

Chevron USA

Piceance

SKR-598-36-BV (New)

SKR-598-36-BV-14 - Slot 14

598-36-35

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

09 April, 2009

Well Coordinates (NAD83): 1,643,850.89 N, 2,197,634.90 E (39° 33' 59.93" N, 108° 20' 47.64" W)

Ground Level: 6,032.60 ft

Local Coordinate Origin: Centered on Well SKR-598-36-BV-14 (Slot 14) - 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-14
Wellbore: 598-36-35
Plan: Actual Field Surveys

Chevron USA

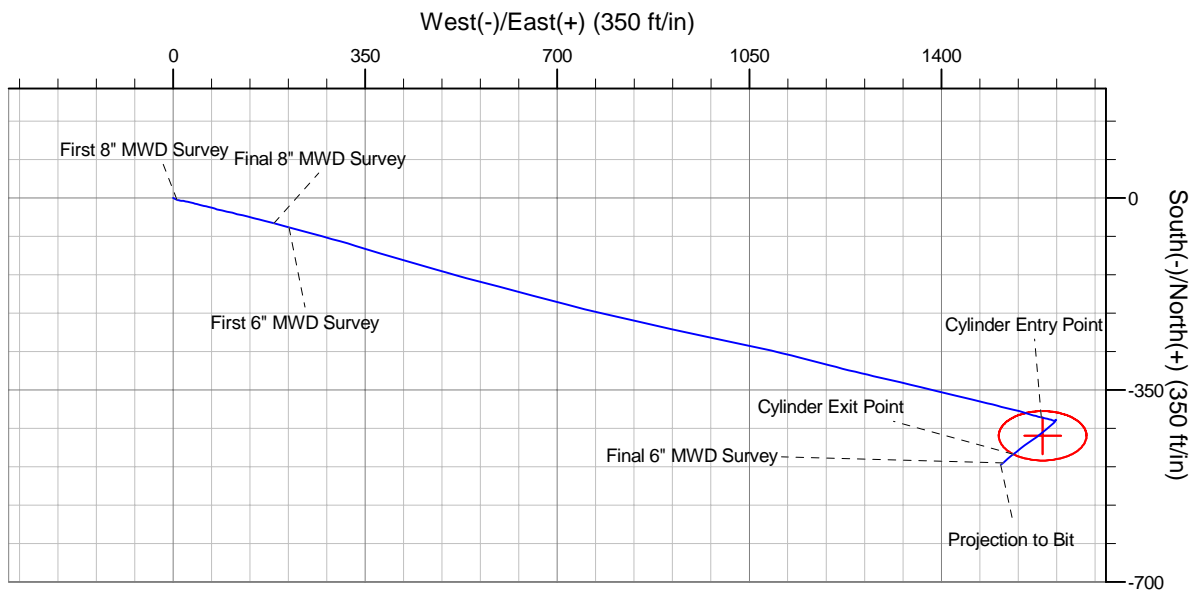
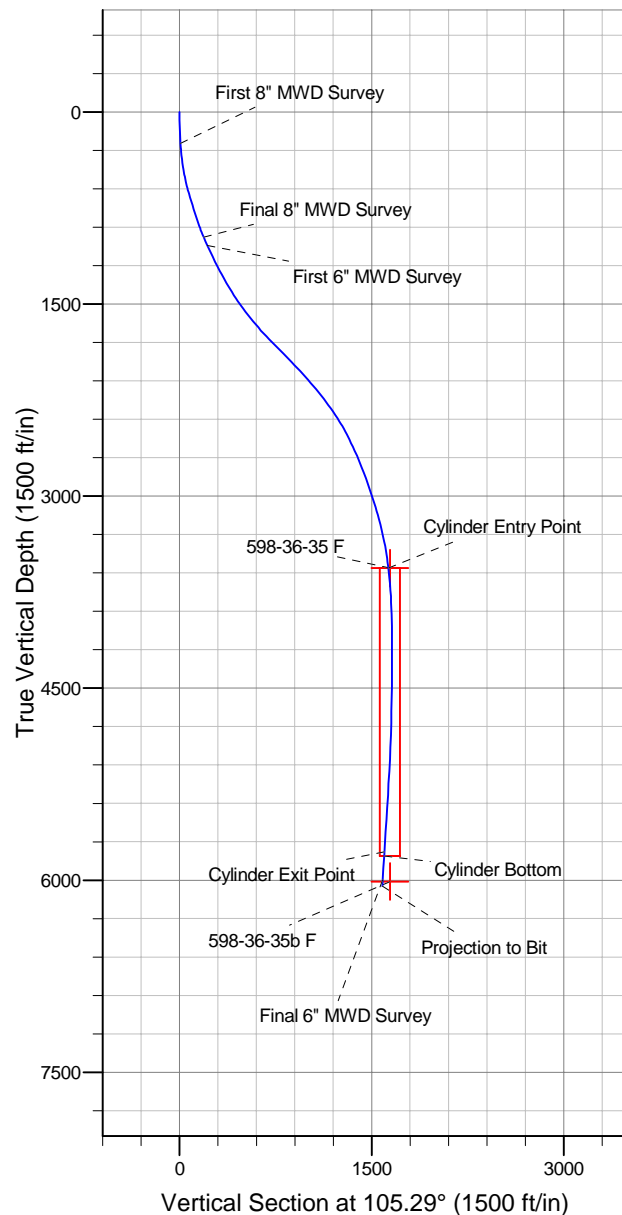
HALLIBURTON
Drilling and Formation
Evaluation

WELL DETAILS: SKR-598-36-BV-14

+N/-S	+E/-W	Northing	Ground Level: 6032.6	Easting	Latitude	Longitude	Slot
0.0	0.0	1643850.89		2197634.90	39° 33' 59.926 N	108° 20' 47.643 W	Slot 14

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
598-36-35 F	3562.0	-433.2	1584.8	1643417.70	2199219.70	Ellipse (Radii: L45.0 W80.0)
598-36-35b F	6011.0	-433.2	1584.8	1643417.70	2199219.70	Point



Design Report for SKR-598-36-BV-14 - 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
245.0	3.50	113.10	244.8	-2.9	6.9	7.4	1.43
First 8" MWD Survey							
276.0	4.40	107.70	275.8	-3.7	8.9	9.5	3.14
307.0	5.60	98.80	306.7	-4.3	11.5	12.2	4.60
337.0	6.50	96.10	336.5	-4.7	14.6	15.4	3.15
368.0	7.30	100.10	367.3	-5.2	18.3	19.1	3.01
399.0	8.00	100.90	398.0	-6.0	22.4	23.2	2.28
430.0	8.70	103.30	428.7	-6.9	26.8	27.7	2.52
460.0	9.80	103.90	458.3	-8.0	31.5	32.5	3.68
491.0	10.90	104.50	488.8	-9.4	36.9	38.0	3.57
522.0	12.10	103.30	519.1	-10.9	42.9	44.2	3.95
552.0	13.10	102.90	548.4	-12.4	49.2	50.8	3.35
583.0	13.90	104.00	578.6	-14.0	56.3	58.0	2.71
614.0	15.00	105.60	608.6	-16.0	63.8	65.7	3.77
644.0	16.00	104.90	637.5	-18.1	71.5	73.7	3.39
675.0	17.00	103.60	667.2	-20.3	80.0	82.6	3.44
706.0	17.60	103.00	696.8	-22.4	89.0	91.8	2.02
737.0	17.60	102.80	726.4	-24.5	98.1	101.1	0.20
769.0	17.80	104.20	756.8	-26.8	107.6	110.9	1.47
800.0	17.80	103.50	786.4	-29.1	116.8	120.3	0.69
832.0	18.30	104.10	816.8	-31.4	126.4	130.2	1.67
863.0	18.60	104.40	846.2	-33.8	135.9	140.0	1.02
895.0	19.10	103.60	876.5	-36.3	146.0	150.4	1.76
926.0	20.20	104.60	905.7	-38.9	156.1	160.8	3.71
958.0	21.50	105.00	935.6	-41.8	167.1	172.2	4.09
1,003.0	23.20	104.60	977.2	-46.2	183.6	189.3	3.79
Final 8" MWD Survey							
1,073.0	24.70	105.50	1,041.2	-53.5	211.1	217.7	2.21
First 6" MWD Survey							
1,169.0	25.20	104.30	1,128.2	-63.9	250.2	258.2	0.74
1,263.0	26.90	105.70	1,212.7	-74.6	290.1	299.5	1.92
1,357.0	29.60	107.10	1,295.4	-87.2	332.7	344.0	2.96
1,452.0	30.90	106.20	1,377.5	-100.9	378.6	391.8	1.45
1,546.0	33.80	106.30	1,456.9	-115.0	426.9	442.1	3.09
1,641.0	36.80	106.50	1,534.4	-130.5	479.5	497.0	3.16
1,735.0	38.60	104.50	1,608.8	-145.9	534.9	554.4	2.31
1,830.0	40.90	104.90	1,681.8	-161.3	593.7	615.2	2.44
1,924.0	43.00	104.90	1,751.8	-177.4	654.4	678.0	2.23
2,018.0	45.20	104.80	1,819.3	-194.2	717.6	743.4	2.34
2,113.0	44.60	102.50	1,886.6	-210.0	782.8	810.4	1.82
2,207.0	44.20	103.30	1,953.7	-224.7	846.9	876.2	0.73
2,302.0	42.20	102.50	2,023.0	-239.2	910.3	941.1	2.18
2,397.0	42.20	101.80	2,093.3	-252.7	972.6	1,004.8	0.49
2,491.0	39.60	102.10	2,164.4	-265.4	1,032.9	1,066.3	2.77
2,586.0	37.10	102.70	2,238.9	-278.0	1,090.4	1,125.1	2.66
2,680.0	35.40	104.90	2,314.7	-291.3	1,144.4	1,180.7	2.28
2,775.0	32.90	104.50	2,393.3	-304.8	1,196.0	1,234.0	2.64
2,869.0	29.50	103.50	2,473.7	-316.6	1,243.2	1,282.7	3.66
2,964.0	26.40	102.50	2,557.6	-326.6	1,286.6	1,327.2	3.30

Design Report for SKR-598-36-BV-14 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
3,058.0	24.10	103.10	2,642.6	-335.5	1,325.7	1,367.2	2.46
3,152.0	22.20	104.30	2,729.0	-344.3	1,361.6	1,404.2	2.08
3,247.0	20.80	103.70	2,817.4	-352.7	1,395.4	1,439.0	1.49
3,341.0	19.40	103.40	2,905.7	-360.3	1,426.8	1,471.3	1.49
3,436.0	18.20	103.60	2,995.6	-367.4	1,456.5	1,501.9	1.26
3,530.0	17.20	103.30	3,085.2	-374.1	1,484.3	1,530.4	1.07
3,625.0	14.80	104.40	3,176.5	-380.3	1,509.8	1,556.6	2.55
3,719.0	13.30	103.60	3,267.7	-385.8	1,531.9	1,579.4	1.61
3,813.0	11.70	106.10	3,359.4	-391.0	1,551.6	1,599.8	1.80
3,908.0	9.20	106.80	3,452.9	-395.9	1,568.1	1,617.0	2.63
4,002.0	6.40	103.40	3,546.0	-399.3	1,580.4	1,629.7	3.02
4,018.1	6.21	103.34	3,562.0	-399.7	1,582.1	1,631.5	1.16
Cylinder Entry Point							
4,019.1	6.20	103.34	3,563.0	-399.7	1,582.2	1,631.6	1.16
598-36-35 F							
4,097.0	5.30	103.00	3,640.5	-401.5	1,589.8	1,639.4	1.16
4,192.0	4.00	105.50	3,735.2	-403.4	1,597.3	1,647.1	1.38
4,286.0	2.90	111.20	3,829.0	-405.1	1,602.7	1,652.8	1.22
4,380.0	1.40	90.90	3,922.9	-406.0	1,606.0	1,656.2	1.77
4,475.0	0.90	33.90	4,017.9	-405.4	1,607.6	1,657.6	1.24
4,569.0	0.70	43.30	4,111.9	-404.3	1,608.4	1,658.1	0.25
4,664.0	0.50	67.60	4,206.9	-403.8	1,609.2	1,658.7	0.34
4,758.0	0.30	210.60	4,300.9	-403.8	1,609.4	1,659.0	0.81
4,852.0	0.70	210.20	4,394.9	-404.5	1,609.0	1,658.7	0.43
4,947.0	1.20	214.10	4,489.9	-405.8	1,608.2	1,658.3	0.53
5,042.0	1.70	219.30	4,584.9	-407.8	1,606.7	1,657.4	0.54
5,136.0	2.40	227.00	4,678.8	-410.2	1,604.4	1,655.8	0.80
5,230.0	3.10	229.30	4,772.7	-413.2	1,601.0	1,653.3	0.75
5,325.0	3.40	228.40	4,867.5	-416.7	1,597.0	1,650.3	0.32
5,419.0	4.20	229.30	4,961.3	-420.8	1,592.3	1,646.9	0.85
5,514.0	4.50	230.50	5,056.1	-425.5	1,586.8	1,642.8	0.33
5,608.0	4.80	231.00	5,149.7	-430.3	1,580.9	1,638.4	0.32
5,703.0	5.30	234.30	5,244.4	-435.3	1,574.2	1,633.3	0.61
5,797.0	5.40	238.40	5,338.0	-440.2	1,566.9	1,627.5	0.42
5,892.0	5.40	233.80	5,432.5	-445.2	1,559.5	1,621.7	0.46
5,986.0	5.80	233.00	5,526.1	-450.6	1,552.2	1,616.0	0.43
6,081.0	5.80	231.20	5,620.6	-456.5	1,544.6	1,610.3	0.19
6,175.0	6.10	232.40	5,714.1	-462.6	1,536.9	1,604.5	0.35
6,239.3	6.10	233.28	5,778.0	-466.7	1,531.5	1,600.3	0.15
Cylinder Exit Point							
6,270.0	6.10	233.70	5,808.6	-468.6	1,528.9	1,598.3	0.15
6,272.4	6.11	233.55	5,811.0	-468.8	1,528.6	1,598.2	0.70
Cylinder Bottom							
6,364.0	6.40	228.30	5,902.0	-475.1	1,520.9	1,592.4	0.70
6,460.0	6.80	228.50	5,997.4	-482.4	1,512.7	1,586.3	0.42
Final 6" MWD Survey - 598-36-35b F							
6,510.0	6.80	228.50	6,047.0	-486.3	1,508.2	1,583.1	0.00
Projection to Bit							

Design Report for SKR-598-36-BV-14 - Actual Field Surveys**Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
245.0	244.8	-2.9	6.9	First 8" MWD Survey
1,003.0	977.2	-46.2	183.6	Final 8" MWD Survey
1,073.0	1,041.2	-53.5	211.1	First 6" MWD Survey
4,018.1	3,562.0	-399.7	1,582.1	Cylinder Entry Point
6,239.3	5,778.0	-466.7	1,531.5	Cylinder Exit Point
6,272.4	5,811.0	-468.8	1,528.6	Cylinder Bottom
6,460.0	5,997.4	-482.4	1,512.7	Final 6" MWD Survey
6,510.0	6,047.0	-486.3	1,508.2	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	598-36-35 F	105.29	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
245.0	1,003.0	8" EM Surveys	MWD
1,073.0	6,510.0	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
598-36-35b F	0.00	0.00	6,011.0	-433.2	1,584.8	1,643,417.70	2,199,219.70	39° 33' 56.137 N	108° 20' 27.243 W
- actual wellpath misses target center by 88.4ft at 6460.0ft MD (5997.4 TVD, -482.4 N, 1512.7 E)									
- Point									
598-36-35 F	0.00	0.00	3,562.0	-433.2	1,584.8	1,643,417.70	2,199,219.70	39° 33' 56.137 N	108° 20' 27.243 W
- actual wellpath misses target center by 33.6ft at 4019.1ft MD (3563.0 TVD, -399.7 N, 1582.2 E)									
- Ellipse (radii L45.0 W80.0 on 0.00 azi) - Target Cylinder 98.5% Intersected									