

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 10-T1N-R67W

JZM 29N-3HZ

Plan A

Plan: Rev A0 Permit

Sperry Drilling Services

Proposal Report

21 January, 2014

Well Coordinates: 1,265,034.77 N, 3,173,353.98 E (40° 03' 33.29" N, 104° 52' 50.43" W)

Ground Level: 5,077.00 usft

Local Coordinate Origin:

Centered on Well JZM 29N-3HZ

Viewing Datum:

RKB = 17' @ 5094.00usft (Drilling Rig)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 10-T1N-R67W
 Well: JZM 29N-3HZ
 Wellbore: Plan A
 Design: Rev A0 Permit

Anadarko Petroleum Corp.

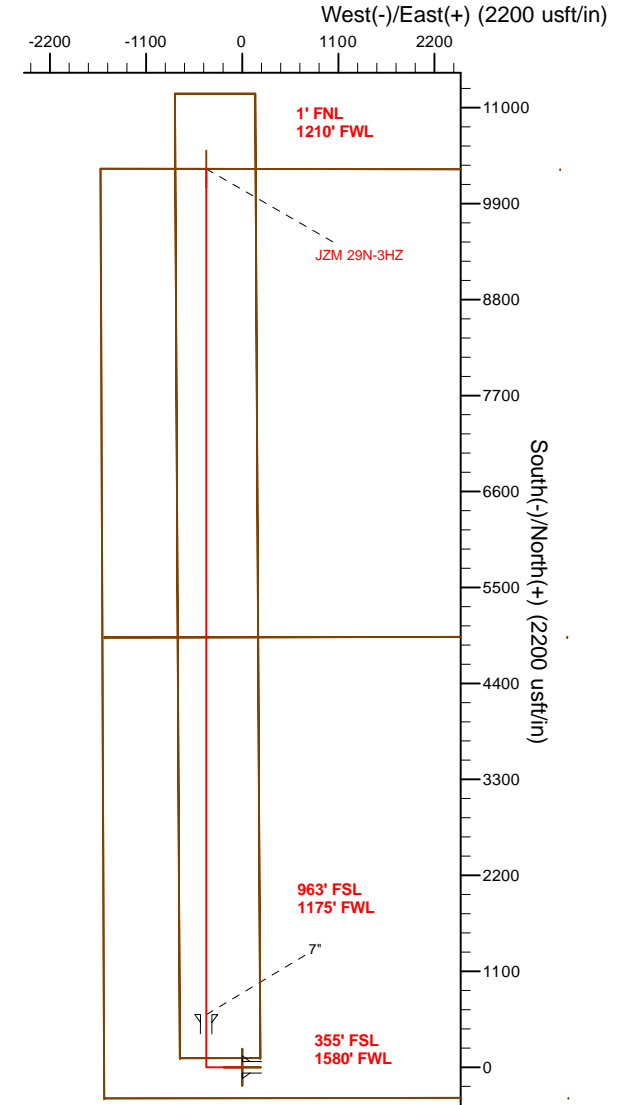
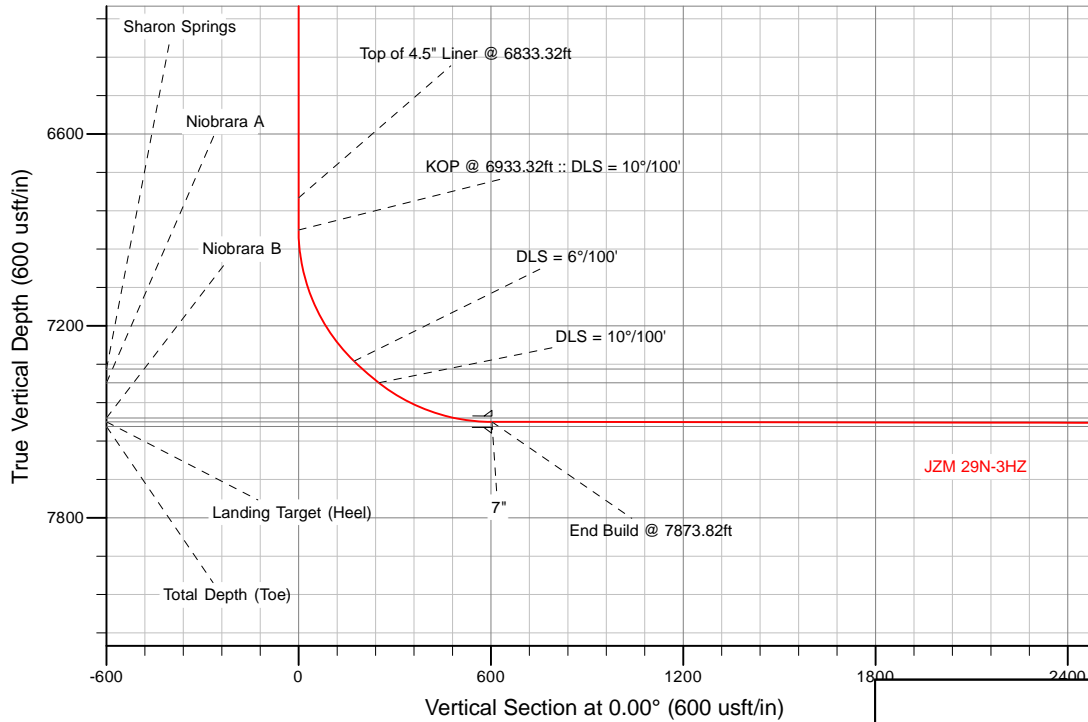


SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
3	2000.00	10.00	270.00	1997.47	0.00	-43.52	2.00	270.00	0.00	
4	3870.00	10.00	270.00	3839.06	0.00	-368.24	0.00	0.00	0.00	
5	4370.00	0.00	0.00	4336.52	0.00	-411.77	2.00	180.00	0.00	
6	6933.32	0.00	0.00	6899.84	0.00	-411.77	0.00	0.00	0.00	
7	7390.46	45.71	0.00	7310.00	172.89	-411.77	10.00	0.00	172.89	
8	7493.77	51.91	0.00	7378.00	250.61	-411.77	6.00	0.00	250.61	
9	7873.82	89.92	0.00	7500.00	603.22	-411.75	10.00	0.01	603.22	
10	17568.38	89.92	0.00	7514.00	10297.77	-411.03	0.00	0.00	10297.77	JZM 29N-3HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
JZM 29N-3HZ_LD	0.00	0.00	0.00	40.059248	-104.880675	
JZM 29N-3HZ_SEC	0.00	0.00	0.00	40.059248	-104.880675	Polygon
JZM 29N-3HZ_SHL	0.00	0.00	0.00	40.059248	-104.880675	
JZM 29N-3HZ_BHL	7514.00	10297.77	-411.03	40.087516	-104.882144	



WELL DETAILS: JZM 29N-3HZ	
Ground Level:	5077.00
RKB = 17' @ 5094.00usft (Drilling Rig)	
Plan: Rev A0 Permit (JZM 29N-3HZ/Plan A)	
Created By: Clint Eshelman	Date: 1/21/2013
Reviewed:	Date:
TVD	MD
6799.84	6833.32 Top of 4.5" Liner @ 6833.32ft
6899.84	6933.32 KOP @ 6933.32ft :: DLS = 10°/100'

Plan Report for JZM 29N-3HZ - 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
JZM 29N-3HZ_SEC - JZM 29N-3HZ_LD - JZM 29N-3HZ_SHL										
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
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,228.00	0.00	0.00	1,228.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Marker										
1,278.00	0.00	0.00	1,278.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
Begin Nudge @ 1500.00ft										
1,600.00	2.00	270.00	1,599.98	0.00	-1.75	0.00	2.00	2.00	0.00	270.00
1,700.00	4.00	270.00	1,699.84	0.00	-6.98	0.00	2.00	2.00	0.00	0.00
1,800.00	6.00	270.00	1,799.45	0.00	-15.69	0.00	2.00	2.00	0.00	0.00
1,900.00	8.00	270.00	1,898.70	0.00	-27.88	0.00	2.00	2.00	0.00	0.00
2,000.00	10.00	270.00	1,997.47	0.00	-43.52	0.00	2.00	2.00	0.00	0.00
End Nudge @ 2000.00ft										
2,100.00	10.00	270.00	2,095.95	0.00	-60.89	0.00	0.00	0.00	0.00	0.00
2,200.00	10.00	270.00	2,194.43	0.00	-78.25	0.00	0.00	0.00	0.00	0.00
2,300.00	10.00	270.00	2,292.91	0.00	-95.62	0.00	0.00	0.00	0.00	0.00
2,400.00	10.00	270.00	2,391.39	0.00	-112.98	0.00	0.00	0.00	0.00	0.00
2,500.00	10.00	270.00	2,489.87	0.00	-130.35	0.00	0.00	0.00	0.00	0.00
2,600.00	10.00	270.00	2,588.35	0.00	-147.71	0.00	0.00	0.00	0.00	0.00
2,700.00	10.00	270.00	2,686.83	0.00	-165.08	0.00	0.00	0.00	0.00	0.00
2,800.00	10.00	270.00	2,785.31	0.00	-182.44	0.00	0.00	0.00	0.00	0.00
2,900.00	10.00	270.00	2,883.79	0.00	-199.81	0.00	0.00	0.00	0.00	0.00
3,000.00	10.00	270.00	2,982.27	0.00	-217.17	0.00	0.00	0.00	0.00	0.00
3,100.00	10.00	270.00	3,080.75	0.00	-234.54	0.00	0.00	0.00	0.00	0.00
3,200.00	10.00	270.00	3,179.23	0.00	-251.90	0.00	0.00	0.00	0.00	0.00
3,300.00	10.00	270.00	3,277.72	0.00	-269.27	0.00	0.00	0.00	0.00	0.00
3,400.00	10.00	270.00	3,376.20	0.00	-286.63	0.00	0.00	0.00	0.00	0.00
3,500.00	10.00	270.00	3,474.68	0.00	-303.99	0.00	0.00	0.00	0.00	0.00
3,600.00	10.00	270.00	3,573.16	0.00	-321.36	0.00	0.00	0.00	0.00	0.00
3,700.00	10.00	270.00	3,671.64	0.00	-338.72	0.00	0.00	0.00	0.00	0.00
3,800.00	10.00	270.00	3,770.12	0.00	-356.09	0.00	0.00	0.00	0.00	0.00
3,870.00	10.00	270.00	3,839.06	0.00	-368.24	0.00	0.00	0.00	0.00	0.00
Begin Drop @ 3870.00ft										
3,900.00	9.40	270.00	3,868.63	0.00	-373.30	0.00	2.00	-2.00	0.00	180.00
4,000.00	7.40	270.00	3,967.55	0.00	-387.91	0.00	2.00	-2.00	0.00	180.00
4,100.00	5.40	270.00	4,066.92	0.00	-399.05	0.00	2.00	-2.00	0.00	180.00
4,200.00	3.40	270.00	4,166.62	0.00	-406.72	0.00	2.00	-2.00	0.00	180.00
4,300.00	1.40	270.00	4,266.53	0.00	-410.91	0.00	2.00	-2.00	0.00	180.00
4,370.00	0.00	0.00	4,336.52	0.00	-411.77	0.00	2.00	-2.00	0.00	180.00
End Drop @ 4370.00ft										
4,400.00	0.00	0.00	4,366.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,466.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00

Plan Report for JZM 29N-3HZ - 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 (°)
4,600.00	0.00	0.00	4,566.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,666.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,766.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,866.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,966.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,066.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,117.48	0.00	0.00	5,084.00	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
Sussex										
5,200.00	0.00	0.00	5,166.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,254.48	0.00	0.00	5,221.00	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
Shannon										
5,300.00	0.00	0.00	5,266.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,366.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,466.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,566.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,666.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,766.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,866.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,966.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,066.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,166.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,266.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,366.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,466.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,566.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,666.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,766.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,833.32	0.00	0.00	6,799.84	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6833.32ft										
6,900.00	0.00	0.00	6,866.52	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
6,933.32	0.00	0.00	6,899.84	0.00	-411.77	0.00	0.00	0.00	0.00	0.00
KOP @ 6933.32ft :: DLS = 10°/100'										
7,000.00	6.67	0.00	6,966.37	3.88	-411.77	3.88	10.00	10.00	0.00	0.00
7,100.00	16.67	0.00	7,064.18	24.07	-411.77	24.07	10.00	10.00	0.00	0.00
7,200.00	26.67	0.00	7,157.00	60.95	-411.77	60.95	10.00	10.00	0.00	0.00
7,300.00	36.67	0.00	7,242.00	113.38	-411.77	113.38	10.00	10.00	0.00	0.00
7,390.46	45.71	0.00	7,310.00	172.90	-411.77	172.90	10.00	10.00	0.00	0.00
DLS = 6°/100'										
7,400.00	46.29	0.00	7,316.63	179.76	-411.77	179.76	6.00	6.00	0.00	0.00
7,426.99	47.91	0.00	7,335.00	199.53	-411.77	199.53	6.00	6.00	0.00	0.00
Sharon Springs										
7,493.77	51.91	0.00	7,378.00	250.61	-411.77	250.61	6.00	6.00	0.00	0.00
DLS = 10°/100' - Niobrara A										
7,500.00	52.54	0.00	7,381.82	255.53	-411.77	255.53	10.00	10.00	0.00	0.01
7,600.00	62.54	0.00	7,435.42	339.79	-411.77	339.79	10.00	10.00	0.00	0.01
7,700.00	72.54	0.00	7,473.59	432.09	-411.76	432.09	10.00	10.00	0.00	0.01
7,757.18	78.25	0.00	7,488.00	487.40	-411.76	487.40	10.00	10.00	0.00	0.01
Niobrara B										
7,800.00	82.54	0.00	7,495.14	529.61	-411.76	529.61	10.00	10.00	0.00	0.01
7,873.82	89.92	0.00	7,500.00	603.22	-411.75	603.22	10.00	10.00	0.00	0.01
End Build @ 7873.82ft - Landing Target (Heel) - 7"										
7,900.00	89.92	0.00	7,500.04	629.40	-411.75	629.40	0.00	0.00	0.00	0.00
8,000.00	89.92	0.00	7,500.18	729.40	-411.74	729.40	0.00	0.00	0.00	0.00
8,100.00	89.92	0.00	7,500.33	829.40	-411.74	829.40	0.00	0.00	0.00	0.00
8,200.00	89.92	0.00	7,500.47	929.40	-411.73	929.40	0.00	0.00	0.00	0.00
8,300.00	89.92	0.00	7,500.61	1,029.40	-411.72	1,029.40	0.00	0.00	0.00	0.00
8,400.00	89.92	0.00	7,500.76	1,129.40	-411.71	1,129.40	0.00	0.00	0.00	0.00
8,500.00	89.92	0.00	7,500.90	1,229.40	-411.71	1,229.40	0.00	0.00	0.00	0.00
8,600.00	89.92	0.00	7,501.05	1,329.40	-411.70	1,329.40	0.00	0.00	0.00	0.00

Plan Report for JZM 29N-3HZ - 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 (°)
8,700.00	89.92	0.00	7,501.19	1,429.40	-411.69	1,429.40	0.00	0.00	0.00	0.00
8,800.00	89.92	0.00	7,501.34	1,529.40	-411.68	1,529.40	0.00	0.00	0.00	0.00
8,900.00	89.92	0.00	7,501.48	1,629.40	-411.68	1,629.40	0.00	0.00	0.00	0.00
9,000.00	89.92	0.00	7,501.62	1,729.40	-411.67	1,729.40	0.00	0.00	0.00	0.00
9,100.00	89.92	0.00	7,501.77	1,829.40	-411.66	1,829.40	0.00	0.00	0.00	0.00
9,200.00	89.92	0.00	7,501.91	1,929.40	-411.65	1,929.40	0.00	0.00	0.00	0.00
9,300.00	89.92	0.00	7,502.06	2,029.40	-411.65	2,029.40	0.00	0.00	0.00	0.00
9,400.00	89.92	0.00	7,502.20	2,129.40	-411.64	2,129.40	0.00	0.00	0.00	0.00
9,500.00	89.92	0.00	7,502.35	2,229.40	-411.63	2,229.40	0.00	0.00	0.00	0.00
9,600.00	89.92	0.00	7,502.49	2,329.40	-411.62	2,329.40	0.00	0.00	0.00	0.00
9,700.00	89.92	0.00	7,502.64	2,429.40	-411.62	2,429.40	0.00	0.00	0.00	0.00
9,800.00	89.92	0.00	7,502.78	2,529.40	-411.61	2,529.40	0.00	0.00	0.00	0.00
9,900.00	89.92	0.00	7,502.92	2,629.40	-411.60	2,629.40	0.00	0.00	0.00	0.00
10,000.00	89.92	0.00	7,503.07	2,729.40	-411.59	2,729.40	0.00	0.00	0.00	0.00
10,100.00	89.92	0.00	7,503.21	2,829.40	-411.59	2,829.40	0.00	0.00	0.00	0.00
10,200.00	89.92	0.00	7,503.36	2,929.40	-411.58	2,929.40	0.00	0.00	0.00	0.00
10,300.00	89.92	0.00	7,503.50	3,029.39	-411.57	3,029.39	0.00	0.00	0.00	0.00
10,400.00	89.92	0.00	7,503.65	3,129.39	-411.57	3,129.39	0.00	0.00	0.00	0.00
10,500.00	89.92	0.00	7,503.79	3,229.39	-411.56	3,229.39	0.00	0.00	0.00	0.00
10,600.00	89.92	0.00	7,503.94	3,329.39	-411.55	3,329.39	0.00	0.00	0.00	0.00
10,700.00	89.92	0.00	7,504.08	3,429.39	-411.54	3,429.39	0.00	0.00	0.00	0.00
10,800.00	89.92	0.00	7,504.22	3,529.39	-411.54	3,529.39	0.00	0.00	0.00	0.00
10,900.00	89.92	0.00	7,504.37	3,629.39	-411.53	3,629.39	0.00	0.00	0.00	0.00
11,000.00	89.92	0.00	7,504.51	3,729.39	-411.52	3,729.39	0.00	0.00	0.00	0.00
11,100.00	89.92	0.00	7,504.66	3,829.39	-411.51	3,829.39	0.00	0.00	0.00	0.00
11,200.00	89.92	0.00	7,504.80	3,929.39	-411.51	3,929.39	0.00	0.00	0.00	0.00
11,300.00	89.92	0.00	7,504.95	4,029.39	-411.50	4,029.39	0.00	0.00	0.00	0.00
11,400.00	89.92	0.00	7,505.09	4,129.39	-411.49	4,129.39	0.00	0.00	0.00	0.00
11,500.00	89.92	0.00	7,505.24	4,229.39	-411.48	4,229.39	0.00	0.00	0.00	0.00
11,600.00	89.92	0.00	7,505.38	4,329.39	-411.48	4,329.39	0.00	0.00	0.00	0.00
11,700.00	89.92	0.00	7,505.52	4,429.39	-411.47	4,429.39	0.00	0.00	0.00	0.00
11,800.00	89.92	0.00	7,505.67	4,529.39	-411.46	4,529.39	0.00	0.00	0.00	0.00
11,900.00	89.92	0.00	7,505.81	4,629.39	-411.45	4,629.39	0.00	0.00	0.00	0.00
12,000.00	89.92	0.00	7,505.96	4,729.39	-411.45	4,729.39	0.00	0.00	0.00	0.00
12,100.00	89.92	0.00	7,506.10	4,829.39	-411.44	4,829.39	0.00	0.00	0.00	0.00
12,200.00	89.92	0.00	7,506.25	4,929.39	-411.43	4,929.39	0.00	0.00	0.00	0.00
12,300.00	89.92	0.00	7,506.39	5,029.39	-411.42	5,029.39	0.00	0.00	0.00	0.00
12,400.00	89.92	0.00	7,506.54	5,129.39	-411.42	5,129.39	0.00	0.00	0.00	0.00
12,500.00	89.92	0.00	7,506.68	5,229.39	-411.41	5,229.39	0.00	0.00	0.00	0.00
12,600.00	89.92	0.00	7,506.82	5,329.39	-411.40	5,329.39	0.00	0.00	0.00	0.00
12,700.00	89.92	0.00	7,506.97	5,429.39	-411.39	5,429.39	0.00	0.00	0.00	0.00
12,800.00	89.92	0.00	7,507.11	5,529.39	-411.39	5,529.39	0.00	0.00	0.00	0.00
12,900.00	89.92	0.00	7,507.26	5,629.39	-411.38	5,629.39	0.00	0.00	0.00	0.00
13,000.00	89.92	0.00	7,507.40	5,729.39	-411.37	5,729.39	0.00	0.00	0.00	0.00
13,100.00	89.92	0.00	7,507.55	5,829.39	-411.36	5,829.39	0.00	0.00	0.00	0.00
13,200.00	89.92	0.00	7,507.69	5,929.39	-411.36	5,929.39	0.00	0.00	0.00	0.00
13,300.00	89.92	0.00	7,507.84	6,029.39	-411.35	6,029.39	0.00	0.00	0.00	0.00
13,400.00	89.92	0.00	7,507.98	6,129.39	-411.34	6,129.39	0.00	0.00	0.00	0.00
13,500.00	89.92	0.00	7,508.12	6,229.39	-411.33	6,229.39	0.00	0.00	0.00	0.00
13,600.00	89.92	0.00	7,508.27	6,329.39	-411.33	6,329.39	0.00	0.00	0.00	0.00
13,700.00	89.92	0.00	7,508.41	6,429.39	-411.32	6,429.39	0.00	0.00	0.00	0.00
13,800.00	89.92	0.00	7,508.56	6,529.39	-411.31	6,529.39	0.00	0.00	0.00	0.00
13,900.00	89.92	0.00	7,508.70	6,629.39	-411.31	6,629.39	0.00	0.00	0.00	0.00
14,000.00	89.92	0.00	7,508.85	6,729.39	-411.30	6,729.39	0.00	0.00	0.00	0.00
14,100.00	89.92	0.00	7,508.99	6,829.39	-411.29	6,829.39	0.00	0.00	0.00	0.00
14,200.00	89.92	0.00	7,509.14	6,929.39	-411.28	6,929.39	0.00	0.00	0.00	0.00
14,300.00	89.92	0.00	7,509.28	7,029.39	-411.28	7,029.39	0.00	0.00	0.00	0.00
14,400.00	89.92	0.00	7,509.42	7,129.39	-411.27	7,129.39	0.00	0.00	0.00	0.00
14,500.00	89.92	0.00	7,509.57	7,229.39	-411.26	7,229.39	0.00	0.00	0.00	0.00
14,600.00	89.92	0.00	7,509.71	7,329.39	-411.25	7,329.39	0.00	0.00	0.00	0.00



Plan Report for JZM 29N-3HZ - 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)	Tooface Azimuth (°)
14,700.00	89.92	0.00	7,509.86	7,429.39	-411.25	7,429.39	0.00	0.00	0.00	0.00
14,800.00	89.92	0.00	7,510.00	7,529.39	-411.24	7,529.39	0.00	0.00	0.00	0.00
14,900.00	89.92	0.00	7,510.15	7,629.39	-411.23	7,629.39	0.00	0.00	0.00	0.00
15,000.00	89.92	0.00	7,510.29	7,729.39	-411.22	7,729.39	0.00	0.00	0.00	0.00
15,100.00	89.92	0.00	7,510.43	7,829.39	-411.22	7,829.39	0.00	0.00	0.00	0.00
15,200.00	89.92	0.00	7,510.58	7,929.39	-411.21	7,929.39	0.00	0.00	0.00	0.00
15,300.00	89.92	0.00	7,510.72	8,029.39	-411.20	8,029.39	0.00	0.00	0.00	0.00
15,400.00	89.92	0.00	7,510.87	8,129.39	-411.19	8,129.39	0.00	0.00	0.00	0.00
15,500.00	89.92	0.00	7,511.01	8,229.39	-411.19	8,229.39	0.00	0.00	0.00	0.00
15,600.00	89.92	0.00	7,511.16	8,329.39	-411.18	8,329.39	0.00	0.00	0.00	0.00
15,700.00	89.92	0.00	7,511.30	8,429.39	-411.17	8,429.39	0.00	0.00	0.00	0.00
15,800.00	89.92	0.00	7,511.45	8,529.39	-411.16	8,529.39	0.00	0.00	0.00	0.00
15,900.00	89.92	0.00	7,511.59	8,629.39	-411.16	8,629.39	0.00	0.00	0.00	0.00
16,000.00	89.92	0.00	7,511.73	8,729.39	-411.15	8,729.39	0.00	0.00	0.00	0.00
16,100.00	89.92	0.00	7,511.88	8,829.39	-411.14	8,829.39	0.00	0.00	0.00	0.00
16,200.00	89.92	0.00	7,512.02	8,929.39	-411.13	8,929.39	0.00	0.00	0.00	0.00
16,300.00	89.92	0.00	7,512.17	9,029.39	-411.13	9,029.39	0.00	0.00	0.00	0.00
16,400.00	89.92	0.00	7,512.31	9,129.39	-411.12	9,129.39	0.00	0.00	0.00	0.00
16,500.00	89.92	0.00	7,512.46	9,229.39	-411.11	9,229.39	0.00	0.00	0.00	0.00
16,600.00	89.92	0.00	7,512.60	9,329.39	-411.10	9,329.39	0.00	0.00	0.00	0.00
16,700.00	89.92	0.00	7,512.75	9,429.39	-411.10	9,429.39	0.00	0.00	0.00	0.00
16,800.00	89.92	0.00	7,512.89	9,529.39	-411.09	9,529.39	0.00	0.00	0.00	0.00
16,900.00	89.92	0.00	7,513.03	9,629.39	-411.08	9,629.39	0.00	0.00	0.00	0.00
17,000.00	89.92	0.00	7,513.18	9,729.39	-411.08	9,729.39	0.00	0.00	0.00	0.00
17,100.00	89.92	0.00	7,513.32	9,829.39	-411.07	9,829.39	0.00	0.00	0.00	0.00
17,200.00	89.92	0.00	7,513.47	9,929.39	-411.06	9,929.39	0.00	0.00	0.00	0.00
17,300.00	89.92	0.00	7,513.61	10,029.39	-411.05	10,029.39	0.00	0.00	0.00	0.00
17,400.00	89.92	0.00	7,513.76	10,129.39	-411.05	10,129.39	0.00	0.00	0.00	0.00
17,500.00	89.92	0.00	7,513.90	10,229.39	-411.04	10,229.39	0.00	0.00	0.00	0.00
17,568.38	89.92	0.00	7,514.00	10,297.77	-411.03	10,297.77	0.00	0.00	0.00	0.00

TD Well @ 17568.38ft - JZM 29N-3HZ_BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
1,500.00	1,500.00	0.00	0.00	Begin Nudge @ 1500.00ft
2,000.00	1,997.47	0.00	-43.52	End Nudge @ 2000.00ft
3,870.00	3,839.06	0.00	-368.24	Begin Drop @ 3870.00ft
4,370.00	4,336.52	0.00	-411.77	End Drop @ 4370.00ft
6,833.32	6,799.84	0.00	-411.77	Top of 4.5" Liner @ 6833.32ft
6,933.32	6,899.84	0.00	-411.77	KOP @ 6933.32ft :: DLS = 10°/100'
7,390.46	7,310.00	172.90	-411.77	DLS = 6°/100'
7,493.77	7,378.00	250.61	-411.77	DLS = 10°/100'
7,873.82	7,500.00	603.22	-411.75	End Build @ 7873.82ft
17,568.38	7,514.00	10,297.77	-411.03	TD Well @ 17568.38ft

Vertical Section Information

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

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
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Plan Report for JZM 29N-3HZ - Rev A0 Permit**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,873.82	Rev A0 Permit	MWD
7,873.82	17,568.38	Rev A0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,278.00	1,278.00	9 5/8"	9-5/8	13-1/2
7,873.82	7,500.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,228.00	1,228.00	Fox Hills Marker		0.00	
5,117.48	5,084.00	Sussex		0.00	
5,254.48	5,221.00	Shannon		0.00	
7,426.99	7,335.00	Sharon Springs		0.00	
7,493.77	7,378.00	Niobrara A		0.00	
7,757.18	7,488.00	Niobrara B		0.00	
7,873.82	7,500.00	Landing Target (Heel)		0.00	
17,568.38	7,514.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N-S (usft)	+E-W (usft)	Shape
JZM 29N-3HZ_SEC	0.00	0.00	0.00	Polygon
JZM 29N-3HZ_LD	0.00	0.00	0.00	Polygon
JZM 29N-3HZ_SHL	0.00	0.00	0.00	Point
JZM 29N-3HZ_BHL	7,514.00	10,297.77	-411.03	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.63 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,390.46 usft
Net Tortosity applicable to Plans:	0.63 °/100usft	Directional Difficulty Index:	6.673

Audit Info

North Reference Sheet for Sec. 10-T1N-R67W - JZM 29N-3HZ - 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' @ 5094.00usft (Drilling Rig). Northing and Easting are relative to JZM 29N-3HZ
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: 0.99996240

Grid Coordinates of Well: 1,265,034.77 usft N, 3,173,353.98 usft E
Geographical Coordinates of Well: 40° 03' 33.29" N, 104° 52' 50.43" W
Grid Convergence at Surface is: 0.40°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,568.38usft
the Bottom Hole Displacement is 10,305.97usft in the Direction of 357.71° (True).

Magnetic Convergence at surface is: -8.19° (21 January 2014, , BGGM2013)

Magnetic Model: BGGM2013
Date: 21-Jan-14
Declination: 8.59°
Inclination/Dip: 66.66°
Field Strength: 52585

Grid North is 0.40° East of True North (Grid Convergence)
Magnetic North is 8.59° East of True North (Magnetic Declination)
Magnetic North is 8.19° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 0.40°
To convert a Magnetic Direction to a True Direction, Add 8.59° East
To convert a Magnetic Direction to a Grid Direction, Add 8.19°