

Well Name: Rancho Water Valley 3-9-4

Surface Location: Rancho Water Valley 8-6-33 Pad Sec.4-T5N-R67W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone
Ground Elevation: 0.0

+N/-S
0.0

+E/-W
0.0

Northing
1402075.63
Original Well Elev

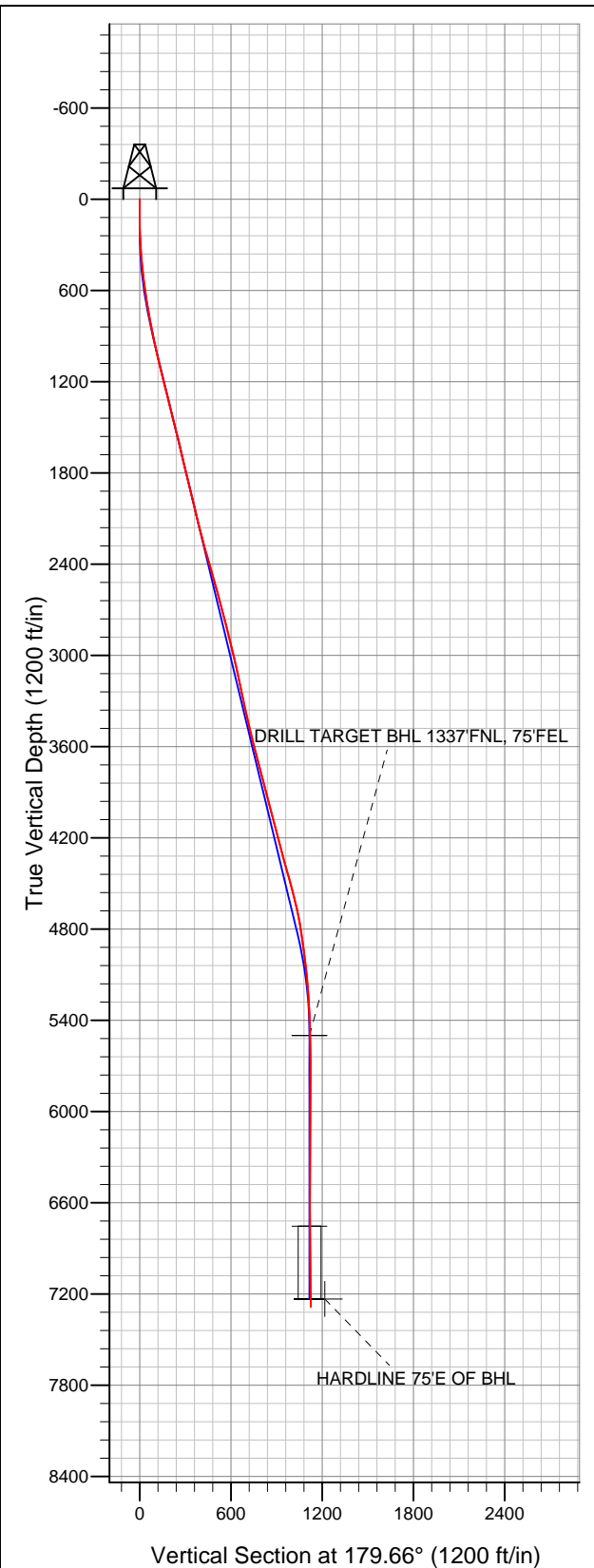
Easting
3170392.26

Latitude
40.435485

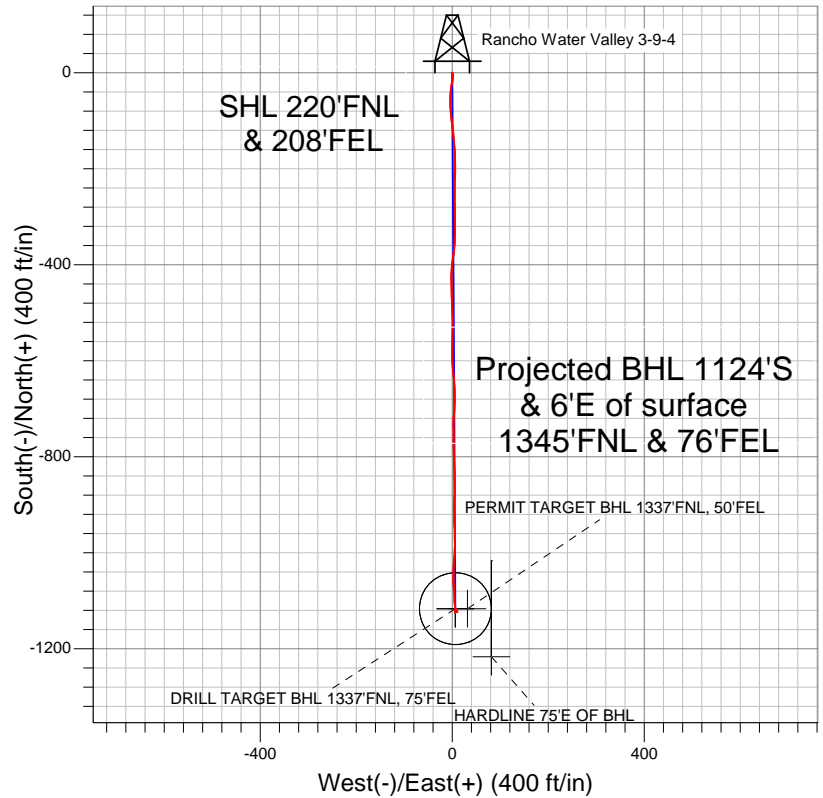
Longitude
-104.887876

Slot

WELL @ 0.0ft (Original Well Elev)



Tekton Energy



LEGEND

- Survey #1
- △ Rancho Water Valley 3-9-4, Wellbore #1, Plan #3 (2-1-12) V0
- Wellbore #1

Final Survey Plot

Projected Final Survey -
7415'MD & 7285'TVD @ 1124'VS
0.60 deg Inc 187.90 deg AZ

Project: SEC.4-T5N-R67W
Site: Rancho Water Valley 8-6-33 Pad Sec.4-T5N-R67W
Well: Rancho Water Valley 3-9-4
Plan: Wellbore #1



Tekton Energy

SEC.4-T5N-R67W

Rancho Water Valley 8-6-33 Pad Sec.4-T5N-R67W

Rancho Water Valley 3-9-4

Wellbore #1

Survey: Survey #1

Standard Survey Report

07 February, 2012

Company:	Tekton Energy	Local Co-ordinate Reference:	Well Rancho Water Valley 3-9-4
Project:	SEC.4-T5N-R67W	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Rancho Water Valley 8-6-33 Pad Sec.4-T5N-R67W	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Rancho Water Valley 3-9-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.4-T5N-R67W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site		Rancho Water Valley 8-6-33 Pad Sec.4-T5N-R67W			
Site Position:		Northing:	1,402,075.64 ft	Latitude:	40.435485
From:	Lat/Long	Easting:	3,170,392.26 ft	Longitude:	-104.887876
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.40 °

Well	Rancho Water Valley 3-9-4					
Well Position	+N-S	0.0 ft	Northing:	1,402,075.63 ft	Latitude:	40.435485
	+E-W	0.0 ft	Easting:	3,170,392.26 ft	Longitude:	-104.887876
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	0.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/1/2012	8.85	67.04	53,110

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	179.66	

Survey Program	Date	2/7/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
96.0	7,415.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
96.0	0.30	82.90	96.0	0.0	0.2	0.0	0.31	0.31	0.00	
129.0	0.20	59.00	129.0	0.1	0.4	-0.1	0.43	-0.30	-72.42	
252.0	2.20	168.00	252.0	-2.1	1.1	2.1	1.85	1.63	88.62	
374.0	4.70	184.10	373.7	-9.4	1.2	9.4	2.18	2.05	13.20	
496.0	6.80	191.00	495.1	-21.5	-0.5	21.5	1.81	1.72	5.66	
621.0	8.50	186.30	619.0	-37.9	-3.0	37.9	1.45	1.36	-3.76	
745.0	9.70	180.10	741.4	-57.5	-4.0	57.5	1.25	0.97	-5.00	
870.0	11.00	175.80	864.4	-79.9	-3.1	79.9	1.21	1.04	-3.44	
995.0	13.10	173.60	986.7	-105.9	-0.7	105.9	1.72	1.68	-1.76	
1,120.0	13.80	173.00	1,108.2	-134.8	2.7	134.8	0.57	0.56	-0.48	
1,241.0	14.20	177.20	1,225.6	-163.9	5.2	163.9	0.90	0.33	3.47	

Company:	Tekton Energy	Local Co-ordinate Reference:	Well Rancho Water Valley 3-9-4
Project:	SEC.4-T5N-R67W	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Rancho Water Valley 8-6-33 Pad Sec.4-T5N-R67W	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Rancho Water Valley 3-9-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,301.0	13.80	177.40	1,283.8	-178.4	5.9	178.4	0.67	-0.67	0.33
1,426.0	13.90	182.40	1,405.2	-208.3	5.9	208.3	0.96	0.08	4.00
1,550.0	14.40	180.30	1,525.5	-238.6	5.2	238.6	0.58	0.40	-1.69
1,675.0	13.30	181.20	1,646.8	-268.5	4.8	268.5	0.90	-0.88	0.72
1,800.0	13.10	176.90	1,768.5	-297.0	5.3	297.1	0.80	-0.16	-3.44
1,925.0	14.20	181.60	1,890.0	-326.5	5.6	326.5	1.25	0.88	3.76
2,050.0	13.20	181.80	2,011.4	-356.1	4.8	356.1	0.80	-0.80	0.16
2,174.0	14.50	189.00	2,131.8	-385.6	1.9	385.6	1.74	1.05	5.81
2,299.0	14.40	183.60	2,252.9	-416.6	-1.5	416.5	1.08	-0.08	-4.32
2,424.0	16.30	177.00	2,373.4	-449.6	-1.6	449.6	2.06	1.52	-5.28
2,549.0	16.50	177.90	2,493.3	-484.9	0.0	484.8	0.26	0.16	0.72
2,673.0	14.70	179.50	2,612.8	-518.2	0.8	518.2	1.49	-1.45	1.29
2,798.0	14.80	181.60	2,733.7	-550.0	0.5	550.0	0.44	0.08	1.68
2,923.0	14.10	180.10	2,854.7	-581.2	0.0	581.2	0.63	-0.56	-1.20
3,048.0	13.50	176.10	2,976.1	-611.0	0.9	611.0	0.90	-0.48	-3.20
3,172.0	12.50	173.80	3,096.9	-638.8	3.4	638.8	0.91	-0.81	-1.85
3,297.0	11.60	177.20	3,219.2	-664.8	5.5	664.8	0.92	-0.72	2.72
3,422.0	12.20	185.50	3,341.5	-690.5	4.8	690.5	1.45	0.48	6.64
3,547.0	13.40	182.20	3,463.4	-718.1	3.0	718.1	1.12	0.96	-2.64
3,671.0	14.20	178.70	3,583.8	-747.6	2.8	747.6	0.93	0.65	-2.82
3,796.0	15.10	179.10	3,704.7	-779.3	3.4	779.3	0.72	0.72	0.32
3,921.0	13.90	179.70	3,825.8	-810.5	3.7	810.6	0.97	-0.96	0.48
4,046.0	14.90	176.50	3,946.8	-841.6	4.8	841.6	1.02	0.80	-2.56
4,171.0	15.50	182.80	4,067.5	-874.3	4.9	874.3	1.41	0.48	5.04
4,295.0	14.20	180.30	4,187.3	-906.1	4.0	906.1	1.17	-1.05	-2.02
4,420.0	14.90	177.70	4,308.3	-937.5	4.6	937.5	0.77	0.56	-2.08
4,545.0	16.30	179.40	4,428.7	-971.1	5.4	971.1	1.18	1.12	1.36
4,670.0	14.40	183.20	4,549.2	-1,004.1	4.8	1,004.2	1.72	-1.52	3.04
4,794.0	12.60	183.90	4,669.8	-1,033.0	3.0	1,033.0	1.46	-1.45	0.56
4,919.0	9.60	177.30	4,792.5	-1,057.1	2.5	1,057.1	2.60	-2.40	-5.28
5,040.0	7.30	177.60	4,912.1	-1,074.8	3.3	1,074.8	1.90	-1.90	0.25
5,169.0	6.40	174.50	5,040.2	-1,090.2	4.4	1,090.2	0.75	-0.70	-2.40
5,293.0	5.40	180.30	5,163.6	-1,102.9	5.0	1,102.9	0.94	-0.81	4.68
5,418.0	2.80	169.30	5,288.2	-1,111.8	5.5	1,111.8	2.16	-2.08	-8.80
5,543.0	2.30	159.30	5,413.1	-1,117.1	7.0	1,117.1	0.53	-0.40	-8.00
5,629.8	1.46	152.47	5,499.9	-1,119.7	8.1	1,119.7	1.00	-0.97	-7.86
DRILL TARGET BHL 1337°FNL, 75°FEL									
5,630.1	1.45	152.43	5,500.2	-1,119.7	8.1	1,119.8	1.00	-0.95	-12.41
PERMIT TARGET BHL 1337°FNL, 50°FEL									
5,668.0	1.10	146.20	5,538.1	-1,120.4	8.5	1,120.5	1.00	-0.93	-16.47
5,792.0	1.20	138.50	5,662.0	-1,122.4	10.1	1,122.5	0.15	0.08	-6.21
5,917.0	0.30	319.70	5,787.0	-1,123.1	10.7	1,123.2	1.20	-0.72	-143.04
6,042.0	0.80	325.40	5,912.0	-1,122.2	10.0	1,122.2	0.40	0.40	4.56
6,167.0	0.40	315.70	6,037.0	-1,121.1	9.2	1,121.2	0.33	-0.32	-7.76
6,287.0	0.40	339.80	6,157.0	-1,120.5	8.8	1,120.5	0.14	0.00	20.08
6,411.0	0.00	47.30	6,281.0	-1,120.0	8.6	1,120.1	0.32	-0.32	0.00
6,536.0	0.60	316.30	6,406.0	-1,119.6	8.2	1,119.6	0.48	0.48	0.00
6,661.0	0.60	9.20	6,531.0	-1,118.5	7.8	1,118.5	0.43	0.00	42.32
6,785.0	0.40	224.40	6,655.0	-1,118.1	7.6	1,118.1	0.77	-0.16	-116.77
6,884.0	0.79	201.96	6,754.0	-1,119.0	7.1	1,119.0	0.45	0.39	-22.67
TARGET CIRCLE 1337°FNL, 75°FEL									
6,910.0	0.90	199.40	6,780.0	-1,119.4	7.0	1,119.4	0.45	0.43	-9.83
7,035.0	0.40	188.70	6,905.0	-1,120.7	6.6	1,120.7	0.41	-0.40	-8.56

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7,159.0	0.70	194.30	7,029.0	-1,121.9	6.4	1,121.9	0.25	0.24	4.52
7,284.0	0.50	184.80	7,154.0	-1,123.2	6.1	1,123.2	0.18	-0.16	-7.60
7,363.8	0.60	187.77	7,233.8	-1,123.9	6.0	1,123.9	0.12	0.12	3.72
HARDLINE 75'E OF BHL									
7,368.0	0.60	187.90	7,238.0	-1,124.0	6.0	1,124.0	0.12	0.12	3.10
7,415.0	0.60	187.90	7,285.0	-1,124.4	6.0	1,124.5	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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