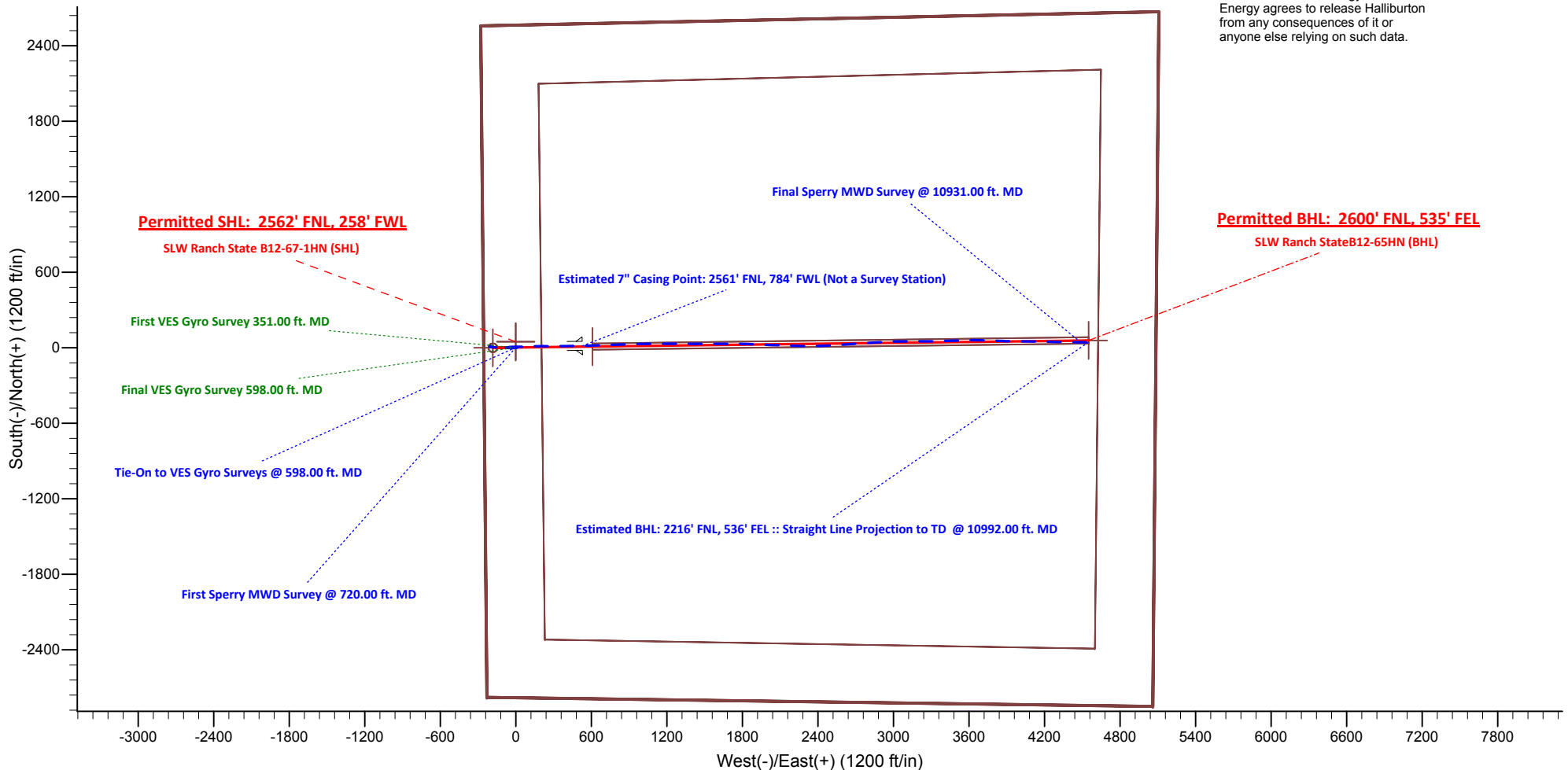


### LEGEND

- SLW Ranch State B12-65HN, Plan A - Rev 0 Proposal
- Vaughn ESS and Sperry MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the "SLW Ranch State B12-65HN" well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.

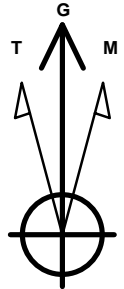


Project: Weld County, CO (NAD 83)  
 Site: Sec. 12-T5N-R64W (SLW Ranch 12 PAD)  
 Well: SLW Ranch State B12-65HN

**HALLIBURTON**

Sperry Drilling

# Noble Energy



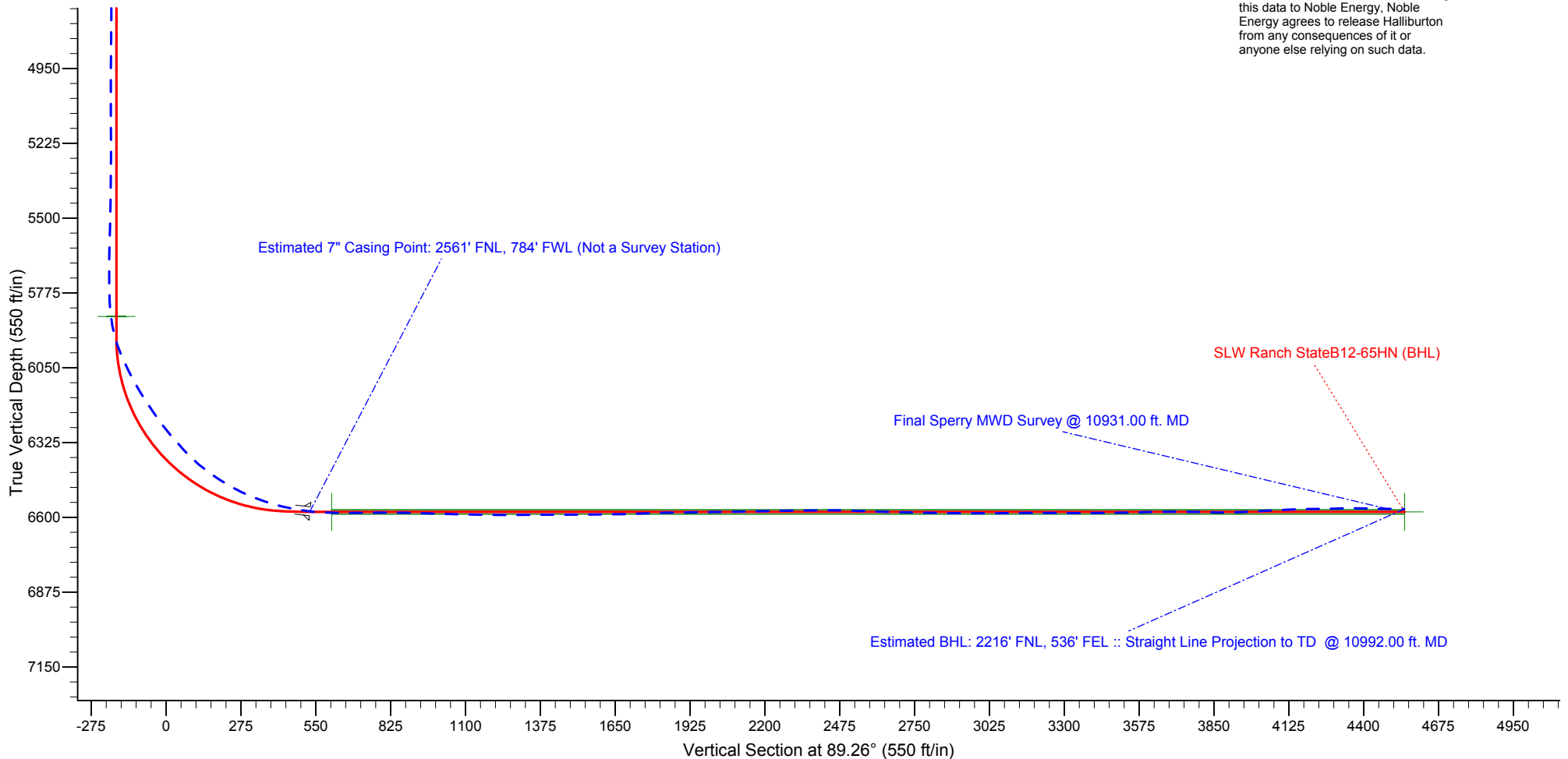
Azimuths to Grid North  
 True North: -0.64°  
 Magnetic North: 7.90°

Magnetic Field  
 Strength: 52883.2snT  
 Dip Angle: 67.01°  
 Date: 3/30/2013  
 Model: BGGM2012

## LEGEND

- SLW Ranch State B12-65HN, Plan A - Rev 0 Proposal
- - - Vaughn ESS and Sperry MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the "SLW Ranch State B12-65HN" well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.



# Noble Energy

Weld County, CO (NAD 83)  
Sec. 12-T5N-R64W (SLW Ranch 12 PAD)  
SLW Ranch State B12-65HN

Design: Vaughn ESS and Sperry MWD Survey

## Sperry Drilling Services Final Survey Report

17 June, 2013

Well Coordinates: 1,395,255.48 N, 3,276,444.46 E (40° 24' 50.87" N, 104° 30' 25.88" W)  
Ground Level: 4,603.00 ft

Local Coordinate Origin:	Centered on Well SLW Ranch State B12-65HN
Viewing Datum:	KB=24' @ 4627.00ft (H&P 315)
TVDs to System:	N
North Reference:	Grid
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied  
Version: 2003.16 Build: 431

**HALLIBURTON**

## Design Report for SLW Ranch State B12-65HN - Vaughn ESS and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
351.00	0.30	312.09	351.00	0.62	-0.68	-0.67	0.09
<b>First VES Gyro Survey 351.00 ft. MD</b>							
598.00	0.30	10.39	598.00	1.69	-1.05	-1.02	0.12
<b>Final VES Gyro Survey 598.00 ft. MD - Tie-On to VES Gyro Surveys @ 598.00 ft. MD</b>							
720.00	0.62	69.70	719.99	2.23	-0.37	-0.34	0.44
<b>First Sperry MWD Survey @ 720.00 ft. MD</b>							
812.00	0.50	150.41	811.99	2.05	0.30	0.32	0.79
905.00	0.66	97.26	904.98	1.63	1.03	1.05	0.58
1,089.00	0.34	76.58	1,088.98	1.62	2.61	2.63	0.20
1,183.00	0.65	117.63	1,182.97	1.44	3.35	3.37	0.48
1,275.00	0.50	74.68	1,274.97	1.31	4.20	4.22	0.48
1,367.00	0.69	111.06	1,366.97	1.21	5.11	5.12	0.45
1,462.00	0.50	72.16	1,461.96	1.13	6.04	6.05	0.46
1,557.00	0.51	92.28	1,556.96	1.24	6.85	6.87	0.19
1,652.00	1.11	263.65	1,651.95	1.13	6.36	6.38	1.70
1,747.00	0.58	244.01	1,746.94	0.81	5.01	5.02	0.63
1,841.00	2.90	268.33	1,840.89	0.54	2.21	2.22	2.54
1,936.00	2.95	252.03	1,935.77	-0.29	-2.52	-2.52	0.87
2,031.00	4.80	265.92	2,030.55	-1.33	-8.81	-8.82	2.17
2,126.00	5.27	267.79	2,125.18	-1.78	-17.13	-17.15	0.52
2,221.00	7.96	265.48	2,219.54	-2.46	-28.05	-28.08	2.84
2,316.00	8.43	281.30	2,313.59	-1.62	-41.44	-41.46	2.42
2,411.00	10.91	278.75	2,407.23	1.12	-57.16	-57.14	2.65
2,506.00	10.51	274.46	2,500.58	3.16	-74.68	-74.63	0.94
2,601.00	9.07	277.23	2,594.19	4.77	-90.75	-90.68	1.59
2,696.00	10.53	273.05	2,687.80	6.18	-106.85	-106.76	1.71
2,790.00	10.19	273.97	2,780.27	7.21	-123.72	-123.61	0.40
2,885.00	8.52	271.40	2,874.00	7.96	-139.14	-139.02	1.81
2,980.00	7.78	274.92	2,968.04	8.69	-152.58	-152.45	0.94
3,075.00	5.70	274.61	3,062.38	9.62	-163.69	-163.55	2.19
3,170.00	4.59	272.40	3,157.00	10.16	-172.19	-172.04	1.19
3,265.00	3.09	265.17	3,251.78	10.10	-178.54	-178.39	1.66
3,360.00	2.07	271.46	3,346.69	9.93	-182.81	-182.66	1.11
3,455.00	1.44	271.43	3,441.64	10.00	-185.71	-185.57	0.66
3,550.00	1.24	267.49	3,536.61	9.99	-187.93	-187.79	0.23
3,645.00	1.47	285.58	3,631.59	10.27	-190.14	-189.99	0.51
3,739.00	1.91	281.51	3,725.55	10.90	-192.83	-192.68	0.48
3,834.00	0.44	307.87	3,820.52	11.44	-194.67	-194.51	1.61
3,929.00	0.34	261.35	3,915.52	11.63	-195.24	-195.07	0.34
4,024.00	0.66	236.82	4,010.52	11.28	-195.97	-195.81	0.40
4,119.00	0.50	235.80	4,105.51	10.75	-196.78	-196.62	0.17
4,214.00	1.05	246.50	4,200.50	10.17	-197.92	-197.77	0.60
4,309.00	1.45	241.03	4,295.48	9.24	-199.77	-199.63	0.44
4,404.00	0.37	338.02	4,390.47	8.94	-200.93	-200.80	1.62
4,498.00	1.79	333.25	4,484.45	10.54	-201.71	-201.55	1.51
4,593.00	0.59	351.12	4,579.43	12.35	-202.45	-202.27	1.31
4,688.00	0.77	111.50	4,674.43	12.60	-201.93	-201.75	1.25
4,783.00	0.70	236.21	4,769.42	12.04	-201.82	-201.65	1.37
4,878.00	0.73	224.31	4,864.42	11.28	-202.73	-202.56	0.16

## Design Report for SLW Ranch State B12-65HN - Vaughn ESS and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,972.00	0.35	184.66	4,958.41	10.57	-203.17	-203.01	0.54
5,067.00	0.39	234.61	5,053.41	10.09	-203.45	-203.31	0.33
5,162.00	0.63	107.83	5,148.41	9.74	-203.22	-203.08	0.97
5,257.00	0.10	103.28	5,243.41	9.57	-202.64	-202.50	0.56
5,352.00	0.72	303.82	5,338.40	9.88	-203.06	-202.91	0.86
5,447.00	1.22	230.66	5,433.39	9.57	-204.34	-204.20	1.29
5,541.00	1.40	243.68	5,527.37	8.43	-206.14	-206.01	0.37
5,636.00	1.83	239.38	5,622.33	7.14	-208.48	-208.38	0.47
5,730.00	0.65	85.09	5,716.32	6.42	-209.25	-209.15	2.59
5,791.00	0.48	98.27	5,777.31	6.41	-208.65	-208.55	0.35
5,919.00	10.91	93.34	5,904.51	5.63	-195.99	-195.90	8.15
5,967.00	17.41	91.49	5,951.02	5.18	-184.26	-184.18	13.57
6,014.00	22.18	90.03	5,995.23	4.99	-168.35	-168.28	10.20
6,062.00	25.67	92.10	6,039.10	4.60	-148.90	-148.83	7.48
6,109.00	27.02	88.49	6,081.22	4.51	-128.05	-127.98	4.46
6,157.00	30.53	88.14	6,123.29	5.19	-104.96	-104.88	7.32
6,204.00	32.50	89.37	6,163.36	5.72	-80.40	-80.32	4.41
6,252.00	33.69	88.78	6,203.57	6.15	-54.19	-54.11	2.57
6,298.00	35.95	87.18	6,241.33	7.08	-27.95	-27.85	5.30
6,346.00	39.05	89.80	6,279.41	7.83	1.25	1.36	7.26
6,393.00	41.22	89.47	6,315.34	8.02	31.55	31.65	4.64
6,441.00	42.91	88.15	6,350.97	8.70	63.70	63.80	3.97
6,488.00	46.17	87.30	6,384.47	10.01	96.63	96.75	7.05
6,536.00	51.72	88.05	6,415.98	11.47	132.78	132.92	11.62
6,583.00	54.88	89.48	6,444.07	12.27	170.45	170.60	7.15
6,631.00	58.29	89.91	6,470.50	12.48	210.51	210.65	7.14
6,678.00	61.72	90.52	6,493.99	12.33	251.21	251.35	7.38
6,726.00	66.28	90.04	6,515.03	12.12	294.34	294.47	9.54
6,773.00	69.63	89.07	6,532.67	12.46	337.90	338.03	7.38
6,821.00	73.00	88.83	6,548.04	13.30	383.35	383.49	7.04
6,868.00	76.85	88.72	6,560.26	14.27	428.71	428.86	8.19
6,925.00	80.09	89.49	6,571.66	15.14	484.55	484.70	5.84
6,969.00	83.46	88.91	6,577.95	15.75	528.09	528.25	7.77
<b>Estimated 7" Casing Point: 2561' FNL, 784' FWL (Not a Survey Station)</b>							
7,035.00	88.52	88.05	6,582.56	17.49	593.88	594.06	7.77
7,130.00	90.25	88.10	6,583.58	20.68	688.82	689.03	1.82
7,225.00	90.86	87.96	6,582.66	23.95	783.76	784.00	0.66
7,320.00	88.68	87.79	6,583.04	27.47	878.68	878.97	2.30
7,415.00	88.09	88.50	6,585.72	30.55	973.60	973.91	0.97
7,510.00	88.80	89.58	6,588.30	32.14	1,068.55	1,068.87	1.36
7,605.00	88.86	90.32	6,590.24	32.22	1,163.52	1,163.84	0.78
7,699.00	90.09	90.30	6,591.10	31.71	1,257.52	1,257.82	1.31
7,794.00	90.71	90.37	6,590.44	31.16	1,352.51	1,352.80	0.66
7,889.00	90.06	89.70	6,589.80	31.10	1,447.51	1,447.79	0.98
7,984.00	90.34	89.97	6,589.47	31.37	1,542.51	1,542.79	0.41
8,079.00	90.46	90.09	6,588.80	31.32	1,637.51	1,637.77	0.18
8,174.00	92.28	89.92	6,586.53	31.31	1,732.48	1,732.74	1.92
8,269.00	91.78	91.35	6,583.17	30.26	1,827.41	1,827.65	1.59
8,364.00	90.43	92.65	6,581.33	26.95	1,922.33	1,922.52	1.97
8,459.00	90.92	92.16	6,580.22	22.96	2,017.24	2,017.37	0.73
8,553.00	90.83	91.60	6,578.78	19.88	2,111.17	2,111.26	0.60

## Design Report for SLW Ranch State B12-65HN - Vaughn ESS and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
8,648.00	91.42	92.52	6,576.91	16.46	2,206.09	2,206.12	1.15
8,743.00	90.52	91.24	6,575.31	13.35	2,301.03	2,301.01	1.65
8,838.00	90.74	88.01	6,574.26	13.97	2,396.01	2,395.99	3.41
8,933.00	88.46	86.76	6,574.92	18.30	2,490.90	2,490.93	2.74
9,028.00	87.91	86.04	6,577.93	24.26	2,585.66	2,585.76	0.95
9,123.00	88.74	86.31	6,580.71	30.60	2,680.41	2,680.58	0.92
9,218.00	88.98	86.24	6,582.60	36.77	2,775.19	2,775.43	0.26
9,313.00	89.20	86.53	6,584.11	42.76	2,869.99	2,870.30	0.38
9,408.00	89.82	87.19	6,584.92	47.96	2,964.84	2,965.21	0.95
9,503.00	90.68	89.73	6,584.51	50.52	3,059.80	3,060.19	2.82
9,598.00	90.34	89.49	6,583.66	51.16	3,154.79	3,155.19	0.44
9,693.00	89.72	90.21	6,583.61	51.41	3,249.79	3,250.18	1.00
9,788.00	89.91	89.17	6,583.92	51.92	3,344.78	3,345.18	1.11
9,883.00	90.43	87.11	6,583.64	55.01	3,439.73	3,440.15	2.24
9,978.00	91.17	88.00	6,582.31	59.06	3,534.63	3,535.10	1.22
10,073.00	91.64	90.29	6,579.98	60.48	3,629.59	3,630.06	2.46
10,168.00	89.51	91.89	6,579.03	58.67	3,724.56	3,725.00	2.80
10,263.00	88.30	92.36	6,580.84	55.15	3,819.47	3,819.86	1.37
10,358.00	91.05	90.94	6,581.38	52.41	3,914.42	3,914.77	3.26
10,453.00	93.52	90.27	6,577.59	51.41	4,009.33	4,009.66	2.69
10,548.00	92.84	91.09	6,572.32	50.28	4,104.17	4,104.48	1.12
10,643.00	90.59	91.10	6,569.48	48.47	4,199.11	4,199.38	2.37
10,737.00	91.82	90.75	6,567.50	46.95	4,293.07	4,293.32	1.36
10,832.00	88.71	91.11	6,567.07	45.41	4,388.05	4,388.27	3.30
10,931.00	89.23	90.53	6,568.84	43.99	4,487.02	4,487.22	0.79
<b>Final Sperry MWD Survey @ 10931.00 ft. MD</b>							
10,992.00	89.23	90.53	6,569.66	43.43	4,548.01	4,548.20	0.00
<b>Estimated BHL: 2216' FNL, 536' FEL :: Straight Line Projection to TD @ 10992.00 ft. MD</b>							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
351.00	351.00	0.62	-0.68	First VES Gyro Survey 351.00 ft. MD
598.00	598.00	1.69	-1.05	Final VES Gyro Survey 598.00 ft. MD
598.00	598.00	1.69	-1.05	Tie-On to VES Gyro Surveys @ 598.00 ft. MD
720.00	719.99	2.23	-0.37	First Sperry MWD Survey @ 720.00 ft. MD
6,969.00	6,577.95	15.75	528.09	Estimated 7" Casing Point: 2561' FNL, 784' FWL (Not a Survey Station)
10,931.00	6,568.84	43.99	4,487.02	Final Sperry MWD Survey @ 10931.00 ft. MD
10,992.00	6,569.66	43.43	4,548.01	Estimated BHL: 2216' FNL, 536' FEL :: Straight Line Projection to TD @ 10992.00 ft. MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	SLW Ranch StateB12-65HN_PlanA-Rev0_ BHL Tgt	89.26	Slot	0.00	0.00	0.00

**Design Report for SLW Ranch State B12-65HN - Vaughn ESS and Sperry MWD Survey**

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
351.00	598.00	Vaughn ESS Surveys	Flexi-Shot
720.00	6,969.00	Sperry MWD Survey	MWD
6,969.00	10,992.00	Sperry MWD Survey	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
6,969.00	6,577.95	7" Casing PT	7	8-3/4

**Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SLW Ranch	0.00	0.00	6,580.00	58.65	4,549.72	1,395,314.12	3,280,994.00	40.414150	-104.490850
- actual wellpath misses target center by 18.47ft at 10992.00ft MD (6569.66 TVD, 43.43 N, 4548.01 E)									
- Point									
SLW Ranch State	0.00	0.00	0.00	47.36	-0.53	1,395,302.83	3,276,443.93	40.414260	-104.507190
- actual wellpath misses target center by 47.36ft at 0.08ft MD (0.08 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-279.53	2,558.36	1,397,813.73	3,276,164.94		
Point 2				5,107.47	2,670.36	1,397,925.73	3,281,551.73		
Point 3				5,059.47	-2,850.64	1,392,404.95	3,281,503.73		
Point 4				-230.53	-2,778.64	1,392,476.94	3,276,213.94		
Point 5				-279.53	2,558.36	1,397,813.73	3,276,164.94		
SLW Ranch State	0.00	0.00	0.00	47.36	-0.53	1,395,302.83	3,276,443.93	40.414260	-104.507190
- actual wellpath misses target center by 47.36ft at 0.08ft MD (0.08 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				180.47	2,098.36	1,397,353.75	3,276,624.92		
Point 2				4,647.47	2,210.36	1,397,465.75	3,281,091.75		
Point 3				4,599.47	-2,390.64	1,392,864.93	3,281,043.75		
Point 4				229.47	-2,318.64	1,392,936.93	3,276,673.92		
Point 5				180.47	2,098.36	1,397,353.75	3,276,624.92		
SLW Ranch	0.00	0.00	5,861.62	0.00	-183.00	1,395,255.48	3,276,261.47	40.414136	-104.507847
- actual wellpath misses target center by 20.62ft at 5877.59ft MD (5863.64 TVD, 6.02 N, -202.61 E)									
- Circle (radius 35.00)									
SLW Ranch		89.29	6,580.00	9.80	608.10	1,395,265.28	3,277,052.54	40.414138	-104.505006
- actual wellpath misses target center by 8.67ft at 7048.93ft MD (6582.89 TVD, 17.97 N, 607.79 E)									
- Rectangle (sides W50.00 H16.00 D3,941.92)									

**North Reference Sheet for Sec. 12-T5N-R64W (SLW Ranch 12 PAD) - SLW Ranch State B12-65HN**

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to KB=24' @ 4627.00ft (H&P 315). Northing and Easting are relative to SLW Ranch State B12-65HN  
 Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980  
 Projection method is Lambert Conformal Conic (2 parallel)  
 Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°  
 False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996090

Grid Coordinates of Well: 1,395,255.48 ft N, 3,276,444.46 ft E  
 Geographical Coordinates of Well: 40° 24' 50.87" N, 104° 30' 25.88" W  
 Grid Convergence at Surface is: 0.64°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,992.00ft  
 the Bottom Hole Displacement is 4,548.22ft in the Direction of 89.45° (Grid).

Magnetic Convergence at surface is: -7.90° (30 March 2013, , BGGM2012)

