

Chevron USA

Piceance

SKR-598-36-BV (New)

SKR-598-36-BV-10 - Slot 10

598-36-74 - Final Design

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

16 March, 2009

Well Coordinates (NAD83): 1,643,864.95 N, 2,197,629.92 E (39° 34' 00.06" N, 108° 20' 47.71" W)

Ground Level: 6,032.60 ft

Local Coordinate Origin: Centered on Well SKR-598-36-BV-10 (Slot 10) - 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

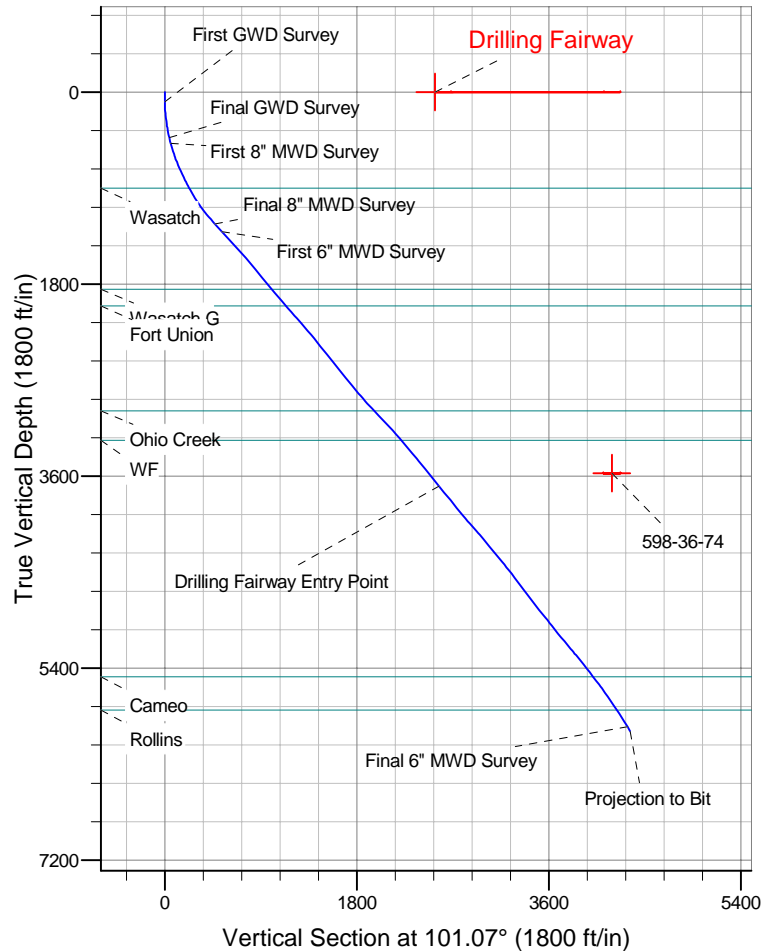
HALLIBURTON

Project: Piceance
Site: SKR-598-36-BV (New)
Well: SKR-598-36-BV-10
Wellbore: 598-36-74 - Final Design
Plan: Actual Field Surveys

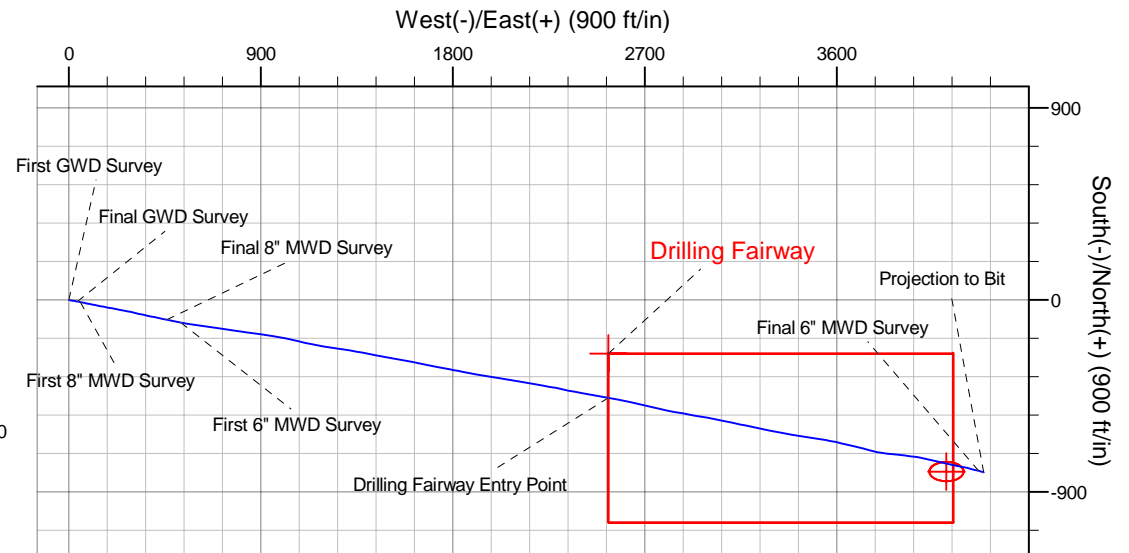
Chevron USA

HALLIBURTON

Drilling and Formation
Evaluation



WELL DETAILS: SKR-598-36-BV-10						
+N/-S	+E/-W	Northing	Easting	Ground Level: 6032.6	Latitude	Longitude
0.0	0.0	1643864.95	2197629.92	39° 34' 0.063 N	108° 20' 47.712 W	Slot 10
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Drilling Fairway	0.0	-252.2	2529.1	1643612.70	2200159.00	Polygon
598-36-74	3573.0	-805.0	4113.0	1643059.95	2201742.92	Ellipse (Radii: L45.0 W80.0)



Design Report for SKR-598-36-BV-10 - 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
90.0	0.35	192.41	90.0	-0.3	-0.1	0.0	0.39
First GWD Survey							
121.0	1.50	111.00	121.0	-0.5	0.3	0.4	4.80
152.0	3.52	98.84	152.0	-0.8	1.6	1.7	6.70
183.0	4.58	98.66	182.9	-1.1	3.8	3.9	3.42
214.0	5.81	100.95	213.8	-1.6	6.5	6.7	4.02
245.0	6.70	101.30	244.6	-2.3	9.9	10.1	2.87
275.0	7.58	105.18	274.3	-3.1	13.5	13.8	3.34
306.0	8.55	99.54	305.0	-4.0	17.7	18.2	4.03
337.0	9.60	98.31	335.6	-4.8	22.6	23.1	3.44
368.0	10.57	99.54	366.2	-5.6	27.9	28.5	3.21
398.0	11.63	101.13	395.6	-6.7	33.6	34.3	3.68
429.0	12.78	101.13	425.9	-8.0	40.0	40.8	3.71
Final GWD Survey							
486.0	15.23	101.61	481.2	-10.7	53.6	54.6	4.30
First 8" MWD Survey							
517.0	16.21	101.75	511.0	-12.4	61.8	63.0	3.16
548.0	17.17	100.49	540.7	-14.1	70.5	71.9	3.31
578.0	18.38	100.58	569.3	-15.8	79.5	81.1	4.03
609.0	19.40	101.38	598.6	-17.7	89.4	91.1	3.39
640.0	21.03	101.63	627.7	-19.8	99.9	101.8	5.27
670.0	22.20	102.13	655.6	-22.1	110.7	112.9	3.95
701.0	23.10	101.22	684.2	-24.5	122.4	124.8	3.12
733.0	24.04	100.85	713.6	-27.0	134.9	137.6	2.97
764.0	24.60	101.74	741.8	-29.5	147.5	150.4	2.16
796.0	24.98	101.72	770.9	-32.2	160.6	163.8	1.19
827.0	25.23	101.26	798.9	-34.8	173.5	176.9	1.02
859.0	25.82	100.46	827.8	-37.4	187.0	190.7	2.14
890.0	26.84	99.86	855.6	-39.8	200.6	204.5	3.40
922.0	28.02	99.57	884.0	-42.3	215.1	219.2	3.71
939.7	28.72	99.88	899.6	-43.7	223.4	227.6	4.05
Wasatch							
953.0	29.25	100.10	911.2	-44.8	229.7	234.1	4.05
984.0	30.02	100.84	938.1	-47.6	244.8	249.4	2.75
1,016.0	30.64	101.37	965.8	-50.7	260.7	265.5	2.11
1,047.0	31.68	101.69	992.3	-54.0	276.4	281.6	3.40
1,079.0	32.55	102.31	1,019.4	-57.5	293.0	298.6	2.91
1,110.0	33.85	102.76	1,045.3	-61.2	309.6	315.6	4.27
1,142.0	35.62	102.85	1,071.6	-65.2	327.4	333.8	5.53
1,173.0	36.90	103.16	1,096.6	-69.3	345.2	352.1	4.17
1,205.0	38.52	102.47	1,121.9	-73.7	364.3	371.7	5.23
1,236.0	39.66	102.09	1,146.0	-77.8	383.4	391.2	3.76
1,268.0	40.10	101.95	1,170.6	-82.1	403.5	411.7	1.40
1,299.0	40.41	101.42	1,194.2	-86.2	423.1	431.8	1.49
1,330.0	40.60	101.66	1,217.8	-90.2	442.8	451.9	0.79
1,355.0	41.24	101.49	1,236.7	-93.5	458.9	468.3	2.60
Final 8" MWD Survey							
1,455.0	43.10	101.10	1,310.8	-106.6	524.7	535.4	1.88
First 6" MWD Survey							

Design Report for SKR-598-36-BV-10 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
1,550.0	43.40	98.60	1,380.0	-117.8	588.8	600.5	1.83
1,644.0	42.20	97.80	1,449.0	-126.9	652.0	664.3	1.40
1,739.0	41.50	97.70	1,519.7	-135.4	714.8	727.5	0.74
1,777.6	41.01	97.74	1,548.8	-138.8	740.1	753.0	1.28
Drilling Fairway							
1,833.0	40.30	97.80	1,590.8	-143.7	775.8	789.0	1.28
1,928.0	39.40	98.90	1,663.7	-152.6	836.0	849.8	1.20
2,022.0	38.90	97.90	1,736.6	-161.2	894.7	909.1	0.86
2,117.0	39.70	99.40	1,810.1	-170.3	954.2	969.2	1.31
2,168.4	39.97	100.00	1,849.6	-175.8	986.7	1,002.1	0.92
Wasatch G							
2,211.0	40.20	100.50	1,882.2	-180.7	1,013.7	1,029.5	0.92
2,306.0	41.50	103.70	1,954.0	-193.8	1,074.4	1,091.6	2.59
2,374.4	40.69	101.96	2,005.6	-203.7	1,118.2	1,136.6	2.04
Fort Union							
2,400.0	40.40	101.30	2,025.0	-207.1	1,134.5	1,153.2	2.04
2,495.0	42.20	100.00	2,096.4	-218.7	1,196.2	1,215.9	2.10
2,589.0	40.20	98.20	2,167.1	-228.5	1,257.3	1,277.8	2.47
2,684.0	40.90	99.30	2,239.3	-237.9	1,318.3	1,339.5	1.05
2,778.0	39.30	100.30	2,311.2	-248.2	1,378.0	1,400.0	1.83
2,872.0	38.30	100.60	2,384.5	-258.9	1,435.9	1,458.9	1.08
2,967.0	38.40	101.30	2,459.0	-270.1	1,493.8	1,517.8	0.47
3,061.0	38.70	99.90	2,532.5	-280.8	1,551.4	1,576.4	0.98
3,156.0	39.00	101.40	2,606.5	-291.8	1,609.9	1,636.0	1.04
3,250.0	39.10	101.40	2,679.5	-303.6	1,668.0	1,695.2	0.11
3,345.0	39.50	100.10	2,753.0	-314.8	1,727.1	1,755.4	0.96
3,439.0	39.70	101.60	2,825.4	-326.1	1,785.9	1,815.3	1.04
3,534.0	41.60	100.50	2,897.5	-337.9	1,846.7	1,877.2	2.14
3,628.0	44.40	99.50	2,966.3	-349.0	1,909.8	1,941.3	3.07
3,657.7	43.83	99.50	2,987.6	-352.4	1,930.2	1,962.0	1.91
Ohio Creek							
3,722.0	42.60	99.50	3,034.4	-359.7	1,973.6	2,005.9	1.91
3,817.0	43.20	100.00	3,104.0	-370.7	2,037.3	2,070.6	0.73
3,911.0	42.50	99.50	3,172.9	-381.5	2,100.3	2,134.5	0.83
4,006.0	40.70	100.00	3,244.0	-392.2	2,162.5	2,197.6	1.93
4,035.0	40.48	99.79	3,266.0	-395.4	2,181.1	2,216.4	0.89
WF							
4,100.0	40.00	99.30	3,315.6	-402.4	2,222.5	2,258.4	0.89
4,195.0	41.10	100.80	3,387.8	-413.1	2,283.3	2,320.1	1.55
4,289.0	38.80	102.20	3,459.9	-425.2	2,342.5	2,380.5	2.63
4,384.0	38.80	100.40	3,533.9	-436.8	2,400.8	2,440.0	1.19
4,478.0	39.20	99.70	3,606.9	-447.1	2,459.1	2,499.2	0.63
4,573.0	38.90	99.80	3,680.7	-457.3	2,518.1	2,559.0	0.32
4,590.9	38.96	100.09	3,694.7	-459.2	2,529.1	2,570.2	1.05
Drilling Fairway Entry Point							
4,667.0	39.20	101.30	3,753.7	-468.1	2,576.3	2,618.2	1.05
4,762.0	38.80	102.40	3,827.6	-480.4	2,634.8	2,678.0	0.84
4,856.0	39.00	103.50	3,900.7	-493.6	2,692.3	2,737.0	0.77
4,951.0	39.30	102.50	3,974.4	-507.1	2,750.7	2,796.9	0.74
5,045.0	41.90	101.80	4,045.8	-520.0	2,810.5	2,858.1	2.81
5,140.0	42.20	100.20	4,116.3	-532.1	2,873.0	2,921.7	1.17

Design Report for SKR-598-36-BV-10 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,234.0	39.00	99.20	4,187.7	-542.4	2,933.3	2,982.9	3.47
5,328.0	39.00	99.90	4,260.7	-552.3	2,991.6	3,042.0	0.47
5,423.0	40.40	101.90	4,333.8	-563.7	3,051.2	3,102.7	1.99
5,517.0	39.90	102.80	4,405.7	-576.7	3,110.4	3,163.3	0.81
598-36-74							
5,612.0	37.70	100.70	4,479.7	-588.9	3,168.7	3,222.8	2.70
5,706.0	36.60	102.50	4,554.6	-600.3	3,224.3	3,279.5	1.65
5,801.0	36.80	100.90	4,630.8	-611.8	3,279.9	3,336.3	1.03
5,895.0	37.90	100.20	4,705.5	-622.2	3,335.9	3,393.3	1.25
5,989.0	37.70	100.20	4,779.8	-632.4	3,392.6	3,450.9	0.21
6,084.0	37.80	99.30	4,854.9	-642.3	3,449.9	3,509.1	0.59
6,178.0	39.60	98.50	4,928.3	-651.3	3,508.0	3,567.8	1.99
6,273.0	37.90	100.80	5,002.3	-661.3	3,566.6	3,627.2	2.34
6,367.0	38.70	102.80	5,076.1	-673.2	3,623.6	3,685.5	1.57
6,462.0	40.00	103.00	5,149.6	-686.7	3,682.4	3,745.7	1.37
6,556.0	40.40	106.40	5,221.4	-702.0	3,741.0	3,806.2	2.37
6,650.0	38.90	99.80	5,293.8	-715.7	3,799.4	3,866.1	4.75
6,745.0	38.60	95.10	5,367.9	-723.4	3,858.3	3,925.4	3.11
6,839.0	37.50	96.60	5,441.9	-729.3	3,915.9	3,983.1	1.53
6,888.0	38.11	97.85	5,480.6	-733.1	3,945.7	4,013.0	2.01
Cameo							
6,934.0	38.70	99.00	5,516.7	-737.3	3,974.0	4,041.6	2.01
7,028.0	36.00	103.60	5,591.4	-748.4	4,029.9	4,098.6	4.13
7,123.0	34.30	102.80	5,669.1	-760.9	4,083.1	4,153.2	1.85
7,217.0	33.60	101.20	5,747.1	-771.8	4,134.5	4,205.7	1.21
7,274.2	33.54	101.86	5,794.7	-778.1	4,165.4	4,237.3	0.65
Rollins							
7,312.0	33.50	102.30	5,826.2	-782.5	4,185.9	4,258.2	0.65
7,406.0	32.10	104.80	5,905.3	-794.4	4,235.4	4,309.1	2.07
7,460.0	31.90	104.90	5,951.1	-801.7	4,263.0	4,337.6	0.38
Final 6" MWD Survey							
7,510.0	31.90	104.90	5,993.5	-808.5	4,288.6	4,364.0	0.00
Projection to Bit							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
90.0	90.0	-0.3	-0.1	First GWD Survey
429.0	425.9	-8.0	40.0	Final GWD Survey
486.0	481.2	-10.7	53.6	First 8" MWD Survey
1,355.0	1,236.7	-93.5	458.9	Final 8" MWD Survey
1,455.0	1,310.8	-106.6	524.7	First 6" MWD Survey
4,590.9	3,694.7	-459.2	2,529.1	Drilling Fairway Entry Point
7,460.0	5,951.1	-801.7	4,263.0	Final 6" MWD Survey
7,510.0	5,993.5	-808.5	4,288.6	Projection to Bit

Design Report for SKR-598-36-BV-10 - Actual Field Surveys**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	598-36-74	101.07	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
90.0	429.0	GWD Surveys	GYD_DP_MS
486.0	1,355.0	8" MWD Surveys	MWD
1,455.0	7,510.0	6" MWD Surveys	MWD

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	TVDSS (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
939.7	899.6	-5,158.00	Wasatch		0.00	
2,168.4	1,849.6	-4,208.00	Wasatch G		0.00	
2,374.4	2,005.6	-4,052.00	Fort Union		0.00	
3,657.7	2,987.6	-3,070.00	Ohio Creek		0.00	
4,035.0	3,266.0	-2,791.60	WF		0.00	
6,888.0	5,480.6	-577.00	Cameo		0.00	
7,274.2	5,794.7	-262.90	Rollins		0.00	

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
Drilling Fairway	0.00	0.00	0.0	-252.2	2,529.1	1,643,612.70	2,200,159.00	39° 33' 58.353 N	108° 20' 15.332 W
- actual wellpath misses target center by 2369.0ft at 1777.6ft MD (1548.8 TVD, -138.8 N, 740.1 E)									
- Polygon									
Point 1				2,529.1	-252.2	1,643,612.70	2,200,159.00		
Point 2				4,145.3	-252.2	1,643,612.70	2,201,775.20		
Point 3				4,145.3	-1,043.8	1,642,821.10	2,201,775.20		
Point 4				2,529.1	-1,043.8	1,642,821.10	2,200,159.00		
598-36-74	0.00	360.00	3,573.0	-805.0	4,113.0	1,643,059.95	2,201,742.92	39° 33' 53.382 N	108° 19' 54.896 W
- actual wellpath misses target center by 1323.1ft at 5517.0ft MD (4405.7 TVD, -576.7 N, 3110.4 E)									
- Ellipse (radii L45.0 W80.0 on 360.00 azi)									