

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Alles 22D-402**

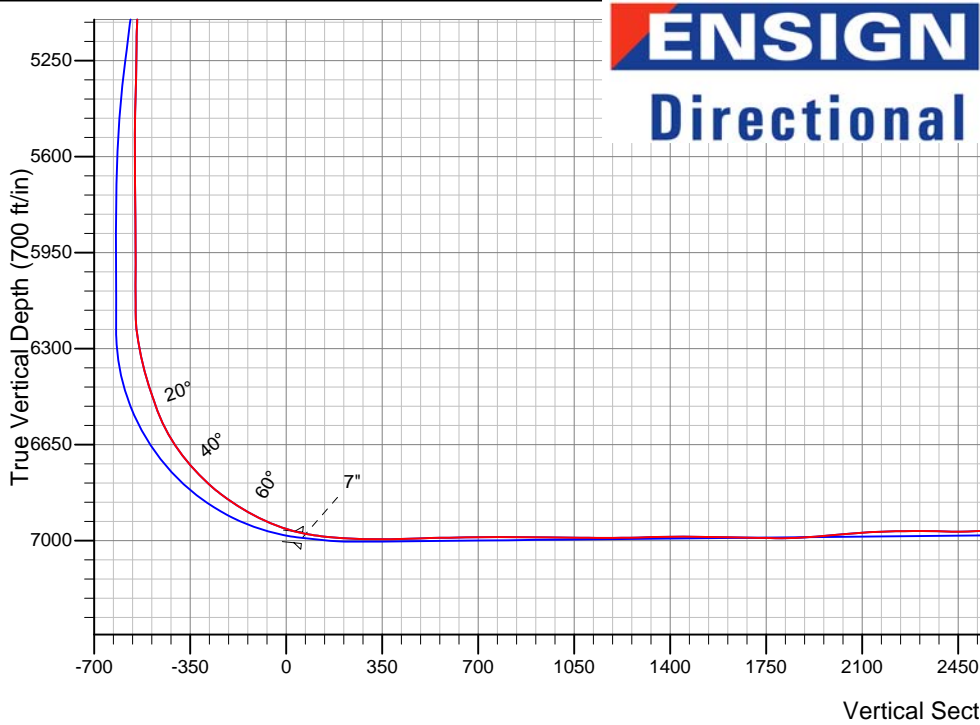
Surface Location: Alles 22S-HZ Pad Sec.22-T5N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4645.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1383618.78	3239056.16	40.383260	-104.641860	
RKB - 15' WELL @ 4660.0ft (RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location
12701'MD 6954'TVD 685'S & 5303'E of SHL
91.1 degree Incl @ 88.6 degree AZM



Alles 22S-HZ Pad Sec.22-T5N-R65W
Alles 22D-402
Wellbore #1
7:29, May 06 2014

ANNOTATIONS

No annotation data is available.

LEGEND

- Alles 22D-402, Wellbore #1, Plan #1 (4-17-14)R V0
- Wellbore #1
- Survey #1

BHL 1430'FSL & 501'FEL, SEC.23



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.22-T5N-R65W

Alles 22S-HZ Pad Sec.22-T5N-R65W

Alles 22D-402

Wellbore #1

Survey: Survey #1

Standard Survey Report

06 May, 2014

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22D-402
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Well:	Alles 22D-402	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.22-T5N-R65W, 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		Alles 22S-HZ Pad Sec.22-T5N-R65W			
Site Position:		Northing:	1,383,618.80 ft	Latitude:	40.383260
From:	Lat/Long	Easting:	3,239,056.16 ft	Longitude:	-104.641860
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Alles 22D-402					
Well Position	+N-S	0.0 ft	Northing:	1,383,618.78 ft	Latitude:	40.383260
	+E-W	0.0 ft	Easting:	3,239,056.16 ft	Longitude:	-104.641860
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,645.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/17/2014	8.41	66.96	52,838

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	97.47	

Survey Program	Date 5/6/2014				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
121.0	12,701.0	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
1.0	0.01	225.20	1.0	0.0	0.0	0.0	0.58	0.58	0.00
SHL 2098'FSL, 545'FEL, SEC.22									
13.2	0.08	225.20	13.2	0.0	0.0	0.0	0.58	0.58	0.00
LEASE LINE									
121.0	0.70	225.20	121.0	-0.5	-0.5	-0.5	0.58	0.58	0.00
184.0	1.40	243.80	184.0	-1.1	-1.5	-1.3	1.22	1.11	29.52
279.0	2.70	250.50	278.9	-2.4	-4.6	-4.3	1.39	1.37	7.05
407.0	4.80	237.80	406.6	-6.3	-12.0	-11.1	1.75	1.64	-9.92
529.0	6.90	233.80	528.0	-13.3	-22.2	-20.3	1.75	1.72	-3.28
655.0	8.80	232.70	652.8	-23.6	-36.0	-32.6	1.51	1.51	-0.87
782.0	10.10	223.00	778.1	-37.6	-51.3	-46.0	1.62	1.02	-7.64

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Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Well:	Alles 22D-402	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)
883.0	11.20	225.40	877.4	-51.0	-64.4	-57.2	1.17	1.09	2.38
939.0	11.70	230.80	932.2	-58.4	-72.6	-64.4	2.11	0.89	9.64
1,097.0	11.10	226.70	1,087.1	-79.0	-96.1	-85.1	0.64	-0.38	-2.59
1,254.0	10.30	222.50	1,241.4	-99.7	-116.6	-102.7	0.71	-0.51	-2.68
1,408.0	9.10	208.80	1,393.2	-120.5	-131.8	-115.0	1.68	-0.78	-8.90
1,530.0	7.70	205.60	1,513.9	-136.3	-140.0	-121.1	1.21	-1.15	-2.62
1,622.0	6.90	221.80	1,605.2	-146.0	-146.3	-126.1	2.39	-0.87	17.61
1,713.0	8.40	228.10	1,695.4	-154.5	-154.9	-133.5	1.89	1.65	6.92
1,804.0	7.60	227.60	1,785.5	-163.0	-164.3	-141.7	0.88	-0.88	-0.55
1,925.0	7.30	237.10	1,905.5	-172.6	-176.7	-152.7	1.05	-0.25	7.85
2,077.0	11.00	247.50	2,055.5	-183.4	-198.2	-172.7	2.66	2.43	6.84
2,200.0	12.60	237.50	2,175.9	-195.1	-220.3	-193.1	2.11	1.30	-8.13
2,351.0	11.40	219.90	2,323.7	-215.4	-243.8	-213.7	2.54	-0.79	-11.66
2,474.0	11.00	210.00	2,444.3	-234.9	-257.5	-224.8	1.59	-0.33	-8.05
2,600.0	12.10	226.90	2,567.8	-254.3	-273.1	-237.8	2.81	0.87	13.41
2,726.0	14.80	231.70	2,690.3	-273.3	-295.4	-257.4	2.32	2.14	3.81
2,852.0	14.30	225.90	2,812.3	-294.1	-319.2	-278.3	1.22	-0.40	-4.60
2,979.0	14.40	221.30	2,935.4	-316.9	-340.9	-296.8	0.90	0.08	-3.62
3,104.0	13.90	223.00	3,056.6	-339.6	-361.4	-314.2	0.52	-0.40	1.36
3,230.0	13.70	219.00	3,178.9	-362.2	-381.1	-330.8	0.77	-0.16	-3.17
3,357.0	13.10	217.10	3,302.5	-385.4	-399.3	-345.8	0.59	-0.47	-1.50
3,484.0	12.60	221.50	3,426.3	-407.3	-417.1	-360.6	0.86	-0.39	3.46
3,610.0	12.00	220.60	3,549.4	-427.5	-434.7	-375.5	0.50	-0.48	-0.71
3,736.0	13.70	222.00	3,672.2	-448.5	-453.3	-391.1	1.37	1.35	1.11
3,862.0	15.30	220.90	3,794.2	-472.2	-474.1	-408.7	1.29	1.27	-0.87
3,988.0	14.80	222.20	3,915.9	-496.7	-495.8	-427.1	0.48	-0.40	1.03
4,114.0	13.60	220.60	4,038.0	-519.9	-516.3	-444.3	1.00	-0.95	-1.27
4,240.0	14.90	216.00	4,160.2	-544.2	-535.4	-460.2	1.37	1.03	-3.65
4,367.0	14.90	212.50	4,282.9	-571.2	-553.8	-474.9	0.71	0.00	-2.76
4,493.0	13.90	209.90	4,404.9	-598.0	-570.1	-487.5	0.94	-0.79	-2.06
4,619.0	12.60	209.00	4,527.6	-623.1	-584.3	-498.3	1.04	-1.03	-0.71
4,714.0	11.80	213.90	4,620.4	-640.2	-594.7	-506.5	1.38	-0.84	5.16
4,841.0	10.40	212.10	4,745.1	-660.7	-608.0	-517.0	1.14	-1.10	-1.42
4,968.0	9.30	209.30	4,870.2	-679.4	-619.1	-525.6	0.94	-0.87	-2.20
5,094.0	8.10	231.10	4,994.8	-693.8	-631.0	-535.5	2.76	-0.95	17.30
5,221.0	2.60	234.30	5,121.2	-701.2	-640.4	-543.8	4.34	-4.33	2.52
5,284.0	0.70	268.60	5,184.1	-702.0	-641.9	-545.2	3.27	-3.02	54.44
5,411.0	1.30	262.90	5,311.1	-702.2	-644.1	-547.4	0.48	0.47	-4.49
5,537.0	1.80	237.30	5,437.1	-703.4	-647.2	-550.3	0.67	0.40	-20.32
5,695.0	0.80	152.60	5,595.1	-705.8	-648.8	-551.5	1.20	-0.63	-53.61
5,853.0	0.80	127.10	5,753.0	-707.4	-647.4	-550.0	0.22	0.00	-16.14
6,011.0	0.70	358.40	5,911.0	-707.1	-646.5	-549.2	0.86	-0.06	-81.46
6,170.0	0.50	48.10	6,070.0	-705.7	-646.0	-548.9	0.34	-0.13	31.26
6,233.0	0.70	23.70	6,133.0	-705.1	-645.7	-548.6	0.51	0.32	-38.73
6,265.0	0.30	75.20	6,165.0	-704.9	-645.5	-548.4	1.76	-1.25	160.94
6,297.0	2.50	82.60	6,197.0	-704.8	-644.7	-547.7	6.88	6.88	23.13
6,329.0	6.10	84.30	6,228.9	-704.6	-642.4	-545.4	11.26	11.25	5.31
6,360.0	9.20	84.20	6,259.6	-704.1	-638.3	-541.3	10.00	10.00	-0.32
6,392.0	10.90	86.30	6,291.1	-703.7	-632.7	-535.9	5.43	5.31	6.56
6,424.0	11.60	88.20	6,322.5	-703.4	-626.5	-529.7	2.47	2.19	5.94
6,455.0	12.60	91.90	6,352.8	-703.4	-620.0	-523.3	4.08	3.23	11.94
6,487.0	15.20	94.20	6,383.9	-703.8	-612.3	-515.6	8.30	8.13	7.19
6,519.0	17.50	91.70	6,414.6	-704.3	-603.3	-506.7	7.51	7.19	-7.81
6,550.0	18.40	82.40	6,444.1	-703.8	-593.8	-497.3	9.68	2.90	-30.00

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Well:	Alles 22D-402	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)
6,582.0	19.90	75.60	6,474.3	-701.8	-583.5	-487.4	8.39	4.69	-21.25
6,614.0	21.30	75.40	6,504.3	-698.9	-572.6	-476.9	4.38	4.38	-0.63
6,646.0	22.80	80.10	6,533.9	-696.4	-560.9	-465.6	7.23	4.69	14.69
6,677.0	23.70	87.00	6,562.4	-695.0	-548.7	-453.7	9.25	2.90	22.26
6,709.0	26.50	90.70	6,591.4	-694.8	-535.2	-440.3	10.03	8.75	11.56
6,740.0	30.00	91.60	6,618.7	-695.1	-520.5	-425.7	11.37	11.29	2.90
6,771.0	33.70	91.40	6,645.0	-695.5	-504.1	-409.5	11.94	11.94	-0.65
6,803.0	36.10	90.70	6,671.3	-695.9	-485.8	-391.3	7.60	7.50	-2.19
6,834.0	38.40	88.90	6,696.0	-695.8	-467.1	-372.7	8.21	7.42	-5.81
6,865.0	40.90	87.90	6,719.8	-695.2	-447.3	-353.2	8.32	8.06	-3.23
6,897.0	42.90	88.90	6,743.6	-694.6	-425.9	-332.1	6.59	6.25	3.13
6,928.0	44.80	89.40	6,766.0	-694.3	-404.5	-310.8	6.23	6.13	1.61
6,960.0	47.30	89.10	6,788.2	-694.0	-381.4	-288.0	7.84	7.81	-0.94
6,992.0	50.20	89.40	6,809.3	-693.7	-357.4	-264.2	9.09	9.06	0.94
7,023.0	52.60	90.00	6,828.6	-693.6	-333.2	-240.2	7.89	7.74	1.94
7,055.0	54.80	90.10	6,847.6	-693.6	-307.4	-214.6	6.88	6.88	0.31
7,086.0	56.60	89.80	6,865.1	-693.6	-281.8	-189.2	5.86	5.81	-0.97
7,118.0	58.90	89.30	6,882.1	-693.4	-254.7	-162.4	7.31	7.19	-1.56
7,149.0	60.90	88.70	6,897.7	-692.9	-227.9	-135.9	6.67	6.45	-1.94
7,181.0	63.60	89.80	6,912.6	-692.5	-199.6	-107.9	8.97	8.44	3.44
7,212.0	65.50	89.80	6,925.9	-692.4	-171.6	-80.1	6.13	6.13	0.00
7,244.0	67.60	89.40	6,938.6	-692.2	-142.2	-51.1	6.66	6.56	-1.25
7,276.0	70.30	89.40	6,950.1	-691.9	-112.4	-21.5	8.44	8.44	0.00
7,307.0	73.30	89.60	6,959.8	-691.7	-82.9	7.7	9.70	9.68	0.65
7,338.0	76.50	90.30	6,967.9	-691.6	-53.0	37.3	10.55	10.32	2.26
7,370.0	78.80	91.70	6,974.7	-692.2	-21.7	68.4	8.36	7.19	4.38
7,405.0	82.00	93.70	6,980.6	-693.8	12.7	102.8	10.74	9.14	5.71
7,444.0	84.60	95.10	6,985.1	-696.8	51.3	141.4	7.56	6.67	3.59
7,474.0	85.00	95.60	6,987.8	-699.6	81.1	171.3	2.13	1.33	1.67
7,504.0	85.60	94.50	6,990.3	-702.2	110.9	201.2	4.17	2.00	-3.67
7,535.0	86.40	94.20	6,992.4	-704.5	141.7	232.1	2.76	2.58	-0.97
7,565.0	87.60	94.20	6,994.0	-706.7	171.6	262.0	4.00	4.00	0.00
7,596.0	88.80	93.50	6,995.0	-708.8	202.5	292.9	4.48	3.87	-2.26
7,626.0	89.80	93.10	6,995.4	-710.5	232.4	322.8	3.59	3.33	-1.33
7,657.0	90.50	93.00	6,995.3	-712.2	263.4	353.7	2.28	2.26	-0.32
7,687.0	91.10	91.70	6,994.9	-713.4	293.4	383.6	4.77	2.00	-4.33
7,718.0	91.70	91.00	6,994.1	-714.1	324.3	414.4	2.97	1.94	-2.26
7,748.0	91.80	90.50	6,993.2	-714.5	354.3	444.2	1.70	0.33	-1.67
7,779.0	92.10	89.80	6,992.1	-714.6	385.3	474.9	2.46	0.97	-2.26
7,809.0	91.70	89.10	6,991.1	-714.3	415.3	504.6	2.69	-1.33	-2.33
7,839.0	91.30	89.30	6,990.3	-713.9	445.3	534.3	1.49	-1.33	0.67
7,869.0	90.60	88.90	6,989.8	-713.4	475.3	564.0	2.69	-2.33	-1.33
7,900.0	90.60	89.10	6,989.5	-712.9	506.3	594.6	0.65	0.00	0.65
7,930.0	91.50	88.20	6,989.0	-712.2	536.2	624.3	4.24	3.00	-3.00
7,961.0	91.70	87.50	6,988.1	-711.0	567.2	654.8	2.35	0.65	-2.26
7,991.0	91.30	86.60	6,987.3	-709.5	597.2	684.3	3.28	-1.33	-3.00
8,022.0	90.50	85.90	6,986.8	-707.5	628.1	714.7	3.43	-2.58	-2.26
8,052.0	89.50	85.40	6,986.8	-705.2	658.0	744.1	3.73	-3.33	-1.67
8,082.0	89.30	85.90	6,987.2	-702.9	687.9	773.4	1.79	-0.67	1.67
8,113.0	89.60	85.80	6,987.4	-700.7	718.8	803.8	1.02	0.97	-0.32
8,143.0	89.90	86.30	6,987.6	-698.6	748.8	833.2	1.94	1.00	1.67
8,174.0	90.30	86.50	6,987.5	-696.7	779.7	863.6	1.44	1.29	0.65
8,204.0	89.70	86.50	6,987.5	-694.8	809.6	893.1	2.00	-2.00	0.00

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8,235.0	89.70	86.60	6,987.7	-693.0	840.6	923.5	0.32	0.00	0.32
8,265.0	89.50	86.50	6,987.9	-691.2	870.5	953.0	0.75	-0.67	-0.33
8,295.0	89.80	87.50	6,988.1	-689.6	900.5	982.5	3.48	1.00	3.33
8,326.0	89.30	87.70	6,988.3	-688.3	931.5	1,013.0	1.74	-1.61	0.65
8,356.0	88.90	87.30	6,988.8	-687.0	961.4	1,042.6	1.89	-1.33	-1.33
8,386.0	88.90	88.40	6,989.4	-685.9	991.4	1,072.1	3.67	0.00	3.67
8,417.0	89.10	88.70	6,989.9	-685.1	1,022.4	1,102.7	1.16	0.65	0.97
8,447.0	89.30	88.90	6,990.3	-684.4	1,052.4	1,132.4	0.94	0.67	0.67
8,478.0	89.60	88.40	6,990.6	-683.7	1,083.4	1,163.0	1.88	0.97	-1.61
8,508.0	90.70	88.90	6,990.5	-683.0	1,113.4	1,192.7	4.03	3.67	1.67
8,539.0	91.50	89.40	6,990.0	-682.5	1,144.4	1,223.3	3.04	2.58	1.61
8,569.0	90.90	89.80	6,989.3	-682.3	1,174.3	1,253.1	2.40	-2.00	1.33
8,600.0	90.90	90.10	6,988.8	-682.3	1,205.3	1,283.8	0.97	0.00	0.97
8,631.0	91.50	90.00	6,988.2	-682.3	1,236.3	1,314.5	1.96	1.94	-0.32
8,663.0	92.00	89.10	6,987.2	-682.1	1,268.3	1,346.2	3.22	1.56	-2.81
8,695.0	91.30	88.20	6,986.3	-681.3	1,300.3	1,377.8	3.56	-2.19	-2.81
8,726.0	90.40	87.90	6,985.8	-680.3	1,331.3	1,408.4	3.06	-2.90	-0.97
8,758.0	90.40	88.00	6,985.6	-679.1	1,363.3	1,439.9	0.31	0.00	0.31
8,789.0	90.60	88.70	6,985.3	-678.2	1,394.2	1,470.6	2.35	0.65	2.26
8,821.0	89.30	88.00	6,985.4	-677.3	1,426.2	1,502.1	4.61	-4.06	-2.19
8,853.0	88.50	88.60	6,986.0	-676.4	1,458.2	1,533.7	3.12	-2.50	1.88
8,885.0	88.50	89.30	6,986.8	-675.8	1,490.2	1,565.4	2.19	0.00	2.19
8,917.0	88.40	89.60	6,987.7	-675.5	1,522.2	1,597.0	0.99	-0.31	0.94
8,948.0	88.30	89.30	6,988.6	-675.2	1,553.2	1,627.7	1.02	-0.32	-0.97
8,980.0	88.60	89.10	6,989.4	-674.7	1,585.1	1,659.4	1.13	0.94	-0.63
9,011.0	89.30	89.60	6,990.0	-674.4	1,616.1	1,690.1	2.77	2.26	1.61
9,043.0	89.60	89.60	6,990.3	-674.2	1,648.1	1,721.8	0.94	0.94	0.00
9,074.0	89.30	89.80	6,990.6	-674.0	1,679.1	1,752.5	1.16	-0.97	0.65
9,106.0	89.60	90.10	6,990.9	-674.0	1,711.1	1,784.2	1.33	0.94	0.94
9,138.0	90.30	90.30	6,990.9	-674.1	1,743.1	1,815.9	2.28	2.19	0.63
9,170.0	91.30	90.30	6,990.5	-674.2	1,775.1	1,847.7	3.13	3.13	0.00
9,202.0	93.20	90.70	6,989.2	-674.5	1,807.1	1,879.4	6.07	5.94	1.25
9,233.0	94.70	90.70	6,987.1	-674.9	1,838.0	1,910.1	4.84	4.84	0.00
9,265.0	95.10	91.60	6,984.4	-675.5	1,869.9	1,941.8	3.07	1.25	2.81
9,297.0	94.70	91.70	6,981.6	-676.5	1,901.8	1,973.5	1.29	-1.25	0.31
9,329.0	94.70	91.00	6,979.0	-677.2	1,933.7	2,005.3	2.18	0.00	-2.19
9,360.0	94.90	90.10	6,976.4	-677.5	1,964.5	2,035.9	2.96	0.65	-2.90
9,392.0	94.70	89.80	6,973.7	-677.5	1,996.4	2,067.5	1.12	-0.63	-0.94
9,424.0	94.40	90.00	6,971.2	-677.4	2,028.3	2,099.2	1.13	-0.94	0.63
9,455.0	93.50	89.60	6,969.1	-677.3	2,059.3	2,129.8	3.18	-2.90	-1.29
9,487.0	92.10	89.40	6,967.5	-677.0	2,091.2	2,161.5	4.42	-4.38	-0.63
9,518.0	91.00	88.60	6,966.7	-676.5	2,122.2	2,192.1	4.39	-3.55	-2.58
9,550.0	91.00	88.60	6,966.1	-675.7	2,154.2	2,223.7	0.00	0.00	0.00
9,582.0	90.70	89.10	6,965.6	-675.1	2,186.2	2,255.4	1.82	-0.94	1.56
9,613.0	90.70	90.30	6,965.3	-674.9	2,217.2	2,286.1	3.87	0.00	3.87
9,645.0	90.00	90.70	6,965.1	-675.2	2,249.2	2,317.8	2.52	-2.19	1.25
9,676.0	89.00	90.90	6,965.3	-675.6	2,280.2	2,348.6	3.29	-3.23	0.65
9,708.0	88.00	89.80	6,966.2	-675.8	2,312.1	2,380.4	4.64	-3.13	-3.44
9,739.0	88.60	89.30	6,967.1	-675.6	2,343.1	2,411.1	2.52	1.94	-1.61
9,770.0	90.10	89.30	6,967.4	-675.2	2,374.1	2,441.7	4.84	4.84	0.00
9,802.0	91.60	90.00	6,967.0	-675.0	2,406.1	2,473.4	5.17	4.69	2.19
9,834.0	92.50	90.10	6,965.8	-675.0	2,438.1	2,505.2	2.83	2.81	0.31
9,866.0	91.40	89.10	6,964.7	-674.8	2,470.1	2,536.8	4.64	-3.44	-3.13

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22D-402
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Well:	Alles 22D-402	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)
9,897.0	89.80	88.20	6,964.4	-674.1	2,501.1	2,567.5	5.92	-5.16	-2.90
9,929.0	88.50	88.40	6,964.9	-673.1	2,533.1	2,599.0	4.11	-4.06	0.63
9,960.0	89.30	88.90	6,965.5	-672.4	2,564.0	2,629.7	3.04	2.58	1.61
9,991.0	90.70	88.40	6,965.5	-671.7	2,595.0	2,660.3	4.80	4.52	-1.61
10,023.0	91.40	87.70	6,964.9	-670.6	2,627.0	2,691.9	3.09	2.19	-2.19
10,055.0	90.90	86.60	6,964.3	-669.0	2,659.0	2,723.3	3.78	-1.56	-3.44
10,086.0	89.30	86.50	6,964.2	-667.1	2,689.9	2,753.8	5.17	-5.16	-0.32
10,118.0	90.60	88.90	6,964.2	-665.8	2,721.9	2,785.3	8.53	4.06	7.50
10,150.0	90.60	90.00	6,963.9	-665.5	2,753.9	2,817.0	3.44	0.00	3.44
10,181.0	89.90	90.30	6,963.8	-665.6	2,784.9	2,847.8	2.46	-2.26	0.97
10,213.0	90.70	91.70	6,963.6	-666.2	2,816.9	2,879.5	5.04	2.50	4.38
10,245.0	90.00	91.00	6,963.4	-666.9	2,848.9	2,911.4	3.09	-2.19	-2.19
10,276.0	89.90	90.50	6,963.4	-667.3	2,879.8	2,942.1	1.64	-0.32	-1.61
10,308.0	90.70	91.70	6,963.3	-667.9	2,911.8	2,974.0	4.51	2.50	3.75
10,340.0	90.60	92.60	6,962.9	-669.1	2,943.8	3,005.8	2.83	-0.31	2.81
10,371.0	89.90	92.30	6,962.8	-670.5	2,974.8	3,036.7	2.46	-2.26	-0.97
10,403.0	90.00	92.80	6,962.8	-671.9	3,006.8	3,068.6	1.59	0.31	1.56
10,435.0	89.20	92.10	6,963.0	-673.3	3,038.7	3,100.4	3.32	-2.50	-2.19
10,467.0	90.80	92.80	6,963.0	-674.6	3,070.7	3,132.3	5.46	5.00	2.19
10,498.0	91.60	92.80	6,962.4	-676.1	3,101.7	3,163.2	2.58	2.58	0.00
10,530.0	91.30	92.10	6,961.5	-677.5	3,133.6	3,195.1	2.38	-0.94	-2.19
10,561.0	91.30	91.40	6,960.8	-678.5	3,164.6	3,225.9	2.26	0.00	-2.26
10,593.0	91.40	90.70	6,960.1	-679.0	3,196.6	3,257.7	2.21	0.31	-2.19
10,625.0	91.10	90.30	6,959.4	-679.3	3,228.6	3,289.5	1.56	-0.94	-1.25
10,656.0	91.20	89.60	6,958.8	-679.3	3,259.6	3,320.2	2.28	0.32	-2.26
10,688.0	91.60	89.60	6,958.0	-679.1	3,291.5	3,351.9	1.25	1.25	0.00
10,720.0	91.20	89.30	6,957.2	-678.8	3,323.5	3,383.6	1.56	-1.25	-0.94
10,751.0	90.90	89.80	6,956.6	-678.5	3,354.5	3,414.3	1.88	-0.97	1.61
10,783.0	90.70	89.40	6,956.2	-678.3	3,386.5	3,446.0	1.40	-0.63	-1.25
10,815.0	90.40	89.80	6,955.9	-678.1	3,418.5	3,477.7	1.56	-0.94	1.25
10,846.0	89.30	89.60	6,956.0	-677.9	3,449.5	3,508.4	3.61	-3.55	-0.65
10,878.0	88.50	89.10	6,956.6	-677.5	3,481.5	3,540.0	2.95	-2.50	-1.56
10,909.0	87.10	88.90	6,957.8	-677.0	3,512.5	3,570.7	4.56	-4.52	-0.65
10,941.0	86.80	89.30	6,959.5	-676.5	3,544.4	3,602.3	1.56	-0.94	1.25
10,973.0	86.50	89.40	6,961.3	-676.1	3,576.4	3,633.9	0.99	-0.94	0.31
11,005.0	86.40	89.80	6,963.3	-675.9	3,608.3	3,665.6	1.29	-0.31	1.25
11,037.0	85.60	90.50	6,965.6	-676.0	3,640.2	3,697.2	3.32	-2.50	2.19
11,068.0	85.70	90.10	6,967.9	-676.2	3,671.1	3,727.9	1.33	0.32	-1.29
11,100.0	86.70	90.10	6,970.0	-676.2	3,703.1	3,759.6	3.13	3.13	0.00
11,131.0	87.60	89.80	6,971.6	-676.2	3,734.0	3,790.2	3.06	2.90	-0.97
11,162.0	87.60	90.00	6,972.9	-676.1	3,765.0	3,821.0	0.64	0.00	0.65
11,194.0	87.30	89.80	6,974.3	-676.1	3,797.0	3,852.6	1.13	-0.94	-0.63
11,225.0	87.50	89.40	6,975.7	-675.9	3,827.9	3,883.3	1.44	0.65	-1.29
11,257.0	87.90	89.80	6,977.0	-675.6	3,859.9	3,915.0	1.77	1.25	1.25
11,288.0	89.20	89.80	6,977.8	-675.5	3,890.9	3,945.7	4.19	4.19	0.00
11,320.0	90.40	90.00	6,977.9	-675.5	3,922.9	3,977.4	3.80	3.75	0.63
11,353.0	90.80	89.60	6,977.5	-675.4	3,955.9	4,010.1	1.71	1.21	-1.21
11,384.0	91.70	89.10	6,976.9	-675.0	3,986.9	4,040.8	3.32	2.90	-1.61
11,415.0	92.80	88.60	6,975.6	-674.4	4,017.9	4,071.4	3.90	3.55	-1.61
11,447.0	92.70	88.60	6,974.1	-673.6	4,049.8	4,103.0	0.31	-0.31	0.00
11,478.0	92.00	88.60	6,972.8	-672.9	4,080.8	4,133.6	2.26	-2.26	0.00
11,510.0	91.40	88.40	6,971.9	-672.0	4,112.8	4,165.2	1.98	-1.88	-0.63
11,541.0	90.70	88.00	6,971.3	-671.0	4,143.7	4,195.8	2.60	-2.26	-1.29
11,572.0	90.10	88.70	6,971.1	-670.1	4,174.7	4,226.4	2.97	-1.94	2.26

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22D-402
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Well:	Alles 22D-402	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)
11,604.0	90.40	89.60	6,971.0	-669.7	4,206.7	4,258.1	2.96	0.94	2.81
11,636.0	90.10	89.10	6,970.8	-669.3	4,238.7	4,289.8	1.82	-0.94	-1.56
11,667.0	91.70	90.00	6,970.3	-669.1	4,269.7	4,320.5	5.92	5.16	2.90
11,699.0	92.20	89.80	6,969.2	-669.0	4,301.7	4,352.2	1.68	1.56	-0.63
11,731.0	92.40	90.10	6,968.0	-669.0	4,333.7	4,383.9	1.13	0.63	0.94
11,762.0	92.20	90.10	6,966.7	-669.0	4,364.6	4,414.6	0.65	-0.65	0.00
11,794.0	92.20	90.50	6,965.5	-669.2	4,396.6	4,446.3	1.25	0.00	1.25
11,826.0	91.90	91.00	6,964.3	-669.6	4,428.6	4,478.1	1.82	-0.94	1.56
11,857.0	91.60	90.90	6,963.4	-670.1	4,459.6	4,508.8	1.02	-0.97	-0.32
11,888.0	91.00	91.20	6,962.7	-670.7	4,490.6	4,539.6	2.16	-1.94	0.97
11,920.0	90.40	91.00	6,962.3	-671.3	4,522.6	4,571.4	1.98	-1.88	-0.63
11,951.0	89.60	91.60	6,962.3	-672.0	4,553.5	4,602.3	3.23	-2.58	1.94
11,983.0	90.00	92.30	6,962.4	-673.1	4,585.5	4,634.1	2.52	1.25	2.19
12,015.0	91.00	92.30	6,962.1	-674.4	4,617.5	4,666.0	3.13	3.13	0.00
12,046.0	90.80	91.70	6,961.6	-675.5	4,648.5	4,696.8	2.04	-0.65	-1.94
12,078.0	90.40	91.70	6,961.3	-676.4	4,680.5	4,728.7	1.25	-1.25	0.00
12,109.0	89.80	91.40	6,961.3	-677.3	4,711.5	4,759.5	2.16	-1.94	-0.97
12,141.0	90.00	91.60	6,961.3	-678.1	4,743.4	4,791.3	0.88	0.63	0.63
12,173.0	90.70	91.60	6,961.1	-679.0	4,775.4	4,823.2	2.19	2.19	0.00
12,204.0	91.20	90.90	6,960.6	-679.7	4,806.4	4,854.0	2.77	1.61	-2.26
12,236.0	90.50	90.70	6,960.1	-680.1	4,838.4	4,885.8	2.28	-2.19	-0.63
12,267.0	90.20	91.20	6,959.9	-680.6	4,869.4	4,916.6	1.88	-0.97	1.61
12,298.0	90.10	91.20	6,959.9	-681.3	4,900.4	4,947.4	0.32	-0.32	0.00
12,330.0	90.10	91.70	6,959.8	-682.1	4,932.4	4,979.2	1.56	0.00	1.56
12,361.0	90.30	91.20	6,959.7	-682.9	4,963.4	5,010.0	1.74	0.65	-1.61
12,393.0	90.80	91.00	6,959.4	-683.5	4,995.4	5,041.8	1.68	1.56	-0.63
12,424.0	91.40	91.20	6,958.8	-684.1	5,026.4	5,072.6	2.04	1.94	0.65
12,456.0	92.00	91.40	6,957.8	-684.8	5,058.3	5,104.4	1.98	1.88	0.63
12,488.0	92.20	91.70	6,956.7	-685.7	5,090.3	5,136.2	1.13	0.63	0.94
12,520.0	92.00	91.20	6,955.5	-686.5	5,122.3	5,168.0	1.68	-0.63	-1.56
12,551.0	90.40	90.10	6,954.8	-686.8	5,153.3	5,198.8	6.26	-5.16	-3.55
12,583.0	90.10	90.30	6,954.7	-686.9	5,185.3	5,230.6	1.13	-0.94	0.63
12,615.0	89.40	89.80	6,954.8	-687.0	5,217.3	5,262.3	2.69	-2.19	-1.56
12,646.0	91.10	88.60	6,954.7	-686.5	5,248.3	5,293.0	6.71	5.48	-3.87
12,701.0	91.10	88.60	6,953.7	-685.2	5,303.2	5,347.3	0.00	0.00	0.00
BHL 1420'FSL & 500'FEL, SEC.23									

Checked By: _____	Approved By: _____	Date: _____
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