



# Jay-Bee Oil & Gas

Tyler County

Curly PAD

Curly 2U

Wellbore #2

Design: Wellbore #2

## QES Survey Certification Report

05 June, 2018

RECEIVED  
Office of Oil and Gas

JUN 12 2020

WV Department of  
Environmental Protection



## 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-180467	6/5/2018

Lease	Well Name	County & State
N/A	Curly 2U	Tyler County, WV

API No.	Survey Depth Range	Survey Type
47-095-02447	4889 feet to 11561 feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
<a href="#">Click here to enter text.</a>	Adam Ball

### 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: 2018.06.07 07:33:28 -05'00'

RECEIVED  
Office of Oil and Gas  
JUN 12 2020  
WV Department of  
Environmental Protection

Christopher Hughes  
MWD Compliance Manager  
Quintana Energy Services



<b>Company:</b>	Jay-Bee Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Curly 2U
<b>Project:</b>	Tyler County	<b>TVD Reference:</b>	WELL @ 1144.0usft
<b>Site:</b>	Curly PAD	<b>MD Reference:</b>	WELL @ 1144.0usft
<b>Well:</b>	Curly 2U	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #2	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Tyler County		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	West Virginia Northern Zone		

<b>Site</b>	Curly PAD				
<b>Site Position:</b>		<b>Northing:</b>	354,137.79 usft	<b>Latitude:</b>	39° 27' 49.958 N
<b>From:</b>	Map	<b>Easting:</b>	1,574,078.09 usft	<b>Longitude:</b>	80° 53' 49.560 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	-0.89 °

<b>Well</b>	Curly 2U					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	354,120.44 usft	<b>Latitude:</b>	39° 27' 49.783 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,574,053.63 usft	<b>Longitude:</b>	80° 53' 49.869 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,123.4 usft

<b>Wellbore</b>	Wellbore #2				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	5/24/2018	-8.52	66.65	51,923.44337028

<b>Design</b>	Wellbore #2				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	10,372.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	162.53	

<b>Survey Program</b>	<b>Date</b>	6/5/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
50.0	488.0	GYRO (Pilot Hole)	GYRO-NS	OWSG Gyrocompass Gyro	
517.0	10,372.0	QES MWD Surveys (Pilot Hole)	OWSG MWD - Standard	OWSG MWD - Standard	
10,425.0	18,547.0	QES MWD Surveys (WB 2) (Wellbore #2)	OWSG MWD - Standard	OWSG MWD - Standard	

RECEIVED  
Office of Oil and Gas  
JUN 12 2020  
WV Department of Environmental Protection

<b>Survey</b>								
<b>MD (usft)</b>	<b>Inc (°)</b>	<b>Azi (azimuth) (°)</b>	<b>TVD (usft)</b>	<b>N/S (usft)</b>	<b>E/W (usft)</b>	<b>Closure Distance (usft)</b>	<b>Closure Azimuth (°)</b>	
10,372.0	2.50	233.90	10,369.1	20.1	-48.4	52.4	292.61	
<b>PH Tie-in @ 10372.0' MD / 10369.1' TVD</b>								
10,425.0	4.40	172.60	10,422.0	17.5	-49.1	52.1	289.58	
10,473.0	5.10	190.50	10,469.8	13.5	-49.2	51.0	285.37	
10,520.0	4.70	193.10	10,516.7	9.6	-50.0	50.9	280.86	
10,568.0	4.70	194.30	10,564.5	5.8	-51.0	51.3	276.47	
10,615.0	4.20	194.70	10,611.4	2.2	-51.9	51.9	272.48	
10,663.0	3.50	195.90	10,659.3	-0.9	-52.7	52.7	269.06	
10,710.0	3.60	192.80	10,706.2	-3.7	-53.4	53.6	266.06	
10,758.0	4.70	181.60	10,754.0	-7.1	-53.8	54.3	262.47	



QES Survey Certification Report



RECEIVED  
Office of Oil and Gas

JUN 12 2020

WV Department of  
Environmental Protection

**Company:** Jay-Bee Oil & Gas  
**Project:** Tyler County  
**Site:** Curly PAD  
**Well:** Curly 2U  
**Wellbore:** Wellbore #2  
**Design:** Wellbore #2

**Local Co-ordinate Reference:**  
**TVD Reference:**  
**MD Reference:**  
**North Reference:**  
**Survey Calculation Method:**  
**Database:**

Well Curly 2U  
WELL @ 1144.0usft  
WELL @ 1144.0usft  
Grid  
Minimum Curvature  
EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
10,805.0	8.00	168.90	10,800.8	-12.3	-53.2	54.6	257.04
10,853.0	12.50	164.20	10,848.0	-20.5	-51.2	55.1	248.14
10,900.0	16.30	165.50	10,893.5	-31.8	-48.1	57.7	236.54
10,948.0	19.70	163.70	10,939.1	-46.1	-44.2	63.9	223.78
10,995.0	23.30	161.50	10,982.9	-62.5	-39.0	73.7	211.96
11,043.0	26.90	160.30	11,026.3	-81.8	-32.3	87.9	201.58
11,090.0	31.20	158.80	11,067.4	-103.1	-24.3	106.0	193.28
11,138.0	35.60	158.00	11,107.5	-127.7	-14.6	128.5	186.53
11,185.0	40.00	158.10	11,144.6	-154.4	-3.9	154.5	181.43
11,233.0	45.10	159.40	11,179.9	-184.7	7.9	184.8	177.55
11,280.0	50.00	160.90	11,211.7	-217.3	19.6	218.2	174.83
11,327.0	55.30	162.30	11,240.2	-252.7	31.4	254.7	172.91
11,374.0	61.20	163.20	11,264.9	-290.9	43.3	294.1	171.54
11,422.0	66.00	163.80	11,286.2	-332.1	55.5	336.7	170.52
11,469.0	69.90	163.20	11,303.9	-373.8	67.8	379.9	169.72
11,516.0	74.00	162.70	11,318.4	-416.5	80.9	424.3	169.00
11,563.0	76.60	163.10	11,330.3	-460.0	94.3	469.6	168.41
11,611.0	79.80	163.60	11,340.2	-505.0	107.8	516.4	167.95
11,658.0	81.90	163.80	11,347.6	-549.5	120.8	562.7	167.60
11,706.0	82.20	163.80	11,354.3	-595.2	134.0	610.1	167.31
11,753.0	82.90	163.40	11,360.4	-639.9	147.2	656.6	167.04
11,801.0	84.00	163.80	11,365.8	-685.6	160.7	704.2	166.81
11,848.0	86.40	164.40	11,369.8	-730.7	173.5	751.0	166.64
11,896.0	87.30	164.50	11,372.4	-776.9	186.3	798.9	166.51
11,991.0	90.80	164.80	11,374.0	-868.4	211.5	893.8	166.31
12,086.0	90.80	163.80	11,372.7	-959.9	237.2	988.8	166.12
12,180.0	91.90	164.10	11,370.4	-1,050.2	263.2	1,082.7	165.93
12,275.0	91.10	161.70	11,368.0	-1,141.0	291.1	1,177.5	165.69
12,370.0	90.10	162.00	11,367.0	-1,231.2	320.7	1,272.3	165.40
12,465.0	89.80	162.20	11,367.0	-1,321.6	349.9	1,367.2	165.17
12,559.0	89.10	159.30	11,367.9	-1,410.4	380.9	1,460.9	164.89
12,654.0	89.20	158.00	11,369.4	-1,498.8	415.4	1,555.3	164.51
12,748.0	88.90	157.80	11,370.9	-1,585.9	450.8	1,648.7	164.13
12,843.0	88.40	159.20	11,373.1	-1,674.3	485.6	1,743.3	163.83
12,938.0	89.70	163.40	11,374.7	-1,764.2	516.1	1,838.1	163.69
13,032.0	88.40	162.40	11,376.3	-1,854.0	543.7	1,932.1	163.66
13,127.0	89.70	163.80	11,377.9	-1,944.9	571.3	2,027.1	163.63
13,222.0	88.70	162.40	11,379.2	-2,035.8	598.9	2,122.1	163.61
13,316.0	89.40	163.20	11,380.7	-2,125.6	626.7	2,216.1	163.57
13,411.0	88.70	162.80	11,382.3	-2,216.4	654.5	2,311.0	163.55
13,505.0	89.40	165.40	11,383.9	-2,306.8	680.2	2,405.0	163.57
13,600.0	89.30	162.50	11,385.0	-2,398.1	706.5	2,500.0	163.58
13,695.0	89.50	160.50	11,386.0	-2,488.2	736.6	2,594.9	163.51
13,790.0	90.50	162.90	11,386.0	-2,578.4	766.5	2,689.9	163.44



QES Survey Certification Report



Company: Jay-Bee Oil & Gas
Project: Tyler County
Site: Curly PAD
Well: Curly 2U
Wellbore: Wellbore #2
Design: Wellbore #2

Local Co-ordinate Reference: Well Curly 2U
TVD Reference: WELL @ 1144.0usft
MD Reference: WELL @ 1144.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

RECEIVED
Office of Oil and Gas
JUN 12 2020

WV Department of
Environmental Protection

Table with 9 columns: MD (usft), Inc (°), Azi (azimuth) (°), TVD (usft), N/S (usft), E/W (usft), Closure Distance (usft), Closure Azimuth (°). It contains 45 rows of survey data points.



**Company:** Jay-Bee Oil & Gas  
**Project:** Tyler County  
**Site:** Curly PAD  
**Well:** Curly 2U  
**Wellbore:** Wellbore #2  
**Design:** Wellbore #2

**Local Co-ordinate Reference:**  
**TVD Reference:**  
**MD Reference:**  
**North Reference:**  
**Survey Calculation Method:**  
**Database:**

Well Curly 2U  
 WELL @ 1144.0usft  
 WELL @ 1144.0usft  
 Grid  
 Minimum Curvature  
 EDM 5000.1 Single User Db

RECEIVED  
 Office of Oil and Gas  
 JUN 12 2020

WV Department of  
 Environmental Protection

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
18,050.0	90.70	163.30	11,371.2	-6,626.7	2,089.0	6,948.1	162.50
18,145.0	88.70	161.60	11,371.7	-6,717.2	2,117.6	7,043.1	162.50
18,239.0	89.70	162.30	11,373.0	-6,806.6	2,146.7	7,137.1	162.50
18,334.0	90.20	162.10	11,373.1	-6,897.0	2,175.8	7,232.1	162.49
18,428.0	90.30	161.60	11,372.7	-6,986.4	2,205.1	7,326.1	162.48
18,497.0	90.50	161.10	11,372.2	-7,051.7	2,227.1	7,395.1	162.47
18,547.0	90.50	161.10	11,371.8	-7,099.0	2,243.3	7,445.1	162.46

TD @ 18547.0' MD / 11371.8' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,372.0	10,369.1	20.1	-48.4	PH Tie-in @ 10372.0' MD / 10369.1' TVD
18,547.0	11,371.8	-7,099.0	2,243.3	TD @ 18547.0' MD / 11371.8' TVD