

Chevron USA

Piceance

SKR-598-36-BV (New)

SKR-598-36-BV-04 - Slot 4

598-36-32

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

09 April, 2009

Well Coordinates (NAD83): 1,643,886.23 N, 2,197,622.38 E (39° 34' 00.27" N, 108° 20' 47.82" W)

Ground Level: 6,032.60 ft

Local Coordinate Origin: Centered on Well SKR-598-36-BV-04 (Slot 4) - Slot S

Viewing Datum: RFE @ 6057.6ft (Original Well Elev)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet

Version: 2003.16 Build: 431

HALLIBURTON

Project: Piceance
Site: SKR-598-36-BV (New)
Well: SKR-598-36-BV-04
Wellbore: 598-36-32
Plan: Actual Field Surveys

Chevron USA

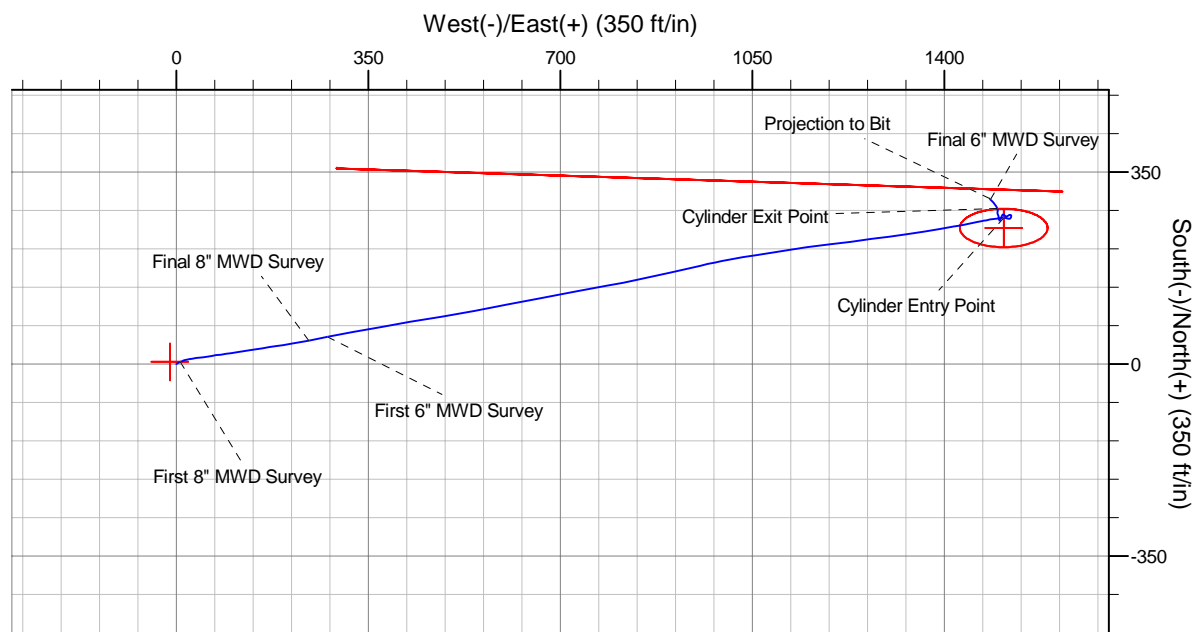
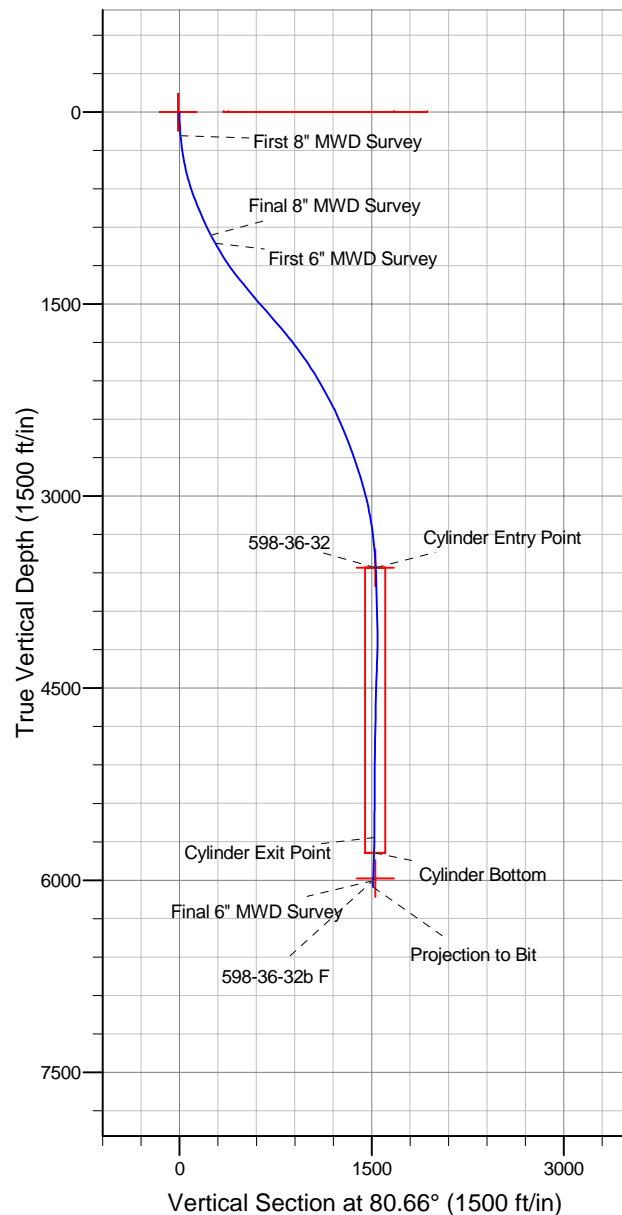
HALLIBURTON
Drilling and Formation
Evaluation

WELL DETAILS: SKR-598-36-BV-04

			Ground Level: 6032.6				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot	
0.0	0.0	1643886.23	2197622.38	39° 34' 0.271 N	108° 20' 47.817 W	Slot 4	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
200' Hardline	0.0	3.7	-11.9	1643889.95	2197610.45	Polygon
BLM Tract	0.0	3.7	-11.9	1643889.95	2197610.45	Polygon
598-36-32	3559.0	248.0	1508.3	1644134.23	2199130.68	Ellipse (Radii: L35.0 W80.0)
598-36-32b F	5986.0	248.0	1508.3	1644134.23	2199130.71	Point



Design Report for SKR-598-36-BV-04 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
200' Hardline - BLM Tract							
184.0	5.10	62.90	183.8	3.7	7.3	7.8	2.77
First 8" MWD Survey							
214.0	5.90	68.20	213.6	4.9	9.9	10.6	3.16
245.0	6.80	68.40	244.4	6.2	13.1	13.9	2.90
276.0	7.50	75.60	275.2	7.4	16.8	17.7	3.66
307.0	8.30	78.70	305.9	8.3	20.9	22.0	2.92
337.0	9.20	80.10	335.5	9.1	25.4	26.5	3.08
368.0	10.30	82.60	366.1	9.9	30.6	31.8	3.80
399.0	11.10	82.60	396.6	10.7	36.3	37.5	2.58
430.0	12.20	82.40	426.9	11.5	42.5	43.8	3.55
460.0	13.40	82.20	456.2	12.4	49.1	50.4	4.00
491.0	14.40	81.00	486.3	13.5	56.5	57.9	3.36
522.0	15.40	81.20	516.2	14.7	64.3	65.9	3.23
552.0	16.50	81.60	545.1	15.9	72.5	74.1	3.68
583.0	17.50	82.00	574.7	17.2	81.4	83.2	3.25
614.0	18.30	82.20	604.2	18.5	90.9	92.7	2.59
644.0	19.50	82.30	632.6	19.8	100.5	102.4	4.00
675.0	20.30	81.60	661.7	21.3	111.0	112.9	2.69
706.0	21.00	81.60	690.7	22.9	121.8	123.9	2.26
737.0	21.90	80.60	719.6	24.7	133.0	135.2	3.13
769.0	22.60	80.70	749.2	26.6	144.9	147.3	2.19
800.0	22.90	80.10	777.8	28.6	156.8	159.3	1.22
832.0	23.50	81.00	807.2	30.7	169.2	171.9	2.18
863.0	23.90	81.30	835.6	32.6	181.5	184.4	1.35
895.0	24.90	81.40	864.7	34.6	194.6	197.6	3.13
926.0	25.40	81.00	892.8	36.6	207.6	210.8	1.70
958.0	26.60	80.00	921.6	38.9	221.4	224.8	3.99
1,003.0	28.20	79.10	961.5	42.7	241.8	245.5	3.67
Final 8" MWD Survey							
1,075.0	28.70	78.70	1,024.8	49.3	275.4	279.8	0.74
First 6" MWD Survey							
1,169.0	31.30	79.50	1,106.2	58.2	321.6	326.8	2.80
1,263.0	33.90	79.70	1,185.4	67.3	371.4	377.4	2.77
1,358.0	37.70	80.50	1,262.4	76.8	426.1	433.0	4.03
1,452.0	40.00	81.00	1,335.6	86.3	484.3	491.9	2.47
1,547.0	39.50	79.00	1,408.7	96.9	544.1	552.7	1.45
1,641.0	40.80	79.00	1,480.5	108.4	603.6	613.2	1.38
1,736.0	41.50	79.20	1,552.1	120.2	665.0	675.7	0.75
1,830.0	40.70	79.60	1,622.9	131.6	725.8	737.5	0.90
1,924.0	39.80	79.50	1,694.6	142.6	785.5	798.2	0.96
2,019.0	38.90	77.50	1,768.1	154.6	844.5	858.4	1.64
2,113.0	36.80	77.80	1,842.3	167.0	900.9	916.0	2.24
2,208.0	35.50	76.90	1,919.0	179.2	955.5	972.0	1.48
2,303.0	32.50	79.40	1,997.8	190.2	1,007.5	1,025.0	3.48
2,397.0	31.10	81.50	2,077.7	198.4	1,056.3	1,074.5	1.90
2,492.0	29.90	80.70	2,159.5	205.9	1,104.0	1,122.7	1.33
2,586.0	28.00	82.30	2,241.8	212.6	1,149.0	1,168.2	2.18
2,680.0	25.60	82.80	2,325.7	218.1	1,191.0	1,210.6	2.56

Design Report for SKR-598-36-BV-04 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2,775.0	23.50	82.80	2,412.1	223.1	1,230.1	1,250.0	2.21
2,870.0	21.90	82.70	2,499.7	227.7	1,266.5	1,286.7	1.68
2,964.0	20.80	82.30	2,587.3	232.2	1,300.4	1,320.9	1.18
3,058.0	20.00	81.60	2,675.4	236.7	1,332.9	1,353.6	0.89
3,153.0	18.30	80.90	2,765.1	241.5	1,363.7	1,384.8	1.81
3,247.0	16.90	80.20	2,854.7	246.1	1,391.7	1,413.2	1.51
3,341.0	15.30	80.70	2,945.0	250.5	1,417.4	1,439.3	1.71
3,436.0	13.40	78.60	3,037.1	254.7	1,440.6	1,462.8	2.07
3,530.0	11.50	77.70	3,128.9	258.8	1,460.4	1,483.1	2.03
3,625.0	8.70	78.80	3,222.4	262.2	1,476.7	1,499.7	2.95
3,719.0	6.80	83.20	3,315.5	264.3	1,489.2	1,512.4	2.12
3,814.0	5.00	86.10	3,410.0	265.2	1,498.9	1,522.1	1.92
3,908.0	3.30	80.30	3,503.8	265.9	1,505.7	1,528.9	1.86
3,963.2	2.87	87.51	3,558.9	266.3	1,508.6	1,531.9	1.04
598-36-32							
3,963.3	2.87	87.53	3,559.0	266.3	1,508.6	1,531.9	1.04
Cylinder Entry Point							
4,003.0	2.60	94.10	3,598.6	266.3	1,510.5	1,533.7	1.04
4,097.0	2.00	108.80	3,692.6	265.6	1,514.2	1,537.2	0.89
4,192.0	1.40	103.00	3,787.5	264.8	1,516.9	1,539.8	0.66
4,286.0	1.60	68.10	3,881.5	265.0	1,519.3	1,542.1	0.98
4,381.0	2.00	23.60	3,976.4	267.0	1,521.1	1,544.3	1.49
4,475.0	1.30	6.20	4,070.4	269.6	1,521.9	1,545.5	0.91
4,570.0	1.00	316.60	4,165.4	271.3	1,521.5	1,545.3	1.06
4,664.0	1.50	266.10	4,259.4	271.8	1,519.7	1,543.6	1.23
4,758.0	2.50	238.60	4,353.3	270.6	1,516.7	1,540.5	1.45
4,853.0	1.80	253.60	4,448.2	269.1	1,513.5	1,537.1	0.94
4,947.0	1.80	322.10	4,542.2	269.9	1,511.2	1,534.9	2.16
5,042.0	1.90	299.00	4,637.2	271.8	1,508.9	1,533.0	0.79
5,136.0	0.80	271.70	4,731.1	272.6	1,506.9	1,531.1	1.32
5,231.0	1.70	202.30	4,826.1	271.3	1,505.7	1,529.7	1.69
5,325.0	1.70	210.20	4,920.1	268.8	1,504.4	1,528.1	0.25
5,420.0	1.50	206.90	5,015.0	266.5	1,503.2	1,526.5	0.23
5,514.0	1.90	208.30	5,109.0	264.0	1,501.9	1,524.8	0.43
5,609.0	1.10	197.00	5,204.0	261.7	1,500.9	1,523.4	0.89
5,703.0	0.90	352.70	5,297.9	261.6	1,500.5	1,523.1	2.08
5,798.0	2.60	344.20	5,392.9	264.4	1,499.8	1,522.8	1.81
5,892.0	4.10	345.80	5,486.7	269.7	1,498.4	1,522.3	1.60
5,955.0	4.70	344.90	5,549.5	274.4	1,497.2	1,521.9	0.96
5,987.0	4.50	10.70	5,581.4	276.9	1,497.1	1,522.2	6.44
6,071.8	4.79	339.46	5,666.0	283.5	1,496.5	1,522.6	2.97
Cylinder Exit Point							
6,081.0	4.90	336.50	5,675.2	284.2	1,496.2	1,522.5	2.97
6,175.0	3.40	320.60	5,768.9	290.1	1,492.8	1,520.1	2.00
6,192.1	3.38	320.07	5,786.0	290.8	1,492.1	1,519.6	0.21
Cylinder Bottom							
6,270.0	3.30	317.60	5,863.7	294.3	1,489.2	1,517.2	0.21
6,364.0	2.90	317.70	5,957.6	298.0	1,485.7	1,514.4	0.43
6,389.9	2.67	318.28	5,983.5	298.9	1,484.9	1,513.7	0.88
598-36-32b F							
6,410.0	2.50	318.80	6,003.6	299.6	1,484.3	1,513.2	0.88

Design Report for SKR-598-36-BV-04 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Final 6" MWD Survey							
6,460.0	2.50	318.80	6,053.5	301.3	1,482.9	1,512.1	0.00
Projection to Bit							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
184.0	183.8	3.7	7.3	First 8" MWD Survey
1,003.0	961.5	42.7	241.8	Final 8" MWD Survey
1,075.0	1,024.8	49.3	275.4	First 6" MWD Survey
3,963.3	3,559.0	266.3	1,508.6	Cylinder Entry Point
6,071.8	5,666.0	283.5	1,496.5	Cylinder Exit Point
6,192.1	5,786.0	290.8	1,492.1	Cylinder Bottom
6,410.0	6,003.6	299.6	1,484.3	Final 6" MWD Survey
6,460.0	6,053.5	301.3	1,482.9	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	598-36-32	80.66	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
184.0	1,003.0	8" MWD Surveys	MWD
1,075.0	6,460.0	6" MWD Surveys	MWD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
BLM Tract	0.00	360.00	0.0	3.7	-11.9	1,643,889.95	2,197,610.45	39° 34' 0.304 N	108° 20' 47.971 W
- actual wellpath misses target center by 12.5ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1				335.4	1,875.4	1,645,761.65	2,197,957.75		
Point 2				1,657.9	1,836.6	1,645,722.85	2,199,280.25		
Point 3				1,615.4	514.6	1,644,400.85	2,199,237.75		
Point 4				292.4	556.4	1,644,442.65	2,197,914.75		
598-36-32b F	0.00	360.00	5,986.0	248.0	1,508.3	1,644,134.23	2,199,130.71	39° 34' 3.188 N	108° 20' 28.665 W
- actual wellpath misses target center by 56.1ft at 6390.0ft MD (5983.6 TVD, 299.0 N, 1484.9 E)									
- Point									
200' Hardline	0.00	360.00	0.0	3.7	-11.9	1,643,889.95	2,197,610.45	39° 34' 0.304 N	108° 20' 47.971 W
- actual wellpath misses target center by 12.5ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1				1,615.4	314.6	1,644,200.85	2,199,237.75		
Point 2				292.4	356.4	1,644,242.65	2,197,914.75		
598-36-32	0.00	360.00	3,559.0	248.0	1,508.3	1,644,134.23	2,199,130.68	39° 34' 3.188 N	108° 20' 28.665 W
- actual wellpath misses target center by 18.3ft at 3963.3ft MD (3558.9 TVD, 266.3 N, 1508.6 E)									
- Ellipse (radii L35.0 W80.0 on 360.00 azi) - Target Cylinder 94.6% Intersected									