

Apache Corporation

Eddy County, NM

Crow Federal 15H API#30-015-40579

Job # 1210353

Wellbore #1

Plan 1 4-25-2012



Anticollision Report

25 April, 2012

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Reference	Plan 1 4-25-2012		
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 9,999.98 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date 04/25/12		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	11,149.10	Plan 1 4-25-2012 (Wellbore #1)	MWD	MWD - Standard

Summary							
Site Name	Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Crow Federal 10H							
Job # 1210348 - Wellbore #1 - Plan 1	4-25-2012	200.00	200.00	105.00	104.33	155.721	CC
Job # 1210348 - Wellbore #1 - Plan 1	4-25-2012	4,800.00	4,798.40	116.81	95.71	5.535	ES, SF
Crow Federal 11H							
Job # 1210349 - Wellbore #1 - Plan 1	4-25-2012	200.00	200.00	40.00	39.33	59.323	CC
Job # 1210349 - Wellbore #1 - Plan 1	4-25-2012	300.00	299.98	40.04	38.93	35.964	ES
Job # 1210349 - Wellbore #1 - Plan 1	4-25-2012	5,417.21	5,415.61	64.97	41.08	2.719	SF
Crow Federal 12H							
Job # 1210350 - Wellbore #1 - Plan 1	4-25-2012	200.00	200.00	25.00	24.33	37.076	CC
Job # 1210350 - Wellbore #1 - Plan 1	4-25-2012	300.00	299.98	25.07	23.95	22.513	ES
Job # 1210350 - Wellbore #1 - Plan 1	4-25-2012	5,779.80	5,778.20	57.00	31.47	2.233	SF
Crow Federal 13H							
Well #1 - Wellbore #1 - Plan 1	4-25-2012	4,990.73	4,998.14	130.00	108.06	5.924	CC, ES
Well #1 - Wellbore #1 - Plan 1	4-25-2012	5,000.00	5,006.07	130.09	108.11	5.918	SF
Crow federal 14H							
Job # 1210352 - Wellbore #1 - Plan 1	4-25-2012	5,595.73	5,603.13	65.00	40.35	2.636	CC, ES
Job # 1210352 - Wellbore #1 - Plan 1	4-25-2012	5,600.00	5,606.81	65.04	40.37	2.636	SF

Crow Federal 10H - Job # 1210348 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	179.62	-105.00	0.70	105.00					
100.00	100.00	100.00	100.00	0.11	0.11	179.62	-105.00	0.70	105.00	104.78	0.22	467.163		
200.00	200.00	200.00	200.00	0.34	0.34	179.62	-105.00	0.70	105.00	104.33	0.67	155.721 CC		
226.93	226.93	226.93	226.93	0.40	0.40	-90.08	-105.00	0.70	105.00	104.21	0.79	132.485		
300.00	299.98	299.98	299.98	0.55	0.56	-90.96	-105.00	0.70	105.02	103.90	1.11	94.325		
400.16	400.00	400.00	400.00	0.78	0.79	-93.81	-105.00	0.70	105.24	103.68	1.56	67.445		
500.00	499.59	499.59	499.59	1.01	1.01	-97.56	-105.00	0.70	105.93	103.90	2.02	52.342		
600.00	599.35	599.35	599.35	1.26	1.23	-101.25	-105.00	0.70	107.07	104.58	2.49	42.923		
700.00	699.11	699.11	699.11	1.51	1.46	-104.86	-105.00	0.70	108.65	105.68	2.97	36.612		

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal 10H - Job # 1210348 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error:
Survey Program: 0-MWD													0.00 usft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
800.00	798.86	798.86	798.86	1.76	1.68	-108.34	-105.00	0.70	110.65	107.21	3.44	32.155	
900.16	898.78	898.78	898.78	2.02	1.91	-111.70	-105.00	0.70	113.05	109.13	3.91	28.878	
1,000.00	998.46	998.46	998.46	2.24	2.13	-114.34	-105.00	0.70	115.27	110.91	4.35	26.483	
1,100.00	1,098.41	1,098.41	1,098.41	2.43	2.36	-115.73	-105.00	0.70	116.56	111.80	4.76	24.490	
1,166.60	1,165.00	1,165.00	1,165.00	2.55	2.51	153.64	-105.00	0.70	116.81	111.88	4.94	23.662	
1,200.00	1,198.40	1,198.40	1,198.40	2.61	2.58	153.64	-105.00	0.70	116.81	111.73	5.08	22.999	
1,300.00	1,298.40	1,298.40	1,298.40	2.81	2.81	153.64	-105.00	0.70	116.81	111.30	5.51	21.195	
1,400.00	1,398.40	1,398.40	1,398.40	3.02	3.03	153.64	-105.00	0.70	116.81	110.87	5.95	19.644	
1,500.00	1,498.40	1,498.40	1,498.40	3.22	3.26	153.64	-105.00	0.70	116.81	110.43	6.38	18.299	
1,600.00	1,598.40	1,598.40	1,598.40	3.43	3.48	153.64	-105.00	0.70	116.81	109.99	6.82	17.122	
1,700.00	1,698.40	1,698.40	1,698.40	3.64	3.71	153.64	-105.00	0.70	116.81	109.55	7.26	16.085	
1,800.00	1,798.40	1,798.40	1,798.40	3.86	3.93	153.64	-105.00	0.70	116.81	109.11	7.70	15.164	
1,900.00	1,898.40	1,898.40	1,898.40	4.07	4.15	153.64	-105.00	0.70	116.81	108.67	8.15	14.341	
2,000.00	1,998.40	1,998.40	1,998.40	4.29	4.38	153.64	-105.00	0.70	116.81	108.22	8.59	13.601	
2,100.00	2,098.40	2,098.40	2,098.40	4.50	4.60	153.64	-105.00	0.70	116.81	107.78	9.03	12.933	
2,200.00	2,198.40	2,198.40	2,198.40	4.72	4.83	153.64	-105.00	0.70	116.81	107.34	9.48	12.327	
2,300.00	2,298.40	2,298.40	2,298.40	4.94	5.05	153.64	-105.00	0.70	116.81	106.89	9.92	11.775	
2,400.00	2,398.40	2,398.40	2,398.40	5.15	5.28	153.64	-105.00	0.70	116.81	106.45	10.37	11.269	
2,500.00	2,498.40	2,498.40	2,498.40	5.37	5.50	153.64	-105.00	0.70	116.81	106.00	10.81	10.805	
2,600.00	2,598.40	2,598.40	2,598.40	5.59	5.73	153.64	-105.00	0.70	116.81	105.56	11.26	10.377	
2,700.00	2,698.40	2,698.40	2,698.40	5.81	5.95	153.64	-105.00	0.70	116.81	105.11	11.70	9.982	
2,800.00	2,798.40	2,798.40	2,798.40	6.03	6.18	153.64	-105.00	0.70	116.81	104.66	12.15	9.615	
2,900.00	2,898.40	2,898.40	2,898.40	6.25	6.40	153.64	-105.00	0.70	116.81	104.22	12.60	9.274	
3,000.00	2,998.40	2,998.40	2,998.40	6.47	6.63	153.64	-105.00	0.70	116.81	103.77	13.04	8.957	
3,100.00	3,098.40	3,098.40	3,098.40	6.69	6.85	153.64	-105.00	0.70	116.81	103.32	13.49	8.660	
3,200.00	3,198.40	3,198.40	3,198.40	6.91	7.08	153.64	-105.00	0.70	116.81	102.88	13.94	8.382	
3,300.00	3,298.40	3,298.40	3,298.40	7.14	7.30	153.64	-105.00	0.70	116.81	102.43	14.38	8.121	
3,400.00	3,398.40	3,398.40	3,398.40	7.36	7.53	153.64	-105.00	0.70	116.81	101.98	14.83	7.876	
3,500.00	3,498.40	3,498.40	3,498.40	7.58	7.75	153.64	-105.00	0.70	116.81	101.53	15.28	7.646	
3,600.00	3,598.40	3,598.40	3,598.40	7.80	7.98	153.64	-105.00	0.70	116.81	101.09	15.73	7.428	
3,700.00	3,698.40	3,698.40	3,698.40	8.02	8.20	153.64	-105.00	0.70	116.81	100.64	16.17	7.222	
3,800.00	3,798.40	3,798.40	3,798.40	8.24	8.43	153.64	-105.00	0.70	116.81	100.19	16.62	7.028	
3,900.00	3,898.40	3,898.40	3,898.40	8.47	8.65	153.64	-105.00	0.70	116.81	99.74	17.07	6.843	
4,000.00	3,998.40	3,998.40	3,998.40	8.69	8.87	153.64	-105.00	0.70	116.81	99.29	17.52	6.668	
4,100.00	4,098.40	4,098.40	4,098.40	8.91	9.10	153.64	-105.00	0.70	116.81	98.85	17.97	6.502	
4,200.00	4,198.40	4,198.40	4,198.40	9.14	9.32	153.64	-105.00	0.70	116.81	98.40	18.41	6.344	
4,300.00	4,298.40	4,298.40	4,298.40	9.36	9.55	153.64	-105.00	0.70	116.81	97.95	18.86	6.193	
4,400.00	4,398.40	4,398.40	4,398.40	9.58	9.77	153.64	-105.00	0.70	116.81	97.50	19.31	6.049	
4,500.00	4,498.40	4,498.40	4,498.40	9.80	10.00	153.64	-105.00	0.70	116.81	97.05	19.76	5.912	
4,600.00	4,598.40	4,598.40	4,598.40	10.03	10.22	153.64	-105.00	0.70	116.81	96.60	20.21	5.781	
4,700.00	4,698.40	4,698.40	4,698.40	10.25	10.45	153.64	-105.00	0.70	116.81	96.16	20.66	5.655	
4,800.00	4,798.40	4,798.40	4,798.40	10.47	10.67	153.64	-105.00	0.70	116.81	95.71	21.10	5.535 ES, SF	
4,900.00	4,898.40	4,885.11	4,884.37	10.70	10.85	149.49	-104.93	10.48	122.21	100.70	21.51	5.682	
5,000.00	4,998.40	4,963.70	4,958.60	10.92	11.03	140.19	-104.74	35.87	141.63	119.71	21.91	6.463	
5,100.00	5,098.40	5,029.87	5,015.98	11.14	11.21	131.00	-104.49	68.65	178.88	156.56	22.31	8.016	
5,200.00	5,198.40	5,083.32	5,057.65	11.37	11.42	124.15	-104.24	102.05	232.55	209.83	22.73	10.233	
5,300.00	5,298.40	5,125.00	5,086.67	11.59	11.64	119.52	-104.02	131.94	298.51	275.36	23.14	12.898	
5,400.00	5,398.40	5,159.68	5,108.22	11.81	11.86	116.20	-103.81	159.10	372.99	349.42	23.58	15.820	
5,500.00	5,498.40	5,186.87	5,123.34	12.04	12.07	113.93	-103.64	181.69	453.40	429.40	24.00	18.893	
5,600.00	5,598.40	5,208.98	5,134.42	12.26	12.27	112.27	-103.50	200.82	537.98	513.57	24.41	22.042	
5,700.00	5,698.40	5,225.00	5,141.75	12.48	12.42	111.16	-103.39	215.06	625.59	600.81	24.78	25.249	
5,779.80	5,778.20	5,239.54	5,147.88	12.66	12.58	110.23	-103.29	228.25	697.12	672.01	25.10	27.769	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal 10H - Job # 1210348 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference	Offset	Semi-Major Axis		Distance		Minimum Separation		Separation Factor		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,800.00	5,798.39	5,250.00	5,151.98	12.71	12.69	-157.61	-103.22	237.87	715.74	691.41	24.33	29.413	
5,825.00	5,823.30	5,250.00	5,151.98	12.76	12.69	-153.46	-103.22	237.87	739.15	714.79	24.37	30.337	
5,850.00	5,848.01	5,250.00	5,151.98	12.82	12.69	-147.21	-103.22	237.87	763.11	738.70	24.41	31.262	
5,875.00	5,872.42	5,250.00	5,151.98	12.88	12.69	-137.20	-103.22	237.87	787.47	762.89	24.59	32.029	
5,900.00	5,896.43	5,250.00	5,151.98	12.94	12.69	-120.44	-103.22	237.87	812.10	787.02	25.08	32.382	
5,925.00	5,919.93	5,250.00	5,151.98	13.01	12.69	-94.42	-103.22	237.87	836.87	811.19	25.68	32.588	
5,950.00	5,942.82	5,250.00	5,151.98	13.08	12.69	-65.81	-103.22	237.87	861.67	836.42	25.24	34.133	
5,975.00	5,965.01	5,250.00	5,151.98	13.16	12.69	-45.31	-103.22	237.87	886.39	862.40	23.99	36.944	
6,000.00	5,986.40	5,250.00	5,151.98	13.25	12.69	-32.98	-103.22	237.87	910.94	888.16	22.78	39.980	
6,025.00	6,006.90	5,250.00	5,151.98	13.34	12.69	-25.45	-103.22	237.87	935.23	913.50	21.73	43.032	
6,050.00	6,026.42	5,250.00	5,151.98	13.45	12.69	-20.54	-103.22	237.87	959.19	938.42	20.77	46.191	
6,075.00	6,044.87	5,250.00	5,151.98	13.57	12.69	-17.15	-103.22	237.87	982.73	962.90	19.83	49.560	
6,100.00	6,062.18	5,239.28	5,147.77	13.71	12.57	-14.36	-103.29	228.01	1,005.58	986.71	18.87	53.298	
6,125.00	6,078.28	5,236.30	5,146.55	13.87	12.54	-12.53	-103.31	225.29	1,027.96	1,010.03	17.94	57.308	
6,150.00	6,093.09	5,225.00	5,141.75	14.05	12.42	-10.97	-103.39	215.06	1,049.81	1,032.82	16.99	61.774	
6,175.00	6,106.55	5,225.00	5,141.75	14.25	12.42	-9.93	-103.39	215.06	1,070.75	1,054.67	16.08	66.598	
6,200.00	6,118.60	5,225.00	5,141.75	14.48	12.42	-9.08	-103.39	215.06	1,090.97	1,075.79	15.18	71.880	
6,225.00	6,129.20	5,225.00	5,141.75	14.73	12.42	-8.37	-103.39	215.06	1,110.41	1,096.10	14.31	77.593	
6,250.00	6,138.29	5,225.00	5,141.75	15.00	12.42	-7.79	-103.39	215.06	1,129.04	1,115.54	13.50	83.644	
6,275.00	6,145.84	5,212.92	5,136.28	15.31	12.31	-7.22	-103.47	204.29	1,146.57	1,133.81	12.76	89.855	
6,300.00	6,151.82	5,200.00	5,130.05	15.63	12.18	-6.74	-103.56	192.97	1,163.35	1,151.22	12.13	95.936	
6,325.00	6,156.19	5,200.00	5,130.05	15.98	12.18	-6.40	-103.56	192.97	1,178.91	1,167.28	11.63	101.337	
6,350.00	6,158.95	5,200.00	5,130.05	16.35	12.18	-6.11	-103.56	192.97	1,193.51	1,182.21	11.30	105.596	
6,375.00	6,160.07	5,200.00	5,130.05	16.74	12.18	-5.85	-103.56	192.97	1,207.13	1,195.98	11.15	108.219	
6,388.48	6,160.00	5,200.00	5,130.05	16.96	12.18	-5.73	-103.56	192.97	1,214.06	1,202.90	11.15	108.839	
6,400.00	6,159.73	5,188.29	5,124.08	17.14	12.09	-5.70	-103.63	182.90	1,219.65	1,208.47	11.18	109.097	
6,428.76	6,159.07	5,175.00	5,116.93	17.63	11.98	-5.66	-103.72	171.70	1,234.35	1,223.10	11.26	109.633	
6,500.00	6,157.42	5,175.00	5,116.93	18.92	11.98	-5.66	-103.72	171.70	1,272.13	1,260.62	11.51	110.538	
6,600.00	6,155.11	5,150.00	5,102.45	20.92	11.79	-5.59	-103.87	151.32	1,328.70	1,316.80	11.90	111.655	
6,700.00	6,152.80	5,125.00	5,086.67	23.07	11.64	-5.51	-104.02	131.94	1,389.27	1,376.92	12.35	112.482	
6,800.00	6,150.49	5,125.00	5,086.67	25.34	11.64	-5.51	-104.02	131.94	1,453.28	1,440.42	12.86	113.001	
6,900.00	6,148.18	5,100.00	5,069.66	27.69	11.50	-5.43	-104.15	113.63	1,520.19	1,506.80	13.40	113.465	
7,000.00	6,145.87	5,086.47	5,059.96	30.11	11.44	-5.39	-104.22	104.20	1,590.04	1,576.07	13.97	113.804	
7,100.00	6,143.56	5,075.00	5,051.48	32.59	11.39	-5.35	-104.28	96.47	1,662.41	1,647.84	14.57	114.085	
7,200.00	6,141.25	5,061.14	5,040.93	35.11	11.33	-5.30	-104.35	87.48	1,737.02	1,721.82	15.19	114.341	
7,300.00	6,138.94	5,050.00	5,032.22	37.66	11.28	-5.26	-104.40	80.54	1,813.65	1,797.82	15.83	114.573	
7,400.00	6,136.63	5,039.18	5,023.57	40.24	11.25	-5.22	-104.45	74.05	1,892.10	1,875.61	16.48	114.798	
7,500.00	6,134.32	5,025.00	5,011.96	42.84	11.20	-5.17	-104.51	65.91	1,972.21	1,955.07	17.14	115.039	
7,600.00	6,132.01	5,025.00	5,011.96	45.45	11.20	-5.17	-104.51	65.91	2,053.78	2,035.95	17.83	115.217	
7,700.00	6,129.70	5,011.48	5,000.61	48.09	11.16	-5.12	-104.57	58.55	2,136.63	2,118.12	18.50	115.463	
7,800.00	6,127.39	5,000.00	4,990.78	50.73	11.12	-5.08	-104.61	52.62	2,220.74	2,201.55	19.19	115.706	
7,900.00	6,125.08	5,000.00	4,990.78	53.39	11.12	-5.08	-104.61	52.62	2,305.93	2,286.03	19.90	115.892	
8,000.00	6,122.77	4,988.78	4,981.01	56.06	11.09	-5.04	-104.65	47.12	2,392.08	2,371.48	20.60	116.144	
8,100.00	6,120.45	4,975.00	4,968.79	58.73	11.05	-4.99	-104.70	40.75	2,479.23	2,457.93	21.30	116.420	
8,200.00	6,118.14	4,975.00	4,968.79	61.41	11.05	-4.99	-104.70	40.75	2,567.05	2,545.03	22.01	116.609	
8,300.00	6,115.83	4,975.00	4,968.79	64.10	11.05	-4.99	-104.70	40.75	2,655.73	2,632.99	22.74	116.803	
8,400.00	6,113.52	4,975.00	4,968.79	66.79	11.05	-4.99	-104.70	40.75	2,745.19	2,721.72	23.46	117.000	
8,500.00	6,111.21	4,950.00	4,946.06	69.49	10.99	-4.90	-104.78	30.35	2,835.10	2,810.95	24.16	117.357	
8,600.00	6,108.90	4,950.00	4,946.06	72.19	10.99	-4.90	-104.78	30.35	2,925.54	2,900.65	24.89	117.544	
8,700.00	6,106.59	4,950.00	4,946.06	74.90	10.99	-4.90	-104.78	30.35	3,016.58	2,990.96	25.62	117.732	
8,800.00	6,104.28	4,950.00	4,946.06	77.61	10.99	-4.90	-104.78	30.35	3,108.17	3,081.81	26.36	117.921	
8,900.00	6,101.97	4,950.00	4,946.06	80.32	10.99	-4.90	-104.78	30.35	3,200.27	3,173.17	27.10	118.109	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal 10H - Job # 1210348 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,000.00	6,099.66	4,936.83	4,933.83	83.03	10.96	-4.85	-104.81	25.47	3,292.57	3,264.76	27.81	118.384	
9,100.00	6,097.35	4,925.00	4,922.70	85.75	10.94	-4.81	-104.84	21.45	3,385.48	3,356.94	28.53	118.654	
9,200.00	6,095.04	4,925.00	4,922.70	88.47	10.94	-4.81	-104.84	21.45	3,478.58	3,449.31	29.27	118.829	
9,300.00	6,092.73	4,925.00	4,922.70	91.19	10.94	-4.81	-104.84	21.45	3,572.06	3,542.05	30.02	119.002	
9,400.00	6,090.42	4,925.00	4,922.70	93.92	10.94	-4.81	-104.84	21.45	3,665.89	3,635.12	30.76	119.172	
9,500.00	6,088.11	4,925.00	4,922.70	96.64	10.94	-4.81	-104.84	21.45	3,760.03	3,728.52	31.51	119.341	
9,600.00	6,085.79	4,925.00	4,922.70	99.37	10.94	-4.81	-104.84	21.45	3,854.46	3,822.21	32.25	119.507	
9,700.00	6,083.48	4,925.00	4,922.70	102.10	10.94	-4.81	-104.84	21.45	3,949.17	3,916.17	33.00	119.670	
9,800.00	6,081.17	4,900.00	4,898.81	104.83	10.88	-4.72	-104.90	14.11	4,044.02	4,010.33	33.69	120.023	
9,900.00	6,078.86	4,900.00	4,898.81	107.56	10.88	-4.72	-104.90	14.11	4,139.04	4,104.59	34.44	120.175	
10,000.00	6,076.55	4,900.00	4,898.81	110.29	10.88	-4.72	-104.90	14.11	4,234.28	4,199.09	35.19	120.324	
10,100.00	6,074.24	4,900.00	4,898.81	113.02	10.88	-4.72	-104.90	14.11	4,329.74	4,293.80	35.94	120.471	
10,200.00	6,071.93	4,900.00	4,898.81	115.76	10.88	-4.72	-104.90	14.11	4,425.40	4,388.71	36.69	120.615	
10,300.00	6,069.62	4,900.00	4,898.81	118.49	10.88	-4.72	-104.90	14.11	4,521.24	4,483.80	37.44	120.756	
10,400.00	6,067.31	4,900.00	4,898.81	121.23	10.88	-4.72	-104.90	14.11	4,617.27	4,579.07	38.19	120.894	
10,500.00	6,065.00	4,900.00	4,898.81	123.97	10.88	-4.72	-104.90	14.11	4,713.46	4,674.51	38.94	121.029	
10,600.00	6,062.69	4,900.00	4,898.81	126.70	10.88	-4.72	-104.90	14.11	4,809.80	4,770.10	39.70	121.162	
10,700.00	6,060.38	4,900.00	4,898.81	129.44	10.88	-4.72	-104.90	14.11	4,906.29	4,865.84	40.45	121.292	
10,800.00	6,058.07	4,900.00	4,898.81	132.18	10.88	-4.72	-104.90	14.11	5,002.92	4,961.71	41.20	121.419	
10,900.00	6,055.76	4,886.92	4,886.13	134.92	10.86	-4.67	-104.92	10.89	5,099.44	5,057.51	41.92	121.645	
11,000.00	6,053.45	4,875.00	4,874.49	137.66	10.83	-4.63	-104.94	8.33	5,196.40	5,153.75	42.64	121.866	
11,100.00	6,051.13	4,875.00	4,874.49	140.40	10.83	-4.63	-104.94	8.33	5,293.28	5,249.88	43.39	121.982	
11,149.11	6,050.00	4,875.00	4,874.49	141.75	10.83	-4.63	-104.94	8.33	5,340.89	5,297.13	43.76	122.039	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Crow Federal 11H - Job # 1210349 - Wellbore #1 - Plan 1 4-25-2012														Offset Site Error:
Survey Program: 0-MWD														0.00 usft
Reference	Offset	Semi-Major Axis		Distance		Warning		Offset Wellbore Centre		Between Centres		Minimum Separation		Offset Well Error:
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)		N-S (usft)	E-W (usft)	Between Centres (usft)	Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	179.57		-40.00	0.30	40.00				
100.00	100.00	100.00	100.00	0.11	0.11	179.57		-40.00	0.30	40.00	39.78	0.22	177.968	
200.00	200.00	200.00	200.00	0.34	0.34	179.57		-40.00	0.30	40.00	39.33	0.67	59.323 CC	
226.15	226.15	226.15	226.15	0.39	0.40	-90.23		-40.00	0.30	40.00	39.21	0.79	50.692	
300.00	299.98	299.98	299.98	0.55	0.56	-92.55		-40.00	0.30	40.04	38.93	1.11	35.964 ES	
400.16	400.00	400.00	400.00	0.78	0.79	-99.94		-40.00	0.30	40.61	39.05	1.56	26.023	
500.00	499.59	499.59	499.59	1.01	1.01	-109.23		-40.00	0.30	42.38	40.35	2.02	20.948	
600.00	599.35	599.35	599.35	1.26	1.23	-117.60		-40.00	0.30	45.16	42.67	2.49	18.149	
700.00	699.11	699.11	699.11	1.51	1.46	-124.87		-40.00	0.30	48.79	45.84	2.95	16.531	
800.00	798.86	798.86	798.86	1.76	1.68	-131.05		-40.00	0.30	53.10	49.69	3.41	15.565	
900.16	898.78	898.78	898.78	2.02	1.91	-136.26		-40.00	0.30	57.93	54.06	3.87	14.973	
1,000.00	998.46	998.46	998.46	2.24	2.13	-139.91		-40.00	0.30	62.15	57.85	4.29	14.471	
1,100.00	1,098.41	1,098.41	1,098.41	2.43	2.36	-141.68		-40.00	0.30	64.52	59.82	4.70	13.731	
1,166.60	1,165.00	1,165.00	1,165.00	2.55	2.51	127.63		-40.00	0.30	64.97	59.98	5.00	13.003	
1,200.00	1,198.40	1,198.40	1,198.40	2.61	2.58	127.63		-40.00	0.30	64.97	59.84	5.14	12.647	
1,300.00	1,298.40	1,298.40	1,298.40	2.81	2.81	127.63		-40.00	0.30	64.97	59.41	5.57	11.672	
1,400.00	1,398.40	1,398.40	1,398.40	3.02	3.03	127.63		-40.00	0.30	64.97	58.98	6.00	10.832	
1,500.00	1,498.40	1,498.40	1,498.40	3.22	3.26	127.63		-40.00	0.30	64.97	58.54	6.43	10.100	
1,600.00	1,598.40	1,598.40	1,598.40	3.43	3.48	127.63		-40.00	0.30	64.97	58.10	6.87	9.459	
1,700.00	1,698.40	1,698.40	1,698.40	3.64	3.71	127.63		-40.00	0.30	64.97	57.67	7.31	8.892	
1,800.00	1,798.40	1,798.40	1,798.40	3.86	3.93	127.63		-40.00	0.30	64.97	57.23	7.75	8.388	
1,900.00	1,898.40	1,898.40	1,898.40	4.07	4.15	127.63		-40.00	0.30	64.97	56.79	8.19	7.937	
2,000.00	1,998.40	1,998.40	1,998.40	4.29	4.38	127.63		-40.00	0.30	64.97	56.35	8.63	7.531	
2,100.00	2,098.40	2,098.40	2,098.40	4.50	4.60	127.63		-40.00	0.30	64.97	55.90	9.07	7.164	
2,200.00	2,198.40	2,198.40	2,198.40	4.72	4.83	127.63		-40.00	0.30	64.97	55.46	9.51	6.830	
2,300.00	2,298.40	2,298.40	2,298.40	4.94	5.05	127.63		-40.00	0.30	64.97	55.02	9.96	6.526	
2,400.00	2,398.40	2,398.40	2,398.40	5.15	5.28	127.63		-40.00	0.30	64.97	54.57	10.40	6.247	
2,500.00	2,498.40	2,498.40	2,498.40	5.37	5.50	127.63		-40.00	0.30	64.97	54.13	10.84	5.991	
2,600.00	2,598.40	2,598.40	2,598.40	5.59	5.73	127.63		-40.00	0.30	64.97	53.68	11.29	5.755	
2,700.00	2,698.40	2,698.40	2,698.40	5.81	5.95	127.63		-40.00	0.30	64.97	53.24	11.73	5.537	
2,800.00	2,798.40	2,798.40	2,798.40	6.03	6.18	127.63		-40.00	0.30	64.97	52.79	12.18	5.335	
2,900.00	2,898.40	2,898.40	2,898.40	6.25	6.40	127.63		-40.00	0.30	64.97	52.35	12.63	5.146	
3,000.00	2,998.40	2,998.40	2,998.40	6.47	6.63	127.63		-40.00	0.30	64.97	51.90	13.07	4.971	
3,100.00	3,098.40	3,098.40	3,098.40	6.69	6.85	127.63		-40.00	0.30	64.97	51.46	13.52	4.806	
3,200.00	3,198.40	3,198.40	3,198.40	6.91	7.08	127.63		-40.00	0.30	64.97	51.01	13.96	4.653	
3,300.00	3,298.40	3,298.40	3,298.40	7.14	7.30	127.63		-40.00	0.30	64.97	50.56	14.41	4.509	
3,400.00	3,398.40	3,398.40	3,398.40	7.36	7.53	127.63		-40.00	0.30	64.97	50.12	14.86	4.373	
3,500.00	3,498.40	3,498.40	3,498.40	7.58	7.75	127.63		-40.00	0.30	64.97	49.67	15.31	4.245	
3,600.00	3,598.40	3,598.40	3,598.40	7.80	7.98	127.63		-40.00	0.30	64.97	49.22	15.75	4.125	
3,700.00	3,698.40	3,698.40	3,698.40	8.02	8.20	127.63		-40.00	0.30	64.97	48.77	16.20	4.011	
3,800.00	3,798.40	3,798.40	3,798.40	8.24	8.43	127.63		-40.00	0.30	64.97	48.33	16.65	3.903	
3,900.00	3,898.40	3,898.40	3,898.40	8.47	8.65	127.63		-40.00	0.30	64.97	47.88	17.09	3.801	
4,000.00	3,998.40	3,998.40	3,998.40	8.69	8.87	127.63		-40.00	0.30	64.97	47.43	17.54	3.704	
4,100.00	4,098.40	4,098.40	4,098.40	8.91	9.10	127.63		-40.00	0.30	64.97	46.98	17.99	3.612	
4,200.00	4,198.40	4,198.40	4,198.40	9.14	9.32	127.63		-40.00	0.30	64.97	46.54	18.44	3.524	
4,300.00	4,298.40	4,298.40	4,298.40	9.36	9.55	127.63		-40.00	0.30	64.97	46.09	18.89	3.440	
4,400.00	4,398.40	4,398.40	4,398.40	9.58	9.77	127.63		-40.00	0.30	64.97	45.64	19.33	3.361	
4,500.00	4,498.40	4,498.40	4,498.40	9.80	10.00	127.63		-40.00	0.30	64.97	45.19	19.78	3.285	
4,600.00	4,598.40	4,598.40	4,598.40	10.03	10.22	127.63		-40.00	0.30	64.97	44.74	20.23	3.212	
4,700.00	4,698.40	4,698.40	4,698.40	10.25	10.45	127.63		-40.00	0.30	64.97	44.30	20.68	3.142	
4,800.00	4,798.40	4,798.40	4,798.40	10.47	10.67	127.63		-40.00	0.30	64.97	43.85	21.13	3.076	
4,900.00	4,898.40	4,898.40	4,898.40	10.70	10.90	127.63		-40.00	0.30	64.97	43.40	21.57	3.012	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal 11H - Job # 1210349 - Wellbore #1 - Plan 1 4-25-2012											Offset Site Error: 0.00 usft			
Survey Program: 0-MWD				Offset Well Error: 0.00 usft										
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,000.00	4,998.40	4,998.40	4,998.40	10.92	11.12	127.63	-40.00	0.30	64.97	42.95	22.02	2.950		
5,100.00	5,098.40	5,098.40	5,098.40	11.14	11.35	127.63	-40.00	0.30	64.97	42.50	22.47	2.891		
5,200.00	5,198.40	5,198.40	5,198.40	11.37	11.57	127.63	-40.00	0.30	64.97	42.05	22.92	2.835		
5,300.00	5,298.40	5,298.40	5,298.40	11.59	11.80	127.63	-40.00	0.30	64.97	41.61	23.37	2.780		
5,400.00	5,398.40	5,398.40	5,398.40	11.81	12.02	127.63	-40.00	0.30	64.97	41.16	23.82	2.728		
5,417.21	5,415.61	5,415.61	5,415.61	11.85	12.06	127.63	-40.00	0.30	64.97	41.08	23.89	2.719 SF		
5,500.00	5,498.40	5,490.93	5,490.76	12.04	12.22	125.72	-39.97	3.96	68.32	44.08	24.24	2.819		
5,600.00	5,598.40	5,575.00	5,572.08	12.26	12.40	117.53	-39.82	24.60	89.40	64.75	24.65	3.627		
5,700.00	5,698.40	5,644.78	5,634.83	12.48	12.57	110.31	-39.59	54.90	129.74	104.69	25.05	5.180		
5,779.80	5,778.20	5,692.33	5,673.96	12.66	12.72	106.36	-39.39	81.88	173.46	148.09	25.37	6.836		
5,800.00	5,798.39	5,700.00	5,679.94	12.71	12.75	-163.14	-39.35	86.67	186.27	160.97	25.30	7.361		
5,825.00	5,823.30	5,714.55	5,691.03	12.76	12.81	-163.30	-39.28	96.10	203.69	178.40	25.29	8.055		
5,850.00	5,848.01	5,725.00	5,698.76	12.82	12.85	-163.00	-39.23	103.12	222.75	197.56	25.19	8.844		
5,875.00	5,872.42	5,733.45	5,704.87	12.88	12.89	-162.31	-39.18	108.96	243.18	218.17	25.00	9.726		
5,900.00	5,896.43	5,740.77	5,710.05	12.94	12.92	-161.19	-39.15	114.12	264.77	240.02	24.75	10.697		
5,925.00	5,919.93	5,750.00	5,716.46	13.01	12.96	-159.95	-39.10	120.77	287.35	262.91	24.44	11.756		
5,950.00	5,942.82	5,750.00	5,716.46	13.08	12.96	-156.33	-39.10	120.77	310.65	286.52	24.14	12.871		
5,975.00	5,965.01	5,750.00	5,716.46	13.16	12.96	-150.58	-39.10	120.77	334.64	310.70	23.94	13.980		
6,000.00	5,986.40	5,757.61	5,721.61	13.25	13.00	-144.56	-39.05	126.37	358.94	335.06	23.88	15.032		
6,025.00	6,006.90	5,759.17	5,722.65	13.34	13.01	-130.11	-39.05	127.53	383.60	358.99	24.61	15.589		
6,050.00	6,026.42	5,759.84	5,723.10	13.45	13.01	-102.04	-39.04	128.03	408.43	382.17	26.26	15.551		
6,075.00	6,044.87	5,759.70	5,723.01	13.57	13.01	-64.46	-39.04	127.92	433.31	407.79	25.52	16.979		
6,100.00	6,062.18	5,758.82	5,722.42	13.71	13.01	-39.19	-39.05	127.27	458.14	435.53	22.61	20.265		
6,125.00	6,078.28	5,757.28	5,721.39	13.87	13.00	-26.26	-39.06	126.12	482.80	462.38	20.42	23.638		
6,150.00	6,093.09	5,750.00	5,716.46	14.05	12.96	-18.44	-39.10	120.77	507.29	488.52	18.77	27.025		
6,175.00	6,106.55	5,750.00	5,716.46	14.25	12.96	-14.67	-39.10	120.77	531.34	513.77	17.57	30.244		
6,200.00	6,118.60	5,750.00	5,716.46	14.48	12.96	-12.10	-39.10	120.77	555.03	538.54	16.48	33.670		
6,225.00	6,129.20	5,750.00	5,716.46	14.73	12.96	-10.25	-39.10	120.77	578.30	562.81	15.49	37.337		
6,250.00	6,138.29	5,741.46	5,710.54	15.00	12.92	-8.61	-39.14	114.62	600.95	586.40	14.55	41.295		
6,275.00	6,145.84	5,737.01	5,707.40	15.31	12.90	-7.51	-39.17	111.46	623.05	609.31	13.74	45.346		
6,300.00	6,151.82	5,725.00	5,698.76	15.63	12.85	-6.53	-39.23	103.12	644.62	631.59	13.04	49.437		
6,325.00	6,156.19	5,725.00	5,698.76	15.98	12.85	-5.93	-39.23	103.12	665.29	652.79	12.50	53.215		
6,350.00	6,158.95	5,725.00	5,698.76	16.35	12.85	-5.43	-39.23	103.12	685.33	673.20	12.13	56.496		
6,375.00	6,160.07	5,716.05	5,692.15	16.74	12.81	-4.94	-39.27	97.09	704.55	692.61	11.94	59.010		
6,388.48	6,160.00	5,712.91	5,689.79	16.96	12.80	-4.73	-39.29	95.01	714.59	702.67	11.92	59.950		
6,400.00	6,159.73	5,710.21	5,687.76	17.14	12.79	-4.71	-39.30	93.24	723.09	711.14	11.95	60.504		
6,428.76	6,159.07	5,700.00	5,679.94	17.63	12.75	-4.64	-39.35	86.67	744.57	732.54	12.03	61.887		
6,500.00	6,157.42	5,688.47	5,670.91	18.92	12.71	-4.56	-39.41	79.51	799.04	786.78	12.26	65.152		
6,600.00	6,155.11	5,675.00	5,660.09	20.92	12.66	-4.46	-39.47	71.48	878.41	865.76	12.65	69.453		
6,700.00	6,152.80	5,650.00	5,639.29	23.07	12.58	-4.29	-39.57	57.63	960.45	947.38	13.07	73.458		
6,800.00	6,150.49	5,637.87	5,628.88	25.34	12.55	-4.21	-39.62	51.40	1,044.81	1,031.25	13.56	77.070		
6,900.00	6,148.18	5,625.00	5,617.62	27.69	12.52	-4.13	-39.66	45.16	1,131.09	1,117.02	14.07	80.362		
7,000.00	6,145.87	5,613.05	5,606.99	30.11	12.49	-4.05	-39.70	39.71	1,218.97	1,204.35	14.62	83.358		
7,100.00	6,143.56	5,600.00	5,595.19	32.59	12.45	-3.97	-39.75	34.13	1,308.21	1,293.02	15.20	86.092		
7,200.00	6,141.25	5,600.00	5,595.19	35.11	12.45	-3.97	-39.75	34.13	1,398.66	1,382.85	15.80	88.499		
7,300.00	6,138.94	5,575.00	5,572.08	37.66	12.40	-3.82	-39.82	24.60	1,490.09	1,473.69	16.40	90.881		
7,400.00	6,136.63	5,575.00	5,572.08	40.24	12.40	-3.82	-39.82	24.60	1,582.14	1,565.10	17.04	92.867		
7,500.00	6,134.32	5,575.00	5,572.08	42.84	12.40	-3.82	-39.82	24.60	1,675.10	1,657.41	17.69	94.692		
7,600.00	6,132.01	5,563.56	5,561.31	45.45	12.37	-3.75	-39.85	20.75	1,768.82	1,750.29	18.34	96.461		
7,700.00	6,129.70	5,550.00	5,548.40	48.09	12.34	-3.68	-39.88	16.60	1,862.83	1,843.85	18.99	98.121		
7,800.00	6,127.39	5,550.00	5,548.40	50.73	12.34	-3.68	-39.88	16.60	1,957.36	1,937.69	19.67	99.535		
7,900.00	6,125.08	5,550.00	5,548.40	53.39	12.34	-3.68	-39.88	16.60	2,052.40	2,032.05	20.35	100.845		

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal 11H - Job # 1210349 - Wellbore #1 - Plan 1 4-25-2012														Offset Site Error:	0.00 usft
Survey Program: 0-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
8,000.00	6,122.77	5,550.00	5,548.40	56.06	12.34	-3.68	-39.88	16.60	2,147.89	2,126.84	21.04	102.062			
8,100.00	6,120.45	5,538.47	5,537.31	58.73	12.32	-3.61	-39.90	13.43	2,243.57	2,221.85	21.72	103.296			
8,200.00	6,118.14	5,525.00	5,524.25	61.41	12.29	-3.54	-39.93	10.16	2,339.78	2,317.38	22.39	104.479			
8,300.00	6,115.83	5,525.00	5,524.25	64.10	12.29	-3.54	-39.93	10.16	2,436.03	2,412.93	23.10	105.456			
8,400.00	6,113.52	5,525.00	5,524.25	66.79	12.29	-3.54	-39.93	10.16	2,532.58	2,508.77	23.81	106.371			
8,500.00	6,111.21	5,525.00	5,524.25	69.49	12.29	-3.54	-39.93	10.16	2,629.38	2,604.86	24.52	107.229			
8,600.00	6,108.90	5,525.00	5,524.25	72.19	12.29	-3.54	-39.93	10.16	2,726.41	2,701.18	25.24	108.037			
8,700.00	6,106.59	5,525.00	5,524.25	74.90	12.29	-3.54	-39.93	10.16	2,823.65	2,797.70	25.95	108.797			
8,800.00	6,104.28	5,525.00	5,524.25	77.61	12.29	-3.54	-39.93	10.16	2,921.08	2,894.41	26.67	109.514			
8,900.00	6,101.97	5,513.08	5,512.60	80.32	12.27	-3.48	-39.94	7.65	3,018.47	2,991.10	27.37	110.302			
9,000.00	6,099.66	5,500.00	5,499.73	83.03	12.24	-3.41	-39.96	5.32	3,116.29	3,088.24	28.06	111.072			
9,100.00	6,097.35	5,500.00	5,499.73	85.75	12.24	-3.41	-39.96	5.32	3,214.01	3,185.23	28.78	111.673			
9,200.00	6,095.04	5,500.00	5,499.73	88.47	12.24	-3.41	-39.96	5.32	3,311.87	3,282.37	29.51	112.244			
9,300.00	6,092.73	5,500.00	5,499.73	91.19	12.24	-3.41	-39.96	5.32	3,409.86	3,379.62	30.23	112.786			
9,400.00	6,090.42	5,500.00	5,499.73	93.92	12.24	-3.41	-39.96	5.32	3,507.95	3,476.99	30.96	113.301			
9,500.00	6,088.11	5,500.00	5,499.73	96.64	12.24	-3.41	-39.96	5.32	3,606.15	3,574.46	31.69	113.792			
9,600.00	6,085.79	5,500.00	5,499.73	99.37	12.24	-3.41	-39.96	5.32	3,704.45	3,672.03	32.42	114.260			
9,700.00	6,083.48	5,500.00	5,499.73	102.10	12.24	-3.41	-39.96	5.32	3,802.84	3,769.68	33.15	114.706			
9,800.00	6,081.17	5,500.00	5,499.73	104.83	12.24	-3.41	-39.96	5.32	3,901.30	3,867.42	33.89	115.133			
9,900.00	6,078.86	5,500.00	5,499.73	107.56	12.24	-3.41	-39.96	5.32	3,999.85	3,965.23	34.62	115.540			
10,000.00	6,076.55	5,500.00	5,499.73	110.29	12.24	-3.41	-39.96	5.32	4,098.46	4,063.11	35.35	115.931			
10,100.00	6,074.24	5,500.00	5,499.73	113.02	12.24	-3.41	-39.96	5.32	4,197.14	4,161.06	36.09	116.305			
10,200.00	6,071.93	5,500.00	5,499.73	115.76	12.24	-3.41	-39.96	5.32	4,295.88	4,259.06	36.82	116.663			
10,300.00	6,069.62	5,500.00	5,499.73	118.49	12.24	-3.41	-39.96	5.32	4,394.68	4,357.12	37.56	117.007			
10,400.00	6,067.31	5,487.45	5,487.32	121.23	12.21	-3.35	-39.98	3.50	4,493.31	4,455.05	38.26	117.454			
10,500.00	6,065.00	5,475.00	5,474.94	123.97	12.19	-3.29	-39.99	2.09	4,592.35	4,553.39	38.95	117.893			
10,600.00	6,062.69	5,475.00	5,474.94	126.70	12.19	-3.29	-39.99	2.09	4,691.22	4,651.53	39.69	118.196			
10,700.00	6,060.38	5,475.00	5,474.94	129.44	12.19	-3.29	-39.99	2.09	4,790.13	4,749.70	40.43	118.488			
10,800.00	6,058.07	5,475.00	5,474.94	132.18	12.19	-3.29	-39.99	2.09	4,889.09	4,847.93	41.16	118.769			
10,900.00	6,055.76	5,475.00	5,474.94	134.92	12.19	-3.29	-39.99	2.09	4,988.09	4,946.19	41.90	119.040			
11,000.00	6,053.45	5,475.00	5,474.94	137.66	12.19	-3.29	-39.99	2.09	5,087.13	5,044.49	42.64	119.301			
11,100.00	6,051.13	5,475.00	5,474.94	140.40	12.19	-3.29	-39.99	2.09	5,186.21	5,142.83	43.38	119.553			
11,149.11	6,050.00	5,475.00	5,474.94	141.75	12.19	-3.29	-39.99	2.09	5,234.88	5,191.13	43.74	119.674			

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Crow Federal 12H - Job # 1210350 - Wellbore #1 - Plan 1 4-25-2012														Offset Site Error:	0.00 usft
Survey Program: 0-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-0.23	25.00	-0.10	25.00						
100.00	100.00	100.00	100.00	0.11	0.11	-0.23	25.00	-0.10	25.00	24.78	0.22	111.228			
200.00	200.00	200.00	200.00	0.34	0.34	-0.23	25.00	-0.10	25.00	24.33	0.67	37.076 CC			
225.33	225.33	225.33	225.33	0.39	0.39	90.40	25.00	-0.10	25.00	24.22	0.79	31.827			
300.00	299.98	299.98	299.98	0.55	0.56	94.13	25.00	-0.10	25.07	23.95	1.11	22.513 ES			
400.16	400.00	400.00	400.00	0.78	0.79	105.70	25.00	-0.10	25.97	24.41	1.56	16.645			
500.00	499.59	499.59	499.59	1.01	1.01	119.21	25.00	-0.10	28.66	26.64	2.02	14.201			
600.00	599.35	599.35	599.35	1.26	1.23	129.94	25.00	-0.10	32.64	30.17	2.47	13.193			
700.00	699.11	699.11	699.11	1.51	1.46	138.13	25.00	-0.10	37.51	34.58	2.93	12.818			
800.00	798.86	798.86	798.86	1.76	1.68	144.35	25.00	-0.10	42.96	39.58	3.38	12.724			
900.16	898.78	898.78	898.78	2.02	1.91	149.13	25.00	-0.10	48.81	44.99	3.83	12.757			
1,000.00	998.46	998.46	998.46	2.24	2.13	152.26	25.00	-0.10	53.75	49.50	4.25	12.641			
1,100.00	1,098.41	1,098.41	1,098.41	2.43	2.36	153.72	25.00	-0.10	56.47	51.81	4.66	12.116			
1,166.60	1,165.00	1,165.00	1,165.00	2.55	2.51	63.61	25.00	-0.10	57.00	51.96	5.03	11.325			
1,200.00	1,198.40	1,198.40	1,198.40	2.61	2.58	63.61	25.00	-0.10	57.00	51.82	5.17	11.019			
1,300.00	1,298.40	1,298.40	1,298.40	2.81	2.81	63.61	25.00	-0.10	57.00	51.40	5.60	10.180			
1,400.00	1,398.40	1,398.40	1,398.40	3.02	3.03	63.61	25.00	-0.10	57.00	50.97	6.03	9.454			
1,500.00	1,498.40	1,498.40	1,498.40	3.22	3.26	63.61	25.00	-0.10	57.00	50.53	6.46	8.821			
1,600.00	1,598.40	1,598.40	1,598.40	3.43	3.48	63.61	25.00	-0.10	57.00	50.10	6.90	8.265			
1,700.00	1,698.40	1,698.40	1,698.40	3.64	3.71	63.61	25.00	-0.10	57.00	49.66	7.33	7.773			
1,800.00	1,798.40	1,798.40	1,798.40	3.86	3.93	63.61	25.00	-0.10	57.00	49.23	7.77	7.335			
1,900.00	1,898.40	1,898.40	1,898.40	4.07	4.15	63.61	25.00	-0.10	57.00	48.79	8.21	6.943			
2,000.00	1,998.40	1,998.40	1,998.40	4.29	4.38	63.61	25.00	-0.10	57.00	48.35	8.65	6.589			
2,100.00	2,098.40	2,098.40	2,098.40	4.50	4.60	63.61	25.00	-0.10	57.00	47.91	9.09	6.270			
2,200.00	2,198.40	2,198.40	2,198.40	4.72	4.83	63.61	25.00	-0.10	57.00	47.46	9.53	5.979			
2,300.00	2,298.40	2,298.40	2,298.40	4.94	5.05	63.61	25.00	-0.10	57.00	47.02	9.98	5.714			
2,400.00	2,398.40	2,398.40	2,398.40	5.15	5.28	63.61	25.00	-0.10	57.00	46.58	10.42	5.471			
2,500.00	2,498.40	2,498.40	2,498.40	5.37	5.50	63.61	25.00	-0.10	57.00	46.13	10.86	5.247			
2,600.00	2,598.40	2,598.40	2,598.40	5.59	5.73	63.61	25.00	-0.10	57.00	45.69	11.31	5.041			
2,700.00	2,698.40	2,698.40	2,698.40	5.81	5.95	63.61	25.00	-0.10	57.00	45.24	11.75	4.850			
2,800.00	2,798.40	2,798.40	2,798.40	6.03	6.18	63.61	25.00	-0.10	57.00	44.80	12.20	4.673			
2,900.00	2,898.40	2,898.40	2,898.40	6.25	6.40	63.61	25.00	-0.10	57.00	44.35	12.64	4.509			
3,000.00	2,998.40	2,998.40	2,998.40	6.47	6.63	63.61	25.00	-0.10	57.00	43.91	13.09	4.355			
3,100.00	3,098.40	3,098.40	3,098.40	6.69	6.85	63.61	25.00	-0.10	57.00	43.46	13.53	4.212			
3,200.00	3,198.40	3,198.40	3,198.40	6.91	7.08	63.61	25.00	-0.10	57.00	43.02	13.98	4.077			
3,300.00	3,298.40	3,298.40	3,298.40	7.14	7.30	63.61	25.00	-0.10	57.00	42.57	14.43	3.951			
3,400.00	3,398.40	3,398.40	3,398.40	7.36	7.53	63.61	25.00	-0.10	57.00	42.12	14.87	3.833			
3,500.00	3,498.40	3,498.40	3,498.40	7.58	7.75	63.61	25.00	-0.10	57.00	41.68	15.32	3.721			
3,600.00	3,598.40	3,598.40	3,598.40	7.80	7.98	63.61	25.00	-0.10	57.00	41.23	15.77	3.615			
3,700.00	3,698.40	3,698.40	3,698.40	8.02	8.20	63.61	25.00	-0.10	57.00	40.78	16.21	3.516			
3,800.00	3,798.40	3,798.40	3,798.40	8.24	8.43	63.61	25.00	-0.10	57.00	40.34	16.66	3.421			
3,900.00	3,898.40	3,898.40	3,898.40	8.47	8.65	63.61	25.00	-0.10	57.00	39.89	17.11	3.332			
4,000.00	3,998.40	3,998.40	3,998.40	8.69	8.87	63.61	25.00	-0.10	57.00	39.44	17.55	3.247			
4,100.00	4,098.40	4,098.40	4,098.40	8.91	9.10	63.61	25.00	-0.10	57.00	38.99	18.00	3.166			
4,200.00	4,198.40	4,198.40	4,198.40	9.14	9.32	63.61	25.00	-0.10	57.00	38.55	18.45	3.089			
4,300.00	4,298.40	4,298.40	4,298.40	9.36	9.55	63.61	25.00	-0.10	57.00	38.10	18.90	3.016			
4,400.00	4,398.40	4,398.40	4,398.40	9.58	9.77	63.61	25.00	-0.10	57.00	37.65	19.34	2.946			
4,500.00	4,498.40	4,498.40	4,498.40	9.80	10.00	63.61	25.00	-0.10	57.00	37.20	19.79	2.880			
4,600.00	4,598.40	4,598.40	4,598.40	10.03	10.22	63.61	25.00	-0.10	57.00	36.76	20.24	2.816			
4,700.00	4,698.40	4,698.40	4,698.40	10.25	10.45	63.61	25.00	-0.10	57.00	36.31	20.69	2.755			
4,800.00	4,798.40	4,798.40	4,798.40	10.47	10.67	63.61	25.00	-0.10	57.00	35.86	21.14	2.697			
4,900.00	4,898.40	4,898.40	4,898.40	10.70	10.90	63.61	25.00	-0.10	57.00	35.41	21.58	2.641			

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal 12H - Job # 1210350 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,000.00	4,998.40	4,998.40	4,998.40	10.92	11.12	63.61	25.00	-0.10	57.00	34.96	22.03	2.587	
5,100.00	5,098.40	5,098.40	5,098.40	11.14	11.35	63.61	25.00	-0.10	57.00	34.52	22.48	2.535	
5,200.00	5,198.40	5,198.40	5,198.40	11.37	11.57	63.61	25.00	-0.10	57.00	34.07	22.93	2.486	
5,300.00	5,298.40	5,298.40	5,298.40	11.59	11.80	63.61	25.00	-0.10	57.00	33.62	23.38	2.438	
5,400.00	5,398.40	5,398.40	5,398.40	11.81	12.02	63.61	25.00	-0.10	57.00	33.17	23.83	2.392	
5,500.00	5,498.40	5,498.40	5,498.40	12.04	12.25	63.61	25.00	-0.10	57.00	32.72	24.27	2.348	
5,600.00	5,598.40	5,598.40	5,598.40	12.26	12.47	63.61	25.00	-0.10	57.00	32.27	24.72	2.305	
5,700.00	5,698.40	5,698.40	5,698.40	12.48	12.70	63.61	25.00	-0.10	57.00	31.82	25.17	2.264	
5,779.80	5,778.20	5,778.20	5,778.20	12.66	12.88	63.61	25.00	-0.10	57.00	31.47	25.53	2.233 SF	
5,800.00	5,798.39	5,798.39	5,798.39	12.71	12.92	154.19	25.00	-0.10	57.48	31.91	25.57	2.248	
5,825.00	5,823.30	5,823.30	5,823.30	12.76	12.98	154.96	25.00	-0.10	59.41	33.82	25.59	2.322	
5,850.00	5,848.01	5,848.01	5,848.01	12.82	13.03	156.20	25.00	-0.10	62.84	37.32	25.52	2.462	
5,875.00	5,872.42	5,872.42	5,872.42	12.88	13.09	157.74	25.00	-0.10	67.80	42.42	25.38	2.672	
5,900.00	5,896.43	5,895.15	5,895.15	12.94	13.14	159.31	25.00	-0.04	74.38	49.24	25.14	2.958	
5,925.00	5,919.93	5,914.48	5,914.46	13.01	13.18	160.78	25.01	0.80	83.42	58.60	24.82	3.362	
5,950.00	5,942.82	5,932.35	5,932.25	13.08	13.21	162.14	25.02	2.45	95.03	70.63	24.40	3.894	
5,975.00	5,965.01	5,950.00	5,949.73	13.16	13.25	163.45	25.04	4.89	109.03	85.12	23.91	4.560	
6,000.00	5,986.40	5,963.01	5,962.53	13.25	13.28	164.10	25.05	7.20	125.14	101.79	23.35	5.359	
6,025.00	6,006.90	5,975.00	5,974.25	13.34	13.30	164.51	25.07	9.72	143.13	120.40	22.73	6.297	
6,050.00	6,026.42	5,986.55	5,985.46	13.45	13.33	164.72	25.09	12.49	162.72	140.66	22.06	7.377	
6,075.00	6,044.87	5,995.73	5,994.31	13.57	13.34	164.44	25.11	14.94	183.66	162.30	21.36	8.598	
6,100.00	6,062.18	6,000.00	5,998.41	13.71	13.35	163.09	25.12	16.15	205.76	185.05	20.71	9.937	
6,125.00	6,078.28	6,009.38	6,007.35	13.87	13.37	162.18	25.14	18.96	228.68	208.64	20.04	11.412	
6,150.00	6,093.09	6,014.08	6,011.81	14.05	13.38	159.64	25.15	20.46	252.35	232.77	19.58	12.889	
6,175.00	6,106.55	6,017.52	6,015.06	14.25	13.39	155.14	25.16	21.58	276.55	257.01	19.54	14.153	
6,200.00	6,118.60	6,025.00	6,022.09	14.48	13.41	149.70	25.18	24.14	301.21	281.25	19.96	15.089	
6,225.00	6,129.20	6,025.00	6,022.09	14.73	13.41	131.94	25.18	24.14	325.99	302.64	23.35	13.964	
6,250.00	6,138.29	6,025.00	6,022.09	15.00	13.41	90.93	25.18	24.14	350.90	322.49	28.41	12.352	
6,275.00	6,145.84	6,025.00	6,022.09	15.31	13.41	47.04	25.18	24.14	375.82	352.71	23.12	16.258	
6,300.00	6,151.82	6,025.00	6,022.09	15.63	13.41	27.27	25.18	24.14	400.66	382.78	17.88	22.408	
6,325.00	6,156.19	6,017.59	6,015.12	15.98	13.39	16.87	25.16	21.61	425.19	410.19	15.00	28.340	
6,350.00	6,158.95	6,014.98	6,012.67	16.35	13.39	12.50	25.16	20.75	449.52	435.68	13.84	32.486	
6,375.00	6,160.07	6,011.82	6,009.68	16.74	13.38	9.80	25.15	19.73	473.49	460.26	13.23	35.783	
6,388.48	6,160.00	6,009.91	6,007.86	16.96	13.37	8.74	25.14	19.13	486.24	473.17	13.07	37.212	
6,400.00	6,159.73	6,008.23	6,006.26	17.14	13.37	8.66	25.14	18.61	497.09	483.99	13.09	37.972	
6,428.76	6,159.07	6,000.00	5,998.41	17.63	13.35	8.27	25.12	16.15	524.28	511.15	13.12	39.949	
6,500.00	6,157.42	6,000.00	5,998.41	18.92	13.35	8.27	25.12	16.15	591.96	578.56	13.40	44.174	
6,600.00	6,155.11	5,984.56	5,983.54	20.92	13.32	7.62	25.09	11.99	687.69	673.97	13.72	50.129	
6,700.00	6,152.80	5,975.00	5,974.25	23.07	13.30	7.27	25.07	9.72	784.18	770.04	14.14	55.459	
6,800.00	6,150.49	5,975.00	5,974.25	25.34	13.30	7.27	25.07	9.72	881.31	866.63	14.68	60.036	
6,900.00	6,148.18	5,961.64	5,961.19	27.69	13.27	6.82	25.05	6.94	978.69	963.54	15.15	64.606	
7,000.00	6,145.87	5,950.00	5,949.73	30.11	13.25	6.47	25.04	4.89	1,076.57	1,060.91	15.66	68.736	
7,100.00	6,143.56	5,950.00	5,949.73	32.59	13.25	6.47	25.04	4.89	1,174.61	1,158.32	16.29	72.117	
7,200.00	6,141.25	5,950.00	5,949.73	35.11	13.25	6.47	25.04	4.89	1,272.95	1,256.01	16.93	75.167	
7,300.00	6,138.94	5,950.00	5,949.73	37.66	13.25	6.47	25.04	4.89	1,371.52	1,353.92	17.60	77.925	
7,400.00	6,136.63	5,939.59	5,939.44	40.24	13.23	6.18	25.03	3.35	1,470.12	1,451.93	18.19	80.829	
7,500.00	6,134.32	5,936.52	5,936.39	42.84	13.22	6.10	25.02	2.95	1,568.93	1,550.08	18.85	83.233	
7,600.00	6,132.01	5,925.00	5,924.94	45.45	13.20	5.82	25.01	1.67	1,667.97	1,648.53	19.45	85.762	
7,700.00	6,129.70	5,925.00	5,924.94	48.09	13.20	5.82	25.01	1.67	1,766.94	1,746.79	20.15	87.680	
7,800.00	6,127.39	5,925.00	5,924.94	50.73	13.20	5.82	25.01	1.67	1,866.01	1,845.15	20.86	89.440	
7,900.00	6,125.08	5,925.00	5,924.94	53.39	13.20	5.82	25.01	1.67	1,965.18	1,943.60	21.58	91.060	
8,000.00	6,122.77	5,925.00	5,924.94	56.06	13.20	5.82	25.01	1.67	2,064.43	2,042.12	22.31	92.554	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Crow Federal 12H - Job # 1210350 - Wellbore #1 - Plan 1 4-25-2012												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,100.00	6,120.45	5,925.00	5,924.94	58.73	13.20	5.82	25.01	1.67	2,163.75	2,140.71	23.03	93.935	
8,200.00	6,118.14	5,925.00	5,924.94	61.41	13.20	5.82	25.01	1.67	2,263.12	2,239.35	23.77	95.216	
8,300.00	6,115.83	5,925.00	5,924.94	64.10	13.20	5.82	25.01	1.67	2,362.55	2,338.05	24.51	96.407	
8,400.00	6,113.52	5,925.00	5,924.94	66.79	13.20	5.82	25.01	1.67	2,462.03	2,436.78	25.25	97.516	
8,500.00	6,111.21	5,925.00	5,924.94	69.49	13.20	5.82	25.01	1.67	2,561.55	2,535.55	25.99	98.552	
8,600.00	6,108.90	5,925.00	5,924.94	72.19	13.20	5.82	25.01	1.67	2,661.10	2,634.36	26.74	99.520	
8,700.00	6,106.59	5,925.00	5,924.94	74.90	13.20	5.82	25.01	1.67	2,760.69	2,733.20	27.49	100.428	
8,800.00	6,104.28	5,913.67	5,913.66	77.61	13.17	5.57	25.01	0.75	2,860.11	2,832.01	28.10	101.772	
8,900.00	6,101.97	5,912.65	5,912.63	80.32	13.17	5.54	25.01	0.68	2,959.71	2,930.87	28.84	102.621	
9,000.00	6,099.66	5,911.68	5,911.67	83.03	13.17	5.52	25.01	0.62	3,059.34	3,029.76	29.58	103.422	
9,100.00	6,097.35	5,900.00	5,900.00	85.75	13.15	5.29	25.00	0.08	3,159.16	3,128.96	30.20	104.615	
9,200.00	6,095.04	5,900.00	5,900.00	88.47	13.15	5.29	25.00	0.08	3,258.80	3,227.86	30.95	105.296	
9,300.00	6,092.73	5,900.00	5,900.00	91.19	13.15	5.29	25.00	0.08	3,358.47	3,326.77	31.70	105.941	
9,400.00	6,090.42	5,900.00	5,900.00	93.92	13.15	5.29	25.00	0.08	3,458.15	3,425.70	32.45	106.553	
9,500.00	6,088.11	5,900.00	5,900.00	96.64	13.15	5.29	25.00	0.08	3,557.85	3,524.64	33.21	107.133	
9,600.00	6,085.79	5,900.00	5,900.00	99.37	13.15	5.29	25.00	0.08	3,657.57	3,623.60	33.97	107.685	
9,700.00	6,083.48	5,900.00	5,900.00	102.10	13.15	5.29	25.00	0.08	3,757.30	3,722.58	34.72	108.210	
9,800.00	6,081.17	5,900.00	5,900.00	104.83	13.15	5.29	25.00	0.08	3,857.04	3,821.57	35.48	108.711	
9,900.00	6,078.86	5,900.00	5,900.00	107.56	13.15	5.29	25.00	0.08	3,956.80	3,920.57	36.24	109.188	
10,000.00	6,076.55	5,900.00	5,900.00	110.29	13.15	5.29	25.00	0.08	4,056.57	4,019.58	37.00	109.644	
10,100.00	6,074.24	5,900.00	5,900.00	113.02	13.15	5.29	25.00	0.08	4,156.36	4,118.60	37.76	110.079	
10,200.00	6,071.93	5,900.00	5,900.00	115.76	13.15	5.29	25.00	0.08	4,256.15	4,217.63	38.52	110.496	
10,300.00	6,069.62	5,900.00	5,900.00	118.49	13.15	5.29	25.00	0.08	4,355.95	4,316.67	39.28	110.895	
10,400.00	6,067.31	5,900.00	5,900.00	121.23	13.15	5.29	25.00	0.08	4,455.76	4,415.72	40.04	111.277	
10,500.00	6,065.00	5,900.00	5,900.00	123.97	13.15	5.29	25.00	0.08	4,555.58	4,514.77	40.80	111.644	
10,600.00	6,062.69	5,900.00	5,900.00	126.70	13.15	5.29	25.00	0.08	4,655.40	4,613.84	41.57	111.996	
10,700.00	6,060.38	5,900.00	5,900.00	129.44	13.15	5.29	25.00	0.08	4,755.24	4,712.91	42.33	112.335	
10,800.00	6,058.07	5,900.00	5,900.00	132.18	13.15	5.29	25.00	0.08	4,855.08	4,811.98	43.09	112.660	
10,900.00	6,055.76	5,900.00	5,900.00	134.92	13.15	5.29	25.00	0.08	4,954.92	4,911.07	43.86	112.973	
11,000.00	6,053.45	5,900.00	5,900.00	137.66	13.15	5.29	25.00	0.08	5,054.78	5,010.15	44.62	113.275	
11,100.00	6,051.13	5,900.00	5,900.00	140.40	13.15	5.29	25.00	0.08	5,154.64	5,109.25	45.39	113.565	
11,149.11	6,050.00	5,900.00	5,900.00	141.75	13.15	5.29	25.00	0.08	5,203.67	5,157.91	45.77	113.704	

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset-TVD Reference:	Offset Datum

Offset Design Crow Federal 13H - Well #1 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	179.65	-130.00	0.80	130.00				
100.00	100.00	100.00	100.00	0.11	0.11	179.65	-130.00	0.80	130.00	129.78	0.22	578.390	
200.00	200.00	200.00	200.00	0.34	0.34	179.65	-130.00	0.80	130.00	129.33	0.67	192.797	
229.29	229.28	229.28	229.28	0.40	0.40	-90.05	-130.00	0.80	130.00	129.20	0.80	161.919	
300.00	299.98	299.98	299.98	0.55	0.56	-90.75	-130.00	0.80	130.01	128.90	1.11	116.777	
400.16	400.00	400.00	400.00	0.78	0.79	-93.05	-130.00	0.80	130.19	128.63	1.56	83.438	
500.00	499.59	499.59	499.59	1.01	1.01	-98.09	-130.00	0.80	130.74	128.72	2.02	64.605	
600.00	599.35	599.35	599.35	1.26	1.23	-99.10	-130.00	0.80	131.67	129.17	2.49	52.777	
700.00	699.11	699.11	699.11	1.51	1.46	-102.07	-130.00	0.80	132.95	129.99	2.97	44.785	
800.00	798.86	798.86	798.86	1.76	1.68	-104.97	-130.00	0.80	134.59	131.15	3.44	39.083	
900.16	898.78	898.78	898.78	2.02	1.91	-107.79	-130.00	0.80	136.56	132.65	3.92	34.845	
1,000.00	998.46	998.46	998.46	2.24	2.13	-110.05	-130.00	0.80	138.40	134.04	4.36	31.751	
1,100.00	1,098.41	1,098.41	1,098.41	2.43	2.36	-111.24	-130.00	0.80	139.48	134.71	4.77	29.259	
1,166.60	1,165.00	1,165.00	1,165.00	2.55	2.51	158.16	-130.00	0.80	139.69	134.76	4.93	28.342	
1,200.00	1,198.40	1,198.40	1,198.40	2.61	2.58	158.16	-130.00	0.80	139.69	134.62	5.07	27.546	
1,300.00	1,298.40	1,298.40	1,298.40	2.81	2.81	158.16	-130.00	0.80	139.69	134.19	5.50	25.379	
1,400.00	1,398.40	1,398.40	1,398.40	3.02	3.03	158.16	-130.00	0.80	139.69	133.75	5.94	23.518	
1,500.00	1,498.40	1,498.40	1,498.40	3.22	3.26	158.16	-130.00	0.80	139.69	133.31	6.38	21.905	
1,600.00	1,598.40	1,598.40	1,598.40	3.43	3.48	158.16	-130.00	0.80	139.69	132.88	6.82	20.494	
1,700.00	1,698.40	1,698.40	1,698.40	3.64	3.71	158.16	-130.00	0.80	139.69	132.44	7.26	19.251	
1,800.00	1,798.40	1,798.40	1,798.40	3.86	3.93	158.16	-130.00	0.80	139.69	131.99	7.70	18.147	
1,900.00	1,898.40	1,898.40	1,898.40	4.07	4.15	158.16	-130.00	0.80	139.69	131.55	8.14	17.161	
2,000.00	1,998.40	1,998.40	1,998.40	4.29	4.38	158.16	-130.00	0.80	139.69	131.11	8.58	16.275	
2,100.00	2,098.40	2,098.40	2,098.40	4.50	4.60	158.16	-130.00	0.80	139.69	130.67	9.03	15.475	
2,200.00	2,198.40	2,198.40	2,198.40	4.72	4.83	158.16	-130.00	0.80	139.69	130.22	9.47	14.749	
2,300.00	2,298.40	2,298.40	2,298.40	4.94	5.05	158.16	-130.00	0.80	139.69	129.78	9.92	14.088	
2,400.00	2,398.40	2,398.40	2,398.40	5.15	5.28	158.16	-130.00	0.80	139.69	129.33	10.36	13.483	
2,500.00	2,498.40	2,498.40	2,498.40	5.37	5.50	158.16	-130.00	0.80	139.69	128.89	10.81	12.927	
2,600.00	2,598.40	2,598.40	2,598.40	5.59	5.73	158.16	-130.00	0.80	139.69	128.44	11.25	12.415	
2,700.00	2,698.40	2,698.40	2,698.40	5.81	5.95	158.16	-130.00	0.80	139.69	127.99	11.70	11.941	
2,800.00	2,798.40	2,798.40	2,798.40	6.03	6.18	158.16	-130.00	0.80	139.69	127.55	12.14	11.502	
2,900.00	2,898.40	2,898.40	2,898.40	6.25	6.40	158.16	-130.00	0.80	139.69	127.10	12.59	11.094	
3,000.00	2,998.40	2,998.40	2,998.40	6.47	6.63	158.16	-130.00	0.80	139.69	126.65	13.04	10.714	
3,100.00	3,098.40	3,098.40	3,098.40	6.69	6.85	158.16	-130.00	0.80	139.69	126.21	13.49	10.359	
3,200.00	3,198.40	3,198.40	3,198.40	6.91	7.08	158.16	-130.00	0.80	139.69	125.76	13.93	10.026	
3,300.00	3,298.40	3,298.40	3,298.40	7.14	7.30	158.16	-130.00	0.80	139.69	125.31	14.38	9.715	
3,400.00	3,398.40	3,398.40	3,398.40	7.36	7.53	158.16	-130.00	0.80	139.69	124.86	14.83	9.421	
3,500.00	3,498.40	3,498.40	3,498.40	7.58	7.75	158.16	-130.00	0.80	139.69	124.42	15.27	9.145	
3,600.00	3,598.40	3,598.40	3,598.40	7.80	7.98	158.16	-130.00	0.80	139.69	123.97	15.72	8.885	
3,700.00	3,698.40	3,698.40	3,698.40	8.02	8.20	158.16	-130.00	0.80	139.69	123.52	16.17	8.639	
3,800.00	3,798.40	3,798.40	3,798.40	8.24	8.43	158.16	-130.00	0.80	139.69	123.07	16.62	8.406	
3,900.00	3,898.40	3,898.40	3,898.40	8.47	8.65	158.16	-130.00	0.80	139.69	122.63	17.07	8.185	
4,000.00	3,998.40	3,998.40	3,998.40	8.69	8.87	158.16	-130.00	0.80	139.69	122.18	17.51	7.976	
4,100.00	4,098.40	4,098.40	4,098.40	8.91	9.10	158.16	-130.00	0.80	139.69	121.73	17.96	7.777	
4,200.00	4,198.40	4,198.40	4,198.40	9.14	9.32	158.16	-130.00	0.80	139.69	121.28	18.41	7.588	
4,300.00	4,298.40	4,298.40	4,298.40	9.36	9.55	158.16	-130.00	0.80	139.69	120.83	18.86	7.407	
4,400.00	4,398.40	4,398.40	4,398.40	9.58	9.77	158.16	-130.00	0.80	139.69	120.38	19.31	7.235	
4,500.00	4,498.40	4,498.40	4,498.40	9.80	10.00	158.16	-130.00	0.80	139.69	119.94	19.76	7.071	
4,600.00	4,598.40	4,598.40	4,598.40	10.03	10.22	158.16	-130.00	0.80	139.69	119.49	20.20	6.914	
4,700.00	4,698.40	4,698.40	4,698.40	10.25	10.45	158.16	-130.00	0.80	139.69	119.04	20.65	6.764	
4,800.00	4,798.40	4,798.42	4,798.42	10.47	10.67	158.16	-130.00	0.80	139.69	118.59	21.10	6.620	
4,900.00	4,898.40	4,910.53	4,908.92	10.70	10.91	164.66	-130.11	-15.57	134.98	113.42	21.55	6.262	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Crow Federal 13H - Well #1 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error:
Survey Program: 0-MWD													0.00 usft
Reference													Offset Well Error:
Offset													0.00 usft
Semi Major Axis													
Distance													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,990.73	4,989.14	4,998.14	4,989.15	10.90	11.12	179.62	-130.33	-50.30	130.00	108.06	21.94	5.924	CC, ES
5,000.00	4,998.40	5,006.07	4,995.98	10.92	11.14	-178.60	-130.36	-54.33	130.09	108.11	21.98	5.918	SF
5,100.00	5,098.40	5,079.69	5,054.92	11.14	11.41	-160.13	-130.64	-98.25	145.22	122.85	22.38	6.490	
5,200.00	5,198.40	5,134.37	5,092.65	11.37	11.70	-146.45	-130.89	-137.76	189.02	166.23	22.79	8.292	
5,300.00	5,298.40	5,175.00	5,116.83	11.59	11.98	-137.65	-131.11	-170.38	253.55	230.30	23.24	10.909	
5,400.00	5,398.40	5,205.82	5,132.78	11.81	12.24	-131.97	-131.28	-196.75	330.00	306.30	23.70	13.927	
5,500.00	5,498.40	5,225.00	5,141.62	12.04	12.42	-128.87	-131.39	-213.77	413.42	389.33	24.09	17.164	
5,600.00	5,598.40	5,250.00	5,151.83	12.26	12.69	-125.28	-131.53	-236.58	501.02	476.46	24.56	20.399	
5,700.00	5,698.40	5,263.73	5,156.79	12.48	12.85	-123.52	-131.62	-249.38	591.50	566.56	24.94	23.716	
5,779.80	5,778.20	5,275.00	5,160.53	12.66	12.99	-122.17	-131.68	-260.01	665.13	639.88	25.25	26.342	
5,800.00	5,798.39	5,275.00	5,160.53	12.71	12.99	-28.19	-131.68	-260.01	683.76	659.21	24.55	27.851	
5,825.00	5,823.30	5,275.00	5,160.53	12.76	12.99	-24.61	-131.68	-260.01	706.42	681.97	24.45	28.895	
5,850.00	5,848.01	5,283.78	5,163.21	12.82	13.10	-21.31	-131.74	-268.37	728.44	704.14	24.30	29.974	
5,875.00	5,872.42	5,287.98	5,164.43	12.88	13.15	-18.96	-131.76	-272.39	749.91	725.83	24.08	31.142	
5,900.00	5,896.43	5,300.00	5,167.67	12.94	13.31	-16.82	-131.84	-283.96	770.82	747.02	23.80	32.388	
5,925.00	5,919.93	5,300.00	5,167.67	13.01	13.31	-15.44	-131.84	-283.96	790.81	767.39	23.42	33.760	
5,950.00	5,942.82	5,300.00	5,167.67	13.08	13.31	-14.27	-131.84	-283.96	810.13	787.16	22.98	35.261	
5,975.00	5,965.01	5,300.00	5,167.67	13.16	13.31	-13.27	-131.84	-283.96	828.75	806.29	22.45	36.907	
6,000.00	5,986.40	5,313.18	5,170.81	13.25	13.49	-12.24	-131.92	-296.77	846.30	824.40	21.89	38.657	
6,025.00	6,006.90	5,325.00	5,173.24	13.34	13.66	-11.40	-132.00	-308.33	863.14	841.87	21.27	40.587	
6,050.00	6,026.42	5,325.00	5,173.24	13.45	13.66	-10.81	-132.00	-308.33	878.91	858.36	20.56	42.750	
6,075.00	6,044.87	5,325.00	5,173.24	13.57	13.66	-10.30	-132.00	-308.33	893.87	874.06	19.80	45.142	
6,100.00	6,062.18	5,337.05	5,175.35	13.71	13.84	-9.77	-132.07	-320.20	907.70	888.67	19.03	47.699	
6,125.00	6,078.28	5,350.00	5,177.20	13.87	14.04	-9.31	-132.16	-333.01	920.67	902.43	18.23	50.500	
6,150.00	6,093.09	5,350.00	5,177.20	14.05	14.04	-8.99	-132.16	-333.01	932.43	915.05	17.38	53.655	
6,175.00	6,106.55	5,350.00	5,177.20	14.25	14.04	-8.72	-132.16	-333.01	943.28	926.77	16.52	57.113	
6,200.00	6,118.60	5,363.04	5,178.62	14.48	14.24	-8.43	-132.24	-345.98	952.90	937.20	15.70	60.693	
6,225.00	6,129.20	5,375.00	5,179.53	14.73	14.43	-8.19	-132.32	-357.90	961.55	946.64	14.91	64.494	
6,250.00	6,138.29	5,375.00	5,179.53	15.00	14.43	-8.03	-132.32	-357.90	968.98	954.85	14.13	68.599	
6,275.00	6,145.84	5,375.00	5,179.53	15.31	14.43	-7.89	-132.32	-357.90	975.45	962.04	13.41	72.745	
6,300.00	6,151.82	5,390.34	5,180.16	15.63	14.69	-7.75	-132.42	-373.22	980.52	967.68	12.84	76.337	
6,325.00	6,156.19	5,400.00	5,180.24	15.98	14.85	-7.66	-132.48	-382.88	984.59	972.21	12.38	79.527	
6,350.00	6,158.95	5,404.26	5,180.19	16.35	14.92	-7.60	-132.51	-387.14	987.47	975.43	12.04	81.998	
6,375.00	6,160.07	5,411.78	5,180.00	16.74	15.05	-7.56	-132.55	-394.66	989.20	977.32	11.88	83.253	
6,388.48	6,160.00	5,423.46	5,179.59	16.96	15.26	-7.55	-132.63	-406.33	989.60	977.70	11.90	83.166	
6,400.00	6,159.73	5,434.97	5,179.18	17.14	15.48	-7.55	-132.70	-417.84	989.74	977.76	11.99	82.574	
6,428.76	6,159.07	5,463.73	5,178.16	17.63	16.01	-7.55	-132.89	-446.57	990.09	977.88	12.21	81.100	
6,500.00	6,157.42	5,534.96	5,175.65	18.92	17.42	-7.54	-133.35	-517.76	990.96	978.15	12.81	77.357	
6,600.00	6,155.11	5,634.96	5,172.11	20.92	19.54	-7.53	-133.99	-617.69	992.17	978.40	13.77	72.053	
6,700.00	6,152.80	5,734.95	5,168.58	23.07	21.80	-7.52	-134.64	-717.62	993.39	978.54	14.84	66.926	
6,800.00	6,150.49	5,834.94	5,165.04	25.34	24.16	-7.51	-135.29	-817.55	994.60	978.59	16.01	62.137	
6,900.00	6,148.18	5,934.93	5,161.51	27.69	26.60	-7.50	-135.93	-917.48	995.82	978.57	17.24	57.756	
7,000.00	6,145.87	6,034.93	5,157.97	30.11	29.10	-7.49	-136.58	-1,017.40	997.03	978.50	18.53	53.793	
7,100.00	6,143.56	6,134.92	5,154.44	32.59	31.64	-7.48	-137.22	-1,117.33	998.25	978.37	19.87	50.230	
7,200.00	6,141.25	6,234.91	5,150.90	35.11	34.21	-7.47	-137.87	-1,217.26	999.46	978.21	21.25	47.035	
7,300.00	6,138.94	6,334.90	5,147.37	37.66	36.81	-7.47	-138.51	-1,317.19	1,000.67	978.02	22.66	44.168	
7,400.00	6,136.63	6,434.90	5,143.83	40.24	39.43	-7.46	-139.16	-1,417.12	1,001.89	977.80	24.09	41.594	
7,500.00	6,134.32	6,534.89	5,140.30	42.84	42.07	-7.45	-139.80	-1,517.04	1,003.10	977.56	25.54	39.276	
7,600.00	6,132.01	6,634.88	5,136.76	45.45	44.72	-7.44	-140.45	-1,616.97	1,004.32	977.31	27.01	37.184	
7,700.00	6,129.70	6,734.87	5,133.23	48.09	47.38	-7.43	-141.10	-1,716.90	1,005.53	977.04	28.49	35.290	
7,800.00	6,127.39	6,834.87	5,129.69	50.73	50.05	-7.42	-141.74	-1,816.83	1,006.75	976.76	29.99	33.570	
7,900.00	6,125.08	6,934.86	5,126.16	53.39	52.73	-7.41	-142.39	-1,916.75	1,007.96	976.47	31.50	32.003	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal 13H - Well #1 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,000.00	6,122.77	7,034.85	5,122.62	56.06	55.42	-7.40	-143.03	-2,016.68	1,009.18	976.17	33.01	30.571		
8,100.00	6,120.45	7,134.84	5,119.09	58.73	58.11	-7.39	-143.68	-2,116.61	1,010.39	975.86	34.53	29.257		
8,200.00	6,118.14	7,234.84	5,115.55	61.41	60.81	-7.38	-144.32	-2,216.54	1,011.61	975.54	36.06	28.050		
8,300.00	6,115.83	7,334.83	5,112.02	64.10	63.52	-7.38	-144.97	-2,316.47	1,012.82	975.22	37.60	26.937		
8,400.00	6,113.52	7,434.82	5,108.48	66.79	66.22	-7.37	-145.61	-2,416.39	1,014.04	974.90	39.14	25.908		
8,500.00	6,111.21	7,534.81	5,104.95	69.49	68.93	-7.36	-146.26	-2,516.32	1,015.25	974.57	40.69	24.954		
8,600.00	6,108.90	7,634.81	5,101.41	72.19	71.65	-7.35	-146.91	-2,616.25	1,016.47	974.23	42.23	24.068		
8,700.00	6,106.59	7,734.80	5,097.88	74.90	74.37	-7.34	-147.55	-2,716.18	1,017.68	973.90	43.79	23.242		
8,800.00	6,104.28	7,834.79	5,094.34	77.61	77.09	-7.33	-148.20	-2,816.11	1,018.90	973.56	45.34	22.472		
8,900.00	6,101.97	7,934.78	5,090.81	80.32	79.81	-7.32	-148.84	-2,916.03	1,020.11	973.21	46.90	21.752		
9,000.00	6,099.66	8,034.78	5,087.27	83.03	82.53	-7.31	-149.49	-3,015.96	1,021.33	972.87	48.46	21.077		
9,100.00	6,097.35	8,134.77	5,083.74	85.75	85.26	-7.30	-150.13	-3,115.89	1,022.54	972.52	50.02	20.443		
9,200.00	6,095.04	8,234.76	5,080.20	88.47	87.98	-7.30	-150.78	-3,215.82	1,023.76	972.17	51.58	19.847		
9,300.00	6,092.73	8,334.75	5,076.67	91.19	90.71	-7.29	-151.42	-3,315.75	1,024.97	971.82	53.15	19.285		
9,400.00	6,090.42	8,434.75	5,073.13	93.92	93.44	-7.28	-152.07	-3,415.67	1,026.19	971.47	54.71	18.756		
9,500.00	6,088.11	8,534.74	5,069.60	96.64	96.17	-7.27	-152.72	-3,515.60	1,027.40	971.12	56.28	18.255		
9,600.00	6,085.79	8,634.73	5,066.06	99.37	98.91	-7.26	-153.36	-3,615.53	1,028.62	970.77	57.85	17.781		
9,700.00	6,083.48	8,734.72	5,062.53	102.10	101.64	-7.25	-154.01	-3,715.46	1,029.83	970.41	59.42	17.332		
9,800.00	6,081.17	8,834.72	5,058.99	104.83	104.38	-7.24	-154.65	-3,815.39	1,031.05	970.06	60.99	16.905		
9,900.00	6,078.86	8,934.71	5,055.46	107.56	107.11	-7.24	-155.30	-3,915.31	1,032.26	969.70	62.56	16.500		
10,000.00	6,076.55	9,034.70	5,051.92	110.29	109.85	-7.23	-155.94	-4,015.24	1,033.48	969.35	64.13	16.115		
10,100.00	6,074.24	9,134.69	5,048.39	113.02	112.59	-7.22	-156.59	-4,115.17	1,034.69	968.99	65.70	15.748		
10,200.00	6,071.93	9,234.69	5,044.85	115.76	115.32	-7.21	-157.23	-4,215.10	1,035.91	968.63	67.28	15.398		
10,300.00	6,069.62	9,334.68	5,041.32	118.49	118.06	-7.20	-157.88	-4,315.02	1,037.12	968.27	68.85	15.064		
10,400.00	6,067.31	9,434.67	5,037.78	121.23	120.80	-7.19	-158.53	-4,414.95	1,038.34	967.92	70.42	14.744		
10,500.00	6,065.00	9,534.66	5,034.25	123.97	123.54	-7.18	-159.17	-4,514.88	1,039.55	967.56	72.00	14.439		
10,600.00	6,062.69	9,634.66	5,030.72	126.70	126.28	-7.18	-159.82	-4,614.81	1,040.77	967.20	73.57	14.147		
10,700.00	6,060.38	9,734.65	5,027.18	129.44	129.02	-7.17	-160.46	-4,714.74	1,041.99	966.84	75.14	13.867		
10,800.00	6,058.07	9,834.64	5,023.65	132.18	131.77	-7.16	-161.11	-4,814.66	1,043.20	966.48	76.72	13.598		
10,900.00	6,055.76	9,934.63	5,020.11	134.92	134.51	-7.15	-161.75	-4,914.59	1,044.42	966.12	78.29	13.340		
11,000.00	6,053.45	10,034.63	5,016.58	137.66	137.25	-7.14	-162.40	-5,014.52	1,045.63	965.77	79.87	13.092		
11,100.00	6,051.13	10,134.62	5,013.04	140.40	139.99	-7.13	-163.04	-5,114.45	1,046.85	965.41	81.44	12.854		
11,149.11	6,050.00	10,183.72	5,011.30	141.75	141.34	-7.13	-163.36	-5,163.52	1,047.44	965.23	82.21	12.741		

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow federal 14H - Job # 1210352 - Wellbore #1 - Plan 1 4-25-2012														Offset Site Error:	0.00 usft
Survey Program: 0-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	179.65	-65.00	0.40	65.00						
100.00	100.00	100.00	100.00	0.11	0.11	179.65	-65.00	0.40	65.00	64.78	0.22	289.195			
200.00	200.00	200.00	200.00	0.34	0.34	179.65	-65.00	0.40	65.00	64.33	0.67	96.398			
228.52	228.52	228.52	228.52	0.40	0.40	-90.11	-65.00	0.40	65.00	64.20	0.80	81.299			
300.00	299.98	299.98	299.98	0.55	0.56	-91.52	-65.00	0.40	65.02	63.91	1.11	58.404			
400.16	400.00	400.00	400.00	0.78	0.79	-96.10	-65.00	0.40	65.37	63.81	1.56	41.894			
500.00	499.59	499.59	499.59	1.01	1.01	-102.07	-65.00	0.40	66.48	64.45	2.02	32.851			
600.00	599.35	599.35	599.35	1.26	1.23	-107.79	-65.00	0.40	68.28	65.79	2.49	27.391			
700.00	699.11	699.11	699.11	1.51	1.46	-113.16	-65.00	0.40	70.73	67.77	2.96	23.874			
800.00	798.86	798.86	798.86	1.76	1.68	-118.14	-65.00	0.40	73.76	70.33	3.43	21.499			
900.16	898.78	898.78	898.78	2.02	1.91	-122.71	-65.00	0.40	77.30	73.41	3.90	19.836			
1,000.00	998.46	998.46	998.46	2.24	2.13	-126.13	-65.00	0.40	80.51	76.18	4.33	18.599			
1,100.00	1,098.41	1,098.41	1,098.41	2.43	2.36	-127.87	-65.00	0.40	82.35	77.62	4.73	17.398			
1,166.60	1,165.00	1,165.00	1,165.00	2.55	2.51	141.44	-65.00	0.40	82.71	77.74	4.96	16.665			
1,200.00	1,198.40	1,198.40	1,198.40	2.61	2.58	141.44	-65.00	0.40	82.71	77.60	5.10	16.203			
1,300.00	1,298.40	1,298.40	1,298.40	2.81	2.81	141.44	-65.00	0.40	82.71	77.17	5.54	14.941			
1,400.00	1,398.40	1,398.40	1,398.40	3.02	3.03	141.44	-65.00	0.40	82.71	76.74	5.97	13.856			
1,500.00	1,498.40	1,498.40	1,498.40	3.22	3.26	141.44	-65.00	0.40	82.71	76.30	6.41	12.913			
1,600.00	1,598.40	1,598.40	1,598.40	3.43	3.48	141.44	-65.00	0.40	82.71	75.86	6.84	12.087			
1,700.00	1,698.40	1,698.40	1,698.40	3.64	3.71	141.44	-65.00	0.40	82.71	75.42	7.28	11.358			
1,800.00	1,798.40	1,798.40	1,798.40	3.86	3.93	141.44	-65.00	0.40	82.71	74.98	7.72	10.710			
1,900.00	1,898.40	1,898.40	1,898.40	4.07	4.15	141.44	-65.00	0.40	82.71	74.54	8.16	10.131			
2,000.00	1,998.40	1,998.40	1,998.40	4.29	4.38	141.44	-65.00	0.40	82.71	74.10	8.61	9.611			
2,100.00	2,098.40	2,098.40	2,098.40	4.50	4.60	141.44	-65.00	0.40	82.71	73.66	9.05	9.140			
2,200.00	2,198.40	2,198.40	2,198.40	4.72	4.83	141.44	-65.00	0.40	82.71	73.21	9.49	8.713			
2,300.00	2,298.40	2,298.40	2,298.40	4.94	5.05	141.44	-65.00	0.40	82.71	72.77	9.94	8.324			
2,400.00	2,398.40	2,398.40	2,398.40	5.15	5.28	141.44	-65.00	0.40	82.71	72.33	10.38	7.967			
2,500.00	2,498.40	2,498.40	2,498.40	5.37	5.50	141.44	-65.00	0.40	82.71	71.88	10.83	7.640			
2,600.00	2,598.40	2,598.40	2,598.40	5.59	5.73	141.44	-65.00	0.40	82.71	71.44	11.27	7.338			
2,700.00	2,698.40	2,698.40	2,698.40	5.81	5.95	141.44	-65.00	0.40	82.71	70.99	11.72	7.059			
2,800.00	2,798.40	2,798.40	2,798.40	6.03	6.18	141.44	-65.00	0.40	82.71	70.54	12.16	6.800			
2,900.00	2,898.40	2,898.40	2,898.40	6.25	6.40	141.44	-65.00	0.40	82.71	70.10	12.61	6.559			
3,000.00	2,998.40	2,998.40	2,998.40	6.47	6.63	141.44	-65.00	0.40	82.71	69.65	13.06	6.335			
3,100.00	3,098.40	3,098.40	3,098.40	6.69	6.85	141.44	-65.00	0.40	82.71	69.20	13.50	6.126			
3,200.00	3,198.40	3,198.40	3,198.40	6.91	7.08	141.44	-65.00	0.40	82.71	68.76	13.95	5.929			
3,300.00	3,298.40	3,298.40	3,298.40	7.14	7.30	141.44	-65.00	0.40	82.71	68.31	14.40	5.745			
3,400.00	3,398.40	3,398.40	3,398.40	7.36	7.53	141.44	-65.00	0.40	82.71	67.86	14.84	5.572			
3,500.00	3,498.40	3,498.40	3,498.40	7.58	7.75	141.44	-65.00	0.40	82.71	67.42	15.29	5.409			
3,600.00	3,598.40	3,598.40	3,598.40	7.80	7.98	141.44	-65.00	0.40	82.71	66.97	15.74	5.255			
3,700.00	3,698.40	3,698.40	3,698.40	8.02	8.20	141.44	-65.00	0.40	82.71	66.52	16.19	5.110			
3,800.00	3,798.40	3,798.40	3,798.40	8.24	8.43	141.44	-65.00	0.40	82.71	66.07	16.63	4.973			
3,900.00	3,898.40	3,898.40	3,898.40	8.47	8.65	141.44	-65.00	0.40	82.71	65.63	17.08	4.842			
4,000.00	3,998.40	3,998.40	3,998.40	8.69	8.87	141.44	-65.00	0.40	82.71	65.18	17.53	4.718			
4,100.00	4,098.40	4,098.40	4,098.40	8.91	9.10	141.44	-65.00	0.40	82.71	64.73	17.98	4.601			
4,200.00	4,198.40	4,198.40	4,198.40	9.14	9.32	141.44	-65.00	0.40	82.71	64.28	18.42	4.489			
4,300.00	4,298.40	4,298.40	4,298.40	9.36	9.55	141.44	-65.00	0.40	82.71	63.83	18.87	4.382			
4,400.00	4,398.40	4,398.40	4,398.40	9.58	9.77	141.44	-65.00	0.40	82.71	63.39	19.32	4.281			
4,500.00	4,498.40	4,498.40	4,498.40	9.80	10.00	141.44	-65.00	0.40	82.71	62.94	19.77	4.184			
4,600.00	4,598.40	4,598.40	4,598.40	10.03	10.22	141.44	-65.00	0.40	82.71	62.49	20.22	4.091			
4,700.00	4,698.40	4,698.40	4,698.40	10.25	10.45	141.44	-65.00	0.40	82.71	62.04	20.67	4.002			
4,800.00	4,798.40	4,798.40	4,798.40	10.47	10.67	141.44	-65.00	0.40	82.71	61.59	21.11	3.917			
4,900.00	4,898.40	4,898.40	4,898.40	10.70	10.90	141.44	-65.00	0.40	82.71	61.14	21.56	3.836			

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Offset Design Crow federal 14H - Job # 1210352 - Wellbore #1 - Plan 1 4-25-2012													Offset Site Error:
Survey Program: 0-MWD													0.00 usft
Reference:	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning		Offset Well Error:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,998.40	4,998.40	4,998.40	10.92	11.12	141.44	-65.00	0.40	82.71	60.70	22.01	3.758	
5,100.00	5,098.40	5,098.40	5,098.40	11.14	11.35	141.44	-65.00	0.40	82.71	60.25	22.46	3.683	
5,200.00	5,198.40	5,198.40	5,198.40	11.37	11.57	141.44	-65.00	0.40	82.71	59.80	22.91	3.610	
5,300.00	5,298.40	5,298.40	5,298.40	11.59	11.80	141.44	-65.00	0.40	82.71	59.35	23.36	3.541	
5,400.00	5,398.40	5,398.40	5,398.40	11.81	12.02	141.44	-65.00	0.40	82.71	58.90	23.80	3.474	
5,500.00	5,498.40	5,510.23	5,508.83	12.04	12.26	150.49	-65.10	-14.50	75.15	50.89	24.26	3.098	
5,595.73	5,594.13	5,603.13	5,594.13	12.25	12.47	179.63	-65.33	-50.74	65.00	40.35	24.65	2.636 CC, ES	
5,600.00	5,598.40	5,606.81	5,597.31	12.26	12.49	-178.73	-65.34	-52.60	65.04	40.37	24.67	2.636 SF	
5,700.00	5,698.40	5,681.48	5,657.51	12.48	12.74	-145.19	-65.63	-96.56	89.43	64.33	25.10	3.563	
5,779.80	5,778.20	5,725.00	5,688.26	12.66	12.94	-130.69	-65.82	-127.32	134.83	109.36	25.47	5.294	
5,800.00	5,798.39	5,737.28	5,696.29	12.71	13.01	-35.65	-65.88	-136.61	148.10	122.63	25.47	5.815	
5,825.00	5,823.30	5,750.00	5,704.28	12.76	13.08	-31.40	-65.95	-146.51	164.49	139.04	25.45	6.463	
5,850.00	5,848.01	5,762.51	5,711.82	12.82	13.16	-27.94	-66.01	-156.49	180.66	155.31	25.35	7.126	
5,875.00	5,872.42	5,775.00	5,719.01	12.88	13.24	-25.10	-66.08	-166.70	196.49	171.32	25.17	7.806	
5,900.00	5,896.43	5,787.72	5,725.99	12.94	13.34	-22.71	-66.15	-177.34	211.91	187.00	24.91	8.508	
5,925.00	5,919.93	5,800.00	5,732.39	13.01	13.43	-20.75	-66.22	-187.82	226.84	202.28	24.56	9.236	
5,950.00	5,942.82	5,812.91	5,738.74	13.08	13.54	-19.06	-66.29	-199.05	241.24	217.11	24.13	9.997	
5,975.00	5,965.01	5,825.00	5,744.35	13.16	13.64	-17.67	-66.36	-209.76	255.08	231.45	23.62	10.797	
6,000.00	5,986.40	5,838.08	5,750.04	13.25	13.77	-16.44	-66.43	-221.54	268.31	245.26	23.05	11.642	
6,025.00	6,006.90	5,850.00	5,764.86	13.34	13.88	-15.43	-66.50	-232.44	280.91	258.51	22.40	12.539	
6,050.00	6,026.42	5,863.24	5,759.82	13.45	14.02	-14.52	-66.58	-244.71	292.86	271.16	21.70	13.495	
6,075.00	6,044.87	5,875.00	5,763.86	13.57	14.15	-13.77	-66.65	-255.76	304.15	283.20	20.95	14.519	
6,100.00	6,062.18	5,888.38	5,768.05	13.71	14.30	-13.08	-66.74	-268.47	314.73	294.58	20.15	15.616	
6,125.00	6,078.28	5,900.00	5,771.32	13.87	14.44	-12.52	-66.81	-279.62	324.61	305.29	19.33	16.796	
6,150.00	6,093.09	5,913.52	5,774.69	14.05	14.61	-12.01	-66.89	-292.71	333.77	315.28	18.48	18.057	
6,175.00	6,106.55	5,925.00	5,777.20	14.25	14.76	-11.59	-66.97	-303.91	342.19	324.56	17.63	19.405	
6,200.00	6,118.60	5,938.65	5,779.73	14.48	14.95	-11.20	-67.05	-317.32	349.86	333.06	16.80	20.824	
6,225.00	6,129.20	5,950.00	5,781.47	14.73	15.10	-10.89	-67.12	-328.54	356.78	340.78	15.99	22.308	
6,250.00	6,138.29	5,963.78	5,783.14	15.00	15.30	-10.61	-67.21	-342.21	362.92	347.67	15.25	23.806	
6,275.00	6,145.84	5,975.00	5,784.13	15.31	15.47	-10.38	-67.28	-353.39	368.30	353.73	14.57	25.284	
6,300.00	6,151.82	5,988.90	5,784.91	15.63	15.68	-10.19	-67.37	-367.27	372.88	358.88	14.00	26.639	
6,325.00	6,156.19	6,000.00	5,785.16	15.98	15.85	-10.04	-67.45	-378.36	376.68	363.14	13.55	27.806	
6,350.00	6,158.95	6,014.74	5,785.00	16.35	16.09	-9.91	-67.54	-393.10	379.68	366.42	13.26	28.635	
6,375.00	6,160.07	6,038.26	5,784.29	16.74	16.48	-9.82	-67.69	-416.81	381.53	368.36	13.17	28.966	
6,388.48	6,160.00	6,051.74	5,783.88	16.96	16.71	-9.80	-67.78	-430.09	381.86	368.65	13.21	28.910	
6,400.00	6,159.73	6,063.26	5,783.54	17.14	16.92	-9.80	-67.85	-441.60	381.94	368.64	13.30	28.722	
6,428.76	6,159.07	6,092.01	5,782.67	17.63	17.43	-9.79	-68.04	-470.34	382.14	368.62	13.53	28.252	
6,500.00	6,157.42	6,163.26	5,780.52	18.92	18.81	-9.78	-68.50	-541.55	382.64	368.48	14.16	27.022	
6,600.00	6,155.11	6,263.25	5,777.51	20.92	20.87	-9.76	-69.15	-641.50	383.33	368.17	15.16	25.284	
6,700.00	6,152.80	6,363.25	5,774.49	23.07	23.08	-9.75	-69.79	-741.45	384.02	367.74	16.28	23.590	
6,800.00	6,150.49	6,463.25	5,771.48	25.34	25.40	-9.73	-70.44	-841.40	384.72	367.23	17.49	21.994	
6,900.00	6,148.18	6,563.25	5,768.46	27.69	27.79	-9.71	-71.08	-941.35	385.41	366.63	18.78	20.522	
7,000.00	6,145.87	6,663.24	5,765.45	30.11	30.25	-9.69	-71.73	-1,041.30	386.11	365.98	20.13	19.180	
7,100.00	6,143.56	6,763.24	5,762.44	32.59	32.76	-9.67	-72.37	-1,141.25	386.80	365.27	21.53	17.966	
7,200.00	6,141.25	6,863.24	5,759.42	35.11	35.30	-9.66	-73.02	-1,241.20	387.49	364.53	22.97	16.871	
7,300.00	6,138.94	6,963.24	5,756.41	37.66	37.87	-9.64	-73.67	-1,341.14	388.19	363.75	24.44	15.884	
7,400.00	6,136.63	7,063.23	5,753.39	40.24	40.47	-9.62	-74.31	-1,441.09	388.88	362.95	25.94	14.993	
7,500.00	6,134.32	7,163.23	5,750.38	42.84	43.08	-9.61	-74.96	-1,541.04	389.58	362.12	27.46	14.189	
7,600.00	6,132.01	7,263.23	5,747.36	45.45	45.72	-9.59	-75.60	-1,640.99	390.27	361.28	28.99	13.460	
7,700.00	6,129.70	7,363.23	5,744.35	48.09	48.36	-9.57	-76.25	-1,740.94	390.97	360.42	30.55	12.798	
7,800.00	6,127.39	7,463.22	5,741.33	50.73	51.02	-9.55	-76.89	-1,840.89	391.66	359.55	32.11	12.196	
7,900.00	6,125.08	7,563.22	5,738.32	53.39	53.68	-9.54	-77.54	-1,940.84	392.35	358.66	33.69	11.646	

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

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

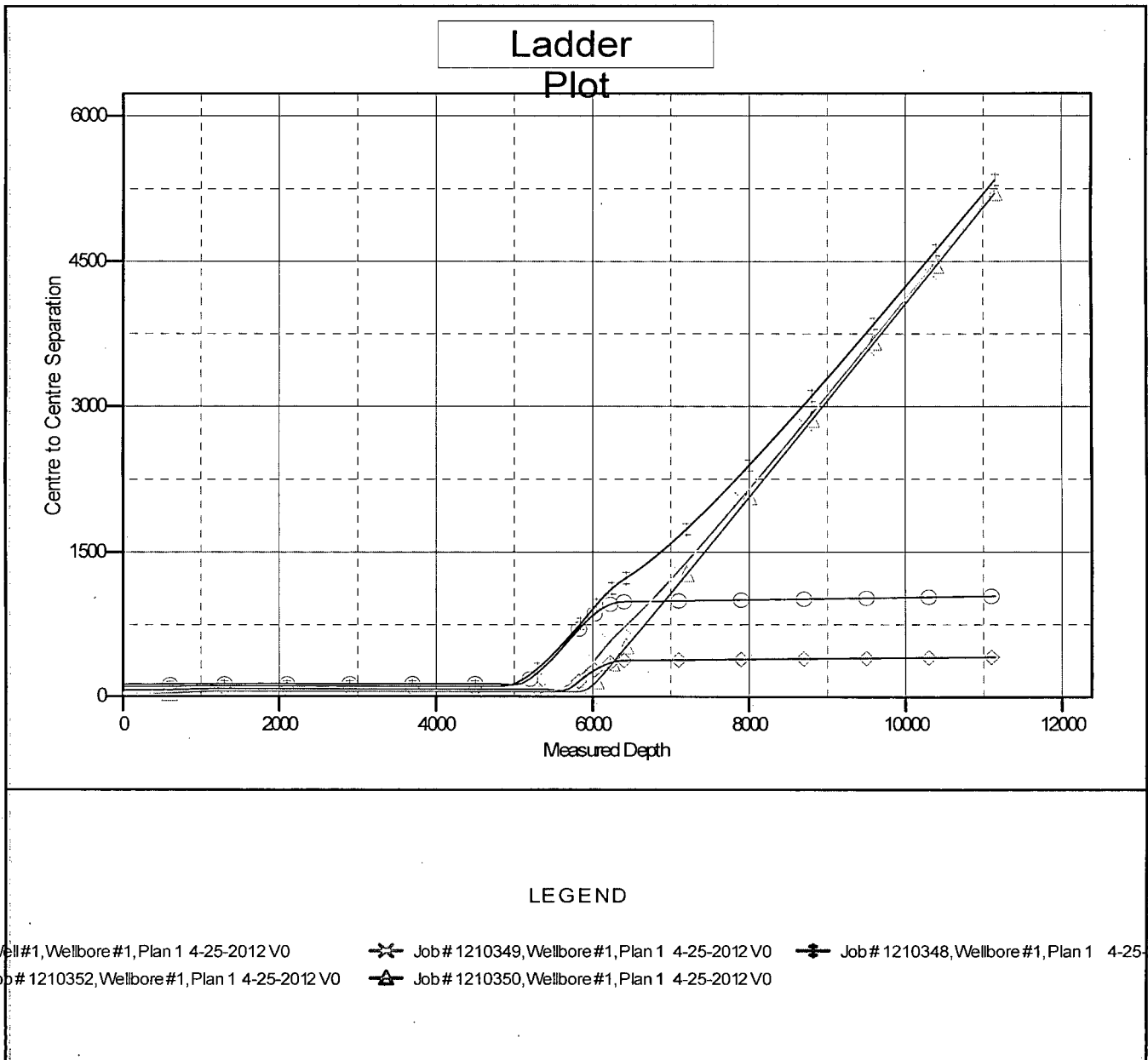
Crow federal 14H - Job # 1210352 - Wellbore #1 - Plan 1 4-25-2012														Offset Site Error: 0.00 usft	
Survey Program: 0-MWD														Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance								Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
8,000.00	6,122.77	7,663.22	5,735.30	56.06	56.36	-9.52	-78.19	-2,040.79	393.05	357.77	35.28	11.142			
8,100.00	6,120.45	7,763.22	5,732.29	58.73	59.04	-9.50	-78.83	-2,140.74	393.74	356.87	36.87	10.679			
8,200.00	6,118.14	7,863.21	5,729.28	61.41	61.73	-9.49	-79.48	-2,240.69	394.44	355.97	38.47	10.253			
8,300.00	6,115.83	7,963.21	5,726.26	64.10	64.42	-9.47	-80.12	-2,340.64	395.13	355.06	40.08	9.859			
8,400.00	6,113.52	8,063.21	5,723.25	66.79	67.12	-9.45	-80.77	-2,440.59	395.83	354.14	41.69	9.495			
8,500.00	6,111.21	8,163.21	5,720.23	69.49	69.83	-9.44	-81.41	-2,540.54	396.52	353.22	43.30	9.157			
8,600.00	6,108.90	8,263.20	5,717.22	72.19	72.53	-9.42	-82.06	-2,640.49	397.22	352.30	44.92	8.843			
8,700.00	6,106.59	8,363.20	5,714.20	74.90	75.24	-9.40	-82.71	-2,740.44	397.91	351.37	46.54	8.549			
8,800.00	6,104.28	8,463.20	5,711.19	77.61	77.96	-9.39	-83.35	-2,840.39	398.61	350.44	48.17	8.276			
8,900.00	6,101.97	8,563.20	5,708.17	80.32	80.67	-9.37	-84.00	-2,940.34	399.30	349.51	49.79	8.019			
9,000.00	6,099.66	8,663.19	5,705.16	83.03	83.39	-9.35	-84.64	-3,040.29	400.00	348.57	51.42	7.779			
9,100.00	6,097.35	8,763.19	5,702.14	85.75	86.11	-9.34	-85.29	-3,140.24	400.69	347.64	53.05	7.553			
9,200.00	6,095.04	8,863.19	5,699.13	88.47	88.83	-9.32	-85.93	-3,240.19	401.39	346.70	54.68	7.340			
9,300.00	6,092.73	8,963.19	5,696.12	91.19	91.56	-9.30	-86.58	-3,340.14	402.08	345.77	56.31	7.140			
9,400.00	6,090.42	9,063.18	5,693.10	93.92	94.28	-9.29	-87.23	-3,440.09	402.78	344.83	57.95	6.951			
9,500.00	6,088.11	9,163.18	5,690.09	96.64	97.01	-9.27	-87.87	-3,540.04	403.47	343.89	59.58	6.772			
9,600.00	6,085.79	9,263.18	5,687.07	99.37	99.74	-9.26	-88.52	-3,639.99	404.17	342.95	61.21	6.603			
9,700.00	6,083.48	9,363.18	5,684.06	102.10	102.47	-9.24	-89.16	-3,739.94	404.86	342.01	62.85	6.442			
9,800.00	6,081.17	9,463.17	5,681.04	104.83	105.20	-9.22	-89.81	-3,839.89	405.56	341.07	64.48	6.289			
9,900.00	6,078.86	9,563.17	5,678.03	107.56	107.94	-9.21	-90.45	-3,939.84	406.25	340.13	66.12	6.144			
10,000.00	6,076.55	9,663.17	5,675.01	110.29	110.67	-9.19	-91.10	-4,039.79	406.95	339.19	67.75	6.006			
10,100.00	6,074.24	9,763.17	5,672.00	113.02	113.40	-9.18	-91.75	-4,139.74	407.64	338.25	69.39	5.875			
10,200.00	6,071.93	9,863.16	5,668.98	115.76	116.14	-9.16	-92.39	-4,239.69	408.34	337.31	71.02	5.749			
10,300.00	6,069.62	9,963.16	5,665.97	118.49	118.88	-9.14	-93.04	-4,339.64	409.03	336.38	72.66	5.630			
10,400.00	6,067.31	10,063.16	5,662.96	121.23	121.61	-9.13	-93.68	-4,439.59	409.73	335.44	74.29	5.515			
10,500.00	6,065.00	10,163.16	5,659.94	123.97	124.35	-9.11	-94.33	-4,539.54	410.42	334.50	75.92	5.406			
10,600.00	6,062.69	10,263.15	5,656.93	126.70	127.09	-9.10	-94.97	-4,639.49	411.12	333.56	77.56	5.301			
10,700.00	6,060.38	10,363.15	5,653.91	129.44	129.83	-9.08	-95.62	-4,739.44	411.81	332.62	79.19	5.200			
10,800.00	6,058.07	10,463.15	5,650.90	132.18	132.57	-9.07	-96.27	-4,839.39	412.51	331.68	80.82	5.104			
10,900.00	6,055.76	10,563.15	5,647.88	134.92	135.31	-9.05	-96.91	-4,939.34	413.20	330.75	82.46	5.011			
11,000.00	6,053.45	10,663.14	5,644.87	137.66	138.05	-9.04	-97.56	-5,039.29	413.90	329.81	84.09	4.922			
11,100.00	6,051.13	10,763.14	5,641.85	140.40	140.79	-9.02	-98.20	-5,139.24	414.59	328.87	85.72	4.837			
11,149.11	6,050.00	10,812.25	5,640.37	141.75	142.14	-9.01	-98.52	-5,188.33	414.94	328.42	86.52	4.796			

Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 3915.00usft (Original Well E
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.0000 W

Coordinates are relative to: Crow Federal 15H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.25°

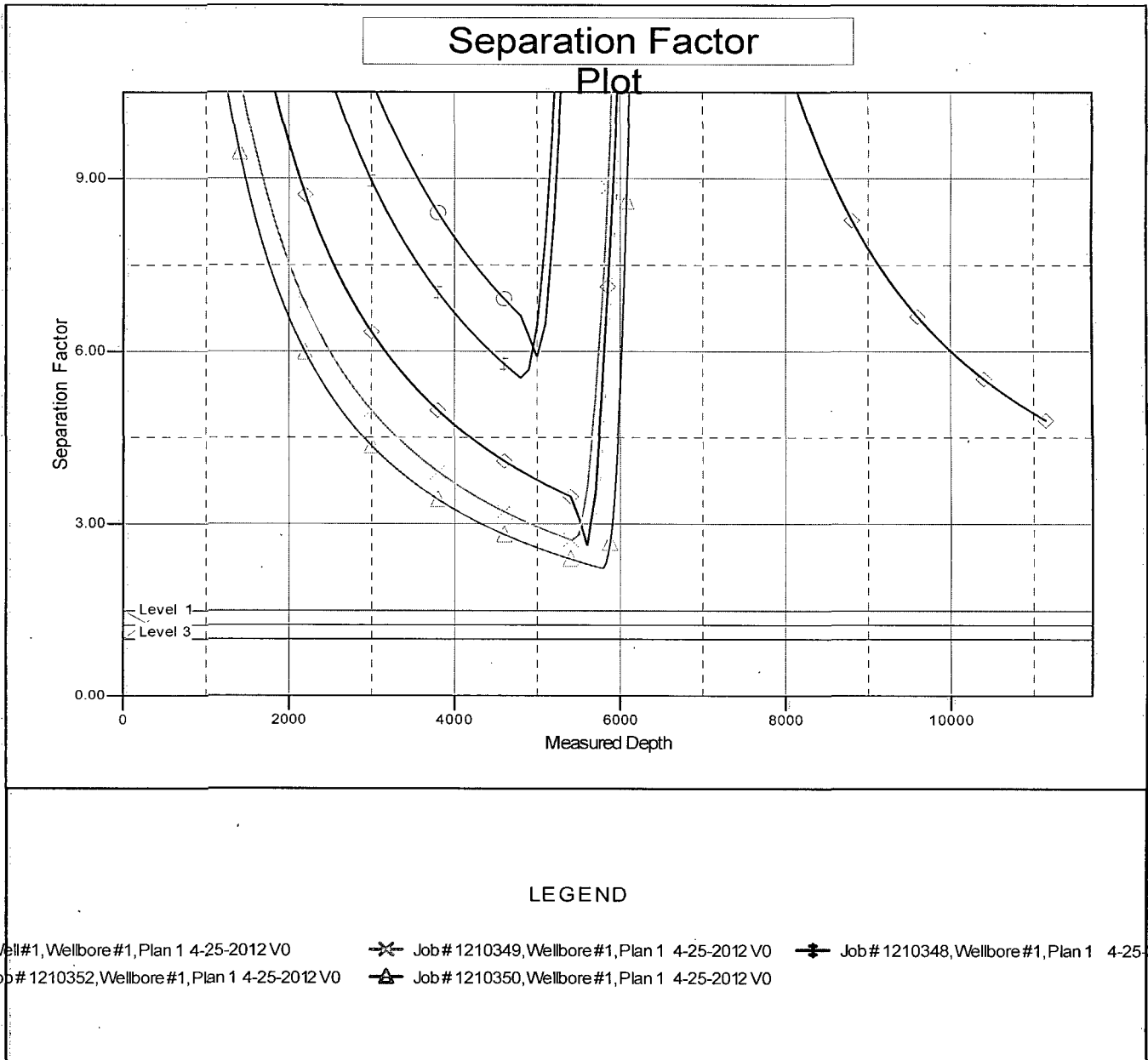


Anticollision Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow Federal 15H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Reference Site:	Crow Federal 15H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Job # 1210353	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass5000
Reference Design:	Plan 1 4-25-2012	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 3915.00usft (Original Well E
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.0000 W

Coordinates are relative to: Crow Federal 15H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.25°



RECEIVED
JAN 17 2014
NMOCD ARTESIA

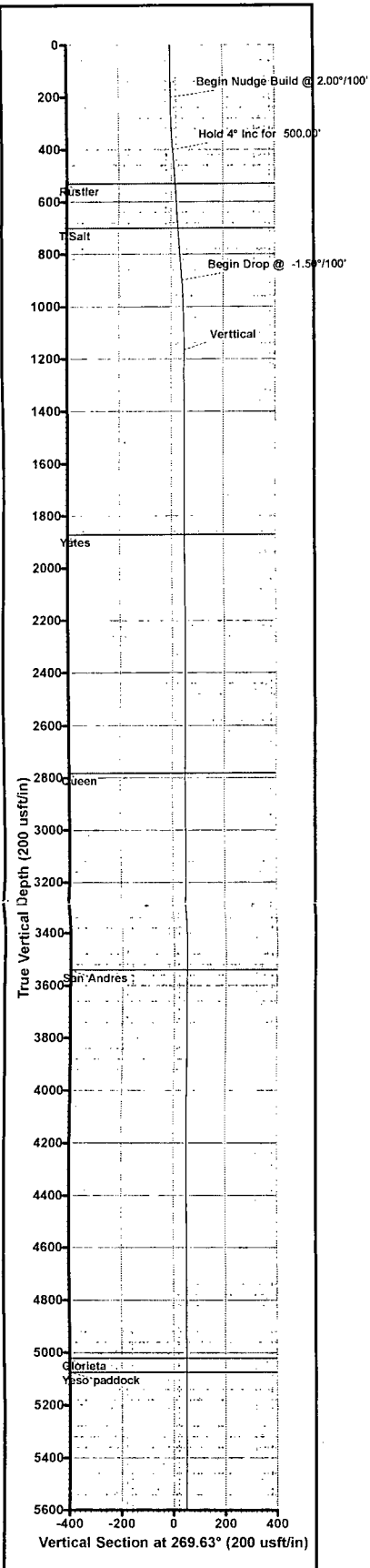


Apache Corporation

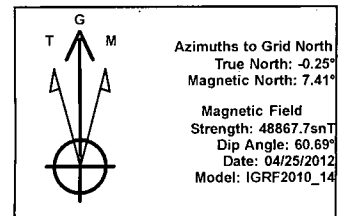
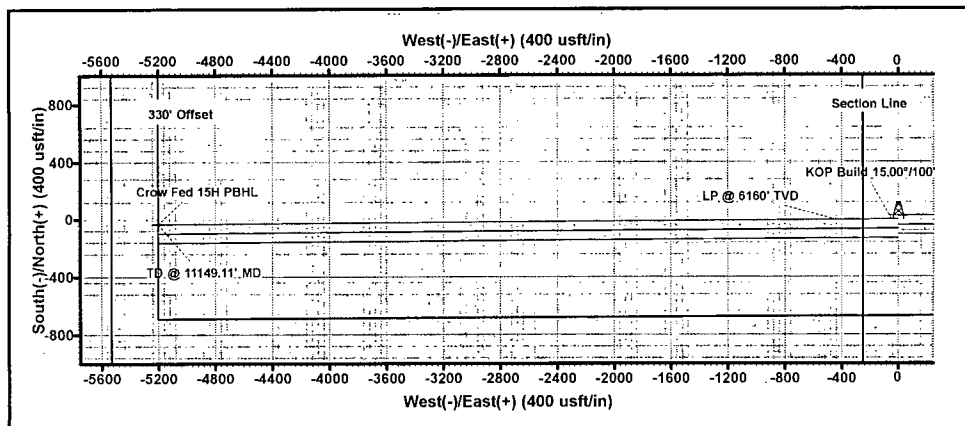
Project: Eddy County, NM
Site: Crow Federal 15H
Well: Job # 1210353
Wellbore: Wellbore #1
Plan: Plan 1 4-25-2012
API# 30-015-40519

WELL DETAILS: Job # 1210353

North	East	Ground Level: 3915.00	Latitude	Longitude
671235.90	643906.10	32° 50' 39.9670 N	103° 51' 53.1696 W	

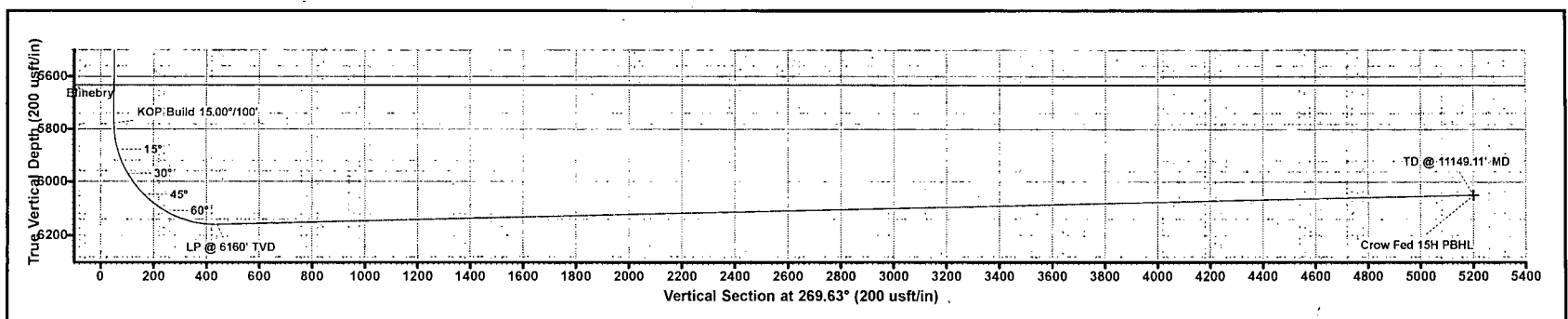
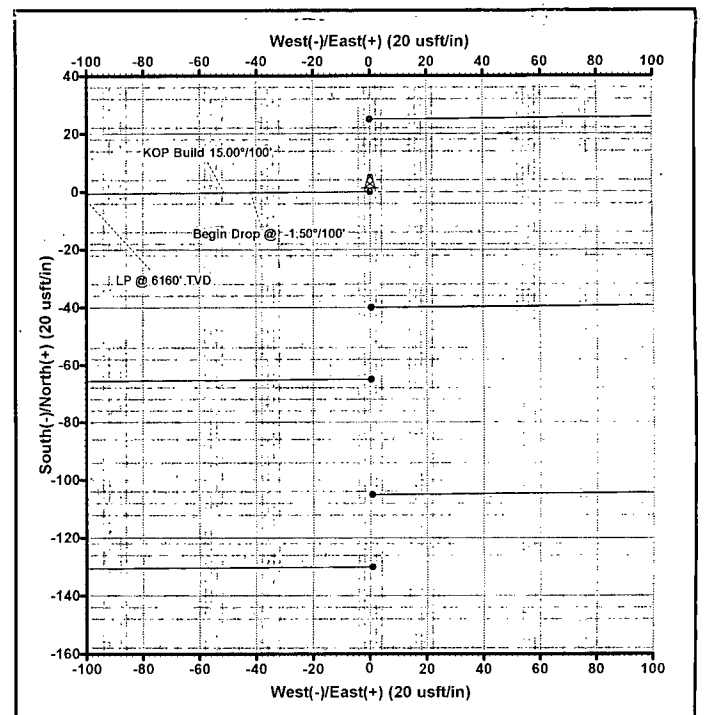
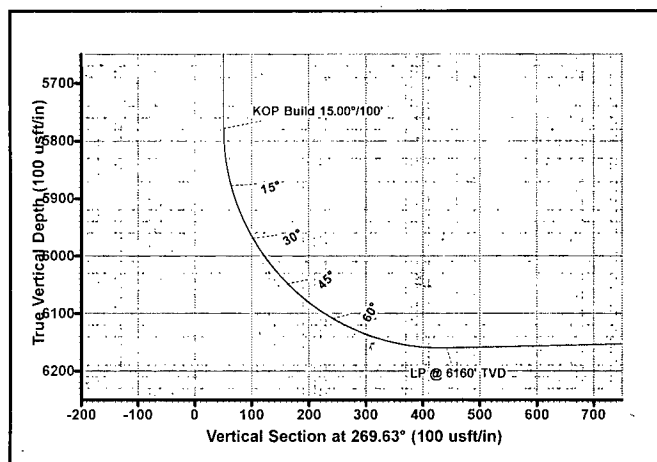


SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
400.16	4.00	269.63	400.00	-0.05	-6.98	2.00	269.63	6.98	
900.16	4.00	269.63	898.78	-0.27	-41.86	0.00	0.00	41.86	
1166.60	0.00	0.00	1165.00	-0.33	-51.16	1.50	180.00	51.16	
5779.80	0.00	0.00	5778.20	-0.33	-51.16	0.00	0.00	51.16	
6388.48	91.32	269.63	6160.00	-2.85	-441.85	15.00	269.63	441.85	
6428.76	91.32	269.63	6159.07	-3.11	-482.11	0.01	-2.11	482.12	
11149.11	91.32	269.63	6050.00	-33.60	-5201.10	0.00	0.00	5201.21	Crow Fed 15H PBHL



FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
530.00	530.48	Rustler	0.00	
701.00	701.90	T/Salt	0.00	
1872.00	1873.60	Yates	0.00	
2781.00	2782.60	Queen	0.00	
3541.00	3542.60	San Andres	0.00	
5021.00	5022.60	Glorieta	0.00	
5075.00	5076.60	Yesso Paddock	0.00	
5633.00	5634.60	Blainebr	0.00	

ANNOTATIONS		
TVD	MD	Annotation
200.00	200.00	Begin Nudge Build @ 2.00°/100'
400.00	400.16	Hold 4° Inc for 500.00'
898.78	900.16	Begin Drop @ -1.50°/100'
1165.00	1166.60	Vertical
5778.20	5779.80	KOP Build 15.00°/100'
6160.00	6388.48	LP @ 6160' TVD
6050.00	11149.00	TD @ 11149.11' MD



RECEIVED
JAN 17 2014
NMOCD ARTESIA