

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 23-T2N-R67W

MULGA 28C-23HZ

Plan A

Plan: Rev A0 Permit

## Sperry Drilling Services

### Proposal Report

04 March, 2014

Well Coordinates: 1,286,163.62 N, 3,179,131.69 E (40° 07' 01.69" N, 104° 51' 34.16" W)

Ground Level: 4,947.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well MULGA 28C-23HZ

RKB=17' @ 4964.00usft (Drilling Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

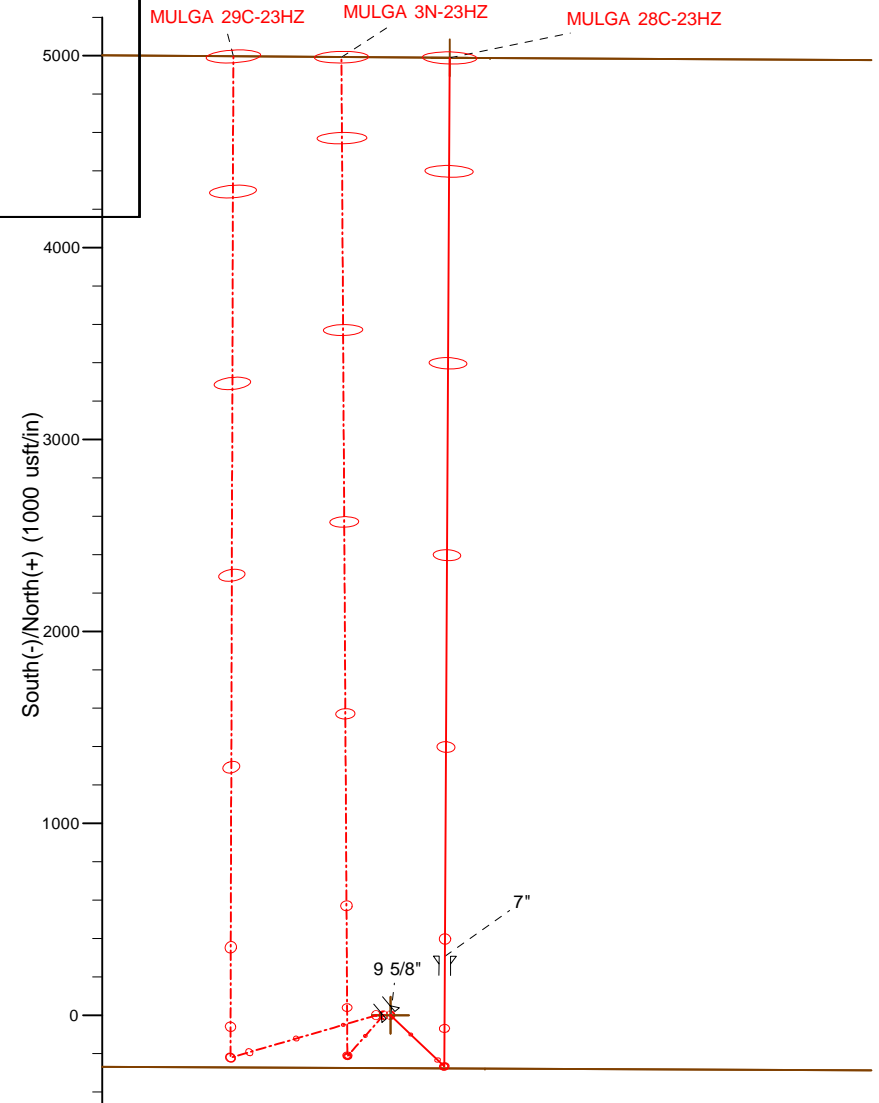
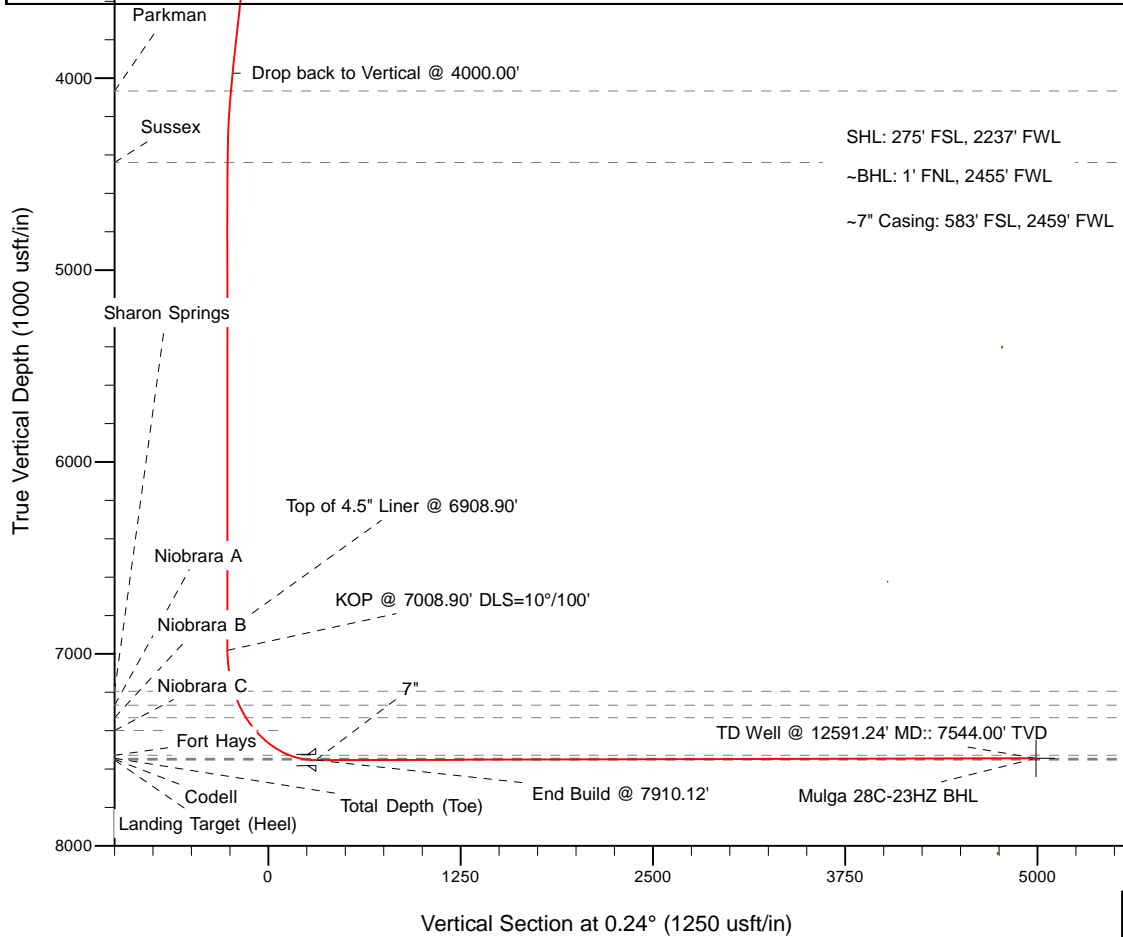
Project: Weld County, CO (NAD 83)  
 Site: Sec. 23-T2N-R67W  
 Well: MULGA 28C-23HZ  
 Wellbore: Plan A  
 Design: Rev A0 Permit

# Anadarko Petroleum Corp.

**HALLIBURTON**  
 Sperry Drilling

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Mulga 28C-23HZ SHL	0.00	0.00	0.00	1286163.62	3179131.69	40.117136	-104.859489
Mulga Pad Section Line	0.00	0.00	0.00	1286163.62	3179131.69	40.117136	-104.859489
Mulga 28C-23HZ BHL	7544.00	4989.03	245.79	1291154.09	3179341.43	40.130831	-104.858610

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00
2500.00	10.00	140.00	2497.47	-33.34	27.98	2.00	-33.22
4000.00	10.00	140.00	3974.68	-232.87	195.40	0.00	-232.05
4500.00	0.00	0.00	4472.14	-266.21	223.38	2.00	-265.28
7008.90	0.00	0.00	6981.04	-266.21	223.38	0.00	-265.28
7910.12	90.12	0.24	7554.00	307.96	225.83	10.00	308.91
12591.24	90.12	0.24	7544.00	4989.03	245.79	0.00	4990.01



WELL DETAILS: MULGA 28C-23HZ	
Ground Level:	4947.00
RKB=17' @ 4964.00usft (Drilling Rig)	
Plan: Rev A0 Permit (MULGA 28C-23HZ/Plan A)	
Created By: Pari Amanlou	Date: 3-3-2014

**Plan Report for MULGA 28C-23HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,182.00	0.00	0.00	1,182.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Marker</b>										
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,232.00	0.00	0.00	1,232.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 2000.00'</b>										
2,100.00	2.00	140.00	2,099.98	-1.34	1.12	-1.33	2.00	2.00	0.00	140.00
2,200.00	4.00	140.00	2,199.84	-5.35	4.49	-5.33	2.00	2.00	0.00	0.00
2,300.00	6.00	140.00	2,299.45	-12.02	10.09	-11.98	2.00	2.00	0.00	0.00
2,400.00	8.00	140.00	2,398.70	-21.36	17.92	-21.28	2.00	2.00	0.00	0.00
2,500.00	10.00	140.00	2,497.47	-33.34	27.98	-33.22	2.00	2.00	0.00	0.00
2,600.00	10.00	140.00	2,595.95	-46.64	39.14	-46.48	0.00	0.00	0.00	0.00
2,700.00	10.00	140.00	2,694.43	-59.94	50.30	-59.73	0.00	0.00	0.00	0.00
2,800.00	10.00	140.00	2,792.91	-73.25	61.46	-72.99	0.00	0.00	0.00	0.00
2,900.00	10.00	140.00	2,891.39	-86.55	72.62	-86.24	0.00	0.00	0.00	0.00
3,000.00	10.00	140.00	2,989.87	-99.85	83.79	-99.50	0.00	0.00	0.00	0.00
3,100.00	10.00	140.00	3,088.35	-113.15	94.95	-112.75	0.00	0.00	0.00	0.00
3,200.00	10.00	140.00	3,186.83	-126.46	106.11	-126.01	0.00	0.00	0.00	0.00
3,300.00	10.00	140.00	3,285.31	-139.76	117.27	-139.27	0.00	0.00	0.00	0.00
3,400.00	10.00	140.00	3,383.79	-153.06	128.43	-152.52	0.00	0.00	0.00	0.00
3,500.00	10.00	140.00	3,482.27	-166.36	139.59	-165.78	0.00	0.00	0.00	0.00
3,600.00	10.00	140.00	3,580.75	-179.66	150.76	-179.03	0.00	0.00	0.00	0.00
3,700.00	10.00	140.00	3,679.23	-192.97	161.92	-192.29	0.00	0.00	0.00	0.00
3,800.00	10.00	140.00	3,777.72	-206.27	173.08	-205.54	0.00	0.00	0.00	0.00
3,900.00	10.00	140.00	3,876.20	-219.57	184.24	-218.80	0.00	0.00	0.00	0.00
4,000.00	10.00	140.00	3,974.68	-232.87	195.40	-232.05	0.00	0.00	0.00	0.00
<b>Drop back to Vertical @ 4000.00'</b>										
4,093.49	8.13	140.00	4,067.00	-244.16	204.87	-243.30	2.00	-2.00	0.00	-180.00
<b>Parkman</b>										
4,100.00	8.00	140.00	4,073.44	-244.86	205.46	-243.99	2.00	-2.00	0.00	180.00
4,200.00	6.00	140.00	4,172.69	-254.19	213.29	-253.30	2.00	-2.00	0.00	180.00
4,300.00	4.00	140.00	4,272.30	-260.87	218.89	-259.95	2.00	-2.00	0.00	180.00
4,400.00	2.00	140.00	4,372.16	-264.88	222.26	-263.94	2.00	-2.00	0.00	180.00
4,466.86	0.66	140.00	4,439.00	-266.07	223.26	-265.13	2.00	-2.00	0.00	-180.00
<b>Sussex</b>										
4,500.00	0.00	0.00	4,472.14	-266.21	223.38	-265.28	2.00	-2.00	0.00	-180.00
4,600.00	0.00	0.00	4,572.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,672.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00

**Plan Report for MULGA 28C-23HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
4,800.00	0.00	0.00	4,772.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,872.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,972.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,072.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,172.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,272.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,372.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,472.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,572.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,672.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,772.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,872.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,972.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,072.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,172.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,272.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,372.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,472.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,572.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,672.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,772.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,872.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
6,908.90	0.00	0.00	6,881.04	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6908.90'</b>										
7,000.00	0.00	0.00	6,972.14	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
7,008.90	0.00	0.00	6,981.04	-266.21	223.38	-265.28	0.00	0.00	0.00	0.00
<b>KOP @ 7008.90' DLS=10°/100'</b>										
7,100.00	9.11	0.24	7,071.76	-258.99	223.41	-258.05	10.00	10.00	0.00	0.24
7,200.00	19.11	0.24	7,168.62	-234.64	223.51	-233.70	10.00	10.00	0.00	0.00
7,228.17	21.93	0.24	7,195.00	-224.77	223.56	-223.83	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,300.00	29.11	0.24	7,259.78	-193.84	223.69	-192.90	10.00	10.00	0.00	0.00
7,308.30	29.94	0.24	7,267.00	-189.75	223.71	-188.81	10.00	10.00	0.00	0.00
<b>Niobrara A</b>										
7,386.63	37.77	0.24	7,332.00	-146.15	223.89	-145.21	10.00	10.00	0.00	0.00
<b>Niobrara B</b>										
7,400.00	39.11	0.24	7,342.47	-137.83	223.93	-136.90	10.00	10.00	0.00	0.00
7,477.32	46.84	0.24	7,399.00	-85.16	224.15	-84.22	10.00	10.00	0.00	0.00
<b>Niobrara C</b>										
7,500.00	49.11	0.24	7,414.18	-68.32	224.22	-67.38	10.00	10.00	0.00	0.00
7,600.00	59.11	0.24	7,472.73	12.59	224.57	13.53	10.00	10.00	0.00	0.00
7,700.00	69.11	0.24	7,516.34	102.44	224.95	103.38	10.00	10.00	0.00	0.00
7,735.64	72.67	0.24	7,528.00	136.11	225.10	137.05	10.00	10.00	0.00	0.00
<b>Fort Hays</b>										
7,800.00	79.11	0.24	7,543.68	198.50	225.36	199.44	10.00	10.00	0.00	0.00
7,833.17	82.43	0.24	7,549.00	231.23	225.50	232.17	10.00	10.00	0.00	0.00
<b>Codell</b>										
7,900.00	89.11	0.24	7,553.93	297.84	225.79	298.78	10.00	10.00	0.00	0.00
7,910.12	90.12	0.24	7,554.00	307.96	225.83	308.90	10.00	10.00	0.00	0.00
<b>End Build @ 7910.12' - Landing Target (Heel) - 7"</b>										
8,000.00	90.12	0.24	7,553.80	397.84	226.21	398.78	0.00	0.00	0.00	0.00
8,100.00	90.12	0.24	7,553.59	497.84	226.64	498.78	0.00	0.00	0.00	0.00
8,200.00	90.12	0.24	7,553.38	597.84	227.06	598.78	0.00	0.00	0.00	0.00
8,300.00	90.12	0.24	7,553.16	697.84	227.49	698.78	0.00	0.00	0.00	0.00
8,400.00	90.12	0.24	7,552.95	797.84	227.92	798.78	0.00	0.00	0.00	0.00
8,500.00	90.12	0.24	7,552.74	897.83	228.34	898.78	0.00	0.00	0.00	0.00
8,600.00	90.12	0.24	7,552.52	997.83	228.77	998.78	0.00	0.00	0.00	0.00
8,700.00	90.12	0.24	7,552.31	1,097.83	229.20	1,098.78	0.00	0.00	0.00	0.00

**Plan Report for MULGA 28C-23HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
8,800.00	90.12	0.24	7,552.10	1,197.83	229.62	1,198.78	0.00	0.00	0.00	0.00
8,900.00	90.12	0.24	7,551.88	1,297.83	230.05	1,298.78	0.00	0.00	0.00	0.00
9,000.00	90.12	0.24	7,551.67	1,397.83	230.48	1,398.78	0.00	0.00	0.00	0.00
9,100.00	90.12	0.24	7,551.46	1,497.83	230.90	1,498.78	0.00	0.00	0.00	0.00
9,200.00	90.12	0.24	7,551.24	1,597.83	231.33	1,598.78	0.00	0.00	0.00	0.00
9,300.00	90.12	0.24	7,551.03	1,697.83	231.76	1,698.78	0.00	0.00	0.00	0.00
9,400.00	90.12	0.24	7,550.81	1,797.82	232.18	1,798.78	0.00	0.00	0.00	0.00
9,500.00	90.12	0.24	7,550.60	1,897.82	232.61	1,898.78	0.00	0.00	0.00	0.00
9,600.00	90.12	0.24	7,550.39	1,997.82	233.04	1,998.78	0.00	0.00	0.00	0.00
9,700.00	90.12	0.24	7,550.17	2,097.82	233.46	2,098.78	0.00	0.00	0.00	0.00
9,800.00	90.12	0.24	7,549.96	2,197.82	233.89	2,198.78	0.00	0.00	0.00	0.00
9,900.00	90.12	0.24	7,549.75	2,297.82	234.32	2,298.78	0.00	0.00	0.00	0.00
10,000.00	90.12	0.24	7,549.53	2,397.82	234.74	2,398.78	0.00	0.00	0.00	0.00
10,100.00	90.12	0.24	7,549.32	2,497.82	235.17	2,498.78	0.00	0.00	0.00	0.00
10,200.00	90.12	0.24	7,549.11	2,597.82	235.59	2,598.78	0.00	0.00	0.00	0.00
10,300.00	90.12	0.24	7,548.89	2,697.81	236.02	2,698.78	0.00	0.00	0.00	0.00
10,400.00	90.12	0.24	7,548.68	2,797.81	236.45	2,798.78	0.00	0.00	0.00	0.00
10,500.00	90.12	0.24	7,548.47	2,897.81	236.87	2,898.78	0.00	0.00	0.00	0.00
10,600.00	90.12	0.24	7,548.25	2,997.81	237.30	2,998.78	0.00	0.00	0.00	0.00
10,700.00	90.12	0.24	7,548.04	3,097.81	237.73	3,098.78	0.00	0.00	0.00	0.00
10,800.00	90.12	0.24	7,547.83	3,197.81	238.15	3,198.78	0.00	0.00	0.00	0.00
10,900.00	90.12	0.24	7,547.61	3,297.81	238.58	3,298.78	0.00	0.00	0.00	0.00
11,000.00	90.12	0.24	7,547.40	3,397.81	239.01	3,398.78	0.00	0.00	0.00	0.00
11,100.00	90.12	0.24	7,547.18	3,497.80	239.43	3,498.78	0.00	0.00	0.00	0.00
11,200.00	90.12	0.24	7,546.97	3,597.80	239.86	3,598.78	0.00	0.00	0.00	0.00
11,300.00	90.12	0.24	7,546.76	3,697.80	240.29	3,698.78	0.00	0.00	0.00	0.00
11,400.00	90.12	0.24	7,546.54	3,797.80	240.71	3,798.78	0.00	0.00	0.00	0.00
11,500.00	90.12	0.24	7,546.33	3,897.80	241.14	3,898.78	0.00	0.00	0.00	0.00
11,600.00	90.12	0.24	7,546.12	3,997.80	241.57	3,998.78	0.00	0.00	0.00	0.00
11,700.00	90.12	0.24	7,545.90	4,097.80	241.99	4,098.78	0.00	0.00	0.00	0.00
11,800.00	90.12	0.24	7,545.69	4,197.80	242.42	4,198.78	0.00	0.00	0.00	0.00
11,900.00	90.12	0.24	7,545.48	4,297.80	242.84	4,298.78	0.00	0.00	0.00	0.00
12,000.00	90.12	0.24	7,545.26	4,397.79	243.27	4,398.78	0.00	0.00	0.00	0.00
12,100.00	90.12	0.24	7,545.05	4,497.79	243.70	4,498.77	0.00	0.00	0.00	0.00
12,200.00	90.12	0.24	7,544.84	4,597.79	244.12	4,598.77	0.00	0.00	0.00	0.00
12,300.00	90.12	0.24	7,544.62	4,697.79	244.55	4,698.77	0.00	0.00	0.00	0.00
12,400.00	90.12	0.24	7,544.41	4,797.79	244.98	4,798.77	0.00	0.00	0.00	0.00
12,500.00	90.12	0.24	7,544.19	4,897.79	245.40	4,898.77	0.00	0.00	0.00	0.00
12,591.20	90.12	0.24	7,544.00	4,988.99	245.79	4,989.97	0.00	0.00	0.00	0.00

**Total Depth (Toe)**

12,591.24	90.12	0.24	7,544.00	4,989.03	245.79	4,990.01	0.00	0.00	0.00	0.00
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**TD Well @ 12591.24' MD:: 7544.00' TVD****Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	2,000.00	0.00	0.00	Begin Nudge @ 2000.00'
4,000.00	3,974.68	-232.87	195.40	Drop back to Vertical @ 4000.00'
6,908.90	6,881.04	-266.21	223.38	Top of 4.5" Liner @ 6908.90'
7,008.90	6,981.04	-266.21	223.38	KOP @ 7008.90' DLS=10°/100'
7,910.12	7,554.00	307.96	225.83	End Build @ 7910.12'
12,591.24	7,544.00	4,989.03	245.79	TD Well @ 12591.24' MD:: 7544.00' TVD

## Plan Report for MULGA 28C-23HZ - Rev A0 Permit

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	0.24	Slot	0.00	0.00	0.00

### Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	1,232.00	Rev A0 Permit	MWD
1,232.00	7,910.12	Rev A0 Permit	MWD
7,910.12	12,591.24	Rev A0 Permit	MWD

### Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,232.00	1,232.00	9 5/8"	9-5/8	12-3/4
7,910.12	7,554.00	7"	7	8-3/4

### Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,182.00	1,182.00	Fox Hills Marker		0.00	
4,093.49	4,067.00	Parkman		0.00	
4,466.86	4,439.00	Sussex		0.00	
7,228.17	7,195.00	Sharon Springs		0.00	
7,308.30	7,267.00	Niobrara A		0.00	
7,386.63	7,332.00	Niobrara B		0.00	
7,477.32	7,399.00	Niobrara C		0.00	
7,735.64	7,528.00	Fort Hays		0.00	
7,833.17	7,549.00	Codell		0.00	
7,910.12	7,554.00	Landing Target (Heel)		0.00	
12,591.20	7,544.00	Total Depth (Toe)		0.00	

### Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Mulga 28C-23HZ SHL	0.00	0.00	0.00	Point
Mulga Pad Section Line	0.00	0.00	0.00	Polygon
Mulga 28C-23HZ BHL	7,544.00	4,989.03	245.79	Point

### Directional Difficulty Index

Average Dogleg over Survey:	0.87 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,910.12 usft
Net Tortousity applicable to Plans:	0.87 °/100usft	Directional Difficulty Index:	6.184

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**Plan Report for MULGA 28C-23HZ - Rev A0 Permit**

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*Audit Info*

**North Reference Sheet for Sec. 23-T2N-R67W - MULGA 28C-23HZ - Plan A**

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference .  
 Vertical Depths are relative to RKB=17' @ 4964.00usft (Drilling Rig). Northing and Easting are relative to MULGA 28C-23HZ  
 Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980  
 Projection method is Lambert Conformal Conic (2 parallel)  
 Central Meridian is -105.50°, Longitude Origin:0.000000°, Latitude Origin:40.783333°  
 False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995955

Grid Coordinates of Well: 1,286,163.62 usft N, 3,179,131.69 usft E  
 Geographical Coordinates of Well: 40° 07' 01.69" N, 104° 51' 34.16" W  
 Grid Convergence at Surface is: 0.41°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,591.24usft  
 the Bottom Hole Displacement is 4,995.08usft in the Direction of 2.82° ( True).  
 Magnetic Convergence at surface is: -8.15° ( 4 March 2014, , BGGM2013)

