

Company Name: Jay-Bee Oil & Gas
 P3N2U
 Pleasants County
 Rig: Patterson #551
 Created By: Shelly Petersin
 Date: 10/1/2017

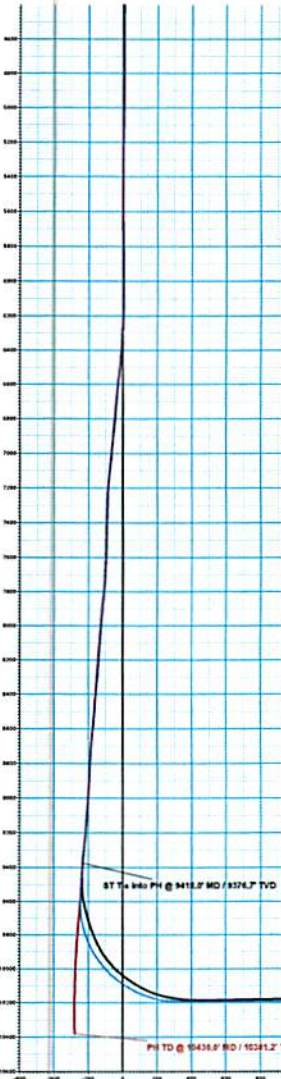
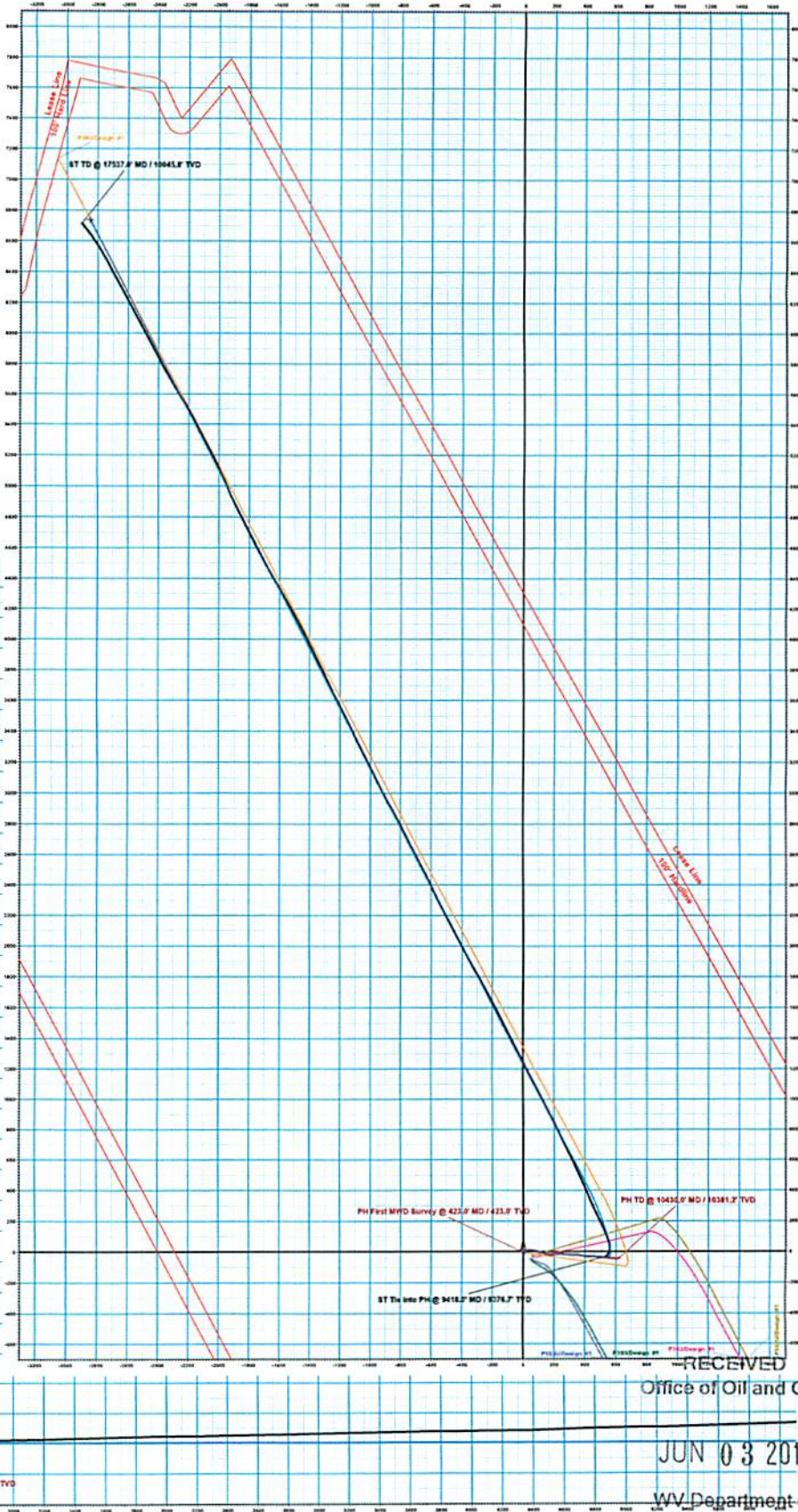
P3N2U
 Pleasants County
 Q171137 & AM-170956
 Design #1

PROJECT DETAILS: Pleasants County
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: West Virginia Northern Zone
 System Datum: Mean Sea Level

WELL DETAILS: P3N2U
 +N-5 8.0 +E-W 6.0 Northing 348194.20 Ground Level 818.3 Longitude 127770.27 39° 26' 25.888 N 81° 4' 16.944 W



Azimuth to Grid North: 0.99
 Magnetic North: -7.33°
 Magnetic Field Strength: 52009.2gnT
 Dip Angle: 66.711
 Date: 9/22/2017
 Model: IGRF2015



DESIGN ANNOTATIONS										
MD	Inc	Adj	TVD	+N-5	+E-W	VSec	Departure	Annotation		
8418.0	8.80	87.20	8376.7	-36.0	511.9	-232.5	626.3	ST Tilt Info PH @ 8418.0' MD / 8376.7' TVD		
8946.0	7.90	84.16	8467.9	-37.2	521.1	-238.0	51.3	TW Legena @ 8946.0' MD / 8467.9' TVD		
9516.0	10.17	89.26	8961.1	-38.0	545.9	-245.1	33.7	Bull Run 10" / 10"		
9828.2	10.17	89.26	8961.1	-38.0	545.9	-245.1	33.7	Bull Run 10" / 10"		
10272.0	80.00	332.84	10193.0	-814.1	371.6	371.6	434.4	ESD 180° / 0' MD 80' Inc. 332.84' Ann		
17577.0	80.00	332.84	10193.0	-814.1	371.6	371.6	434.4	ESD 180° / 0' MD 80' Inc. 332.84' Ann		

ST ANNOTATIONS										
MD	Inc	Adj	TVD	+N-5	+E-W	VSec	Departure	Annotation		
8418.0	8.80	87.20	8376.7	-36.0	511.9	-232.5	626.3	ST Tilt Info PH @ 8418.0' MD / 8376.7' TVD		
17537.0	91.50	321.80	10645.8	-6714.6	-2903.3	7315.1	8257.9	ST TD @ 17537.0' MD / 10645.8' TVD		

PH ANNOTATIONS										
MD	Inc	Adj	TVD	+N-5	+E-W	VSec	Departure	Annotation		
423.0	6.43	253.89	423.0	-6.4	-1.5	6.2	1.6	PH First MWD Survey @ 423.0' MD / 423.0' TVD		
10433.0	1.50	35.78	10381.2	-39.3	623.6	-278.0	729.4	PH TD @ 10433.0' MD / 10381.2' TVD		

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DESIGN TARGET DETAILS										
Name	MD	Inc	Adj	TVD	+N-5	+E-W	VSec	Departure	Longitude	Latitude
PH1 - P3N2U (intermittent) ST1	10193.0	87.20	321.80	10645.8	-6714.6	-2903.3	7315.1	10248.1	81° 4' 16.944 W	39° 27' 31.888 N



Jay-Bee Oil & Gas

Pleasants County

P3 Pad

P3N2U

Pilot Hole

Design: Wellbore #1

QES Survey Certification Report

01 October, 2017

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Quintana Energy Services

11390 FM 830
Willis, TX 77318
Phone: (936) 856-4332
Fax: (936) 856-8678



Survey Certification Sheet

Company	Job Number	Date
Jay- Bee Oil& Gas	AM-170956	2/20/2018

Lease	Well Name	County & State
N/A	P3N2U	Pleasants Coutny, West Virginia

API No.	Survey Depth Range	Survey Type
47-073-02560	2123 feet to 10430 feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
9418 feet to 17537 feet MD	Steve Spicer

Certification Statement

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by Quintana Energy Services (QES). This report represents a true and correct directional survey of this well based on the original data obtained at the well site. Wellbore coordinates are calculated using minimum curvature.

Christopher Hughes

Digitally signed by Christopher Hughes
DN: cn=Christopher Hughes, o=QES, ou=compliance,
email=chrish@qeslp.com, c=US
Date: 2018.02.23 11:10:30 -06'00'

Christopher Hughes
MWD Compliance Manager

Quintana Energy Services

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QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	well @ 859.9usft (Nomac #81)
Site:	P3 Pad	MD Reference:	well @ 859.9usft (Nomac #81)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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

Site	P3 Pad				
Site Position:		Northing:	346,394.20 usft	Latitude:	39° 26' 25.886 N
From:	Map	Easting:	1,527,700.27 usft	Longitude:	81° 3' 39.129 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.00 °

Well	P3N2U					
Well Position	+N/-S	0.0 usft	Northing:	346,394.20 usft	Latitude:	39° 26' 25.886 N
	+E/-W	0.0 usft	Easting:	1,527,700.27 usft	Longitude:	81° 3' 39.129 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	839.3 usft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/1/2017	-8.38	66.72	52,015.84558740

Design	Wellbore #1				
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	337.08

Survey Program	Date	10/1/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
423.0	10,430.0	MWD Surveys (Pilot Hole)	MWD default	MWD - Standard	

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
423.0	0.43	253.89	423.0	-0.4	-1.5	1.6	253.89
PH First MWD Survey @ 423.0' MD / 423.0' TVD							
518.0	0.98	269.57	518.0	-0.5	-2.7	6.2	258.50
613.0	1.11	282.03	613.0	-0.4	-4.4	7.5	265.32
708.0	1.28	298.17	708.0	0.3	-6.2	8.8	273.06
803.0	0.73	325.67	802.9	1.3	-7.5	10.1	280.08
898.0	0.75	69.52	897.9	2.1	-7.3	11.4	285.77
992.0	1.43	102.71	991.9	2.0	-5.5	12.7	289.92
1,087.0	1.14	123.02	1,086.9	1.2	-3.6	14.0	288.93
1,182.0	1.54	159.45	1,181.9	-0.5	-2.4	15.3	258.52
1,277.0	1.20	199.48	1,276.8	-2.6	-2.2	16.6	220.59

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QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	well @ 859.9usft (Nomac #81)
Site:	P3 Pad	MD Reference:	well @ 859.9usft (Nomac #81)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
	1,371.0	1.01	242.20	1,370.8	-3.9	-3.3	5.1	220.03
	1,466.0	0.79	323.37	1,465.8	-3.8	-4.4	5.8	229.44
	1,561.0	1.16	30.03	1,560.8	-2.4	-4.3	5.0	240.73
	1,655.0	2.37	62.76	1,654.8	-0.7	-2.1	2.3	251.39
	1,750.0	2.68	68.69	1,749.7	1.0	1.7	1.9	59.57
	1,845.0	1.82	95.81	1,844.6	1.6	5.3	5.5	72.64
	2,033.0	2.02	164.34	2,032.5	-1.9	9.1	9.3	101.48
	2,128.0	1.75	170.19	2,127.5	-4.9	9.8	11.0	116.50
	2,222.0	1.36	162.90	2,221.4	-7.4	10.4	12.7	125.37
	2,317.0	0.55	192.82	2,316.4	-8.9	10.6	13.9	129.96
	2,412.0	0.92	314.60	2,411.4	-8.8	10.0	13.3	131.44
	2,507.0	2.36	326.17	2,506.4	-6.6	8.3	10.7	128.54
	2,602.0	3.64	323.40	2,601.2	-2.6	5.5	6.0	115.47
	2,696.0	1.67	316.13	2,695.1	0.8	2.7	2.8	73.93
	2,791.0	1.23	315.68	2,790.1	2.5	1.1	2.7	22.76
	2,886.0	0.66	312.78	2,885.1	3.6	-0.1	3.6	359.05
	2,981.0	0.45	325.07	2,980.1	4.3	-0.7	4.3	351.06
	3,075.0	0.37	320.74	3,074.1	4.8	-1.1	4.9	347.41
	3,170.0	0.84	337.90	3,169.1	5.7	-1.5	5.9	344.96
	3,265.0	0.81	342.46	3,264.1	7.0	-2.0	7.3	344.06
	3,359.0	0.87	3.42	3,358.1	8.3	-2.2	8.6	345.51
	3,454.0	1.22	27.23	3,453.0	10.0	-1.7	10.1	350.59
	3,549.0	0.88	38.62	3,548.0	11.4	-0.7	11.5	356.33
	3,644.0	0.54	53.58	3,643.0	12.3	0.1	12.3	0.39
	3,738.0	0.72	57.76	3,737.0	12.8	0.9	12.9	4.18
	3,833.0	0.99	55.74	3,832.0	13.6	2.1	13.8	8.85
	3,928.0	1.16	61.55	3,927.0	14.5	3.6	15.0	14.07
	4,023.0	0.78	101.38	4,022.0	14.9	5.1	15.7	19.01
	4,118.0	0.85	164.37	4,117.0	14.1	5.9	15.3	22.92
	4,213.0	1.46	187.83	4,211.9	12.2	6.0	13.6	26.10
	4,307.0	0.97	184.77	4,305.9	10.2	5.7	11.7	29.36
	4,404.0	0.37	119.24	4,402.9	9.2	5.9	11.0	32.77
	4,499.0	1.30	83.07	4,497.9	9.2	7.3	11.8	38.31
	4,594.0	1.56	76.31	4,592.9	9.7	9.6	13.6	44.87
	4,689.0	0.96	55.61	4,687.9	10.4	11.5	15.5	47.90
	4,784.0	1.26	66.41	4,782.8	11.3	13.1	17.3	49.35
	4,879.0	0.99	76.26	4,877.8	11.9	14.9	19.1	51.39
	4,974.0	1.00	94.85	4,972.8	12.0	16.5	20.4	53.96
	5,068.0	0.87	131.51	5,066.8	11.5	17.9	21.0	57.29
	5,163.0	1.42	174.22	5,161.8	9.8	18.5	21.0	62.06
	5,258.0	1.14	192.35	5,256.8	7.7	18.4	20.0	67.25
	5,353.0	0.77	223.54	5,351.7	6.3	17.8	18.4	70.38
	5,448.0	0.64	264.15	5,446.7	5.8	16.8	17.8	70.90
	5,542.0	0.85	263.57	5,540.7	5.7	15.6	16.8	69.96

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QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	well @ 859.9usft (Nomac #81)
Site:	P3 Pad	MD Reference:	well @ 859.9usft (Nomac #81)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
	5,637.0	0.89	260.12	5,635.7	5.5	14.2	15.2	68.84
	5,734.0	1.47	276.56	5,732.7	5.5	12.2	13.4	65.73
	5,829.0	1.67	275.32	5,827.7	5.8	9.6	11.2	59.04
	5,924.0	0.57	312.06	5,922.6	6.2	7.9	10.1	51.78
	6,017.0	1.11	75.09	6,015.6	6.8	8.4	10.8	51.25
	6,112.0	3.05	78.55	6,110.6	7.5	11.8	14.0	57.54
	6,207.0	6.37	81.19	6,205.2	8.8	19.5	21.4	65.67
	6,301.0	9.26	85.07	6,298.3	10.3	32.2	33.8	72.31
	6,396.0	10.03	91.16	6,392.0	10.7	48.1	49.2	77.39
	6,491.0	10.18	99.94	6,485.5	9.1	64.6	65.2	81.96
	6,586.0	10.46	103.40	6,579.0	5.7	81.3	81.5	86.00
	6,681.0	8.79	102.70	6,672.7	2.1	96.7	96.7	88.76
	6,775.0	8.19	103.54	6,765.6	-1.1	110.2	110.2	90.55
	6,870.0	8.49	105.59	6,859.6	-4.5	123.6	123.7	92.10
	6,965.0	8.80	106.40	6,953.5	-8.5	137.3	137.6	93.53
	7,060.0	9.16	107.71	7,047.4	-12.8	151.5	152.0	94.84
	7,155.0	7.85	106.51	7,141.3	-17.0	164.9	165.8	95.87
	7,250.0	6.26	94.26	7,235.6	-19.2	176.3	177.3	96.21
	7,347.0	6.70	83.23	7,332.0	-18.9	187.2	188.1	95.77
	7,442.0	6.94	79.36	7,426.3	-17.2	198.3	199.1	94.96
	7,537.0	7.46	76.11	7,520.6	-14.7	210.0	210.5	93.99
	7,632.0	8.01	83.20	7,614.7	-12.4	222.5	222.9	93.19
	7,727.0	8.64	91.27	7,708.7	-11.8	236.2	236.5	92.85
	7,821.0	9.88	97.57	7,801.5	-13.0	251.3	251.6	92.96
	7,916.0	10.03	97.96	7,895.1	-15.2	267.5	268.0	93.25
	8,011.0	9.81	95.06	7,988.6	-17.1	283.8	284.3	93.44
	8,106.0	9.44	93.23	8,082.3	-18.2	299.6	300.2	93.48
	8,198.0	9.61	92.45	8,173.0	-19.0	314.8	315.4	93.45
	8,293.0	9.96	91.57	8,266.7	-19.5	331.0	331.6	93.38
	8,388.0	10.88	90.55	8,360.1	-19.9	348.2	348.7	93.26
	8,483.0	9.83	97.12	8,453.5	-20.9	365.2	365.8	93.28
	8,578.0	9.96	100.95	8,547.1	-23.5	381.3	382.0	93.53
	8,672.0	9.12	101.08	8,639.8	-26.5	396.6	397.5	93.82
	8,767.0	8.03	94.80	8,733.8	-28.5	410.6	411.6	93.97
	8,861.0	8.13	90.27	8,826.8	-29.1	423.8	424.8	93.92
	8,956.0	8.34	88.05	8,920.9	-28.9	437.4	438.3	93.78
	9,051.0	8.83	91.26	9,014.8	-28.8	451.5	452.5	93.65
	9,144.0	8.99	96.59	9,106.7	-29.8	465.9	466.9	93.66
	9,239.0	9.81	98.53	9,200.4	-31.8	481.3	482.3	93.78
	9,323.0	10.70	97.80	9,283.1	-34.0	496.1	497.2	93.92
	9,418.0	8.60	97.20	9,376.7	-36.0	511.9	513.4	94.03
	9,513.0	7.10	93.50	9,470.8	-37.3	524.8	526.1	94.06
	9,607.0	7.80	94.70	9,564.0	-38.2	536.9	538.7	94.07
	9,702.0	9.30	99.10	9,658.0	-39.9	550.9	552.4	94.14
	9,797.0	9.60	94.80	9,751.7	-41.8	566.4	567.9	94.22

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QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	well @ 859.9usft (Nomac #81)
Site:	P3 Pad	MD Reference:	well @ 859.9usft (Nomac #81)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Pilot Hole	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
9,892.0	9.30	93.00	9,845.4	-42.8	582.0	583.5	94.21
9,987.0	7.70	91.50	9,939.3	-43.4	596.0	597.6	94.17
10,083.0	5.60	87.80	10,034.7	-43.4	607.1	608.7	94.09
10,178.0	3.70	79.40	10,129.4	-42.7	614.8	616.2	93.97
10,273.0	2.20	70.40	10,224.2	-41.5	619.5	620.9	93.83
10,368.0	1.50	55.70	10,319.2	-40.2	622.2	623.5	93.69
10,430.0	1.50	55.70	10,381.2	-39.3	623.6	624.8	93.60

PH TD @ 10430.0' MD / 10381.2' TVD

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
423.0	423.0	-0.4	-1.5	PH First MWD Survey @ 423.0' MD / 423.0' TVD
10,430.0	10,381.2	-39.3	623.6	PH TD @ 10430.0' MD / 10381.2' TVD

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Jay-Bee Oil & Gas

Pleasants County

P3 Pad

P3N2U

Sidetrack #1

Design: Sidetrack #1

QES Survey Certification Report

01 October, 2017





QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Project	Pleasants County		
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Geo Datum:	North American Datum 1983		
Map Zone:	West Virginia Northern Zone		

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From:	Map	Easting:	1,527,700.27 usft	Longitude:	81° 3' 39.129 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.00 °

Well	P3N2U					
Well Position	+N/-S	0.0 usft	Northing:	346,394.20 usft	Latitude:	39° 26' 25.886 N
	+E/-W	0.0 usft	Easting:	1,527,700.27 usft	Longitude:	81° 3' 39.129 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	839.3 usft

Wellbore	Sidetrack #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/22/2017	-8.38	66.71	52,009.17482507

Design	Sidetrack #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	9,418.0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.0	0.0	0.0	337.08

Survey Program	Date	10/1/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
423.0	9,418.0	MWD Surveys (Pilot Hole)	MWD default	MWD - Standard	
9,504.0	17,537.0	QES MWD Surveys (Sidetrack #1)	MWD default	MWD - Standard	

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
9,418.0	8.60	97.20	9,376.7	-36.0	511.9	513.1	94.03
ST Tie into PH @ 9418.0' MD / 9376.7' TVD							
9,504.0	12.30	75.50	9,461.3	-34.6	527.1	528.3	93.75
9,552.0	12.90	58.60	9,508.2	-30.5	536.7	537.5	93.25
9,599.0	13.30	40.50	9,554.0	-23.6	544.6	545.2	92.48
9,647.0	15.30	31.00	9,600.5	-14.0	551.5	551.7	91.45
9,694.0	17.40	19.70	9,645.6	-2.1	557.1	557.1	90.21
9,742.0	18.20	9.70	9,691.3	12.1	560.7	560.9	88.77
9,789.0	19.40	358.60	9,735.8	27.1	561.8	562.4	87.24
9,836.0	20.70	352.40	9,780.0	43.2	560.5	562.1	85.60
9,883.0	22.90	344.90	9,823.6	60.2	557.0	560.3	83.83

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QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
9,931.0	26.70	340.70	9,867.2	79.4	551.0	556.7	81.80
9,978.0	32.00	337.80	9,908.1	100.9	542.8	552.1	79.46
10,026.0	37.80	336.30	9,947.5	126.2	532.1	546.9	76.66
10,073.0	43.20	335.00	9,983.2	154.0	519.5	541.8	73.49
10,121.0	47.30	334.50	10,017.0	184.8	504.9	537.7	69.90
10,168.0	51.20	334.20	10,047.7	216.9	489.5	535.4	66.10
10,216.0	55.10	334.60	10,076.4	251.6	472.9	535.7	61.99
10,263.0	59.50	335.50	10,101.8	287.4	456.3	539.2	57.79
10,311.0	63.90	336.90	10,124.6	326.1	439.2	547.0	53.41
10,358.0	69.10	337.30	10,143.3	365.8	422.5	558.8	49.12
10,406.0	73.70	336.40	10,158.6	407.6	404.6	574.3	44.79
10,453.0	78.40	336.60	10,169.9	449.4	386.4	592.7	40.69
10,501.0	81.80	335.70	10,178.2	492.6	367.3	614.5	36.71
10,548.0	85.20	335.30	10,183.5	535.1	347.9	638.3	33.03
10,595.0	88.30	335.20	10,186.2	577.7	328.3	664.5	29.61
10,690.0	90.00	334.50	10,187.6	663.7	287.9	723.5	23.45
10,785.0	90.90	334.30	10,186.8	749.4	246.9	789.0	18.23
10,880.0	91.50	334.30	10,184.9	835.0	205.7	859.9	13.84
10,975.0	90.80	333.20	10,182.9	920.1	163.7	934.6	10.09
11,069.0	91.30	333.40	10,181.2	1,004.1	121.4	1,011.4	6.90
11,164.0	90.50	333.10	10,179.7	1,088.9	78.7	1,091.8	4.13
11,259.0	91.70	333.00	10,177.9	1,173.6	35.6	1,174.1	1.74
11,354.0	90.30	333.00	10,176.3	1,258.2	-7.5	1,258.3	359.66
11,448.0	92.00	333.60	10,174.4	1,342.2	-49.7	1,343.1	357.88
11,543.0	90.90	333.10	10,172.0	1,427.1	-92.3	1,430.0	356.30
11,638.0	91.60	332.60	10,169.9	1,511.6	-135.6	1,517.7	354.87
11,732.0	92.60	332.90	10,166.4	1,595.1	-178.7	1,605.1	353.61
11,827.0	90.90	331.30	10,163.5	1,679.0	-223.1	1,693.8	352.43
11,922.0	91.20	330.70	10,161.8	1,762.1	-269.1	1,782.5	351.32
12,017.0	91.90	329.70	10,159.2	1,844.5	-316.3	1,871.4	350.27
12,111.0	91.20	332.80	10,156.7	1,926.9	-361.5	1,960.5	349.37
12,206.0	90.20	332.20	10,155.5	2,011.1	-405.4	2,051.6	348.60
12,301.0	90.50	332.20	10,155.0	2,095.1	-449.7	2,142.9	347.89
12,396.0	91.20	333.10	10,153.5	2,179.5	-493.3	2,234.6	347.25
12,491.0	90.10	332.50	10,152.5	2,264.0	-536.7	2,326.8	346.66
12,586.0	92.20	335.60	10,150.6	2,349.4	-578.3	2,419.5	346.17
12,680.0	90.90	333.40	10,148.0	2,434.2	-618.8	2,511.6	345.74
12,775.0	90.90	333.00	10,146.5	2,519.0	-661.6	2,604.4	345.28
12,870.0	91.60	332.70	10,144.4	2,603.5	-704.9	2,697.2	344.85
12,965.0	90.60	332.90	10,142.6	2,688.0	-748.3	2,789.9	344.44
13,060.0	90.80	332.50	10,141.5	2,772.4	-791.9	2,883.3	344.06
13,154.0	91.10	331.10	10,139.9	2,855.2	-836.3	2,975.2	343.67
13,249.0	91.60	330.00	10,137.7	2,937.9	-883.0	3,067.1	343.27
13,344.0	90.70	332.80	10,135.8	3,021.3	-928.5	3,160.7	342.92
13,439.0	91.00	333.40	10,134.4	3,106.0	-971.5	3,254.2	342.63

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QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
	13,534.0	91.30	333.00	10,132.4	3,190.8	-1,014.3	3,348.1	342.37
	13,629.0	92.10	332.90	10,129.6	3,275.4	-1,057.5	3,441.8	342.11
	13,724.0	90.60	333.10	10,127.4	3,360.0	-1,100.6	3,535.6	341.86
	13,818.0	91.70	334.20	10,125.5	3,444.2	-1,142.3	3,628.7	341.65
	13,913.0	89.80	332.70	10,124.3	3,529.2	-1,184.7	3,722.7	341.44
	14,007.0	89.90	332.70	10,124.5	3,612.7	-1,227.9	3,815.6	341.23
	14,101.0	91.20	335.40	10,123.6	3,697.2	-1,269.0	3,908.9	341.06
	14,196.0	90.50	334.00	10,122.2	3,783.1	-1,309.6	4,003.3	340.91
	14,291.0	90.50	332.70	10,121.4	3,868.0	-1,352.2	4,097.5	340.73
	14,386.0	91.40	334.90	10,119.8	3,953.2	-1,394.1	4,191.8	340.57
	14,481.0	90.30	332.10	10,118.4	4,038.2	-1,436.5	4,286.1	340.42
	14,576.0	90.10	332.00	10,118.0	4,122.1	-1,481.0	4,380.1	340.24
	14,670.0	92.70	329.80	10,115.7	4,204.2	-1,526.7	4,472.8	340.04
	14,765.0	93.20	329.50	10,110.9	4,286.1	-1,574.7	4,566.2	339.83
	14,860.0	91.30	330.50	10,107.1	4,368.3	-1,622.1	4,659.7	339.63
	14,955.0	92.50	331.80	10,104.0	4,451.4	-1,667.9	4,753.7	339.46
	15,050.0	90.90	331.50	10,101.2	4,535.0	-1,713.0	4,847.8	339.31
	15,144.0	90.70	331.80	10,099.9	4,617.7	-1,757.7	4,940.9	339.16
	15,239.0	91.90	332.70	10,097.7	4,701.8	-1,801.9	5,035.2	339.03
	15,334.0	89.90	332.90	10,096.2	4,786.3	-1,845.3	5,129.7	338.92
	15,429.0	90.30	333.30	10,096.0	4,871.0	-1,888.3	5,224.2	338.81
	15,524.0	92.90	336.20	10,093.4	4,956.9	-1,928.8	5,318.9	338.74
	15,619.0	91.10	334.30	10,090.1	5,043.1	-1,968.5	5,413.6	338.68
	15,714.0	91.60	335.30	10,087.8	5,129.0	-2,009.0	5,508.4	338.61
	15,809.0	91.90	331.70	10,084.9	5,214.0	-2,051.3	5,603.0	338.52
	15,904.0	91.50	331.50	10,082.1	5,297.5	-2,096.5	5,697.2	338.41
	15,998.0	91.80	334.30	10,079.4	5,381.1	-2,139.3	5,790.8	338.32
	16,093.0	91.30	330.20	10,076.8	5,465.2	-2,183.5	5,885.2	338.22
	16,188.0	91.50	329.40	10,074.5	5,547.2	-2,231.3	5,979.2	338.09
	16,283.0	92.30	329.10	10,071.4	5,628.8	-2,279.8	6,073.0	337.95
	16,378.0	91.20	329.40	10,068.5	5,710.4	-2,328.4	6,166.9	337.82
	16,473.0	90.90	332.00	10,066.7	5,793.3	-2,374.8	6,261.1	337.71
	16,568.0	91.60	333.20	10,064.6	5,877.6	-2,418.5	6,355.7	337.63
	16,663.0	91.30	330.70	10,062.2	5,961.4	-2,463.2	6,450.2	337.55
	16,759.0	90.90	331.60	10,060.4	6,045.5	-2,509.5	6,545.6	337.46
	16,853.0	90.70	331.20	10,059.1	6,128.0	-2,554.5	6,639.1	337.37
	16,948.0	90.90	333.70	10,057.8	6,212.2	-2,598.4	6,733.7	337.30
	17,042.0	90.90	330.30	10,056.3	6,295.2	-2,642.6	6,827.3	337.23
	17,137.0	91.20	331.30	10,054.5	6,378.1	-2,688.9	6,921.7	337.14
	17,232.0	91.00	332.60	10,052.7	6,461.9	-2,733.6	7,016.3	337.07
	17,326.0	91.00	327.90	10,051.1	6,543.5	-2,780.2	7,109.6	336.98
	17,421.0	91.60	324.80	10,048.9	6,622.5	-2,832.8	7,203.0	336.84
	17,480.0	91.50	321.80	10,047.3	6,669.8	-2,868.0	7,260.3	336.73

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QES Survey Certification Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
17,537.0	91.50	321.80	10,045.8	6,714.6	-2,903.3	7,315.4	336.62
ST TD @ 17537.0' MD / 10045.8' TVD							

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,418.0	9,376.7	-36.0	511.9	ST Tie into PH @ 9418.0' MD / 9376.7' TVD
17,537.0	10,045.8	6,714.6	-2,903.3	ST TD @ 17537.0' MD / 10045.8' TVD

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Jay-Bee Oil & Gas

Pleasants County

P3 Pad

P3N2U

Sidetrack #1

Design: Sidetrack #1

QES Survey Report

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Survey Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

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

Site	P3 Pad				
Site Position:		Northing:	346,394.20 usft	Latitude:	39° 26' 25.886 N
From:	Map	Easting:	1,527,700.27 usft	Longitude:	81° 3' 39.129 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.00 °

Well	P3N2U					
Well Position	+N/-S	0.0 usft	Northing:	346,394.20 usft	Latitude:	39° 26' 25.886 N
	+E/-W	0.0 usft	Easting:	1,527,700.27 usft	Longitude:	81° 3' 39.129 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	839.3 usft

Wellbore	Sidetrack #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/22/2017	-8.38	66.71	52,009.17482507

Design	Sidetrack #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	9,418.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	337.08	

Survey Program	Date	10/1/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
423.0	9,418.0	MWD Surveys (Pilot Hole)	MWD default	MWD - Standard	
9,504.0	17,537.0	QES MWD Surveys (Sidetrack #1)	MWD default	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical 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	0.0	0.0	0.0	0.00	0.00	0.00
423.0	0.43	253.89	423.0	-0.4	-1.5	0.2	0.10	0.10	0.00
518.0	0.98	269.57	518.0	-0.5	-2.7	0.5	0.61	0.56	16.50
613.0	1.11	282.03	613.0	-0.4	-4.4	1.4	0.27	0.14	13.12
708.0	1.28	298.17	708.0	0.3	-6.2	2.7	0.40	0.18	16.99
803.0	0.73	325.67	802.9	1.3	-7.5	4.2	0.75	0.38	26.95
898.0	0.75	69.52	897.9	2.1	-7.3	4.7	1.23	0.02	109.32
992.0	1.43	102.71	991.9	2.0	-5.5	4.0	0.96	0.72	35.31
1,087.0	1.14	123.02	1,086.9	1.2	-3.6	2.5	0.56	-0.31	21.38
1,182.0	1.54	159.45	1,181.9	-0.5	-2.4	0.5	0.97	0.42	38.35

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Survey Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,277.0	1.20	199.48	1,276.8	-2.6	-2.2	-1.5	1.04	-0.36	42.14
1,371.0	1.01	242.20	1,370.8	-3.9	-3.3	-2.3	0.88	-0.20	45.45
1,466.0	0.79	323.37	1,465.8	-3.8	-4.4	-1.8	1.25	-0.23	85.44
1,561.0	1.16	30.03	1,560.8	-2.4	-4.3	-0.6	1.17	0.39	70.17
1,655.0	2.37	62.76	1,654.8	-0.7	-2.1	0.2	1.63	1.29	34.82
1,750.0	2.68	68.69	1,749.7	1.0	1.7	0.3	0.43	0.33	6.24
1,845.0	1.82	95.81	1,844.6	1.6	5.3	-0.5	1.42	-0.91	28.55
2,033.0	2.02	164.34	2,032.5	-1.9	9.1	-5.3	1.15	0.11	36.45
2,128.0	1.75	170.19	2,127.5	-4.9	9.8	-8.3	0.35	-0.28	6.16
2,222.0	1.36	162.90	2,221.4	-7.4	10.4	-10.8	0.46	-0.41	-7.76
2,317.0	0.55	192.82	2,316.4	-8.9	10.6	-12.3	0.97	-0.85	31.49
2,412.0	0.92	314.60	2,411.4	-8.8	10.0	-12.0	1.37	0.39	128.19
2,507.0	2.36	326.17	2,506.4	-6.6	8.3	-9.4	1.55	1.52	12.18
2,602.0	3.64	323.40	2,601.2	-2.6	5.5	-4.5	1.36	1.35	-2.92
2,696.0	1.67	316.13	2,695.1	0.8	2.7	-0.3	2.12	-2.10	-7.73
2,791.0	1.23	315.68	2,790.1	2.5	1.1	1.9	0.46	-0.46	-0.47
2,886.0	0.66	312.78	2,885.1	3.6	-0.1	3.4	0.60	-0.60	-3.05
2,981.0	0.45	325.07	2,980.1	4.3	-0.7	4.2	0.25	-0.22	12.94
3,075.0	0.37	320.74	3,074.1	4.8	-1.1	4.9	0.09	-0.09	-4.61
3,170.0	0.84	337.90	3,169.1	5.7	-1.5	5.9	0.52	0.49	18.06
3,265.0	0.81	342.46	3,264.1	7.0	-2.0	7.2	0.08	-0.03	4.80
3,359.0	0.87	3.42	3,358.1	8.3	-2.2	8.5	0.33	0.06	22.30
3,454.0	1.22	27.23	3,453.0	10.0	-1.7	9.8	0.58	0.37	25.06
3,549.0	0.88	38.62	3,548.0	11.4	-0.7	10.8	0.42	-0.36	11.99
3,644.0	0.54	53.58	3,643.0	12.3	0.1	11.3	0.40	-0.36	15.75
3,738.0	0.72	57.76	3,737.0	12.8	0.9	11.5	0.20	0.19	4.45
3,833.0	0.99	55.74	3,832.0	13.6	2.1	11.7	0.29	0.28	-2.13
3,928.0	1.16	61.55	3,927.0	14.5	3.6	12.0	0.21	0.18	6.12
4,023.0	0.78	101.38	4,022.0	14.9	5.1	11.7	0.79	-0.40	41.93
4,118.0	0.85	164.37	4,117.0	14.1	5.9	10.6	0.90	0.07	66.31
4,213.0	1.46	187.83	4,211.9	12.2	6.0	8.9	0.80	0.64	24.69
4,307.0	0.97	184.77	4,305.9	10.2	5.7	7.2	0.53	-0.52	-3.26
4,404.0	0.37	119.24	4,402.9	9.2	5.9	6.2	0.91	-0.62	-67.56
4,499.0	1.30	83.07	4,497.9	9.2	7.3	5.7	1.08	0.98	-38.07
4,594.0	1.56	76.31	4,592.9	9.7	9.6	5.2	0.33	0.27	-7.12
4,689.0	0.96	55.61	4,687.9	10.4	11.5	5.1	0.78	0.19	-21.79
4,784.0	1.26	66.41	4,782.8	11.3	13.1	5.3	0.38	0.37	10.37
4,879.0	0.99	76.26	4,877.8	11.9	14.9	5.2	0.35	-0.28	10.37
4,974.0	1.00	94.85	4,972.8	12.0	16.5	4.6	0.34	0.01	19.57
5,068.0	0.87	131.51	5,066.8	11.5	17.9	3.6	0.64	0.39	39.00
5,163.0	1.42	174.22	5,161.8	9.8	18.5	1.8	1.03	0.44	44.96
5,258.0	1.14	192.35	5,256.8	7.7	18.4	-0.1	0.51	0.08	10.08
5,353.0	0.77	223.54	5,351.7	6.3	17.8	-1.1	0.66	-0.39	32.83

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Survey Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,448.0	0.64	264.15	5,446.7	5.8	16.8	-1.2	0.53	-0.14	42.75
5,542.0	0.85	263.57	5,540.7	5.7	15.6	-0.8	0.22	0.22	-0.62
5,637.0	0.89	260.12	5,635.7	5.5	14.2	-0.5	0.07	0.04	-3.63
5,734.0	1.47	276.56	5,732.7	5.5	12.2	0.3	0.69	0.60	16.95
5,829.0	1.67	275.32	5,827.7	5.8	9.6	1.6	0.21	0.21	-1.31
5,924.0	0.57	312.06	5,922.6	6.2	7.9	2.7	1.33	-1.16	38.67
6,017.0	1.11	75.09	6,015.6	6.8	8.4	2.9	1.61	0.58	132.29
6,112.0	3.05	78.55	6,110.6	7.5	11.8	2.3	2.05	2.04	3.64
6,207.0	6.37	81.19	6,205.2	8.8	19.5	0.5	3.50	3.49	2.78
6,301.0	9.26	85.07	6,298.3	10.3	32.2	-3.1	3.12	3.07	4.13
6,396.0	10.03	91.16	6,392.0	10.7	48.1	-8.8	1.34	0.81	6.41
6,491.0	10.18	99.94	6,485.5	9.1	64.6	-16.7	1.63	0.16	9.24
6,586.0	10.46	103.40	6,579.0	5.7	81.3	-26.4	0.72	0.29	3.64
6,681.0	8.79	102.70	6,672.7	2.1	96.7	-35.7	1.76	-1.76	-0.74
6,775.0	8.19	103.54	6,765.6	-1.1	110.2	-43.9	0.65	-0.64	0.89
6,870.0	8.49	105.59	6,859.6	-4.5	123.6	-52.3	0.44	0.32	2.16
6,965.0	8.80	106.40	6,953.5	-8.5	137.3	-61.3	0.35	0.33	0.85
7,060.0	9.16	107.71	7,047.4	-12.8	151.5	-70.8	0.44	0.38	1.38
7,155.0	7.85	106.51	7,141.3	-17.0	164.9	-79.8	1.39	-1.38	-1.26
7,250.0	6.26	94.26	7,235.6	-19.2	176.3	-86.3	2.30	-1.67	-12.89
7,347.0	6.70	83.23	7,332.0	-18.9	187.2	-90.3	1.36	0.45	-11.37
7,442.0	6.94	79.36	7,426.3	-17.2	198.3	-93.1	0.55	0.25	-4.07
7,537.0	7.46	76.11	7,520.6	-14.7	210.0	-95.3	0.70	0.55	-3.42
7,632.0	8.01	83.20	7,614.7	-12.4	222.5	-98.1	1.16	0.58	7.46
7,727.0	8.64	91.27	7,708.7	-11.8	236.2	-102.8	1.40	0.66	8.49
7,821.0	9.88	97.57	7,801.5	-13.0	251.3	-109.8	1.70	1.32	6.70
7,916.0	10.03	97.96	7,895.1	-15.2	267.5	-118.2	0.17	0.16	0.41
8,011.0	9.81	95.06	7,988.6	-17.1	283.8	-126.2	0.57	-0.23	-3.05
8,106.0	9.44	93.23	8,082.3	-18.2	299.6	-133.5	0.51	-0.39	-1.93
8,198.0	9.61	92.45	8,173.0	-19.0	314.8	-140.1	0.23	0.18	-0.85
8,293.0	9.96	91.57	8,266.7	-19.5	331.0	-146.9	0.40	0.37	-0.93
8,388.0	10.88	90.55	8,360.1	-19.9	348.2	-153.9	0.99	0.97	-1.07
8,483.0	9.83	97.12	8,453.5	-20.9	365.2	-161.5	1.66	-1.11	6.92
8,578.0	9.96	100.95	8,547.1	-23.5	381.3	-170.1	0.71	0.14	4.03
8,672.0	9.12	101.08	8,639.8	-26.5	396.6	-178.8	0.89	-0.89	0.14
8,767.0	8.03	94.80	8,733.8	-28.5	410.6	-186.1	1.51	-1.15	-6.61
8,861.0	8.13	90.27	8,826.8	-29.1	423.8	-191.8	0.69	0.11	-4.82
8,956.0	8.34	88.05	8,920.9	-28.9	437.4	-196.9	0.40	0.22	-2.34
9,051.0	8.83	91.26	9,014.8	-28.8	451.5	-202.4	0.72	0.52	3.38
9,144.0	8.99	96.59	9,106.7	-29.8	465.9	-208.9	0.90	0.17	2.04
9,239.0	9.81	98.53	9,200.4	-31.8	481.3	-216.8	0.93	1.06	2.04
9,323.0	10.70	97.80	9,283.1	-34.0	496.1	-224.5	1.07	1.06	2.04

ST Tie into PH @ 9418.0' MD / 9376.7' TVD

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Survey Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,418.0	8.60	97.20	9,376.7	-36.0	511.9	-232.5	2.21	-2.21	-0.63
9,504.0	12.30	75.50	9,461.3	-34.6	527.1	-237.1	6.21	4.30	-25.23
9,552.0	12.90	58.60	9,508.2	-30.5	536.7	-237.1	7.75	1.25	-35.21
9,599.0	13.30	40.50	9,554.0	-23.6	544.6	-233.9	8.73	0.85	-38.51
9,647.0	15.30	31.00	9,600.5	-14.0	551.5	-227.7	6.41	4.17	-19.79
9,694.0	17.40	19.70	9,645.6	-2.1	557.1	-218.8	8.09	4.47	-24.04
9,742.0	18.20	9.70	9,691.3	12.1	560.7	-207.2	6.57	1.67	-20.83
9,789.0	19.40	358.60	9,735.8	27.1	561.8	-193.8	8.01	2.55	-23.62
9,836.0	20.70	352.40	9,780.0	43.2	560.5	-178.5	5.30	2.77	-13.19
9,883.0	22.90	344.90	9,823.6	60.2	557.0	-161.4	7.54	4.68	-15.96
9,931.0	26.70	340.70	9,867.2	79.4	551.0	-141.4	8.72	7.92	-8.75
9,978.0	32.00	337.80	9,908.1	100.9	542.8	-118.4	11.67	11.28	-6.17
10,026.0	37.80	336.30	9,947.5	126.2	532.1	-91.0	12.21	12.08	-3.13
10,073.0	43.20	335.00	9,983.2	154.0	519.5	-60.5	11.63	11.49	-2.77
10,121.0	47.30	334.50	10,017.0	184.8	504.9	-26.4	8.57	8.54	-1.04
10,168.0	51.20	334.20	10,047.7	216.9	489.5	9.1	8.31	8.30	-0.64
10,216.0	55.10	334.60	10,076.4	251.6	472.9	47.5	8.15	8.13	0.83
10,263.0	59.50	335.50	10,101.8	287.4	456.3	87.0	9.50	9.36	1.91
10,311.0	63.90	336.90	10,124.6	326.1	439.2	129.3	9.52	9.17	2.92
10,358.0	69.10	337.30	10,143.3	365.8	422.5	172.4	11.09	11.06	0.85
10,406.0	73.70	336.40	10,158.6	407.6	404.6	217.8	9.75	9.58	-1.88
10,453.0	78.40	336.60	10,169.9	449.4	386.4	263.4	10.01	10.00	0.43
10,501.0	81.80	335.70	10,178.2	492.6	367.3	310.7	7.32	7.08	-1.88
10,548.0	85.20	335.30	10,183.5	535.1	347.9	357.4	7.28	7.23	-0.85
10,595.0	88.30	335.20	10,186.2	577.7	328.3	404.3	6.60	6.60	-0.21
10,690.0	90.00	334.50	10,187.6	663.7	287.9	499.2	1.94	1.79	-0.74
10,785.0	90.90	334.30	10,186.8	749.4	246.9	594.1	0.97	0.95	-0.21
10,880.0	91.50	334.30	10,184.9	835.0	205.7	688.9	0.63	0.63	0.00
10,975.0	90.80	333.20	10,182.9	920.1	163.7	783.8	1.37	-0.74	-1.16
11,069.0	91.30	333.40	10,181.2	1,004.1	121.4	877.5	0.57	0.53	0.21
11,164.0	90.50	333.10	10,179.7	1,088.9	78.7	972.3	0.90	-0.84	-0.32
11,259.0	91.70	333.00	10,177.9	1,173.6	35.6	1,067.1	1.27	1.26	-0.11
11,354.0	90.30	333.00	10,176.3	1,258.2	-7.5	1,161.8	1.47	-1.47	0.00
11,448.0	92.00	333.60	10,174.4	1,342.2	-49.7	1,255.6	1.92	1.81	0.64
11,543.0	90.90	333.10	10,172.0	1,427.1	-92.3	1,350.3	1.27	-1.16	-0.53
11,638.0	91.60	332.60	10,169.9	1,511.6	-135.6	1,445.1	0.91	0.74	-0.53
11,732.0	92.60	332.90	10,166.4	1,595.1	-178.7	1,538.7	1.11	1.06	0.32
11,827.0	90.90	331.30	10,163.5	1,679.0	-223.1	1,633.3	2.46	-1.75	-1.68
11,922.0	91.20	330.70	10,161.8	1,762.1	-269.1	1,727.8	0.71	0.68	-0.68
12,017.0	91.90	329.70	10,159.2	1,844.5	-316.3	1,822.1	1.28	0.74	-1.05
12,111.0	91.20	332.80	10,156.7	1,926.9	-361.5	1,915.5	3.38	3.30	3.30
12,206.0	90.20	332.20	10,155.5	2,011.1	-405.4	2,010.2	1.23	-1.05	-0.63
12,301.0	90.50	332.20	10,154.9	2,095.1	-449.7	2,104.9	0.32	0.32	0.32
12,396.0	91.20	333.10	10,153.5	2,179.5	-493.3	2,199.6	1.20	1.20	1.20

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Survey Report



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Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,491.0	90.10	332.50	10,152.5	2,264.0	-536.7	2,294.3	1.32	-1.16	-0.63
12,586.0	92.20	335.60	10,150.6	2,349.4	-578.3	2,389.1	3.94	2.21	3.26
12,680.0	90.90	333.40	10,148.0	2,434.2	-618.8	2,483.0	2.72	-1.38	-2.34
12,775.0	90.90	333.00	10,146.5	2,519.0	-661.6	2,577.8	0.42	0.00	-0.42
12,870.0	91.60	332.70	10,144.4	2,603.5	-704.9	2,672.5	0.80	0.74	-0.32
12,965.0	90.60	332.90	10,142.6	2,688.0	-748.3	2,767.2	1.07	-1.05	0.21
13,060.0	90.80	332.50	10,141.5	2,772.4	-791.9	2,861.9	0.47	0.21	-0.42
13,154.0	91.10	331.10	10,139.9	2,855.2	-836.3	2,955.5	1.52	0.32	-1.49
13,249.0	91.60	330.00	10,137.7	2,937.9	-883.0	3,049.8	1.27	0.53	-1.16
13,344.0	90.70	332.80	10,135.8	3,021.3	-928.5	3,144.4	3.10	-0.95	2.95
13,439.0	91.00	333.40	10,134.4	3,106.0	-971.5	3,239.1	0.71	0.32	0.63
13,534.0	91.30	333.00	10,132.4	3,190.8	-1,014.3	3,333.9	0.53	0.32	-0.42
13,629.0	92.10	332.90	10,129.6	3,275.4	-1,057.5	3,428.6	0.85	0.84	-0.11
13,724.0	90.60	333.10	10,127.4	3,360.0	-1,100.6	3,523.3	1.59	-1.58	0.21
13,818.0	91.70	334.20	10,125.5	3,444.2	-1,142.3	3,617.1	1.65	1.17	1.17
13,913.0	89.80	332.70	10,124.3	3,529.2	-1,184.7	3,711.9	2.55	-2.00	-1.58
14,007.0	89.90	332.70	10,124.5	3,612.7	-1,227.9	3,805.6	0.11	0.11	0.00
14,101.0	91.20	335.40	10,123.6	3,697.2	-1,269.0	3,899.5	3.19	1.38	2.87
14,196.0	90.50	334.00	10,122.2	3,783.1	-1,309.6	3,994.4	1.65	-0.74	-1.47
14,291.0	90.50	332.70	10,121.4	3,868.0	-1,352.2	4,089.2	1.37	0.00	-1.37
14,386.0	91.40	334.90	10,119.8	3,953.2	-1,394.1	4,184.0	2.50	0.95	2.32
14,481.0	90.30	332.10	10,118.4	4,038.2	-1,436.5	4,278.8	3.17	-1.16	-2.95
14,576.0	90.10	332.00	10,118.0	4,122.1	-1,481.0	4,373.4	0.24	-0.21	-0.11
14,670.0	92.70	329.80	10,115.7	4,204.2	-1,526.7	4,468.9	3.62	2.77	-2.34
14,765.0	93.20	329.50	10,110.9	4,286.1	-1,574.7	4,560.9	0.61	0.53	-0.32
14,860.0	91.30	330.50	10,107.1	4,368.3	-1,622.1	4,655.1	2.26	-2.00	1.05
14,955.0	92.50	331.80	10,104.0	4,451.4	-1,667.9	4,749.6	1.86	1.26	1.37
15,050.0	90.90	331.50	10,101.2	4,535.0	-1,713.0	4,844.1	1.71	-1.68	-0.32
15,144.0	90.70	331.80	10,099.9	4,617.7	-1,757.7	4,937.7	0.38	-0.21	0.32
15,239.0	91.90	332.70	10,097.7	4,701.8	-1,801.9	5,032.3	1.58	1.26	0.95
15,334.0	89.90	332.90	10,096.2	4,786.3	-1,845.3	5,127.0	2.12	-2.11	0.21
15,429.0	90.30	333.30	10,096.0	4,871.0	-1,888.3	5,221.8	0.60	0.42	0.42
15,524.0	92.90	336.20	10,093.4	4,956.9	-1,928.8	5,316.7	4.10	2.74	3.05
15,619.0	91.10	334.30	10,090.1	5,043.1	-1,968.5	5,411.5	2.75	-1.89	-2.00
15,714.0	91.60	335.30	10,087.8	5,129.0	-2,009.0	5,506.4	1.18	0.53	1.05
15,809.0	91.90	331.70	10,084.9	5,214.0	-2,051.3	5,601.2	3.80	-3.79	-3.79
15,904.0	91.50	331.50	10,082.1	5,297.5	-2,096.5	5,695.7	0.47	-0.42	-0.21
15,998.0	91.80	334.30	10,079.4	5,381.1	-2,139.3	5,789.4	2.99	0.32	2.98
16,093.0	91.30	330.20	10,076.8	5,465.2	-2,183.5	5,884.0	4.35	0.21	0.32
16,188.0	91.50	329.40	10,074.5	5,547.2	-2,231.3	5,978.2	0.87	0.21	-0.84
16,283.0	92.30	329.10	10,071.4	5,628.8	-2,279.8	6,072.3	0.90	-0.32	-0.32
16,378.0	91.20	329.40	10,068.5	5,710.4	-2,328.4	6,166.4	1.20	-1.16	0.32
16,473.0	90.90	332.00	10,066.7	5,793.3	-2,374.8	6,260.8	2.75	-0.32	2.74

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WV Department of Environmental Protection



Survey Report



Company:	Jay-Bee Oil & Gas	Local Co-ordinate Reference:	Well P3N2U
Project:	Pleasants County	TVD Reference:	KB @ 859.9usft (Patterson #581)
Site:	P3 Pad	MD Reference:	KB @ 859.9usft (Patterson #581)
Well:	P3N2U	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,568.0	91.60	333.20	10,064.6	5,877.6	-2,418.5	6,355.4	1.46	0.74	1.26
16,663.0	91.30	330.70	10,062.2	5,961.4	-2,463.2	6,450.0	2.65	-0.32	-2.63
16,759.0	90.90	331.60	10,060.4	6,045.5	-2,509.5	6,545.5	1.03	-0.42	0.94
16,853.0	90.70	331.20	10,059.1	6,128.0	-2,554.5	6,639.0	0.48	-0.21	-0.43
16,948.0	90.90	333.70	10,057.8	6,212.2	-2,598.4	6,733.7	2.64	0.21	2.63
17,042.0	90.90	330.30	10,056.3	6,295.2	-2,642.6	6,827.3	3.62	0.00	-3.62
17,137.0	91.20	331.30	10,054.5	6,378.1	-2,688.9	6,921.7	1.10	0.32	1.05
17,232.0	91.00	332.60	10,052.7	6,461.9	-2,733.6	7,016.3	1.38	-0.21	1.37
17,326.0	91.00	327.90	10,051.1	6,543.5	-2,780.2	7,109.6	5.00	0.00	-5.00
17,421.0	91.60	324.80	10,048.9	6,622.5	-2,832.8	7,202.9	3.32	0.63	-3.26
17,480.0	91.50	321.80	10,047.3	6,669.8	-2,868.0	7,260.2	5.09	-0.17	-5.08
ST TD @ 17537.0' MD / 10045.8' TVD									
17,537.0	91.50	321.80	10,045.8	6,714.6	-2,903.3	7,315.1	0.00	0.00	0.00

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,418.0	9,376.7	-36.0	511.9	ST Tie into PH @ 9418.0' MD / 9376.7' TVD
17,537.0	10,045.8	6,714.6	-2,903.3	ST TD @ 17537.0' MD / 10045.8' TVD

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