

ENSIGN

Directional

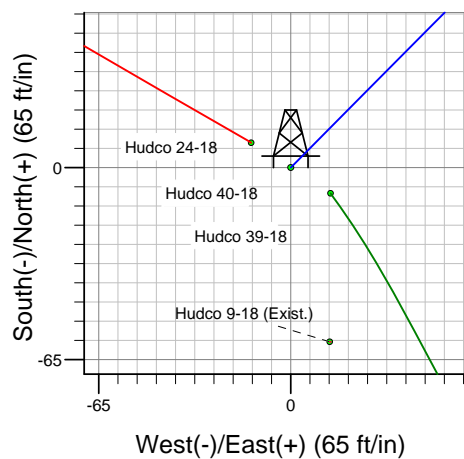
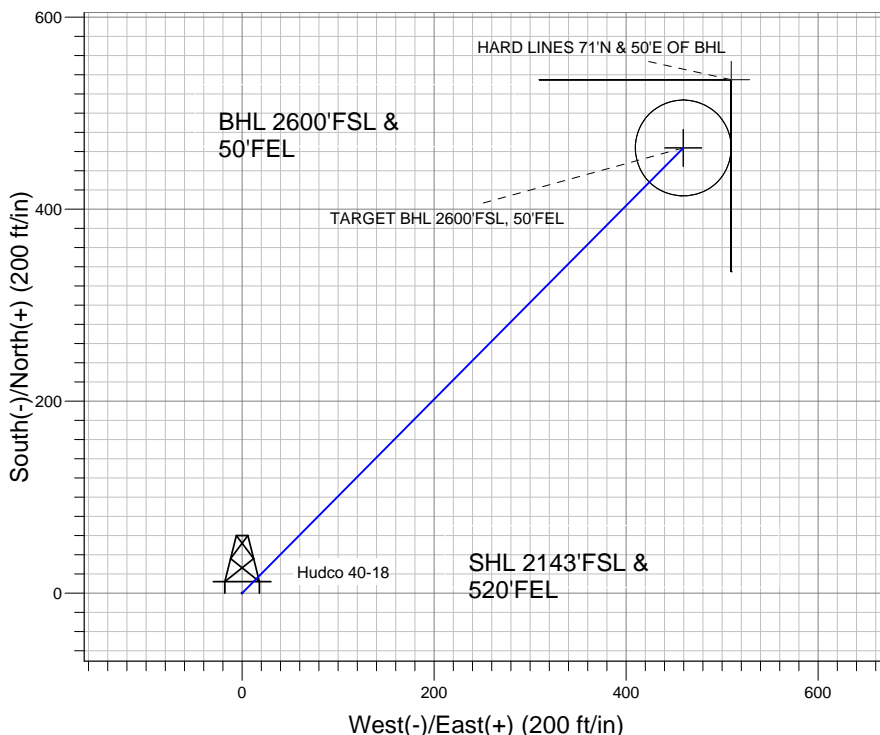
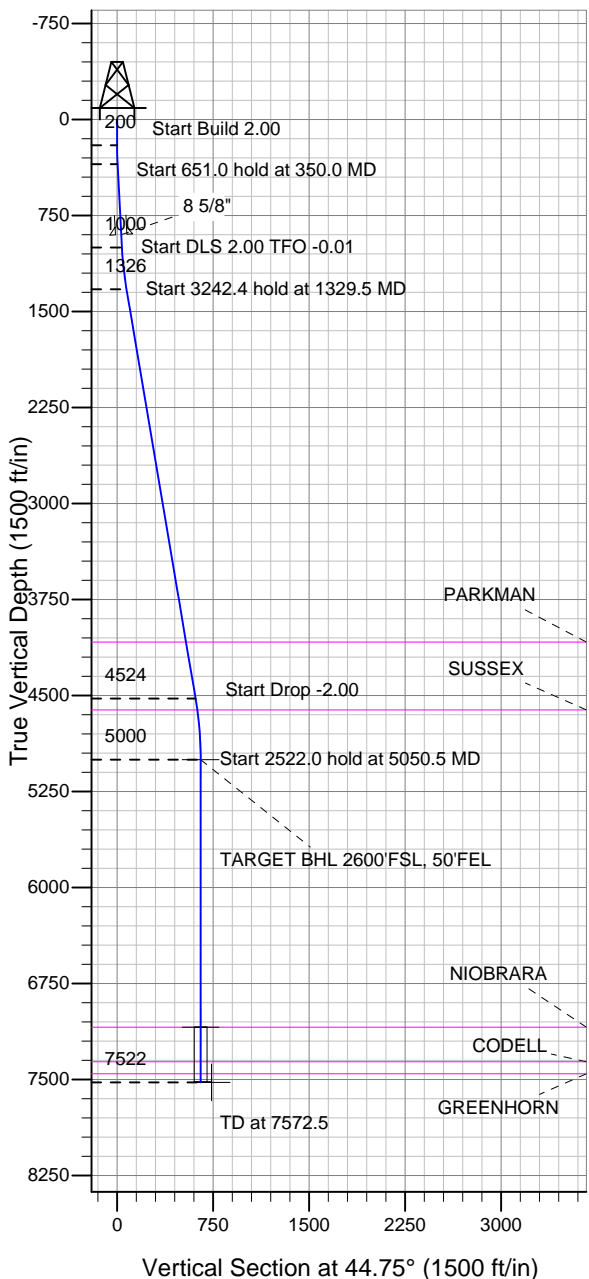
Well Name: Hudco 40-18

Surface Location: Hudco 9-18 Pad Sec.18-T2N-R65W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4982.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1293840.99	3223901.79	40.137212	-104.699167	

Original Well Elev WELL @ 4996.0ft (Original Well Elev)

Anadarko, Weld County CO



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4082.0	4124.0	PARKMAN
4612.0	4661.3	SUSSEX
7092.0	7142.5	NIOBRARA
7362.0	7412.5	CODELL
7455.0	7505.5	GREENHORN



Azimuths to True North
 Magnetic North: 8.84°

Magnetic Field
 Strength: 53025.6snT
 Dip Angle: 66.86°
 Date: 3/15/2011
 Model: IGRF2010

Well Name: Hudco 40-18 Lat/Long: 40.137212 -104.699167

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 2600'FSL, 50'FEL	5000.0	463.8	459.7	40.138485	-104.697523	Point
TARGET CIRCLE 2600'FSL & 50'FEL	7092.0	463.8	459.7	40.138485	-104.697523	Circle (Radius: 50.0)
HARD LINES 71°N & 50°E OF BHL	7522.0	534.8	509.7	40.138680	-104.697344	Polygon

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	350.0	3.00	44.75	349.9	2.8	2.8	2.00	44.75	3.9	
4	1001.0	3.00	44.75	1000.0	27.0	26.7	0.00	0.00	38.0	
5	1329.5	9.57	44.74	1326.4	52.5	52.1	2.00	-0.01	73.9	
6	4571.9	9.57	44.74	4523.6	435.4	431.6	0.00	0.00	613.1	
7	5050.5	0.00	0.00	5000.0	463.8	459.7	2.00	180.00	653.0	TARGET BHL 2600'FSL, 50'FEL
8	7572.5	0.00	0.00	7522.0	463.8	459.7	0.00	0.00	653.0	

CASING DETAILS

TVD	MD	Name	Size
900.0	900.8	8 5/8"	8-5/8

Hudco 9-18 Pad Sec.18-T2N-R65W
 Hudco 40-18
 Plan #1 (3-15-11)
 15:16, March 17 2011



Anadarko, Weld County CO

SEC.18-T2N-R65W

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

Hudco 40-18

Wellbore #1

Plan: Plan #1 (3-15-11)

Standard Planning Report

17 March, 2011



Database:	Landmark	Local Co-ordinate Reference:	Well Hudco 40-18
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Project:	SEC.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	North Reference:	True
Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-11)		

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

Well	Hudco 40-18					
Well Position	+N/-S	-8.4 ft	Northing:	1,293,840.99 ft	Latitude:	40.137212
	+E/-W	13.4 ft	Easting:	3,223,901.79 ft	Longitude:	-104.699167
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,982.0 ft

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

Design	Plan #1 (3-15-11)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	44.75

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
350.0	3.00	44.75	349.9	2.8	2.8	2.00	2.00	0.00	44.75	
1,001.0	3.00	44.75	1,000.0	27.0	26.7	0.00	0.00	0.00	0.00	
1,329.5	9.57	44.74	1,326.4	52.5	52.1	2.00	2.00	0.00	-0.01	
4,571.9	9.57	44.74	4,523.6	435.4	431.6	0.00	0.00	0.00	0.00	
5,050.5	0.00	0.00	5,000.0	463.8	459.7	2.00	-2.00	0.00	180.00	TARGET BHL 260C
7,572.5	0.00	0.00	7,522.0	463.8	459.7	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Hudco 40-18
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Project:	SEC.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	North Reference:	True
Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-11)		

Planned 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
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.80	44.75	240.0	0.2	0.2	0.3	2.00	2.00	0.00
280.0	1.60	44.75	280.0	0.8	0.8	1.1	2.00	2.00	0.00
320.0	2.40	44.75	320.0	1.8	1.8	2.5	2.00	2.00	0.00
350.0	3.00	44.75	349.9	2.8	2.8	3.9	2.00	2.00	0.00
360.0	3.00	44.75	359.9	3.2	3.1	4.4	0.00	0.00	0.00
400.0	3.00	44.75	399.9	4.6	4.6	6.5	0.00	0.00	0.00
440.0	3.00	44.75	439.8	6.1	6.1	8.6	0.00	0.00	0.00
480.0	3.00	44.75	479.8	7.6	7.6	10.7	0.00	0.00	0.00
520.0	3.00	44.75	519.7	9.1	9.0	12.8	0.00	0.00	0.00
560.0	3.00	44.75	559.6	10.6	10.5	14.9	0.00	0.00	0.00
600.0	3.00	44.75	599.6	12.1	12.0	17.0	0.00	0.00	0.00
640.0	3.00	44.75	639.5	13.6	13.4	19.1	0.00	0.00	0.00
680.0	3.00	44.75	679.5	15.1	14.9	21.2	0.00	0.00	0.00
720.0	3.00	44.75	719.4	16.5	16.4	23.3	0.00	0.00	0.00
760.0	3.00	44.75	759.4	18.0	17.9	25.4	0.00	0.00	0.00
800.0	3.00	44.75	799.3	19.5	19.3	27.5	0.00	0.00	0.00
840.0	3.00	44.75	839.3	21.0	20.8	29.6	0.00	0.00	0.00
880.0	3.00	44.75	879.2	22.5	22.3	31.7	0.00	0.00	0.00
900.8	3.00	44.75	900.0	23.3	23.1	32.8	0.00	0.00	0.00
8 5/8"									
920.0	3.00	44.75	919.2	24.0	23.8	33.8	0.00	0.00	0.00
960.0	3.00	44.75	959.1	25.5	25.2	35.9	0.00	0.00	0.00
1,000.0	3.00	44.75	999.0	26.9	26.7	37.9	0.00	0.00	0.00
1,001.0	3.00	44.75	1,000.0	27.0	26.7	38.0	0.00	0.00	0.00
1,040.0	3.78	44.75	1,039.0	28.6	28.4	40.3	2.00	2.00	0.00
1,080.0	4.58	44.75	1,078.9	30.7	30.4	43.2	2.00	2.00	0.00
1,120.0	5.38	44.75	1,118.7	33.2	32.9	46.7	2.00	2.00	0.00
1,160.0	6.18	44.75	1,158.5	36.0	35.7	50.7	2.00	2.00	0.00
1,200.0	6.98	44.75	1,198.2	39.3	38.9	55.3	2.00	2.00	0.00
1,240.0	7.78	44.75	1,237.9	42.9	42.6	60.4	2.00	2.00	0.00
1,280.0	8.58	44.75	1,277.5	47.0	46.6	66.1	2.00	2.00	0.00
1,320.0	9.38	44.74	1,317.0	51.4	51.0	72.4	2.00	2.00	0.00
1,329.5	9.57	44.74	1,326.4	52.5	52.1	73.9	2.00	2.00	0.00
1,360.0	9.57	44.74	1,356.5	56.1	55.6	79.0	0.00	0.00	0.00
1,400.0	9.57	44.74	1,395.9	60.8	60.3	85.7	0.00	0.00	0.00
1,440.0	9.57	44.74	1,435.3	65.6	65.0	92.3	0.00	0.00	0.00
1,480.0	9.57	44.74	1,474.8	70.3	69.7	99.0	0.00	0.00	0.00
1,520.0	9.57	44.74	1,514.2	75.0	74.4	105.6	0.00	0.00	0.00
1,560.0	9.57	44.74	1,553.7	79.7	79.0	112.3	0.00	0.00	0.00
1,600.0	9.57	44.74	1,593.1	84.5	83.7	118.9	0.00	0.00	0.00
1,640.0	9.57	44.74	1,632.6	89.2	88.4	125.6	0.00	0.00	0.00
1,680.0	9.57	44.74	1,672.0	93.9	93.1	132.2	0.00	0.00	0.00
1,720.0	9.57	44.74	1,711.4	98.6	97.8	138.9	0.00	0.00	0.00
1,760.0	9.57	44.74	1,750.9	103.4	102.4	145.5	0.00	0.00	0.00
1,800.0	9.57	44.74	1,790.3	108.1	107.1	152.2	0.00	0.00	0.00
1,840.0	9.57	44.74	1,829.8	112.8	111.8	158.8	0.00	0.00	0.00
1,880.0	9.57	44.74	1,869.2	117.5	116.5	165.5	0.00	0.00	0.00
1,920.0	9.57	44.74	1,908.7	122.3	121.2	172.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Hudco 40-18
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Project:	SEC.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	North Reference:	True
Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-11)		

Planned 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)
1,960.0	9.57	44.74	1,948.1	127.0	125.9	178.8	0.00	0.00	0.00
2,000.0	9.57	44.74	1,987.6	131.7	130.5	185.4	0.00	0.00	0.00
2,040.0	9.57	44.74	2,027.0	136.4	135.2	192.1	0.00	0.00	0.00
2,080.0	9.57	44.74	2,066.4	141.1	139.9	198.7	0.00	0.00	0.00
2,120.0	9.57	44.74	2,105.9	145.9	144.6	205.4	0.00	0.00	0.00
2,160.0	9.57	44.74	2,145.3	150.6	149.3	212.0	0.00	0.00	0.00
2,200.0	9.57	44.74	2,184.8	155.3	153.9	218.7	0.00	0.00	0.00
2,240.0	9.57	44.74	2,224.2	160.0	158.6	225.3	0.00	0.00	0.00
2,280.0	9.57	44.74	2,263.7	164.8	163.3	232.0	0.00	0.00	0.00
2,320.0	9.57	44.74	2,303.1	169.5	168.0	238.6	0.00	0.00	0.00
2,360.0	9.57	44.74	2,342.5	174.2	172.7	245.3	0.00	0.00	0.00
2,400.0	9.57	44.74	2,382.0	178.9	177.4	251.9	0.00	0.00	0.00
2,440.0	9.57	44.74	2,421.4	183.7	182.0	258.6	0.00	0.00	0.00
2,480.0	9.57	44.74	2,460.9	188.4	186.7	265.2	0.00	0.00	0.00
2,520.0	9.57	44.74	2,500.3	193.1	191.4	271.9	0.00	0.00	0.00
2,560.0	9.57	44.74	2,539.8	197.8	196.1	278.5	0.00	0.00	0.00
2,600.0	9.57	44.74	2,579.2	202.6	200.8	285.2	0.00	0.00	0.00
2,640.0	9.57	44.74	2,618.6	207.3	205.5	291.9	0.00	0.00	0.00
2,680.0	9.57	44.74	2,658.1	212.0	210.1	298.5	0.00	0.00	0.00
2,720.0	9.57	44.74	2,697.5	216.7	214.8	305.2	0.00	0.00	0.00
2,760.0	9.57	44.74	2,737.0	221.5	219.5	311.8	0.00	0.00	0.00
2,800.0	9.57	44.74	2,776.4	226.2	224.2	318.5	0.00	0.00	0.00
2,840.0	9.57	44.74	2,815.9	230.9	228.9	325.1	0.00	0.00	0.00
2,880.0	9.57	44.74	2,855.3	235.6	233.5	331.8	0.00	0.00	0.00
2,920.0	9.57	44.74	2,894.7	240.4	238.2	338.4	0.00	0.00	0.00
2,960.0	9.57	44.74	2,934.2	245.1	242.9	345.1	0.00	0.00	0.00
3,000.0	9.57	44.74	2,973.6	249.8	247.6	351.7	0.00	0.00	0.00
3,040.0	9.57	44.74	3,013.1	254.5	252.3	358.4	0.00	0.00	0.00
3,080.0	9.57	44.74	3,052.5	259.2	257.0	365.0	0.00	0.00	0.00
3,120.0	9.57	44.74	3,092.0	264.0	261.6	371.7	0.00	0.00	0.00
3,160.0	9.57	44.74	3,131.4	268.7	266.3	378.3	0.00	0.00	0.00
3,200.0	9.57	44.74	3,170.8	273.4	271.0	385.0	0.00	0.00	0.00
3,240.0	9.57	44.74	3,210.3	278.1	275.7	391.6	0.00	0.00	0.00
3,280.0	9.57	44.74	3,249.7	282.9	280.4	398.3	0.00	0.00	0.00
3,320.0	9.57	44.74	3,289.2	287.6	285.0	404.9	0.00	0.00	0.00
3,360.0	9.57	44.74	3,328.6	292.3	289.7	411.6	0.00	0.00	0.00
3,400.0	9.57	44.74	3,368.1	297.0	294.4	418.2	0.00	0.00	0.00
3,440.0	9.57	44.74	3,407.5	301.8	299.1	424.9	0.00	0.00	0.00
3,480.0	9.57	44.74	3,446.9	306.5	303.8	431.5	0.00	0.00	0.00
3,520.0	9.57	44.74	3,486.4	311.2	308.5	438.2	0.00	0.00	0.00
3,560.0	9.57	44.74	3,525.8	315.9	313.1	444.8	0.00	0.00	0.00
3,600.0	9.57	44.74	3,565.3	320.7	317.8	451.5	0.00	0.00	0.00
3,640.0	9.57	44.74	3,604.7	325.4	322.5	458.1	0.00	0.00	0.00
3,680.0	9.57	44.74	3,644.2	330.1	327.2	464.8	0.00	0.00	0.00
3,720.0	9.57	44.74	3,683.6	334.8	331.9	471.4	0.00	0.00	0.00
3,760.0	9.57	44.74	3,723.1	339.6	336.5	478.1	0.00	0.00	0.00
3,800.0	9.57	44.74	3,762.5	344.3	341.2	484.7	0.00	0.00	0.00
3,840.0	9.57	44.74	3,801.9	349.0	345.9	491.4	0.00	0.00	0.00
3,880.0	9.57	44.74	3,841.4	353.7	350.6	498.0	0.00	0.00	0.00
3,920.0	9.57	44.74	3,880.8	358.5	355.3	504.7	0.00	0.00	0.00
3,960.0	9.57	44.74	3,920.3	363.2	360.0	511.3	0.00	0.00	0.00
4,000.0	9.57	44.74	3,959.7	367.9	364.6	518.0	0.00	0.00	0.00
4,040.0	9.57	44.74	3,999.2	372.6	369.3	524.6	0.00	0.00	0.00
4,080.0	9.57	44.74	4,038.6	377.3	374.0	531.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Hudco 40-18
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Project:	SEC.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	North Reference:	True
Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-11)		

Planned 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)
4,120.0	9.57	44.74	4,078.0	382.1	378.7	537.9	0.00	0.00	0.00
4,124.0	9.57	44.74	4,082.0	382.5	379.2	538.6	0.00	0.00	0.00
PARKMAN									
4,160.0	9.57	44.74	4,117.5	386.8	383.4	544.6	0.00	0.00	0.00
4,200.0	9.57	44.74	4,156.9	391.5	388.1	551.2	0.00	0.00	0.00
4,240.0	9.57	44.74	4,196.4	396.2	392.7	557.9	0.00	0.00	0.00
4,280.0	9.57	44.74	4,235.8	401.0	397.4	564.5	0.00	0.00	0.00
4,320.0	9.57	44.74	4,275.3	405.7	402.1	571.2	0.00	0.00	0.00
4,360.0	9.57	44.74	4,314.7	410.4	406.8	577.8	0.00	0.00	0.00
4,400.0	9.57	44.74	4,354.1	415.1	411.5	584.5	0.00	0.00	0.00
4,440.0	9.57	44.74	4,393.6	419.9	416.1	591.2	0.00	0.00	0.00
4,480.0	9.57	44.74	4,433.0	424.6	420.8	597.8	0.00	0.00	0.00
4,520.0	9.57	44.74	4,472.5	429.3	425.5	604.5	0.00	0.00	0.00
4,560.0	9.57	44.74	4,511.9	434.0	430.2	611.1	0.00	0.00	0.00
4,571.9	9.57	44.74	4,523.6	435.4	431.6	613.1	0.00	0.00	0.00
4,600.0	9.01	44.74	4,551.4	438.7	434.8	617.6	2.00	-2.00	0.00
4,640.0	8.21	44.74	4,590.9	442.9	439.0	623.6	2.00	-2.00	0.00
4,661.3	7.78	44.74	4,612.0	445.0	441.1	626.6	2.00	-2.00	0.00
SUSSEX									
4,680.0	7.41	44.74	4,630.6	446.8	442.8	629.0	2.00	-2.00	0.00
4,720.0	6.61	44.74	4,670.3	450.2	446.3	633.9	2.00	-2.00	0.00
4,760.0	5.81	44.74	4,710.0	453.3	449.3	638.3	2.00	-2.00	0.00
4,800.0	5.01	44.74	4,749.8	456.0	452.0	642.0	2.00	-2.00	0.00
4,840.0	4.21	44.74	4,789.7	458.3	454.2	645.2	2.00	-2.00	0.00
4,880.0	3.41	44.74	4,829.6	460.2	456.1	647.9	2.00	-2.00	0.00
4,920.0	2.61	44.74	4,869.6	461.7	457.6	650.0	2.00	-2.00	0.00
4,960.0	1.81	44.74	4,909.5	462.8	458.7	651.5	2.00	-2.00	0.00
5,000.0	1.01	44.74	4,949.5	463.4	459.3	652.5	2.00	-2.00	0.00
5,040.0	0.21	44.74	4,989.5	463.8	459.6	652.9	2.00	-2.00	0.00
5,050.5	0.00	0.00	5,000.0	463.8	459.7	653.0	2.00	-2.00	0.00
TARGET BHL 2600'FSL, 50'FEL									
5,080.0	0.00	0.00	5,029.5	463.8	459.7	653.0	0.00	0.00	0.00
5,120.0	0.00	0.00	5,069.5	463.8	459.7	653.0	0.00	0.00	0.00
5,160.0	0.00	0.00	5,109.5	463.8	459.7	653.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,149.5	463.8	459.7	653.0	0.00	0.00	0.00
5,240.0	0.00	0.00	5,189.5	463.8	459.7	653.0	0.00	0.00	0.00
5,280.0	0.00	0.00	5,229.5	463.8	459.7	653.0	0.00	0.00	0.00
5,320.0	0.00	0.00	5,269.5	463.8	459.7	653.0	0.00	0.00	0.00
5,360.0	0.00	0.00	5,309.5	463.8	459.7	653.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,349.5	463.8	459.7	653.0	0.00	0.00	0.00
5,440.0	0.00	0.00	5,389.5	463.8	459.7	653.0	0.00	0.00	0.00
5,480.0	0.00	0.00	5,429.5	463.8	459.7	653.0	0.00	0.00	0.00
5,520.0	0.00	0.00	5,469.5	463.8	459.7	653.0	0.00	0.00	0.00
5,560.0	0.00	0.00	5,509.5	463.8	459.7	653.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,549.5	463.8	459.7	653.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,589.5	463.8	459.7	653.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,629.5	463.8	459.7	653.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,669.5	463.8	459.7	653.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,709.5	463.8	459.7	653.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,749.5	463.8	459.7	653.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,789.5	463.8	459.7	653.0	0.00	0.00	0.00
5,880.0	0.00	0.00	5,829.5	463.8	459.7	653.0	0.00	0.00	0.00
5,920.0	0.00	0.00	5,869.5	463.8	459.7	653.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Hudco 40-18
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Project:	SEC.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	North Reference:	True
Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-11)		

Planned 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)
5,960.0	0.00	0.00	5,909.5	463.8	459.7	653.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,949.5	463.8	459.7	653.0	0.00	0.00	0.00
6,040.0	0.00	0.00	5,989.5	463.8	459.7	653.0	0.00	0.00	0.00
6,080.0	0.00	0.00	6,029.5	463.8	459.7	653.0	0.00	0.00	0.00
6,120.0	0.00	0.00	6,069.5	463.8	459.7	653.0	0.00	0.00	0.00
6,160.0	0.00	0.00	6,109.5	463.8	459.7	653.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,149.5	463.8	459.7	653.0	0.00	0.00	0.00
6,240.0	0.00	0.00	6,189.5	463.8	459.7	653.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,229.5	463.8	459.7	653.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,269.5	463.8	459.7	653.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,309.5	463.8	459.7	653.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,349.5	463.8	459.7	653.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,389.5	463.8	459.7	653.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,429.5	463.8	459.7	653.0	0.00	0.00	0.00
6,520.0	0.00	0.00	6,469.5	463.8	459.7	653.0	0.00	0.00	0.00
6,560.0	0.00	0.00	6,509.5	463.8	459.7	653.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,549.5	463.8	459.7	653.0	0.00	0.00	0.00
6,640.0	0.00	0.00	6,589.5	463.8	459.7	653.0	0.00	0.00	0.00
6,680.0	0.00	0.00	6,629.5	463.8	459.7	653.0	0.00	0.00	0.00
6,720.0	0.00	0.00	6,669.5	463.8	459.7	653.0	0.00	0.00	0.00
6,760.0	0.00	0.00	6,709.5	463.8	459.7	653.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,749.5	463.8	459.7	653.0	0.00	0.00	0.00
6,840.0	0.00	0.00	6,789.5	463.8	459.7	653.0	0.00	0.00	0.00
6,880.0	0.00	0.00	6,829.5	463.8	459.7	653.0	0.00	0.00	0.00
6,920.0	0.00	0.00	6,869.5	463.8	459.7	653.0	0.00	0.00	0.00
6,960.0	0.00	0.00	6,909.5	463.8	459.7	653.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,949.5	463.8	459.7	653.0	0.00	0.00	0.00
7,040.0	0.00	0.00	6,989.5	463.8	459.7	653.0	0.00	0.00	0.00
7,080.0	0.00	0.00	7,029.5	463.8	459.7	653.0	0.00	0.00	0.00
7,120.0	0.00	0.00	7,069.5	463.8	459.7	653.0	0.00	0.00	0.00
7,142.5	0.00	0.00	7,092.0	463.8	459.7	653.0	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 2600'FSL & 50'FEL									
7,160.0	0.00	0.00	7,109.5	463.8	459.7	653.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,149.5	463.8	459.7	653.0	0.00	0.00	0.00
7,240.0	0.00	0.00	7,189.5	463.8	459.7	653.0	0.00	0.00	0.00
7,280.0	0.00	0.00	7,229.5	463.8	459.7	653.0	0.00	0.00	0.00
7,320.0	0.00	0.00	7,269.5	463.8	459.7	653.0	0.00	0.00	0.00
7,360.0	0.00	0.00	7,309.5	463.8	459.7	653.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,349.5	463.8	459.7	653.0	0.00	0.00	0.00
7,412.5	0.00	0.00	7,362.0	463.8	459.7	653.0	0.00	0.00	0.00
CODELL									
7,440.0	0.00	0.00	7,389.5	463.8	459.7	653.0	0.00	0.00	0.00
7,480.0	0.00	0.00	7,429.5	463.8	459.7	653.0	0.00	0.00	0.00
7,505.5	0.00	0.00	7,455.0	463.8	459.7	653.0	0.00	0.00	0.00
GREENHORN									
7,520.0	0.00	0.00	7,469.5	463.8	459.7	653.0	0.00	0.00	0.00
7,560.0	0.00	0.00	7,509.5	463.8	459.7	653.0	0.00	0.00	0.00
7,572.5	0.00	0.00	7,522.0	463.8	459.7	653.0	0.00	0.00	0.00
HARD LINES 71°N & 50°E OF BHL									

Database:	Landmark	Local Co-ordinate Reference:	Well Hudco 40-18
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Project:	SEC.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	North Reference:	True
Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-11)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
TARGET BHL 2600'F: - plan hits target center - Point	0.00	0.00	5,000.0	463.8	459.7	1,294,308.87	3,224,357.22	40.138485	-104.697523
TARGET CIRCLE 260' - plan hits target center - Circle (radius 50.0)	0.00	0.00	7,092.0	463.8	459.7	1,294,308.87	3,224,357.22	40.138485	-104.697523
HARD LINES 71'N & 1' - plan misses target center by 86.9ft at 7572.5ft MD (7522.0 TVD, 463.8 N, 459.7 E) - Polygon	0.00	0.00	7,522.0	534.8	509.7	1,294,380.35	3,224,406.62	40.138680	-104.697344
Point 1			7,522.0	0.0	0.0	1,294,380.35	3,224,406.62		
Point 2			7,522.0	-200.0	0.0	1,294,180.37	3,224,408.43		
Point 3			7,522.0	0.0	0.0	1,294,380.35	3,224,406.62		
Point 4			7,522.0	0.0	-200.0	1,294,378.55	3,224,206.64		

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(")	(")
	900.8	900.0	8 5/8"	8-5/8	12-1/4

Formations						
	Measured Depth	Vertical Depth			Dip	Dip Direction
	(ft)	(ft)	Name	Lithology	(°)	(°)
	4,124.0	4,082.0	PARKMAN		0.00	
	4,661.3	4,612.0	SUSSEX		0.00	
	7,142.5	7,092.0	NIOBRARA		0.00	
	7,412.5	7,362.0	CODELL		0.00	
	7,505.5	7,455.0	GREENHORN		0.00	



Directional

Anadarko, Weld County CO

SEC.18-T2N-R65W

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

Hudco 40-18

Wellbore #1

Plan #1 (3-15-11)

Anticollision Report

17 March, 2011



Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (3-15-11)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 3/17/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,572.5	Plan #1 (3-15-11) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Hudco 9-18 Pad Sec.18-T2N-R65W						
Hudco 24-18 - Wellbore #1 - Plan #1 (3-15-11)	200.0	200.0	15.8	15.1	23.457	CC, ES
Hudco 24-18 - Wellbore #1 - Plan #1 (3-15-11)	800.0	799.3	34.6	31.2	10.249	SF
Hudco 39-18 - Wellbore #1 - Plan #1 (3-15-11)	200.0	199.0	16.0	15.3	23.834	CC, ES
Hudco 39-18 - Wellbore #1 - Plan #1 (3-15-11)	350.0	348.0	19.5	18.2	14.820	SF
Hudco 9-18 (Exist.) - Wellbore #1 - Design #1	200.0	208.0	60.5	59.8	87.337	CC, ES
Hudco 9-18 (Exist.) - Wellbore #1 - Design #1	1,200.0	1,206.2	101.6	96.4	19.386	SF

Offset Design Hudco 9-18 Pad Sec.18-T2N-R65W - Hudco 24-18 - Wellbore #1 - Plan #1 (3-15-11)												
Survey Program: 0-MWD												
Reference												
Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (ft)	Separation Factor	Warning	
				Reference	Offset		Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-58.05	8.4	-13.4	15.8	15.6	0.00	N/A
100.0	100.0	100.0	100.0	0.1	0.1	-58.05	8.4	-13.4	15.8	15.6	0.22	70.372
200.0	200.0	200.0	200.0	0.3	0.3	-58.05	8.4	-13.4	15.8	15.1	0.67	23.457 CC, ES
300.0	300.0	300.0	300.0	0.6	0.6	-108.78	8.4	-13.4	16.3	15.2	1.12	14.530
350.0	349.9	349.9	349.9	0.7	0.7	-115.69	8.4	-13.4	17.1	15.8	1.35	12.712
400.0	399.9	399.9	399.9	0.8	0.8	-123.04	8.4	-13.4	18.4	16.8	1.57	11.703
500.0	499.7	499.7	499.7	1.0	1.0	-134.69	8.4	-13.4	21.7	19.7	2.03	10.721
600.0	599.6	599.6	599.6	1.3	1.2	-143.02	8.4	-13.4	25.7	23.2	2.48	10.365
700.0	699.5	699.5	699.5	1.5	1.5	-149.04	8.4	-13.4	30.0	27.1	2.93	10.256
800.0	799.3	799.3	799.3	1.7	1.7	-153.50	8.4	-13.4	34.6	31.2	3.38	10.249 SF
900.0	899.2	899.2	899.2	2.0	1.9	-156.90	8.4	-13.4	39.4	35.5	3.83	10.286
1,001.0	1,000.0	1,000.0	1,000.0	2.2	2.1	-159.59	8.4	-13.4	44.3	40.0	4.28	10.340
1,100.0	1,098.8	1,097.8	1,097.8	2.5	2.3	-160.66	9.2	-14.9	51.7	47.0	4.72	10.951
1,200.0	1,198.2	1,195.9	1,195.7	2.7	2.6	-159.87	11.7	-19.2	64.4	59.2	5.17	12.458
1,300.0	1,297.3	1,292.8	1,292.3	3.1	2.8	-158.21	15.9	-26.4	82.3	76.6	5.63	14.623
1,329.5	1,326.4	1,321.2	1,320.5	3.2	2.9	-157.66	17.4	-29.0	88.5	82.8	5.76	15.361
1,400.0	1,395.9	1,388.4	1,387.2	3.4	3.0	-156.29	21.5	-36.2	104.5	98.4	6.10	17.126
1,500.0	1,494.5	1,482.8	1,480.5	3.7	3.3	-154.00	28.7	-48.5	129.1	122.5	6.61	19.540
1,600.0	1,593.1	1,575.9	1,572.0	4.1	3.6	-151.58	37.3	-63.3	155.9	148.8	7.13	21.863
1,700.0	1,691.7	1,669.0	1,663.0	4.4	3.9	-149.20	47.2	-80.5	184.9	177.2	7.68	24.083
1,800.0	1,790.3	1,764.3	1,755.9	4.8	4.2	-147.30	57.7	-98.7	214.6	206.4	8.24	26.048

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0ft
Survey Program: 0-MWD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
1,900.0	1,888.9	1,859.5	1,848.9	5.2	4.6	-145.86	68.2	-116.8	244.5	235.7	8.81	27.762	
2,000.0	1,987.6	1,954.8	1,941.8	5.5	5.0	-144.73	78.7	-134.9	274.5	265.1	9.39	29.239	
2,100.0	2,086.2	2,050.1	2,034.8	5.9	5.4	-143.83	89.1	-153.0	304.6	294.6	9.97	30.545	
2,200.0	2,184.8	2,145.4	2,127.7	6.3	5.8	-143.09	99.6	-171.1	334.7	324.1	10.56	31.695	
2,300.0	2,283.4	2,240.6	2,220.6	6.6	6.2	-142.47	110.1	-189.2	364.9	353.7	11.15	32.714	
2,400.0	2,382.0	2,335.9	2,313.6	7.0	6.6	-141.94	120.6	-207.3	395.1	383.3	11.75	33.622	
2,500.0	2,480.6	2,431.2	2,406.5	7.4	7.1	-141.49	131.1	-225.5	425.3	412.9	12.35	34.435	
2,600.0	2,579.2	2,526.4	2,499.5	7.8	7.5	-141.10	141.6	-243.6	455.5	442.6	12.95	35.167	
2,700.0	2,677.8	2,621.7	2,592.4	8.1	7.9	-140.76	152.0	-261.7	485.8	472.2	13.56	35.829	
2,800.0	2,776.4	2,717.0	2,685.4	8.5	8.4	-140.46	162.5	-279.8	516.1	501.9	14.17	36.430	
2,900.0	2,875.0	2,812.3	2,778.3	8.9	8.8	-140.19	173.0	-297.9	546.4	531.6	14.78	36.978	
3,000.0	2,973.6	2,907.5	2,871.3	9.3	9.2	-139.95	183.5	-316.0	576.7	561.3	15.39	37.479	
3,100.0	3,072.2	3,002.8	2,964.2	9.6	9.7	-139.73	194.0	-334.1	607.0	591.0	16.00	37.938	
3,200.0	3,170.8	3,098.1	3,057.2	10.0	10.1	-139.54	204.4	-352.2	637.3	620.7	16.61	38.361	
3,300.0	3,269.5	3,193.4	3,150.1	10.4	10.5	-139.36	214.9	-370.4	667.6	650.4	17.23	38.752	
3,400.0	3,368.1	3,288.6	3,243.1	10.8	11.0	-139.20	225.4	-388.5	697.9	680.1	17.84	39.114	
3,500.0	3,466.7	3,383.9	3,336.0	11.1	11.4	-139.05	235.9	-406.6	728.2	709.8	18.46	39.450	
3,600.0	3,565.3	3,479.2	3,428.9	11.5	11.9	-138.91	246.4	-424.7	758.6	739.5	19.08	39.762	
3,700.0	3,663.9	3,574.5	3,521.9	11.9	12.3	-138.78	256.9	-442.8	788.9	769.2	19.70	40.054	
3,800.0	3,762.5	3,669.7	3,614.8	12.3	12.8	-138.67	267.3	-460.9	819.3	798.9	20.32	40.327	
3,900.0	3,861.1	3,765.0	3,707.8	12.7	13.2	-138.56	277.8	-479.0	849.6	828.7	20.94	40.582	
4,000.0	3,959.7	3,860.3	3,800.7	13.0	13.7	-138.46	288.3	-497.2	879.9	858.4	21.56	40.821	
4,100.0	4,058.3	3,955.5	3,893.7	13.4	14.1	-138.36	298.8	-515.3	910.3	888.1	22.18	41.047	
4,200.0	4,156.9	4,050.8	3,986.6	13.8	14.6	-138.27	309.3	-533.4	940.6	917.8	22.80	41.259	
4,300.0	4,255.5	4,146.1	4,079.6	14.2	15.0	-138.19	319.8	-551.5	971.0	947.6	23.42	41.459	
4,400.0	4,354.1	4,241.4	4,172.5	14.6	15.5	-138.11	330.2	-569.6	1,001.4	977.3	24.04	41.648	
4,500.0	4,452.7	4,336.6	4,265.5	14.9	15.9	-138.04	340.7	-587.7	1,031.7	1,007.0	24.67	41.827	
4,571.9	4,523.6	4,405.1	4,332.3	15.2	16.2	-137.99	348.3	-600.8	1,053.5	1,028.4	25.11	41.949	
4,600.0	4,551.4	4,431.9	4,358.4	15.3	16.4	-138.08	351.2	-605.8	1,062.0	1,036.7	25.31	41.966	
4,700.0	4,650.4	4,566.0	4,489.8	15.6	16.9	-138.30	364.7	-629.2	1,088.9	1,062.9	25.99	41.896	
4,800.0	4,749.8	4,709.5	4,631.6	15.8	17.3	-138.45	375.7	-648.2	1,109.4	1,082.8	26.61	41.698	
4,900.0	4,849.6	4,855.9	4,777.1	16.0	17.6	-138.55	383.3	-661.3	1,123.2	1,096.1	27.14	41.387	
5,000.0	4,949.5	5,003.9	4,925.0	16.2	17.9	-138.60	387.1	-667.9	1,130.1	1,102.5	27.59	40.960	
5,050.5	5,000.0	5,079.0	5,000.0	16.2	18.0	-93.86	387.6	-668.8	1,131.0	1,103.2	27.79	40.704	
5,100.0	5,049.5	5,128.5	5,049.5	16.3	18.0	-93.86	387.6	-668.8	1,131.0	1,103.1	27.94	40.475	
5,200.0	5,149.5	5,228.5	5,149.5	16.4	18.2	-93.86	387.6	-668.8	1,131.0	1,102.7	28.28	39.998	
5,300.0	5,249.5	5,328.5	5,249.5	16.6	18.3	-93.86	387.6	-668.8	1,131.0	1,102.4	28.61	39.528	
5,400.0	5,349.5	5,428.5	5,349.5	16.7	18.4	-93.86	387.6	-668.8	1,131.0	1,102.1	28.95	39.064	
5,500.0	5,449.5	5,528.5	5,449.5	16.9	18.6	-93.86	387.6	-668.8	1,131.0	1,101.7	29.30	38.607	
5,600.0	5,549.5	5,628.5	5,549.5	17.0	18.7	-93.86	387.6	-668.8	1,131.0	1,101.4	29.64	38.157	
5,700.0	5,649.5	5,728.5	5,649.5	17.2	18.8	-93.86	387.6	-668.8	1,131.0	1,101.0	29.99	37.714	
5,800.0	5,749.5	5,828.5	5,749.5	17.4	19.0	-93.86	387.6	-668.8	1,131.0	1,100.7	30.34	37.278	
5,900.0	5,849.5	5,928.5	5,849.5	17.5	19.1	-93.86	387.6	-668.8	1,131.0	1,100.3	30.69	36.848	
6,000.0	5,949.5	6,028.5	5,949.5	17.7	19.3	-93.86	387.6	-668.8	1,131.0	1,100.0	31.05	36.426	
6,100.0	6,049.5	6,128.5	6,049.5	17.8	19.4	-93.86	387.6	-668.8	1,131.0	1,099.6	31.41	36.010	
6,200.0	6,149.5	6,228.5	6,149.5	18.0	19.6	-93.86	387.6	-668.8	1,131.0	1,099.3	31.77	35.601	
6,300.0	6,249.5	6,328.5	6,249.5	18.2	19.7	-93.86	387.6	-668.8	1,131.0	1,098.9	32.13	35.199	
6,400.0	6,349.5	6,428.5	6,349.5	18.3	19.9	-93.86	387.6	-668.8	1,131.0	1,098.5	32.50	34.804	
6,500.0	6,449.5	6,528.5	6,449.5	18.5	20.1	-93.86	387.6	-668.8	1,131.0	1,098.2	32.86	34.415	
6,600.0	6,549.5	6,628.5	6,549.5	18.7	20.2	-93.86	387.6	-668.8	1,131.0	1,097.8	33.23	34.033	
6,700.0	6,649.5	6,728.5	6,649.5	18.8	20.4	-93.86	387.6	-668.8	1,131.0	1,097.4	33.60	33.657	
6,800.0	6,749.5	6,828.5	6,749.5	19.0	20.5	-93.86	387.6	-668.8	1,131.0	1,097.0	33.98	33.287	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Hudco 9-18 Pad Sec.18-T2N-R65W - Hudco 24-18 - Wellbore #1 - Plan #1 (3-15-11)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,900.0	6,849.5	6,928.5	6,849.5	19.2	20.7	-93.86	387.6	-668.8	1,131.0	1,096.7	34.35	32.924	
7,000.0	6,949.5	7,028.5	6,949.5	19.3	20.8	-93.86	387.6	-668.8	1,131.0	1,096.3	34.73	32.567	
7,100.0	7,049.5	7,128.5	7,049.5	19.5	21.0	-93.86	387.6	-668.8	1,131.0	1,095.9	35.11	32.216	
7,200.0	7,149.5	7,228.5	7,149.5	19.7	21.2	-93.86	387.6	-668.8	1,131.0	1,095.5	35.49	31.871	
7,300.0	7,249.5	7,328.5	7,249.5	19.9	21.3	-93.86	387.6	-668.8	1,131.0	1,095.2	35.87	31.532	
7,400.0	7,349.5	7,428.5	7,349.5	20.0	21.5	-93.86	387.6	-668.8	1,131.0	1,094.8	36.25	31.198	
7,500.0	7,449.5	7,528.5	7,449.5	20.2	21.7	-93.86	387.6	-668.8	1,131.0	1,094.4	36.64	30.871	
7,572.5	7,522.0	7,601.0	7,522.0	20.3	21.8	-93.86	387.6	-668.8	1,131.0	1,094.1	36.92	30.637	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Offset Design Hudco 9-18 Pad Sec.18-T2N-R65W - Hudco 39-18 - Wellbore #1 - Plan #1 (3-15-11)													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	123.08	-8.7	13.4	16.0	16.0	0.00	N/A		
100.0	100.0	99.0	99.0	0.1	0.1	123.08	-8.7	13.4	16.0	15.8	0.22	71.621		
200.0	200.0	199.0	199.0	0.3	0.3	123.08	-8.7	13.4	16.0	15.3	0.67	23.834 CC, ES		
300.0	300.0	298.4	298.4	0.6	0.5	86.00	-10.1	14.4	17.4	16.3	1.10	15.848		
350.0	349.9	348.0	347.9	0.7	0.6	93.86	-11.9	15.6	19.5	18.2	1.32	14.820 SF		
400.0	399.9	397.4	397.3	0.8	0.7	101.19	-14.3	17.3	22.9	21.3	1.54	14.850		
500.0	499.7	495.9	495.4	1.0	1.0	109.94	-21.3	22.1	32.9	30.9	2.01	16.373		
600.0	599.6	593.6	592.3	1.3	1.3	114.24	-31.2	28.3	46.7	44.2	2.47	18.871		
700.0	699.5	690.2	687.8	1.5	1.6	116.32	-44.0	35.6	63.9	61.0	2.95	21.668		
800.0	799.3	785.6	781.5	1.7	1.9	117.28	-59.6	44.1	84.5	81.1	3.44	24.607		
900.0	899.2	879.5	873.2	2.0	2.4	117.69	-77.7	53.7	108.4	104.4	3.93	27.604		
1,001.0	1,000.0	975.6	966.4	2.2	2.8	117.84	-98.4	64.4	134.9	130.5	4.43	30.482		
1,100.0	1,098.8	1,070.8	1,058.7	2.5	3.3	117.99	-119.2	75.1	162.0	157.1	4.92	32.919		
1,200.0	1,198.2	1,166.4	1,151.4	2.7	3.8	118.88	-140.1	85.9	191.0	185.5	5.44	35.080		
1,300.0	1,297.3	1,261.4	1,243.4	3.1	4.3	120.18	-160.8	96.6	221.7	215.7	5.99	36.998		
1,329.5	1,326.4	1,289.3	1,270.5	3.2	4.4	120.61	-166.9	99.7	231.2	225.0	6.16	37.519		
1,400.0	1,395.9	1,355.8	1,334.9	3.4	4.8	121.94	-181.4	107.2	253.9	247.3	6.58	38.617		
1,500.0	1,494.5	1,450.1	1,426.4	3.7	5.2	123.47	-202.0	117.9	286.4	279.2	7.17	39.942		
1,600.0	1,593.1	1,544.4	1,517.8	4.1	5.7	124.69	-222.6	128.5	319.0	311.3	7.77	41.039		
1,700.0	1,691.7	1,638.7	1,609.2	4.4	6.2	125.68	-243.1	139.1	351.8	343.4	8.38	41.961		
1,800.0	1,790.3	1,733.1	1,700.7	4.8	6.7	126.50	-263.7	149.7	384.6	375.6	9.00	42.744		
1,900.0	1,888.9	1,827.4	1,792.1	5.2	7.2	127.20	-284.3	160.4	417.5	407.9	9.62	43.417		
2,000.0	1,987.6	1,921.7	1,883.6	5.5	7.7	127.79	-304.9	171.0	450.4	440.2	10.24	44.000		
2,100.0	2,086.2	2,016.1	1,975.0	5.9	8.2	128.30	-325.5	181.6	483.4	472.5	10.86	44.510		
2,200.0	2,184.8	2,110.4	2,066.5	6.3	8.7	128.75	-346.1	192.2	516.3	504.9	11.48	44.960		
2,300.0	2,283.4	2,204.7	2,157.9	6.6	9.2	129.14	-366.7	202.8	549.4	537.3	12.11	45.358		
2,400.0	2,382.0	2,299.0	2,249.3	7.0	9.7	129.49	-387.2	213.5	582.4	569.7	12.74	45.714		
2,500.0	2,480.6	2,393.4	2,340.8	7.4	10.2	129.80	-407.8	224.1	615.5	602.1	13.37	46.033		
2,600.0	2,579.2	2,487.7	2,432.2	7.8	10.7	130.08	-428.4	234.7	648.5	634.5	14.00	46.321		
2,700.0	2,677.8	2,582.0	2,523.7	8.1	11.2	130.33	-449.0	245.3	681.6	667.0	14.63	46.582		
2,800.0	2,776.4	2,676.4	2,615.1	8.5	11.7	130.56	-469.6	256.0	714.7	699.4	15.26	46.820		
2,900.0	2,875.0	2,770.7	2,706.5	8.9	12.2	130.77	-490.2	266.6	747.8	731.9	15.90	47.037		
3,000.0	2,973.6	2,865.0	2,798.0	9.3	12.7	130.96	-510.7	277.2	780.9	764.4	16.53	47.236		
3,100.0	3,072.2	2,959.4	2,889.4	9.6	13.2	131.14	-531.3	287.8	814.0	796.8	17.17	47.419		
3,200.0	3,170.8	3,053.7	2,980.9	10.0	13.7	131.30	-551.9	298.5	847.1	829.3	17.80	47.589		
3,300.0	3,269.5	3,148.0	3,072.3	10.4	14.2	131.45	-572.5	309.1	880.3	861.8	18.44	47.745		
3,400.0	3,368.1	3,242.3	3,163.7	10.8	14.7	131.59	-593.1	319.7	913.4	894.3	19.07	47.891		
3,500.0	3,466.7	3,336.7	3,255.2	11.1	15.2	131.72	-613.7	330.3	946.5	926.8	19.71	48.026		
3,600.0	3,565.3	3,431.0	3,346.6	11.5	15.7	131.84	-634.2	341.0	979.7	959.3	20.35	48.152		
3,700.0	3,663.9	3,525.3	3,438.1	11.9	16.2	131.95	-654.8	351.6	1,012.8	991.8	20.98	48.270		
3,800.0	3,762.5	3,619.7	3,529.5	12.3	16.7	132.06	-675.4	362.2	1,046.0	1,024.3	21.62	48.380		
3,900.0	3,861.1	3,714.0	3,621.0	12.7	17.2	132.15	-696.0	372.8	1,079.1	1,056.9	22.26	48.484		
4,000.0	3,959.7	3,808.3	3,712.4	13.0	17.7	132.25	-716.6	383.5	1,112.3	1,089.4	22.89	48.581		
4,100.0	4,058.3	3,902.7	3,803.8	13.4	18.2	132.33	-737.2	394.1	1,145.4	1,121.9	23.53	48.673		
4,200.0	4,156.9	3,997.0	3,895.3	13.8	18.7	132.42	-757.8	404.7	1,178.6	1,154.4	24.17	48.759		
4,300.0	4,255.5	4,091.3	3,986.7	14.2	19.2	132.50	-778.3	415.3	1,211.7	1,186.9	24.81	48.841		
4,400.0	4,354.1	4,185.6	4,078.2	14.6	19.7	132.57	-798.9	426.0	1,244.9	1,219.4	25.45	48.918		
4,500.0	4,452.7	4,280.0	4,169.6	14.9	20.2	132.64	-819.5	436.6	1,278.1	1,252.0	26.09	48.991		
4,571.9	4,523.6	4,347.8	4,235.3	15.2	20.5	132.69	-834.3	444.2	1,301.9	1,275.4	26.55	49.041		
4,600.0	4,551.4	4,374.3	4,261.1	15.3	20.7	132.85	-840.1	447.2	1,311.1	1,284.4	26.75	49.010		
4,700.0	4,650.4	4,511.7	4,394.7	15.6	21.3	133.30	-868.5	461.9	1,341.6	1,314.1	27.51	48.768		
4,800.0	4,749.8	4,680.6	4,560.7	15.8	21.8	133.62	-895.9	476.0	1,365.1	1,336.9	28.21	48.394		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Hudco 9-18 Pad Sec.18-T2N-R65W - Hudco 39-18 - Wellbore #1 - Plan #1 (3-15-11)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,849.6	4,854.1	4,732.8	16.0	22.2	133.83	-914.9	485.8	1,381.1	1,352.2	28.81	47.930	
5,000.0	4,949.5	5,030.4	4,908.8	16.2	22.5	133.93	-924.7	490.9	1,389.1	1,359.8	29.31	47.388	
5,050.5	5,000.0	5,119.9	4,998.2	16.2	22.6	178.69	-926.0	491.6	1,390.2	1,360.6	29.53	47.080	
5,100.0	5,049.5	5,170.2	5,048.5	16.3	22.6	178.69	-926.0	491.6	1,390.2	1,360.5	29.67	46.849	
5,200.0	5,149.5	5,270.2	5,148.5	16.4	22.7	178.69	-926.0	491.6	1,390.2	1,360.2	29.98	46.376	
5,300.0	5,249.5	5,370.2	5,248.5	16.6	22.8	178.69	-926.0	491.6	1,390.2	1,359.9	30.28	45.910	
5,400.0	5,349.5	5,470.2	5,348.5	16.7	22.9	178.69	-926.0	491.6	1,390.2	1,359.6	30.59	45.449	
5,500.0	5,449.5	5,570.2	5,448.5	16.9	23.0	178.69	-926.0	491.6	1,390.2	1,359.3	30.90	44.992	
5,600.0	5,549.5	5,670.2	5,548.5	17.0	23.1	178.69	-926.0	491.6	1,390.2	1,358.9	31.21	44.540	
5,700.0	5,649.5	5,770.2	5,648.5	17.2	23.2	178.69	-926.0	491.6	1,390.2	1,358.6	31.53	44.091	
5,800.0	5,749.5	5,870.2	5,748.5	17.4	23.3	178.69	-926.0	491.6	1,390.2	1,358.3	31.85	43.648	
5,900.0	5,849.5	5,970.2	5,848.5	17.5	23.4	178.69	-926.0	491.6	1,390.2	1,358.0	32.17	43.209	
6,000.0	5,949.5	6,070.2	5,948.5	17.7	23.5	178.69	-926.0	491.6	1,390.2	1,357.7	32.50	42.775	
6,100.0	6,049.5	6,170.2	6,048.5	17.8	23.6	178.69	-926.0	491.6	1,390.2	1,357.3	32.83	42.346	
6,200.0	6,149.5	6,270.2	6,148.5	18.0	23.7	178.69	-926.0	491.6	1,390.2	1,357.0	33.16	41.922	
6,300.0	6,249.5	6,370.2	6,248.5	18.2	23.8	178.69	-926.0	491.6	1,390.2	1,356.7	33.50	41.503	
6,400.0	6,349.5	6,470.2	6,348.5	18.3	23.9	178.69	-926.0	491.6	1,390.2	1,356.3	33.83	41.089	
6,500.0	6,449.5	6,570.2	6,448.5	18.5	24.0	178.69	-926.0	491.6	1,390.2	1,356.0	34.17	40.680	
6,600.0	6,549.5	6,670.2	6,548.5	18.7	24.1	178.69	-926.0	491.6	1,390.2	1,355.6	34.52	40.277	
6,700.0	6,649.5	6,770.2	6,648.5	18.8	24.2	178.69	-926.0	491.6	1,390.2	1,355.3	34.86	39.878	
6,800.0	6,749.5	6,870.2	6,748.5	19.0	24.3	178.69	-926.0	491.6	1,390.2	1,354.9	35.21	39.485	
6,900.0	6,849.5	6,970.2	6,848.5	19.2	24.4	178.69	-926.0	491.6	1,390.2	1,354.6	35.56	39.097	
7,000.0	6,949.5	7,070.2	6,948.5	19.3	24.6	178.69	-926.0	491.6	1,390.2	1,354.2	35.91	38.714	
7,100.0	7,049.5	7,170.2	7,048.5	19.5	24.7	178.69	-926.0	491.6	1,390.2	1,353.9	36.26	38.336	
7,200.0	7,149.5	7,270.2	7,148.5	19.7	24.8	178.69	-926.0	491.6	1,390.2	1,353.5	36.62	37.964	
7,300.0	7,249.5	7,370.2	7,248.5	19.9	24.9	178.69	-926.0	491.6	1,390.2	1,353.2	36.98	37.596	
7,400.0	7,349.5	7,470.2	7,348.5	20.0	25.0	178.69	-926.0	491.6	1,390.2	1,352.8	37.34	37.234	
7,500.0	7,449.5	7,570.2	7,448.5	20.2	25.2	178.69	-926.0	491.6	1,390.2	1,352.5	37.70	36.877	
7,572.5	7,522.0	7,642.6	7,521.0	20.3	25.3	178.69	-926.0	491.6	1,390.2	1,352.2	37.96	36.621	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Offset Design Hudco 9-18 Pad Sec.18-T2N-R65W - Hudco 9-18 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	8.0	8.0	0.0	0.0	167.45	-59.0	13.1	60.5	60.5	0.01	6,590.044		
100.0	100.0	108.0	108.0	0.1	0.1	167.45	-59.0	13.1	60.5	60.2	0.24	249.071		
200.0	200.0	208.0	208.0	0.3	0.4	167.45	-59.0	13.1	60.5	59.8	0.69	87.337 CC, ES		
300.0	300.0	308.0	308.0	0.6	0.6	124.05	-59.0	13.1	61.4	60.3	1.14	53.798		
350.0	349.9	357.9	357.9	0.7	0.7	125.68	-59.0	13.1	62.7	61.3	1.37	45.799		
400.0	399.9	407.9	407.9	0.8	0.8	127.58	-59.0	13.1	64.2	62.6	1.59	40.278		
500.0	499.7	507.7	507.7	1.0	1.0	131.09	-59.0	13.1	67.6	65.5	2.05	32.955		
600.0	599.6	607.6	607.6	1.3	1.3	134.27	-59.0	13.1	71.1	68.6	2.51	28.373		
700.0	699.5	707.5	707.5	1.5	1.5	137.14	-59.0	13.1	74.9	71.9	2.96	25.269		
800.0	799.3	807.3	807.3	1.7	1.7	139.73	-59.0	13.1	78.8	75.4	3.42	23.047		
900.0	899.2	907.2	907.2	2.0	1.9	142.07	-59.0	13.1	82.8	79.0	3.87	21.388		
1,001.0	1,000.0	1,008.0	1,008.0	2.2	2.2	144.20	-59.0	13.1	87.1	82.7	4.33	20.099		
1,100.0	1,098.8	1,106.8	1,106.8	2.5	2.4	146.63	-59.0	13.1	92.7	88.0	4.78	19.387		
1,200.0	1,198.2	1,206.2	1,206.2	2.7	2.6	149.77	-59.0	13.1	101.6	96.4	5.24	19.386 SF		
1,300.0	1,297.3	1,305.3	1,305.3	3.1	2.8	153.18	-59.0	13.1	113.9	108.2	5.70	19.978		
1,329.5	1,326.4	1,334.4	1,334.4	3.2	2.9	154.18	-59.0	13.1	118.1	112.3	5.83	20.252		
1,400.0	1,395.9	1,403.9	1,403.9	3.4	3.0	156.44	-59.0	13.1	128.8	122.6	6.16	20.908		
1,500.0	1,494.5	1,502.5	1,502.5	3.7	3.3	159.08	-59.0	13.1	144.2	137.6	6.62	21.771		
1,600.0	1,593.1	1,601.1	1,601.1	4.1	3.5	161.20	-59.0	13.1	159.9	152.8	7.09	22.555		
1,700.0	1,691.7	1,699.7	1,699.7	4.4	3.7	162.95	-59.0	13.1	175.7	168.2	7.55	23.266		
1,800.0	1,790.3	1,798.3	1,798.3	4.8	3.9	164.40	-59.0	13.1	191.7	183.7	8.02	23.910		
1,900.0	1,888.9	1,896.9	1,896.9	5.2	4.2	165.64	-59.0	13.1	207.8	199.3	8.48	24.494		
2,000.0	1,987.6	1,995.6	1,995.6	5.5	4.4	166.69	-59.0	13.1	224.0	215.0	8.95	25.025		
2,100.0	2,086.2	2,094.2	2,094.2	5.9	4.6	167.60	-59.0	13.1	240.2	230.8	9.42	25.509		
2,200.0	2,184.8	2,192.8	2,192.8	6.3	4.8	168.40	-59.0	13.1	256.5	246.6	9.88	25.952		
2,300.0	2,283.4	2,291.4	2,291.4	6.6	5.0	169.10	-59.0	13.1	272.8	262.4	10.35	26.358		
2,400.0	2,382.0	2,390.0	2,390.0	7.0	5.3	169.73	-59.0	13.1	289.1	278.3	10.82	26.731		
2,500.0	2,480.6	2,488.6	2,488.6	7.4	5.5	170.28	-59.0	13.1	305.5	294.2	11.28	27.075		
2,600.0	2,579.2	2,587.2	2,587.2	7.8	5.7	170.78	-59.0	13.1	321.9	310.2	11.75	27.393		
2,700.0	2,677.8	2,685.8	2,685.8	8.1	5.9	171.23	-59.0	13.1	338.3	326.1	12.22	27.687		
2,800.0	2,776.4	2,784.4	2,784.4	8.5	6.1	171.64	-59.0	13.1	354.8	342.1	12.69	27.961		
2,900.0	2,875.0	2,883.0	2,883.0	8.9	6.4	172.01	-59.0	13.1	371.3	358.1	13.16	28.216		
3,000.0	2,973.6	2,981.6	2,981.6	9.3	6.6	172.36	-59.0	13.1	387.7	374.1	13.63	28.454		
3,100.0	3,072.2	3,080.2	3,080.2	9.6	6.8	172.67	-59.0	13.1	404.2	390.1	14.10	28.676		
3,200.0	3,170.8	3,178.8	3,178.8	10.0	7.0	172.96	-59.0	13.1	420.7	406.2	14.57	28.884		
3,300.0	3,269.5	3,277.5	3,277.5	10.4	7.3	173.22	-59.0	13.1	437.2	422.2	15.04	29.080		
3,400.0	3,368.1	3,376.1	3,376.1	10.8	7.5	173.47	-59.0	13.1	453.7	438.2	15.51	29.263		
3,500.0	3,466.7	3,474.7	3,474.7	11.1	7.7	173.70	-59.0	13.1	470.3	454.3	15.98	29.437		
3,600.0	3,565.3	3,573.3	3,573.3	11.5	7.9	173.92	-59.0	13.1	486.8	470.4	16.45	29.600		
3,700.0	3,663.9	3,671.9	3,671.9	11.9	8.1	174.12	-59.0	13.1	503.3	486.4	16.92	29.754		
3,800.0	3,762.5	3,770.5	3,770.5	12.3	8.4	174.31	-59.0	13.1	519.9	502.5	17.39	29.900		
3,900.0	3,861.1	3,869.1	3,869.1	12.7	8.6	174.48	-59.0	13.1	536.4	518.6	17.86	30.039		
4,000.0	3,959.7	3,967.7	3,967.7	13.0	8.8	174.65	-59.0	13.1	553.0	534.7	18.33	30.170		
4,100.0	4,058.3	4,066.3	4,066.3	13.4	9.0	174.80	-59.0	13.1	569.6	550.8	18.80	30.295		
4,200.0	4,156.9	4,164.9	4,164.9	13.8	9.2	174.95	-59.0	13.1	586.1	566.9	19.27	30.413		
4,300.0	4,255.5	4,263.5	4,263.5	14.2	9.5	175.09	-59.0	13.1	602.7	582.9	19.74	30.526		
4,400.0	4,354.1	4,362.1	4,362.1	14.6	9.7	175.22	-59.0	13.1	619.3	599.0	20.21	30.634		
4,500.0	4,452.7	4,460.7	4,460.7	14.9	9.9	175.35	-59.0	13.1	635.8	615.1	20.69	30.737		
4,571.9	4,523.6	4,531.6	4,531.6	15.2	10.1	175.43	-59.0	13.1	647.7	626.7	21.03	30.808		
4,600.0	4,551.4	4,559.4	4,559.4	15.3	10.1	175.47	-59.0	13.1	652.3	631.1	21.17	30.818		
4,700.0	4,650.4	4,658.4	4,658.4	15.6	10.4	175.59	-59.0	13.1	666.2	644.5	21.62	30.814		
4,800.0	4,749.8	4,757.8	4,757.8	15.8	10.6	175.67	-59.0	13.1	676.6	654.6	22.05	30.691		

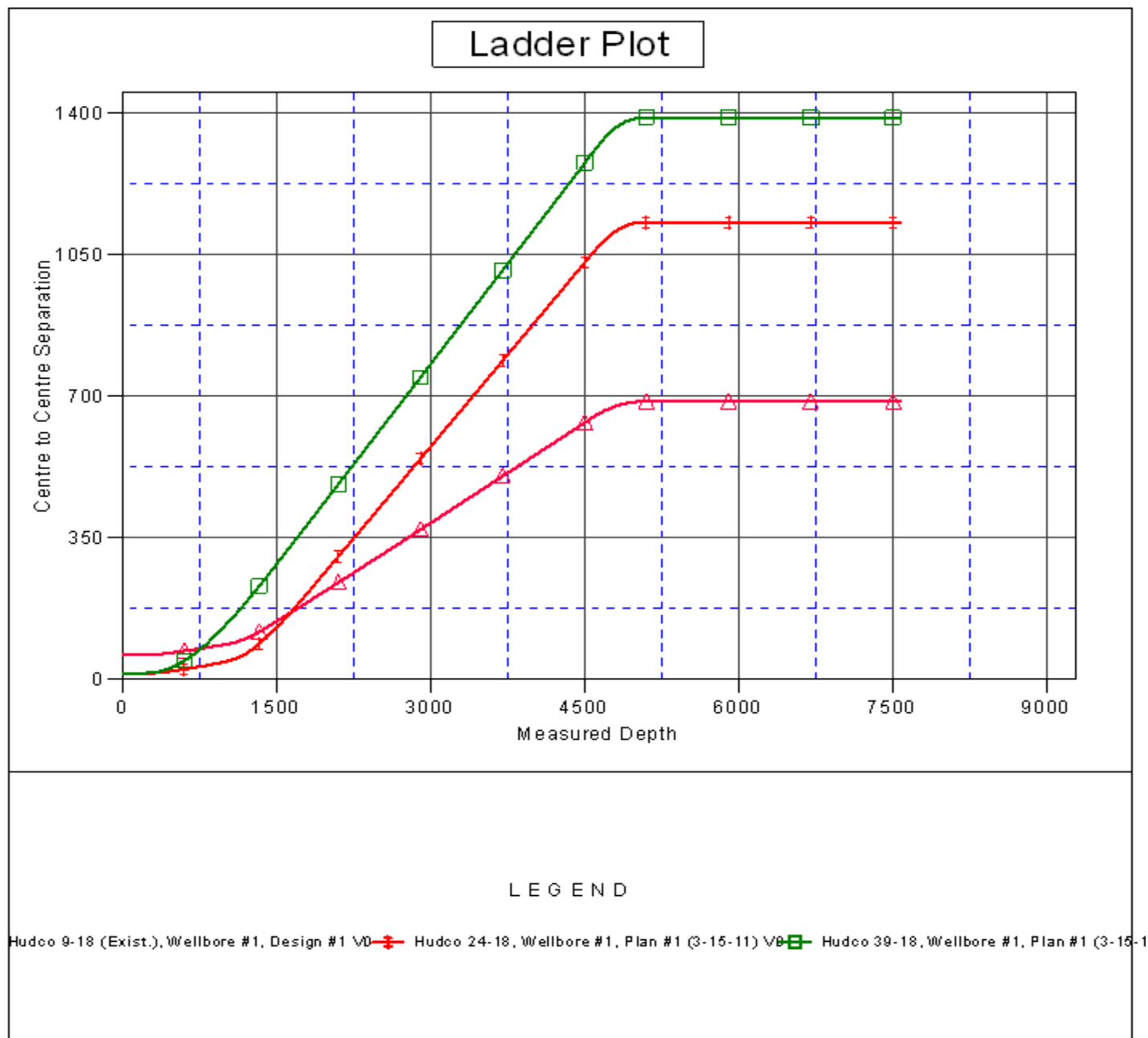
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Offset Design Hudco 9-18 Pad Sec.18-T2N-R65W - Hudco 9-18 (Exist.) - Wellbore #1 - Design #1												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,849.6	4,857.6	4,857.6	16.0	10.8	175.73	-59.0	13.1	683.6	661.1	22.44	30.459	
5,000.0	4,949.5	4,957.5	4,957.5	16.2	11.0	175.75	-59.0	13.1	687.1	664.3	22.81	30.122	
5,050.5	5,000.0	5,008.0	5,008.0	16.2	11.1	-139.50	-59.0	13.1	687.5	664.5	22.98	29.912	
5,100.0	5,049.5	5,057.5	5,057.5	16.3	11.3	-139.50	-59.0	13.1	687.5	664.3	23.19	29.653	
5,200.0	5,149.5	5,157.5	5,157.5	16.4	11.5	-139.50	-59.0	13.1	687.5	663.9	23.61	29.120	
5,300.0	5,249.5	5,257.5	5,257.5	16.6	11.7	-139.50	-59.0	13.1	687.5	663.5	24.03	28.606	
5,400.0	5,349.5	5,357.5	5,357.5	16.7	11.9	-139.50	-59.0	13.1	687.5	663.1	24.46	28.108	
5,500.0	5,449.5	5,457.5	5,457.5	16.9	12.2	-139.50	-59.0	13.1	687.5	662.6	24.89	27.627	
5,600.0	5,549.5	5,557.5	5,557.5	17.0	12.4	-139.50	-59.0	13.1	687.5	662.2	25.31	27.161	
5,700.0	5,649.5	5,657.5	5,657.5	17.2	12.6	-139.50	-59.0	13.1	687.5	661.8	25.74	26.709	
5,800.0	5,749.5	5,757.5	5,757.5	17.4	12.8	-139.50	-59.0	13.1	687.5	661.3	26.17	26.272	
5,900.0	5,849.5	5,857.5	5,857.5	17.5	13.1	-139.50	-59.0	13.1	687.5	660.9	26.60	25.848	
6,000.0	5,949.5	5,957.5	5,957.5	17.7	13.3	-139.50	-59.0	13.1	687.5	660.5	27.03	25.437	
6,100.0	6,049.5	6,057.5	6,057.5	17.8	13.5	-139.50	-59.0	13.1	687.5	660.1	27.46	25.038	
6,200.0	6,149.5	6,157.5	6,157.5	18.0	13.7	-139.50	-59.0	13.1	687.5	659.6	27.89	24.651	
6,300.0	6,249.5	6,257.5	6,257.5	18.2	14.0	-139.50	-59.0	13.1	687.5	659.2	28.32	24.276	
6,400.0	6,349.5	6,357.5	6,357.5	18.3	14.2	-139.50	-59.0	13.1	687.5	658.8	28.75	23.911	
6,500.0	6,449.5	6,457.5	6,457.5	18.5	14.4	-139.50	-59.0	13.1	687.5	658.3	29.19	23.556	
6,600.0	6,549.5	6,557.5	6,557.5	18.7	14.6	-139.50	-59.0	13.1	687.5	657.9	29.62	23.212	
6,700.0	6,649.5	6,657.5	6,657.5	18.8	14.9	-139.50	-59.0	13.1	687.5	657.5	30.05	22.877	
6,800.0	6,749.5	6,757.5	6,757.5	19.0	15.1	-139.50	-59.0	13.1	687.5	657.0	30.49	22.551	
6,900.0	6,849.5	6,857.5	6,857.5	19.2	15.3	-139.50	-59.0	13.1	687.5	656.6	30.92	22.235	
7,000.0	6,949.5	6,957.5	6,957.5	19.3	15.5	-139.50	-59.0	13.1	687.5	656.2	31.36	21.926	
7,100.0	7,049.5	7,057.5	7,057.5	19.5	15.8	-139.50	-59.0	13.1	687.5	655.7	31.79	21.626	
7,200.0	7,149.5	7,157.5	7,157.5	19.7	16.0	-139.50	-59.0	13.1	687.5	655.3	32.23	21.334	
7,300.0	7,249.5	7,257.5	7,257.5	19.9	16.2	-139.50	-59.0	13.1	687.5	654.9	32.66	21.049	
7,400.0	7,349.5	7,357.5	7,357.5	20.0	16.4	-139.50	-59.0	13.1	687.5	654.4	33.10	20.771	
7,500.0	7,449.5	7,457.5	7,457.5	20.2	16.6	-139.50	-59.0	13.1	687.5	654.0	33.54	20.501	
7,572.5	7,522.0	7,530.0	7,530.0	20.3	16.8	-139.50	-59.0	13.1	687.5	653.7	33.85	20.309	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4996.0ft (Original Well Elev) Coordinates are relative to: Hudco 40-18
Offset Depths are relative to Offset Datum
Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °
Grid Convergence at Surface is: 0.52°



Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Hudco 40-18
Project:	SEC.18-T2N-R65W	TVD Reference:	WELL @ 4996.0ft (Original Well Elev)
Reference Site:	Hudco 9-18 Pad Sec.18-T2N-R65W	MD Reference:	WELL @ 4996.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hudco 40-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-15-11)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4996.0ft (Original Well Elev) Coordinates are relative to: Hudco 40-18
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.52°

