

BISON OIL & GAS

Location: COLORADO Slot: SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19)

Field: WELD COUNTY (NAD83/TN) Well: CASTOR FED 8-59 19-24-1

Facility: SEC.19-T08N-R59W Wellbore: CASTOR FED 8-59 19-24-1 PWB

Plot reference wellpath is CASTOR FED 8-59 19-24-1 (REV-A.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB)	North Reference: True north
Reference wellpath measured depths are referenced to H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB)	Scale: True distance
H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB) to Mean Sea Level: 4879 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Mud line (At Slot: SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19)): 0 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: hanisab on 2019-11-12; Database: WA_DENVER

Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.19-T08N-R59W	3412761.859	1481203.932	40°38'41.2700"N	104°00'45.0900"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19)	0.28	-0.28	3412761.577	1481204.211
H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB) to Mud line (At Slot: SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19))				4879ft
Mean Sea Level to Mud line (At Slot: SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19))				0ft
H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB) to Mean Sea Level				4879ft

Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
25.00	2000.00	OWSG MWD rev2	OWSG MWD rev2 + IFR1		CASTOR FED 8-59 19-24-1 PWB
2000.00	15121.16	BH AutoTrak Curve (superseded model)	BH AutoTrak Curve (Short)		CASTOR FED 8-59 19-24-1 PWB

Bottom Hole Location

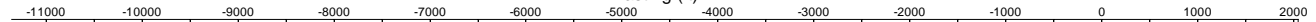
MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
15121.16	90.263	269.022	6240.00	3530.29	-7175.95	3405527.58	1484613.57	40°39'16.1460"N	104°02'18.1968"W

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	25.00	0.000	16.925	25.00	0.00	0.00	0.00	0.00
End of Tangent	200.00	0.000	16.925	200.00	0.00	0.00	0.00	0.00
End of Build	1959.16	35.183	16.925	1850.67	500.69	152.36	2.00	84.31
End of Tangent	6543.50	35.183	16.925	5597.52	3027.73	921.36	0.00	509.82
End of 3D Arc	7646.86	90.000	270.633	6210.00	3449.10	297.73	9.00	1255.40
End of Tangent	11500.00	90.000	270.633	6210.00	3491.66	-3555.18	0.00	4731.38
End of Drop	11578.45	89.216	270.633	6210.54	3492.53	-3633.62	1.00	4802.15
End of Tangent	13000.00	89.216	270.633	6230.00	3508.23	-5054.95	0.00	6084.43
End of 3D Arc	13050.74	89.723	270.635	6230.47	3508.80	-5105.68	1.00	6130.20
End of Tangent	15020.98	89.723	270.635	6240.00	3530.63	-7075.78	0.00	7907.60
End of 3D Arc	15118.61	90.263	269.022	6240.01	3530.34	-7173.40	1.74	7995.06
End of Tangent	15121.16	90.263	269.022	6240.00	3530.29	-7175.95	0.00	7997.33

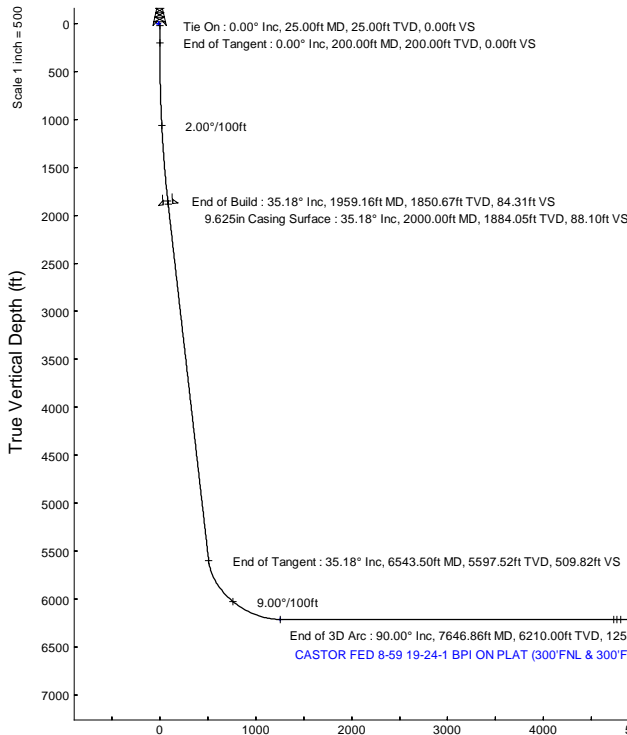
Scale 1 inch = 500

Easting (ft)



Scale 1 inch = 500

True Vertical Depth (ft)



End of Tangent : 90.00° Inc, 11500.00ft MD, 6210.00ft TVD, 4731.38ft VS
1.00°/100ft
End of Drop : 89.22° Inc, 11578.45ft MD, 6210.54ft TVD, 4802.15ft VS
End of Tangent : 89.22° Inc, 13000.00ft MD, 6230.00ft TVD, 6084.43ft VS
1.00°/100ft
End of 3D Arc : 89.72° Inc, 13050.74ft MD, 6230.47ft TVD, 6130.20ft VS
End of Tangent : 90.26° Inc, 15121.16ft MD, 6240.00ft TVD, 7997.33ft VS
1.74°/100ft
End of 3D Arc : 90.26° Inc, 15118.61ft MD, 6240.01ft TVD, 7995.06ft VS
End of Tangent : 89.72° Inc, 15020.98ft MD, 6240.00ft TVD, 7907.60ft VS

Vertical Section (ft)

Azimuth 296.20° with reference 0.00° N, 0.00° E

CASTOR FED 8-59 19-24-1 EPI ON PLAT (300'FNL & 2340'FEL,SEC.24)

CASTOR FED 8-59 19-24-1 BHL ON PLAT (300'FNL & 2440'FEL,SEC.24)

CASTOR FED 8-59 19-24-1 BPI ON PLAT (300'FNL & 300'FEL,SEC.19)

CASTOR FED 8-59 19-24-3 PWB

CASTOR FED 8-59 19-24-4 PWB

CASTOR FED 8-59 19-24-6 PWB

CASTOR FED 8-59 19-24-7 PWB

CASTOR FED 8-59 19-24-8 PWB

CASTOR FED 8-59 19-24-9 PWB

CASTOR FED 8-59 19-24-10 PWB

SEC.24-T08N-R60W

SEC.19-T08N-R59W

9.625in Casing Surface :
1884.05ft TVD, 523.20ft N, 159.21ft E

SLOT#01 CASTOR FED 8-59 19-24-1
(1560'FSL & 560'FEL SEC.19)

CASTOR FED 8-59 19-24-1 EPI ON PLAT (300'FNL & 2340'FEL,SEC.24)
CASTOR FED 8-59 19-24-1 BHL ON PLAT (300'FNL & 2440'FEL,SEC.24)

Scale 1 inch = 500



Planned Wellpath Report

CASTOR FED 8-59 19-24-1 (REV-A.0) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	BISON OIL & GAS	Well	CASTOR FED 8-59 19-24-1
Field	WELD COUNTY (NAD83/TN)	API/Legal	
Facility	SEC.19-T08N-R59W	Wellbore	CASTOR FED 8-59 19-24-1 PWB
Slot	SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19)		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 6.0
North Reference	True	User	Hanisab
Scale	0.999980	Report Generated	11/12/2019 at 1:31:12 PM
Convergence at slot	0.96° East	Database	WA_DENVER

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.28	-0.28	3412761.58	1481204.21	40°38'41.2728"N	104°00'45.0936"W
Facility Reference Pt			3412761.86	1481203.93	40°38'41.2700"N	104°00'45.0900"W
Field Reference Pt			3376841.67	1496090.80	40°41'14.0500"N	104°08'28.0600"W

WELLPATH DATUM			
Calculation method	Minimum curvature	H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB) to Facility Vertical Datum	4879.00ft
Horizontal Reference Pt	Slot	H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB) to Mean Sea Level	4879.00ft
Vertical Reference Pt	H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB)	H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB) to Mud Line at Slot (SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19))	4879.00ft
MD Reference Pt	H&P 290 (4854'GL+25'RIG@4879'RKB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	296.20°



Planned Wellpath Report

CASTOR FED 8-59 19-24-1 (REV-A.0) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	BISON OIL & GAS	Well	CASTOR FED 8-59 19-24-1
Field	WELD COUNTY (NAD83/TN)	API/Legal	
Facility	SEC.19-T08N-R59W	Wellbore	CASTOR FED 8-59 19-24-1 PWB
Slot	SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19)		

WELLPATH DATA (171 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	16.925	0.00	0.00	0.00	0.00	40°38'41.2728"N	104°00'45.0936"W	0.00	
25.00	0.000	16.925	25.00	0.00	0.00	0.00	40°38'41.2728"N	104°00'45.0936"W	0.00	Tie On
125.00†	0.000	16.925	125.00	0.00	0.00	0.00	40°38'41.2728"N	104°00'45.0936"W	0.00	
200.00	0.000	16.925	200.00	0.00	0.00	0.00	40°38'41.2728"N	104°00'45.0936"W	0.00	End of Tangent
225.00†	0.500	16.925	225.00	0.02	0.10	0.03	40°38'41.2738"N	104°00'45.0932"W	2.00	
325.00†	2.500	16.925	324.96	0.44	2.61	0.79	40°38'41.2986"N	104°00'45.0833"W	2.00	
425.00†	4.500	16.925	424.77	1.42	8.45	2.57	40°38'41.3563"N	104°00'45.0602"W	2.00	
525.00†	6.500	16.925	524.30	2.97	17.62	5.36	40°38'41.4469"N	104°00'45.0241"W	2.00	
625.00†	8.500	16.925	623.44	5.07	30.10	9.16	40°38'41.5703"N	104°00'44.9748"W	2.00	
725.00†	10.500	16.925	722.07	7.73	45.89	13.97	40°38'41.7263"N	104°00'44.9124"W	2.00	
825.00†	12.500	16.925	820.05	10.94	64.97	19.77	40°38'41.9147"N	104°00'44.8371"W	2.00	
925.00†	14.500	16.925	917.29	14.70	87.30	26.57	40°38'42.1354"N	104°00'44.7490"W	2.00	
1025.00†	16.500	16.925	1013.64	19.00	112.86	34.34	40°38'42.3880"N	104°00'44.6481"W	2.00	
1125.00†	18.500	16.925	1109.01	23.85	141.63	43.10	40°38'42.6723"N	104°00'44.5345"W	2.00	
1225.00†	20.500	16.925	1203.27	29.22	173.56	52.82	40°38'42.9878"N	104°00'44.4084"W	2.00	
1325.00†	22.500	16.925	1296.31	35.13	208.62	63.49	40°38'43.3343"N	104°00'44.2700"W	2.00	
1425.00†	24.500	16.925	1388.01	41.55	246.77	75.09	40°38'43.7112"N	104°00'44.1194"W	2.00	
1525.00†	26.500	16.925	1478.26	48.49	287.95	87.63	40°38'44.1181"N	104°00'43.9569"W	2.00	
1625.00†	28.500	16.925	1566.96	55.92	332.13	101.07	40°38'44.5546"N	104°00'43.7825"W	2.00	
1725.00†	30.500	16.925	1653.99	63.86	379.23	115.40	40°38'45.0201"N	104°00'43.5965"W	2.00	
1825.00†	32.500	16.925	1739.25	72.27	429.22	130.61	40°38'45.5140"N	104°00'43.3992"W	2.00	
1925.00†	34.500	16.925	1822.63	81.16	482.02	146.68	40°38'46.0357"N	104°00'43.1907"W	2.00	
1959.16	35.183	16.925	1850.67	84.31	500.69	152.36	40°38'46.2202"N	104°00'43.1170"W	2.00	End of Build
2025.00†	35.183	16.925	1904.48	90.42	536.98	163.41	40°38'46.5788"N	104°00'42.9738"W	0.00	
2125.00†	35.183	16.925	1986.21	99.70	592.10	180.18	40°38'47.1235"N	104°00'42.7561"W	0.00	
2225.00†	35.183	16.925	2067.95	108.98	647.23	196.96	40°38'47.6682"N	104°00'42.5385"W	0.00	
2325.00†	35.183	16.925	2149.68	118.26	702.35	213.73	40°38'48.2129"N	104°00'42.3209"W	0.00	
2425.00†	35.183	16.925	2231.41	127.55	757.47	230.50	40°38'48.7576"N	104°00'42.1033"W	0.00	
2525.00†	35.183	16.925	2313.14	136.83	812.60	247.28	40°38'49.3022"N	104°00'41.8857"W	0.00	
2625.00†	35.183	16.925	2394.87	146.11	867.72	264.05	40°38'49.8469"N	104°00'41.6681"W	0.00	
2725.00†	35.183	16.925	2476.60	155.39	922.84	280.83	40°38'50.3916"N	104°00'41.4504"W	0.00	
2825.00†	35.183	16.925	2558.33	164.67	977.97	297.60	40°38'50.9363"N	104°00'41.2328"W	0.00	
2925.00†	35.183	16.925	2640.07	173.95	1033.09	314.38	40°38'51.4810"N	104°00'41.0152"W	0.00	
3025.00†	35.183	16.925	2721.80	183.24	1088.22	331.15	40°38'52.0257"N	104°00'40.7976"W	0.00	
3125.00†	35.183	16.925	2803.53	192.52	1143.34	347.92	40°38'52.5703"N	104°00'40.5799"W	0.00	

WELLPATH DATA (171 stations) † = interpolated, ‡ = extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
3225.00†	35.183	16.925	2885.26	201.80	1198.46	364.70	40°38'53.1150"N	104°00'40.3623"W	0.00	
3325.00†	35.183	16.925	2966.99	211.08	1253.59	381.47	40°38'53.6597"N	104°00'40.1447"W	0.00	
3425.00†	35.183	16.925	3048.72	220.36	1308.71	398.25	40°38'54.2044"N	104°00'39.9271"W	0.00	
3498.75†	35.183	16.925	3109.00	227.21	1349.36	410.62	40°38'54.6061"N	104°00'39.7666"W	0.00	Parkman
3525.00†	35.183	16.925	3130.45	229.64	1363.83	415.02	40°38'54.7491"N	104°00'39.7094"W	0.00	
3625.00†	35.183	16.925	3212.19	238.93	1418.96	431.80	40°38'55.2938"N	104°00'39.4918"W	0.00	
3725.00†	35.183	16.925	3293.92	248.21	1474.08	448.57	40°38'55.8384"N	104°00'39.2742"W	0.00	
3825.00†	35.183	16.925	3375.65	257.49	1529.20	465.35	40°38'56.3831"N	104°00'39.0565"W	0.00	
3925.00†	35.183	16.925	3457.38	266.77	1584.33	482.12	40°38'56.9278"N	104°00'38.8389"W	0.00	
4025.00†	35.183	16.925	3539.11	276.05	1639.45	498.89	40°38'57.4725"N	104°00'38.6213"W	0.00	
4125.00†	35.183	16.925	3620.84	285.34	1694.57	515.67	40°38'58.0172"N	104°00'38.4036"W	0.00	
4225.00†	35.183	16.925	3702.57	294.62	1749.70	532.44	40°38'58.5619"N	104°00'38.1860"W	0.00	
4325.00†	35.183	16.925	3784.31	303.90	1804.82	549.22	40°38'59.1065"N	104°00'37.9684"W	0.00	
4379.68†	35.183	16.925	3829.00	308.97	1834.96	558.39	40°38'59.4044"N	104°00'37.8494"W	0.00	Sussex
4425.00†	35.183	16.925	3866.04	313.18	1859.94	565.99	40°38'59.6512"N	104°00'37.7507"W	0.00	
4525.00†	35.183	16.925	3947.77	322.46	1915.07	582.77	40°39'0.1959"N	104°00'37.5331"W	0.00	
4625.00†	35.183	16.925	4029.50	331.74	1970.19	599.54	40°39'0.7406"N	104°00'37.3154"W	0.00	
4725.00†	35.183	16.925	4111.23	341.03	2025.31	616.32	40°39'1.2853"N	104°00'37.0978"W	0.00	
4825.00†	35.183	16.925	4192.96	350.31	2080.44	633.09	40°39'1.8299"N	104°00'36.8802"W	0.00	
4925.00†	35.183	16.925	4274.69	359.59	2135.56	649.86	40°39'2.3746"N	104°00'36.6625"W	0.00	
5025.00†	35.183	16.925	4356.43	368.87	2190.68	666.64	40°39'2.9193"N	104°00'36.4449"W	0.00	
5125.00†	35.183	16.925	4438.16	378.15	2245.81	683.41	40°39'3.4640"N	104°00'36.2272"W	0.00	
5225.00†	35.183	16.925	4519.89	387.44	2300.93	700.19	40°39'4.0087"N	104°00'36.0096"W	0.00	
5285.09†	35.183	16.925	4569.00	393.01	2334.05	710.27	40°39'4.3360"N	104°00'35.8788"W	0.00	Shannon
5325.00†	35.183	16.925	4601.62	396.72	2356.05	716.96	40°39'4.5533"N	104°00'35.7919"W	0.00	
5425.00†	35.183	16.925	4683.35	406.00	2411.18	733.74	40°39'5.0980"N	104°00'35.5743"W	0.00	
5525.00†	35.183	16.925	4765.08	415.28	2466.30	750.51	40°39'5.6427"N	104°00'35.3566"W	0.00	
5625.00†	35.183	16.925	4846.82	424.56	2521.42	767.28	40°39'6.1874"N	104°00'35.1390"W	0.00	
5725.00†	35.183	16.925	4928.55	433.84	2576.55	784.06	40°39'6.7321"N	104°00'34.9213"W	0.00	
5825.00†	35.183	16.925	5010.28	443.13	2631.67	800.83	40°39'7.2767"N	104°00'34.7037"W	0.00	
5925.00†	35.183	16.925	5092.01	452.41	2686.79	817.61	40°39'7.8214"N	104°00'34.4860"W	0.00	
6025.00†	35.183	16.925	5173.74	461.69	2741.92	834.38	40°39'8.3661"N	104°00'34.2684"W	0.00	
6125.00†	35.183	16.925	5255.47	470.97	2797.04	851.16	40°39'8.9108"N	104°00'34.0507"W	0.00	
6225.00†	35.183	16.925	5337.20	480.25	2852.16	867.93	40°39'9.4555"N	104°00'33.8331"W	0.00	
6325.00†	35.183	16.925	5418.94	489.54	2907.29	884.71	40°39'10.0001"N	104°00'33.6154"W	0.00	
6425.00†	35.183	16.925	5500.67	498.82	2962.41	901.48	40°39'10.5448"N	104°00'33.3978"W	0.00	
6525.00†	35.183	16.925	5582.40	508.10	3017.53	918.25	40°39'11.0895"N	104°00'33.1801"W	0.00	
6543.50	35.183	16.925	5597.52	509.82	3027.73	921.36	40°39'11.1903"N	104°00'33.1398"W	0.00	End of Tangent
6625.00†	34.135	4.141	5664.65	522.20	3073.06	929.86	40°39'11.6382"N	104°00'33.0296"W	9.00	
6725.00†	34.717	348.219	5747.30	550.32	3129.04	926.06	40°39'12.1913"N	104°00'33.0788"W	9.00	
6825.00†	37.251	333.486	5828.37	592.00	3184.11	906.70	40°39'12.7355"N	104°00'33.3300"W	9.00	
6923.87†	41.320	320.959	5905.00	645.56	3236.35	872.71	40°39'13.2516"N	104°00'33.7709"W	9.00	Sharon Springs
6925.00†	41.374	320.829	5905.84	646.23	3236.92	872.24	40°39'13.2573"N	104°00'33.7770"W	9.00	
7025.00†	46.658	310.321	5977.83	711.67	3286.17	823.54	40°39'13.7440"N	104°00'34.4088"W	9.00	
7032.56†	47.094	309.605	5983.00	717.03	3289.72	819.31	40°39'13.7791"N	104°00'34.4637"W	9.00	Sharon Springs Hot GR Marker
7068.54†	49.226	306.333	6007.00	743.27	3306.19	798.18	40°39'13.9418"N	104°00'34.7379"W	9.00	Nio A Top
7125.00†	52.743	301.609	6042.55	786.71	3330.65	761.80	40°39'14.1836"N	104°00'35.2099"W	9.00	
7220.29†	59.046	294.577	6096.00	865.45	3367.59	692.21	40°39'14.5486"N	104°00'36.1127"W	9.00	Nio B Top
7225.00†	59.368	294.255	6098.41	869.50	3369.27	688.53	40°39'14.5651"N	104°00'36.1605"W	9.00	
7325.00†	66.352	287.869	6144.04	958.00	3401.06	605.54	40°39'14.8793"N	104°00'37.2372"W	9.00	

WELLPATH DATA (171 stations) † = interpolated, ‡ = extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7425.00†	73.571	282.142	6178.30	1050.03	3425.25	514.87	40°39'15.1183"N	104°00'38.4135"W	9.00	
7431.07†	74.015	281.810	6180.00	1055.68	3426.46	509.17	40°39'15.1303"N	104°00'38.4875"W	9.00	Nio C Top
7525.00†	80.934	276.831	6200.37	1143.33	3441.24	418.77	40°39'15.2764"N	104°00'39.6604"W	9.00	
7625.00†	88.371	271.736	6209.69	1235.59	3448.64	319.58	40°39'15.3495"N	104°00'40.9473"W	9.00	
7646.86	90.000	270.633	6210.00†	1255.40	3449.10	297.73	40°39'15.3540"N	104°00'41.2308"W	9.00	End of 3D Arc
7725.00†	90.000	270.633	6210.00	1325.89	3449.96	219.59	40°39'15.3625"N	104°00'42.2445"W	0.00	
7825.00†	90.000	270.633	6210.00	1416.10	3451.06	119.60	40°39'15.3735"N	104°00'43.5419"W	0.00	
7925.00†	90.000	270.633	6210.00	1506.31	3452.17	19.61	40°39'15.3844"N	104°00'44.8392"W	0.00	
8025.00†	90.000	270.633	6210.00	1596.52	3453.27	-80.39	40°39'15.3953"N	104°00'46.1366"W	0.00	
8125.00†	90.000	270.633	6210.00	1686.74	3454.38	-180.38	40°39'15.4062"N	104°00'47.4339"W	0.00	
8225.00†	90.000	270.633	6210.00	1776.95	3455.48	-280.38	40°39'15.4171"N	104°00'48.7313"W	0.00	
8325.00†	90.000	270.633	6210.00	1867.16	3456.59	-380.37	40°39'15.4280"N	104°00'50.0286"W	0.00	
8425.00†	90.000	270.633	6210.00	1957.37	3457.69	-480.36	40°39'15.4389"N	104°00'51.3260"W	0.00	
8525.00†	90.000	270.633	6210.00	2047.58	3458.80	-580.36	40°39'15.4498"N	104°00'52.6233"W	0.00	
8625.00†	90.000	270.633	6210.00	2137.79	3459.90	-680.35	40°39'15.4607"N	104°00'53.9207"W	0.00	
8725.00†	90.000	270.633	6210.00	2228.01	3461.01	-780.35	40°39'15.4716"N	104°00'55.2180"W	0.00	
8825.00†	90.000	270.633	6210.00	2318.22	3462.11	-880.34	40°39'15.4825"N	104°00'56.5154"W	0.00	
8925.00†	90.000	270.633	6210.00	2408.43	3463.22	-980.33	40°39'15.4934"N	104°00'57.8127"W	0.00	
9025.00†	90.000	270.633	6210.00	2498.64	3464.32	-1080.33	40°39'15.5042"N	104°00'59.1101"W	0.00	
9125.00†	90.000	270.633	6210.00	2588.85	3465.43	-1180.32	40°39'15.5151"N	104°01'0.4074"W	0.00	
9225.00†	90.000	270.633	6210.00	2679.06	3466.53	-1280.31	40°39'15.5260"N	104°01'1.7048"W	0.00	
9325.00†	90.000	270.633	6210.00	2769.28	3467.64	-1380.31	40°39'15.5368"N	104°01'3.0021"W	0.00	
9425.00†	90.000	270.633	6210.00	2859.49	3468.74	-1480.30	40°39'15.5477"N	104°01'4.2995"W	0.00	
9525.00†	90.000	270.633	6210.00	2949.70	3469.84	-1580.30	40°39'15.5585"N	104°01'5.5969"W	0.00	
9625.00†	90.000	270.633	6210.00	3039.91	3470.95	-1680.29	40°39'15.5694"N	104°01'6.8942"W	0.00	
9725.00†	90.000	270.633	6210.00	3130.12	3472.05	-1780.28	40°39'15.5802"N	104°01'8.1916"W	0.00	
9825.00†	90.000	270.633	6210.00	3220.33	3473.16	-1880.28	40°39'15.5911"N	104°01'9.4889"W	0.00	
9925.00†	90.000	270.633	6210.00	3310.54	3474.26	-1980.27	40°39'15.6019"N	104°01'10.7863"W	0.00	
10025.00†	90.000	270.633	6210.00	3400.76	3475.37	-2080.27	40°39'15.6128"N	104°01'12.0836"W	0.00	
10125.00†	90.000	270.633	6210.00	3490.97	3476.47	-2180.26	40°39'15.6236"N	104°01'13.3810"W	0.00	
10225.00†	90.000	270.633	6210.00	3581.18	3477.58	-2280.25	40°39'15.6344"N	104°01'14.6783"W	0.00	
10325.00†	90.000	270.633	6210.00	3671.39	3478.68	-2380.25	40°39'15.6452"N	104°01'15.9757"W	0.00	
10425.00†	90.000	270.633	6210.00	3761.60	3479.79	-2480.24	40°39'15.6561"N	104°01'17.2730"W	0.00	
10525.00†	90.000	270.633	6210.00	3851.81	3480.89	-2580.24	40°39'15.6669"N	104°01'18.5704"W	0.00	
10625.00†	90.000	270.633	6210.00	3942.03	3482.00	-2680.23	40°39'15.6777"N	104°01'19.8677"W	0.00	
10725.00†	90.000	270.633	6210.00	4032.24	3483.10	-2780.22	40°39'15.6885"N	104°01'21.1651"W	0.00	
10825.00†	90.000	270.633	6210.00	4122.45	3484.21	-2880.22	40°39'15.6993"N	104°01'22.4624"W	0.00	
10925.00†	90.000	270.633	6210.00	4212.66	3485.31	-2980.21	40°39'15.7101"N	104°01'23.7598"W	0.00	
11025.00†	90.000	270.633	6210.00	4302.87	3486.42	-3080.21	40°39'15.7209"N	104°01'25.0572"W	0.00	
11125.00†	90.000	270.633	6210.00	4393.08	3487.52	-3180.20	40°39'15.7317"N	104°01'26.3545"W	0.00	
11225.00†	90.000	270.633	6210.00	4483.29	3488.63	-3280.19	40°39'15.7425"N	104°01'27.6519"W	0.00	
11325.00†	90.000	270.633	6210.00	4573.51	3489.73	-3380.19	40°39'15.7532"N	104°01'28.9492"W	0.00	
11425.00†	90.000	270.633	6210.00	4663.72	3490.84	-3480.18	40°39'15.7640"N	104°01'30.2466"W	0.00	
11500.00	90.000	270.633	6210.00	4731.38	3491.66	-3555.18	40°39'15.7721"N	104°01'31.2196"W	0.00	End of Tangent
11525.00†	89.750	270.633	6210.05	4753.93	3491.94	-3580.17	40°39'15.7748"N	104°01'31.5439"W	1.00	
11578.45	89.216	270.633	6210.54	4802.15	3492.53	-3633.62	40°39'15.7806"N	104°01'32.2373"W	1.00	End of Drop
11625.00†	89.216	270.633	6211.17	4844.14	3493.05	-3680.16	40°39'15.7856"N	104°01'32.8412"W	0.00	
11725.00†	89.216	270.633	6212.54	4934.34	3494.15	-3780.15	40°39'15.7963"N	104°01'34.1384"W	0.00	
11825.00†	89.216	270.633	6213.91	5024.54	3495.25	-3880.13	40°39'15.8071"N	104°01'35.4357"W	0.00	
11925.00†	89.216	270.633	6215.28	5114.74	3496.36	-3980.12	40°39'15.8179"N	104°01'36.7329"W	0.00	

WELLPATH DATA (171 stations) † = interpolated, ‡ = extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12025.00†	89.216	270.633	6216.65	5204.95	3497.46	-4080.10	40°39'15.8286"N	104°01'38.0301"W	0.00	
12125.00†	89.216	270.633	6218.02	5295.15	3498.57	-4180.08	40°39'15.8394"N	104°01'39.3274"W	0.00	
12225.00†	89.216	270.633	6219.39	5385.35	3499.67	-4280.07	40°39'15.8501"N	104°01'40.6246"W	0.00	
12325.00†	89.216	270.633	6220.76	5475.56	3500.78	-4380.05	40°39'15.8608"N	104°01'41.9218"W	0.00	
12425.00†	89.216	270.633	6222.13	5565.76	3501.88	-4480.04	40°39'15.8716"N	104°01'43.2191"W	0.00	
12525.00†	89.216	270.633	6223.50	5655.96	3502.99	-4580.02	40°39'15.8823"N	104°01'44.5163"W	0.00	
12625.00†	89.216	270.633	6224.87	5746.17	3504.09	-4680.01	40°39'15.8930"N	104°01'45.8135"W	0.00	
12725.00†	89.216	270.633	6226.24	5836.37	3505.20	-4779.99	40°39'15.9038"N	104°01'47.1108"W	0.00	
12825.00†	89.216	270.633	6227.60	5926.57	3506.30	-4879.98	40°39'15.9145"N	104°01'48.4080"W	0.00	
12925.00†	89.216	270.633	6228.97	6016.78	3507.41	-4979.96	40°39'15.9252"N	104°01'49.7052"W	0.00	
13000.00	89.216	270.633	6230.00	6084.43	3508.23	-5054.95	40°39'15.9332"N	104°01'50.6782"W	0.00	End of Tangent
13025.00†	89.465	270.634	6230.29	6106.98	3508.51	-5079.95	40°39'15.9359"N	104°01'51.0025"W	1.00	
13050.74	89.723	270.635	6230.47	6130.20	3508.80	-5105.68	40°39'15.9387"N	104°01'51.3364"W	1.00	End of 3D Arc
13125.00†	89.723	270.635	6230.83	6197.19	3509.62	-5179.94	40°39'15.9467"N	104°01'52.2998"W	0.00	
13225.00†	89.723	270.635	6231.31	6287.40	3510.73	-5279.93	40°39'15.9574"N	104°01'53.5972"W	0.00	
13325.00†	89.723	270.635	6231.80	6377.61	3511.83	-5379.92	40°39'15.9681"N	104°01'54.8945"W	0.00	
13425.00†	89.723	270.635	6232.28	6467.83	3512.94	-5479.92	40°39'15.9789"N	104°01'56.1918"W	0.00	
13525.00†	89.723	270.635	6232.76	6558.04	3514.05	-5579.91	40°39'15.9896"N	104°01'57.4892"W	0.00	
13625.00†	89.723	270.635	6233.25	6648.25	3515.16	-5679.90	40°39'16.0003"N	104°01'58.7865"W	0.00	
13725.00†	89.723	270.635	6233.73	6738.46	3516.27	-5779.89	40°39'16.0110"N	104°02'0.0839"W	0.00	
13825.00†	89.723	270.635	6234.22	6828.67	3517.38	-5879.89	40°39'16.0218"N	104°02'1.3812"W	0.00	
13925.00†	89.723	270.635	6234.70	6918.89	3518.48	-5979.88	40°39'16.0325"N	104°02'2.6785"W	0.00	
14025.00†	89.723	270.635	6235.18	7009.10	3519.59	-6079.87	40°39'16.0432"N	104°02'3.9759"W	0.00	
14125.00†	89.723	270.635	6235.67	7099.31	3520.70	-6179.86	40°39'16.0539"N	104°02'5.2732"W	0.00	
14225.00†	89.723	270.635	6236.15	7189.52	3521.81	-6279.86	40°39'16.0646"N	104°02'6.5706"W	0.00	
14325.00†	89.723	270.635	6236.63	7279.73	3522.92	-6379.85	40°39'16.0753"N	104°02'7.8679"W	0.00	
14425.00†	89.723	270.635	6237.12	7369.95	3524.02	-6479.84	40°39'16.0860"N	104°02'9.1652"W	0.00	
14525.00†	89.723	270.635	6237.60	7460.16	3525.13	-6579.84	40°39'16.0967"N	104°02'10.4626"W	0.00	
14625.00†	89.723	270.635	6238.08	7550.37	3526.24	-6679.83	40°39'16.1073"N	104°02'11.7599"W	0.00	
14725.00†	89.723	270.635	6238.57	7640.58	3527.35	-6779.82	40°39'16.1180"N	104°02'13.0573"W	0.00	
14825.00†	89.723	270.635	6239.05	7730.79	3528.46	-6879.81	40°39'16.1287"N	104°02'14.3546"W	0.00	
14925.00†	89.723	270.635	6239.54	7821.01	3529.56	-6979.81	40°39'16.1394"N	104°02'15.6520"W	0.00	
15020.98	89.723	270.635	6240.00 ²	7907.60	3530.63	-7075.78	40°39'16.1496"N	104°02'16.8972"W	0.00	End of Tangent
15025.00†	89.745	270.569	6240.02	7911.22	3530.67	-7079.80	40°39'16.1500"N	104°02'16.9493"W	1.74	
15118.61	90.263	269.022	6240.01	7995.06	3530.34	-7173.40	40°39'16.1464"N	104°02'18.1638"W	1.74	End of 3D Arc
15121.16	90.263	269.022	6240.00 ³	7997.33	3530.29	-7175.95	40°39'16.1460"N	104°02'18.1968"W	0.00	End of Tangent

HOLE & CASING SECTIONS - Ref Wellbore: CASTOR FED 8-59 19-24-1 PWB Ref Wellpath: CASTOR FED 8-59 19-24-1 (REV-A.0) 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	25.00	2000.00	1975.00	25.00	1884.05	0.00	0.00	523.20	159.21
9.625in Casing Surface	25.00	2000.00	1975.00	25.00	1884.05	0.00	0.00	523.20	159.21
8.5in Open Hole	2000.00	15121.16	13121.16	1884.05	6240.00	523.20	159.21	3530.29	-7175.95

TARGETS

[illegible]

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
CASTOR FED HARDLINES 300'SETBACK	N/A	0.00	-27.61	-0.49	3412761.55	1481176.60	40°38'41.0000"N	104°00'45.1000"W	polygon
	2D Polygon: dimensions not calculated								
SEC.19-T08N-R59W	N/A	0.00	-27.61	-0.49	3412761.55	1481176.60	40°38'41.0000"N	104°00'45.1000"W	polygon
	2D Polygon: dimensions not calculated								
SEC.24-T08N-R60W	N/A	0.00	-27.61	-0.49	3412761.55	1481176.60	40°38'41.0000"N	104°00'45.1000"W	polygon
	2D Polygon: dimensions not calculated								
1) CASTOR FED 8-59 19-24-1 BPI ON PLAT (300'FNL & 300'FEL,SEC.19)	7646.86	6210.00	3449.10	297.73	3413001.40	1484657.74	40°39'15.3540"N	104°00'41.2308"W	point
3) CASTOR FED 8-59 19-24-1 BHL ON PLAT (300'FNL & 2440'FEL,SEC.24)	15121.16	6240.00	3530.29	-7175.95	3405527.58	1484613.57	40°39'16.1460"N	104°02'18.1968"W	point
2) CASTOR FED 8-59 19-24-1 EPI ON PLAT (300'FNL & 2340'FEL,SEC.24)	15020.98	6240.00	3530.63	-7075.78	3405627.72	1484615.58	40°39'16.1496"N	104°02'16.8972"W	point

SURVEY PROGRAM - Ref Wellbore: CASTOR FED 8-59 19-24-1 PWB					Ref Wellpath: CASTOR FED 8-59 19-24-1 (REV-A.0) PWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model			Log Name/Comment		Wellbore		
25.00	2000.00	OWSG MWD rev2 + IFR1					CASTOR FED 8-59 19-24-1 PWB		
2000.00	15121.16	BH AutoTrak Curve (Short)					CASTOR FED 8-59 19-24-1 PWB		



Planned Wellpath Report

CASTOR FED 8-59 19-24-1 (REV-A.0) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	BISON OIL & GAS	Well	CASTOR FED 8-59 19-24-1
Field	WELD COUNTY (NAD83/TN)	API/Legal	
Facility	SEC.19-T08N-R59W	Wellbore	CASTOR FED 8-59 19-24-1 PWB
Slot	SLOT#01 CASTOR FED 8-59 19-24-1 (1560'FSL & 560'FEL SEC.19)		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
3498.75	35.183	16.925	3109.00	Parkman
4379.68	35.183	16.925	3829.00	Sussex
5285.09	35.183	16.925	4569.00	Shannon
6923.87	41.320	320.959	5905.00	Sharon Springs
7032.56	47.094	309.605	5983.00	Sharon Springs Hot GR Marker
7068.54	49.226	306.333	6007.00	Nio A Top
7220.29	59.046	294.577	6096.00	Nio B Top
7431.07	74.015	281.810	6180.00	Nio C Top

DESIGN COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
25.00	0.000	16.925	25.00	Tie On
200.00	0.000	16.925	200.00	End of Tangent
1959.16	35.183	16.925	1850.67	End of Build
6543.50	35.183	16.925	5597.52	End of Tangent
7646.86	90.000	270.633	6210.00	End of 3D Arc
11500.00	90.000	270.633	6210.00	End of Tangent
11578.45	89.216	270.633	6210.54	End of Drop
13000.00	89.216	270.633	6230.00	End of Tangent
13050.74	89.723	270.635	6230.47	End of 3D Arc
15020.98	89.723	270.635	6240.00	End of Tangent
15118.61	90.263	269.022	6240.01	End of 3D Arc
15121.16	90.263	269.022	6240.00	End of Tangent