

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Tateyama 15U-434**

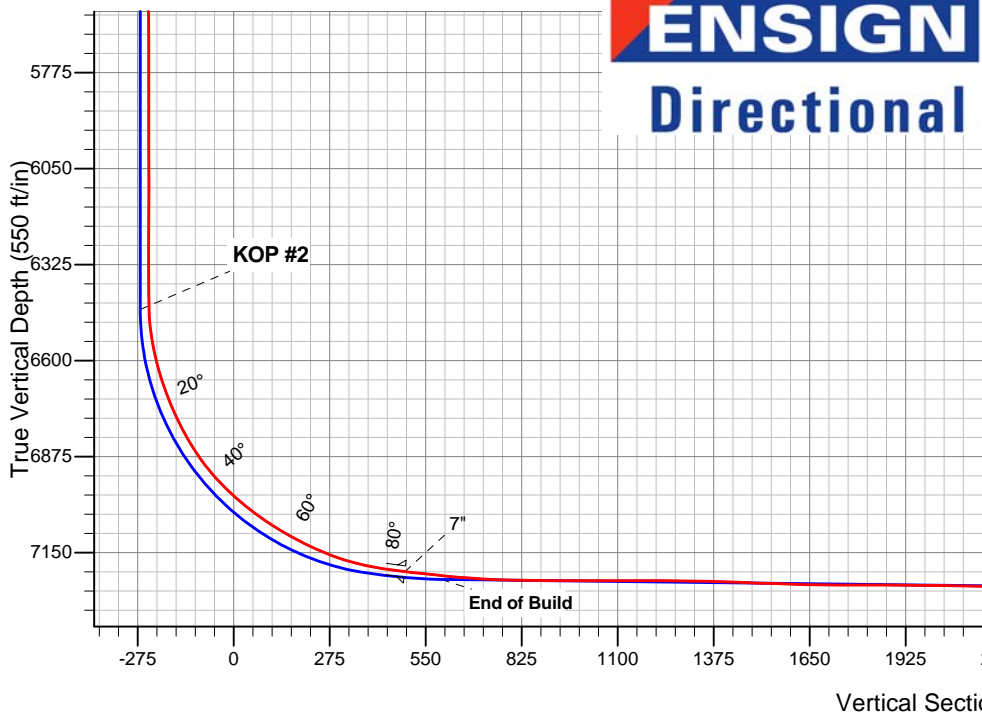
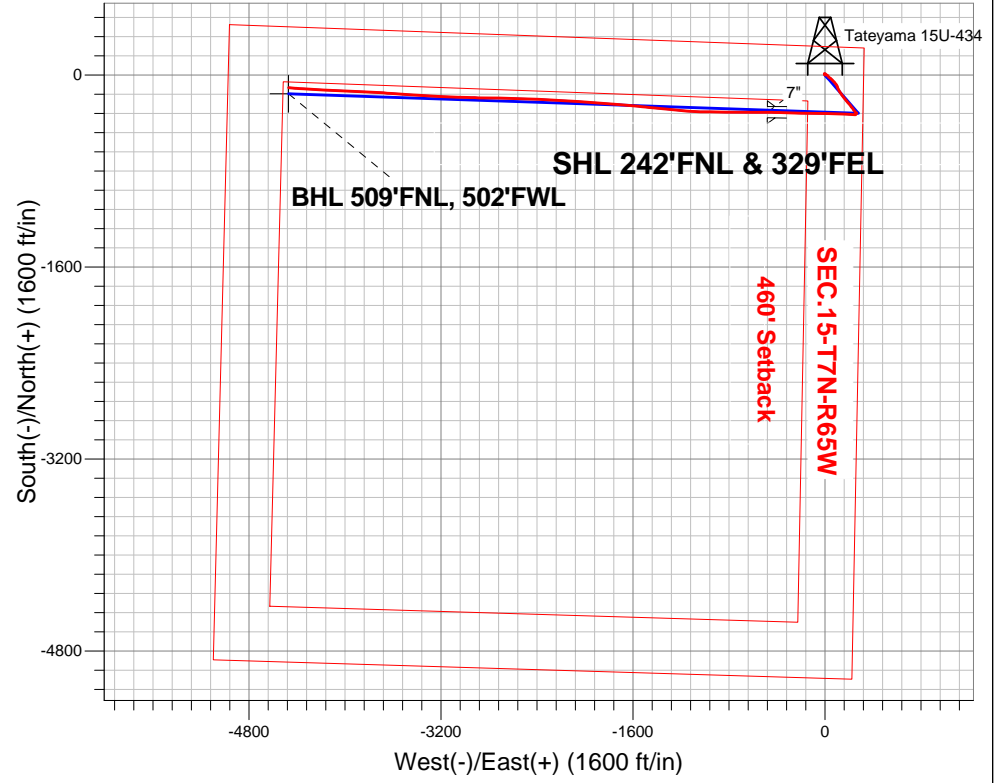
Surface Location: Tateyama 15U-434 Pad Sec.15-T7N-R65W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4857.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1455408.67	3238722.52	40.580320	-104.640560	
RKB - 15' WELL @ 4872.0ft (RKB - 15')						

FINAL SURVEY

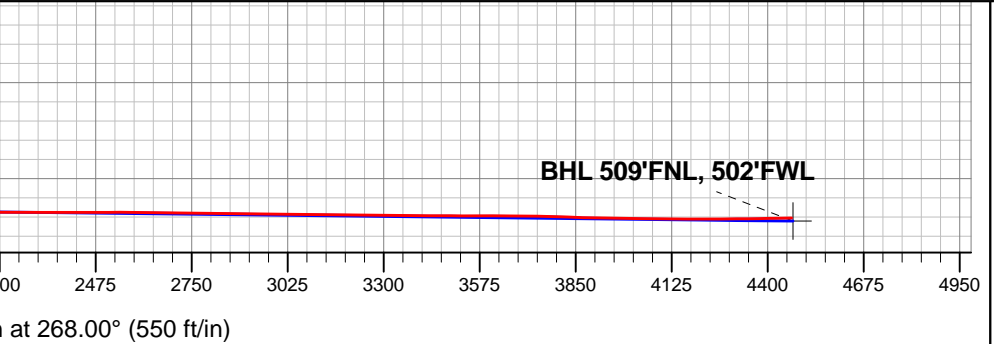
Projected Bottom Hole Location
 11625'MD 7263'TVD 105'S & 4467'W of SHL
 90.9 degree Incl @ 274.7 degree AZM



Tateyama 15U-434 Pad Sec.15-T7N-R65W
 Tateyama 15U-434
 Wellbore #1
 11:44, September 06 2013

ANNOTATIONS		
TVD	MD	Annotation
999.9	1000.0	KOP #1
6426.1	6453.2	KOP #2
7074.7	7227.0	End of Build

LEGEND	
	Tateyama 15U-434, Wellbore #1, Plan #1 (1-23-13) V0
	Wellbore #1
	Survey #1





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.15-T7N-R65W

Tateyama 15U-434 Pad Sec.15-T7N-R65W

Tateyama 15U-434

Wellbore #1

Survey: Survey #1

Standard Survey Report

06 September, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Tateyama 15U-434
Project:	SEC.15-T7N-R65W	TVD Reference:	WELL @ 4872.0ft (RKB - 15')
Site:	Tateyama 15U-434 Pad Sec.15-T7N-R65W	MD Reference:	WELL @ 4872.0ft (RKB - 15')
Well:	Tateyama 15U-434	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.15-T7N-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	Tateyama 15U-434 Pad Sec.15-T7N-R65W				
Site Position:		Northing:	1,455,408.67 ft	Latitude:	40.580320
From:	Lat/Long	Easting:	3,238,722.52 ft	Longitude:	-104.640560
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.56 °

Well	Tateyama 15U-434					
Well Position	+N/-S	0.0 ft	Northing:	1,455,408.67 ft	Latitude:	40.580320
	+E/-W	0.0 ft	Easting:	3,238,722.52 ft	Longitude:	-104.640560
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,857.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/26/2013	8.52	67.14	53,007

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	268.00	

Survey Program	Date	9/6/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
142.0	11,625.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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
142.0	0.60	319.30	142.0	0.6	-0.5	0.5	0.42	0.42	0.00
230.0	0.70	327.20	230.0	1.4	-1.1	1.0	0.15	0.11	8.98
321.0	0.70	331.60	321.0	2.3	-1.6	1.6	0.06	0.00	4.84
413.0	0.80	347.30	413.0	3.4	-2.1	1.9	0.25	0.11	17.07
506.0	0.90	347.00	506.0	4.8	-2.4	2.2	0.11	0.11	-0.32
597.0	0.80	349.30	597.0	6.1	-2.6	2.4	0.12	-0.11	2.53
692.0	1.10	341.40	691.9	7.6	-3.1	2.8	0.34	0.32	-8.32
783.0	0.80	339.70	782.9	9.0	-3.5	3.2	0.33	-0.33	-1.87
903.0	0.90	355.80	902.9	10.8	-3.9	3.5	0.21	0.08	13.42
973.0	0.70	337.40	972.9	11.7	-4.1	3.7	0.46	-0.29	-26.29
1,000.0	0.42	9.68	999.9	12.0	-4.2	3.7	1.53	-1.05	119.56

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Site:	Tateyama 15U-434 Pad Sec.15-T7N-R65W	MD Reference:	WELL @ 4872.0ft (RKB - 15')
Well:	Tateyama 15U-434	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)	
KOP #1										
1,065.0	0.90	99.80	1,064.9	12.1	-3.6	3.2	1.53	0.74	138.64	
1,157.0	2.90	118.50	1,156.9	10.9	-0.9	0.5	2.25	2.17	20.33	
1,251.0	5.00	118.00	1,250.6	7.8	4.8	-5.1	2.23	2.23	-0.53	
1,347.0	6.20	128.50	1,346.2	2.6	12.6	-12.7	1.64	1.25	10.94	
1,443.0	7.20	136.70	1,441.5	-5.0	20.8	-20.6	1.44	1.04	8.54	
1,538.0	7.40	134.80	1,535.7	-13.6	29.2	-28.7	0.33	0.21	-2.00	
1,633.0	7.20	128.80	1,630.0	-21.7	38.2	-37.4	0.83	-0.21	-6.32	
1,728.0	6.80	129.50	1,724.3	-29.0	47.2	-46.1	0.43	-0.42	0.74	
1,823.0	6.90	139.40	1,818.6	-36.9	55.2	-53.9	1.25	0.11	10.42	
1,918.0	6.60	135.60	1,912.9	-45.1	62.8	-61.1	0.57	-0.32	-4.00	
2,013.0	6.20	134.20	2,007.3	-52.6	70.3	-68.4	0.45	-0.42	-1.47	
2,108.0	5.60	133.30	2,101.8	-59.3	77.3	-75.2	0.64	-0.63	-0.95	
2,203.0	6.40	137.40	2,196.3	-66.4	84.3	-81.9	0.95	0.84	4.32	
2,299.0	6.40	146.10	2,291.7	-74.8	90.9	-88.2	1.01	0.00	9.06	
2,394.0	5.50	143.30	2,386.2	-82.8	96.5	-93.6	1.00	-0.95	-2.95	
2,489.0	5.50	159.30	2,480.8	-90.8	100.9	-97.6	1.61	0.00	16.84	
2,584.0	6.50	163.80	2,575.3	-100.2	104.0	-100.4	1.16	1.05	4.74	
2,679.0	6.80	153.30	2,669.6	-110.4	108.0	-104.1	1.32	0.32	-11.05	
2,774.0	7.90	152.20	2,763.8	-121.2	113.6	-109.3	1.17	1.16	-1.16	
2,869.0	7.40	153.00	2,858.0	-132.4	119.4	-114.7	0.54	-0.53	0.84	
2,964.0	8.30	145.80	2,952.1	-143.5	126.0	-120.9	1.40	0.95	-7.58	
3,059.0	7.80	145.70	3,046.2	-154.5	133.5	-128.0	0.53	-0.53	-0.11	
3,154.0	7.40	145.40	3,140.3	-164.9	140.6	-134.8	0.42	-0.42	-0.32	
3,250.0	7.50	138.60	3,235.5	-174.7	148.3	-142.1	0.92	0.10	-7.08	
3,345.0	8.50	144.50	3,329.6	-185.0	156.5	-149.9	1.36	1.05	6.21	
3,440.0	7.90	145.50	3,423.6	-196.1	164.2	-157.3	0.65	-0.63	1.05	
3,535.0	7.10	145.10	3,517.8	-206.3	171.3	-164.0	0.84	-0.84	-0.42	
3,630.0	6.80	140.90	3,612.1	-215.5	178.2	-170.6	0.62	-0.32	-4.42	
3,725.0	6.90	136.30	3,706.4	-224.0	185.7	-177.7	0.59	0.11	-4.84	
3,820.0	7.00	135.60	3,800.7	-232.3	193.7	-185.4	0.14	0.11	-0.74	
3,915.0	8.50	139.20	3,894.9	-241.7	202.3	-193.7	1.66	1.58	3.79	
4,011.0	8.60	143.60	3,989.8	-252.9	211.2	-202.2	0.69	0.10	4.58	
4,106.0	9.00	143.50	4,083.7	-264.5	219.8	-210.5	0.42	0.42	-0.11	
4,202.0	9.30	143.40	4,178.5	-276.8	228.9	-219.1	0.31	0.31	-0.10	
4,297.0	9.00	143.30	4,272.3	-288.9	238.0	-227.7	0.32	-0.32	-0.11	
4,392.0	7.70	139.90	4,366.2	-299.8	246.5	-235.9	1.46	-1.37	-3.58	
4,488.0	5.90	132.60	4,461.6	-308.0	254.3	-243.4	2.08	-1.88	-7.60	
4,583.0	3.90	139.20	4,556.2	-313.8	260.0	-248.9	2.18	-2.11	6.95	
4,678.0	1.90	135.50	4,651.1	-317.3	263.2	-251.9	2.11	-2.11	-3.89	
4,773.0	1.40	151.70	4,746.1	-319.5	264.8	-253.5	0.71	-0.53	17.05	
4,868.0	0.60	172.50	4,841.0	-321.0	265.5	-254.1	0.91	-0.84	21.89	
4,964.0	0.80	245.60	4,937.0	-321.8	264.9	-253.5	0.88	0.21	76.15	
5,059.0	1.00	277.20	5,032.0	-321.9	263.5	-252.1	0.55	0.21	33.26	
5,154.0	1.10	286.80	5,127.0	-321.6	261.8	-250.4	0.21	0.11	10.11	
5,249.0	1.30	284.40	5,222.0	-321.0	259.9	-248.5	0.22	0.21	-2.53	
5,344.0	1.50	269.40	5,317.0	-320.8	257.6	-246.2	0.44	0.21	-15.79	
5,439.0	0.40	150.60	5,411.9	-321.1	256.5	-245.1	1.82	-1.16	-125.05	
5,534.0	0.50	219.90	5,506.9	-321.7	256.4	-245.0	0.55	0.11	72.95	
5,629.0	0.60	259.30	5,601.9	-322.1	255.7	-244.2	0.40	0.11	41.47	
5,724.0	0.50	199.40	5,696.9	-322.6	255.0	-243.6	0.59	-0.11	-63.05	
5,819.0	0.30	163.70	5,791.9	-323.2	255.0	-243.5	0.33	-0.21	-37.58	
5,914.0	0.40	161.70	5,886.9	-323.8	255.1	-243.7	0.11	0.11	-2.11	

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Site:	Tateyama 15U-434 Pad Sec.15-T7N-R65W	MD Reference:	WELL @ 4872.0ft (RKB - 15')
Well:	Tateyama 15U-434	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)
6,009.0	0.30	218.00	5,981.9	-324.3	255.1	-243.6	0.36	-0.11	59.26
6,104.0	0.50	161.10	6,076.9	-324.9	255.1	-243.6	0.44	0.21	-59.89
6,199.0	0.80	180.30	6,171.9	-325.9	255.2	-243.7	0.39	0.32	20.21
6,294.0	0.70	189.60	6,266.9	-327.2	255.1	-243.5	0.17	-0.11	9.79
6,389.0	1.10	178.40	6,361.9	-328.6	255.0	-243.4	0.46	0.42	-11.79
6,423.0	1.10	180.90	6,395.9	-329.3	255.0	-243.4	0.14	0.00	7.35
6,453.2	1.20	183.83	6,426.1	-329.9	255.0	-243.3	0.38	0.32	9.70
KOP #2									
6,454.0	1.20	183.90	6,426.9	-329.9	255.0	-243.3	0.38	0.33	8.89
6,486.0	2.20	249.50	6,458.9	-330.5	254.4	-242.7	6.33	3.13	205.00
6,518.0	5.40	265.50	6,490.8	-330.8	252.3	-240.6	10.44	10.00	50.00
6,549.0	8.20	271.30	6,521.6	-330.9	248.7	-236.9	9.29	9.03	18.71
6,581.0	10.40	274.70	6,553.2	-330.6	243.5	-231.8	7.08	6.88	10.63
6,613.0	12.70	276.50	6,584.5	-329.9	237.1	-225.5	7.27	7.19	5.63
6,644.0	14.90	276.10	6,614.6	-329.1	229.8	-218.1	7.10	7.10	-1.29
6,676.0	17.20	274.20	6,645.4	-328.4	221.0	-209.4	7.37	7.19	-5.94
6,708.0	19.30	272.20	6,675.8	-327.8	211.0	-199.4	6.85	6.56	-6.25
6,740.0	21.40	271.80	6,705.8	-327.4	199.8	-188.3	6.58	6.56	-1.25
6,771.0	23.40	272.60	6,734.4	-327.0	188.0	-176.5	6.53	6.45	2.58
6,802.0	25.50	273.30	6,762.6	-326.3	175.2	-163.7	6.84	6.77	2.26
6,834.0	27.10	273.20	6,791.3	-325.5	161.1	-149.6	5.00	5.00	-0.31
6,866.0	29.40	273.00	6,819.5	-324.7	145.9	-134.5	7.19	7.19	-0.63
6,898.0	31.90	273.40	6,847.0	-323.8	129.7	-118.3	7.84	7.81	1.25
6,929.0	34.60	273.30	6,873.0	-322.8	112.7	-101.3	8.71	8.71	-0.32
6,961.0	37.70	272.40	6,898.8	-321.8	93.8	-82.5	9.83	9.69	-2.81
6,993.0	40.70	270.40	6,923.6	-321.4	73.6	-62.4	10.17	9.38	-6.25
7,024.0	43.30	269.10	6,946.6	-321.4	52.9	-41.6	8.84	8.39	-4.19
7,056.0	45.70	269.20	6,969.4	-321.8	30.5	-19.2	7.50	7.50	0.31
7,087.0	48.20	269.70	6,990.6	-322.0	7.8	3.4	8.15	8.06	1.61
7,119.0	50.50	270.40	7,011.5	-322.0	-16.5	27.7	7.38	7.19	2.19
7,151.0	52.70	271.00	7,031.3	-321.7	-41.5	52.8	7.03	6.88	1.88
7,183.0	54.70	271.30	7,050.3	-321.1	-67.3	78.5	6.30	6.25	0.94
7,214.0	56.90	272.00	7,067.7	-320.4	-92.9	104.1	7.34	7.10	2.26
7,227.0	57.63	272.16	7,074.7	-320.0	-103.9	115.0	5.72	5.62	1.26
End of Build									
7,246.0	58.70	272.40	7,084.7	-319.4	-120.0	131.1	5.72	5.63	1.24
7,278.0	60.60	272.40	7,100.9	-318.2	-147.6	158.6	5.94	5.94	0.00
7,309.0	62.60	271.60	7,115.7	-317.3	-174.8	185.8	6.84	6.45	-2.58
7,341.0	64.60	271.30	7,129.9	-316.5	-203.5	214.4	6.31	6.25	-0.94
7,373.0	66.30	271.40	7,143.2	-315.8	-232.6	243.5	5.32	5.31	0.31
7,404.0	68.40	271.60	7,155.1	-315.1	-261.2	272.0	6.80	6.77	0.65
7,436.0	71.30	271.40	7,166.1	-314.3	-291.2	302.0	9.08	9.06	-0.63
7,468.0	74.20	271.60	7,175.6	-313.5	-321.8	332.5	9.08	9.06	0.63
7,499.0	76.80	271.90	7,183.4	-312.6	-351.8	362.5	8.44	8.39	0.97
7,531.0	78.80	271.60	7,190.2	-311.6	-383.0	393.7	6.32	6.25	-0.94
7,563.0	80.70	271.30	7,195.8	-310.8	-414.5	425.1	6.01	5.94	-0.94
7,594.0	82.40	271.20	7,200.4	-310.2	-445.2	455.7	5.49	5.48	-0.32
7,629.0	83.25	270.40	7,204.8	-309.7	-479.9	490.4	3.31	2.42	-2.28
7"									
7,660.0	84.00	269.70	7,208.2	-309.7	-510.7	521.2	3.31	2.43	-2.27
7,690.0	83.90	270.10	7,211.4	-309.7	-540.5	551.0	1.37	-0.33	1.33
7,721.0	83.80	270.30	7,214.7	-309.6	-571.3	581.8	0.72	-0.32	0.65
7,751.0	84.30	269.60	7,217.8	-309.6	-601.2	611.6	2.86	1.67	-2.33

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Site:	Tateyama 15U-434 Pad Sec.15-T7N-R65W	MD Reference:	WELL @ 4872.0ft (RKB - 15')
Well:	Tateyama 15U-434	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)
7,782.0	85.10	269.60	7,220.7	-309.8	-632.0	642.5	2.58	2.58	0.00
7,812.0	86.00	269.20	7,223.0	-310.2	-662.0	672.4	3.28	3.00	-1.33
7,842.0	86.40	269.60	7,225.0	-310.5	-691.9	702.3	1.88	1.33	1.33
7,873.0	86.80	270.00	7,226.8	-310.6	-722.8	733.2	1.82	1.29	1.29
7,903.0	87.70	270.40	7,228.3	-310.5	-752.8	763.2	3.28	3.00	1.33
7,934.0	88.60	270.70	7,229.3	-310.2	-783.8	794.1	3.06	2.90	0.97
7,964.0	89.80	271.30	7,229.7	-309.7	-813.8	824.1	4.47	4.00	2.00
7,995.0	89.20	270.70	7,230.0	-309.1	-844.8	855.0	2.74	-1.94	-1.94
8,025.0	89.50	271.10	7,230.3	-308.6	-874.8	885.0	1.67	1.00	1.33
8,056.0	90.30	272.60	7,230.3	-307.6	-905.7	915.9	5.48	2.58	4.84
8,086.0	90.00	271.30	7,230.3	-306.6	-935.7	945.9	4.45	-1.00	-4.33
8,117.0	89.20	269.50	7,230.5	-306.4	-966.7	976.8	6.35	-2.58	-5.81
8,147.0	90.10	271.00	7,230.7	-306.3	-996.7	1,006.8	5.83	3.00	5.00
8,178.0	90.30	271.90	7,230.6	-305.5	-1,027.7	1,037.8	2.97	0.65	2.90
8,208.0	89.60	271.30	7,230.6	-304.7	-1,057.7	1,067.7	3.07	-2.33	-2.00
8,239.0	89.50	271.30	7,230.8	-304.0	-1,088.7	1,098.6	0.32	-0.32	0.00
8,269.0	89.80	272.90	7,231.0	-302.9	-1,118.7	1,128.6	5.43	1.00	5.33
8,300.0	90.60	275.00	7,230.9	-300.7	-1,149.6	1,159.4	7.25	2.58	6.77
8,330.0	91.40	276.10	7,230.4	-297.8	-1,179.4	1,189.1	4.53	2.67	3.67
8,361.0	90.50	276.50	7,229.9	-294.4	-1,210.3	1,219.8	3.18	-2.90	1.29
8,392.0	88.70	275.40	7,230.1	-291.2	-1,241.1	1,250.5	6.80	-5.81	-3.55
8,424.0	88.40	275.10	7,230.9	-288.3	-1,272.9	1,282.2	1.33	-0.94	-0.94
8,456.0	88.40	275.50	7,231.8	-285.3	-1,304.8	1,314.0	1.25	0.00	1.25
8,487.0	88.50	275.30	7,232.6	-282.4	-1,335.6	1,344.7	0.72	0.32	-0.65
8,519.0	88.20	275.50	7,233.5	-279.4	-1,367.5	1,376.4	1.13	-0.94	0.63
8,551.0	88.10	275.70	7,234.6	-276.3	-1,399.3	1,408.1	0.70	-0.31	0.63
8,583.0	88.30	275.90	7,235.6	-273.0	-1,431.1	1,439.8	0.88	0.63	0.63
8,614.0	88.40	276.10	7,236.5	-269.8	-1,462.0	1,470.5	0.72	0.32	0.65
8,646.0	88.40	276.70	7,237.4	-266.2	-1,493.7	1,502.1	1.87	0.00	1.88
8,678.0	87.90	275.50	7,238.4	-262.8	-1,525.5	1,533.8	4.06	-1.56	-3.75
8,709.0	88.00	275.20	7,239.5	-259.9	-1,556.4	1,564.5	1.02	0.32	-0.97
8,741.0	88.00	275.50	7,240.6	-257.0	-1,588.2	1,596.2	0.94	0.00	0.94
8,773.0	88.50	275.30	7,241.6	-254.0	-1,620.1	1,628.0	1.68	1.56	-0.63
8,805.0	88.90	274.70	7,242.3	-251.2	-1,651.9	1,659.7	2.25	1.25	-1.88
8,837.0	89.80	274.20	7,242.7	-248.7	-1,683.8	1,691.5	3.22	2.81	-1.56
8,868.0	89.90	274.00	7,242.8	-246.5	-1,714.8	1,722.3	0.72	0.32	-0.65
8,900.0	89.90	274.60	7,242.8	-244.1	-1,746.7	1,754.1	1.88	0.00	1.88
8,932.0	90.00	274.10	7,242.9	-241.6	-1,778.6	1,785.9	1.59	0.31	-1.56
8,964.0	89.80	274.10	7,242.9	-239.4	-1,810.5	1,817.8	0.63	-0.63	0.00
8,996.0	89.80	274.20	7,243.0	-237.0	-1,842.4	1,849.6	0.31	0.00	0.31
9,027.0	89.70	274.10	7,243.2	-234.8	-1,873.3	1,880.4	0.46	-0.32	-0.32
9,059.0	89.50	274.40	7,243.4	-232.4	-1,905.2	1,912.2	1.13	-0.63	0.94
9,091.0	89.50	274.30	7,243.7	-230.0	-1,937.1	1,944.0	0.31	0.00	-0.31
9,122.0	89.40	274.60	7,244.0	-227.6	-1,968.1	1,974.8	1.02	-0.32	0.97
9,154.0	89.30	274.70	7,244.3	-225.0	-1,999.9	2,006.6	0.44	-0.31	0.31
9,186.0	89.20	274.40	7,244.7	-222.5	-2,031.8	2,038.4	0.99	-0.31	-0.94
9,218.0	89.10	274.10	7,245.2	-220.1	-2,063.8	2,070.2	0.99	-0.31	-0.94
9,249.0	89.50	273.90	7,245.6	-217.9	-2,094.7	2,101.0	1.44	1.29	-0.65
9,281.0	89.60	274.70	7,245.9	-215.5	-2,126.6	2,132.8	2.52	0.31	2.50
9,313.0	89.30	273.20	7,246.2	-213.3	-2,158.5	2,164.6	4.78	-0.94	-4.69
9,344.0	89.50	272.90	7,246.5	-211.7	-2,189.5	2,195.5	1.16	0.65	-0.97
9,376.0	89.50	273.10	7,246.8	-210.0	-2,221.4	2,227.4	0.62	0.00	0.63
9,408.0	89.50	273.30	7,247.0	-208.2	-2,253.4	2,259.3	0.62	0.00	0.63

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Tateyama 15U-434
Project:	SEC.15-T7N-R65W	TVD Reference:	WELL @ 4872.0ft (RKB - 15')
Site:	Tateyama 15U-434 Pad Sec.15-T7N-R65W	MD Reference:	WELL @ 4872.0ft (RKB - 15')
Well:	Tateyama 15U-434	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)
9,440.0	90.00	272.30	7,247.2	-206.6	-2,285.3	2,291.1	3.49	1.56	-3.13
9,471.0	90.20	272.10	7,247.1	-205.5	-2,316.3	2,322.1	0.91	0.65	-0.65
9,503.0	90.20	272.50	7,247.0	-204.2	-2,348.3	2,354.0	1.25	0.00	1.25
9,535.0	90.00	272.60	7,247.0	-202.8	-2,380.2	2,385.9	0.70	-0.63	0.31
9,567.0	90.20	273.10	7,246.9	-201.2	-2,412.2	2,417.8	1.68	0.63	1.56
9,598.0	90.20	272.80	7,246.8	-199.6	-2,443.2	2,448.6	0.97	0.00	-0.97
9,630.0	90.00	271.80	7,246.7	-198.3	-2,475.1	2,480.6	3.19	-0.63	-3.13
9,662.0	90.10	271.70	7,246.7	-197.3	-2,507.1	2,512.5	0.44	0.31	-0.31
9,694.0	90.00	271.80	7,246.7	-196.3	-2,539.1	2,544.4	0.44	-0.31	0.31
9,726.0	89.80	271.70	7,246.7	-195.3	-2,571.1	2,576.3	0.70	-0.63	-0.31
9,757.0	89.00	270.90	7,247.1	-194.6	-2,602.1	2,607.3	3.65	-2.58	-2.58
9,789.0	89.00	271.00	7,247.6	-194.1	-2,634.1	2,639.2	0.31	0.00	0.31
9,821.0	89.10	271.70	7,248.2	-193.4	-2,666.1	2,671.2	2.21	0.31	2.19
9,853.0	89.20	270.80	7,248.6	-192.7	-2,698.0	2,703.1	2.83	0.31	-2.81
9,884.0	89.60	270.30	7,249.0	-192.4	-2,729.0	2,734.1	2.07	1.29	-1.61
9,915.0	89.50	270.90	7,249.2	-192.0	-2,760.0	2,765.1	1.96	-0.32	1.94
9,947.0	89.30	271.10	7,249.5	-191.5	-2,792.0	2,797.0	0.88	-0.63	0.63
9,979.0	89.30	270.80	7,249.9	-191.0	-2,824.0	2,829.0	0.94	0.00	-0.94
10,011.0	89.40	271.20	7,250.3	-190.4	-2,856.0	2,860.9	1.29	0.31	1.25
10,042.0	89.30	271.00	7,250.6	-189.8	-2,887.0	2,891.9	0.72	-0.32	-0.65
10,073.0	89.50	271.60	7,251.0	-189.1	-2,918.0	2,922.8	2.04	0.65	1.94
10,105.0	89.50	271.70	7,251.2	-188.2	-2,950.0	2,954.8	0.31	0.00	0.31
10,137.0	89.40	271.60	7,251.6	-187.3	-2,982.0	2,986.7	0.44	-0.31	-0.31
10,169.0	89.40	271.70	7,251.9	-186.3	-3,014.0	3,018.6	0.31	0.00	0.31
10,200.0	89.20	272.00	7,252.3	-185.3	-3,044.9	3,049.6	1.16	-0.65	0.97
10,232.0	89.20	271.80	7,252.7	-184.3	-3,076.9	3,081.5	0.62	0.00	-0.63
10,264.0	89.30	272.10	7,253.1	-183.2	-3,108.9	3,113.4	0.99	0.31	0.94
10,295.0	89.20	272.30	7,253.5	-182.0	-3,139.9	3,144.3	0.72	-0.32	0.65
10,327.0	89.20	272.50	7,254.0	-180.7	-3,171.8	3,176.2	0.62	0.00	0.63
10,359.0	89.10	272.80	7,254.5	-179.2	-3,203.8	3,208.1	0.99	-0.31	0.94
10,390.0	89.30	272.80	7,254.9	-177.7	-3,234.8	3,239.0	0.65	0.65	0.00
10,422.0	89.60	272.90	7,255.2	-176.1	-3,266.7	3,270.9	0.99	0.94	0.31
10,454.0	89.70	273.30	7,255.4	-174.3	-3,298.7	3,302.8	1.29	0.31	1.25
10,486.0	89.80	273.40	7,255.5	-172.5	-3,330.6	3,334.6	0.44	0.31	0.31
10,517.0	89.70	274.00	7,255.7	-170.5	-3,361.6	3,365.5	1.96	-0.32	1.94
10,549.0	89.60	273.80	7,255.9	-168.3	-3,393.5	3,397.3	0.70	-0.31	-0.63
10,581.0	89.70	273.30	7,256.1	-166.3	-3,425.4	3,429.1	1.59	0.31	-1.56
10,612.0	89.60	274.00	7,256.2	-164.3	-3,456.4	3,460.0	2.28	-0.32	2.26
10,644.0	89.70	273.80	7,256.4	-162.2	-3,488.3	3,491.8	0.70	0.31	-0.63
10,676.0	89.70	274.00	7,256.6	-160.0	-3,520.2	3,523.6	0.62	0.00	0.63
10,707.0	89.80	274.40	7,256.7	-157.7	-3,551.1	3,554.5	1.33	0.32	1.29
10,739.0	89.90	273.90	7,256.8	-155.4	-3,583.0	3,586.3	1.59	0.31	-1.56
10,771.0	89.80	274.00	7,256.9	-153.2	-3,615.0	3,618.1	0.44	-0.31	0.31
10,803.0	89.90	273.90	7,257.0	-151.0	-3,646.9	3,649.9	0.44	0.31	-0.31
10,834.0	89.90	274.00	7,257.1	-148.9	-3,677.8	3,680.8	0.32	0.00	0.32
10,866.0	89.90	273.50	7,257.1	-146.8	-3,709.7	3,712.6	1.56	0.00	-1.56
10,898.0	88.00	273.10	7,257.7	-144.9	-3,741.7	3,744.5	6.07	-5.94	-1.25
10,929.0	87.80	273.20	7,258.8	-143.2	-3,772.6	3,775.3	0.72	-0.65	0.32
10,961.0	88.50	272.90	7,259.9	-141.5	-3,804.6	3,807.2	2.38	2.19	-0.94
10,993.0	88.30	272.10	7,260.8	-140.1	-3,836.5	3,839.1	2.58	-0.63	-2.50
11,024.0	88.50	272.30	7,261.6	-138.9	-3,867.5	3,870.0	0.91	0.65	0.65
11,056.0	88.60	273.00	7,262.4	-137.4	-3,899.4	3,901.9	2.21	0.31	2.19
11,088.0	88.70	273.20	7,263.2	-135.7	-3,931.4	3,933.7	0.70	0.31	0.63

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Tateyama 15U-434
Project:	SEC.15-T7N-R65W	TVD Reference:	WELL @ 4872.0ft (RKB - 15')
Site:	Tateyama 15U-434 Pad Sec.15-T7N-R65W	MD Reference:	WELL @ 4872.0ft (RKB - 15')
Well:	Tateyama 15U-434	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
11,120.0	89.30	272.30	7,263.7	-134.2	-3,963.3	3,965.6	3.38	1.88	-2.81
11,151.0	89.30	272.40	7,264.1	-132.9	-3,994.3	3,996.5	0.32	0.00	0.32
11,183.0	89.30	272.20	7,264.5	-131.6	-4,026.3	4,028.4	0.62	0.00	-0.63
11,215.0	89.30	272.50	7,264.9	-130.3	-4,058.2	4,060.3	0.94	0.00	0.94
11,246.0	89.30	273.20	7,265.3	-128.8	-4,089.2	4,091.2	2.26	0.00	2.26
11,278.0	89.20	273.20	7,265.7	-127.0	-4,121.2	4,123.1	0.31	-0.31	0.00
11,310.0	89.40	272.60	7,266.1	-125.4	-4,153.1	4,155.0	1.98	0.63	-1.88
11,341.0	90.20	272.50	7,266.2	-124.0	-4,184.1	4,185.9	2.60	2.58	-0.32
11,373.0	90.30	273.40	7,266.1	-122.3	-4,216.0	4,217.7	2.83	0.31	2.81
11,405.0	90.40	273.20	7,265.9	-120.5	-4,248.0	4,249.6	0.70	0.31	-0.63
11,437.0	90.50	273.30	7,265.6	-118.7	-4,279.9	4,281.5	0.44	0.31	0.31
11,468.0	90.60	273.60	7,265.3	-116.8	-4,310.9	4,312.3	1.02	0.32	0.97
11,500.0	90.80	274.00	7,264.9	-114.7	-4,342.8	4,344.2	1.40	0.63	1.25
11,532.0	90.90	274.30	7,264.5	-112.4	-4,374.7	4,376.0	0.99	0.31	0.94
11,563.0	90.90	274.70	7,264.0	-110.0	-4,405.6	4,406.8	1.29	0.00	1.29
11,571.0	90.90	274.70	7,263.8	-109.3	-4,413.6	4,414.7	0.00	0.00	0.00
11,622.7	90.90	274.70	7,263.0	-105.1	-4,465.1	4,466.1	0.00	0.00	0.00
BHL 560'FNL, 500'FWL									
11,625.0	90.90	274.70	7,263.0	-104.9	-4,467.4	4,468.3	0.00	0.00	0.00

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,629.0	7,204.8	7"	7	7-1/2

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	999.9	12.0	-4.2	KOP #1
6,453.2	6,426.1	-329.9	255.0	KOP #2
7,227.0	7,074.7	-320.0	-103.9	End of Build

Checked By: _____ Approved By: _____ Date: _____