti
Site: Doddridge County 513344	North Reference:	Grid
Well: Well #513344	Survey Calculation Method:	Minimum Curvature
Wellbore: Main Wellbore		
Design: 513344 As Drilled Surveys		

Checked By: _____ Approved By: _____ Date _____

EQT Production - Marcellus

Project: Doddridge County WV Grid
Site: Doddridge County 513344
Well: Well #513344
Wellbore: Main Wellbore
Design: 513344 As Drilled Surveys



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/27/2015
Job End Date:	5/2/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06573-00-00
Operator Name:	EQT Production
Well Name and Number:	513344
Longitude:	-80.75369100
Latitude:	39.29012700
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,871
Total Base Water Volume (gal):	8,533,938
Total Base Non Water Volume:	0



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
Water	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.84883	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	9.76556	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05695	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02747	None
FFR 730	Keane Group	Friction reducer	Oxyalkylated alcohol A	Proprietary	5.00000	0.00395	None
Greenskeeper LF	Keane Group	Solvent	Distillates, Petroleum, Hydrotreated Light	64742-47-8	100.00000	0.00288	None
EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00124	None
AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.00018	None
			N, N-Dimethylformamide	68-12-2	20.00000	0.00009	None

			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00007	None
			2-Butoxyethanol	111-76-2	15.00000	0.00007	None
			Cinnamialdehyde	104-55-2	15.00000	0.00007	None
			1-Decanol	112-30-1	5.00000	0.00002	None
			Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00002	None
			Isopropyl alcohol	67-63-0	2.50000	0.00001	None
			Triethyl Phosphate	78-40-0	2.50000	0.00001	None
			1-Octanol	111-87-5	2.50000	0.00001	None
LEB-10X	Keane Group	Gel Breaker	Ethylene Glycol	107-21-1	30.00000	0.00011	None

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)

Welcome Michelle N., Operator - OpNo. E1210363 [Log Out]

Hydraulic Fracturing
DISCLOSURE



Please use the FracFocus XML submission process or create disclosures online.

FIND A WELL BY STATE

ABOUT PROJECT PARTNERS

(Note: Clicking the FracFocus, FIND A WELL links will open a new window.)

Prepare Disclosure for FracFocus Submission

[Disclosure Lists](#) | [Dashboard](#)

Disclosure has been submitted.

Note: This window expires with 10 minutes of inactivity. After that you will be taken back to the dashboard.

Hydraulic Fracturing Data

Job Start Date 4/27/2015	Job End Date 5/2/2015	API Number 47-017-06573-00-00	State & County West Virginia --- Doddridge
Well Name 513344			
Longitude -80.753691	Latitude 39.290127	Datum NAD83	Federal/Tribal Well?
True Vertical Depth (ft) 6871	Total Water Vol (gal) 8533938	Total Non Water Vol 0	Total Mass (lbs) 79261701



MSDS Chemical Ingredients

	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
<input type="button" value="Edit"/>	Water	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100%	89.8488315684%	None	71215712.61
<input type="button" value="Edit"/>	Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100%	9.7655612497%	None	7740350
<input type="button" value="Edit"/>	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0569450055%	None	45135.58
<input type="button" value="Edit"/>	Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0274662802%	None	21770.241
<input type="button" value="Edit"/>	FFR 730	Keane Group	Friction reducer	Oxyalkylated alcohol A	Proprietary	5%	.0039529325%	None	3133.162
<input type="button" value="Edit"/>	Greenskeeper LF	Keane Group	Solvent	Distillates, Petroleum, Hydrotreated Light	64742-47-8	100%	.0028842948%	None	2286.141
<input type="button" value="Edit"/>	EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5%	.001240906%	None	983.563
<input type="button" value="Edit"/>	AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40%	.0001832205%	None	145.224

			N, N-Dimethylformamide	68-12-2	20%	.0000916103%	None	72.612
			Tar bases, quinoline derivs, benzyl chloride-quatemized	72480-70-7	15%	.0000687077%	None	54.459
			2-Butoxyethanol	111-76-2	15%	.0000687077%	None	54.459
			Cinnamialdehyde	104-55-2	15%	.0000687077%	None	54.459
			1-Decanol	112-30-1	5%	.0000229026%	None	18.153
			Poly (oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl) -.omega.-hydroxy-, branched	127087-87-0	5%	.0000229026%	None	18.153
			Isopropyl alcohol	67-63-0	2.5%	.0000114513%	None	9.076
			Triethyl Phosphate	78-40-0	2.5%	.0000114513%	None	9.076
			1-Octanol	111-87-5	2.5%	.0000114513%	None	9.076
<input type="button" value="Edit"/>	LEB-10X	Keane Group	Gel Breaker					
			Ethylene Glycol	107-21-1	30%	.0001113569%	None	88.263

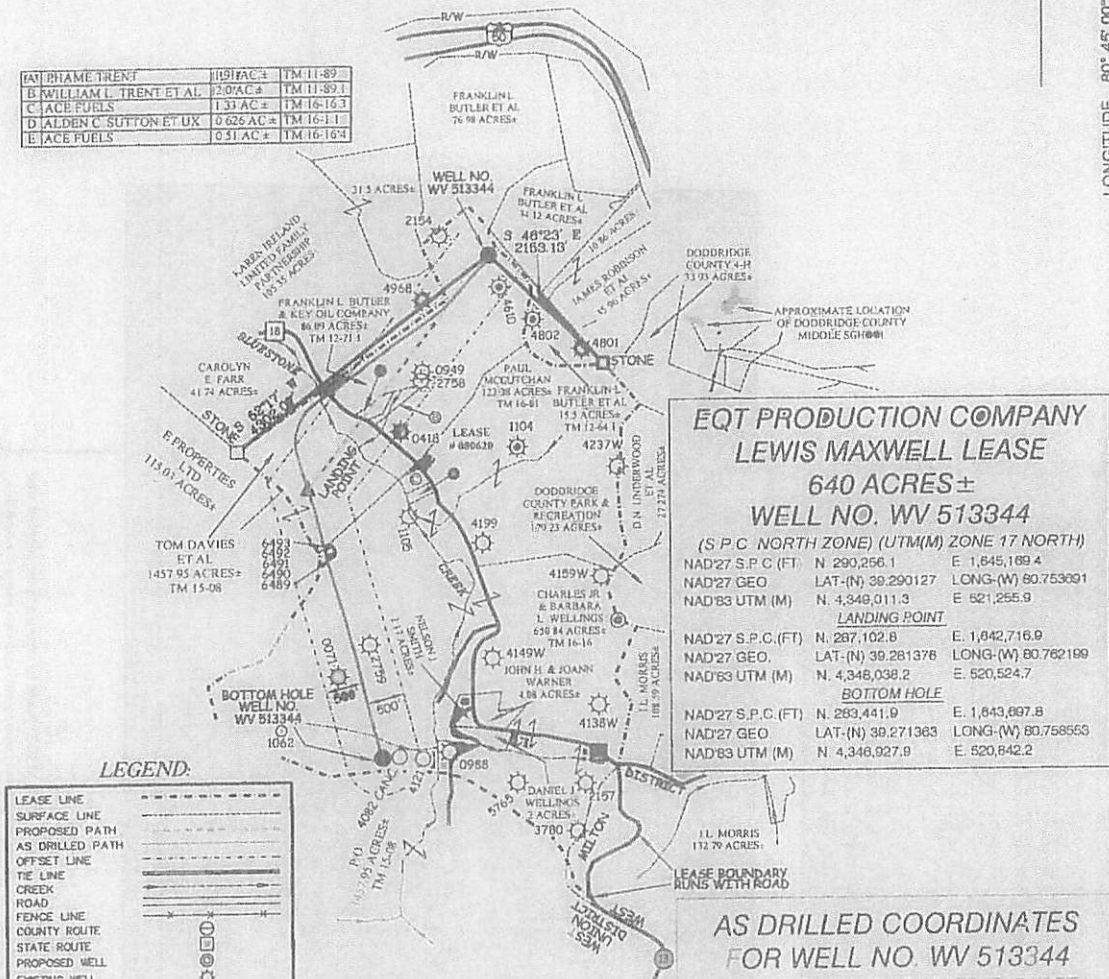
Non-MSDS Chemical Ingredients

New Ingredients		Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
-----------------	--	------------	----------	---------	-------------	-------	-----------------	----------	----------	-----------------

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A) PHAME TRENT	1191 AC ±	TM 11-89
B) WILLIAM L. TRENT ET AL	2.04 AC ±	TM 11-89.1
C) ACE FUELS	1.33 AC ±	TM 16-16.3
D) ALDEN C. SUTTON ET UX	0.626 AC ±	TM 16-1.1
E) ACE FUELS	0.51 AC ±	TM 16-16.4

NAD 27 GRID NORTH



**EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
640 ACRES ±
WELL NO. WV 513344**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD27 S.P.C. (FT)	N. 290,256.1	E. 1,845,109.4
NAD27 GEO	LAT-(N) 39.290127	LONG-(W) 80.753091
NAD83 UTM (M)	N. 4,349,011.3	E. 521,255.9

LANDING POINT

NAD27 S.P.C. (FT)	N. 287,102.8	E. 1,842,716.9
NAD27 GEO	LAT-(N) 39.281376	LONG-(W) 80.762199
NAD83 UTM (M)	N. 4,348,038.2	E. 520,524.7

BOTTOM HOLE

NAD27 S.P.C. (FT)	N. 283,441.9	E. 1,843,607.8
NAD27 GEO	LAT-(N) 39.271363	LONG-(W) 80.758553
NAD83 UTM (M)	N. 4,346,927.9	E. 520,842.2

**AS DRILLED COORDINATES
FOR WELL NO. WV 513344**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD27 S.P.C. (FT)	N. 290,256.1	E. 1,845,109.4
NAD27 GEO	LAT-(N) 39.290127	LONG-(W) 80.753091
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NAD27 GEO	LAT-(N) 39.271363	LONG-(W) 80.758553
NAD83 UTM (M)	N. 4,346,927.9	E. 520,842.2

LEGEND:

LEASE LINE	---
SURFACE LINE	---
PROPOSED PATH	---
AS DRILLED PATH	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
FENCE LINE	---
COUNTY ROUTE	---
STATE ROUTE	---
PROPOSED WELL	⊙
EXISTING WELL	⊙
PERMITTED WELL	⊙
TAX MAP--PARCEL	00=00

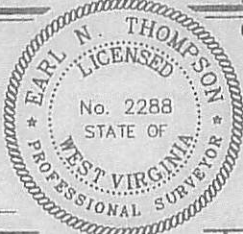
NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS.
- 2500 SQ FT OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- AS DRILLED INFORMATION PROVIDED BY EQT.

Professional Energy Consultants
A DIVISION OF SLS SURVEYING & CONSULTING, INC.
SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.
DRI# 02 284 WWW.SLSURVEYING.COM

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 DIVISION OF ENVIRONMENTAL PROTECTION

P.S. 2288 *Earl N. Thompson*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

DATE	JUNE 09	20	14
REVISED	08/01/14 & 02/09/15	20	14
OPERATORS WELL NO	WV 513344		
API WELL NO	47		
STATE	COUNTY	PERMIT	

MINIMUM DEGREE OF ACCURACY	1 / 200	FILE NO	7831ASDRILLED513344
HORIZONTAL & VERTICAL CONTROL DETERMINED BY	DGPS (SURVEY GRADE TIE TO CORS NETWORK)	SCALE	1" = 2000'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE:	OIL	GAS <input checked="" type="checkbox"/>	LIQUID INJECTION	WASTE DISPOSAL	IF "GAS" PRODUCTION	<input checked="" type="checkbox"/>	STORAGE	DEEP	SHALLOW	<input checked="" type="checkbox"/>		
LOCATION:	ELEVATION	1,260' (PAD ELEVATION)		WATERSHED	BLUESTONE CREEK & MIDDLE ISLAND CREEK							
	DISTRICT	WEST UNION		COUNTY	DODDRIDGE		QUADRANGLE	WEST UNION 7.5'				
SURFACE OWNER	FRANKLIN L. BUTLER & KEY OIL COMPANY		ACREAGE	86.09±								
ROYALTY OWNER	LEWIS MAXWELL HEIRS		ACREAGE	640±								
PROPOSED WORK:	DRILL	<input checked="" type="checkbox"/>	CONVERT	<input type="checkbox"/>	DRILL DEEPER	<input type="checkbox"/>	REDRILL	<input type="checkbox"/>	FRACTURE OR STIMULATE	<input checked="" type="checkbox"/>	PLUG OFF OLD	<input type="checkbox"/>
FORMATION	PERFORATE NEW FORMATION		PLUG AND ABANDON	CLEAN OUT AND REPLUG		OTHER						
PHYSICAL CHANGE IN WELL (SPECIFY)			TARGET FORMATION	MARCELLUS		ESTIMATED DEPTH	TVD 6,854'					

WELL OPERATOR	EQT PRODUCTION COMPANY	DESIGNATED AGENT	REX C RAY
ADDRESS	115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330	ADDRESS	115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

COUNTY NAME

PERMIT