

Anadarko Petroleum Corporation

Weld County, CO (NAD 83)

Sec. 15-T3N-R68W

RMF 32C-15HZ

Plan B

Plan: Permit Rev-2

Sperry Drilling Services

Proposal Report

11 December, 2014

Well Coordinates: 1,327,102.88 N, 3,144,806.32 E (40° 13' 48.48" N, 104° 58' 52.91" W)

Ground Level: 4,967.00 usft

Local Coordinate Origin:

Centered on Well RMF 32C-15HZ

Viewing Datum:

RKB = 17' @ 4984.00usft (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. 15-T3N-R68W
Well: RMF 32C-15HZ
Wellbore: Plan B
Design: Permit Rev-2

Anadarko Petroleum Corporation

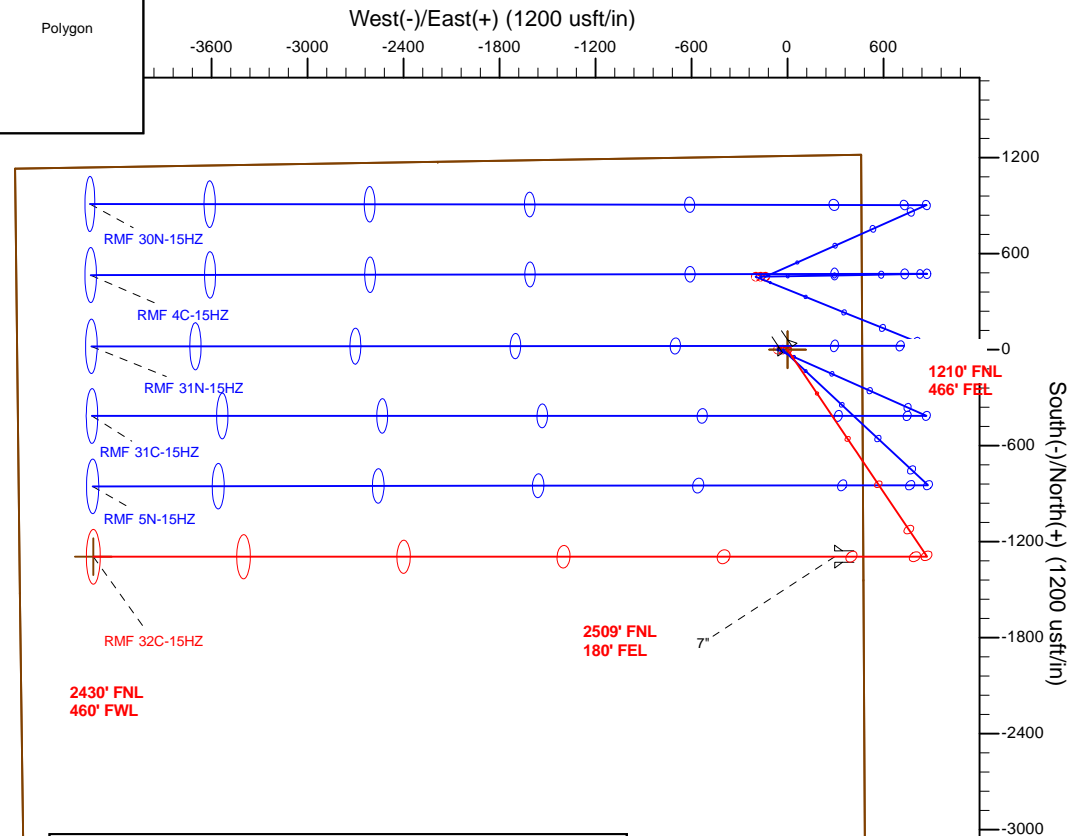
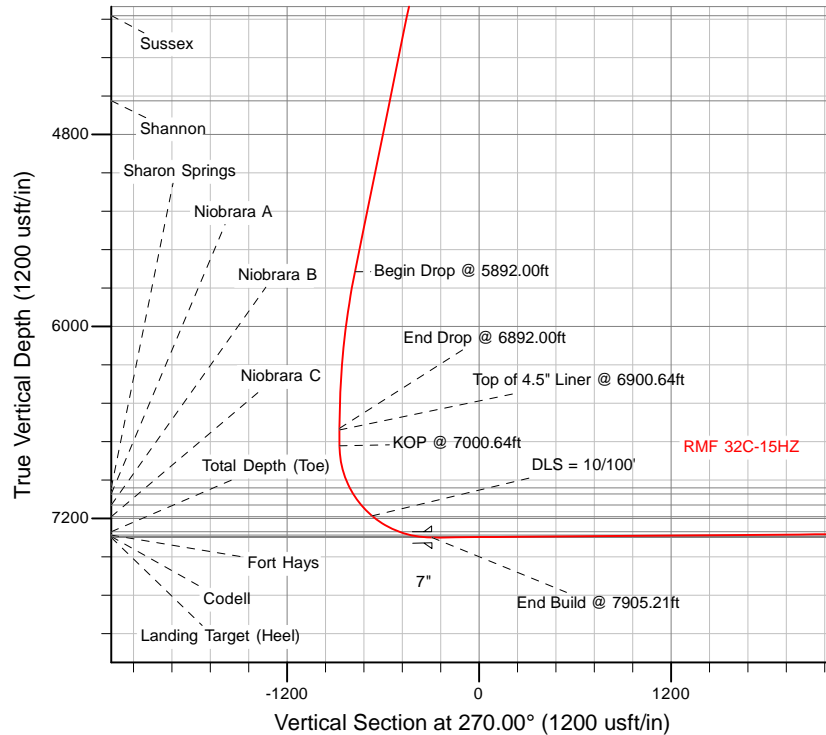
HALLIBURTON
Sperry Drilling

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1340.00	0.00	0.00	1340.00	0.00	0.00	0.00	0.00	0.00	
3	2340.00	20.00	146.00	2319.82	-143.23	96.61	2.00	146.00	-96.61	
4	5892.00	20.00	146.00	5657.60	-1150.39	775.95	0.00	0.00	-775.95	
5	6892.00	0.00	0.00	6637.42	-1293.62	872.56	2.00	180.00	-872.56	
6	7000.64	0.00	0.00	6746.06	-1293.62	872.56	0.00	0.00	-872.56	
7	7905.21	90.46	270.00	7319.00	-1293.66	295.03	10.00	270.00	-295.03	
8	12539.42	90.46	270.00	7282.00	-1293.96	-4339.03	0.00	0.00	4339.03	RMF 32C-15HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
RMF 32C-15HZ_SEC	0.00	0.00	0.00	40.230133	-104.981365	
RMF 32C-15HZ_SHL	0.00	0.00	0.00	40.230133	-104.981365	
RMF 32C-15HZ_BHL	7282.00	-1293.96	-4339.03	40.226580	-104.996904	



TVD MD

6646.06 6900.64 Top of 4.5" Liner @ 6900.64ft
6746.06 7000.64 KOP @ 7000.64ft

WELL DETAILS: RMF 32C-15HZ

Ground Level: 4967.00

RKB = 17" @ 4984.00usft (Drilling Rig)

Plan: Permit Rev-2 (RMF 32C-15HZ/Plan B)

Created By: Clint Eshelman

Reviewed:

Date: 12/11/2014

Date:



Plan Report for RMF 32C-15HZ - Permit Rev-2

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
RMF 32C-15HZ_SEC - RMF 32C-15HZ_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
1,014.00	0.00	0.00	1,014.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base										
1,064.00	0.00	0.00	1,064.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,340.00	0.00	0.00	1,340.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 1340.00ft										
1,400.00	1.20	146.00	1,400.00	-0.52	0.35	-0.35	2.00	2.00	0.00	146.00
1,500.00	3.20	146.00	1,499.92	-3.70	2.50	-2.50	2.00	2.00	0.00	0.00
1,600.00	5.20	146.00	1,599.64	-9.77	6.59	-6.59	2.00	2.00	0.00	0.00
1,700.00	7.20	146.00	1,699.05	-18.73	12.63	-12.63	2.00	2.00	0.00	0.00
1,800.00	9.20	146.00	1,798.03	-30.55	20.61	-20.61	2.00	2.00	0.00	0.00
1,900.00	11.20	146.00	1,896.44	-45.23	30.51	-30.51	2.00	2.00	0.00	0.00
2,000.00	13.20	146.00	1,994.18	-62.75	42.33	-42.33	2.00	2.00	0.00	0.00
2,100.00	15.20	146.00	2,091.12	-83.09	56.04	-56.04	2.00	2.00	0.00	0.00
2,200.00	17.20	146.00	2,187.14	-106.21	71.64	-71.64	2.00	2.00	0.00	0.00
2,300.00	19.20	146.00	2,282.13	-132.11	89.11	-89.11	2.00	2.00	0.00	0.00
2,340.00	20.00	146.00	2,319.82	-143.23	96.61	-96.61	2.00	2.00	0.00	0.00
End Nudge @ 2340.00ft										
2,400.00	20.00	146.00	2,376.20	-160.24	108.09	-108.09	0.00	0.00	0.00	0.00
2,500.00	20.00	146.00	2,470.17	-188.60	127.21	-127.21	0.00	0.00	0.00	0.00
2,600.00	20.00	146.00	2,564.14	-216.95	146.34	-146.34	0.00	0.00	0.00	0.00
2,700.00	20.00	146.00	2,658.10	-245.31	165.46	-165.46	0.00	0.00	0.00	0.00
2,800.00	20.00	146.00	2,752.07	-273.66	184.59	-184.59	0.00	0.00	0.00	0.00
2,900.00	20.00	146.00	2,846.04	-302.02	203.71	-203.71	0.00	0.00	0.00	0.00
3,000.00	20.00	146.00	2,940.01	-330.37	222.84	-222.84	0.00	0.00	0.00	0.00
3,100.00	20.00	146.00	3,033.98	-358.73	241.96	-241.96	0.00	0.00	0.00	0.00
3,200.00	20.00	146.00	3,127.95	-387.08	261.09	-261.09	0.00	0.00	0.00	0.00
3,300.00	20.00	146.00	3,221.92	-415.44	280.22	-280.22	0.00	0.00	0.00	0.00
3,400.00	20.00	146.00	3,315.89	-443.79	299.34	-299.34	0.00	0.00	0.00	0.00
3,500.00	20.00	146.00	3,409.86	-472.15	318.47	-318.47	0.00	0.00	0.00	0.00
3,600.00	20.00	146.00	3,503.83	-500.50	337.59	-337.59	0.00	0.00	0.00	0.00
3,700.00	20.00	146.00	3,597.80	-528.86	356.72	-356.72	0.00	0.00	0.00	0.00
3,800.00	20.00	146.00	3,691.77	-557.21	375.84	-375.84	0.00	0.00	0.00	0.00
3,900.00	20.00	146.00	3,785.74	-585.57	394.97	-394.97	0.00	0.00	0.00	0.00
4,000.00	20.00	146.00	3,879.71	-613.92	414.09	-414.09	0.00	0.00	0.00	0.00
4,100.00	20.00	146.00	3,973.67	-642.27	433.22	-433.22	0.00	0.00	0.00	0.00
4,189.74	20.00	146.00	4,058.00	-667.72	450.38	-450.38	0.00	0.00	0.00	0.00
Sussex										
4,200.00	20.00	146.00	4,067.64	-670.63	452.35	-452.35	0.00	0.00	0.00	0.00
4,300.00	20.00	146.00	4,161.61	-698.98	471.47	-471.47	0.00	0.00	0.00	0.00
4,400.00	20.00	146.00	4,255.58	-727.34	490.60	-490.60	0.00	0.00	0.00	0.00
4,500.00	20.00	146.00	4,349.55	-755.69	509.72	-509.72	0.00	0.00	0.00	0.00
4,600.00	20.00	146.00	4,443.52	-784.05	528.85	-528.85	0.00	0.00	0.00	0.00

Plan Report for RMF 32C-15HZ - Permit Rev-2

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 (°)
4,700.00	20.00	146.00	4,537.49	-812.40	547.97	-547.97	0.00	0.00	0.00	0.00
4,755.88	20.00	146.00	4,590.00	-828.25	558.66	-558.66	0.00	0.00	0.00	0.00
Shannon										
4,800.00	20.00	146.00	4,631.46	-840.76	567.10	-567.10	0.00	0.00	0.00	0.00
4,900.00	20.00	146.00	4,725.43	-869.11	586.22	-586.22	0.00	0.00	0.00	0.00
5,000.00	20.00	146.00	4,819.40	-897.47	605.35	-605.35	0.00	0.00	0.00	0.00
5,100.00	20.00	146.00	4,913.37	-925.82	624.48	-624.48	0.00	0.00	0.00	0.00
5,200.00	20.00	146.00	5,007.34	-954.18	643.60	-643.60	0.00	0.00	0.00	0.00
5,300.00	20.00	146.00	5,101.31	-982.53	662.73	-662.73	0.00	0.00	0.00	0.00
5,400.00	20.00	146.00	5,195.27	-1,010.89	681.85	-681.85	0.00	0.00	0.00	0.00
5,500.00	20.00	146.00	5,289.24	-1,039.24	700.98	-700.98	0.00	0.00	0.00	0.00
5,600.00	20.00	146.00	5,383.21	-1,067.60	720.10	-720.10	0.00	0.00	0.00	0.00
5,700.00	20.00	146.00	5,477.18	-1,095.95	739.23	-739.23	0.00	0.00	0.00	0.00
5,800.00	20.00	146.00	5,571.15	-1,124.31	758.35	-758.35	0.00	0.00	0.00	0.00
5,892.00	20.00	146.00	5,657.60	-1,150.39	775.95	-775.95	0.00	0.00	0.00	0.00
Begin Drop @ 5892.00ft										
5,900.00	19.84	146.00	5,665.13	-1,152.65	777.47	-777.47	2.00	-2.00	0.00	180.00
6,000.00	17.84	146.00	5,759.76	-1,179.42	795.53	-795.53	2.00	-2.00	0.00	180.00
6,100.00	15.84	146.00	5,855.47	-1,203.44	811.73	-811.73	2.00	-2.00	0.00	180.00
6,200.00	13.84	146.00	5,952.13	-1,224.67	826.05	-826.05	2.00	-2.00	0.00	180.00
6,300.00	11.84	146.00	6,049.62	-1,243.09	838.48	-838.48	2.00	-2.00	0.00	180.00
6,400.00	9.84	146.00	6,147.83	-1,258.68	848.99	-848.99	2.00	-2.00	0.00	180.00
6,500.00	7.84	146.00	6,246.64	-1,271.42	857.59	-857.59	2.00	-2.00	0.00	180.00
6,600.00	5.84	146.00	6,345.92	-1,281.30	864.25	-864.25	2.00	-2.00	0.00	180.00
6,700.00	3.84	146.00	6,445.56	-1,288.29	868.96	-868.96	2.00	-2.00	0.00	180.00
6,800.00	1.84	146.00	6,545.44	-1,292.40	871.73	-871.73	2.00	-2.00	0.00	180.00
6,892.00	0.00	0.00	6,637.42	-1,293.62	872.56	-872.56	2.00	-2.00	-158.70	-180.00
End Drop @ 6892.00ft										
6,900.00	0.00	0.00	6,645.42	-1,293.62	872.56	-872.56	0.00	0.00	0.00	180.00
6,900.64	0.00	0.00	6,646.06	-1,293.62	872.56	-872.56	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6900.64ft										
7,000.00	0.00	0.00	6,745.42	-1,293.62	872.56	-872.56	0.00	0.00	0.00	0.00
7,000.64	0.00	0.00	6,746.06	-1,293.62	872.56	-872.56	0.00	0.00	0.00	0.00
KOP @ 7000.64ft										
7,100.00	9.94	270.00	6,844.92	-1,293.62	863.97	-863.97	10.00	10.00	0.00	270.00
7,200.00	19.94	270.00	6,941.42	-1,293.63	838.22	-838.22	10.00	10.00	0.00	0.00
7,273.81	27.32	270.00	7,009.00	-1,293.63	808.66	-808.66	10.00	10.00	0.00	0.00
Sharon Springs										
7,300.00	29.94	270.00	7,031.98	-1,293.63	796.12	-796.12	10.00	10.00	0.00	0.00
7,317.48	31.68	270.00	7,047.00	-1,293.63	787.16	-787.16	10.00	10.00	0.00	0.00
Niobrara A										
7,400.00	39.94	270.00	7,113.86	-1,293.63	738.92	-738.92	10.00	10.00	0.00	0.00
7,402.80	40.22	270.00	7,116.00	-1,293.63	737.12	-737.12	10.00	10.00	0.00	0.00
Niobrara B										
7,500.00	49.94	270.00	7,184.56	-1,293.64	668.38	-668.38	10.00	10.00	0.00	0.00
DLS = 10/100'										
7,506.95	50.63	270.00	7,189.00	-1,293.64	663.04	-663.04	10.00	10.00	0.00	0.00
Niobrara C										
7,600.00	59.94	270.00	7,241.93	-1,293.64	586.64	-586.64	10.00	10.00	0.00	0.00
7,700.00	69.94	270.00	7,284.24	-1,293.65	496.17	-496.17	10.00	10.00	0.00	0.00
7,769.17	76.85	270.00	7,304.00	-1,293.65	429.92	-429.92	10.00	10.00	0.00	0.00
Fort Hays										
7,800.00	79.94	270.00	7,310.20	-1,293.65	399.73	-399.73	10.00	10.00	0.00	0.00
7,817.53	81.69	270.00	7,313.00	-1,293.66	382.42	-382.42	10.00	10.00	0.00	0.00
Codell										
7,900.00	89.94	270.00	7,319.02	-1,293.66	300.24	-300.24	10.00	10.00	0.00	0.00
7,905.21	90.46	270.00	7,319.00	-1,293.66	295.03	-295.03	10.00	10.00	0.00	0.00
End Build @ 7905.21ft - Landing Target (Heel) - 7"										

Plan Report for RMF 32C-15HZ - Permit Rev-2

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 (°)
8,000.00	90.46	270.00	7,318.24	-1,293.67	200.25	-200.25	0.00	0.00	0.00	0.00
8,100.00	90.46	270.00	7,317.44	-1,293.67	100.25	-100.25	0.00	0.00	0.00	0.00
8,200.00	90.46	270.00	7,316.65	-1,293.68	0.25	-0.25	0.00	0.00	0.00	0.00
8,300.00	90.46	270.00	7,315.85	-1,293.69	-99.75	99.75	0.00	0.00	0.00	0.00
8,400.00	90.46	270.00	7,315.05	-1,293.69	-199.74	199.74	0.00	0.00	0.00	0.00
8,500.00	90.46	270.00	7,314.25	-1,293.70	-299.74	299.74	0.00	0.00	0.00	0.00
8,600.00	90.46	270.00	7,313.45	-1,293.71	-399.74	399.74	0.00	0.00	0.00	0.00
8,700.00	90.46	270.00	7,312.65	-1,293.71	-499.73	499.73	0.00	0.00	0.00	0.00
8,800.00	90.46	270.00	7,311.86	-1,293.72	-599.73	599.73	0.00	0.00	0.00	0.00
8,900.00	90.46	270.00	7,311.06	-1,293.73	-699.73	699.73	0.00	0.00	0.00	0.00
9,000.00	90.46	270.00	7,310.26	-1,293.73	-799.72	799.72	0.00	0.00	0.00	0.00
9,100.00	90.46	270.00	7,309.46	-1,293.74	-899.72	899.72	0.00	0.00	0.00	0.00
9,200.00	90.46	270.00	7,308.66	-1,293.75	-999.72	999.72	0.00	0.00	0.00	0.00
9,300.00	90.46	270.00	7,307.86	-1,293.75	-1,099.71	1,099.71	0.00	0.00	0.00	0.00
9,400.00	90.46	270.00	7,307.06	-1,293.76	-1,199.71	1,199.71	0.00	0.00	0.00	0.00
9,500.00	90.46	270.00	7,306.27	-1,293.76	-1,299.71	1,299.71	0.00	0.00	0.00	0.00
9,600.00	90.46	270.00	7,305.47	-1,293.77	-1,399.70	1,399.70	0.00	0.00	0.00	0.00
9,700.00	90.46	270.00	7,304.67	-1,293.78	-1,499.70	1,499.70	0.00	0.00	0.00	0.00
9,800.00	90.46	270.00	7,303.87	-1,293.78	-1,599.70	1,599.70	0.00	0.00	0.00	0.00
9,900.00	90.46	270.00	7,303.07	-1,293.79	-1,699.69	1,699.69	0.00	0.00	0.00	0.00
10,000.00	90.46	270.00	7,302.27	-1,293.80	-1,799.69	1,799.69	0.00	0.00	0.00	0.00
10,100.00	90.46	270.00	7,301.48	-1,293.80	-1,899.69	1,899.69	0.00	0.00	0.00	0.00
10,200.00	90.46	270.00	7,300.68	-1,293.81	-1,999.68	1,999.68	0.00	0.00	0.00	0.00
10,300.00	90.46	270.00	7,299.88	-1,293.82	-2,099.68	2,099.68	0.00	0.00	0.00	0.00
10,400.00	90.46	270.00	7,299.08	-1,293.82	-2,199.68	2,199.68	0.00	0.00	0.00	0.00
10,500.00	90.46	270.00	7,298.28	-1,293.83	-2,299.68	2,299.68	0.00	0.00	0.00	0.00
10,600.00	90.46	270.00	7,297.48	-1,293.84	-2,399.67	2,399.67	0.00	0.00	0.00	0.00
10,700.00	90.46	270.00	7,296.69	-1,293.84	-2,499.67	2,499.67	0.00	0.00	0.00	0.00
10,800.00	90.46	270.00	7,295.89	-1,293.85	-2,599.67	2,599.67	0.00	0.00	0.00	0.00
10,900.00	90.46	270.00	7,295.09	-1,293.86	-2,699.66	2,699.66	0.00	0.00	0.00	0.00
11,000.00	90.46	270.00	7,294.29	-1,293.86	-2,799.66	2,799.66	0.00	0.00	0.00	0.00
11,100.00	90.46	270.00	7,293.49	-1,293.87	-2,899.66	2,899.66	0.00	0.00	0.00	0.00
11,200.00	90.46	270.00	7,292.69	-1,293.88	-2,999.65	2,999.65	0.00	0.00	0.00	0.00
11,300.00	90.46	270.00	7,291.90	-1,293.88	-3,099.65	3,099.65	0.00	0.00	0.00	0.00
11,400.00	90.46	270.00	7,291.10	-1,293.89	-3,199.65	3,199.65	0.00	0.00	0.00	0.00
11,500.00	90.46	270.00	7,290.30	-1,293.90	-3,299.64	3,299.64	0.00	0.00	0.00	0.00
11,600.00	90.46	270.00	7,289.50	-1,293.90	-3,399.64	3,399.64	0.00	0.00	0.00	0.00
11,700.00	90.46	270.00	7,288.70	-1,293.91	-3,499.64	3,499.64	0.00	0.00	0.00	0.00
11,800.00	90.46	270.00	7,287.90	-1,293.91	-3,599.63	3,599.63	0.00	0.00	0.00	0.00
11,900.00	90.46	270.00	7,287.11	-1,293.92	-3,699.63	3,699.63	0.00	0.00	0.00	0.00
12,000.00	90.46	270.00	7,286.31	-1,293.93	-3,799.63	3,799.63	0.00	0.00	0.00	0.00
12,100.00	90.46	270.00	7,285.51	-1,293.93	-3,899.62	3,899.62	0.00	0.00	0.00	0.00
12,200.00	90.46	270.00	7,284.71	-1,293.94	-3,999.62	3,999.62	0.00	0.00	0.00	0.00
12,300.00	90.46	270.00	7,283.91	-1,293.95	-4,099.62	4,099.62	0.00	0.00	0.00	0.00
12,400.00	90.46	270.00	7,283.11	-1,293.95	-4,199.61	4,199.61	0.00	0.00	0.00	0.00
12,500.00	90.46	270.00	7,282.31	-1,293.96	-4,299.61	4,299.61	0.00	0.00	0.00	0.00
12,539.41	90.46	270.00	7,282.00	-1,293.96	-4,339.02	4,339.02	0.00	0.00	0.00	0.00
Total Depth (Toe)										
12,539.42	90.46	270.00	7,282.00	-1,293.96	-4,339.03	4,339.03	0.00	0.00	0.00	0.00
TD Well @ 12539.42ft - RMF 32C-15HZ_BHL										

Plan Report for RMF 32C-15HZ - Permit Rev-2**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,340.00	1,340.00	0.00	0.00	Begin Nudge @ 1340.00ft
2,340.00	2,319.82	-143.23	96.61	End Nudge @ 2340.00ft
5,892.00	5,657.60	-1,150.39	775.95	Begin Drop @ 5892.00ft
6,892.00	6,637.42	-1,293.62	872.56	End Drop @ 6892.00ft
6,900.64	6,646.06	-1,293.62	872.56	Top of 4.5" Liner @ 6900.64ft
7,000.64	6,746.06	-1,293.62	872.56	KOP @ 7000.64ft
7,500.00	7,184.56	-1,293.64	668.38	DLS = 10/100'
7,905.21	7,319.00	-1,293.66	295.03	End Build @ 7905.21ft
12,539.42	7,282.00	-1,293.96	-4,339.03	TD Well @ 12539.42ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	270.00	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,905.21	Permit Rev-2	MWD+IFR1
7,905.21	12,539.42	Permit Rev-2	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,064.00	1,064.00	9 5/8"	9-5/8	13-1/2
7,905.21	7,319.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,014.00	1,014.00	Fox Hills Base		0.00	
4,189.74	4,058.00	Sussex		0.00	
4,755.88	4,590.00	Shannon		0.00	
7,273.81	7,009.00	Sharon Springs		0.00	
7,317.48	7,047.00	Niobrara A		0.00	
7,402.80	7,116.00	Niobrara B		0.00	
7,506.95	7,189.00	Niobrara C		0.00	
7,769.17	7,304.00	Fort Hays		0.00	
7,817.53	7,313.00	Codell		0.00	
7,905.21	7,319.00	Landing Target (Heel)		0.00	
12,539.41	7,282.00	Total Depth (Toe)		0.00	

Plan Report for RMF 32C-15HZ - Permit Rev-2

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
RMF 32C-15HZ_BHL	7,282.00	-1,293.96	-4,339.03	Point
RMF 32C-15HZ_SEC	0.00	0.00	0.00	Polygon
RMF 32C-15HZ_SHL	0.00	0.00	0.00	Point

North Reference Sheet for Sec. 15-T3N-R68W - RMF 32C-15HZ - Plan B

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' @ 4984.00usft (Drilling Rig). Northing and Easting are relative to RMF 32C-15HZ

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: 0.99995691

Grid Coordinates of Well: 1,327,102.88 usft N, 3,144,806.32 usft E

Geographical Coordinates of Well: 40° 13' 48.48" N, 104° 58' 52.91" W

Grid Convergence at Surface is: 0.34°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,539.42usft
the Bottom Hole Displacement is 4,527.86usft in the Direction of 253.39° (True).

Magnetic Convergence at surface is: -8.35° (7 October 2013, , BGGM2013)

