

Chevron USA

Piceance

SKR-598-36-BV (New)

SKR-598-36-BV-18 - Slot 18

598-36-15

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

23 March, 2009

Well Coordinates (NAD83): 1,643,836.64 N, 2,197,639.95 E (39° 33' 59.79" N, 108° 20' 47.57" W)

Ground Level: 6,032.60 ft

Local Coordinate Origin: Centered on Well SKR-598-36-BV-18 (Slot 18) - Slot

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-18
 Wellbore: 598-36-15
 Plan: Actual Field Surveys

Chevron USA

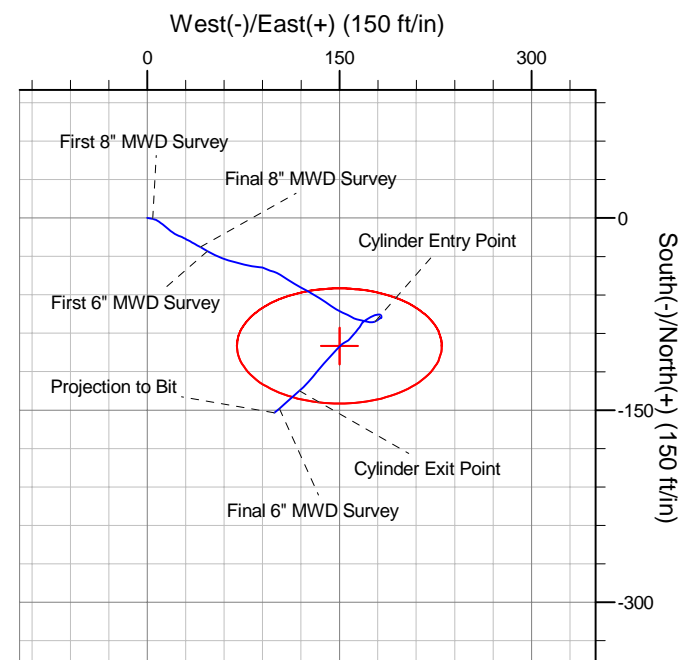
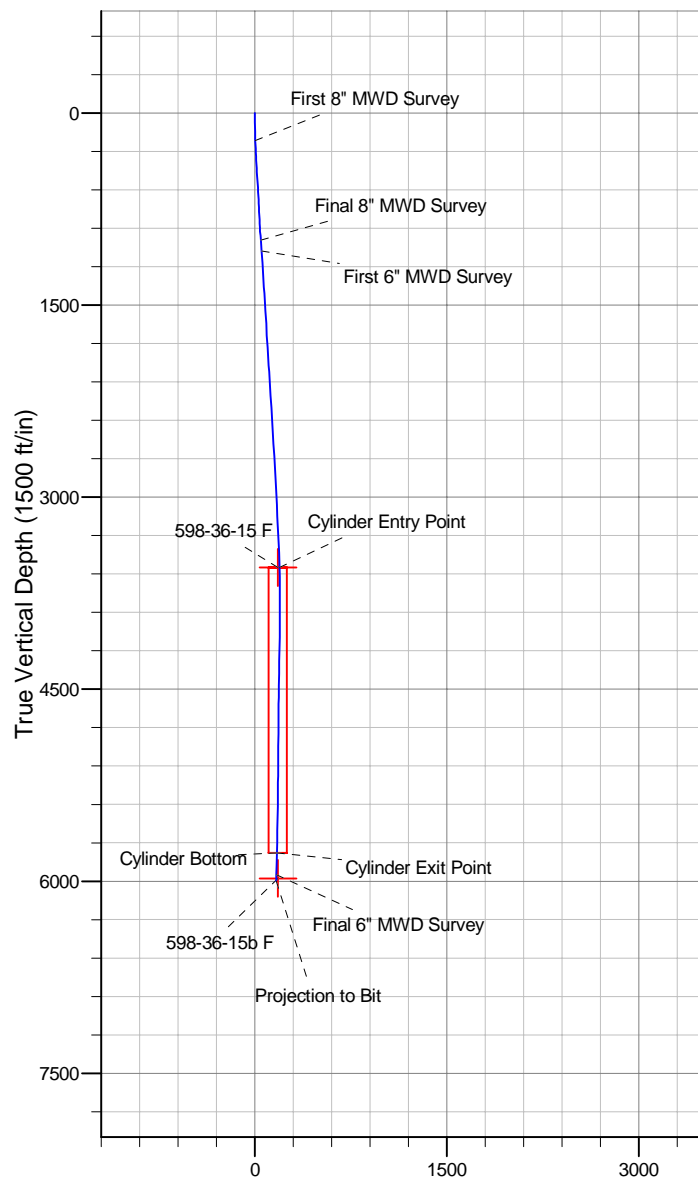
HALLIBURTON
 Drilling and Formation
 Evaluation

WELL DETAILS: SKR-598-36-BV-18

			Ground Level: 6032.6				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot	
0.0	0.0	1643836.64	2197639.95	39° 33' 59.787 N	108° 20' 47.573 W	Slot 18	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
598-36-15 F	3549.0	-99.9	149.9	1643736.77	2197789.88	Ellipse (Radii: L45.0 W80.0)
598-36-15b F	5977.0	-99.9	149.9	1643736.77	2197789.88	Point



Design Report for SKR-598-36-BV-18 - 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
214.0	2.30	99.80	213.9	-0.7	4.2	3.9	1.07
First 8" MWD Survey							
245.0	2.40	107.90	244.9	-1.0	5.5	5.1	1.12
276.0	2.50	111.10	275.9	-1.5	6.7	6.4	0.55
307.0	2.70	121.30	306.9	-2.1	8.0	7.8	1.62
337.0	2.90	124.90	336.8	-2.9	9.2	9.3	0.89
368.0	3.10	127.70	367.8	-3.9	10.5	10.9	0.80
399.0	3.40	126.60	398.7	-4.9	11.9	12.6	0.99
430.0	3.70	130.20	429.7	-6.1	13.4	14.5	1.21
460.0	3.70	128.70	459.6	-7.3	14.9	16.5	0.32
491.0	4.00	130.30	490.5	-8.7	16.5	18.5	1.03
522.0	3.90	129.30	521.5	-10.0	18.1	20.7	0.39
552.0	3.60	127.00	551.4	-11.3	19.7	22.6	1.12
583.0	3.30	121.80	582.3	-12.3	21.2	24.5	1.40
614.0	3.10	114.40	613.3	-13.1	22.7	26.2	1.48
644.0	3.20	109.60	643.2	-13.7	24.3	27.8	0.94
675.0	3.00	112.30	674.2	-14.3	25.8	29.5	0.80
706.0	2.50	115.60	705.2	-14.9	27.2	30.9	1.69
737.0	2.30	117.60	736.1	-15.5	28.4	32.2	0.70
769.0	2.30	118.90	768.1	-16.1	29.5	33.5	0.16
800.0	2.40	119.80	799.1	-16.8	30.6	34.7	0.34
832.0	2.70	116.00	831.1	-17.4	31.9	36.2	1.08
863.0	3.20	120.00	862.0	-18.2	33.3	37.8	1.74
895.0	3.90	117.70	894.0	-19.1	35.0	39.7	2.23
926.0	4.10	117.00	924.9	-20.1	36.9	41.9	0.66
958.0	4.40	119.80	956.8	-21.2	39.0	44.2	1.14
993.0	4.50	121.30	991.7	-22.6	41.3	46.9	0.44
Final 8" MWD Survey							
1,078.0	4.10	119.10	1,076.4	-25.8	46.8	53.3	0.51
First 6" MWD Survey							
1,172.0	3.90	115.20	1,170.2	-28.8	52.7	59.8	0.36
1,267.0	3.60	111.30	1,265.0	-31.3	58.4	65.9	0.41
1,361.0	3.00	105.90	1,358.9	-33.0	63.5	71.2	0.72
1,455.0	4.10	105.70	1,452.7	-34.6	69.1	76.7	1.17
1,550.0	3.90	103.00	1,547.4	-36.3	75.5	82.9	0.29
1,644.0	3.60	98.70	1,641.2	-37.4	81.5	88.6	0.44
1,739.0	3.30	96.10	1,736.1	-38.2	87.2	93.7	0.36
1,833.0	4.00	115.00	1,829.9	-39.8	92.9	99.4	1.47
1,928.0	3.20	102.90	1,924.7	-41.8	98.5	105.1	1.16
2,022.0	4.20	124.60	2,018.5	-44.4	103.8	111.0	1.81
2,117.0	3.90	121.20	2,113.3	-48.0	109.5	117.7	0.40
2,211.0	3.70	122.60	2,207.1	-51.3	114.8	124.0	0.23
2,306.0	3.10	118.30	2,301.9	-54.2	119.6	129.6	0.69
2,400.0	2.70	117.90	2,395.8	-56.4	123.8	134.3	0.43
2,495.0	3.90	118.90	2,490.6	-59.0	128.6	139.8	1.26
2,589.0	3.80	122.80	2,584.4	-62.3	134.0	146.1	0.30
2,684.0	3.30	123.50	2,679.2	-65.5	139.0	151.9	0.53
2,778.0	3.10	126.60	2,773.1	-68.5	143.2	157.2	0.28
2,872.0	3.20	120.30	2,866.9	-71.3	147.6	162.3	0.38

Design Report for SKR-598-36-BV-18 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2,967.0	3.20	113.40	2,961.8	-73.7	152.3	167.6	0.41
3,061.0	2.30	116.50	3,055.7	-75.6	156.4	172.1	0.97
3,156.0	2.10	124.70	3,150.6	-77.4	159.5	175.7	0.39
3,250.0	3.40	103.50	3,244.5	-79.1	163.6	180.0	1.73
3,345.0	3.30	103.70	3,339.3	-80.4	169.0	185.2	0.11
3,439.0	2.40	100.70	3,433.2	-81.4	173.6	189.6	0.97
3,534.0	2.10	67.10	3,528.1	-81.1	177.2	192.4	1.40
3,553.7	1.93	65.48	3,547.8	-80.8	177.8	192.8	0.92
598-36-15 F							
3,554.9	1.92	65.38	3,549.0	-80.8	177.8	192.8	0.92
Cylinder Entry Point							
3,628.0	1.30	55.60	3,622.1	-79.8	179.6	193.7	0.92
3,722.0	0.50	27.10	3,716.1	-78.8	180.7	194.1	0.95
3,817.0	0.90	73.10	3,811.1	-78.3	181.6	194.5	0.69
3,911.0	0.10	135.10	3,905.1	-78.1	182.4	195.1	0.91
4,006.0	1.00	24.20	4,000.1	-77.4	182.8	195.0	1.09
4,100.0	0.80	321.70	4,094.1	-76.1	182.7	194.2	1.01
4,195.0	0.80	283.60	4,189.1	-75.5	181.6	193.0	0.55
4,289.0	1.30	269.10	4,283.0	-75.3	179.9	191.5	0.60
4,384.0	1.70	251.60	4,378.0	-75.8	177.5	189.7	0.64
4,478.0	2.40	241.00	4,471.9	-77.2	174.5	188.0	0.84
4,573.0	3.00	237.00	4,566.8	-79.5	170.6	186.1	0.66
4,667.0	1.90	214.60	4,660.8	-82.1	167.7	185.1	1.53
4,762.0	2.40	213.20	4,755.7	-85.1	165.7	185.1	0.53
4,856.0	3.40	222.80	4,849.6	-88.8	162.7	184.7	1.18
4,951.0	3.00	217.90	4,944.4	-92.8	159.3	184.0	0.51
5,045.0	1.60	236.60	5,038.3	-95.5	156.7	183.3	1.67
5,140.0	1.50	246.60	5,133.3	-96.7	154.4	182.1	0.30
5,234.0	2.50	226.00	5,227.3	-98.6	151.8	181.0	1.29
5,328.0	4.10	223.70	5,321.1	-102.5	148.0	180.0	1.71
5,423.0	4.70	221.70	5,415.8	-107.8	143.1	178.9	0.65
5,517.0	4.80	222.40	5,509.5	-113.6	137.9	177.7	0.12
5,612.0	5.60	217.90	5,604.1	-120.2	132.4	176.8	0.94
5,706.0	6.70	222.80	5,697.6	-127.8	125.8	175.6	1.30
5,787.1	7.46	228.01	5,778.0	-134.8	118.7	173.5	1.23
Cylinder Bottom - Cylinder Exit Point							
5,801.0	7.60	228.80	5,791.8	-136.0	117.3	173.1	1.23
5,895.0	6.90	227.70	5,885.1	-143.9	108.5	170.1	0.76
5,960.0	5.90	229.30	5,949.7	-148.7	103.1	168.2	1.56
Final 6" MWD Survey - 598-36-15b F							
6,010.0	5.90	229.30	5,999.4	-152.1	99.2	166.8	0.00
Projection to Bit							

Design Report for SKR-598-36-BV-18 - Actual Field Surveys**Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
214.0	213.9	-0.7	4.2	First 8" MWD Survey
993.0	991.7	-22.6	41.3	Final 8" MWD Survey
1,078.0	1,076.4	-25.8	46.8	First 6" MWD Survey
3,554.9	3,549.0	-80.8	177.8	Cylinder Entry Point
5,787.1	5,778.0	-134.8	118.7	Cylinder Bottom
5,787.1	5,778.0	-134.8	118.7	Cylinder Exit Point
5,960.0	5,949.7	-148.7	103.1	Final 6" MWD Survey
6,010.0	5,999.4	-152.1	99.2	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	598-36-15 F	123.67	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
214.0	993.0	8" EM Surveys	MWD
1,078.0	6,010.0	6" EM Surveys	MWD

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
598-36-15 F	0.00	0.00	3,549.0	-99.9	149.9	1,643,736.77	2,197,789.88	39° 33' 58.847 N	108° 20' 45.620 W
- actual wellpath misses target center by 33.8ft at 3553.7ft MD (3547.9 TVD, -80.8 N, 177.8 E)									
- Ellipse (radii L45.0 W80.0 on 0.00 azi) - Target Cylinder 100% Intersected									
598-36-15b F	0.00	0.00	5,977.0	-99.9	149.9	1,643,736.77	2,197,789.88	39° 33' 58.847 N	108° 20' 45.620 W
- actual wellpath misses target center by 73.0ft at 5960.0ft MD (5949.7 TVD, -148.7 N, 103.1 E)									
- Point									