

Chevron USA

Piceance

SKR-598-25-CV

SKR-598-25-CV-15 - Slot 15

598-25-53

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

06 November, 2008

Well Coordinates (NAD83): 1,648,065.78 N, 2,199,265.74 E (39° 34' 42.07" N, 108° 20' 28.51" W)

Ground Level: 6,205.00 ft

Local Coordinate Origin: Centered on Well SKR-598-25-CV-15 - Slot Slot 15

Viewing Datum: RFE @ 6230.0ft (Original Well Elev)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet

Version: 2003.16 Build: 42B

HALLIBURTON

Project: Piceance
Site: SKR-598-25-CV
Well: SKR-598-25-CV-15
Wellbore: 598-25-53
Plan: Actual Field Surveys

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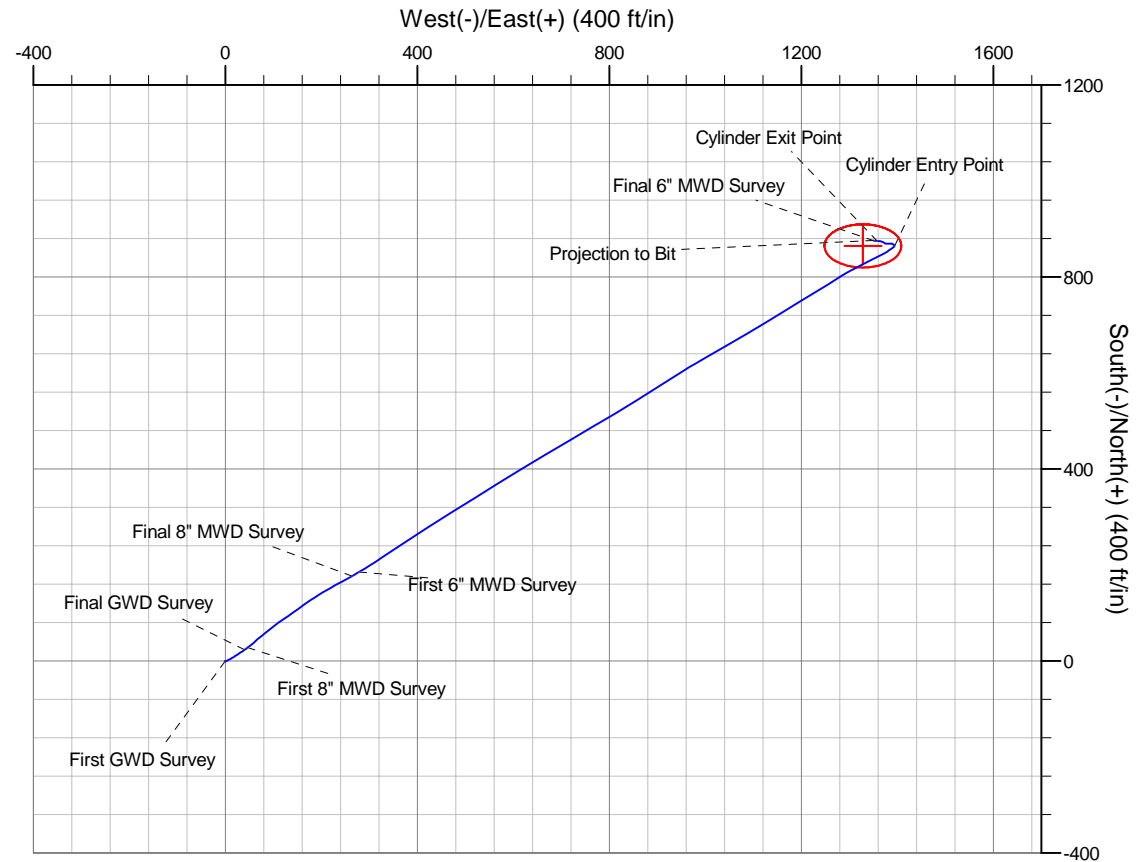
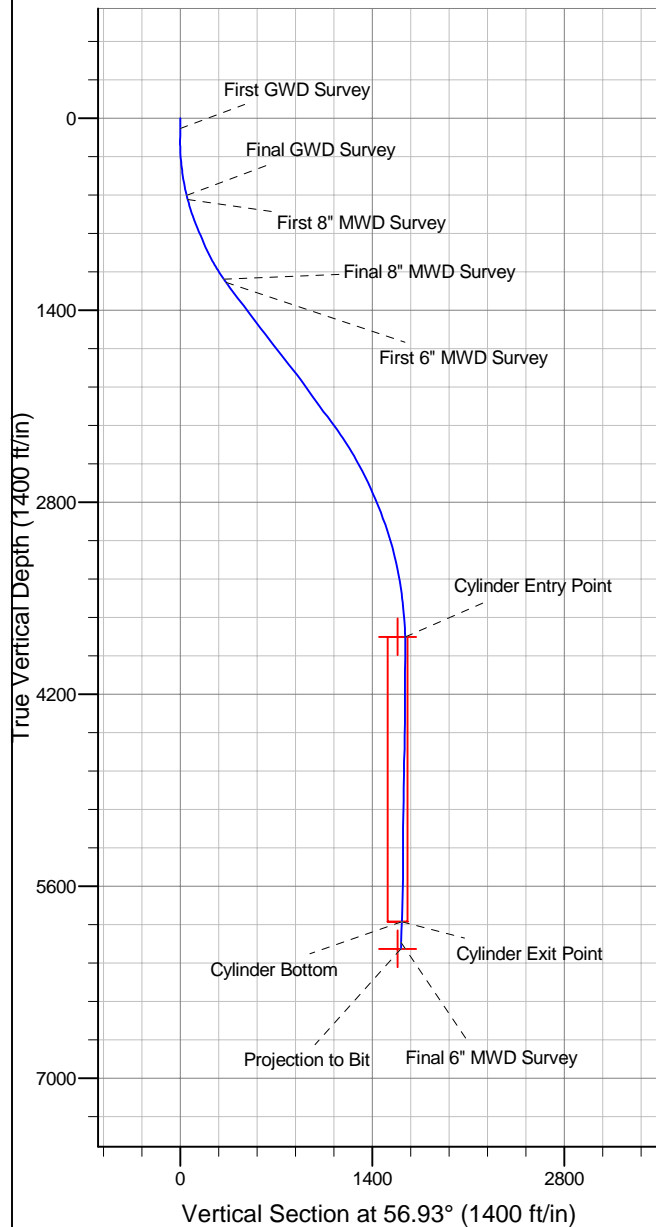
Drilling and Formation
Evaluation

WELL DETAILS: SKR-598-25-CV-15

+N/-S	+E/-W	Northing	Ground Level: 6205.0	Easting	Latitude	Longitude	Slot
0.0	0.0	1648065.78		2199265.74	39° 34' 42.068 N	108° 20' 28.511 W	Slot 15

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
598-25-53	3781.0	865.0	1328.4	1648930.78	2200594.16	Ellipse (Radii: L45.0 W80.0)
598-25-53B	6057.0	865.0	1328.4	1648930.78	2200594.16	Point



Design Report for SKR-598-25-CV-15 - 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
74.0	0.18	269.14	74.0	0.0	-0.1	-0.1	0.24
First GWD Survey							
101.0	0.44	246.76	101.0	0.0	-0.3	-0.2	1.04
132.0	0.62	222.44	132.0	-0.2	-0.5	-0.5	0.92
163.0	0.70	208.87	163.0	-0.5	-0.7	-0.8	0.56
194.0	0.53	95.39	194.0	-0.7	-0.6	-0.9	3.33
225.0	2.56	69.67	225.0	-0.5	0.2	-0.1	6.76
255.0	3.79	65.26	254.9	0.2	1.7	1.5	4.18
290.0	4.67	64.20	289.8	1.3	4.0	4.1	2.52
321.0	5.37	63.68	320.7	2.5	6.5	6.8	2.26
352.0	6.43	63.15	351.6	3.9	9.3	9.9	3.42
382.0	7.31	58.21	381.3	5.7	12.4	13.5	3.53
413.0	8.37	57.86	412.1	7.9	16.0	17.7	3.42
444.0	9.52	57.16	442.7	10.5	20.1	22.6	3.73
475.0	10.48	59.45	473.2	13.3	24.7	27.9	3.35
505.0	11.54	56.80	502.6	16.4	29.5	33.7	3.91
536.0	12.78	58.04	533.0	19.9	35.0	40.2	4.09
566.0	13.39	55.22	562.2	23.6	40.7	47.0	2.94
Final GWD Survey							
597.0	14.57	52.26	592.3	28.0	46.7	54.5	4.45
First 8" MWD Survey							
628.0	15.91	50.31	622.2	33.1	53.1	62.6	4.63
658.0	17.17	49.26	650.9	38.7	59.6	71.0	4.32
689.0	18.46	49.29	680.4	44.9	66.8	80.4	4.16
721.0	20.00	50.13	710.7	51.7	74.8	90.9	4.89
752.0	21.15	51.35	739.7	58.6	83.3	101.7	3.96
784.0	22.07	51.96	769.4	65.9	92.5	113.5	2.96
815.0	22.24	52.99	798.1	73.0	101.8	125.1	1.37
847.0	22.23	54.61	827.8	80.1	111.6	137.2	1.92
878.0	22.68	54.67	856.4	87.0	121.2	149.0	1.45
909.0	22.96	54.89	885.0	93.9	131.0	161.1	0.94
941.0	23.59	54.75	914.4	101.2	141.4	173.7	1.98
972.0	24.30	54.70	942.7	108.5	151.6	186.3	2.29
1,004.0	25.50	54.67	971.7	116.3	162.6	199.7	3.75
1,035.0	27.10	55.11	999.5	124.2	173.9	213.5	5.20
1,067.0	28.16	56.82	1,027.9	132.5	186.2	228.3	4.14
1,098.0	29.40	58.36	1,055.0	140.5	198.8	243.2	4.66
1,130.0	30.83	60.05	1,082.7	148.7	212.6	259.3	5.19
1,193.0	34.16	61.13	1,135.9	165.3	242.0	293.0	5.37
1,238.0	34.30	61.01	1,173.1	177.5	264.2	318.3	0.35
Final 8" MWD Survey							
1,267.0	34.70	59.50	1,197.0	185.7	278.5	334.7	3.26
First 6" MWD Survey							
1,362.0	37.10	56.10	1,273.9	215.4	325.6	390.3	3.28
1,456.0	38.80	56.90	1,348.0	247.3	373.8	448.1	1.88
1,550.0	36.40	57.30	1,422.5	278.4	421.9	505.5	2.57
1,644.0	36.10	58.20	1,498.3	308.1	468.9	561.1	0.65
1,739.0	38.00	58.40	1,574.1	338.2	517.6	618.3	2.00
1,833.0	38.20	57.60	1,648.1	368.9	566.8	676.3	0.57

Design Report for SKR-598-25-CV-15 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
1,928.0	38.10	59.20	1,722.8	399.7	616.8	734.9	1.05
2,022.0	37.60	58.80	1,797.0	429.4	666.2	792.6	0.59
2,117.0	37.60	60.00	1,872.3	458.9	716.1	850.5	0.77
2,211.0	36.10	59.40	1,947.5	487.3	764.8	906.8	1.64
2,306.0	35.50	59.00	2,024.6	515.8	812.5	962.3	0.68
2,400.0	35.80	57.60	2,101.0	544.5	859.1	1,017.1	0.92
2,494.0	37.50	57.80	2,176.4	574.5	906.6	1,073.2	1.81
2,589.0	36.40	58.00	2,252.3	604.9	954.9	1,130.3	1.16
2,683.0	33.40	60.50	2,329.4	632.4	1,001.1	1,184.0	3.54
2,777.0	31.70	59.80	2,408.6	657.6	1,045.0	1,234.5	1.85
2,872.0	29.00	59.70	2,490.6	681.7	1,086.4	1,282.4	2.84
2,966.0	27.20	58.80	2,573.5	704.4	1,124.5	1,326.7	1.97
3,061.0	25.40	58.20	2,658.7	726.4	1,160.4	1,368.8	1.92
3,155.0	24.00	59.00	2,744.1	746.8	1,193.9	1,408.0	1.53
3,250.0	21.90	58.30	2,831.5	766.1	1,225.5	1,445.0	2.23
3,344.0	20.10	58.20	2,919.3	783.8	1,254.2	1,478.7	1.92
3,439.0	18.40	57.60	3,009.0	800.5	1,280.7	1,510.0	1.80
3,533.0	16.00	61.40	3,098.8	814.6	1,304.6	1,537.8	2.82
3,628.0	13.60	63.50	3,190.6	825.9	1,326.1	1,561.9	2.59
3,722.0	11.80	63.70	3,282.3	835.0	1,344.6	1,582.5	1.92
3,817.0	10.00	63.60	3,375.6	843.0	1,360.7	1,600.3	1.89
3,911.0	7.70	60.50	3,468.5	849.8	1,373.5	1,614.7	2.50
4,005.0	5.50	54.50	3,561.8	855.5	1,382.7	1,625.5	2.45
4,100.0	4.40	54.90	3,656.5	860.2	1,389.4	1,633.7	1.16
4,195.0	2.50	40.40	3,751.3	863.9	1,393.7	1,639.3	2.19
4,223.3	1.88	28.71	3,779.6	864.8	1,394.3	1,640.3	2.70
598-25-53							
4,224.7	1.85	27.92	3,781.0	864.8	1,394.3	1,640.3	2.70
Cylinder Entry Point							
4,289.0	1.30	323.90	3,845.3	866.3	1,394.4	1,641.2	2.70
4,383.0	0.70	280.10	3,939.2	867.3	1,393.2	1,640.7	0.99
4,478.0	0.70	294.20	4,034.2	867.6	1,392.1	1,640.0	0.18
4,572.0	0.80	309.90	4,128.2	868.3	1,391.1	1,639.5	0.24
4,667.0	0.70	305.60	4,223.2	869.0	1,390.1	1,639.1	0.12
4,761.0	0.70	278.50	4,317.2	869.4	1,389.0	1,638.5	0.35
4,856.0	0.80	266.00	4,412.2	869.5	1,387.8	1,637.4	0.20
4,950.0	1.10	270.80	4,506.2	869.5	1,386.3	1,636.1	0.33
5,045.0	1.30	270.50	4,601.2	869.5	1,384.3	1,634.5	0.21
5,139.0	1.30	274.20	4,695.2	869.6	1,382.1	1,632.7	0.09
5,234.0	1.50	267.40	4,790.1	869.6	1,379.8	1,630.8	0.27
5,329.0	1.20	273.50	4,885.1	869.6	1,377.6	1,628.9	0.35
5,423.0	0.80	284.90	4,979.1	869.8	1,376.0	1,627.7	0.47
5,517.0	0.90	287.50	5,073.1	870.2	1,374.6	1,626.8	0.11
5,612.0	0.90	299.70	5,168.1	870.8	1,373.3	1,626.0	0.20
5,707.0	0.90	304.60	5,263.1	871.6	1,372.0	1,625.3	0.08
5,801.0	0.50	310.40	5,357.0	872.3	1,371.1	1,624.9	0.43
5,896.0	0.80	299.20	5,452.0	872.9	1,370.2	1,624.5	0.34
5,990.0	1.20	292.00	5,546.0	873.6	1,368.7	1,623.7	0.45
6,085.0	1.60	288.70	5,641.0	874.4	1,366.5	1,622.3	0.43
6,179.0	2.00	276.60	5,734.9	875.0	1,363.7	1,620.2	0.58
6,274.0	2.70	268.60	5,829.9	875.1	1,359.8	1,617.0	0.81

Design Report for SKR-598-25-CV-15 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,301.2	2.72	271.18	5,857.0	875.1	1,358.5	1,615.9	0.46
Cylinder Bottom - Cylinder Exit Point							
6,369.0	2.80	277.40	5,924.8	875.3	1,355.2	1,613.3	0.46
6,454.0	2.10	284.10	6,009.7	876.0	1,351.7	1,610.7	0.89
Final 6" MWD Survey							
6,500.0	2.10	284.10	6,055.7	876.4	1,350.0	1,609.6	0.00
Projection to Bit - 598-25-53B							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
74.0	74.0	0.0	-0.1	First GWD Survey
566.0	562.2	23.6	40.7	Final GWD Survey
597.0	592.3	28.0	46.7	First 8" MWD Survey
1,238.0	1,173.1	177.5	264.2	Final 8" MWD Survey
1,267.0	1,197.0	185.7	278.5	First 6" MWD Survey
4,224.7	3,781.0	864.8	1,394.3	Cylinder Entry Point
6,301.2	5,857.0	875.1	1,358.5	Cylinder Bottom
6,301.2	5,857.0	875.1	1,358.5	Cylinder Exit Point
6,454.0	6,009.7	876.0	1,351.7	Final 6" MWD Survey
6,500.0	6,055.7	876.4	1,350.0	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	598-25-53B	56.93	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
74.0	566.0	GWD Surveys	GYD_GWD_SS
597.0	1,238.0	8" MWD Surveys	MWD
1,267.0	6,500.0	6" MWD 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
598-25-53	0.00	0.00	3,781.0	865.0	1,328.4	1,648,930.78	2,200,594.16	39° 34' 51.023 N	108° 20' 11.898 W
- actual wellpath misses by 65.9ft at 4223.7ft MD (3780.0 TVD, 864.8 N, 1394.3 E)									
- Ellipse (radii L45.0 W80.0 on 360.00 azi) - Target Cylinder 100% Intersected									
598-25-53B	0.00	0.00	6,057.0	865.0	1,328.4	1,648,930.78	2,200,594.16	39° 34' 51.023 N	108° 20' 11.898 W
- actual wellpath misses by 24.5ft at 6500.0ft MD (6055.7 TVD, 876.4 N, 1350.0 E)									
- Point									

North Reference Sheet for SKR-598-25-CV - SKR-598-25-CV-15 - 598-25-53

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

Vertical Depths are relative to RFE @ 6230.0ft (Original Well Elev). Northing and Easting are relative to SKR-598-25-CV-15 - Slot Slot 15

Coordinate System is US State Plane 1983, Colorado Central Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99997055

Grid Coordinates of Well: 1,648,065.78 ft N, 2,199,265.74 ft E

Geographical Coordinates of Well: 39° 34' 42.07" N, 108° 20' 28.51" W

Grid Convergence at Surface is: -1.79°

Based upon Minimum Curvature type calculations, at a Measured Depth of 6,500.00ft the Bottom Hole Displacement is 1,609.55ft in the Direction of 57.01° (Grid).

Magnetic Convergence at surface is: -12.69° (26 September 2008, , BGGM2007)

