

# Chevron USA

Piceance

SKR-698-09-AV

SKR-698-09-AV-24 - Slot 24

698-9-66

Design: Actual Field Surveys

## Sperry Drilling Services

### Standard Report

13 July, 2009

Well Coordinates: 1,637,978.70 N, 2,202,187.50 E (39° 33' 03.32" N, 108° 19' 47.20" W)

Ground Level: 5,921.90 ft

Local Coordinate Origin:	Centered on Well SKR-698-09-AV-24 (Slot 24) - Slot
Viewing Datum:	RFE @ 5946.9ft (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-698-09-AV  
Well: SKR-698-09-AV-24  
Wellbore: 698-9-66  
Plan: Actual Field Surveys

Chevron USA

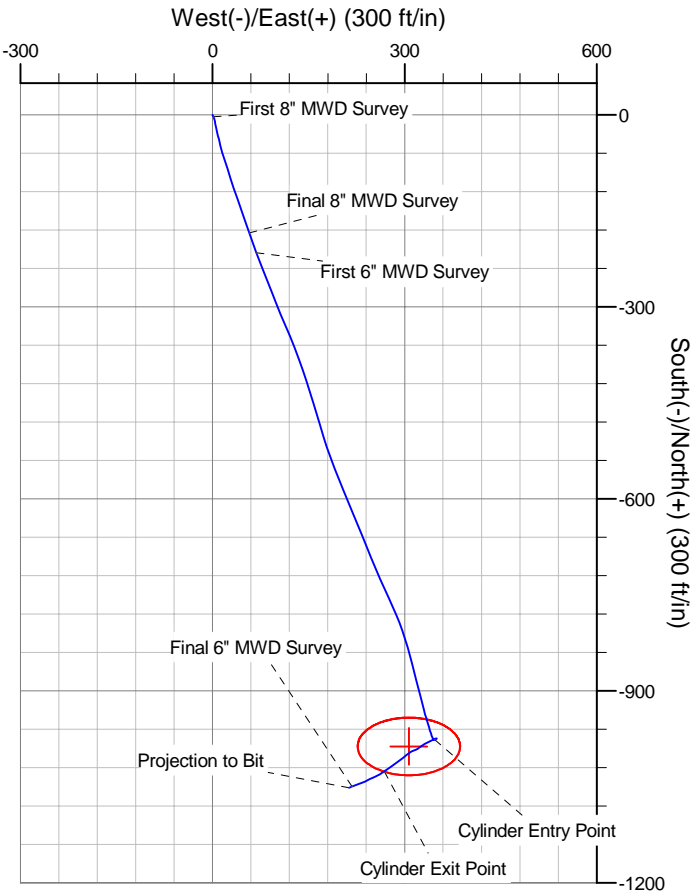
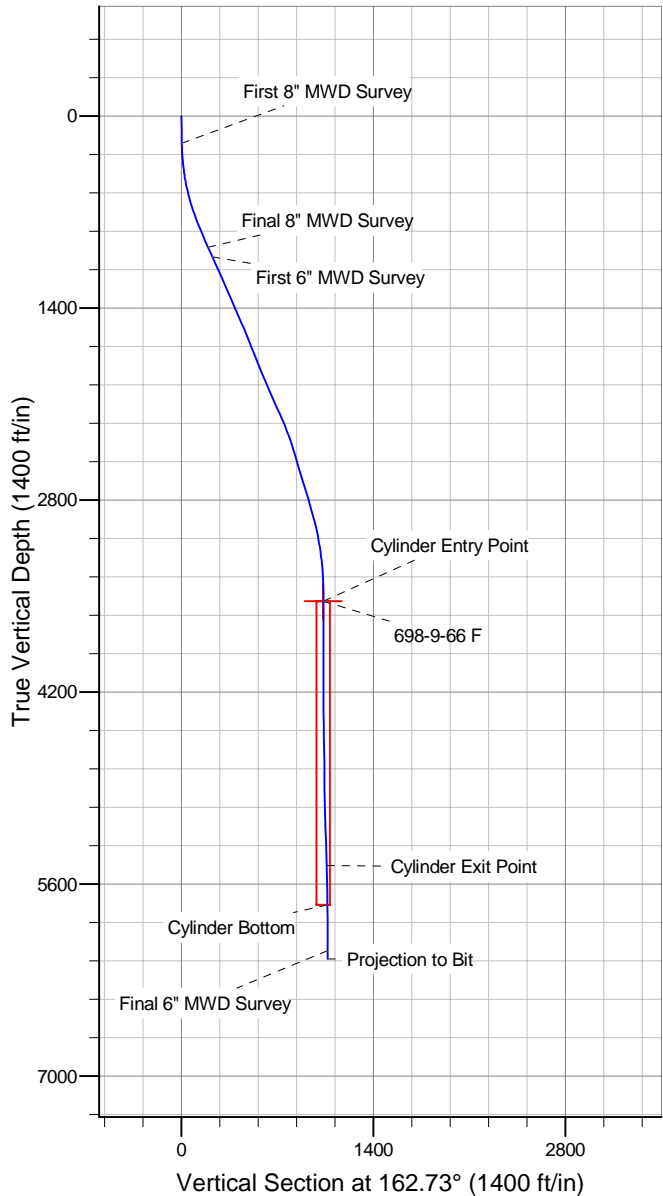


WELL DETAILS: SKR-698-09-AV-24

+N/-S	+E/-W	Northing	Ground Level: 5921.9		Latitude	Longitude	Slot
			Easting				
0.0	0.0	1637978.70	2202187.50		39° 33' 3.323 N	108° 19' 47.201 W	Slot 24

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
698-9-66 F	3538.0	-986.6	306.8	1636992.14	2202494.26	Ellipse (Radii: L45.0 W80.0)



## Design Report for SKR-698-09-AV-24 - 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
199.0	1.79	153.21	199.0	-2.8	1.4	3.1	0.90
<b>First 8" MWD Survey</b>							
259.0	3.08	162.39	258.9	-5.1	2.3	5.6	2.24
290.0	3.66	160.59	289.9	-6.9	2.9	7.4	1.90
321.0	4.45	165.97	320.8	-9.0	3.5	9.6	2.83
352.0	5.71	167.81	351.7	-11.6	4.1	12.3	4.10
382.0	6.67	168.26	381.5	-14.8	4.8	15.6	3.20
413.0	7.99	168.84	412.2	-18.7	5.6	19.5	4.26
445.0	9.37	168.58	443.9	-23.4	6.5	24.3	4.31
473.0	10.51	167.86	471.4	-28.2	7.5	29.1	4.10
519.0	12.16	165.56	516.5	-37.0	9.6	38.1	3.72
565.0	13.79	167.07	561.4	-47.0	12.0	48.4	3.62
611.0	15.73	162.61	605.8	-58.3	15.1	60.1	4.88
656.0	17.25	162.49	649.0	-70.5	19.0	72.9	3.38
702.0	18.60	161.93	692.8	-83.9	23.3	87.1	2.96
749.0	19.87	162.11	737.1	-98.7	28.1	102.6	2.71
796.0	21.47	161.85	781.1	-114.4	33.2	119.1	3.41
843.0	22.16	161.12	824.7	-131.0	38.8	136.6	1.58
937.0	23.75	160.76	911.3	-165.7	50.7	173.2	1.70
986.0	24.28	160.34	956.1	-184.5	57.4	193.2	1.14
<b>Final 8" MWD Survey</b>							
1,065.0	24.88	159.62	1,027.9	-215.3	68.6	226.0	0.85
<b>First 6" MWD Survey</b>							
1,128.0	24.56	158.81	1,085.1	-240.0	78.0	252.3	0.74
1,223.0	24.17	158.42	1,171.7	-276.5	92.3	291.4	0.44
1,317.0	23.22	157.09	1,257.7	-311.4	106.5	329.0	1.16
1,411.0	23.08	157.26	1,344.2	-345.5	120.9	365.8	0.17
1,505.0	23.60	159.77	1,430.5	-380.1	134.5	402.9	1.19
1,600.0	23.90	162.45	1,517.4	-416.3	146.9	441.2	1.18
1,694.0	21.55	162.70	1,604.1	-451.0	157.8	477.5	2.50
1,788.0	21.86	163.93	1,691.5	-484.3	167.7	512.2	0.59
1,883.0	22.56	161.29	1,779.4	-518.5	178.5	548.1	1.28
1,977.0	22.50	158.70	1,866.3	-552.4	190.8	584.1	1.06
2,072.0	22.46	157.22	1,954.0	-586.0	204.4	620.3	0.60
2,166.0	23.93	157.63	2,040.4	-620.2	218.6	657.2	1.57
2,260.0	25.03	158.27	2,126.0	-656.3	233.3	696.0	1.20
2,355.0	23.23	157.07	2,212.7	-692.2	248.0	734.7	1.96
2,449.0	21.33	156.18	2,299.7	-725.0	262.1	770.1	2.05
2,544.0	18.68	155.65	2,388.9	-754.6	275.4	802.4	2.80
2,638.0	16.35	156.64	2,478.6	-780.5	286.8	830.5	2.50
2,732.0	16.57	161.04	2,568.7	-805.3	296.4	857.0	1.35
2,827.0	16.90	164.23	2,659.7	-831.4	304.6	884.4	1.03
2,921.0	17.04	165.45	2,749.6	-857.9	311.8	911.8	0.41
3,015.0	15.88	165.74	2,839.7	-883.7	318.4	938.4	1.24
3,110.0	15.07	165.61	2,931.3	-908.3	324.7	963.7	0.85
3,204.0	12.45	164.92	3,022.6	-929.9	330.3	986.0	2.79
3,298.0	9.80	163.56	3,114.8	-947.3	335.2	1,004.2	2.83
3,393.0	7.43	161.99	3,208.7	-960.9	339.4	1,018.4	2.51
3,487.0	4.24	160.27	3,302.2	-970.0	342.5	1,027.9	3.40

## Design Report for SKR-698-09-AV-24 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
3,582.0	2.37	156.95	3,397.1	-975.1	344.4	1,033.4	1.98
3,676.0	1.52	71.19	3,491.0	-976.5	346.4	1,035.3	2.89
3,721.9	1.49	64.49	3,536.9	-976.0	347.5	1,035.2	0.39
<b>698-9-66 F</b>							
3,723.0	1.49	64.33	3,538.0	-976.0	347.5	1,035.2	0.39
<b>Cylinder Entry Point</b>							
3,770.0	1.48	57.28	3,585.0	-975.4	348.6	1,034.9	0.39
3,865.0	0.62	61.41	3,680.0	-974.5	350.1	1,034.5	0.91
3,959.0	0.35	282.70	3,774.0	-974.2	350.2	1,034.3	0.97
4,053.0	1.24	259.27	3,868.0	-974.3	349.0	1,034.0	0.99
4,148.0	1.56	247.15	3,962.9	-975.0	346.8	1,034.0	0.46
4,242.0	1.85	238.51	4,056.9	-976.3	344.3	1,034.5	0.41
4,336.0	1.86	245.57	4,150.9	-977.8	341.6	1,035.1	0.24
4,431.0	2.03	248.40	4,245.8	-979.0	338.6	1,035.4	0.21
4,525.0	2.39	244.30	4,339.7	-980.5	335.3	1,035.8	0.42
4,620.0	3.09	238.93	4,434.6	-982.7	331.3	1,036.7	0.78
4,714.0	3.54	235.08	4,528.5	-985.6	326.8	1,038.2	0.53
4,808.0	3.52	231.66	4,622.3	-989.1	322.1	1,040.1	0.22
4,903.0	2.63	247.91	4,717.1	-991.7	317.8	1,041.4	1.30
4,997.0	2.73	253.28	4,811.0	-993.2	313.7	1,041.5	0.29
5,091.0	3.86	236.71	4,904.9	-995.5	308.9	1,042.4	1.56
5,185.0	4.54	230.72	4,998.6	-999.6	303.4	1,044.6	0.86
5,280.0	5.25	232.87	5,093.3	-1,004.6	297.0	1,047.5	0.77
5,374.0	5.52	232.74	5,186.9	-1,010.0	290.0	1,050.5	0.29
5,469.0	5.76	234.08	5,281.4	-1,015.5	282.5	1,053.6	0.29
5,563.0	5.28	235.29	5,375.0	-1,020.8	275.1	1,056.4	0.53
5,654.4	5.22	234.18	5,466.0	-1,025.6	268.3	1,059.0	0.13
<b>Cylinder Exit Point</b>							
5,657.0	5.22	234.15	5,468.6	-1,025.7	268.1	1,059.1	0.13
5,752.0	4.99	239.87	5,563.2	-1,030.3	261.0	1,061.4	0.59
5,846.0	5.43	245.25	5,656.8	-1,034.2	253.4	1,062.9	0.70
5,940.6	5.18	246.29	5,751.0	-1,037.8	245.5	1,063.9	0.28
<b>Cylinder Bottom</b>							
5,941.0	5.18	246.29	5,751.4	-1,037.9	245.4	1,063.9	0.28
6,035.0	5.19	245.73	5,845.0	-1,041.3	237.7	1,064.9	0.05
6,129.0	5.34	247.06	5,938.6	-1,044.8	229.8	1,065.9	0.21
6,223.0	4.88	249.88	6,032.3	-1,047.8	222.0	1,066.5	0.56
6,275.0	4.50	248.48	6,084.1	-1,049.3	218.0	1,066.8	0.76
<b>Final 6" MWD Survey</b>							
6,337.0	4.50	248.48	6,145.9	-1,051.1	213.5	1,067.1	0.00
<b>Projection to Bit</b>							

**Design Report for SKR-698-09-AV-24 - Actual Field Surveys****Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
199.0	199.0	-2.8	1.4	First 8" MWD Survey
986.0	956.1	-184.5	57.4	Final 8" MWD Survey
1,065.0	1,027.9	-215.3	68.6	First 6" MWD Survey
3,723.0	3,538.0	-976.0	347.5	Cylinder Entry Point
5,654.4	5,466.0	-1,025.6	268.3	Cylinder Exit Point
5,940.6	5,751.0	-1,037.8	245.5	Cylinder Bottom
6,275.0	6,084.1	-1,049.3	218.0	Final 6" MWD Survey
6,337.0	6,145.9	-1,051.1	213.5	Projection to Bit

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	698-9-66 F	162.73	Slot	0.0	0.0	0.0

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
199.0	986.0	8" EM Surveys	MWD
1,065.0	6,337.0	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
698-9-66 F	0.00	360.00	3,538.0	-986.6	306.8	1,636,992.14	2,202,494.26	39° 32' 53.671 N	108° 19' 42.894 W
- actual wellpath misses target center by 42.1ft at 3721.9ft MD (3536.9 TVD, -976.0 N, 347.5 E)									
- Ellipse (radii L45.0 W80.0 on 360.00 azi)									