

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: Spaur 31V-404

Surface Location: Spaur NE-31 Pad Sec.31-T7N-R63W
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4757.0

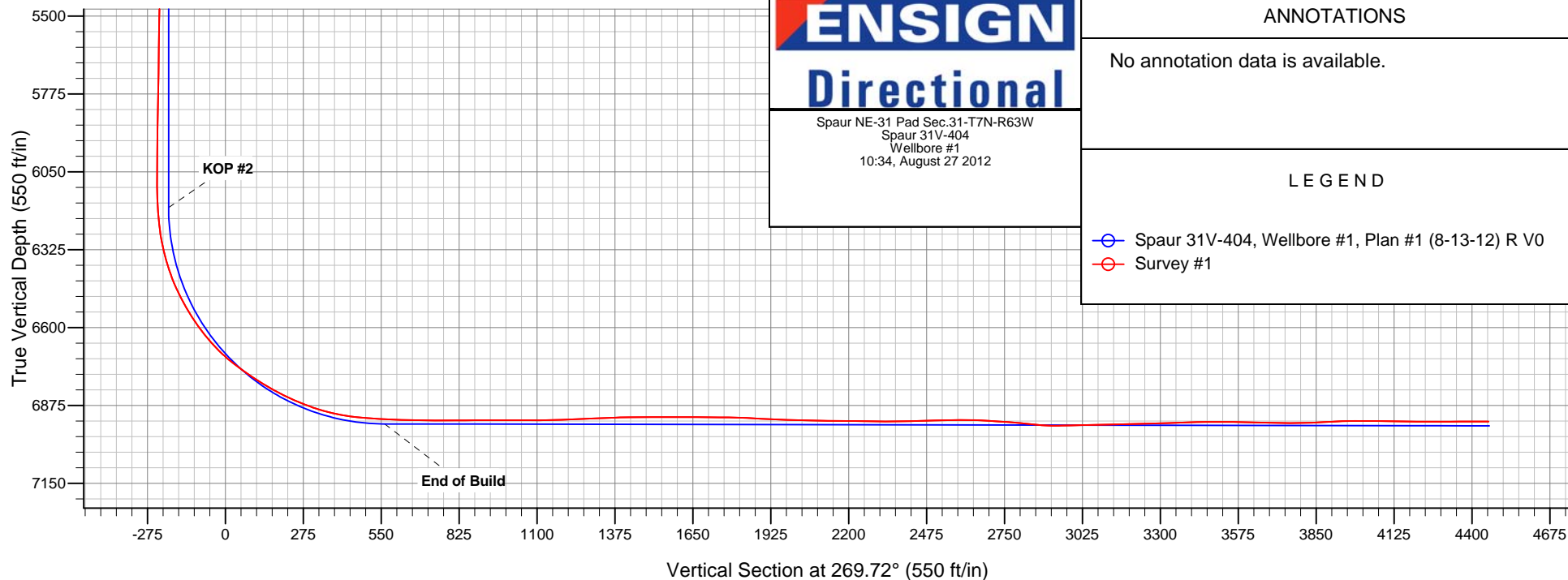
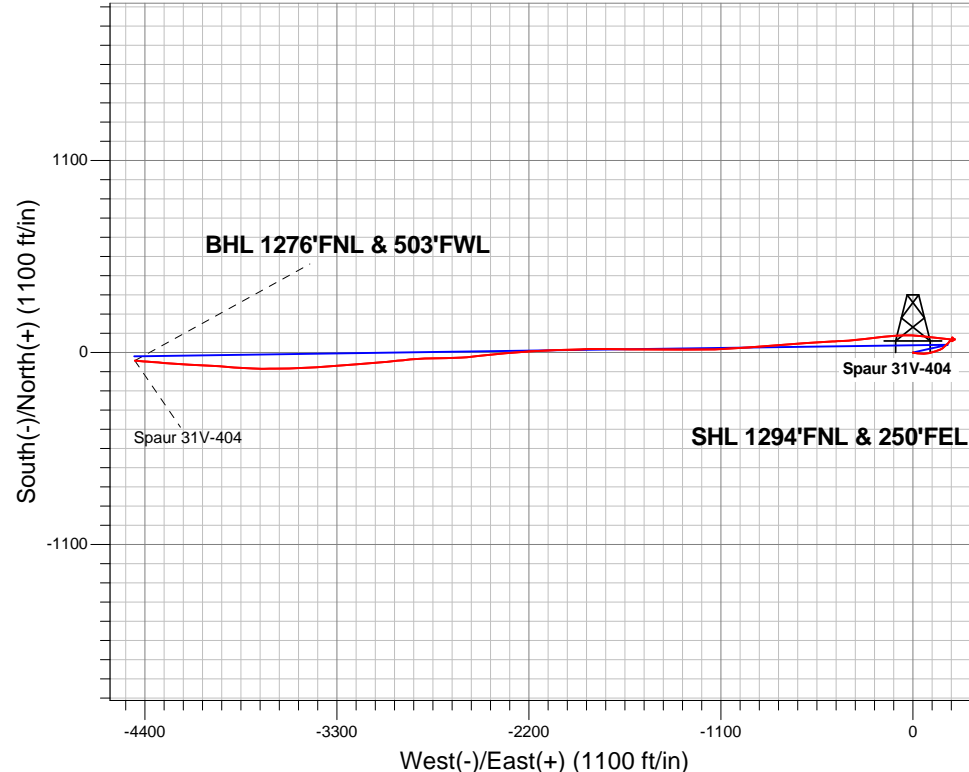
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1439021.11	3285950.50	40.533960	-104.471230	

RKB Ensign 32 - 15' WELL @ 4772.0ft (RKB Ensign 32 - 15')

FINAL SURVEY

Projected Bottom Hole Location
11305' MD 6931' TVD 47' S & 4458' W of SHL

90.20 degree Incl @ 274.30 degree AZM





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.31-T7N-R63W

Spaur NE-31 Pad Sec.31-T7N-R63W

Spaur 31V-404

Wellbore #1

Survey: Survey #1

Standard Survey Report

27 August, 2012

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Spaur 31V-404
Project:	SEC.31-T7N-R63W	TVD Reference:	WELL @ 4772.0ft (RKB Ensign 32 - 15')
Site:	Spaur NE-31 Pad Sec.31-T7N-R63W	MD Reference:	WELL @ 4772.0ft (RKB Ensign 32 - 15')
Well:	Spaur 31V-404	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.31-T7N-R63W, 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		Spaur NE-31 Pad Sec.31-T7N-R63W			
Site Position:		Northing:	1,439,050.27 ft	Latitude:	40.534040
From:	Lat/Long	Easting:	3,285,950.17 ft	Longitude:	-104.471230
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.66 °

Well	Spaur 31V-404					
Well Position	+N-S	0.0 ft	Northing:	1,439,021.11 ft	Latitude:	40.533960
	+E-W	0.0 ft	Easting:	3,285,950.50 ft	Longitude:	-104.471230
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,757.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/13/2012	8.56	67.17	53,110

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	269.72	

Survey Program	Date 8/27/2012				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
181.0	11,305.0	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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
0.8	0.00	132.70	0.8	0.0	0.0	0.0	0.28	0.28	0.00	
HARDLINES BHL 460'FWL										
1.0	0.00	132.70	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
HARDLINES SHL 460'FEL										
2.4	0.01	132.70	2.4	0.0	0.0	0.0	0.31	0.31	0.00	
SECTION HARDLINE 250'E OF SHL										
181.0	0.50	132.70	181.0	-0.5	0.6	-0.6	0.28	0.28	0.00	
275.0	0.70	131.50	275.0	-1.2	1.3	-1.3	0.21	0.21	-1.28	
367.0	2.00	103.80	367.0	-1.9	3.3	-3.3	1.54	1.41	-30.11	
459.0	4.60	100.30	458.8	-3.0	8.5	-8.5	2.83	2.83	-3.80	
550.0	6.20	91.50	549.4	-3.8	17.0	-17.0	1.97	1.76	-9.67	

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Well:	Spaur 31V-404	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
642.0	5.50	96.00	640.9	-4.4	26.3	-26.3	0.91	-0.76	4.89
734.0	5.80	96.20	732.5	-5.3	35.3	-35.3	0.33	0.33	0.22
825.0	5.00	94.50	823.1	-6.1	43.9	-43.8	0.90	-0.88	-1.87
898.0	5.10	98.60	895.8	-6.9	50.2	-50.2	0.51	0.14	5.62
945.0	5.10	97.40	942.6	-7.5	54.4	-54.3	0.23	0.00	-2.55
1,037.0	6.30	87.60	1,034.1	-7.8	63.5	-63.4	1.67	1.30	-10.65
1,128.0	6.70	86.50	1,124.6	-7.2	73.8	-73.7	0.46	0.44	-1.21
1,221.0	7.20	76.30	1,216.9	-5.5	84.8	-84.8	1.43	0.54	-10.97
1,317.0	7.30	74.40	1,312.1	-2.5	96.6	-96.6	0.27	0.10	-1.98
1,413.0	7.70	73.80	1,407.3	1.0	108.6	-108.6	0.42	0.42	-0.63
1,508.0	8.10	73.60	1,501.4	4.6	121.1	-121.2	0.42	0.42	-0.21
1,603.0	7.20	73.50	1,595.5	8.2	133.3	-133.3	0.95	-0.95	-0.11
1,698.0	5.60	71.10	1,689.9	11.4	143.4	-143.4	1.71	-1.68	-2.53
1,794.0	3.90	69.20	1,785.6	14.1	150.9	-150.9	1.78	-1.77	-1.98
1,889.0	3.60	66.20	1,880.4	16.4	156.6	-156.7	0.38	-0.32	-3.16
1,984.0	4.40	58.90	1,975.2	19.5	162.5	-162.5	1.00	0.84	-7.68
2,079.0	4.00	51.40	2,069.9	23.5	168.2	-168.3	0.71	-0.42	-7.89
2,175.0	3.90	52.60	2,165.7	27.6	173.4	-173.5	0.14	-0.10	1.25
2,271.0	3.60	46.10	2,261.5	31.6	178.1	-178.3	0.54	-0.31	-6.77
2,366.0	3.30	46.00	2,356.3	35.6	182.3	-182.4	0.32	-0.32	-0.11
2,462.0	3.10	50.20	2,452.2	39.2	186.2	-186.4	0.32	-0.21	4.38
2,557.0	3.40	49.90	2,547.0	42.6	190.4	-190.6	0.32	0.32	-0.32
2,653.0	3.50	45.10	2,642.8	46.5	194.6	-194.8	0.32	0.10	-5.00
2,749.0	3.20	48.40	2,738.7	50.4	198.7	-198.9	0.37	-0.31	3.44
2,845.0	3.00	45.10	2,834.5	53.9	202.5	-202.7	0.28	-0.21	-3.44
2,941.0	1.90	35.10	2,930.5	57.0	205.2	-205.4	1.23	-1.15	-10.42
3,036.0	1.70	38.00	3,025.4	59.4	207.0	-207.2	0.23	-0.21	3.05
3,131.0	1.90	31.30	3,120.4	61.9	208.6	-208.9	0.31	0.21	-7.05
3,228.0	1.40	56.30	3,217.3	63.9	210.5	-210.8	0.89	-0.52	25.77
3,324.0	1.40	58.40	3,313.3	65.2	212.4	-212.7	0.05	0.00	2.19
3,419.0	1.10	75.50	3,408.3	66.0	214.3	-214.6	0.50	-0.32	18.00
3,515.0	1.20	55.90	3,504.2	66.8	216.0	-216.3	0.42	0.10	-20.42
3,610.0	1.30	100.40	3,599.2	67.2	217.9	-218.2	1.00	0.11	46.84
3,706.0	1.10	103.30	3,695.2	66.7	219.9	-220.2	0.22	-0.21	3.02
3,801.0	1.20	103.40	3,790.2	66.3	221.7	-222.1	0.11	0.11	0.11
3,897.0	1.10	103.40	3,886.2	65.9	223.6	-223.9	0.10	-0.10	0.00
3,993.0	0.70	118.50	3,982.2	65.4	225.0	-225.3	0.48	-0.42	15.73
4,088.0	0.70	126.30	4,077.1	64.7	226.0	-226.3	0.10	0.00	8.21
4,184.0	0.70	53.90	4,173.1	64.7	226.9	-227.3	0.86	0.00	-75.42
4,280.0	0.50	2.30	4,269.1	65.5	227.4	-227.7	0.58	-0.21	-53.75
4,376.0	1.10	342.60	4,365.1	66.8	227.2	-227.5	0.68	0.63	-20.52
4,471.0	1.90	344.90	4,460.1	69.2	226.5	-226.8	0.84	0.84	2.42
4,567.0	2.40	344.40	4,556.0	72.7	225.5	-225.9	0.52	0.52	-0.52
4,663.0	2.70	343.40	4,651.9	76.8	224.4	-224.7	0.32	0.31	-1.04
4,759.0	1.90	354.40	4,747.9	80.5	223.6	-223.9	0.95	-0.83	11.46
4,854.0	1.60	10.50	4,842.8	83.4	223.6	-224.0	0.60	-0.32	16.95
4,950.0	1.00	57.10	4,938.8	85.2	224.6	-225.0	1.22	-0.63	48.54
5,046.0	0.90	100.50	5,034.8	85.5	226.0	-226.4	0.74	-0.10	45.21
5,142.0	1.80	136.60	5,130.7	84.3	227.8	-228.2	1.25	0.94	37.60
5,237.0	1.30	137.90	5,225.7	82.4	229.6	-229.9	0.53	-0.53	1.37
5,333.0	0.80	139.10	5,321.7	81.1	230.7	-231.1	0.52	-0.52	1.25
5,429.0	0.90	130.10	5,417.7	80.1	231.7	-232.1	0.17	0.10	-9.38
5,525.0	0.90	125.20	5,513.7	79.1	232.9	-233.3	0.08	0.00	-5.10

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5,620.0	0.70	126.80	5,608.7	78.4	234.0	-234.4	0.21	-0.21	1.68
5,716.0	1.20	112.10	5,704.7	77.6	235.4	-235.8	0.58	0.52	-15.31
5,812.0	1.00	103.20	5,800.6	77.1	237.2	-237.5	0.27	-0.21	-9.27
5,908.0	1.20	102.20	5,896.6	76.7	239.0	-239.3	0.21	0.21	-1.04
6,003.0	0.80	151.70	5,991.6	75.9	240.2	-240.6	0.96	-0.42	52.11
6,099.0	1.10	192.00	6,087.6	74.4	240.4	-240.7	0.74	0.31	41.98
6,134.0	1.50	226.90	6,122.6	73.7	240.0	-240.3	2.48	1.14	99.71
6,165.0	2.30	244.60	6,153.6	73.2	239.1	-239.5	3.17	2.58	57.10
6,197.0	3.70	259.00	6,185.5	72.7	237.5	-237.9	4.94	4.38	45.00
6,229.0	5.50	271.80	6,217.4	72.6	235.0	-235.3	6.44	5.63	40.00
6,260.0	7.30	277.20	6,248.2	72.9	231.5	-231.9	6.12	5.81	17.42
6,292.0	9.50	276.20	6,279.9	73.4	226.9	-227.2	6.89	6.88	-3.13
6,324.0	12.20	277.20	6,311.3	74.1	220.9	-221.3	8.46	8.44	3.13
6,356.0	14.40	277.70	6,342.4	75.1	213.6	-214.0	6.88	6.88	1.56
6,388.0	16.70	277.70	6,373.3	76.2	205.1	-205.5	7.19	7.19	0.00
6,419.0	19.00	276.70	6,402.8	77.4	195.7	-196.0	7.48	7.42	-3.23
6,451.0	21.70	276.30	6,432.8	78.7	184.6	-185.0	8.45	8.44	-1.25
6,483.0	24.30	275.80	6,462.2	80.0	172.2	-172.6	8.15	8.13	-1.56
6,515.0	27.00	275.50	6,491.1	81.3	158.4	-158.8	8.45	8.44	-0.94
6,547.0	29.70	275.60	6,519.2	82.8	143.3	-143.7	8.44	8.44	0.31
6,579.0	31.60	275.50	6,546.8	84.4	127.0	-127.4	5.94	5.94	-0.31
6,610.0	33.70	276.50	6,572.9	86.1	110.4	-110.8	6.99	6.77	3.23
6,643.0	36.00	276.60	6,599.9	88.3	91.7	-92.1	6.97	6.97	0.30
6,675.0	38.50	277.40	6,625.4	90.7	72.5	-72.9	7.96	7.81	2.50
6,706.0	41.30	276.10	6,649.2	93.0	52.7	-53.2	9.42	9.03	-4.19
6,738.0	44.40	275.50	6,672.7	95.2	31.1	-31.5	9.77	9.69	-1.88
6,770.0	47.30	274.30	6,694.9	97.1	8.2	-8.7	9.45	9.06	-3.75
6,802.0	50.40	271.80	6,716.0	98.4	-15.9	15.4	11.33	9.69	-7.81
6,834.0	53.30	269.00	6,735.8	98.6	-41.0	40.5	11.38	9.06	-8.75
6,866.0	55.10	267.60	6,754.5	97.8	-67.0	66.5	6.65	5.63	-4.38
6,898.0	56.20	266.10	6,772.5	96.3	-93.3	92.9	5.18	3.44	-4.69
6,930.0	57.50	264.90	6,790.0	94.2	-120.0	119.6	5.13	4.06	-3.75
6,960.0	59.60	264.10	6,805.7	91.8	-145.5	145.1	7.36	7.00	-2.67
6,990.0	61.10	263.60	6,820.5	89.0	-171.4	171.0	5.21	5.00	-1.67
7,020.0	63.40	263.10	6,834.5	85.9	-197.8	197.4	7.81	7.67	-1.67
7,051.0	64.70	262.90	6,848.1	82.5	-225.5	225.1	4.23	4.19	-0.65
7,082.0	67.00	263.60	6,860.7	79.2	-253.6	253.2	7.70	7.42	2.26
7,112.0	69.10	264.20	6,872.0	76.2	-281.2	280.9	7.24	7.00	2.00
7,143.0	71.30	264.90	6,882.5	73.5	-310.3	309.9	7.41	7.10	2.26
7,173.0	73.70	265.30	6,891.5	71.0	-338.8	338.4	8.10	8.00	1.33
7,204.0	76.00	266.20	6,899.6	68.8	-368.6	368.3	7.93	7.42	2.90
7,234.0	78.50	266.50	6,906.2	66.9	-397.8	397.5	8.39	8.33	1.00
7,265.0	81.20	265.50	6,911.7	64.8	-428.2	427.9	9.27	8.71	-3.23
7,296.0	84.00	266.50	6,915.7	62.7	-458.9	458.6	9.58	9.03	3.23
7,320.0	84.70	266.20	6,918.0	61.1	-482.7	482.4	3.17	2.92	-1.25
7,367.0	85.90	266.90	6,921.9	58.3	-529.5	529.2	2.95	2.55	1.49
7,368.0	86.70	266.80	6,921.9	58.3	-530.5	530.2	80.62	80.00	-10.00
7,400.0	87.90	266.80	6,923.4	56.5	-562.4	562.1	3.75	3.75	0.00
7,432.0	87.60	266.90	6,924.7	54.7	-594.3	594.1	0.99	-0.94	0.31
7,464.0	88.00	266.30	6,925.9	52.8	-626.3	626.0	2.25	1.25	-1.88
7,496.0	88.00	265.60	6,927.0	50.6	-658.2	657.9	2.19	0.00	-2.19
7,528.0	89.40	265.50	6,927.8	48.1	-690.1	689.8	4.39	4.38	-0.31
7,560.0	90.00	265.80	6,927.9	45.7	-722.0	721.7	2.10	1.88	0.94

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7,591.0	90.20	266.10	6,927.9	43.5	-752.9	752.7	1.16	0.65	0.97
7,623.0	90.20	265.90	6,927.8	41.2	-784.8	784.6	0.62	0.00	-0.63
7,655.0	90.20	265.80	6,927.7	38.9	-816.7	816.5	0.31	0.00	-0.31
7,687.0	90.10	265.40	6,927.6	36.5	-848.6	848.4	1.29	-0.31	-1.25
7,719.0	90.20	265.10	6,927.5	33.8	-880.5	880.3	0.99	0.31	-0.94
7,751.0	90.20	266.10	6,927.4	31.4	-912.4	912.3	3.12	0.00	3.13
7,783.0	90.00	266.00	6,927.3	29.2	-944.3	944.2	0.70	-0.63	-0.31
7,815.0	89.80	265.60	6,927.4	26.8	-976.3	976.1	1.40	-0.63	-1.25
7,847.0	90.20	266.20	6,927.4	24.5	-1,008.2	1,008.0	2.25	1.25	1.88
7,878.0	90.00	266.10	6,927.3	22.5	-1,039.1	1,039.0	0.72	-0.65	-0.32
7,910.0	90.20	267.20	6,927.3	20.6	-1,071.1	1,070.9	3.49	0.63	3.44
7,942.0	90.00	267.60	6,927.2	19.1	-1,103.0	1,102.9	1.40	-0.63	1.25
7,974.0	90.80	268.30	6,927.0	18.0	-1,135.0	1,134.9	3.32	2.50	2.19
8,006.0	92.00	270.00	6,926.2	17.5	-1,167.0	1,166.9	6.50	3.75	5.31
8,038.0	92.40	270.70	6,925.0	17.7	-1,199.0	1,198.9	2.52	1.25	2.19
8,070.0	92.10	269.90	6,923.7	17.9	-1,230.9	1,230.8	2.67	-0.94	-2.50
8,102.0	92.00	269.70	6,922.6	17.8	-1,262.9	1,262.8	0.70	-0.31	-0.63
8,134.0	92.10	269.20	6,921.4	17.5	-1,294.9	1,294.8	1.59	0.31	-1.56
8,167.0	92.50	269.60	6,920.1	17.1	-1,327.9	1,327.8	1.71	1.21	1.21
8,200.0	92.80	269.70	6,918.6	16.9	-1,360.8	1,360.7	0.96	0.91	0.30
8,232.0	91.10	270.60	6,917.5	17.0	-1,392.8	1,392.7	6.01	-5.31	2.81
8,265.0	90.40	269.70	6,917.1	17.1	-1,425.8	1,425.7	3.45	-2.12	-2.73
8,297.0	90.30	269.90	6,916.9	17.0	-1,457.8	1,457.7	0.70	-0.31	0.63
8,329.0	90.80	269.80	6,916.6	16.9	-1,489.8	1,489.7	1.59	1.56	-0.31
8,361.0	91.10	269.70	6,916.0	16.7	-1,521.8	1,521.7	0.99	0.94	-0.31
8,392.0	90.30	271.20	6,915.6	17.0	-1,552.8	1,552.7	5.48	-2.58	4.84
8,423.0	90.30	271.10	6,915.5	17.6	-1,583.8	1,583.7	0.32	0.00	-0.32
8,455.0	88.20	271.20	6,915.9	18.3	-1,615.8	1,615.7	6.57	-6.56	0.31
8,487.0	89.40	271.40	6,916.6	19.0	-1,647.8	1,647.6	3.80	3.75	0.63
8,519.0	89.70	270.90	6,916.8	19.6	-1,679.7	1,679.6	1.82	0.94	-1.56
8,551.0	89.60	270.70	6,917.0	20.1	-1,711.7	1,711.6	0.70	-0.31	-0.63
8,584.0	89.40	270.20	6,917.3	20.3	-1,744.7	1,744.6	1.63	-0.61	-1.52
8,616.0	89.40	269.80	6,917.6	20.3	-1,776.7	1,776.6	1.25	0.00	-1.25
8,648.0	89.20	269.20	6,918.0	20.1	-1,808.7	1,808.6	1.98	-0.63	-1.88
8,680.0	87.50	269.20	6,919.0	19.6	-1,840.7	1,840.6	5.31	-5.31	0.00
8,712.0	86.90	268.70	6,920.5	19.0	-1,872.7	1,872.6	2.44	-1.88	-1.56
8,744.0	86.60	267.90	6,922.3	18.1	-1,904.6	1,904.5	2.67	-0.94	-2.50
8,776.0	87.50	268.20	6,924.0	17.0	-1,936.5	1,936.4	2.96	2.81	0.94
8,808.0	87.40	267.80	6,925.4	15.9	-1,968.5	1,968.4	1.29	-0.31	-1.25
8,840.0	88.10	267.90	6,926.7	14.7	-2,000.4	2,000.4	2.21	2.19	0.31
8,872.0	88.30	268.10	6,927.7	13.6	-2,032.4	2,032.3	0.88	0.63	0.63
8,905.0	89.30	267.80	6,928.4	12.4	-2,065.4	2,065.3	3.16	3.03	-0.91
8,936.0	89.60	267.60	6,928.7	11.1	-2,096.4	2,096.3	1.16	0.97	-0.65
8,968.0	89.60	267.50	6,928.9	9.8	-2,128.3	2,128.3	0.31	0.00	-0.31
8,999.0	89.50	267.30	6,929.1	8.4	-2,159.3	2,159.2	0.72	-0.32	-0.65
9,030.0	89.20	266.80	6,929.5	6.8	-2,190.3	2,190.2	1.88	-0.97	-1.61
9,062.0	88.70	266.20	6,930.1	4.8	-2,222.2	2,222.1	2.44	-1.56	-1.88
9,094.0	89.60	265.10	6,930.5	2.4	-2,254.1	2,254.1	4.44	2.81	-3.44
9,126.0	89.20	264.60	6,930.9	-0.5	-2,286.0	2,285.9	2.00	-1.25	-1.56
9,158.0	89.10	265.10	6,931.3	-3.4	-2,317.8	2,317.8	1.59	-0.31	1.56
9,190.0	90.40	264.70	6,931.5	-6.2	-2,349.7	2,349.7	4.25	4.06	-1.25
9,222.0	91.00	264.40	6,931.1	-9.3	-2,381.6	2,381.6	2.10	1.88	-0.94
9,254.0	91.40	264.50	6,930.4	-12.3	-2,413.4	2,413.4	1.29	1.25	0.31
9,286.0	91.30	264.20	6,929.7	-15.5	-2,445.2	2,445.3	0.99	-0.31	-0.94

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Spaur 31V-404
Project:	SEC.31-T7N-R63W	TVD Reference:	WELL @ 4772.0ft (RKB Ensign 32 - 15')
Site:	Spaur NE-31 Pad Sec.31-T7N-R63W	MD Reference:	WELL @ 4772.0ft (RKB Ensign 32 - 15')
Well:	Spaur 31V-404	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,318.0	91.60	264.20	6,928.9	-18.7	-2,477.1	2,477.1	0.94	0.94	0.00
9,350.0	91.30	263.40	6,928.1	-22.2	-2,508.9	2,508.9	2.67	-0.94	-2.50
9,381.0	91.50	264.40	6,927.3	-25.5	-2,539.7	2,539.8	3.29	0.65	3.23
9,413.0	91.30	266.10	6,926.5	-28.1	-2,571.6	2,571.7	5.35	-0.63	5.31
9,445.0	89.80	267.30	6,926.2	-30.0	-2,603.5	2,603.6	6.00	-4.69	3.75
9,477.0	89.00	268.70	6,926.5	-31.1	-2,635.5	2,635.6	5.04	-2.50	4.38
9,509.0	86.50	267.10	6,927.8	-32.3	-2,667.4	2,667.5	9.27	-7.81	-5.00
9,541.0	86.90	270.40	6,929.6	-33.0	-2,699.4	2,699.5	10.37	1.25	10.31
9,573.0	86.50	270.10	6,931.5	-32.8	-2,731.3	2,731.4	1.56	-1.25	-0.94
9,605.0	85.80	268.90	6,933.6	-33.1	-2,763.2	2,763.4	4.33	-2.19	-3.75
9,636.0	84.40	266.40	6,936.3	-34.4	-2,794.1	2,794.2	9.22	-4.52	-8.06
9,668.0	84.20	266.80	6,939.5	-36.2	-2,825.9	2,826.0	1.39	-0.63	1.25
9,700.0	83.90	264.10	6,942.8	-38.8	-2,857.6	2,857.8	8.44	-0.94	-8.44
9,732.0	86.70	265.10	6,945.4	-41.8	-2,889.3	2,889.5	9.29	8.75	3.13
9,764.0	89.60	264.60	6,946.4	-44.6	-2,921.2	2,921.4	9.20	9.06	-1.56
9,795.0	91.30	264.60	6,946.2	-47.6	-2,952.1	2,952.3	5.48	5.48	0.00
9,827.0	91.10	264.40	6,945.5	-50.6	-2,983.9	2,984.1	0.88	-0.63	-0.63
9,858.0	91.10	264.10	6,944.9	-53.7	-3,014.7	3,015.0	0.97	0.00	-0.97
9,890.0	91.50	265.50	6,944.2	-56.6	-3,046.6	3,046.8	4.55	1.25	4.38
9,922.0	91.40	265.90	6,943.4	-59.0	-3,078.5	3,078.7	1.29	-0.31	1.25
9,954.0	91.40	265.80	6,942.6	-61.3	-3,110.4	3,110.7	0.31	0.00	-0.31
9,986.0	91.20	265.80	6,941.9	-63.7	-3,142.3	3,142.6	0.63	-0.63	0.00
10,018.0	91.20	265.80	6,941.2	-66.0	-3,174.2	3,174.5	0.00	0.00	0.00
10,050.0	91.40	265.30	6,940.5	-68.5	-3,206.1	3,206.4	1.68	0.63	-1.56
10,082.0	91.60	264.90	6,939.6	-71.2	-3,238.0	3,238.3	1.40	0.63	-1.25
10,115.0	91.80	265.00	6,938.7	-74.1	-3,270.8	3,271.2	0.68	0.61	0.30
10,146.0	91.50	265.00	6,937.8	-76.8	-3,301.7	3,302.0	0.97	-0.97	0.00
10,178.0	91.40	264.60	6,937.0	-79.7	-3,333.6	3,333.9	1.29	-0.31	-1.25
10,210.0	91.90	266.00	6,936.0	-82.4	-3,365.5	3,365.8	4.64	1.56	4.38
10,242.0	92.10	266.90	6,934.9	-84.3	-3,397.4	3,397.7	2.88	0.63	2.81
10,274.0	91.20	267.60	6,934.0	-85.9	-3,429.3	3,429.7	3.56	-2.81	2.19
10,306.0	90.70	267.40	6,933.5	-87.3	-3,461.3	3,461.7	1.68	-1.56	-0.63
10,338.0	90.00	268.40	6,933.3	-88.4	-3,493.3	3,493.6	3.81	-2.19	3.13
10,370.0	89.60	268.30	6,933.4	-89.4	-3,525.2	3,525.6	1.29	-1.25	-0.31
10,402.0	89.80	268.40	6,933.6	-90.3	-3,557.2	3,557.6	0.70	0.63	0.31
10,434.0	88.80	268.90	6,933.9	-91.0	-3,589.2	3,589.6	3.49	-3.13	1.56
10,466.0	88.50	268.70	6,934.7	-91.7	-3,621.2	3,621.6	1.13	-0.94	-0.63
10,498.0	88.60	269.40	6,935.5	-92.2	-3,653.2	3,653.6	2.21	0.31	2.19
10,530.0	88.60	269.40	6,936.3	-92.6	-3,685.2	3,685.6	0.00	0.00	0.00
10,562.0	89.00	269.70	6,937.0	-92.8	-3,717.2	3,717.6	1.56	1.25	0.94
10,594.0	90.10	271.10	6,937.2	-92.6	-3,749.2	3,749.6	5.56	3.44	4.38
10,627.0	90.50	271.60	6,937.0	-91.8	-3,782.2	3,782.6	1.94	1.21	1.52
10,658.0	92.10	273.20	6,936.3	-90.5	-3,813.1	3,813.5	7.30	5.16	5.16
10,690.0	92.50	273.90	6,935.1	-88.6	-3,845.0	3,845.4	2.52	1.25	2.19
10,722.0	92.40	274.00	6,933.7	-86.4	-3,876.9	3,877.3	0.44	-0.31	0.31
10,754.0	92.50	274.40	6,932.3	-84.0	-3,908.8	3,909.2	1.29	0.31	1.25
10,787.0	92.70	274.50	6,930.8	-81.5	-3,941.7	3,942.0	0.68	0.61	0.30
10,818.0	90.70	274.30	6,929.9	-79.1	-3,972.6	3,972.9	6.48	-6.45	-0.65
10,851.0	90.10	273.90	6,929.7	-76.7	-4,005.5	4,005.8	2.19	-1.82	-1.21
10,883.0	89.60	273.10	6,929.8	-74.8	-4,037.4	4,037.7	2.95	-1.56	-2.50
10,915.0	89.20	272.30	6,930.1	-73.3	-4,069.4	4,069.7	2.79	-1.25	-2.50
10,948.0	89.10	272.30	6,930.6	-71.9	-4,102.4	4,102.7	0.30	-0.30	0.00
10,980.0	89.10	272.90	6,931.1	-70.5	-4,134.3	4,134.6	1.87	0.00	1.88

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Spaur 31V-404
Project:	SEC.31-T7N-R63W	TVD Reference:	WELL @ 4772.0ft (RKB Ensign 32 - 15')
Site:	Spaur NE-31 Pad Sec.31-T7N-R63W	MD Reference:	WELL @ 4772.0ft (RKB Ensign 32 - 15')
Well:	Spaur 31V-404	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,012.0	89.20	273.10	6,931.6	-68.8	-4,166.3	4,166.6	0.70	0.31	0.63
11,044.0	89.70	273.80	6,931.9	-66.9	-4,198.2	4,198.5	2.69	1.56	2.19
11,076.0	89.70	274.20	6,932.0	-64.6	-4,230.1	4,230.4	1.25	0.00	1.25
11,107.0	89.90	274.50	6,932.1	-62.3	-4,261.0	4,261.3	1.16	0.65	0.97
11,138.0	90.10	274.50	6,932.1	-59.9	-4,292.0	4,292.2	0.65	0.65	0.00
11,170.0	90.20	274.50	6,932.1	-57.4	-4,323.9	4,324.1	0.31	0.31	0.00
11,202.0	90.30	274.40	6,931.9	-54.9	-4,355.8	4,356.0	0.44	0.31	-0.31
11,234.0	90.20	274.10	6,931.8	-52.5	-4,387.7	4,387.9	0.99	-0.31	-0.94
11,254.0	90.20	274.30	6,931.7	-51.0	-4,407.6	4,407.8	1.00	0.00	1.00
11,305.0	90.20	274.30	6,931.5	-47.2	-4,458.5	4,458.6	0.00	0.00	0.00
BHL 1250'FNL & 500'FWL									

Checked By: _____	Approved By: _____	Date: _____
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