

Noble Energy

Weld County, CO (NAD 83)

Sec. 2-T9N-R58W (Sharpe State 2 /Davis State (PAD)

Tripucka_State_LD02-75HN

Original Wellbore

Design: Actual Surveys

API # 123-39879

Sperry Drilling Services

Final Survey Report

19 January, 2015

Well Coordinates: 1,529,542.55 N, 3,462,791.67 E (40° 46' 30.04" N, 103° 49' 44.36" W)

Ground Level: 4,677.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Tripucka_State_LD02-75HN

KB @ 4707.00usft (HP 321)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 2-T9N-R58W (Sharpe State 2 /Davis State (PAD))
Well: Tripucka_State_LD02-75HN
Wellbore: Original Wellbore
Design: Actual Surveys

Noble Energy

HALLIBURTON

Sperry Drilling

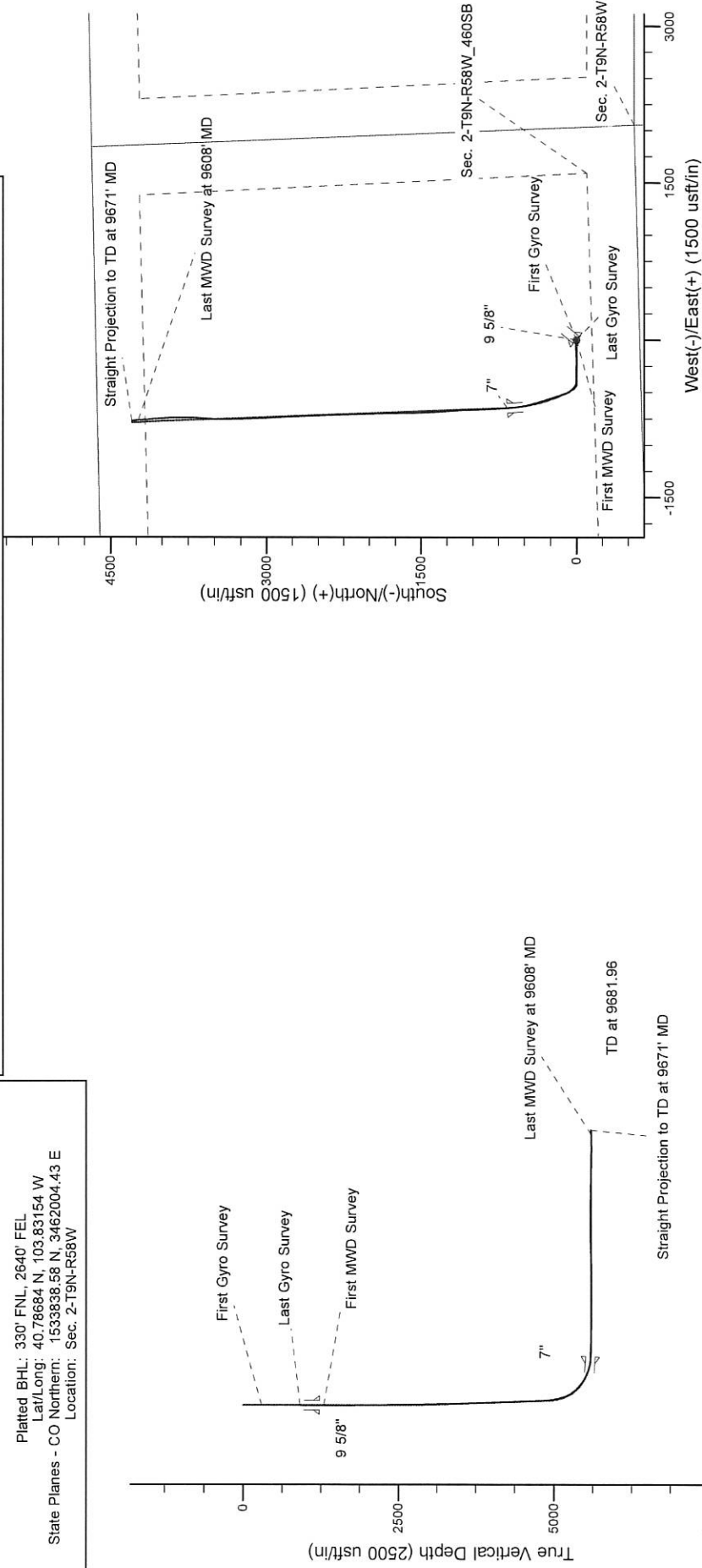
Platted SHL: 615' FSL, 2028' FEL
Platted Lat/Long: 40.77501 N, 103.82899 W
Location: Sec. 2-T9N-R58W

~7" Casing: 1286' FSL, 2641' FEL
Lat/Long: 40.776869 N, 103.831286 W
State Planes - CO Northern: 1530207.86 N, 3462143.23 E
Location: Sec. 2-T9N-R58W

Platted BHL: 330' FNL, 2640' FEL
Lat/Long: 40.78684 N, 103.83154 W
State Planes - CO Northern: 1533838.58 N, 3462004.43 E
Location: Sec. 2-T9N-R58W

LEGEND

- △- Tripucka_State_LD02-75HN, Original Wellbore, Rev A0 V0
- Actual Surveys



WELL DETAILS: Tripucka_State_LD02-75HN

Ground Level: 4677.00
KB @ 4707.00ust (HP 321)

Created By: Amanda Marchand
Created On: 1/19/2015

Design Report for Tripucka_State_LD02-75HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
301.00	0.50	51.91	301.00	0.81	1.03	0.61	0.17
First Gyro Survey							
608.00	0.50	127.31	607.99	0.82	3.15	0.24	0.20
914.00	0.50	329.61	913.98	1.17	3.54	0.51	0.32
Last Gyro Survey							
1,298.00	0.44	206.00	1,297.98	1.29	2.05	0.90	0.22
First MWD Survey							
1,389.00	0.14	185.60	1,388.98	0.86	1.88	0.51	0.34
1,482.00	0.31	308.95	1,481.98	0.91	1.68	0.59	0.43
1,574.00	0.34	289.15	1,573.97	1.15	1.22	0.91	0.13
1,666.00	0.37	352.67	1,665.97	1.54	0.93	1.35	0.41
1,757.00	0.63	16.15	1,756.97	2.31	1.03	2.09	0.36
1,850.00	0.47	26.91	1,849.96	3.14	1.34	2.85	0.20
1,941.00	0.28	26.84	1,940.96	3.67	1.61	3.32	0.21
2,033.00	0.32	1.52	2,032.96	4.13	1.72	3.75	0.15
2,125.00	0.31	56.47	2,124.96	4.52	1.94	4.10	0.32
2,217.00	0.54	52.30	2,216.96	4.93	2.49	4.40	0.25
2,309.00	0.18	129.18	2,308.96	5.10	2.94	4.49	0.58
2,402.00	0.09	73.59	2,401.96	5.03	3.13	4.38	0.16
2,494.00	2.00	282.64	2,493.94	5.40	1.63	5.02	2.26
2,586.00	4.03	268.92	2,585.81	5.69	-3.17	6.17	2.33
2,677.00	5.20	269.45	2,676.51	5.59	-10.49	7.39	1.29
2,772.00	5.27	275.64	2,771.11	5.98	-19.14	9.33	0.60
2,867.00	6.36	265.32	2,865.63	5.98	-28.73	11.06	1.59
2,962.00	7.86	269.45	2,959.89	5.49	-40.47	12.69	1.67
3,056.00	9.90	270.94	3,052.76	5.56	-54.97	15.37	2.18
3,151.00	11.59	270.72	3,146.09	5.81	-72.68	18.82	1.78
3,245.00	12.09	268.71	3,238.09	5.71	-91.97	22.19	0.69
3,340.00	13.03	267.89	3,330.82	5.09	-112.62	25.30	1.01
3,435.00	11.75	265.16	3,423.61	3.88	-132.96	27.78	1.48
3,529.00	10.53	267.14	3,515.83	2.64	-151.07	29.83	1.36
3,624.00	10.03	266.81	3,609.31	1.75	-168.00	32.00	0.53
3,812.00	8.34	269.59	3,794.89	0.74	-197.99	36.41	0.93
3,907.00	9.66	271.09	3,888.72	0.84	-212.85	39.19	1.41
4,001.00	11.43	272.91	3,981.13	1.47	-230.03	42.90	1.92
4,096.00	10.44	272.66	4,074.40	2.34	-248.03	47.01	1.04
4,285.00	11.76	270.98	4,259.86	3.47	-284.40	54.67	0.72
4,380.00	11.16	271.46	4,352.97	3.87	-303.27	58.47	0.64
4,475.00	12.07	266.93	4,446.03	3.57	-322.38	61.62	1.36
4,569.00	10.80	266.79	4,538.16	2.55	-340.99	63.97	1.35
4,664.00	10.40	274.83	4,631.54	2.77	-358.42	67.33	1.61
4,759.00	11.55	275.16	4,724.80	4.35	-376.44	72.13	1.21
4,853.00	12.08	271.81	4,816.81	5.51	-395.64	76.73	0.92
4,948.00	11.55	270.15	4,909.80	5.85	-415.09	80.57	0.66
4,996.00	12.49	287.78	4,956.76	7.45	-424.84	83.90	7.86
5,043.00	14.93	303.12	5,002.43	12.31	-434.75	90.47	9.27
5,091.00	17.54	307.19	5,048.52	20.06	-445.69	100.07	5.93
5,137.00	18.57	313.89	5,092.26	29.33	-456.50	111.13	5.04
5,185.00	20.69	315.26	5,137.46	40.65	-467.98	124.34	4.52

Design Report for Tripucka_State_LD02-75HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
5,232.00	23.92	320.54	5,180.95	53.91	-479.88	139.52	8.08
5,280.00	27.92	326.55	5,224.12	70.81	-492.27	158.38	9.96
5,326.00	31.25	333.95	5,264.13	90.53	-503.45	179.79	10.73
5,374.00	35.74	338.16	5,304.15	114.74	-514.14	205.53	10.53
5,421.00	40.25	340.84	5,341.18	141.84	-524.23	234.01	10.22
5,469.00	44.80	342.91	5,376.55	172.67	-534.30	266.15	9.92
5,516.00	47.47	343.59	5,409.12	205.12	-544.06	299.82	5.78
5,564.00	51.44	343.58	5,440.31	240.10	-554.37	336.09	8.27
5,611.00	55.22	343.50	5,468.38	276.25	-565.05	373.57	8.04
5,659.00	59.41	342.88	5,494.29	314.91	-576.73	413.70	8.80
5,706.00	63.25	342.17	5,516.84	354.23	-589.12	454.62	8.28
5,754.00	66.01	343.71	5,537.40	395.69	-601.83	497.69	6.44
5,801.00	69.97	344.88	5,555.01	437.63	-613.62	541.07	8.74
5,849.00	74.91	347.79	5,569.49	482.08	-624.41	586.74	11.80
5,895.00	79.62	350.66	5,579.63	526.15	-632.78	631.59	11.91
5,943.00	82.71	352.81	5,587.01	573.08	-639.60	678.98	7.81
5,990.00	85.80	354.84	5,591.71	619.56	-644.62	725.60	7.85
6,107.00	88.58	356.83	5,597.45	736.09	-653.11	841.76	2.92
6,198.00	87.78	356.46	5,600.34	826.89	-658.43	932.03	0.97
6,293.00	88.24	358.22	5,603.64	921.73	-662.84	1,026.11	1.91
6,388.00	89.75	358.32	5,605.30	1,016.67	-665.70	1,120.01	1.59
6,483.00	89.66	357.24	5,605.79	1,111.59	-669.38	1,214.04	1.14
6,577.00	88.49	355.54	5,607.31	1,205.39	-675.30	1,307.37	2.20
6,672.00	89.75	356.02	5,608.77	1,300.12	-682.29	1,401.81	1.42
6,767.00	90.31	356.98	5,608.72	1,394.94	-688.09	1,496.12	1.17
6,862.00	90.15	358.26	5,608.34	1,489.86	-692.04	1,590.19	1.36
6,957.00	89.94	357.84	5,608.26	1,584.80	-695.27	1,684.16	0.49
7,052.00	90.03	359.80	5,608.29	1,679.78	-697.22	1,777.94	2.07
7,147.00	89.23	358.51	5,608.90	1,774.76	-698.63	1,871.62	1.60
7,241.00	89.94	359.51	5,609.58	1,868.74	-700.25	1,964.35	1.30
7,336.00	91.54	359.12	5,608.35	1,963.72	-701.39	2,057.98	1.73
7,431.00	90.59	357.37	5,606.59	2,058.66	-704.29	2,151.89	2.10
7,526.00	91.26	357.71	5,605.05	2,153.56	-708.37	2,245.97	0.79
7,621.00	91.23	358.96	5,602.99	2,248.49	-711.13	2,339.85	1.32
7,716.00	91.23	357.54	5,600.95	2,343.42	-714.03	2,433.74	1.49
7,810.00	92.47	358.05	5,597.92	2,437.30	-717.65	2,526.74	1.43
7,905.00	92.00	356.89	5,594.21	2,532.14	-721.84	2,620.77	1.32
7,999.00	90.68	357.90	5,592.01	2,626.01	-726.11	2,713.88	1.77
8,094.00	91.66	358.60	5,590.07	2,720.95	-729.01	2,807.78	1.27
8,189.00	88.09	356.57	5,590.28	2,815.84	-733.01	2,901.84	4.32
8,284.00	88.65	356.54	5,592.98	2,910.63	-738.72	2,996.11	0.59
8,378.00	89.69	357.60	5,594.34	3,004.49	-743.52	3,089.30	1.58
8,473.00	88.64	357.83	5,595.73	3,099.41	-747.31	3,183.34	1.13
8,568.00	89.45	358.34	5,597.31	3,194.34	-750.48	3,277.29	1.01
8,663.00	89.20	359.04	5,598.43	3,289.31	-752.65	3,371.10	0.78
8,758.00	89.01	357.31	5,599.92	3,384.24	-755.68	3,465.02	1.83
8,852.00	89.72	1.41	5,600.96	3,478.21	-756.73	3,557.64	4.43
8,947.00	89.63	6.00	5,601.50	3,572.99	-750.59	3,649.76	4.83
9,041.00	88.74	3.41	5,602.83	3,666.65	-742.88	3,740.50	2.91
9,136.00	88.06	0.72	5,605.49	3,761.54	-739.46	3,833.22	2.92
9,231.00	88.80	358.53	5,608.09	3,856.50	-740.08	3,926.73	2.43

Design Report for Tripucka_State_LD02-75HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
9,325.00	90.18	357.71	5,608.93	3,950.44	-743.17	4,019.69	1.71
9,420.00	91.14	354.47	5,607.83	4,045.20	-749.64	4,114.07	3.56
9,515.00	90.43	355.57	5,606.53	4,139.83	-757.89	4,208.63	1.38
9,608.00	90.71	354.90	5,605.61	4,232.51	-765.61	4,301.18	0.78
Last MWD Survey at 9608' MD							
9,671.00	90.71	354.90	5,604.83	4,295.25	-771.21	4,363.91	0.00
Straight Projection to TD at 9671' MD							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
301.00	301.00	0.81	1.03	First Gyro Survey
914.00	913.98	1.17	3.54	Last Gyro Survey
1,298.00	1,297.98	1.29	2.05	First MWD Survey
9,608.00	5,605.61	4,232.51	-765.61	Last MWD Survey at 9608' MD
9,671.00	5,604.83	4,295.25	-771.21	Straight Projection to TD at 9671' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
Target	Tripucka State LD02-75HN_BHL	349.62	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
301.00	914.00	Gyro Surveys	Flexi-Shot
1,298.00	5,990.00	Intermediate Surveys	MWD
6,107.00	9,671.00	Production Surveys	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,227.00	1,226.98	9 5/8"	9-5/8	13-3/4
6,036.00	5,594.64	7"	7	8-3/4

Wellbore Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Tripucka State LD02-7	0.00	0.00	5,598.00	653.30	-645.40	1,530,195.85	3,462,146.27	40.776836	-103.831275
- actual wellpath misses target center by 4.55usft at 6023.98usft MD (5593.96 TVD, 653.34 N, -647.50 E)									
- Point									
Tripucka State LD02-7	0.00	0.00	5,607.62	4,296.04	-787.24	1,533,838.58	3,462,004.43	40.786840	-103.831540
- actual wellpath misses target center by 16.29usft at 9671.00usft MD (5604.83 TVD, 4295.25 N, -771.21 E)									
- Point									

Design Report for Tripucka_State_LD02-75HN - Actual Surveys

Directional Difficulty Index

Average Dogleg over Survey:	1.99 °/100usft	Maximum Dogleg over Survey:	11.91 °/100usft at 5,895.00 usft
Net Tortosity applicable to Plans:	0.93 °/100usft	Directional Difficulty Index:	6.202

Audit Info