

# KERR-MCGEE OIL & GAS ONSHORE LP\_1

location: Compass Import Slot: SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)

Field: WELD COUNTY (UTM ZONE 13)/NAD83/TRUE NORTH Well: FEHRN 38N-32HZ

Facility: SEC.32-T2N-R66W Wellbore: FEHRN 38N-32HZ PWB

Plot reference wellpath is FEHRN 38N-32HZ (PERMIT REV-1) PWP

True vertical depths are referenced to PERMIT (17KB) (RKB) Grid System: NAD83 / UTM Zone 13 North, US feet  
Measured depths are referenced to PERMIT (17KB) (RKB) North Reference: True north  
PERMIT (17KB) (RKB) to Mean Sea Level: 4943 feet Scale: Grid distance  
Mean Sea Level to Mud line (At Slot: SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)): 0 feet Depths are in feet  
Coordinates are in feet referenced to Slot Created by: precin on 12/15/2014

## Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.32-T2N-R66W			1694937.424	14562911.912	40°05'57.077"N	104°48'18.130"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)	669.52	3083.88	1698019.822	14563588.186	40°06'03.694"N	104°47'38.429"W
PERMIT (17KB) (RKB) to Mud line (At Slot: SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32))			4943ft			
Mean Sea Level to Mud line (At Slot: SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32))			0ft			
PERMIT (17KB) (RKB) to Mean Sea Level			4943ft			

## Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	1078.00	ISOWSA MWD, Rev. 2, axial magnetic correction	ISOWSA MWD, Rev. 2, axial magnetic correction (Standard) (Mag/VAR IFR Watterberg)		FEHRN 38N-32HZ PWB
1078.00	7747.62	ISOWSA MWD, Rev. 2, axial magnetic correction	ISOWSA MWD, Rev. 2, axial magnetic correction (Standard) (Mag/VAR IFR Watterberg)		FEHRN 38N-32HZ PWB
7747.62	12652.16	ISOWSA MWD, Rev. 2, axial magnetic correction	ISOWSA MWD, Rev. 2, axial magnetic correction (Standard) (Mag/VAR IFR Watterberg)		FEHRN 38N-32HZ PWB

## Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
TIE-ON	17.00	0.000	44.500	17.00	0.00	0.00	0.00	0.00
BEGIN NUDDGE	1300.00	0.000	44.500	1300.00	0.00	0.00	0.00	0.00
END NUDDGE	2000.00	14.000	44.500	1993.06	60.70	59.64	2.00	-60.83
BEGIN DROP	4480.63	14.000	44.500	4400.00	488.73	480.27	0.00	-489.85
END DROP	5180.63	0.000	180.134	5093.06	549.43	539.92	2.00	-550.69
KOP, BUILD @ 10°/100'	6847.62	0.000	180.134	6760.05	549.43	539.92	0.00	-550.69
LANDING POINT	7747.62	90.000	180.134	7333.00	-23.53	538.58	10.00	22.27
TOTAL DEPTH	12652.16	90.000	180.134	7333.00	-4928.05	527.09	0.00	4926.81

## Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.29-T2N-R66W SECTION LINES		4.00	2.13	-239.95	1697779.87	14563589.76	40°06'03.715"N	104°47'41.518"W
SEC.32-T2N-R66W SECTION LINES		4.00	2.13	-239.95	1697779.87	14563589.76	40°06'03.715"N	104°47'41.518"W
FEHRN 38N-32HZ BHL (50' FSL & 150' FEL, SEC.32) REV-2	12652.16	7333.00	-4928.05	527.09	1698558.32	14558661.38	40°05'14.975"N	104°47'31.645"W

## Hole and Casing Sections

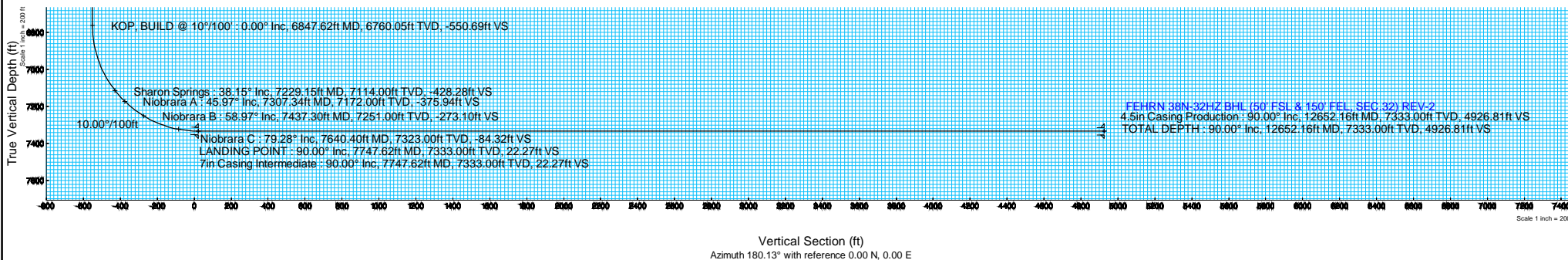
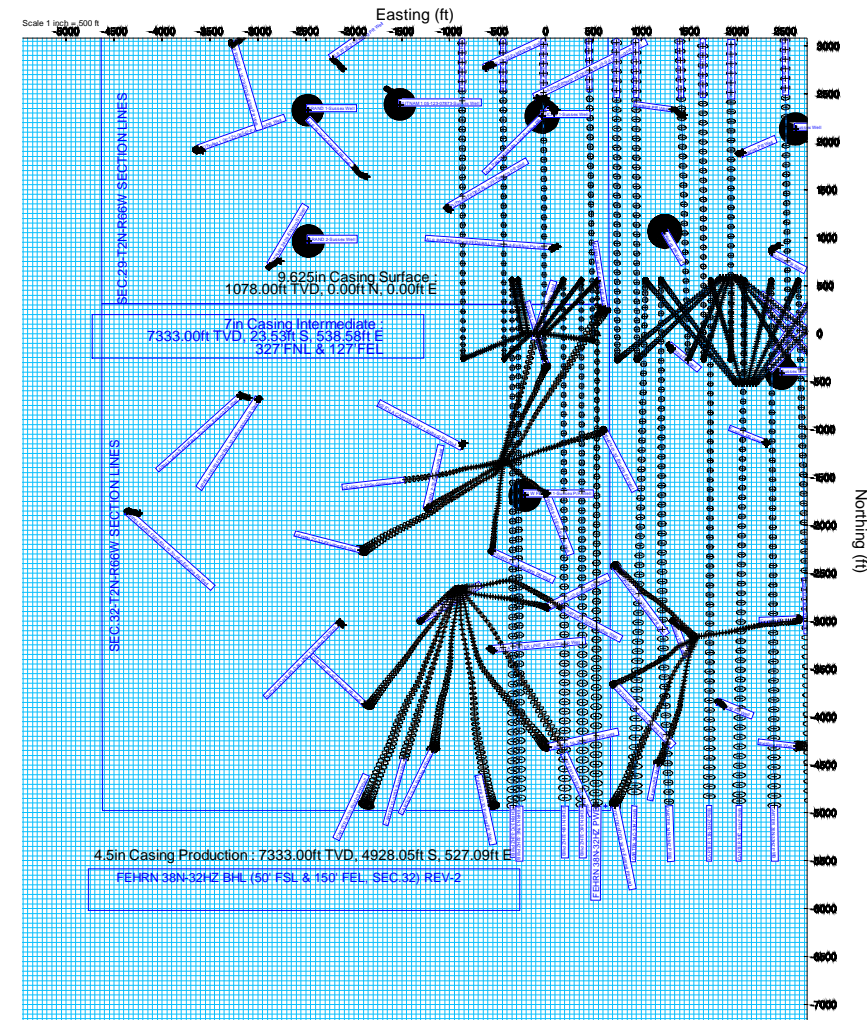
Name	Start MD (ft)	End MD (ft)	Interval (ft)	Start TVD (ft)	End TVD (ft)	Start Local N (ft)	End Local N (ft)	Start Local E (ft)	End Local E (ft)	Wellbore
13.5in Open Hole	17.00	1078.00	1061.00	17.00	1078.00	0.00	0.00	0.00	0.00	FEHRN 38N-32HZ PWB
9.625in Casing Surface	17.00	1078.00	1061.00	17.00	1078.00	0.00	0.00	0.00	0.00	FEHRN 38N-32HZ PWB
8.75in Open Hole	1078.00	7747.62	6669.62	1078.00	7333.00	0.00	0.00	-23.53	538.58	FEHRN 38N-32HZ PWB
7in Casing Intermediate	17.00	7747.62	7730.62	17.00	7333.00	0.00	0.00	-23.53	538.58	FEHRN 38N-32HZ PWB
6.125in Open Hole	7747.62	12652.16	4904.54	7333.00	7333.00	-23.53	538.58	-4928.05	527.09	FEHRN 38N-32HZ PWB
4.5in Casing Production	17.00	12652.16	12635.16	17.00	7333.00	0.00	0.00	-4928.05	527.09	FEHRN 38N-32HZ PWB

## Wellpath Comments

MD (ft)	X (ft)	Y (ft)	TVD (ft)	Inclination (°)	Azimuth (°)	VS (ft)	Comment
1028.00	0.00	0.00	1028.00	0.000	44.500	0.00	Fox Hills Base
4022.01	402.51	409.59	3955.00	14.000	44.500	-410.53	Parkman
4610.83	500.33	509.14	4527.00	11.396	44.500	-510.31	Sussex
7229.15	539.63	427.02	7114.00	38.153	180.134	-428.28	Sharon Springs
7307.34	539.51	374.68	7172.00	45.972	180.134	-375.94	Niobrara A
7437.30	539.27	271.84	7251.00	58.968	180.134	-273.10	Niobrara B
7640.40	538.83	83.06	7323.00	79.278	180.134	-84.32	Niobrara C



# PERMIT PLAN



Vertical Section (ft)  
Azimuth 180.13° with reference 0.00 N, 0.00 E

## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP_1	Slot	SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)
Area	Compass Import	Well	FEHRN 38N-32HZ
Field	WELD COUNTY (UTM (ZONE 13)/NAD83/TRUE NORTH)	Wellbore	FEHRN 38N-32HZ PWB
Facility	SEC.32-T2N-R66W		

## REPORT SETUP INFORMATION

Projection System	NAD83 / UTM Zone 13 North, US feet	Software System	WellArchitect® 4.0.0
North Reference	True	User	Precain
Scale	0.999604	Report Generated	12/15/2014 at 8:34:54 AM
Convergence at slot	n/a	Database/Source file	WellArchitect Review/FEHRN_38N-32HZ_PWB.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	669.52	3083.88	1698019.82	14563588.19	40°06'03.694"N	104°47'38.429"W
Facility Reference Pt			1694937.42	14562911.91	40°05'57.077"N	104°48'18.130"W
Field Reference Pt			1700626.56	14568707.73	40°06'54.245"N	104°47'04.711"W

## WELLPATH DATUM

Calculation method	Minimum curvature	PERMIT (17'KB) (RKB) to 2N-66W-32 Offsets vertical datum	4943.00ft
Horizontal Reference Pt	Slot	PERMIT (17'KB) (RKB) to Mean Sea Level	4943.00ft
Vertical Reference Pt	PERMIT (17'KB) (RKB)	PERMIT (17'KB) (RKB) to Mud Line at Slot (SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32))	4943.00ft
MD Reference Pt	PERMIT (17'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	180.13°

## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP_1	Slot	SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)
Area	Compass Import	Well	FEHRN 38N-32HZ
Field	WELD COUNTY (UTM (ZONE 13)/NAD83/TRUE NORTH)	Wellbore	FEHRN 38N-32HZ PWB
Facility	SEC.32-T2N-R66W		

## WELLPATH DATA (142 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00†	0.000	44.500	0.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
17.00	0.000	44.500	17.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	TIE-ON
117.00†	0.000	44.500	117.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
217.00†	0.000	44.500	217.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
317.00†	0.000	44.500	317.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
417.00†	0.000	44.500	417.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
517.00†	0.000	44.500	517.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
617.00†	0.000	44.500	617.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
717.00†	0.000	44.500	717.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
817.00†	0.000	44.500	817.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
917.00†	0.000	44.500	917.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
1017.00†	0.000	44.500	1017.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
1028.00†	0.000	44.500	1028.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	Fox Hills Base
1117.00†	0.000	44.500	1117.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
1217.00†	0.000	44.500	1217.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	
1300.00	0.000	44.500	1300.00	0.00	0.00	0.00	40°06'03.694"N	104°47'38.429"W	0.00	BEGIN NUDGE
1317.00†	0.340	44.500	1317.00	-0.04	0.04	0.04	40°06'03.694"N	104°47'38.429"W	2.00	
1417.00†	2.340	44.500	1416.97	-1.71	1.70	1.67	40°06'03.711"N	104°47'38.407"W	2.00	
1517.00†	4.340	44.500	1516.79	-5.87	5.86	5.76	40°06'03.752"N	104°47'38.355"W	2.00	
1617.00†	6.340	44.500	1616.35	-12.53	12.50	12.28	40°06'03.818"N	104°47'38.271"W	2.00	
1717.00†	8.340	44.500	1715.53	-21.66	21.61	21.23	40°06'03.908"N	104°47'38.156"W	2.00	
1817.00†	10.340	44.500	1814.20	-33.26	33.18	32.61	40°06'04.022"N	104°47'38.009"W	2.00	
1917.00†	12.340	44.500	1912.24	-47.32	47.21	46.39	40°06'04.161"N	104°47'37.832"W	2.00	
2000.00	14.000	44.500	1993.06	-60.83	60.70	59.64	40°06'04.294"N	104°47'37.661"W	2.00	END NUDGE
2017.00†	14.000	44.500	2009.55	-63.77	63.63	62.53	40°06'04.323"N	104°47'37.624"W	0.00	
2117.00†	14.000	44.500	2106.58	-81.07	80.88	79.48	40°06'04.494"N	104°47'37.406"W	0.00	
2217.00†	14.000	44.500	2203.61	-98.36	98.14	96.44	40°06'04.664"N	104°47'37.187"W	0.00	
2317.00†	14.000	44.500	2300.64	-115.66	115.39	113.40	40°06'04.835"N	104°47'36.969"W	0.00	
2417.00†	14.000	44.500	2397.67	-132.95	132.65	130.35	40°06'05.005"N	104°47'36.751"W	0.00	
2517.00†	14.000	44.500	2494.70	-150.25	149.90	147.31	40°06'05.176"N	104°47'36.533"W	0.00	
2617.00†	14.000	44.500	2591.73	-167.54	167.16	164.27	40°06'05.347"N	104°47'36.314"W	0.00	
2717.00†	14.000	44.500	2688.76	-184.84	184.41	181.22	40°06'05.517"N	104°47'36.096"W	0.00	
2817.00†	14.000	44.500	2785.79	-202.13	201.67	198.18	40°06'05.688"N	104°47'35.878"W	0.00	
2917.00†	14.000	44.500	2882.82	-219.43	218.92	215.14	40°06'05.858"N	104°47'35.659"W	0.00	
3017.00†	14.000	44.500	2979.85	-236.72	236.18	232.09	40°06'06.029"N	104°47'35.441"W	0.00	
3117.00†	14.000	44.500	3076.88	-254.02	253.43	249.05	40°06'06.199"N	104°47'35.223"W	0.00	
3217.00†	14.000	44.500	3173.91	-271.31	270.69	266.01	40°06'06.370"N	104°47'35.004"W	0.00	
3317.00†	14.000	44.500	3270.93	-288.61	287.94	282.96	40°06'06.541"N	104°47'34.786"W	0.00	
3417.00†	14.000	44.500	3367.96	-305.90	305.20	299.92	40°06'06.711"N	104°47'34.568"W	0.00	
3517.00†	14.000	44.500	3464.99	-323.20	322.45	316.88	40°06'06.882"N	104°47'34.350"W	0.00	
3617.00†	14.000	44.500	3562.02	-340.49	339.71	333.83	40°06'07.052"N	104°47'34.131"W	0.00	
3717.00†	14.000	44.500	3659.05	-357.78	356.96	350.79	40°06'07.223"N	104°47'33.913"W	0.00	
3817.00†	14.000	44.500	3756.08	-375.08	374.22	367.75	40°06'07.394"N	104°47'33.695"W	0.00	
3917.00†	14.000	44.500	3853.11	-392.37	391.48	384.70	40°06'07.564"N	104°47'33.476"W	0.00	
4017.00†	14.000	44.500	3950.14	-409.67	408.73	401.66	40°06'07.735"N	104°47'33.258"W	0.00	

## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP_1	Slot	SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)
Area	Compass Import	Well	FEHRN 38N-32HZ
Field	WELD COUNTY (UTM (ZONE 13)/NAD83/TRUE NORTH)	Wellbore	FEHRN 38N-32HZ PWB
Facility	SEC.32-T2N-R66W		

## WELLPATH DATA (142 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4022.01†	14.000	44.500	3955.00	-410.53	409.59	402.51	40°06'07.743"N	104°47'33.247"W	0.00	Parkman
4117.00†	14.000	44.500	4047.17	-426.96	425.99	418.61	40°06'07.905"N	104°47'33.040"W	0.00	
4217.00†	14.000	44.500	4144.20	-444.26	443.24	435.57	40°06'08.076"N	104°47'32.821"W	0.00	
4317.00†	14.000	44.500	4241.23	-461.55	460.50	452.53	40°06'08.246"N	104°47'32.603"W	0.00	
4417.00†	14.000	44.500	4338.26	-478.85	477.75	469.48	40°06'08.417"N	104°47'32.385"W	0.00	
4480.63	14.000	44.500	4400.00	-489.85	488.73	480.27	40°06'08.526"N	104°47'32.246"W	0.00	BEGIN DROP
4517.00†	13.273	44.500	4435.34	-495.98	494.85	486.28	40°06'08.586"N	104°47'32.169"W	2.00	
4610.83†	11.396	44.500	4527.00	-510.31	509.14	500.33	40°06'08.727"N	104°47'31.988"W	2.00	Sussex
4617.00†	11.273	44.500	4533.05	-511.18	510.01	501.18	40°06'08.736"N	104°47'31.977"W	2.00	
4717.00†	9.273	44.500	4631.45	-523.92	522.72	513.68	40°06'08.862"N	104°47'31.816"W	2.00	
4817.00†	7.273	44.500	4730.40	-534.21	532.99	523.76	40°06'08.963"N	104°47'31.686"W	2.00	
4917.00†	5.273	44.500	4829.80	-542.02	540.78	531.42	40°06'09.040"N	104°47'31.587"W	2.00	
5017.00†	3.273	44.500	4929.51	-547.35	546.09	536.64	40°06'09.093"N	104°47'31.520"W	2.00	
5117.00†	1.273	44.500	5029.43	-550.18	548.92	539.42	40°06'09.121"N	104°47'31.484"W	2.00	
5180.63	0.000	180.134	5093.06	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	2.00	END DROP
5217.00†	0.000	180.134	5129.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
5317.00†	0.000	180.134	5229.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
5417.00†	0.000	180.134	5329.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
5517.00†	0.000	180.134	5429.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
5617.00†	0.000	180.134	5529.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
5717.00†	0.000	180.134	5629.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
5817.00†	0.000	180.134	5729.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
5917.00†	0.000	180.134	5829.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6017.00†	0.000	180.134	5929.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6117.00†	0.000	180.134	6029.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6217.00†	0.000	180.134	6129.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6317.00†	0.000	180.134	6229.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6417.00†	0.000	180.134	6329.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6517.00†	0.000	180.134	6429.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6617.00†	0.000	180.134	6529.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6717.00†	0.000	180.134	6629.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6817.00†	0.000	180.134	6729.43	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	
6847.62	0.000	180.134	6760.05	-550.69	549.43	539.92	40°06'09.126"N	104°47'31.478"W	0.00	KOP, BUILD @ 10°/100'
6917.00†	6.938	180.134	6829.26	-546.49	545.23	539.91	40°06'09.084"N	104°47'31.478"W	10.00	
7017.00†	16.938	180.134	6926.97	-525.83	524.57	539.86	40°06'08.880"N	104°47'31.479"W	10.00	
7117.00†	26.938	180.134	7019.61	-488.52	487.26	539.77	40°06'08.511"N	104°47'31.480"W	10.00	
7217.00†	36.938	180.134	7104.36	-435.69	434.43	539.65	40°06'07.989"N	104°47'31.482"W	10.00	
7229.15†	38.153	180.134	7114.00	-428.28	427.02	539.63	40°06'07.915"N	104°47'31.482"W	10.00	Sharon Springs
7307.34†	45.972	180.134	7172.00	-375.94	374.68	539.51	40°06'07.398"N	104°47'31.483"W	10.00	Niobrara A
7317.00†	46.938	180.134	7178.66	-368.94	367.68	539.49	40°06'07.329"N	104°47'31.484"W	10.00	
7417.00†	56.938	180.134	7240.23	-290.30	289.04	539.31	40°06'06.551"N	104°47'31.486"W	10.00	
7437.30†	58.968	180.134	7251.00	-273.10	271.84	539.27	40°06'06.381"N	104°47'31.487"W	10.00	Niobrara B
7517.00†	66.938	180.134	7287.21	-202.17	200.91	539.10	40°06'05.680"N	104°47'31.489"W	10.00	
7617.00†	76.938	180.134	7318.18	-107.22	105.96	538.88	40°06'04.741"N	104°47'31.492"W	10.00	
7640.40†	79.278	180.134	7323.00	-84.32	83.06	538.83	40°06'04.515"N	104°47'31.492"W	10.00	Niobrara C

# Planned Wellpath Report

FEHRN 38N-32HZ (PERMIT REV-1) PWP

Page 4 of 6

## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP_1	Slot	SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)
Area	Compass Import	Well	FEHRN 38N-32HZ
Field	WELD COUNTY (UTM (ZONE 13)/NAD83/TRUE NORTH)	Wellbore	FEHRN 38N-32HZ PWB
Facility	SEC.32-T2N-R66W		

## WELLPATH DATA (142 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7717.00†	86.938	180.134	7332.18	-8.33	7.07	538.65	40°06'03.764"N	104°47'31.495"W	10.00	
7747.62	90.000	180.134	7333.00	22.27	-23.53	538.58	40°06'03.461"N	104°47'31.495"W	10.00	LANDING POINT
7817.00†	90.000	180.134	7333.00	91.65	-92.91	538.42	40°06'02.775"N	104°47'31.498"W	0.00	
7917.00†	90.000	180.134	7333.00	191.65	-192.91	538.18	40°06'01.787"N	104°47'31.501"W	0.00	
8017.00†	90.000	180.134	7333.00	291.65	-292.91	537.95	40°06'00.798"N	104°47'31.504"W	0.00	
8117.00†	90.000	180.134	7333.00	391.65	-392.91	537.71	40°05'59.810"N	104°47'31.507"W	0.00	
8217.00†	90.000	180.134	7333.00	491.65	-492.91	537.48	40°05'58.821"N	104°47'31.510"W	0.00	
8317.00†	90.000	180.134	7333.00	591.65	-592.91	537.25	40°05'57.832"N	104°47'31.513"W	0.00	
8417.00†	90.000	180.134	7333.00	691.65	-692.91	537.01	40°05'56.844"N	104°47'31.516"W	0.00	
8517.00†	90.000	180.134	7333.00	791.65	-792.91	536.78	40°05'55.855"N	104°47'31.519"W	0.00	
8617.00†	90.000	180.134	7333.00	891.65	-892.91	536.54	40°05'54.867"N	104°47'31.522"W	0.00	
8717.00†	90.000	180.134	7333.00	991.65	-992.91	536.31	40°05'53.878"N	104°47'31.525"W	0.00	
8817.00†	90.000	180.134	7333.00	1091.65	-1092.91	536.08	40°05'52.889"N	104°47'31.528"W	0.00	
8917.00†	90.000	180.134	7333.00	1191.65	-1192.91	535.84	40°05'51.901"N	104°47'31.531"W	0.00	
9017.00†	90.000	180.134	7333.00	1291.65	-1292.91	535.61	40°05'50.912"N	104°47'31.534"W	0.00	
9117.00†	90.000	180.134	7333.00	1391.65	-1392.91	535.37	40°05'49.924"N	104°47'31.537"W	0.00	
9217.00†	90.000	180.134	7333.00	1491.65	-1492.91	535.14	40°05'48.935"N	104°47'31.540"W	0.00	
9317.00†	90.000	180.134	7333.00	1591.65	-1592.91	534.91	40°05'47.946"N	104°47'31.543"W	0.00	
9417.00†	90.000	180.134	7333.00	1691.65	-1692.91	534.67	40°05'46.958"N	104°47'31.546"W	0.00	
9517.00†	90.000	180.134	7333.00	1791.65	-1792.91	534.44	40°05'45.969"N	104°47'31.549"W	0.00	
9617.00†	90.000	180.134	7333.00	1891.65	-1892.91	534.20	40°05'44.981"N	104°47'31.552"W	0.00	
9717.00†	90.000	180.134	7333.00	1991.65	-1992.91	533.97	40°05'43.992"N	104°47'31.555"W	0.00	
9817.00†	90.000	180.134	7333.00	2091.65	-2092.91	533.74	40°05'43.003"N	104°47'31.558"W	0.00	
9917.00†	90.000	180.134	7333.00	2191.65	-2192.90	533.50	40°05'42.015"N	104°47'31.561"W	0.00	
10017.00†	90.000	180.134	7333.00	2291.65	-2292.90	533.27	40°05'41.026"N	104°47'31.564"W	0.00	
10117.00†	90.000	180.134	7333.00	2391.65	-2392.90	533.03	40°05'40.038"N	104°47'31.568"W	0.00	
10217.00†	90.000	180.134	7333.00	2491.65	-2492.90	532.80	40°05'39.049"N	104°47'31.571"W	0.00	
10317.00†	90.000	180.134	7333.00	2591.65	-2592.90	532.56	40°05'38.060"N	104°47'31.574"W	0.00	
10417.00†	90.000	180.134	7333.00	2691.65	-2692.90	532.33	40°05'37.072"N	104°47'31.577"W	0.00	
10517.00†	90.000	180.134	7333.00	2791.65	-2792.90	532.10	40°05'36.083"N	104°47'31.580"W	0.00	
10617.00†	90.000	180.134	7333.00	2891.65	-2892.90	531.86	40°05'35.094"N	104°47'31.583"W	0.00	
10717.00†	90.000	180.134	7333.00	2991.65	-2992.90	531.63	40°05'34.106"N	104°47'31.586"W	0.00	
10817.00†	90.000	180.134	7333.00	3091.65	-3092.90	531.39	40°05'33.117"N	104°47'31.589"W	0.00	
10917.00†	90.000	180.134	7333.00	3191.65	-3192.90	531.16	40°05'32.129"N	104°47'31.592"W	0.00	
11017.00†	90.000	180.134	7333.00	3291.65	-3292.90	530.92	40°05'31.140"N	104°47'31.595"W	0.00	
11117.00†	90.000	180.134	7333.00	3391.65	-3392.90	530.69	40°05'30.151"N	104°47'31.598"W	0.00	
11217.00†	90.000	180.134	7333.00	3491.65	-3492.90	530.46	40°05'29.163"N	104°47'31.601"W	0.00	
11317.00†	90.000	180.134	7333.00	3591.65	-3592.90	530.22	40°05'28.174"N	104°47'31.604"W	0.00	
11417.00†	90.000	180.134	7333.00	3691.65	-3692.90	529.99	40°05'27.186"N	104°47'31.607"W	0.00	
11517.00†	90.000	180.134	7333.00	3791.65	-3792.90	529.75	40°05'26.197"N	104°47'31.610"W	0.00	
11617.00†	90.000	180.134	7333.00	3891.65	-3892.90	529.52	40°05'25.208"N	104°47'31.613"W	0.00	
11717.00†	90.000	180.134	7333.00	3991.65	-3992.90	529.28	40°05'24.220"N	104°47'31.616"W	0.00	
11817.00†	90.000	180.134	7333.00	4091.65	-4092.90	529.05	40°05'23.231"N	104°47'31.619"W	0.00	
11917.00†	90.000	180.134	7333.00	4191.65	-4192.90	528.81	40°05'22.243"N	104°47'31.622"W	0.00	
12017.00†	90.000	180.134	7333.00	4291.65	-4292.90	528.58	40°05'21.254"N	104°47'31.625"W	0.00	



## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP_1	Slot	SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)
Area	Compass Import	Well	FEHRN 38N-32HZ
Field	WELD COUNTY (UTM (ZONE 13)/NAD83/TRUE NORTH)	Wellbore	FEHRN 38N-32HZ PWB
Facility	SEC.32-T2N-R66W		

## WELLPATH DATA (142 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12117.00†	90.000	180.134	7333.00	4391.65	-4392.90	528.35	40°05'20.265"N	104°47'31.628"W	0.00	
12217.00†	90.000	180.134	7333.00	4491.65	-4492.90	528.11	40°05'19.277"N	104°47'31.631"W	0.00	
12317.00†	90.000	180.134	7333.00	4591.65	-4592.90	527.88	40°05'18.288"N	104°47'31.635"W	0.00	
12417.00†	90.000	180.134	7333.00	4691.65	-4692.90	527.64	40°05'17.300"N	104°47'31.638"W	0.00	
12517.00†	90.000	180.134	7333.00	4791.65	-4792.90	527.41	40°05'16.311"N	104°47'31.641"W	0.00	
12617.00†	90.000	180.134	7333.00	4891.65	-4892.90	527.17	40°05'15.322"N	104°47'31.644"W	0.00	
12652.16	90.000	180.134	7333.00 <sup>1</sup>	4926.81	-4928.05	527.09	40°05'14.975"N	104°47'31.645"W	0.00	TOTAL DEPTH

## HOLE & CASING SECTIONS - Ref Wellbore: FEHRN 38N-32HZ PWB Ref Wellpath: FEHRN 38N-32HZ (PERMIT REV-1) PWP

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
13.5in Open Hole	17.00	1078.00	1061.00	17.00	1078.00	0.00	0.00	0.00	0.00
9.625in Casing Surface	17.00	1078.00	1061.00	17.00	1078.00	0.00	0.00	0.00	0.00
8.75in Open Hole	1078.00	7747.62	6669.62	1078.00	7333.00	0.00	0.00	-23.53	538.58
7in Casing Intermediate	17.00	7747.62	7730.62	17.00	7333.00	0.00	0.00	-23.53	538.58
6.125in Open Hole	7747.62	12652.16	4904.54	7333.00	7333.00	-23.53	538.58	-4928.05	527.09
4.5in Casing Production	17.00	12652.16	12635.16	17.00	7333.00	0.00	0.00	-4928.05	527.09

## TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.29-T2N-R66W SECTION LINES		4.00	2.13	-239.95	1697779.87	14563589.76	40°06'03.715"N	104°47'41.518"W	polygon
SEC.32-T2N-R66W SECTION LINES		4.00	2.13	-239.95	1697779.87	14563589.76	40°06'03.715"N	104°47'41.518"W	polygon
1) FEHRN 38N-32HZ BHL (50' FSL & 150' FEL, SEC.32) REV-2	12652.16	7333.00	-4928.05	527.09	1698558.32	14558661.38	40°05'14.975"N	104°47'31.645"W	point
FEHRN 38N-32HZ BHL (50' FSL & 50' FEL, SEC.32) REV-1		7333.00	-4928.05	627.09	1698658.32	14558661.61	40°05'14.975"N	104°47'30.358"W	point

## SURVEY PROGRAM - Ref Wellbore: FEHRN 38N-32HZ PWB Ref Wellpath: FEHRN 38N-32HZ (PERMIT REV-1) PWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	1078.00	ISCWSA MWD, Rev. 2, axial magnetic correction (Standard) (MagVAR IFR Wattenberg)		FEHRN 38N-32HZ PWB
1078.00	7747.62	ISCWSA MWD, Rev. 2, axial magnetic correction (Standard) (MagVAR IFR Wattenberg)		FEHRN 38N-32HZ PWB
7747.62	12652.16	ISCWSA MWD, Rev. 2, axial magnetic correction (Standard) (MagVAR IFR Wattenberg)		FEHRN 38N-32HZ PWB

## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP_1	Slot	SLOT#09 FEHRN 38N-32HZ (305' FNL & 664' FEL, SEC.32)
Area	Compass Import	Well	FEHRN 38N-32HZ
Field	WELD COUNTY (UTM (ZONE 13)/NAD83/TRUE NORTH)	Wellbore	FEHRN 38N-32HZ PWB
Facility	SEC.32-T2N-R66W		

## WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1028.00	0.000	44.500	1028.00	Fox Hills Base
4022.01	14.000	44.500	3955.00	Parkman
4610.83	11.396	44.500	4527.00	Sussex
7229.15	38.153	180.134	7114.00	Sharon Springs
7307.34	45.972	180.134	7172.00	Niobrara A
7437.30	58.968	180.134	7251.00	Niobrara B
7640.40	79.278	180.134	7323.00	Niobrara C

## DESIGN COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17.00	0.000	44.500	17.00	TIE-ON
1300.00	0.000	44.500	1300.00	BEGIN NUDGE
2000.00	14.000	44.500	1993.06	END NUDGE
4480.63	14.000	44.500	4400.00	BEGIN DROP
5180.63	0.000	180.134	5093.06	END DROP
6847.62	0.000	180.134	6760.05	KOP, BUILD @ 10°/100'
7747.62	90.000	180.134	7333.00	LANDING POINT
12652.16	90.000	180.134	7333.00	TOTAL DEPTH