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Drilling Services

Proposal

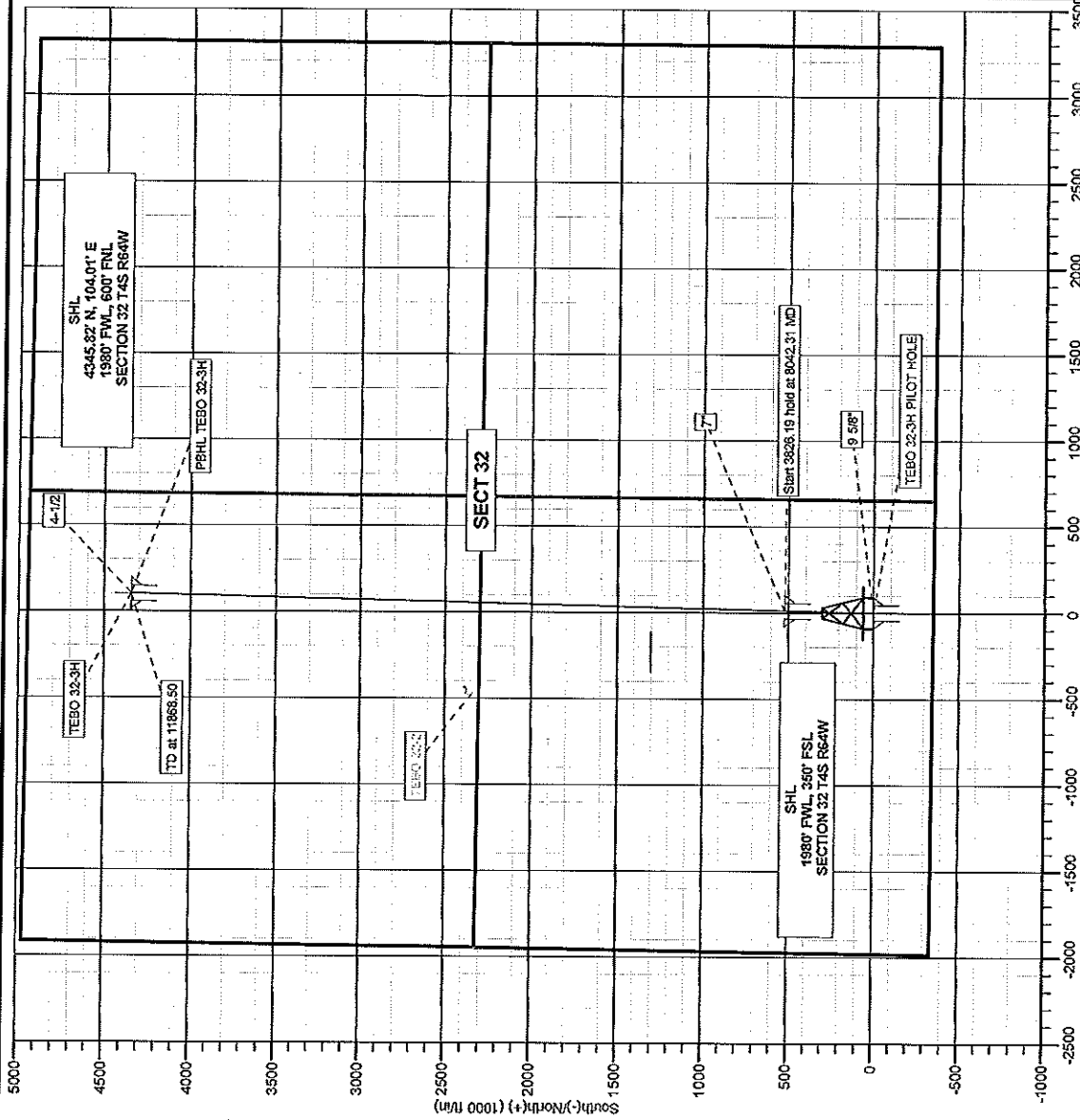
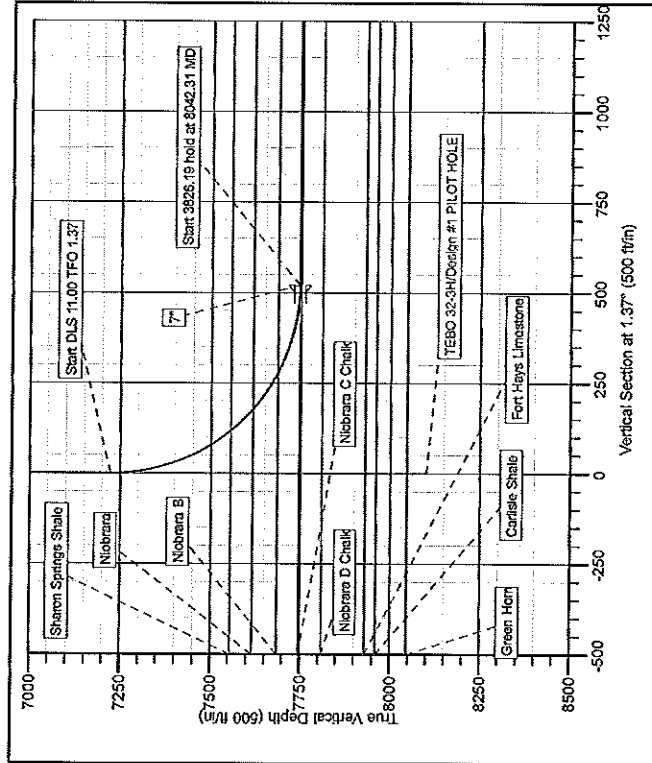
ConocoPhillips

ConocoPhillips
TEBO 32-3H
ARAPAHOE COUNTY, COLORADO
WELL FILE: PLAN 1
JANUARY 6, 2012

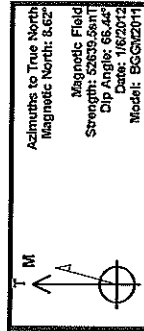
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Project: ARAPAHOE COUNTY CO
 Site: TEBO 32-3H
 Well: TEBO 32-3H
 Wellbore: TEBO 32-3H
 Design: Design #1 CURVE/LAT
 Latitude: 39° 39' 11.910 N
 Longitude: 104° 34' 39.480 W
 GL: 5968.00
 KB: WELL @ 5986.00ft (Original Well Elev)



WELLBORE TARGET DETAILS (LAT/LONG)									
Name	PBHL TEBO 32-3H	TVD	+N/S	+E/W	Latitude	Longitude	Shape	Point	
		7745.00	4345.82	104.01	39° 39' 54.860 N	104° 34' 38.180 W	Point		
WELL DETAILS: TEBO 32-3H									
	+N/S	+E/W	Ground Level	Latitude	Longitude	Slot			
	0.00	0.00	5968.00	39° 39' 11.910 N	104° 34' 39.480 W				
SECTION DETAILS									
MD	Inc	Asl	TVD	+N/S	+E/W	DLog	TFace	VSec	Annotation
7224.13	0.00	0.00	7224.13	0.00	0.00	0.00	0.00	0.00	
8042.31	90.00	1.37	7743.00	520.72	12.46	11.00	1.37	520.37	Start DLS 11.00 TFO 1.37
11868.50	90.00	1.37	7745.00	4345.82	104.01	0.00	0.00	4347.06	Start 3526.19 hold at 8042.31 MD TD at 11868.50



CASING DETAILS			
TVD	MD	Name	Size
2210.00	2210.00	9 5/8"	9.58
7745.00	8042.31	7"	7
7745.00	11868.50	4-1/2"	4.12

FORMATION TOP DETAILS	
TVD/Path	MD/Path
Formation	Carlisle Shale
	Fort Hays Limestone
	Fox Hills Aquifer
	Green Horn
	Niobrara D Chalk
	Pioma Shale
7555.00	7552.65
7616.00	7607.70
7685.00	7789.84
7745.00	8042.31



CONOCO/PHILLIPS CO.

ARAPAHOE COUNTY CO

TEBO 32-3H

TEBO 32-3H

TEBO 32-3H

Plan: Design #1 CURVE/LAT

Standard Planning Report

06 January, 2012



Weatherford®

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Site TEBO 32-3H
Company:	CONOCO/PHILLIPS CO.	TVD Reference:	WELL @ 5986.00ft (Original Well Elev)
Project:	ARAPAHOE COUNTY CO	MD Reference:	WELL @ 5986.00ft (Original Well Elev)
Site:	TEBO 32-3H	North Reference:	True
Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	TEBO 32-3H		
Design:	Design #1 CURVE/LAT		

Project	ARAPAHOE COUNTY CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	TEBO 32-3H				
Site Position:		Northing:	1,664,164.58ft	Latitude:	39° 39' 11.910 N
From:	Lat/Long	Easting:	3,259,706.08ft	Longitude:	104° 34' 39.480 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.58 °

Well	TEBO 32-3H					
Well Position	+N/-S	0.00 ft	Northing:	1,664,164.58 ft	Latitude:	39° 39' 11.910 N
	+E/-W	0.00 ft	Easting:	3,259,706.08 ft	Longitude:	104° 34' 39.480 W
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,968.00 ft	

Wellbore	TEBO 32-3H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2011	1/6/2012	8.62	66.44	52,639

Design	Design #1 CURVE/LAT			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	7,224.13
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	1.37

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
7,224.13	0.00	0.00	7,224.13	0.00	0.00	0.00	0.00	0.00	0.00	
8,042.31	90.00	1.37	7,745.00	520.72	12.46	11.00	11.00	0.17	1.37	
11,868.50	90.00	1.37	7,745.00	4,345.82	104.01	0.00	0.00	0.00	0.00	PBHL TEBO 32-3H

Database: EDM 2003.21 Single User Db
Company: CONOCO/PHILLIPS CO.
Project: ARAPAHOE COUNTY CO
Site: TEBO 32-3H
Well: TEBO 32-3H
Wellbore: TEBO 32-3H
Design: Design #1 CURVE/LAT

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Site TEBO 32-3H
WELL @ 5986.00ft (Original Well Elev)
WELL @ 5986.00ft (Original Well Elev)
True
Minimum Curvature

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
2,210.00	0.00	0.00	2,210.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00

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Company:	CONOCO/PHILLIPS CO.	TVD Reference:	WELL @ 5986.00ft (Original Well Elev)
Project:	ARAPAHOE COUNTY CO	MD Reference:	WELL @ 5986.00ft (Original Well Elev)
Site:	TEBO 32-3H	North Reference:	True
Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	TEBO 32-3H		
Design:	Design #1 CURVE/LAT		

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)	
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
Start DLS 11.00 TFO 1.37										
7,224.13	0.00	0.00	7,224.13	0.00	0.00	0.00	0.00	0.00	0.00	
7,250.00	2.85	1.37	7,249.99	0.64	0.02	0.64	11.00	11.00	0.00	
7,300.00	8.35	1.37	7,299.73	5.51	0.13	5.52	11.00	11.00	0.00	
7,350.00	13.85	1.37	7,348.78	15.13	0.36	15.13	11.00	11.00	0.00	
7,400.00	19.35	1.37	7,396.68	29.40	0.70	29.41	11.00	11.00	0.00	
7,450.00	24.85	1.37	7,442.99	48.20	1.15	48.21	11.00	11.00	0.00	
7,500.00	30.35	1.37	7,487.28	71.34	1.71	71.36	11.00	11.00	0.00	
7,550.00	35.85	1.37	7,529.15	98.63	2.36	98.66	11.00	11.00	0.00	
Sharon Springs Shale										
7,582.65	39.44	1.37	7,555.00	118.56	2.84	118.59	11.00	11.00	0.00	
7,600.00	41.35	1.37	7,568.22	129.80	3.11	129.83	11.00	11.00	0.00	
7,650.00	46.85	1.37	7,604.11	164.57	3.94	164.61	11.00	11.00	0.00	
Niobrara										
7,667.70	48.79	1.37	7,616.00	177.68	4.25	177.73	11.00	11.00	0.00	
7,700.00	52.35	1.37	7,636.51	202.62	4.85	202.67	11.00	11.00	0.00	
7,750.00	57.85	1.37	7,665.11	243.59	5.83	243.66	11.00	11.00	0.00	
Niobrara B										
7,789.84	62.23	1.37	7,685.00	278.09	6.66	278.17	11.00	11.00	0.00	
7,800.00	63.35	1.37	7,689.65	287.12	6.87	287.21	11.00	11.00	0.00	
7,850.00	68.85	1.37	7,709.90	332.80	7.96	332.90	11.00	11.00	0.00	
7,900.00	74.35	1.37	7,725.68	380.22	9.10	380.32	11.00	11.00	0.00	
7,950.00	79.85	1.37	7,736.84	428.92	10.27	429.04	11.00	11.00	0.00	
8,000.00	85.35	1.37	7,743.28	478.47	11.45	478.61	11.00	11.00	0.00	
Start 3826.19 hold at 8042.31 MD - Niobrara C Chalk - 7"										
8,042.31	90.00	1.37	7,745.00	520.72	12.46	520.87	11.00	11.00	0.00	
8,100.00	90.00	1.37	7,745.00	578.39	13.84	578.56	0.00	0.00	0.00	
8,200.00	90.00	1.37	7,745.00	678.37	16.24	678.56	0.00	0.00	0.00	
8,300.00	90.00	1.37	7,745.00	778.34	18.63	778.56	0.00	0.00	0.00	
8,400.00	90.00	1.37	7,745.00	878.31	21.02	878.56	0.00	0.00	0.00	
8,500.00	90.00	1.37	7,745.00	978.28	23.41	978.56	0.00	0.00	0.00	
8,600.00	90.00	1.37	7,745.00	1,078.25	25.81	1,078.56	0.00	0.00	0.00	

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Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	TEBO 32-3H		
Design:	Design #1 CURVE/LAT		

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)	
8,700.00	90.00	1.37	7,745.00	1,178.22	28.20	1,178.56	0.00	0.00	0.00	
8,800.00	90.00	1.37	7,745.00	1,278.19	30.59	1,278.56	0.00	0.00	0.00	
8,900.00	90.00	1.37	7,745.00	1,378.17	32.98	1,378.56	0.00	0.00	0.00	
9,000.00	90.00	1.37	7,745.00	1,478.14	35.38	1,478.56	0.00	0.00	0.00	
9,100.00	90.00	1.37	7,745.00	1,578.11	37.77	1,578.56	0.00	0.00	0.00	
9,200.00	90.00	1.37	7,745.00	1,678.08	40.16	1,678.56	0.00	0.00	0.00	
9,300.00	90.00	1.37	7,745.00	1,778.05	42.55	1,778.56	0.00	0.00	0.00	
9,400.00	90.00	1.37	7,745.00	1,878.02	44.95	1,878.56	0.00	0.00	0.00	
9,500.00	90.00	1.37	7,745.00	1,977.99	47.34	1,978.56	0.00	0.00	0.00	
9,600.00	90.00	1.37	7,745.00	2,077.97	49.73	2,078.56	0.00	0.00	0.00	
9,700.00	90.00	1.37	7,745.00	2,177.94	52.12	2,178.56	0.00	0.00	0.00	
9,800.00	90.00	1.37	7,745.00	2,277.91	54.52	2,278.56	0.00	0.00	0.00	
9,900.00	90.00	1.37	7,745.00	2,377.88	56.91	2,378.56	0.00	0.00	0.00	
10,000.00	90.00	1.37	7,745.00	2,477.85	59.30	2,478.56	0.00	0.00	0.00	
10,100.00	90.00	1.37	7,745.00	2,577.82	61.69	2,578.56	0.00	0.00	0.00	
10,200.00	90.00	1.37	7,745.00	2,677.79	64.09	2,678.56	0.00	0.00	0.00	
10,300.00	90.00	1.37	7,745.00	2,777.76	66.48	2,778.56	0.00	0.00	0.00	
10,400.00	90.00	1.37	7,745.00	2,877.74	68.87	2,878.56	0.00	0.00	0.00	
10,500.00	90.00	1.37	7,745.00	2,977.71	71.26	2,978.56	0.00	0.00	0.00	
10,600.00	90.00	1.37	7,745.00	3,077.68	73.66	3,078.56	0.00	0.00	0.00	
10,700.00	90.00	1.37	7,745.00	3,177.65	76.05	3,178.56	0.00	0.00	0.00	
10,800.00	90.00	1.37	7,745.00	3,277.62	78.44	3,278.56	0.00	0.00	0.00	
10,900.00	90.00	1.37	7,745.00	3,377.59	80.83	3,378.56	0.00	0.00	0.00	
11,000.00	90.00	1.37	7,745.00	3,477.56	83.23	3,478.56	0.00	0.00	0.00	
11,100.00	90.00	1.37	7,745.00	3,577.54	85.62	3,578.56	0.00	0.00	0.00	
11,200.00	90.00	1.37	7,745.00	3,677.51	88.01	3,678.56	0.00	0.00	0.00	
11,300.00	90.00	1.37	7,745.00	3,777.48	90.41	3,778.56	0.00	0.00	0.00	
11,400.00	90.00	1.37	7,745.00	3,877.45	92.80	3,878.56	0.00	0.00	0.00	
11,500.00	90.00	1.37	7,745.00	3,977.42	95.19	3,978.56	0.00	0.00	0.00	
11,600.00	90.00	1.37	7,745.00	4,077.39	97.58	4,078.56	0.00	0.00	0.00	
11,700.00	90.00	1.37	7,745.00	4,177.36	99.98	4,178.56	0.00	0.00	0.00	
11,800.00	90.00	1.37	7,745.00	4,277.34	102.37	4,278.56	0.00	0.00	0.00	
4-1/2 - PBHL TEBO 32-3H										
11,868.50	90.00	1.37	7,745.00	4,345.82	104.01	4,347.06	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
- hit/miss target										
- Shape										
PBHL TEBO 32-3H	0.00	0.00	7,745.00	4,345.82	104.01	1,668,511.22	3,259,765.96	39° 39' 54.860 N	104° 34' 38.150 W	
- plan hits target center										
- Point										

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Site TEBO 32-3H
Company:	CONOCO/PHILLIPS CO.	TVD Reference:	WELL @ 5986.00ft (Original Well Elev)
Project:	ARAPAHOE COUNTY CO	MD Reference:	WELL @ 5986.00ft (Original Well Elev)
Site:	TEBO 32-3H	North Reference:	True
Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	TEBO 32-3H		
Design:	Design #1 CURVE/LAT		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
2,210.00	2,210.00	9 5/8"	9-5/8	12-1/4	
8,042.31	7,745.00	7"	7	8-3/4	
11,868.50	7,745.00	4-1/2	4-1/2	6	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,775.00	1,775.00	Fox Hills Aquifer		0.00	
2,008.00	2,008.00	Pierre Shale		0.00	
7,582.65	7,555.00	Sharon Springs Shale		0.00	
7,667.70	7,616.00	Niobrara		0.00	
7,789.84	7,685.00	Niobrara B		0.00	
8,042.31	7,745.00	Niobrara C Chalk		0.00	
	7,808.00	Niobrara D Chalk		0.00	
	7,930.00	Fort Hays Limestone		0.00	
	7,960.00	Carlisle Shale		0.00	
	8,045.00	Green Horn		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
7,224.13	7,224.13	0.00	0.00	Start DLS 11.00 TFO 1.37	
8,042.31	7,745.00	520.72	12.46	Start 3826.19 hold at 8042.31 MD	
11,868.50	7,745.00	4,345.82	104.01	TD at 11868.50	



CONOCO/PHILLIPS CO.

ARAPAHOE COUNTY CO

TEBO 32-3H

TEBO 32-3H

TEBO 32-3H

Design #1 CURVE/LAT

Anticollision Report

06 January, 2012



Weatherford®

Company:	CONOCO/PHILLIPS CO.	Local Co-ordinate Reference:	Site TEBO 32-3H
Project:	ARAPAHOE COUNTY CO	TVD Reference:	WELL @ 5986.00ft (Original Well Elev)
Reference Site:	TEBO 32-3H	MD Reference:	WELL @ 5986.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	TEBO 32-3H	Database:	EDM 2003.21 Single User Db
Reference Design:	Design #1 CURVE/LAT	Offset TVD Reference:	Offset Datum

Reference	Design #1 CURVE/LAT
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 11,000.00ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	1/6/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	7,224.13	Design #1 PILOT HOLE (TEBO 32-3H PIL	MWD	MWD - Standard	
7,224.13	11,868.50	Design #1 CURVE/LAT (TEBO 32-3H)			

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						
TEBO 32-2						
TEBO 32-2 - TEBO 32-2 - TEBO 32-2	9,852.31	7,397.00	608.86	556.88	11.712	CC, ES
TEBO 32-2 - TEBO 32-2 - TEBO 32-2	10,000.00	7,397.00	626.52	572.22	11.538	SF
TEBO 32-3H						
TEBO 32-3H - TEBO 32-3H PILOT HOLE - Design #1 PI	7,224.13	7,224.13	0.00	0.00	10,000.000	CC, ES
TEBO 32-3H - TEBO 32-3H PILOT HOLE - Design #1 PI	7,235.80	7,235.79	0.13	0.09	2.880	SF

Offset Design												TEBO 32-2 - TEBO 32-2 - TEBO 32-2 - TEBO 32-2		Offset Site Error:		0.00 ft	
Survey Program: 2255-MWD														Offset Well Error:		0.00 ft	
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			
0.00	0.00	2,169.00	2,168.93	0.00	0.00	-10.35	2,387.61	-436.18	3,283.16								
100.00	100.00	2,169.00	2,168.93	0.09	0.00	-10.35	2,387.61	-436.18	3,216.67	3,216.58	0.09	N/A					
200.00	200.00	2,169.00	2,168.93	0.32	0.00	-10.35	2,387.61	-436.18	3,151.95	3,151.63	0.32	9,939.283					
300.00	300.00	2,169.00	2,168.93	0.64	0.00	-10.35	2,387.61	-436.18	3,089.11	3,088.57	0.64	5,700.657					
400.00	400.00	2,169.00	2,168.93	0.77	0.00	-10.35	2,387.61	-436.18	3,028.27	3,027.50	0.77	3,949.988					
500.00	500.00	2,169.00	2,168.93	0.99	0.00	-10.35	2,387.61	-436.18	2,969.55	2,968.56	0.99	2,995.252					
600.00	600.00	2,169.00	2,168.93	1.22	0.00	-10.35	2,387.61	-436.18	2,913.08	2,911.86	1.22	2,395.261					
700.00	700.00	2,169.00	2,168.93	1.44	0.00	-10.35	2,387.61	-436.18	2,858.99	2,857.55	1.44	1,984.103					
800.00	800.00	2,169.00	2,168.93	1.67	0.00	-10.35	2,387.61	-436.18	2,807.43	2,805.76	1.67	1,685.418					
900.00	900.00	2,169.00	2,168.93	1.89	0.00	-10.35	2,387.61	-436.18	2,758.53	2,756.64	1.89	1,459.166					
1,000.00	1,000.00	2,169.00	2,168.93	2.12	0.00	-10.35	2,387.61	-436.18	2,712.43	2,710.32	2.12	1,282.323					
1,100.00	1,100.00	2,169.00	2,168.93	2.34	0.00	-10.35	2,387.61	-436.18	2,669.29	2,666.95	2.34	1,140.714					
1,200.00	1,200.00	2,169.00	2,168.93	2.56	0.00	-10.35	2,387.61	-436.18	2,629.24	2,626.68	2.56	1,025.133					
1,300.00	1,300.00	2,169.00	2,168.93	2.79	0.00	-10.35	2,387.61	-436.18	2,592.44	2,589.65	2.79	929.340					
1,400.00	1,400.00	2,169.00	2,168.93	3.01	0.00	-10.35	2,387.61	-436.18	2,559.01	2,556.00	3.01	848.954					
1,500.00	1,500.00	2,169.00	2,168.93	3.24	0.00	-10.35	2,387.61	-436.18	2,529.10	2,525.86	3.24	780.809					
1,600.00	1,600.00	2,169.00	2,168.93	3.46	0.00	-10.35	2,387.61	-436.18	2,502.83	2,499.37	3.46	722.559					
1,700.00	1,700.00	2,169.00	2,168.93	3.69	0.00	-10.35	2,387.61	-436.18	2,480.32	2,476.63	3.69	672.426					
1,800.00	1,800.00	2,169.00	2,168.93	3.91	0.00	-10.35	2,387.61	-436.18	2,461.67	2,457.75	3.91	629.039					
1,900.00	1,900.00	2,169.00	2,168.93	4.14	0.00	-10.35	2,387.61	-436.18	2,446.96	2,442.82	4.14	591.318					
2,000.00	2,000.00	2,169.00	2,168.93	4.36	0.00	-10.35	2,387.61	-436.18	2,436.27	2,431.91	4.36	558.406					

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

Company:	CONOCO/PHILLIPS CO.	Local Co-ordinate Reference:	Site TEBO 32-3H
Project:	ARAPAHOE COUNTY CO	TVD Reference:	WELL @ 5986.00ft (Original Well Elev)
Reference Site:	TEBO 32-3H	MD Reference:	WELL @ 5986.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore:	TEBO 32-3H	Database:	EDM 2003.21 Single User Db
Reference Design:	Design #1 CURVE/LAT	Offset TVD Reference:	Offset Datum

Offset Design TEBO 32-2 - TEBO 32-2 - TEBO 32-2 - TEBO 32-2													Offset Site Error:	0.00 ft
Survey Program: 2255-MWD													Offset Well Error:	0.00 ft
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		
2,100.00	2,100.00	2,169.00	2,168.93	4.59	0.00	-10.35	2,387.61	-436.18	2,429.66	2,425.07	4.59	529.606		
2,200.00	2,200.00	2,169.00	2,168.93	4.81	0.00	-10.35	2,387.61	-436.18	2,427.15	2,422.34	4.81	504.349		
2,300.00	2,300.00	2,266.07	2,266.00	5.04	0.12	-10.36	2,387.48	-436.29	2,427.03	2,421.87	5.16	470.477		
2,400.00	2,400.00	2,374.45	2,374.37	5.26	0.36	-10.36	2,386.87	-436.48	2,426.50	2,420.88	5.63	431.271		
2,500.00	2,500.00	2,478.06	2,477.99	5.49	0.59	-10.37	2,386.05	-436.61	2,425.75	2,419.67	6.08	399.032		
2,600.00	2,600.00	2,580.75	2,580.67	5.71	0.82	-10.38	2,385.09	-436.79	2,424.87	2,418.34	6.53	371.395		
2,700.00	2,700.00	2,682.36	2,682.27	5.94	1.04	-10.39	2,384.05	-436.99	2,423.89	2,416.92	6.98	347.433		
2,800.00	2,800.00	2,784.46	2,784.37	6.16	1.26	-10.40	2,382.92	-437.30	2,422.86	2,415.44	7.42	328.511		
2,900.00	2,900.00	2,885.00	2,884.90	6.39	1.47	-10.41	2,381.73	-437.54	2,421.73	2,413.88	7.86	308.300		
3,000.00	3,000.00	2,985.68	2,985.57	6.61	1.68	-10.42	2,380.53	-437.91	2,420.63	2,412.34	8.29	292.001		
3,100.00	3,100.00	3,085.62	3,085.50	6.84	1.89	-10.44	2,379.27	-438.39	2,419.47	2,410.75	8.72	277.468		
3,200.00	3,200.00	3,182.32	3,182.20	7.06	2.08	-10.46	2,378.12	-438.85	2,418.39	2,409.26	9.13	264.813		
3,300.00	3,300.00	3,283.09	3,282.96	7.28	2.28	-10.47	2,377.04	-439.25	2,417.41	2,407.86	9.56	252.976		
3,400.00	3,400.00	3,378.69	3,378.56	7.51	2.47	-10.48	2,376.06	-439.35	2,416.43	2,406.45	9.97	242.274		
3,500.00	3,500.00	3,474.01	3,473.87	7.73	2.67	-10.48	2,375.34	-439.40	2,415.69	2,405.30	10.39	232.440		
3,600.00	3,600.00	3,570.48	3,570.34	7.96	2.87	-10.49	2,374.69	-439.81	2,415.10	2,404.29	10.82	223.239		
3,700.00	3,700.00	3,661.64	3,661.49	8.18	3.06	-10.52	2,374.17	-440.81	2,414.74	2,403.51	11.24	214.905		
3,731.45	3,731.45	3,689.61	3,689.45	8.25	3.12	-10.53	2,374.06	-441.28	2,414.72	2,403.35	11.37	212.442		
3,800.00	3,800.00	3,747.85	3,747.68	8.41	3.24	-10.56	2,373.96	-442.45	2,414.86	2,403.22	11.64	207.393		
3,900.00	3,900.00	3,834.36	3,834.17	8.63	3.42	-10.60	2,374.24	-444.43	2,415.59	2,403.54	12.05	200.459		
4,000.00	4,000.00	3,933.11	3,932.90	8.86	3.63	-10.65	2,374.98	-446.56	2,416.73	2,404.25	12.48	193.636		
4,100.00	4,100.00	4,036.13	4,035.89	9.08	3.84	-10.70	2,375.51	-448.71	2,417.81	2,404.69	12.92	187.085		
4,200.00	4,200.00	4,138.72	4,138.46	9.31	4.06	-10.75	2,376.05	-450.92	2,418.54	2,405.18	13.36	180.975		
4,300.00	4,300.00	4,242.56	4,242.28	9.53	4.28	-10.79	2,376.43	-452.81	2,419.24	2,405.43	13.81	175.221		
4,400.00	4,400.00	4,343.09	4,342.80	9.76	4.49	-10.83	2,376.75	-454.56	2,419.87	2,405.63	14.24	169.904		
4,500.00	4,500.00	4,437.74	4,437.43	9.98	4.68	-10.86	2,377.15	-456.04	2,420.59	2,405.92	14.66	165.074		
4,600.00	4,600.00	4,534.36	4,534.03	10.21	4.88	-10.89	2,377.80	-457.48	2,421.53	2,406.44	15.09	160.469		
4,700.00	4,700.00	4,617.53	4,617.18	10.43	5.06	-10.92	2,378.55	-459.09	2,422.79	2,407.30	15.49	156.392		
4,800.00	4,800.00	4,697.29	4,696.90	10.66	5.23	-10.98	2,379.79	-461.56	2,424.90	2,409.02	15.89	152.624		
4,900.00	4,900.00	4,795.86	4,795.37	10.88	5.45	-11.06	2,381.81	-465.56	2,427.69	2,411.36	16.33	148.695		
5,000.00	5,000.00	4,944.76	4,944.13	11.11	5.77	-11.19	2,383.14	-471.57	2,429.39	2,412.52	16.87	143.989		
5,100.00	5,100.00	5,080.46	5,079.77	11.33	6.06	-11.29	2,382.29	-475.63	2,429.41	2,412.02	17.39	139.726		
5,200.00	5,200.00	5,190.80	5,190.08	11.56	6.29	-11.34	2,380.33	-477.24	2,427.92	2,410.07	17.84	136.084		
5,300.00	5,300.00	5,284.32	5,283.59	11.78	6.48	-11.34	2,379.30	-477.23	2,426.82	2,408.56	18.26	132.882		
5,400.00	5,400.00	5,393.81	5,393.07	12.00	6.71	-11.34	2,377.99	-477.10	2,425.64	2,406.92	18.72	129.592		
5,500.00	5,500.00	5,502.62	5,501.87	12.23	6.94	-11.34	2,376.23	-476.73	2,423.98	2,404.81	19.17	126.438		
5,600.00	5,600.00	5,594.57	5,593.81	12.45	7.13	-11.35	2,374.70	-476.47	2,422.29	2,402.70	19.59	123.660		
5,700.00	5,700.00	5,694.38	5,693.61	12.68	7.34	-11.35	2,373.24	-476.50	2,420.86	2,400.84	20.02	120.905		
5,800.00	5,800.00	5,786.06	5,785.27	12.90	7.54	-11.37	2,371.91	-476.90	2,419.53	2,399.09	20.44	118.359		
5,900.00	5,900.00	5,913.47	5,912.65	13.13	7.81	-11.41	2,369.63	-478.12	2,417.90	2,396.96	20.94	115.476		
6,000.00	6,000.00	6,009.11	6,008.27	13.35	8.01	-11.44	2,367.31	-478.97	2,415.80	2,394.44	21.36	113.078		
6,100.00	6,100.00	6,120.01	6,119.12	13.58	8.25	-11.47	2,364.26	-479.67	2,413.20	2,391.38	21.82	110.590		
6,200.00	6,200.00	6,194.71	6,193.80	13.80	8.40	-11.49	2,362.62	-480.36	2,411.23	2,389.02	22.20	108.600		
6,300.00	6,300.00	6,296.95	6,296.02	14.03	8.62	-11.53	2,360.85	-481.41	2,409.73	2,387.09	22.64	106.437		
6,400.00	6,400.00	6,423.38	6,422.40	14.25	8.88	-11.53	2,358.26	-481.22	2,407.72	2,384.59	23.13	104.110		
6,500.00	6,500.00	6,520.40	6,519.40	14.48	9.08	-11.51	2,355.58	-479.80	2,404.73	2,381.18	23.55	102.101		
6,600.00	6,600.00	6,594.73	6,593.71	14.70	9.24	-11.51	2,354.24	-479.28	2,402.80	2,378.67	23.93	100.407		
6,700.00	6,700.00	6,688.19	6,687.16	14.93	9.43	-11.60	2,353.10	-478.69	2,401.48	2,377.13	24.35	98.632		
6,800.00	6,800.00	6,790.33	6,789.29	15.15	9.64	-11.49	2,351.97	-477.90	2,400.24	2,375.46	24.78	96.845		
6,900.00	6,900.00	6,898.37	6,897.32	15.38	9.87	-11.46	2,350.65	-476.56	2,398.79	2,373.56	25.23	95.062		
7,000.00	7,000.00	7,003.49	7,002.40	15.60	10.09	-11.42	2,349.08	-474.72	2,396.98	2,371.30	25.68	93.351		
7,100.00	7,100.00	7,105.40	7,104.29	15.83	10.30	-11.39	2,347.47	-473.10	2,395.12	2,369.01	26.11	91.718		

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

Company: CONOCO/PHILLIPS CO.
Project: ARAPAHOE COUNTY CO
Reference Site: TEBO 32-3H
Site Error: 0.00ft
Reference Well: TEBO 32-3H
Well Error: 0.00ft
Reference Wellbore: TEBO 32-3H
Reference Design: Design #1 CURVE/LAT

Local Co-ordinate Reference: Site TEBO 32-3H
TVD Reference: WELL @ 5986.00ft (Original Well Elev)
MD Reference: WELL @ 5986.00ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 2003.21 Single User Db
Offset TVD Reference: Offset Datum

Offset Design TEBO 32-2 - TEBO 32-2 - TEBO 32-2 - TEBO 32-2													Offset Site Error: 0.00 ft
Survey Program: 2255-MWD													Offset Well Error: 0.00 ft
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	
7,200.00	7,200.00	7,204.83	7,203.70	16.05	10.51	-11.37	2,345.72	-471.91	2,393.15	2,366.61	26.55	90.160	
7,224.13	7,224.13	7,227.92	7,226.79	16.10	10.56	-11.37	2,345.32	-471.68	2,392.70	2,366.05	26.65	89.786	
7,250.00	7,249.99	7,252.57	7,251.43	16.16	10.61	-12.77	2,344.90	-471.45	2,391.59	2,364.86	26.74	89.449	
7,300.00	7,299.73	7,299.55	7,298.40	16.28	10.71	-12.92	2,344.16	-470.97	2,385.97	2,359.17	26.80	89.038	
7,350.00	7,348.78	7,346.16	7,345.00	16.39	10.80	-13.22	2,343.48	-470.42	2,375.78	2,349.06	26.71	88.934	
7,400.00	7,396.68	7,393.86	7,392.69	16.50	10.90	-13.69	2,342.82	-469.82	2,361.09	2,334.59	26.50	89.107	
7,450.00	7,442.99	7,397.00	7,395.83	16.61	10.91	-14.23	2,342.78	-469.78	2,342.41	2,316.35	26.06	89.871	
7,500.00	7,487.28	7,397.00	7,395.83	16.72	10.91	-14.91	2,342.78	-469.78	2,320.38	2,294.86	25.52	90.935	
7,550.00	7,529.15	7,397.00	7,395.83	16.83	10.91	-15.76	2,342.78	-469.78	2,295.10	2,270.21	24.88	92.229	
7,600.00	7,568.22	7,397.00	7,395.83	16.97	10.91	-16.82	2,342.78	-469.78	2,266.69	2,242.50	24.20	93.671	
7,650.00	7,604.11	7,397.00	7,395.83	17.13	10.91	-18.16	2,342.78	-469.78	2,235.32	2,211.82	23.50	95.125	
7,700.00	7,636.51	7,397.00	7,395.83	17.32	10.91	-19.83	2,342.78	-469.78	2,201.14	2,178.30	22.84	96.367	
7,750.00	7,665.11	7,397.00	7,395.83	17.55	10.91	-21.97	2,342.78	-469.78	2,164.35	2,142.05	22.30	97.058	
7,800.00	7,689.65	7,397.00	7,395.83	17.80	10.91	-24.72	2,342.78	-469.78	2,125.16	2,103.19	21.97	96.714	
7,850.00	7,709.90	7,397.00	7,395.83	18.10	10.91	-28.34	2,342.78	-469.78	2,083.81	2,061.81	21.99	94.742	
7,900.00	7,725.68	7,397.00	7,395.83	18.44	10.91	-33.20	2,342.78	-469.78	2,040.55	2,018.02	22.52	90.595	
7,950.00	7,736.84	7,397.00	7,395.83	18.81	10.91	-39.86	2,342.78	-469.78	1,995.67	1,971.93	23.74	84.081	
8,000.00	7,743.28	7,397.00	7,395.83	19.22	10.91	-49.14	2,342.78	-469.78	1,949.49	1,923.76	25.73	75.761	
8,042.31	7,745.00	7,397.00	7,395.83	19.59	10.91	-59.70	2,342.78	-469.78	1,909.66	1,881.75	27.91	68.427	
8,100.00	7,745.00	7,397.00	7,395.83	20.13	10.91	-59.70	2,342.78	-469.78	1,855.07	1,826.69	28.38	65.369	
8,200.00	7,745.00	7,397.00	7,395.83	21.17	10.91	-59.70	2,342.78	-469.78	1,760.92	1,731.63	29.28	60.132	
8,300.00	7,745.00	7,397.00	7,395.83	22.33	10.91	-59.70	2,342.78	-469.78	1,667.44	1,637.15	30.29	55.046	
8,400.00	7,745.00	7,397.00	7,395.83	23.68	10.91	-59.70	2,342.78	-469.78	1,574.77	1,543.38	31.39	50.174	
8,500.00	7,745.00	7,397.00	7,395.83	24.92	10.91	-59.70	2,342.78	-469.78	1,483.05	1,450.50	32.55	45.556	
8,600.00	7,745.00	7,397.00	7,395.83	26.32	10.91	-59.70	2,342.78	-469.78	1,392.47	1,358.69	33.79	41.215	
8,700.00	7,745.00	7,397.00	7,395.83	27.79	10.91	-59.70	2,342.78	-469.78	1,303.27	1,268.20	35.07	37.162	
8,800.00	7,745.00	7,397.00	7,395.83	29.30	10.91	-59.70	2,342.78	-469.78	1,215.75	1,179.35	36.40	33.400	
8,900.00	7,745.00	7,397.00	7,395.83	30.86	10.91	-59.70	2,342.78	-469.78	1,130.31	1,092.54	37.77	29.927	
9,000.00	7,745.00	7,397.00	7,395.83	32.46	10.91	-59.70	2,342.78	-469.78	1,047.44	1,008.27	39.17	26.740	
9,100.00	7,745.00	7,397.00	7,395.83	34.08	10.91	-59.70	2,342.78	-469.78	967.82	927.22	40.60	23.836	
9,200.00	7,745.00	7,397.00	7,395.83	35.74	10.91	-59.70	2,342.78	-469.78	892.31	850.25	42.06	21.215	
9,300.00	7,745.00	7,397.00	7,395.83	37.42	10.91	-59.70	2,342.78	-469.78	822.04	778.50	43.54	18.881	
9,400.00	7,745.00	7,397.00	7,395.83	39.12	10.91	-59.70	2,342.78	-469.78	758.46	713.45	45.03	16.842	
9,500.00	7,745.00	7,397.00	7,395.83	40.83	10.91	-59.70	2,342.78	-469.78	703.44	656.89	46.55	15.113	
9,600.00	7,745.00	7,397.00	7,395.83	42.57	10.91	-59.70	2,342.78	-469.78	659.07	610.99	48.07	13.709	
9,700.00	7,745.00	7,397.00	7,395.83	44.31	10.91	-59.70	2,342.78	-469.78	627.62	578.01	49.62	12.650	
9,800.00	7,745.00	7,397.00	7,395.83	46.07	10.91	-59.70	2,342.78	-469.78	611.10	559.94	51.17	11.943	
9,852.31	7,745.00	7,397.00	7,395.83	47.00	10.91	-59.70	2,342.78	-469.78	608.86	556.88	51.98	11.712 CC, ES	
9,900.00	7,745.00	7,397.00	7,395.83	47.84	10.91	-59.70	2,342.78	-469.78	610.72	558.00	52.73	11.582	
10,000.00	7,745.00	7,397.00	7,395.83	49.62	10.91	-59.70	2,342.78	-469.78	626.52	572.22	54.30	11.538 SF	
10,100.00	7,745.00	7,397.00	7,395.83	51.41	10.91	-59.70	2,342.78	-469.78	657.31	601.44	55.88	11.763	
10,200.00	7,745.00	7,397.00	7,395.83	53.21	10.91	-59.70	2,342.78	-469.78	701.14	643.68	57.47	12.201	
10,300.00	7,745.00	7,397.00	7,395.83	55.01	10.91	-59.70	2,342.78	-469.78	755.74	696.68	59.06	12.797	
10,400.00	7,745.00	7,397.00	7,395.83	56.82	10.91	-59.70	2,342.78	-469.78	818.95	758.29	60.66	13.501	
10,500.00	7,745.00	7,397.00	7,395.83	58.64	10.91	-59.70	2,342.78	-469.78	888.94	826.68	62.26	14.278	
10,600.00	7,745.00	7,397.00	7,395.83	60.46	10.91	-59.70	2,342.78	-469.78	964.24	900.37	63.87	15.097	
10,700.00	7,745.00	7,397.00	7,395.83	62.29	10.91	-59.70	2,342.78	-469.78	1,043.69	978.21	65.48	15.938	
10,800.00	7,745.00	7,397.00	7,395.83	64.12	10.91	-59.70	2,342.78	-469.78	1,126.43	1,059.32	67.10	16.787	
10,900.00	7,745.00	7,397.00	7,395.83	65.95	10.91	-59.70	2,342.78	-469.78	1,211.76	1,143.04	68.72	17.632	
11,000.00	7,745.00	7,397.00	7,395.83	67.79	10.91	-59.70	2,342.78	-469.78	1,299.20	1,228.85	70.35	18.468	
11,100.00	7,745.00	7,397.00	7,395.83	69.63	10.91	-59.70	2,342.78	-469.78	1,388.33	1,316.35	71.98	19.289	
11,200.00	7,745.00	7,397.00	7,395.83	71.48	10.91	-59.70	2,342.78	-469.78	1,478.85	1,405.24	73.61	20.091	

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

Company: CONOCO/PHILLIPS CO.
Project: ARAPAHOE COUNTY CO
Reference Site: TEBO 32-3H
Site Error: 0.00ft
Reference Well: TEBO 32-3H
Well Error: 0.00ft
Reference Wellbore: TEBO 32-3H
Reference Design: Design #1 CURVE/LAT

Local Co-ordinate Reference: Site TEBO 32-3H
TVD Reference: WELL @ 5986.00ft (Original Well Elev)
MD Reference: WELL @ 5986.00ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 2003.21 Single User Db
Offset TVD Reference: Offset Datum

Offset Design TEBO 32-2 - TEBO 32-2 - TEBO 32-2 - TEBO 32-2													Offset Site Error: 0.00 ft
Survey Program: 2255-MWD													Offset Well Error: 0.00 ft
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	
11,300.00	7,745.00	7,397.00	7,395.83	73.33	10.91	-59.70	2,342.78	-469.78	1,570.52	1,495.28	75.24	20.873	
11,400.00	7,745.00	7,397.00	7,395.83	75.18	10.91	-59.70	2,342.78	-469.78	1,663.15	1,586.27	76.88	21.634	
11,500.00	7,745.00	7,397.00	7,395.83	77.03	10.91	-59.70	2,342.78	-469.78	1,756.59	1,678.07	78.52	22.372	
11,600.00	7,745.00	7,397.00	7,395.83	78.89	10.91	-59.70	2,342.78	-469.78	1,850.71	1,770.56	80.16	23.088	
11,700.00	7,745.00	7,397.00	7,395.83	80.75	10.91	-59.70	2,342.78	-469.78	1,945.43	1,863.63	81.80	23.783	
11,800.00	7,745.00	7,397.00	7,395.83	82.61	10.91	-59.70	2,342.78	-469.78	2,040.64	1,957.20	83.45	24.455	
11,868.50	7,745.00	7,397.00	7,395.83	83.89	10.91	-59.70	2,342.78	-469.78	2,106.12	2,021.55	84.57	24.903	

Company:	CONOCO/PHILLIPS CO.	Local Co-ordinate Reference:	Site TEBO 32-3H
Project:	ARAPAHOE COUNTY CO	TVD Reference:	WELL @ 5986.00ft (Original Well Elev)
Reference Site:	TEBO 32-3H	MD Reference:	WELL @ 5986.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	TEBO 32-3H	Database:	EDM 2003.21 Single User Db
Reference Design:	Design #1 CURVE/LAT	Offset TVD Reference:	Offset Datum

Offset Design TEBO 32-3H - TEBO 32-3H - TEBO 32-3H PILOT HOLE - Design #1 PILOT HOLE													Offset Site Error:	0.00ft
Survey Program: 0-MWD													Offset Well Error:	0.00ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
7,224.13	7,224.13	7,224.13	7,224.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	CC, ES	
7,235.80	7,235.79	7,235.79	7,235.79	0.03	0.03	180.00	0.00	0.00	0.13	0.09	0.05	2.880	SF	
7,250.00	7,249.99	7,249.99	7,249.99	0.07	0.06	180.00	0.00	0.00	0.64	0.49	0.15	4.323		
7,300.00	7,299.73	7,299.73	7,299.73	0.20	0.17	180.00	0.00	0.00	5.52	5.06	0.46	12.036		
7,350.00	7,348.78	7,348.78	7,348.78	0.33	0.28	180.00	0.00	0.00	15.13	14.38	0.76	19.928		
7,400.00	7,396.68	7,396.68	7,396.68	0.45	0.39	180.00	0.00	0.00	29.41	28.43	0.98	29.942		
7,450.00	7,442.99	7,442.99	7,442.99	0.57	0.49	180.00	0.00	0.00	48.21	47.10	1.11	43.587		
7,500.00	7,487.28	7,487.28	7,487.28	0.68	0.59	180.00	0.00	0.00	71.36	70.28	1.09	65.767		
7,550.00	7,529.15	7,529.15	7,529.15	0.78	0.69	180.00	0.00	0.00	98.66	97.76	0.90	110.109		
7,600.00	7,568.22	7,568.22	7,568.22	0.89	0.77	180.00	0.00	0.00	129.83	128.34	1.49	87.025		
7,650.00	7,604.11	7,604.11	7,604.11	1.03	0.85	180.00	0.00	0.00	164.61	162.69	1.92	85.603		
7,700.00	7,636.51	7,636.51	7,636.51	1.22	0.93	180.00	0.00	0.00	202.67	200.39	2.29	88.660		
7,750.00	7,665.11	7,665.11	7,665.11	1.45	0.99	180.00	0.00	0.00	243.66	241.08	2.58	94.419		
7,800.00	7,689.65	7,689.65	7,689.65	1.71	1.05	180.00	0.00	0.00	287.21	284.41	2.80	102.722		
7,850.00	7,709.90	7,709.90	7,709.90	2.02	1.09	180.00	0.00	0.00	332.90	329.98	2.92	114.087		
7,900.00	7,725.68	7,725.68	7,725.68	2.36	1.13	180.00	0.00	0.00	380.32	377.39	2.93	129.737		
7,950.00	7,736.84	7,736.84	7,736.84	2.74	1.15	180.00	0.00	0.00	429.04	426.22	2.82	152.175		
8,000.00	7,743.28	7,743.28	7,743.28	3.15	1.17	180.00	0.00	0.00	478.61	476.05	2.56	187.199		
8,042.31	7,745.00	7,745.00	7,745.00	3.52	1.17	0.00	0.00	0.00	520.87	518.70	2.17	239.785		
8,100.00	7,745.00	7,745.00	7,745.00	4.07	1.17	0.00	0.00	0.00	578.56	576.24	2.32	249.677		
8,200.00	7,745.00	7,745.00	7,745.00	5.11	1.17	0.00	0.00	0.00	678.56	675.95	2.61	260.276		
8,300.00	7,745.00	7,745.00	7,745.00	6.27	1.17	0.00	0.00	0.00	778.56	775.62	2.94	264.627		
8,400.00	7,745.00	7,745.00	7,745.00	7.52	1.17	0.00	0.00	0.00	878.56	875.24	3.32	264.790		
8,500.00	7,745.00	7,745.00	7,745.00	8.85	1.17	0.00	0.00	0.00	978.56	974.83	3.73	262.320		
8,600.00	7,745.00	7,745.00	7,745.00	10.25	1.17	0.00	0.00	0.00	1,078.56	1,074.38	4.18	258.311		
8,700.00	7,745.00	7,745.00	7,745.00	11.72	1.17	0.00	0.00	0.00	1,178.56	1,173.91	4.65	253.489		
8,800.00	7,745.00	7,745.00	7,745.00	13.23	1.17	0.00	0.00	0.00	1,278.56	1,273.41	5.15	248.321		
8,900.00	7,745.00	7,745.00	7,745.00	14.79	1.17	0.00	0.00	0.00	1,378.56	1,372.89	5.67	243.096		
9,000.00	7,745.00	7,745.00	7,745.00	16.38	1.17	0.00	0.00	0.00	1,478.56	1,472.35	6.21	237.987		
9,100.00	7,745.00	7,745.00	7,745.00	18.01	1.17	0.00	0.00	0.00	1,578.56	1,571.79	6.77	233.091		
9,200.00	7,745.00	7,745.00	7,745.00	19.66	1.17	0.00	0.00	0.00	1,678.56	1,671.21	7.35	228.458		
9,300.00	7,745.00	7,745.00	7,745.00	21.34	1.17	0.00	0.00	0.00	1,778.56	1,770.62	7.94	224.109		
9,400.00	7,745.00	7,745.00	7,745.00	23.04	1.17	0.00	0.00	0.00	1,878.56	1,870.02	8.54	220.045		
9,500.00	7,745.00	7,745.00	7,745.00	24.75	1.17	0.00	0.00	0.00	1,978.56	1,969.41	9.15	216.258		
9,600.00	7,745.00	7,745.00	7,745.00	26.49	1.17	0.00	0.00	0.00	2,078.56	2,068.79	9.77	212.736		
9,700.00	7,745.00	7,745.00	7,745.00	28.23	1.17	0.00	0.00	0.00	2,178.56	2,168.16	10.40	209.460		
9,800.00	7,745.00	7,745.00	7,745.00	29.99	1.17	0.00	0.00	0.00	2,278.56	2,267.52	11.04	206.414		
9,900.00	7,745.00	7,745.00	7,745.00	31.76	1.17	0.00	0.00	0.00	2,378.56	2,366.88	11.68	203.579		
10,000.00	7,745.00	7,745.00	7,745.00	33.54	1.17	0.00	0.00	0.00	2,478.56	2,466.23	12.33	200.939		
10,100.00	7,745.00	7,745.00	7,745.00	35.33	1.17	0.00	0.00	0.00	2,578.56	2,565.57	12.99	198.477		
10,200.00	7,745.00	7,745.00	7,745.00	37.12	1.17	0.00	0.00	0.00	2,678.56	2,664.91	13.65	196.178		
10,300.00	7,745.00	7,745.00	7,745.00	38.93	1.17	0.00	0.00	0.00	2,778.56	2,764.24	14.32	194.029		
10,400.00	7,745.00	7,745.00	7,745.00	40.74	1.17	0.00	0.00	0.00	2,878.56	2,863.57	14.99	192.017		
10,500.00	7,745.00	7,745.00	7,745.00	42.55	1.17	0.00	0.00	0.00	2,978.56	2,962.89	15.67	190.130		
10,600.00	7,745.00	7,745.00	7,745.00	44.38	1.17	0.00	0.00	0.00	3,078.56	3,062.22	16.34	188.359		
10,700.00	7,745.00	7,745.00	7,745.00	46.20	1.17	0.00	0.00	0.00	3,178.56	3,161.53	17.03	186.693		
10,800.00	7,745.00	7,745.00	7,745.00	48.03	1.17	0.00	0.00	0.00	3,278.56	3,260.85	17.71	185.125		
10,900.00	7,745.00	7,745.00	7,745.00	49.87	1.17	0.00	0.00	0.00	3,378.56	3,360.16	18.40	183.646		
11,000.00	7,745.00	7,745.00	7,745.00	51.71	1.17	0.00	0.00	0.00	3,478.56	3,459.47	19.09	182.250		
11,100.00	7,745.00	7,745.00	7,745.00	53.55	1.17	0.00	0.00	0.00	3,578.56	3,558.78	19.78	180.930		
11,200.00	7,745.00	7,745.00	7,745.00	55.40	1.17	0.00	0.00	0.00	3,678.56	3,658.09	20.47	179.680		
11,300.00	7,745.00	7,745.00	7,745.00	57.24	1.17	0.00	0.00	0.00	3,778.56	3,757.39	21.17	178.496		

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

Company:	CONOCO/PHILLIPS CO.	Local Co-ordinate Reference:	Site TEBO 32-3H
Project:	ARAPAHOE COUNTY CO	TVD Reference:	WELL @ 5986.00ft (Original Well Elev)
Reference Site:	TEBO 32-3H	MD Reference:	WELL @ 5986.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	TEBO 32-3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	TEBO 32-3H	Database:	EDM 2003.21 Single User Db
Reference Design:	Design #1 CURVE/LAT	Offset TVD Reference:	Offset Datum

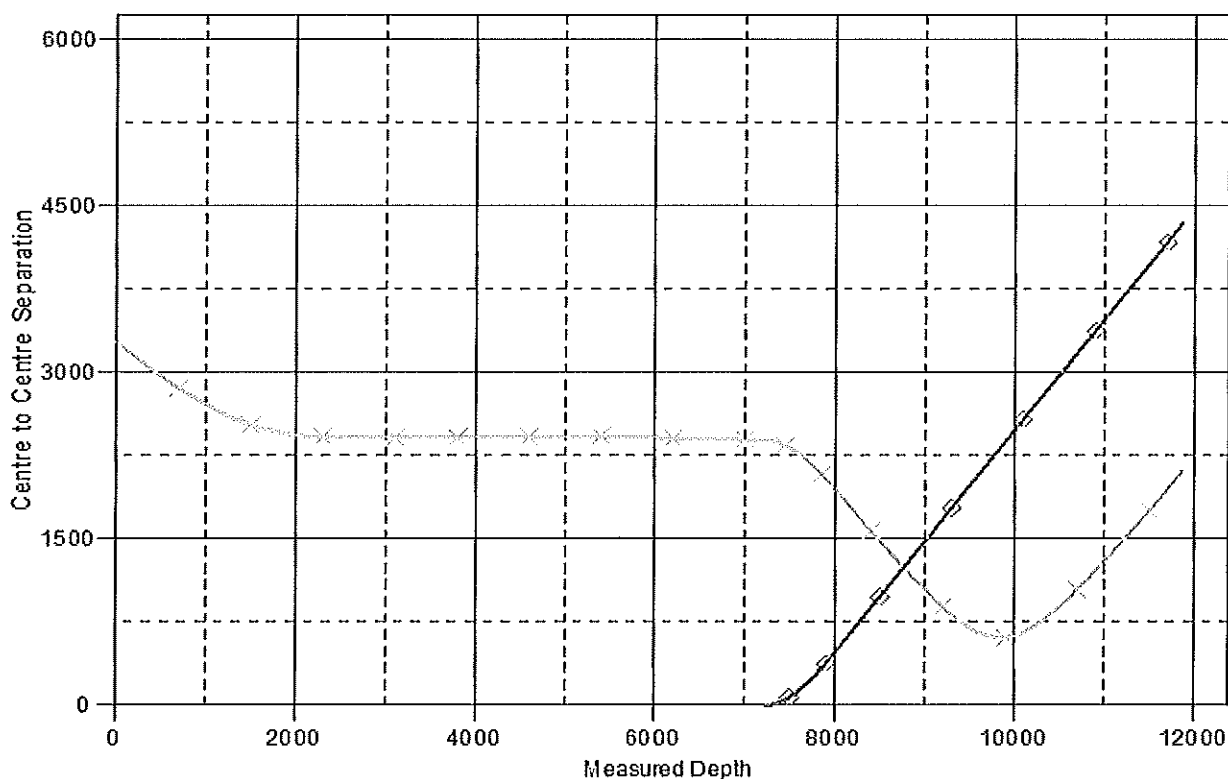
Offset Design TEBO 32-3H - TEBO 32-3H - TEBO 32-3H PILOT HOLE - Design #1 PILOT HOLE													Offset Site Error:	0.00ft
Survey Program: 0-MWD													Offset Well Error:	0.00ft
Reference	Offset	Semi Major Axis		Distance										
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical 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	
11,400.00	7,745.00	7,745.00	7,745.00	59.10	1.17	0.00	0.00	0.00	3,878.56	3,856.69	21.87	177.372		
11,500.00	7,745.00	7,745.00	7,745.00	60.95	1.17	0.00	0.00	0.00	3,978.56	3,955.99	22.57	176.304		
11,600.00	7,745.00	7,745.00	7,745.00	62.81	1.17	0.00	0.00	0.00	4,078.56	4,055.29	23.27	175.268		
11,700.00	7,745.00	7,745.00	7,745.00	64.66	1.17	0.00	0.00	0.00	4,178.56	4,154.59	23.97	174.322		
11,800.00	7,745.00	7,745.00	7,745.00	66.52	1.17	0.00	0.00	0.00	4,278.56	4,253.89	24.67	173.400		
11,868.50	7,745.00	7,745.00	7,745.00	67.80	1.17	0.00	0.00	0.00	4,347.06	4,321.90	25.16	172.793		

Company: CONOCO/PHILLIPS CO.
Project: ARAPAHOE COUNTY CO
Reference Site: TEBO 32-3H
Site Error: 0.00ft
Reference Well: TEBO 32-3H
Well Error: 0.00ft
Reference Wellbore: TEBO 32-3H
Reference Design: Design #1 CURVE/LAT

Local Co-ordinate Reference: Site TEBO 32-3H
TVD Reference: WELL @ 5986.00ft (Original Well Elev)
MD Reference: WELL @ 5986.00ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 2003.21 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 5986.00ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W °
Coordinates are relative to: TEBO 32-3H
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: 0.58°

Ladder Plot



LEGEND

30 32-2V0

◆ TEBO 32-3H, TEBO 32-3H PILOT HOLE, Design #1 PILOT HOLE V0

Company: CONOCO/PHILLIPS CO.
Project: ARAPAHOE COUNTY CO
Reference Site: TEBO 32-3H
Site Error: 0.00ft
Reference Well: TEBO 32-3H
Well Error: 0.00ft
Reference Wellbore: TEBO 32-3H
Reference Design: Design #1 CURVE/LAT

Local Co-ordinate Reference: Site TEBO 32-3H
TVD Reference: WELL @ 5986.00ft (Original Well Elev)
MD Reference: WELL @ 5986.00ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 2003.21 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 5986.00ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W °
Coordinates are relative to: TEBO 32-3H
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: 0.58°

