



ANADARKO PETROLEUM CORP.

ANADARKO COLORADO NORTHERN ZONE NAD 83

WELD_Johnstown Farms

Johnstown 13-9

Johnstown 13-9

Plan: Johnstown 13-9 (wp01)

Standard Planning Report

27 September, 2010



Johnstown 13-9
ANADARKO COLORADO NORTHERN ZONE NAD 83
40° 19' 27.487 N
104° 54' 3.442 W



Plan: Johnstown 13-9 (wp01) (Johnstown 13-9/Johnstown 13-9)

Created By: Jason Daguitera

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Johnstown 13-9, True North
Vertical (TVD) Reference: WELL @ 4780.00ft (Original Well Elev)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: WELL @ 4780.00ft (Original Well Elev)
Calculation Method: Minimum Curvature

WELL DETAILS: Johnstown 13-9

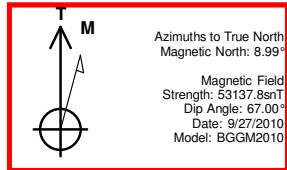
+N/-S	+E/-W	Northing	Ground Level: Easting	4780.00 Latitude	Longitude	Slot
0.00	0.00	1361548.23	3167024.98	40° 19' 27.487 N	104° 54' 3.442 W	

CASING DETAILS

TVD	MD	Name	Size
750.00	751.87	9 5/8"	9.625

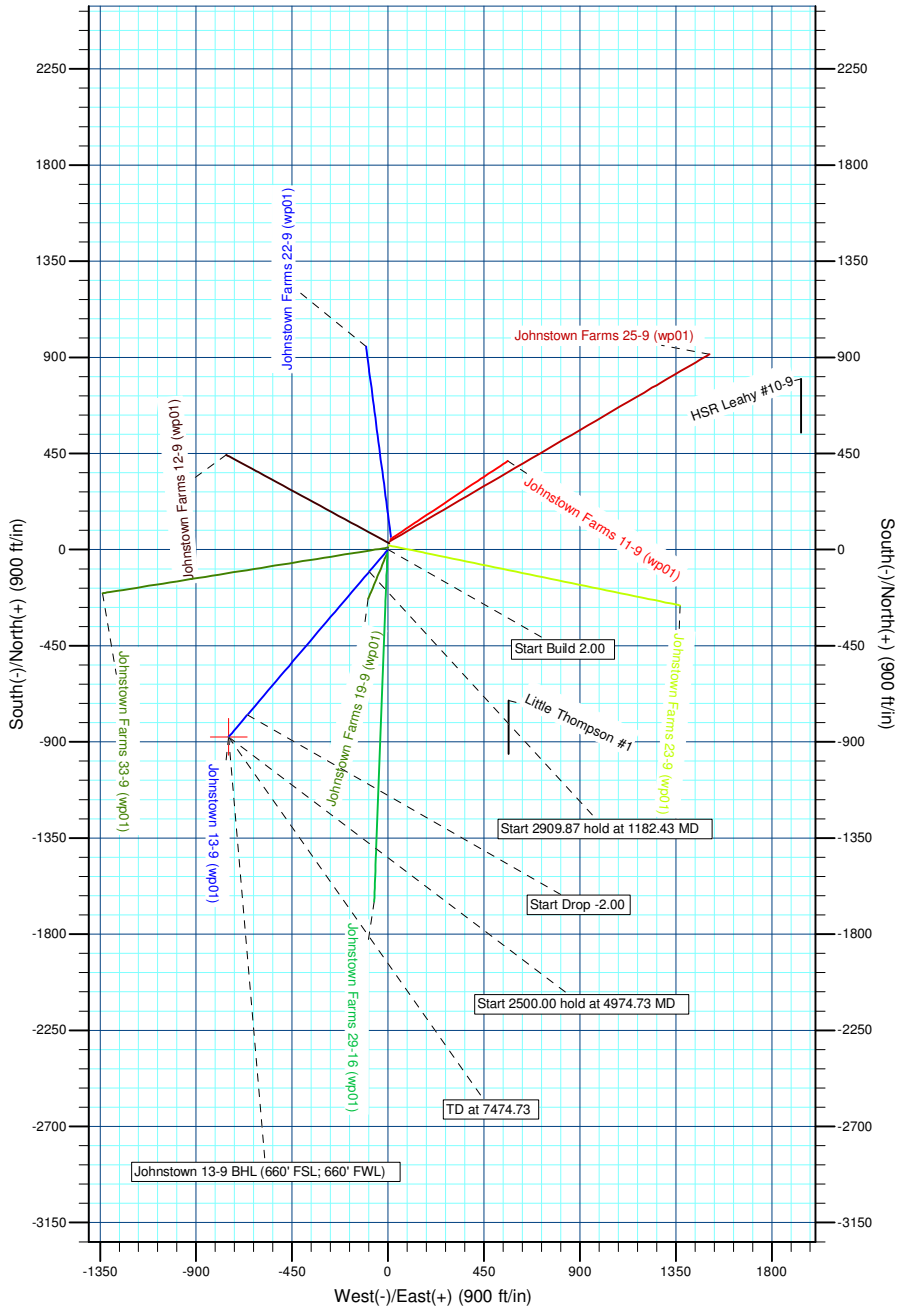
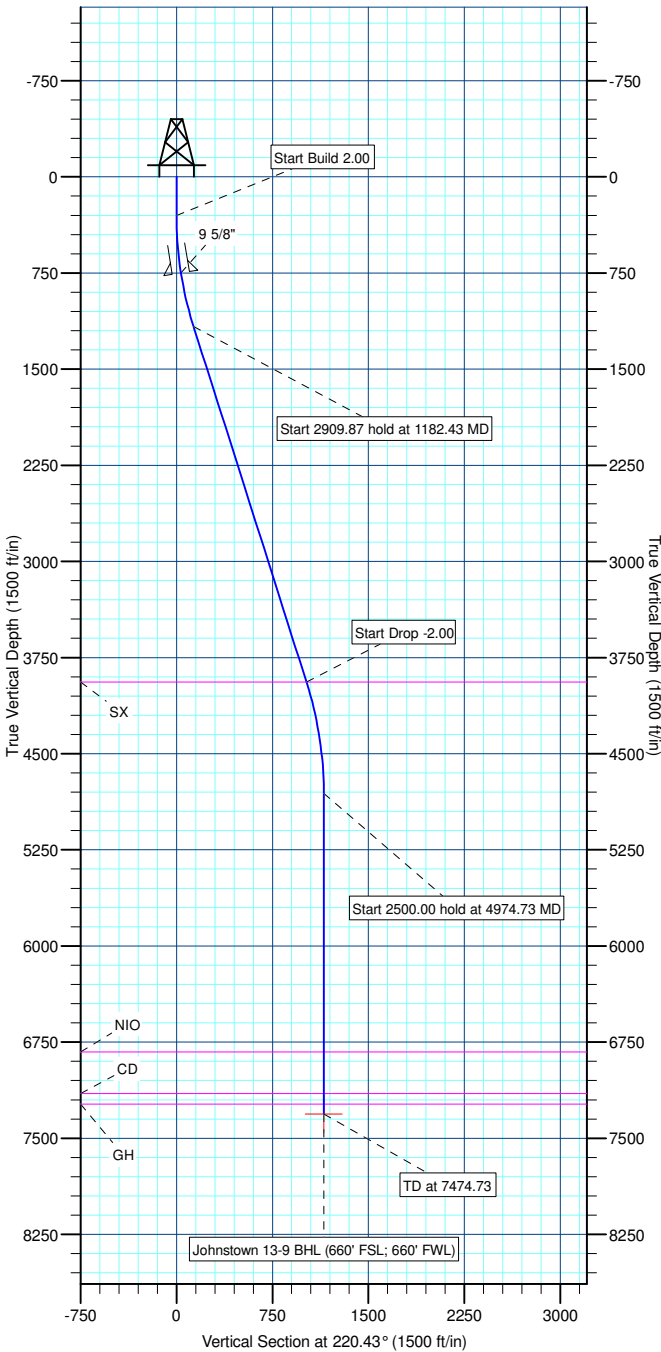
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	1182.43	17.65	220.43	1168.54	-102.64	-87.44	2.00	220.43	134.84	
4	4092.30	17.65	220.43	3941.46	-774.19	-659.55	0.00	0.00	1017.04	
5	4974.73	0.00	0.00	4810.00	-876.83	-746.99	2.00	180.00	1151.88	
6	7474.73	0.00	0.00	7310.00	-876.83	-746.99	0.00	0.00	1151.88	Johnstown 13-9 BHL (660' FSL; 660' FWL)



WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Johnstown 13-9 BHL (660' FSL; 660' FWL)	7310.00	-876.83	-746.99	40° 19' 18.822 N	104° 54' 13.086 W	Point



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well Johnstown 13-9
Company:	ANADARKO PETROLEUM CORP.	TVD Reference:	WELL @ 4780.00ft (Original Well Elev)
Project:	ANADARKO COLORADO NOTHERN ZONE NAD 83	MD Reference:	WELL @ 4780.00ft (Original Well Elev)
Site:	WELD_Johnstown Farms	North Reference:	True
Well:	Johnstown 13-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	Johnstown 13-9		
Design:	Johnstown 13-9 (wp01)		

Project	ANADARKO COLORADO NOTHERN ZONE NAD 83, ROCKIES, ROCKIES		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	WELD_Johnstown Farms		
Site Position:		Northing:	1,361,567.94 ft
From:	Lat/Long	Easting:	3,167,029.59 ft
Position Uncertainty:	0.00 ft	Slot Radius:	in
		Latitude:	40° 19' 27.682 N
		Longitude:	104° 54' 3.380 W
		Grid Convergence:	0.39 °

Well	Johnstown 13-9		
Well Position	+N/-S	-19.68 ft	Northing:
	+E/-W	-4.74 ft	Easting:
Position Uncertainty		0.00 ft	Wellhead Elevation:
			ft
			Latitude:
			40° 19' 27.487 N
			Longitude:
			104° 54' 3.442 W
			Ground Level:
			4,780.00 ft

Wellbore	Johnstown 13-9				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	9/27/2010	8.99	67.00	53,138

Design	Johnstown 13-9 (wp01)			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	220.43

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
0.00	0.00	0.00	0.00	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	
1,182.43	17.65	220.43	1,168.54	-102.64	-87.44	2.00	2.00	0.00	220.43	
4,092.30	17.65	220.43	3,941.46	-774.19	-659.55	0.00	0.00	0.00	0.00	
4,974.73	0.00	0.00	4,810.00	-876.83	-746.99	2.00	-2.00	0.00	180.00	
7,474.73	0.00	0.00	7,310.00	-876.83	-746.99	0.00	0.00	0.00	0.00	Johnstown 13-9 BH

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well Johnstown 13-9
Company:	ANADARKO PETROLEUM CORP.	TVD Reference:	WELL @ 4780.00ft (Original Well Elev)
Project:	ANADARKO COLORADO NOTHERN ZONE NAD 83	MD Reference:	WELL @ 4780.00ft (Original Well Elev)
Site:	WELD_Johnstown Farms	North Reference:	True
Well:	Johnstown 13-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	Johnstown 13-9		
Design:	Johnstown 13-9 (wp01)		

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	2.00	220.43	399.98	-1.33	-1.13	1.75	2.00	2.00	0.00
500.00	4.00	220.43	499.84	-5.31	-4.53	6.98	2.00	2.00	0.00
600.00	6.00	220.43	599.45	-11.95	-10.18	15.69	2.00	2.00	0.00
700.00	8.00	220.43	698.70	-21.22	-18.08	27.88	2.00	2.00	0.00
9 5/8"									
751.87	9.04	220.43	750.00	-27.07	-23.06	35.56	2.00	2.00	0.00
800.00	10.00	220.43	797.47	-33.13	-28.22	43.52	2.00	2.00	0.00
900.00	12.00	220.43	895.62	-47.65	-40.60	62.60	2.00	2.00	0.00
1,000.00	14.00	220.43	993.06	-64.78	-55.18	85.10	2.00	2.00	0.00
1,100.00	16.00	220.43	1,089.64	-84.48	-71.97	110.98	2.00	2.00	0.00
1,182.43	17.65	220.43	1,168.54	-102.64	-87.44	134.84	2.00	2.00	0.00
1,200.00	17.65	220.43	1,185.28	-106.69	-90.89	140.16	0.00	0.00	0.00
1,300.00	17.65	220.43	1,280.58	-129.77	-110.56	170.48	0.00	0.00	0.00
1,400.00	17.65	220.43	1,375.87	-152.85	-130.22	200.80	0.00	0.00	0.00
1,500.00	17.65	220.43	1,471.17	-175.93	-149.88	231.11	0.00	0.00	0.00
1,600.00	17.65	220.43	1,566.46	-199.01	-169.54	261.43	0.00	0.00	0.00
1,700.00	17.65	220.43	1,661.75	-222.09	-189.20	291.75	0.00	0.00	0.00
1,800.00	17.65	220.43	1,757.05	-245.16	-208.86	322.07	0.00	0.00	0.00
1,900.00	17.65	220.43	1,852.34	-268.24	-228.52	352.39	0.00	0.00	0.00
2,000.00	17.65	220.43	1,947.63	-291.32	-248.18	382.70	0.00	0.00	0.00
2,100.00	17.65	220.43	2,042.93	-314.40	-267.84	413.02	0.00	0.00	0.00
2,200.00	17.65	220.43	2,138.22	-337.48	-287.50	443.34	0.00	0.00	0.00
2,300.00	17.65	220.43	2,233.51	-360.56	-307.17	473.66	0.00	0.00	0.00
2,400.00	17.65	220.43	2,328.81	-383.63	-326.83	503.98	0.00	0.00	0.00
2,500.00	17.65	220.43	2,424.10	-406.71	-346.49	534.29	0.00	0.00	0.00
2,600.00	17.65	220.43	2,519.39	-429.79	-366.15	564.61	0.00	0.00	0.00
2,700.00	17.65	220.43	2,614.69	-452.87	-385.81	594.93	0.00	0.00	0.00
2,800.00	17.65	220.43	2,709.98	-475.95	-405.47	625.25	0.00	0.00	0.00
2,900.00	17.65	220.43	2,805.27	-499.03	-425.13	655.56	0.00	0.00	0.00
3,000.00	17.65	220.43	2,900.57	-522.11	-444.79	685.88	0.00	0.00	0.00
3,100.00	17.65	220.43	2,995.86	-545.18	-464.45	716.20	0.00	0.00	0.00
3,200.00	17.65	220.43	3,091.15	-568.26	-484.11	746.52	0.00	0.00	0.00
3,300.00	17.65	220.43	3,186.45	-591.34	-503.78	776.84	0.00	0.00	0.00
3,400.00	17.65	220.43	3,281.74	-614.42	-523.44	807.15	0.00	0.00	0.00
3,500.00	17.65	220.43	3,377.03	-637.50	-543.10	837.47	0.00	0.00	0.00
3,600.00	17.65	220.43	3,472.33	-660.58	-562.76	867.79	0.00	0.00	0.00
3,700.00	17.65	220.43	3,567.62	-683.66	-582.42	898.11	0.00	0.00	0.00
3,800.00	17.65	220.43	3,662.91	-706.73	-602.08	928.43	0.00	0.00	0.00
3,900.00	17.65	220.43	3,758.21	-729.81	-621.74	958.74	0.00	0.00	0.00
4,000.00	17.65	220.43	3,853.50	-752.89	-641.40	989.06	0.00	0.00	0.00
SX									
4,091.82	17.65	220.43	3,941.00	-774.08	-659.46	1,016.90	0.00	0.00	0.00
4,092.30	17.65	220.43	3,941.46	-774.19	-659.55	1,017.04	0.00	0.00	0.00
4,100.00	17.49	220.43	3,948.80	-775.96	-661.06	1,019.37	2.00	-2.00	0.00
4,200.00	15.49	220.43	4,044.68	-797.57	-679.47	1,047.76	2.00	-2.00	0.00
4,300.00	13.49	220.43	4,141.49	-816.62	-695.70	1,072.79	2.00	-2.00	0.00
4,400.00	11.49	220.43	4,239.11	-833.09	-709.73	1,094.42	2.00	-2.00	0.00
4,500.00	9.49	220.43	4,337.44	-846.96	-721.54	1,112.64	2.00	-2.00	0.00
4,600.00	7.49	220.43	4,436.33	-858.20	-731.12	1,127.41	2.00	-2.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well Johnstown 13-9
Company:	ANADARKO PETROLEUM CORP.	TVD Reference:	WELL @ 4780.00ft (Original Well Elev)
Project:	ANADARKO COLORADO NOTHERN ZONE NAD 83	MD Reference:	WELL @ 4780.00ft (Original Well Elev)
Site:	WELD_Johnstown Farms	North Reference:	True
Well:	Johnstown 13-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	Johnstown 13-9		
Design:	Johnstown 13-9 (wp01)		

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)
4,700.00	5.49	220.43	4,535.69	-866.81	-738.45	1,138.72	2.00	-2.00	0.00
4,800.00	3.49	220.43	4,635.38	-872.78	-743.54	1,146.55	2.00	-2.00	0.00
4,900.00	1.49	220.43	4,735.28	-876.09	-746.36	1,150.91	2.00	-2.00	0.00
4,974.73	0.00	0.00	4,810.00	-876.83	-746.99	1,151.88	2.00	-2.00	0.00
5,000.00	0.00	0.00	4,835.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,100.00	0.00	0.00	4,935.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,200.00	0.00	0.00	5,035.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,300.00	0.00	0.00	5,135.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,400.00	0.00	0.00	5,235.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,500.00	0.00	0.00	5,335.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,600.00	0.00	0.00	5,435.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,700.00	0.00	0.00	5,535.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,800.00	0.00	0.00	5,635.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
5,900.00	0.00	0.00	5,735.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,000.00	0.00	0.00	5,835.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,100.00	0.00	0.00	5,935.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,200.00	0.00	0.00	6,035.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,300.00	0.00	0.00	6,135.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,400.00	0.00	0.00	6,235.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,500.00	0.00	0.00	6,335.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,600.00	0.00	0.00	6,435.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,700.00	0.00	0.00	6,535.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,800.00	0.00	0.00	6,635.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
6,900.00	0.00	0.00	6,735.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
NIO									
6,990.73	0.00	0.00	6,826.00	-876.83	-746.99	1,151.88	0.00	0.00	0.00
7,000.00	0.00	0.00	6,835.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
7,100.00	0.00	0.00	6,935.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
7,200.00	0.00	0.00	7,035.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
7,300.00	0.00	0.00	7,135.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
CD									
7,314.73	0.00	0.00	7,150.00	-876.83	-746.99	1,151.88	0.00	0.00	0.00
GH									
7,397.73	0.00	0.00	7,233.00	-876.83	-746.99	1,151.88	0.00	0.00	0.00
7,400.00	0.00	0.00	7,235.27	-876.83	-746.99	1,151.88	0.00	0.00	0.00
7,474.73	0.00	0.00	7,310.00	-876.83	-746.99	1,151.88	0.00	0.00	0.00

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Johnstown 13-9 BHL - plan hits target center - Point	0.00	0.00	7,310.00	-876.83	-746.99	1,360,666.37	3,166,283.93	40° 19' 18.822 N	104° 54' 13.086 W

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well Johnstown 13-9
Company:	ANADARKO PETROLEUM CORP.	TVD Reference:	WELL @ 4780.00ft (Original Well Elev)
Project:	ANADARKO COLORADO NOTHERN ZONE NAD 83	MD Reference:	WELL @ 4780.00ft (Original Well Elev)
Site:	WELD_Johnstown Farms	North Reference:	True
Well:	Johnstown 13-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	Johnstown 13-9		
Design:	Johnstown 13-9 (wp01)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
751.87	750.00	9 5/8"	9.625	12.250

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,314.73	7,150.00	CD		0.00	
6,990.73	6,826.00	NIO		0.00	
7,397.73	7,233.00	GH		0.00	
4,091.82	3,941.00	SX		0.00	



ANADARKO PETROLEUM CORP.

**ANADARKO COLORADO NOTHERN ZONE NAD 83
WELD_Johnstown Farms
Johnstown 13-9**

**Johnstown 13-9
Johnstown 13-9 (wp01)**

Anticollision Summary Report

27 September, 2010



Company:	ANADARKO PETROLEUM CORP.	Local Co-ordinate Reference:	Well Johnstown 13-9
Project:	ANADARKO COLORADO NOTHERN ZONE NAD 83	TVD Reference:	WELL @ 4780.00ft (Original Well Elev)
Reference Site:	WELD_Johnstown Farms	MD Reference:	WELL @ 4780.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	Johnstown 13-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	Johnstown 13-9	Database:	EDM 2003.21 Single User Db
Reference Design:	Johnstown 13-9 (wp01)	Offset TVD Reference:	Offset Datum

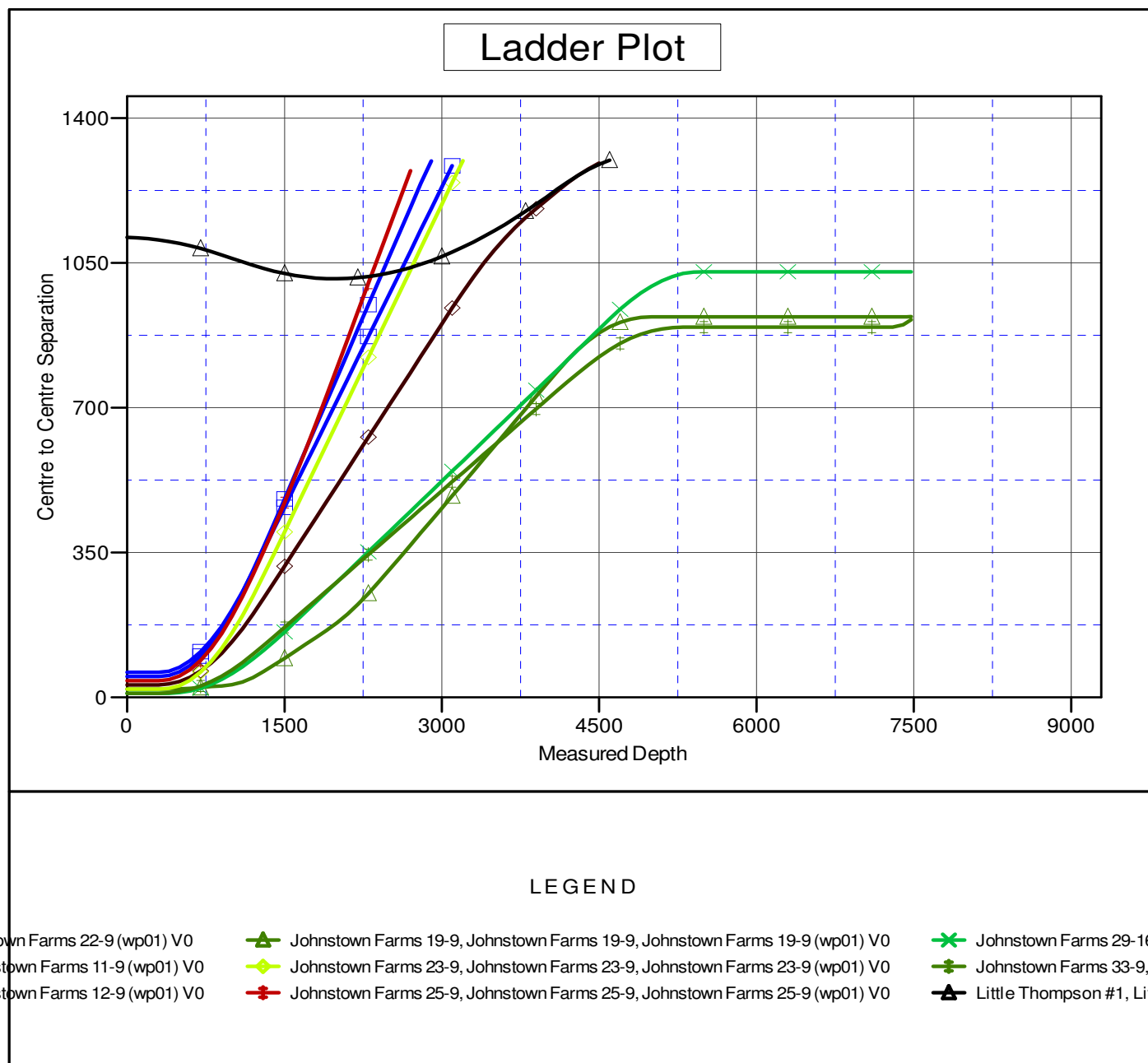
Reference	Johnstown 13-9 (wp01)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,300.79ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 9/27/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,474.73	Johnstown 13-9 (wp01) (Johnstown 13-9)	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						
WELD_Johnstown Farms						
HSR-Leahy #10-9 - HSR Leahy #10-9 - HSR Leahy #10-9						Out of range
Johnston Farms 22-9 - Johnstown Farms 22-9 - Johnst	300.00	300.00	60.29	59.16	53.643 CC, ES	
Johnstown Farms 11-9 - Johnstown Farms 11-9 - Johnst	300.00	300.00	50.20	49.08	44.669 CC, ES	
Johnstown Farms 12-9 - Johnstown Farms 12-9 - Johnst	300.00	300.00	30.32	29.20	26.979 CC, ES	
Johnstown Farms 19-9 - Johnstown Farms 19-9 - Johnst	300.00	300.00	19.88	18.76	17.690 CC	
Johnstown Farms 23-9 - Johnstown Farms 23-9 - Johnst	300.00	300.00	20.23	19.11	18.005 CC, ES	
Johnstown Farms 25-9 - Johnstown Farms 25-9 - Johnst	300.00	300.00	40.03	38.91	35.623 CC, ES	
Johnstown Farms 29-16 - Johnstown Farms 29-16 - Joh	300.00	300.00	9.73	8.61	8.662 CC	
Johnstown Farms 33-9 - Johnstown Farms 33-9 - Johnst	300.00	300.00	10.09	8.96	8.974 CC, ES	
Johnstown Farms 19-9 - Johnstown Farms 19-9 - Johnst	400.00	399.32	20.04	18.51	13.116 ES	
Johnstown Farms 23-9 - Johnstown Farms 23-9 - Johnst	400.00	399.89	22.00	20.45	14.260 SF	
Johnstown Farms 29-16 - Johnstown Farms 29-16 - Joh	400.00	399.65	9.95	8.43	6.517 ES	
Johnstown Farms 33-9 - Johnstown Farms 33-9 - Johnst	400.00	400.12	11.01	9.47	7.144 SF	
Johnstown Farms 11-9 - Johnstown Farms 11-9 - Johnst	500.00	496.54	61.94	59.95	31.146 SF	
Johnstown Farms 12-9 - Johnstown Farms 12-9 - Johnst	500.00	499.07	38.50	36.52	19.422 SF	
Johnstown Farms 25-9 - Johnstown Farms 25-9 - Johnst	500.00	497.17	51.64	49.65	25.964 SF	
Johnstown Farms 29-16 - Johnstown Farms 29-16 - Joh	500.00	499.23	11.29	9.37	5.882 SF	
Johnston Farms 22-9 - Johnstown Farms 22-9 - Johnst	600.00	591.61	88.54	86.08	35.985 SF	
Johnstown Farms 19-9 - Johnstown Farms 19-9 - Johnst	1,000.00	996.10	30.63	25.63	6.121 SF	
Little Thompson #1 - Little Thompson #1 - Little Thompsc	1,985.31	1,955.85	1,012.08	999.24	78.788 CC	
Little Thompson #1 - Little Thompson #1 - Little Thompsc	2,100.00	2,064.15	1,012.79	998.99	73.404 ES	
Little Thompson #1 - Little Thompson #1 - Little Thompsc	4,600.00	4,437.12	1,298.49	1,268.98	43.990 SF	

Company:	ANADARKO PETROLEUM CORP.	Local Co-ordinate Reference:	Well Johnstown 13-9
Project:	ANADARKO COLORADO NOTHERN ZONE NAD 83	TVD Reference:	WELL @ 4780.00ft (Original Well Elev)
Reference Site:	WELD_Johnstown Farms	MD Reference:	WELL @ 4780.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	Johnstown 13-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	Johnstown 13-9	Database:	EDM 2003.21 Single User Db
Reference Design:	Johnstown 13-9 (wp01)	Offset TVD Reference:	Offset Datum

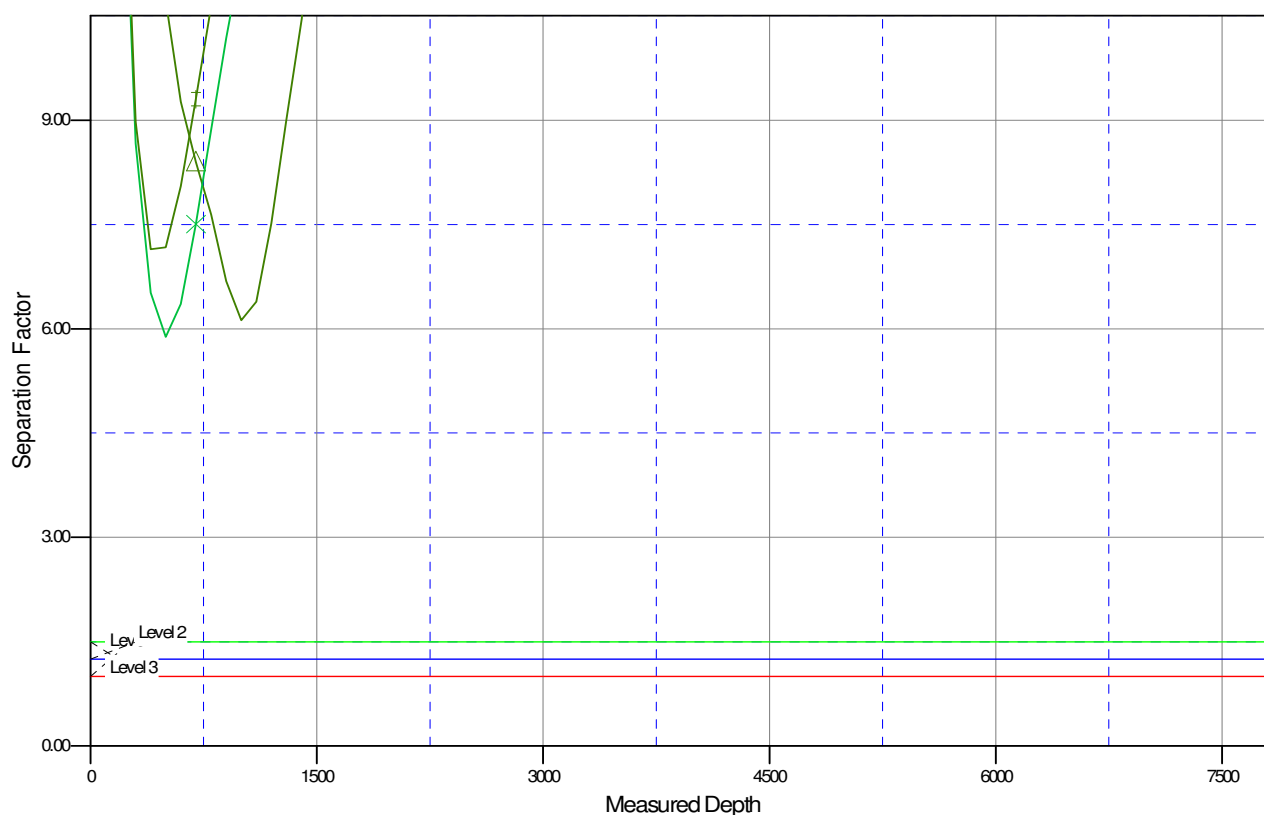
Reference Depths are relative to WELL @ 4780.00ft (Original Well Ele Coordinates are relative to: Johnstown 13-9
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.39°



Company:	ANADARKO PETROLEUM CORP.	Local Co-ordinate Reference:	Well Johnstown 13-9
Project:	ANADARKO COLORADO NOTHERN ZONE NAD 83	TVD Reference:	WELL @ 4780.00ft (Original Well Elev)
Reference Site:	WELD_Johnstown Farms	MD Reference:	WELL @ 4780.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	Johnstown 13-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	Johnstown 13-9	Database:	EDM 2003.21 Single User Db
Reference Design:	Johnstown 13-9 (wp01)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4780.00ft (Original Well Ele Coordinates are relative to: Johnstown 13-9
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.39°

Separation Factor Plot



LEGEND

Johnstown Farms 22-9 (wp01) V0	Johnstown Farms 19-9, Johnstown Farms 19-9, Johnstown Farms 19-9 (wp01) V0	Johnstown Farms 29-16, Johnstown Farms 29-16, Johnstown Farms 29-16 (wp01) V0
Johnstown Farms 11-9 (wp01) V0	Johnstown Farms 23-9, Johnstown Farms 23-9, Johnstown Farms 23-9 (wp01) V0	Johnstown Farms 33-9, Johnstown Farms 33-9, Johnstown Farms 33-9 (wp01) V0
Johnstown Farms 12-9 (wp01) V0	Johnstown Farms 25-9, Johnstown Farms 25-9, Johnstown Farms 25-9 (wp01) V0	Little Thompson #1, Little Thompson #1, Little Thompson #1 (wp01) V0