



## Final Survey Plot

Projected Final Survey -  
7580'MD & 7522'TVD @ 653'VS  
0.3 deg Inc 21.0 deg AZ

Project: SEC.18-T2N-R65W  
 Site: Hudco 9-18 Pad Sec.18-T2N-R65W  
 Well: Hudco 40-18  
 Plan: Wellbore #1



## **Directional**

### **Anadarko, Weld County CO**

**SEC.18-T2N-R65W**

**Hudco 9-18 Pad Sec.18-T2N-R65W**

**Hudco 40-18**

**Wellbore #1**

**Survey: Survey #1**

### **Standard Survey Report**

**04 August, 2011**

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hudco 40-18
<b>Project:</b>	SEC.18-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4996.0ft (Original Well Elev)
<b>Site:</b>	Hudco 9-18 Pad Sec.18-T2N-R65W	<b>MD Reference:</b>	WELL @ 4996.0ft (Original Well Elev)
<b>Well:</b>	Hudco 40-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.18-T2N-R65W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site	Hudco 9-18 Pad Sec.18-T2N-R65W				
Site Position:		Northing:	1,293,849.26ft	Latitude:	40.137235
From:	Lat/Long	Easting:	3,223,888.30ft	Longitude:	-104.699215
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.52 °

Well	Hudco 40-18					
Well Position	+N/-S	0.0 ft	Northing:	1,293,840.99 ft	Latitude:	40.137212
	+E/-W	0.0 ft	Easting:	3,223,901.79 ft	Longitude:	-104.699167
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,982.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/15/2011	8.84	66.86	53,026

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	44.75	

<b>Survey Program</b>	<b>Date</b>	8/4/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
144.0	7,580.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
144.0	0.90	112.60	144.0	-0.4	1.0	0.4	0.63	0.63	0.00	
233.0	1.40	99.10	233.0	-0.9	2.8	1.3	0.64	0.56	-15.17	
324.0	1.90	59.10	323.9	-0.3	5.2	3.4	1.34	0.55	-43.96	
415.0	2.80	51.90	414.9	1.9	8.2	7.1	1.04	0.99	-7.91	
507.0	3.80	43.40	506.7	5.5	12.1	12.4	1.21	1.09	-9.24	
599.0	4.30	43.60	598.5	10.2	16.5	18.9	0.54	0.54	0.22	
691.0	4.40	42.00	690.2	15.3	21.3	25.8	0.17	0.11	-1.74	
783.0	4.50	44.40	781.9	20.5	26.2	33.0	0.23	0.11	2.61	
875.0	4.60	43.30	873.6	25.8	31.2	40.3	0.14	0.11	-1.20	
926.0	4.30	41.50	924.5	28.7	33.9	44.2	0.65	-0.59	-3.53	
1,014.0	3.80	42.20	1,012.3	33.3	38.0	50.4	0.57	-0.57	0.80	
1,109.0	4.50	45.50	1,107.0	38.3	42.8	57.3	0.78	0.74	3.47	

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hudco 40-18
<b>Project:</b>	SEC.18-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4996.0ft (Original Well Elev)
<b>Site:</b>	Hudco 9-18 Pad Sec.18-T2N-R65W	<b>MD Reference:</b>	WELL @ 4996.0ft (Original Well Elev)
<b>Well:</b>	Hudco 40-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
1,205.0	4.40	50.10	1,202.7	43.3	48.3	64.7	0.39	-0.10	4.79
1,300.0	4.50	51.10	1,297.4	47.9	54.0	72.1	0.13	0.11	1.05
1,395.0	5.20	56.20	1,392.1	52.7	60.5	80.0	0.86	0.74	5.37
1,490.0	8.30	60.30	1,486.4	58.5	70.0	90.8	3.30	3.26	4.32
1,585.0	10.40	59.40	1,580.2	66.2	83.4	105.7	2.22	2.21	-0.95
1,680.0	12.90	52.60	1,673.2	77.0	99.2	124.5	3.00	2.63	-7.16
1,775.0	13.10	41.90	1,765.8	91.5	114.8	145.8	2.54	0.21	-11.26
1,871.0	12.70	38.40	1,859.4	107.9	128.6	167.1	0.91	-0.42	-3.65
1,966.0	12.40	37.80	1,952.1	124.1	141.3	187.7	0.34	-0.32	-0.63
2,061.0	12.30	39.70	2,044.9	140.0	154.1	207.9	0.44	-0.11	2.00
2,156.0	11.80	40.00	2,137.8	155.2	166.8	227.6	0.53	-0.53	0.32
2,251.0	11.50	41.80	2,230.9	169.7	179.3	246.8	0.50	-0.32	1.89
2,348.0	11.00	44.50	2,326.0	183.5	192.3	265.7	0.75	-0.52	2.78
2,444.0	9.90	47.70	2,420.4	195.6	204.8	283.1	1.30	-1.15	3.33
2,539.0	8.90	49.30	2,514.1	205.9	216.4	298.5	1.09	-1.05	1.68
2,634.0	8.30	56.20	2,608.1	214.5	227.7	312.6	1.26	-0.63	7.26
2,729.0	9.10	63.10	2,702.0	221.7	240.1	326.4	1.38	0.84	7.26
2,825.0	9.30	58.30	2,796.7	229.2	253.4	341.2	0.83	0.21	-5.00
2,920.0	8.30	59.40	2,890.6	236.7	265.9	355.3	1.07	-1.05	1.16
3,015.0	5.60	42.90	2,984.9	243.6	274.9	366.6	3.51	-2.84	-17.37
3,110.0	10.20	25.50	3,079.0	254.6	281.7	379.1	5.40	4.84	-18.32
3,205.0	12.00	25.90	3,172.2	271.1	289.6	396.4	1.90	1.89	0.42
3,301.0	11.80	27.10	3,266.2	288.8	298.5	415.2	0.33	-0.21	1.25
3,396.0	11.90	26.10	3,359.1	306.2	307.2	433.8	0.24	0.11	-1.05
3,491.0	13.30	26.70	3,451.8	324.8	316.4	453.4	1.48	1.47	0.63
3,586.0	11.80	29.80	3,544.6	343.0	326.2	473.2	1.73	-1.58	3.26
3,681.0	11.90	29.80	3,637.5	359.9	335.9	492.1	0.11	0.11	0.00
3,776.0	12.40	33.50	3,730.4	376.9	346.4	511.5	0.97	0.53	3.89
3,871.0	12.60	43.60	3,823.2	392.9	359.1	531.9	2.31	0.21	10.63
3,967.0	12.50	47.30	3,916.9	407.6	374.0	552.7	0.84	-0.10	3.85
4,062.0	11.00	43.60	4,009.9	421.1	387.8	572.1	1.77	-1.58	-3.89
4,157.0	10.20	58.30	4,103.3	432.1	401.2	589.3	2.96	-0.84	15.47
4,252.0	9.50	57.40	4,196.9	440.7	415.0	605.1	0.75	-0.74	-0.95
4,347.0	8.20	66.80	4,290.8	447.6	427.8	619.1	2.04	-1.37	9.89
4,442.0	5.10	63.30	4,385.1	452.2	437.8	629.4	3.29	-3.26	-3.68
4,538.0	3.10	29.70	4,480.9	456.4	442.9	635.9	3.17	-2.08	-35.00
4,633.0	0.30	28.90	4,575.8	458.8	444.3	638.6	2.95	-2.95	-0.84
4,728.0	0.70	319.50	4,670.8	459.5	444.0	638.9	0.69	0.42	-73.05
4,823.0	1.10	313.50	4,765.8	460.5	443.0	639.0	0.43	0.42	-6.32
4,918.0	1.10	294.60	4,860.8	461.6	441.5	638.6	0.38	0.00	-19.89
5,013.0	1.10	263.60	4,955.8	461.8	439.8	637.6	0.62	0.00	-32.63
5,056.9	1.11	249.50	4,999.6	461.6	439.0	636.9	0.62	0.02	-32.15
TARGET BHL 2600'FSL, 50'FEL									
5,109.0	1.20	234.10	5,051.7	461.1	438.0	635.9	0.62	0.18	-29.53
5,204.0	0.60	213.80	5,146.7	460.1	437.0	634.4	0.71	-0.63	-21.37
5,298.0	0.80	244.50	5,240.7	459.5	436.1	633.3	0.44	0.21	32.66
5,393.0	0.70	232.00	5,335.7	458.8	435.0	632.1	0.20	-0.11	-13.16
5,488.0	0.10	118.40	5,430.7	458.4	434.7	631.6	0.78	-0.63	-119.58
5,584.0	0.20	130.50	5,526.7	458.3	434.9	631.6	0.11	0.10	12.60
5,679.0	0.40	106.50	5,621.7	458.1	435.3	631.8	0.24	0.21	-25.26
5,774.0	0.40	81.20	5,716.7	458.0	435.9	632.2	0.18	0.00	-26.63
5,869.0	0.40	64.30	5,811.7	458.2	436.6	632.8	0.12	0.00	-17.79
5,964.0	1.60	59.00	5,906.7	459.0	438.0	634.4	1.27	1.26	-5.58
6,059.0	1.30	64.70	6,001.7	460.2	440.1	636.7	0.35	-0.32	6.00

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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)
6,154.0	1.40	55.60	6,096.6	461.3	442.0	638.8	0.25	0.11	-9.58
6,250.0	1.60	42.80	6,192.6	462.9	443.9	641.3	0.41	0.21	-13.33
6,345.0	1.10	57.40	6,287.6	464.4	445.6	643.5	0.63	-0.53	15.37
6,440.0	1.20	49.40	6,382.6	465.5	447.1	645.4	0.20	0.11	-8.42
6,535.0	1.10	39.30	6,477.5	466.9	448.5	647.3	0.24	-0.11	-10.63
6,630.0	1.00	19.00	6,572.5	468.4	449.3	649.0	0.40	-0.11	-21.37
6,725.0	0.70	347.60	6,667.5	469.7	449.4	650.0	0.57	-0.32	-33.05
6,821.0	0.40	329.10	6,763.5	470.6	449.1	650.4	0.36	-0.31	-19.27
6,916.0	0.40	333.90	6,858.5	471.2	448.8	650.6	0.04	0.00	5.05
7,011.0	0.20	359.40	6,953.5	471.6	448.7	650.8	0.25	-0.21	26.84
7,106.0	0.40	338.00	7,048.5	472.1	448.6	651.1	0.24	0.21	-22.53
7,149.2	0.98	321.41	7,091.7	472.6	448.3	651.2	1.41	1.34	-38.36
<b>TARGET CIRCLE 2600'FSL &amp; 50'FEL</b>									
7,201.0	1.70	316.80	7,143.5	473.5	447.5	651.3	1.41	1.39	-8.91
7,297.0	0.50	26.40	7,239.5	474.9	446.7	651.7	1.66	-1.25	72.50
7,392.0	0.40	357.50	7,334.5	475.6	446.9	652.3	0.26	-0.11	-30.42
7,530.0	0.30	21.00	7,472.5	476.4	447.0	653.0	0.13	-0.07	17.03
7,579.9	0.30	21.00	7,522.4	476.6	447.1	653.2	0.00	0.00	0.00
<b>HARD LINES 71'N &amp; 50'E OF BHL</b>									
7,580.0	0.30	21.00	7,522.5	476.6	447.1	653.2	0.00	0.00	0.00

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_