

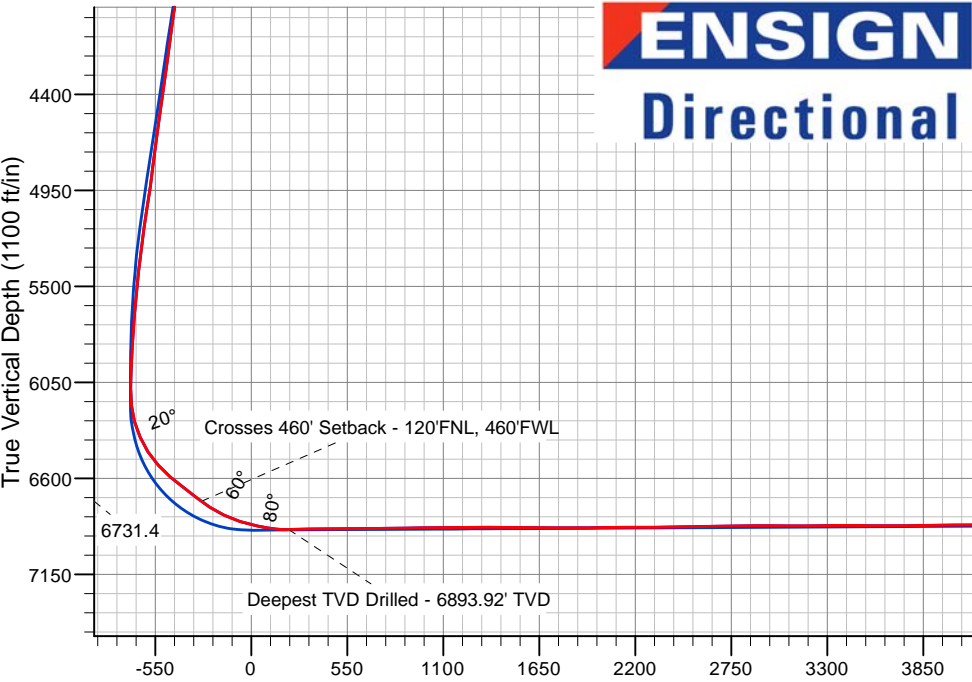
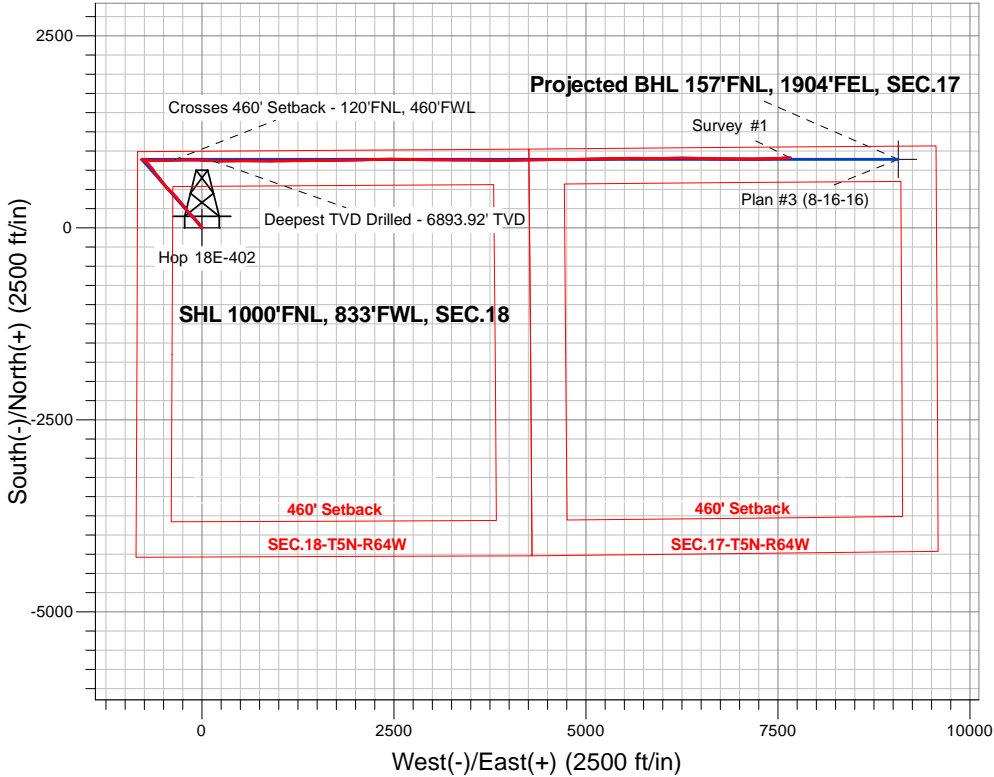
PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: Hop 18E-402

Surface Location: Hop 5N64W18A Pad Sec.18-T5N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4628.0
+N/-S+E/-W Northing Easting Latitude Longitude Slot
0.0 0.0391153.67 3250968.30 40.403618 -104.598827
Ensign Rig #152 - RKB - 23'WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')

FINAL SURVEY

Projected Bottom Hole Location
15093'MD 6844'TVD 910'N & 7662'E of SHL
89.6 degree Incl @ 88.6 degree AZM



Hop 5N64W18A Pad Sec.18-T5N-R64W
Hop 18E-402
Wellbore #1
10:00, September 20 2016

ANNOTATIONS

TVD	MD	Annotation
6731.4	7021.1	Crosses 460' Setback - 120'FNL, 460'FWL
6893.9	7559.0	Deepest TVD Drilled - 6893.92' TVD

LEGEND

- Hop 18E-402, Wellbore #1, Plan #3 (8-16-16) V0
- Wellbore #1
- Survey #1

Vertical Section at 84.38° (1100 ft/in)

Projected BHL 157'FNL, 1904'FEL, SEC.17
Hop 18E-402/Survey #1
Hop 18E-402/Plan #3 (8-16-16)



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.18-T5N-R64W

Hop 5N64W18A Pad Sec.18-T5N-R64W

Hop 18E-402

Wellbore #1

Survey: Survey #1

Standard Survey Report

20 September, 2016

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Hop 18E-402
Project:	SEC.18-T5N-R64W	TVD Reference:	WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')
Site:	Hop 5N64W18A Pad Sec.18-T5N-R64W	MD Reference:	WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')
Well:	Hop 18E-402	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Project	SEC.18-T5N-R64W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Hop 5N64W18A Pad Sec.18-T5N-R64W				
Site Position:		Northing:	1,391,153.68 usft	Latitude:	40.403618
From:	Lat/Long	Easting:	3,250,968.30 usft	Longitude:	-104.598827
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.58 °

Well	Hop 18E-402					
Well Position	+N/-S	0.0 ft	Northing:	1,391,153.67 usft	Latitude:	40.403618
	+E/-W	0.0 ft	Easting:	3,250,968.30 usft	Longitude:	-104.598827
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,628.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/16/2016	8.08	66.90	52,607

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	84.38	

Survey Program	Date	9/20/2016			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
156.0	15,093.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
156.0	0.60	220.40	156.0	-0.6	-0.5	-0.6	0.38	0.38	0.00
252.0	1.60	319.00	252.0	0.0	-1.7	-1.7	1.87	1.04	102.71
348.0	2.60	325.00	347.9	2.8	-3.9	-3.6	1.07	1.04	6.25
443.0	3.90	327.10	442.8	7.3	-6.9	-6.1	1.37	1.37	2.21
539.0	4.80	319.60	538.5	13.1	-11.2	-9.9	1.11	0.94	-7.81
634.0	6.30	322.20	633.0	20.2	-17.0	-14.9	1.60	1.58	2.74
795.0	8.40	324.10	792.7	36.7	-29.3	-25.6	1.31	1.30	1.18
986.0	9.80	325.00	981.3	61.4	-46.8	-40.6	0.74	0.73	0.47
1,178.0	11.10	319.00	1,170.1	88.7	-68.3	-59.3	0.88	0.68	-3.13

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Hop 18E-402
Project:	SEC.18-T5N-R64W	TVD Reference:	WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')
Site:	Hop 5N64W18A Pad Sec.18-T5N-R64W	MD Reference:	WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')
Well:	Hop 18E-402	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,370.0	12.70	317.80	1,358.0	118.3	-94.6	-82.6	0.84	0.83	-0.63
1,430.0	12.30	317.10	1,416.6	127.8	-103.4	-90.4	0.71	-0.67	-1.17
1,494.0	12.70	315.70	1,479.0	137.9	-113.0	-98.9	0.78	0.63	-2.19
1,590.0	12.00	313.90	1,572.8	152.3	-127.5	-112.0	0.83	-0.73	-1.88
1,686.0	12.10	318.00	1,666.7	166.7	-141.4	-124.4	0.90	0.10	4.27
1,782.0	11.80	318.00	1,760.6	181.5	-154.7	-136.2	0.31	-0.31	0.00
1,878.0	11.30	315.50	1,854.7	195.5	-167.9	-147.9	0.74	-0.52	-2.60
1,974.0	12.40	320.10	1,948.6	210.1	-181.1	-159.7	1.51	1.15	4.79
2,070.0	14.20	323.80	2,042.1	227.5	-194.7	-171.5	2.07	1.88	3.85
2,167.0	13.20	321.80	2,136.3	245.8	-208.5	-183.5	1.14	-1.03	-2.06
2,262.0	12.50	320.30	2,228.9	262.3	-221.8	-195.1	0.82	-0.74	-1.58
2,358.0	13.70	321.00	2,322.4	279.1	-235.6	-207.2	1.26	1.25	0.73
2,454.0	13.00	318.20	2,415.8	296.0	-250.0	-219.8	0.99	-0.73	-2.92
2,550.0	15.40	321.70	2,508.9	314.0	-265.1	-233.0	2.65	2.50	3.65
2,646.0	15.20	321.00	2,601.5	333.8	-280.9	-246.8	0.28	-0.21	-0.73
2,772.0	15.10	319.70	2,723.1	359.2	-301.9	-265.3	0.28	-0.08	-1.03
2,867.0	14.00	318.50	2,815.1	377.2	-317.5	-279.0	1.20	-1.16	-1.26
2,964.0	13.40	317.80	2,909.3	394.3	-332.8	-292.6	0.64	-0.62	-0.72
3,060.0	15.00	318.70	3,002.4	411.9	-348.5	-306.5	1.68	1.67	0.94
3,156.0	14.20	315.90	3,095.3	429.7	-364.9	-321.1	1.11	-0.83	-2.92
3,251.0	12.90	312.50	3,187.6	445.2	-380.8	-335.4	1.60	-1.37	-3.58
3,347.0	13.30	313.80	3,281.1	460.1	-396.7	-349.7	0.52	0.42	1.35
3,443.0	12.30	310.10	3,374.7	474.4	-412.5	-364.1	1.35	-1.04	-3.85
3,539.0	12.80	319.20	3,468.5	489.0	-427.3	-377.3	2.12	0.52	9.48
3,635.0	12.10	315.40	3,562.2	504.2	-441.3	-389.8	1.12	-0.73	-3.96
3,730.0	15.00	321.30	3,654.5	520.9	-456.0	-402.8	3.38	3.05	6.21
3,826.0	15.50	321.70	3,747.2	540.7	-471.7	-416.5	0.53	0.52	0.42
3,922.0	15.20	321.20	3,839.7	560.5	-487.5	-430.3	0.34	-0.31	-0.52
4,018.0	14.20	320.40	3,932.6	579.4	-502.9	-443.8	1.06	-1.04	-0.83
4,113.0	12.90	318.50	4,025.0	596.3	-517.4	-456.5	1.45	-1.37	-2.00
4,209.0	15.20	323.80	4,118.1	614.5	-531.9	-469.2	2.74	2.40	5.52
4,305.0	14.30	322.70	4,210.9	634.1	-546.5	-481.8	0.98	-0.94	-1.15
4,401.0	13.20	322.00	4,304.2	652.2	-560.5	-493.9	1.16	-1.15	-0.73
4,496.0	15.60	320.80	4,396.2	670.6	-575.2	-506.8	2.55	2.53	-1.26
4,591.0	14.40	320.30	4,487.9	689.6	-590.8	-520.5	1.27	-1.26	-0.53
4,687.0	13.50	321.80	4,581.1	707.6	-605.4	-533.2	1.01	-0.94	1.56
4,782.0	15.10	324.70	4,673.2	726.4	-619.4	-545.3	1.84	1.68	3.05
4,878.0	14.60	323.80	4,765.9	746.4	-633.8	-557.6	0.57	-0.52	-0.94
4,974.0	13.20	322.90	4,859.1	764.9	-647.5	-569.5	1.48	-1.46	-0.94
5,070.0	15.40	322.20	4,952.2	783.7	-661.9	-582.0	2.30	2.29	-0.73
5,166.0	15.80	321.30	5,044.6	804.0	-677.9	-595.9	0.49	0.42	-0.94
5,262.0	13.30	316.40	5,137.5	822.2	-693.7	-609.9	2.90	-2.60	-5.10
5,357.0	10.70	309.90	5,230.5	835.8	-708.0	-622.8	3.08	-2.74	-6.84
5,452.0	9.60	310.20	5,324.0	846.5	-720.8	-634.5	1.16	-1.16	0.32

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Site:	Hop 5N64W18A Pad Sec.18-T5N-R64W	MD Reference:	WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')
Well:	Hop 18E-402	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,548.0	8.80	311.00	5,418.7	856.5	-732.5	-645.1	0.84	-0.83	0.83
5,644.0	7.80	309.90	5,513.7	865.5	-743.0	-654.7	1.05	-1.04	-1.15
5,740.0	6.70	308.00	5,609.0	873.1	-752.4	-663.3	1.17	-1.15	-1.98
5,836.0	5.90	302.00	5,704.4	879.2	-761.0	-671.3	1.08	-0.83	-6.25
5,931.0	5.20	303.90	5,798.9	884.2	-768.8	-678.5	0.76	-0.74	2.00
6,026.0	3.20	277.20	5,893.7	886.9	-775.0	-684.4	2.89	-2.11	-28.11
6,122.0	1.80	273.90	5,989.6	887.4	-779.1	-688.5	1.47	-1.46	-3.44
6,217.0	0.60	305.30	6,084.6	887.7	-781.0	-690.3	1.40	-1.26	33.05
6,313.0	5.50	85.10	6,180.4	888.4	-776.8	-686.1	6.22	5.10	145.63
6,408.0	15.50	94.40	6,273.7	887.8	-759.6	-669.0	10.64	10.53	9.79
6,504.0	24.60	98.60	6,363.8	883.9	-727.0	-636.9	9.59	9.48	4.38
6,600.0	33.20	91.20	6,447.8	880.3	-680.9	-591.4	9.69	8.96	-7.71
6,696.0	41.50	89.50	6,524.1	880.0	-622.7	-533.5	8.71	8.65	-1.77
6,792.0	49.80	90.50	6,591.1	880.0	-554.1	-465.2	8.68	8.65	1.04
6,888.0	53.10	89.60	6,650.9	879.9	-479.0	-390.5	3.51	3.44	-0.94
6,984.0	52.30	90.00	6,709.1	880.2	-402.7	-314.5	0.90	-0.83	0.42
7,021.1	53.86	89.56	6,731.4	880.3	-373.0	-285.0	4.31	4.21	-1.19
Crosses 460' Setback - 120'FNL, 460'FWL									
7,079.0	56.30	88.90	6,764.5	881.0	-325.5	-237.7	4.31	4.21	-1.13
7,175.0	64.90	88.40	6,811.6	883.0	-242.0	-154.4	8.97	8.96	-0.52
7,271.0	72.80	88.60	6,846.2	885.3	-152.6	-65.1	8.23	8.23	0.21
7,367.0	77.40	91.40	6,870.9	885.3	-59.8	27.2	5.56	4.79	2.92
7,463.0	82.40	93.50	6,887.7	881.2	34.6	120.7	5.64	5.21	2.19
7,559.0	90.20	94.40	6,893.9	874.6	130.1	215.1	8.18	8.13	0.94
Deepest TVD Drilled - 6893.92' TVD									
7,655.0	92.10	91.60	6,892.0	869.6	225.9	310.0	3.52	1.98	-2.92
7,750.0	90.60	88.40	6,889.8	869.6	320.9	404.5	3.72	-1.58	-3.37
7,846.0	90.50	88.10	6,888.8	872.5	416.8	500.2	0.33	-0.10	-0.31
7,941.0	90.00	90.20	6,888.4	873.9	511.8	594.9	2.27	-0.53	2.21
8,037.0	90.50	91.00	6,888.0	872.9	607.8	690.3	0.98	0.52	0.83
8,133.0	91.80	91.40	6,886.1	870.9	703.7	785.6	1.42	1.35	0.42
8,228.0	89.90	89.60	6,884.7	870.1	798.7	880.1	2.75	-2.00	-1.89
8,324.0	90.60	89.60	6,884.2	870.8	894.7	975.7	0.73	0.73	0.00
8,420.0	91.40	89.50	6,882.6	871.5	990.7	1,071.3	0.84	0.83	-0.10
8,515.0	89.70	89.30	6,881.7	872.5	1,085.7	1,165.9	1.80	-1.79	-0.21
8,611.0	90.20	89.10	6,881.7	873.9	1,181.7	1,261.6	0.56	0.52	-0.21
8,707.0	90.90	89.10	6,880.8	875.4	1,277.7	1,357.2	0.73	0.73	0.00
8,802.0	89.20	89.80	6,880.7	876.3	1,372.6	1,451.9	1.94	-1.79	0.74
8,898.0	89.70	89.80	6,881.7	876.6	1,468.6	1,547.4	0.52	0.52	0.00
8,994.0	89.30	89.50	6,882.5	877.2	1,564.6	1,643.0	0.52	-0.42	-0.31
9,091.0	89.50	89.30	6,883.5	878.2	1,661.6	1,739.6	0.29	0.21	-0.21
9,186.0	89.90	89.30	6,884.0	879.4	1,756.6	1,834.3	0.42	0.42	0.00
9,282.0	90.70	89.10	6,883.5	880.7	1,852.6	1,929.9	0.86	0.83	-0.21

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Well:	Hop 18E-402	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,378.0	91.40	88.80	6,881.8	882.5	1,948.6	2,025.6	0.79	0.73	-0.31
9,474.0	90.20	88.90	6,880.4	884.4	2,044.5	2,121.3	1.25	-1.25	0.10
9,570.0	90.10	87.90	6,880.2	887.1	2,140.5	2,217.1	1.05	-0.10	-1.04
9,666.0	90.60	88.10	6,879.6	890.4	2,236.4	2,312.9	0.56	0.52	0.21
9,762.0	90.30	89.60	6,878.8	892.4	2,332.4	2,408.6	1.59	-0.31	1.56
9,857.0	91.50	89.80	6,877.3	892.9	2,427.4	2,503.2	1.28	1.26	0.21
9,953.0	90.40	90.20	6,875.7	892.9	2,523.4	2,598.7	1.22	-1.15	0.42
10,049.0	91.50	90.30	6,874.1	892.4	2,619.4	2,694.2	1.15	1.15	0.10
10,144.0	90.20	91.20	6,872.7	891.2	2,714.4	2,788.6	1.66	-1.37	0.95
10,240.0	91.10	91.60	6,871.6	888.8	2,810.3	2,883.8	1.03	0.94	0.42
10,335.0	89.20	90.70	6,871.4	886.9	2,905.3	2,978.2	2.21	-2.00	-0.95
10,431.0	89.70	90.70	6,872.3	885.8	3,001.3	3,073.6	0.52	0.52	0.00
10,527.0	90.40	90.50	6,872.2	884.8	3,097.3	3,169.0	0.76	0.73	-0.21
10,622.0	90.50	90.30	6,871.5	884.1	3,192.3	3,263.5	0.24	0.11	-0.21
10,717.0	91.40	90.20	6,869.9	883.7	3,287.3	3,358.0	0.95	0.95	-0.11
10,813.0	88.90	90.50	6,869.7	883.1	3,383.2	3,453.5	2.62	-2.60	0.31
10,908.0	89.10	90.50	6,871.3	882.3	3,478.2	3,547.9	0.21	0.21	0.00
11,004.0	89.70	90.30	6,872.3	881.6	3,574.2	3,643.4	0.66	0.63	-0.21
11,100.0	90.80	90.90	6,871.9	880.6	3,670.2	3,738.8	1.31	1.15	0.63
11,196.0	92.20	90.90	6,869.4	879.1	3,766.2	3,834.1	1.46	1.46	0.00
11,292.0	89.50	89.60	6,868.0	878.7	3,862.1	3,929.6	3.12	-2.81	-1.35
11,387.0	90.00	89.60	6,868.4	879.3	3,957.1	4,024.2	0.53	0.53	0.00
11,483.0	90.90	89.50	6,867.6	880.1	4,053.1	4,119.8	0.94	0.94	-0.10
11,579.0	89.60	88.80	6,867.2	881.5	4,149.1	4,215.5	1.54	-1.35	-0.73
11,675.0	90.70	88.80	6,867.0	883.5	4,245.1	4,311.2	1.15	1.15	0.00
11,771.0	90.20	88.90	6,866.2	885.4	4,341.1	4,406.9	0.53	-0.52	0.10
11,867.0	90.70	89.10	6,865.5	887.1	4,437.1	4,502.6	0.56	0.52	0.21
11,963.0	90.00	88.10	6,864.9	889.5	4,533.0	4,598.3	1.27	-0.73	-1.04
12,059.0	90.70	90.50	6,864.3	890.6	4,629.0	4,694.0	2.60	0.73	2.50
12,154.0	92.30	90.70	6,861.8	889.6	4,724.0	4,788.4	1.70	1.68	0.21
12,250.0	89.20	89.60	6,860.5	889.4	4,819.9	4,883.9	3.43	-3.23	-1.15
12,346.0	89.20	89.10	6,861.9	890.5	4,915.9	4,979.5	0.52	0.00	-0.52
12,441.0	89.30	88.60	6,863.1	892.4	5,010.9	5,074.2	0.54	0.11	-0.53
12,537.0	89.80	88.20	6,863.9	895.1	5,106.9	5,170.0	0.67	0.52	-0.42
12,633.0	90.30	88.20	6,863.8	898.1	5,202.8	5,265.7	0.52	0.52	0.00
12,729.0	90.60	89.50	6,863.0	900.0	5,298.8	5,361.5	1.39	0.31	1.35
12,825.0	91.50	88.90	6,861.3	901.4	5,394.8	5,457.1	1.13	0.94	-0.63
12,921.0	90.40	88.60	6,859.7	903.4	5,490.7	5,552.8	1.19	-1.15	-0.31
13,016.0	89.80	90.00	6,859.5	904.6	5,585.7	5,647.4	1.60	-0.63	1.47
13,112.0	90.70	90.00	6,859.1	904.6	5,681.7	5,743.0	0.94	0.94	0.00
13,207.0	91.20	90.70	6,857.5	904.0	5,776.7	5,837.5	0.91	0.53	0.74
13,304.0	91.30	90.70	6,855.4	902.8	5,873.7	5,933.8	0.10	0.10	0.00
13,400.0	89.70	89.30	6,854.6	902.8	5,969.7	6,029.4	2.21	-1.67	-1.46
13,496.0	90.10	88.40	6,854.7	904.8	6,065.6	6,125.1	1.03	0.42	-0.94

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Hop 18E-402
Project:	SEC.18-T5N-R64W	TVD Reference:	WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')
Site:	Hop 5N64W18A Pad Sec.18-T5N-R64W	MD Reference:	WELL @ 4651.0ft (Ensign Rig #152 - RKB - 23')
Well:	Hop 18E-402	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
13,592.0	89.90	89.60	6,854.7	906.4	6,161.6	6,220.8	1.27	-0.21	1.25	
13,688.0	89.70	90.50	6,855.1	906.4	6,257.6	6,316.3	0.96	-0.21	0.94	
13,784.0	90.30	90.70	6,855.1	905.4	6,353.6	6,411.7	0.66	0.63	0.21	
13,879.0	91.10	90.70	6,853.9	904.2	6,448.6	6,506.1	0.84	0.84	0.00	
13,975.0	88.90	90.90	6,853.9	902.9	6,544.6	6,601.5	2.30	-2.29	0.21	
14,071.0	89.40	91.20	6,855.3	901.1	6,640.5	6,696.9	0.61	0.52	0.31	
14,167.0	90.30	91.40	6,855.6	898.9	6,736.5	6,792.2	0.96	0.94	0.21	
14,263.0	89.70	90.30	6,855.6	897.5	6,832.5	6,887.6	1.31	-0.63	-1.15	
14,358.0	90.50	90.50	6,855.4	896.8	6,927.5	6,982.0	0.87	0.84	0.21	
14,454.0	91.60	90.50	6,853.7	896.0	7,023.5	7,077.5	1.15	1.15	0.00	
14,550.0	91.80	89.80	6,850.8	895.7	7,119.4	7,172.9	0.76	0.21	-0.73	
14,646.0	92.40	89.50	6,847.3	896.3	7,215.4	7,268.5	0.70	0.63	-0.31	
14,742.0	90.70	88.90	6,844.7	897.7	7,311.3	7,364.1	1.88	-1.77	-0.63	
14,838.0	90.40	88.10	6,843.8	900.2	7,407.3	7,459.8	0.89	-0.31	-0.83	
14,932.0	90.40	86.70	6,843.1	904.4	7,501.2	7,553.7	1.49	0.00	-1.49	
15,029.0	89.60	88.60	6,843.1	908.4	7,598.1	7,650.5	2.13	-0.82	1.96	
15,093.0	89.60	88.60	6,843.6	910.0	7,662.1	7,714.4	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude Longitude		
SHL 1000'FNL, 833'FWL - hit/miss target - Shape	0.00	0.00	1.0	0.0	0.0	1,391,153.68	3,250,968.30	40.403618 -104.598827		
- survey hits target center - Point										
BHL 175'FNL, 500'FEL, - survey misses target center by 1403.7ft at 15093.0ft MD (6843.6 TVD, 910.0 N, 7662.1 E) - Point	0.00	0.00	6,847.0	892.1	9,065.6	1,392,137.77	3,260,024.03	40.406062 -104.566275		

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
7,021.1	6,731.4	880.3	-373.0	Crosses 460' Setback - 120'FNL, 460'FWL	
7,559.0	6,893.9	874.6	130.1	Deepest TVD Drilled - 6893.92' TVD	

Checked By: _____	Approved By: _____	Date: _____
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