



15-40575

Apache Corporation

**Eddy County, NM (NAD27 NME)
Crow Federal
#11H**

**OH/Job #1310714
Survey: Phoenix MWD Survey**

Anticollision Report

25 June, 2013



**PHOENIX
TECHNOLOGY SERVICES**



Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Reference	Survey: Phoenix MWD Survey		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 u	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Program	Date 06/25/13			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
622.00	10,262.00	Phoenix MWD Survey (OH/Job #1310714)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Crow Federal						
Offset Well - Wellbore - Design						
#10H - OH / Job #1310298 - Surveys (Capstar 114)	5,009.98	5,052.07	59.92	40.67	3.113	CC, ES, SF
#12H - Wellbore #1 / Job #1210350 - Plan 1 4-25-2012	600.00	620.99	67.31	66.03	52.439	CC
#12H - Wellbore #1 / Job #1210350 - Plan 1 4-25-2012	3,742.80	3,761.71	70.13	55.17	4.686	ES
#12H - Wellbore #1 / Job #1210350 - Plan 1 4-25-2012	5,339.44	5,358.06	84.26	62.36	3.849	SF
#13H - OH / Job #1310316 - Surveys (Capstar 114)	710.48	709.66	89.74	88.64	82.004	CC
#13H - OH / Job #1310316 - Surveys (Capstar 114)	800.00	798.54	90.07	88.59	60.923	ES
#13H - OH / Job #1310316 - Surveys (Capstar 114)	4,816.67	4,816.90	141.62	123.32	7.738	SF
#14H - OH/Job #1310557 - Surveys (Capstar 114)	600.00	599.71	26.16	25.50	39.401	CC
#14H - OH/Job #1310557 - Surveys (Capstar 114)	800.00	799.77	26.32	24.85	17.839	ES
#14H - OH/Job #1310557 - Surveys (Capstar 114)	5,200.00	5,198.00	65.16	45.27	3.276	SF
#15H - OH / Job #1310461 - Plan #2 04-18-13	600.00	603.99	42.32	41.09	34.387	CC, ES
#15H - OH / Job #1310461 - Plan #2 04-18-13	5,330.19	5,331.82	68.34	46.56	3.137	SF

Offset Design													Offset Site Error: 0.00 usft	
Crow Federal - #10H - OH / Job #1310298 - Surveys (Capstar 114)													Offset Well Error: 0.00 usft	
Survey Program: 629-MWD														
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
600.00	599.99	630.73	630.73	0.00	0.70	179.64	-66.32	-1.37	64.02	63.32	0.70	91.403		
700.00	699.99	730.72	730.71	0.20	0.91	179.60	-66.76	-1.91	63.64	62.54	1.10	57.659		
800.00	799.98	830.73	830.72	0.41	1.11	-179.69	-67.13	-2.51	63.10	61.58	1.52	41.444		
853.38	853.35	883.99	883.98	0.53	1.22	-178.63	-67.39	-2.85	62.97	61.22	1.75	35.953		
900.00	899.95	930.46	930.44	0.64	1.33	-177.16	-67.70	-3.17	63.11	61.15	1.96	32.255		
1,000.00	999.88	1,030.27	1,030.25	0.86	1.54	-173.22	-68.61	-3.86	63.85	61.45	2.39	26.659		
1,100.00	1,099.76	1,130.11	1,130.08	1.10	1.74	-168.42	-69.52	-4.47	65.38	62.55	2.83	23.089		
1,200.00	1,199.55	1,229.59	1,229.55	1.33	1.96	-162.32	-70.47	-5.65	68.38	65.10	3.29	20.812		
1,300.00	1,299.28	1,329.33	1,329.28	1.58	2.16	-155.85	-71.44	-7.18	72.37	68.63	3.74	19.368		
1,400.00	1,398.96	1,429.32	1,429.24	1.84	2.36	-149.08	-71.77	-9.08	76.89	72.70	4.18	18.373		
1,500.00	1,498.60	1,529.16	1,529.07	2.09	2.56	-142.49	-71.34	-10.96	81.76	77.14	4.62	17.692		
1,600.00	1,598.39	1,629.13	1,629.02	2.30	2.77	-137.51	-70.63	-12.73	85.71	80.69	5.02	17.065		
1,700.00	1,698.33	1,728.84	1,728.71	2.49	2.97	-134.18	-69.64	-14.43	87.61	82.20	5.41	16.187		
1,800.00	1,798.31	1,828.49	1,828.33	2.69	3.19	-131.60	-68.71	-16.54	88.37	82.55	5.82	15.177		
1,900.00	1,898.29	1,928.61	1,928.42	2.90	3.40	-128.98	-67.51	-18.86	90.40	84.16	6.24	14.482		
2,000.00	1,998.26	2,028.46	2,028.25	3.11	3.61	-127.34	-66.99	-20.68	93.88	87.23	6.65	14.122		

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



Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal - #10H - OH / Job #1310298 - Surveys (Capstar 114)													Offset Site Error: 0.00 usft
Survey Program: 629-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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,100.00	2,098.22	2,128.47	2,128.26	3.31	3.82	-126.53	-67.04	-21.77	97.20	90.15	7.05	13.784	
2,200.00	2,198.20	2,228.62	2,228.40	3.51	4.03	-126.41	-67.07	-23.05	100.16	92.70	7.46	13.433	
2,300.00	2,298.18	2,329.21	2,328.98	3.71	4.24	-126.64	-66.62	-23.99	102.49	94.63	7.86	13.034	
2,400.00	2,398.15	2,430.27	2,430.04	3.91	4.44	-127.11	-65.89	-24.14	104.09	95.81	8.27	12.581	
2,500.00	2,498.12	2,530.71	2,530.47	4.12	4.65	-127.75	-64.86	-23.60	104.95	96.26	8.68	12.085	
2,600.00	2,598.08	2,631.21	2,630.95	4.32	4.86	-128.36	-63.30	-22.76	105.22	96.12	9.10	11.565	
2,700.00	2,698.04	2,731.28	2,731.00	4.52	5.07	-128.63	-61.07	-22.24	105.35	95.83	9.51	11.074	
2,800.00	2,798.04	2,831.13	2,830.83	4.72	5.27	-128.65	-59.26	-21.34	104.15	94.23	9.92	10.497	
2,900.00	2,898.03	2,931.20	2,930.88	4.92	5.48	-128.63	-57.52	-20.53	102.58	92.25	10.33	9.928	
3,000.00	2,998.03	3,031.60	3,031.25	5.13	5.69	-128.46	-55.06	-19.92	100.88	90.13	10.75	9.382	
3,100.00	3,098.01	3,131.46	3,131.06	5.33	5.91	-128.17	-52.12	-19.35	99.00	87.82	11.17	8.862	
3,200.00	3,198.00	3,230.20	3,229.77	5.53	6.11	-127.76	-49.52	-19.66	97.85	86.27	11.58	8.449	
3,286.96	3,284.95	3,316.45	3,316.00	5.71	6.30	-127.56	-47.86	-20.53	97.62	85.68	11.94	8.175	
3,300.00	3,297.99	3,329.41	3,328.96	5.74	6.32	-127.54	-47.65	-20.69	97.60	85.60	12.00	8.136	
3,400.00	3,397.97	3,428.81	3,428.33	5.94	6.53	-127.50	-46.32	-22.18	98.07	85.65	12.41	7.900	
3,500.00	3,497.95	3,529.11	3,528.61	6.15	6.75	-127.48	-45.09	-23.75	98.79	85.96	12.83	7.699	
3,600.00	3,597.93	3,630.25	3,629.75	6.35	6.96	-128.03	-44.17	-24.26	98.72	85.47	13.25	7.452	
3,700.00	3,697.91	3,730.34	3,729.82	6.55	7.16	-129.66	-44.24	-23.04	97.82	84.16	13.66	7.160	
3,800.00	3,797.91	3,830.56	3,830.01	6.76	7.37	-130.80	-45.27	-20.70	96.39	82.31	14.07	6.849	
3,900.00	3,897.87	3,929.86	3,929.24	6.96	7.57	-131.25	-47.21	-17.84	95.06	80.57	14.49	6.562	
3,968.45	3,966.29	3,997.62	3,997.00	7.11	7.71	-130.73	-48.02	-17.17	94.85	80.08	14.77	6.420	
4,000.00	3,997.83	4,029.14	4,028.52	7.17	7.78	-130.36	-48.27	-17.09	94.86	79.96	14.91	6.364	
4,100.00	4,097.80	4,129.46	4,128.83	7.39	7.99	-129.24	-49.00	-16.79	94.86	79.54	15.33	6.190	
4,200.00	4,197.77	4,229.88	4,229.24	7.60	8.20	-129.01	-50.38	-15.30	94.37	78.62	15.75	5.993	
4,300.00	4,297.75	4,330.03	4,329.34	7.81	8.41	-129.58	-52.28	-12.99	93.72	77.55	16.17	5.797	
4,400.00	4,397.73	4,429.74	4,428.97	8.02	8.61	-130.75	-54.90	-10.07	92.87	76.28	16.59	5.599	
4,445.14	4,442.86	4,474.43	4,473.63	8.11	8.71	-131.17	-56.02	-9.09	92.72	75.94	16.78	5.527	
4,500.00	4,497.71	4,528.81	4,528.00	8.23	8.82	-131.46	-57.17	-8.45	92.95	75.94	17.01	5.465	
4,600.00	4,597.71	4,629.39	4,628.56	8.44	9.03	-131.67	-58.94	-8.01	93.56	76.14	17.43	5.369	
4,700.00	4,697.70	4,731.15	4,730.32	8.65	9.24	-130.99	-58.62	-7.15	92.54	74.70	17.85	5.185	
4,800.00	4,797.69	4,831.86	4,831.00	8.85	9.45	-130.63	-57.35	-5.54	89.95	71.68	18.26	4.925	
4,900.00	4,897.68	4,947.50	4,944.86	9.06	9.71	-139.56	-57.61	11.68	78.44	59.71	18.73	4.187	
5,000.00	4,997.67	5,043.70	5,031.65	9.27	9.94	-172.73	-58.95	52.67	60.17	40.97	19.20	3.134	
5,009.98	5,007.65	5,052.07	5,038.73	9.29	9.96	-177.10	-59.16	57.13	59.92	40.67	19.25	3.113 CC, ES, SF	
5,100.00	5,097.67	5,119.22	5,092.44	9.48	10.22	148.49	-61.04	97.28	81.30	61.66	19.65	4.138	
5,200.00	5,197.66	5,175.68	5,131.54	9.69	10.54	128.68	-61.76	137.92	140.86	120.87	19.98	7.049	
5,300.00	5,297.64	5,213.00	5,153.80	9.90	10.81	120.74	-61.74	167.86	216.81	196.55	20.26	10.702	
5,400.00	5,397.45	5,245.00	5,170.54	10.12	11.10	116.94	-61.63	195.13	298.29	277.88	20.40	14.620	
5,500.00	5,494.38	5,287.24	5,189.58	10.38	11.57	117.13	-62.14	232.81	375.17	355.14	20.03	18.730	
5,600.00	5,584.54	5,325.87	5,203.82	10.72	12.07	121.99	-62.76	268.70	445.31	426.17	19.14	23.264	
5,700.00	5,684.03	5,377.70	5,219.17	11.23	12.83	126.00	-63.11	318.20	503.67	485.94	17.73	28.410	
5,800.00	5,730.85	5,451.76	5,238.45	12.01	14.09	124.95	-62.68	389.70	547.26	531.04	16.22	33.745	
5,900.00	5,780.76	5,495.00	5,247.28	13.18	14.90	133.51	-61.80	432.00	577.19	563.25	13.94	41.409	
6,000.00	5,809.37	5,550.00	5,253.59	14.77	16.01	148.83	-60.28	486.61	593.57	580.76	12.81	46.325	
6,100.00	5,822.23	5,617.96	5,257.11	16.67	17.47	168.73	-58.34	554.43	601.17	588.67	12.50	48.094	
6,200.00	5,823.81	5,705.79	5,257.28	18.79	19.45	177.71	-55.45	642.21	602.28	588.94	13.35	45.131	
6,300.00	5,826.03	5,810.21	5,257.81	21.06	21.91	174.21	-52.37	746.59	603.72	589.31	14.41	41.893	
6,400.00	5,828.28	5,911.09	5,259.01	23.42	24.38	173.52	-50.69	847.45	604.78	589.19	15.59	38.804	
6,500.00	5,829.96	6,008.74	5,260.05	25.86	26.82	175.35	-49.39	945.09	605.45	588.69	16.76	36.116	
6,600.00	5,830.14	6,107.30	5,260.80	28.36	29.34	176.37	-48.71	1,043.63	604.62	586.67	17.96	33.672	
6,700.00	5,830.06	6,203.87	5,261.53	30.90	31.84	179.13	-50.67	1,140.18	603.91	584.61	19.30	31.290	
6,800.00	5,829.89	6,319.54	5,263.27	33.48	34.86	167.43	-53.34	1,255.79	602.53	581.64	20.90	28.835	

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



Anticollision Report



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Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal - #10H - OH / Job #1310298 - Surveys (Capstar 114)													Offset Site Error: 0.00 usft.	
Survey Program: 629-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Azimuth from North (°)	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)				
6,900.00	5,829.82	6,433.02	5,268.13	36.08	37.84	157.92	-51.91	1,369.15	598.06	575.64	22.42	26.677		
7,000.00	5,829.64	6,518.36	5,270.90	38.70	40.10	167.89	-48.44	1,454.37	594.24	570.62	23.62	25.159		
7,100.00	5,830.06	6,613.20	5,272.59	41.34	42.62	171.51	-46.14	1,549.16	592.44	567.58	24.86	23.832		
7,200.00	5,830.53	6,717.42	5,274.70	44.00	45.41	167.78	-45.87	1,653.36	590.72	564.44	26.28	22.478		
7,300.00	5,831.49	6,824.23	5,277.85	46.67	48.27	161.94	-45.84	1,760.12	588.58	560.83	27.74	21.215		
7,400.00	5,833.16	6,924.40	5,281.91	49.35	50.97	161.27	-45.25	1,860.21	585.98	556.84	29.14	20.111		
7,459.09	5,834.46	6,975.10	5,283.33	50.94	52.33	168.14	-44.68	1,910.89	585.46	555.58	29.88	19.593		
7,500.00	5,835.50	7,016.82	5,284.14	52.04	53.45	167.15	-44.02	1,952.59	585.57	555.15	30.42	19.249		
7,589.82	5,837.98	7,109.30	5,286.55	54.46	55.95	163.73	-41.54	2,045.01	585.33	553.78	31.55	18.553		
7,600.00	5,838.29	7,118.54	5,286.77	54.74	56.20	164.53	-41.28	2,054.24	585.34	553.67	31.67	18.482		
7,700.00	5,841.15	7,209.93	5,288.28	57.44	58.67	172.70	-39.22	2,145.60	586.27	553.39	32.89	17.826		
7,800.00	5,843.40	7,305.82	5,288.73	60.13	61.27	177.15	-37.87	2,241.48	588.11	553.75	34.36	17.114		
7,900.00	5,846.01	7,408.30	5,289.35	62.83	64.05	174.64	-36.72	2,343.95	590.31	554.33	35.98	16.405		
8,000.00	5,846.80	7,505.16	5,290.06	65.54	66.68	177.89	-35.58	2,440.79	590.60	553.06	37.54	15.732		
8,020.58	5,846.74	7,523.94	5,290.10	66.09	67.19	179.66	-35.61	2,459.58	590.56	552.68	37.88	15.590		
8,100.00	5,846.60	7,601.72	5,289.97	68.24	69.31	178.84	-36.71	2,537.35	590.90	551.58	39.32	15.026		
8,200.00	5,846.65	7,704.42	5,290.23	70.96	72.11	178.73	-38.09	2,640.04	590.97	549.89	41.07	14.388		
8,300.00	5,847.14	7,805.69	5,290.63	73.68	74.87	177.67	-38.78	2,741.30	591.27	548.48	42.79	13.818		
8,400.00	5,848.24	7,912.00	5,291.56	76.40	77.77	172.38	-38.99	2,847.61	591.61	547.11	44.50	13.295		
8,500.00	5,850.33	8,012.84	5,293.17	79.13	80.52	171.45	-37.00	2,948.41	591.88	546.01	45.87	12.904		
8,600.00	5,852.54	8,109.71	5,294.41	81.86	83.16	174.11	-35.81	3,045.27	592.77	545.42	47.35	12.518		
8,700.00	5,854.83	8,201.20	5,294.85	84.58	85.67	178.48	-35.15	3,136.75	594.64	545.79	48.85	12.173		
8,800.00	5,857.43	8,294.25	5,293.99	87.31	88.21	172.75	-35.65	3,229.79	598.39	547.87	50.52	11.844		
8,900.00	5,860.30	8,403.30	5,292.98	90.04	91.20	179.65	-37.14	3,338.83	602.48	550.07	52.41	11.495		
9,000.00	5,862.78	8,516.80	5,294.58	92.78	94.31	169.20	-38.65	3,452.31	603.80	549.49	54.31	11.117		
9,100.00	5,864.27	8,623.97	5,298.05	95.51	97.24	164.43	-40.90	3,559.39	602.33	546.08	56.25	10.707		
9,200.00	5,865.86	8,722.81	5,301.64	98.25	99.95	165.52	-42.40	3,658.16	600.47	542.45	58.02	10.350		
9,300.00	5,868.00	8,819.55	5,304.61	100.99	102.60	167.77	-42.33	3,754.85	599.50	539.94	59.56	10.065		
9,330.98	5,868.76	8,848.87	5,305.36	101.84	103.40	168.93	-42.16	3,784.16	599.42	539.42	60.01	9.989		
9,400.00	5,870.55	8,915.44	5,306.79	103.73	105.23	170.66	-41.86	3,850.72	599.67	538.65	61.02	9.828		
9,500.00	5,873.09	9,019.89	5,309.46	106.47	108.09	167.28	-40.90	3,955.12	599.55	537.02	62.53	9.588		
9,506.05	5,873.26	9,025.43	5,309.60	106.63	108.24	167.63	-40.82	3,960.67	599.55	536.93	62.62	9.575		
9,600.00	5,875.95	9,113.94	5,311.28	109.21	110.66	171.49	-39.18	4,049.14	600.23	536.41	63.83	9.404		
9,700.00	5,877.16	9,217.67	5,313.31	111.95	113.50	168.13	-35.84	4,152.79	599.06	534.23	64.83	9.241		
9,800.00	5,877.05	9,311.64	5,314.84	114.69	116.07	172.75	-33.39	4,246.72	597.04	530.98	66.06	9.037		
9,900.00	5,877.22	9,410.32	5,315.66	117.43	118.77	173.72	-31.31	4,345.37	596.18	528.79	67.39	8.847		
10,000.00	5,877.76	9,521.93	5,317.86	120.17	121.83	163.35	-28.59	4,456.93	594.50	525.79	68.71	8.652		
10,100.00	5,878.66	9,632.77	5,322.13	122.92	124.87	153.95	-26.40	4,567.67	591.35	521.27	70.07	8.439		
10,200.00	5,879.76	9,740.24	5,328.23	125.66	127.81	147.75	-24.52	4,674.94	586.60	515.13	71.46	8.208		
10,254.48	5,880.42	9,765.00	5,329.74	127.16	128.48	173.08	-24.04	4,699.65	584.58	512.56	72.02	8.117		
10,262.00	5,880.52	9,765.00	5,329.74	127.36	128.48	179.48	-24.04	4,699.65	584.63	512.56	72.07	8.111		

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design: Crow Federal - #12H - Wellbore #1 / Job #1210350 - 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	Offset	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
600.00	599.99	620.99	620.99	0.00	1.28	1.17	65.00	-0.40	67.31	66.03	1.28	52.439	CC
700.00	699.99	720.99	720.99	0.20	1.51	1.65	65.00	-0.40	68.15	66.44	1.70	40.030	
800.00	799.98	820.98	820.98	0.41	1.73	1.47	65.00	-0.40	69.05	66.91	2.14	32.211	
900.00	899.95	920.95	920.95	0.64	1.96	-0.29	65.00	-0.40	69.67	67.09	2.59	26.912	
1,000.00	999.88	1,020.88	1,020.88	0.86	2.18	-3.32	65.00	-0.40	70.33	67.29	3.04	23.136	
1,100.00	1,099.76	1,120.76	1,120.76	1.10	2.41	-7.32	65.00	-0.40	71.06	67.56	3.50	20.327	
1,200.00	1,199.55	1,220.55	1,220.55	1.33	2.63	-12.44	65.00	-0.40	72.01	68.06	3.96	18.200	
1,300.00	1,299.28	1,320.28	1,320.28	1.58	2.86	-17.96	65.00	-0.40	74.02	69.60	4.42	16.735	
1,400.00	1,398.96	1,419.96	1,419.96	1.84	3.08	-23.53	65.00	-0.40	77.23	72.34	4.89	15.790	
1,500.00	1,498.60	1,519.60	1,519.60	2.09	3.30	-28.76	65.00	-0.40	81.54	76.19	5.35	15.246	
1,600.00	1,598.39	1,619.39	1,619.39	2.30	3.53	-32.17	65.00	-0.40	85.56	79.79	5.77	14.819	
1,700.00	1,698.33	1,719.33	1,719.33	2.49	3.75	-33.55	65.00	-0.40	88.30	82.11	6.18	14.277	
1,800.00	1,798.31	1,819.31	1,819.31	2.69	3.98	-33.64	65.00	-0.40	90.14	83.53	6.61	13.645	
1,900.00	1,898.29	1,919.29	1,919.29	2.90	4.20	-34.41	65.00	-0.40	91.69	84.64	7.04	13.021	
2,000.00	1,998.26	2,019.26	2,019.26	3.11	4.43	-35.91	65.00	-0.40	92.67	85.20	7.47	12.404	
2,100.00	2,098.22	2,119.22	2,119.22	3.31	4.65	-37.41	65.00	-0.40	93.40	85.50	7.90	11.827	
2,200.00	2,198.20	2,219.20	2,219.20	3.51	4.88	-38.59	65.00	-0.40	92.92	84.60	8.32	11.169	
2,300.00	2,298.18	2,319.18	2,319.18	3.71	5.10	-39.77	65.00	-0.40	91.67	82.92	8.75	10.479	
2,400.00	2,398.15	2,419.15	2,419.15	3.91	5.33	-41.03	65.00	-0.40	90.28	81.10	9.18	9.835	
2,500.00	2,498.12	2,519.12	2,519.12	4.12	5.55	-42.33	65.00	-0.40	88.75	79.14	9.61	9.235	
2,600.00	2,598.08	2,619.08	2,619.08	4.32	5.77	-43.66	65.00	-0.40	87.10	77.06	10.04	8.674	
2,700.00	2,698.04	2,719.04	2,719.04	4.52	6.00	-45.06	65.00	-0.40	85.40	74.92	10.47	8.153	
2,800.00	2,798.04	2,819.04	2,819.04	4.72	6.22	-45.56	65.00	-0.40	84.58	73.68	10.90	7.757	
2,900.00	2,898.03	2,919.03	2,919.03	4.92	6.45	-45.73	65.00	-0.40	83.78	72.45	11.33	7.395	
3,000.00	2,998.03	3,019.03	3,019.03	5.13	6.67	-46.04	65.00	-0.40	82.59	70.83	11.76	7.021	
3,100.00	3,098.01	3,119.01	3,119.01	5.33	6.90	-46.45	65.00	-0.40	81.22	69.03	12.19	6.660	
3,200.00	3,198.00	3,219.00	3,219.00	5.53	7.12	-46.78	65.00	-0.40	79.72	67.10	12.62	6.315	
3,300.00	3,297.99	3,318.99	3,318.99	5.74	7.35	-47.03	65.00	-0.40	78.03	64.98	13.05	5.978	
3,400.00	3,397.97	3,418.97	3,418.97	5.94	7.57	-47.34	65.00	-0.40	76.18	62.70	13.49	5.649	
3,500.00	3,497.95	3,518.95	3,518.95	6.15	7.80	-47.76	65.00	-0.40	74.35	60.43	13.92	5.342	
3,600.00	3,597.93	3,618.93	3,618.93	6.35	8.02	-48.10	65.00	-0.40	72.41	58.06	14.35	5.046	
3,700.00	3,697.91	3,718.91	3,718.91	6.55	8.25	-48.36	65.00	-0.40	70.46	55.68	14.78	4.767	
3,742.80	3,740.71	3,761.71	3,761.71	6.64	8.34	-48.36	65.00	-0.40	70.13	55.17	14.97	4.686	ES
3,800.00	3,797.91	3,818.91	3,818.91	6.76	8.47	-48.07	65.00	-0.40	70.78	55.57	15.21	4.654	
3,900.00	3,897.87	3,918.87	3,918.87	6.96	8.70	-47.49	65.00	-0.40	73.30	57.66	15.64	4.688	
4,000.00	3,997.83	4,018.83	4,018.83	7.17	8.92	-47.00	65.00	-0.40	76.01	59.94	16.07	4.729	
4,100.00	4,097.80	4,118.80	4,118.80	7.39	9.15	-46.59	65.00	-0.40	78.58	62.07	16.51	4.761	
4,200.00	4,197.77	4,218.77	4,218.77	7.60	9.37	-46.22	65.00	-0.40	80.92	63.98	16.94	4.777	
4,300.00	4,297.75	4,318.75	4,318.75	7.81	9.59	-46.01	65.00	-0.40	82.89	65.52	17.38	4.771	
4,400.00	4,397.73	4,418.73	4,418.73	8.02	9.82	-45.67	65.00	-0.40	84.84	67.03	17.81	4.764	
4,500.00	4,497.71	4,518.71	4,518.71	8.23	10.04	-45.45	65.00	-0.40	86.44	68.19	18.24	4.738	
4,600.00	4,597.71	4,618.71	4,618.71	8.44	10.27	-45.25	65.00	-0.40	87.69	69.02	18.68	4.695	
4,700.00	4,697.70	4,718.70	4,718.70	8.65	10.49	-45.08	65.00	-0.40	89.10	69.99	19.11	4.663	
4,800.00	4,797.69	4,818.69	4,818.69	8.85	10.72	-44.69	65.00	-0.40	89.73	70.19	19.54	4.592	
4,900.00	4,897.68	4,918.68	4,918.68	9.06	10.94	-43.94	65.00	-0.40	89.16	69.18	19.98	4.463	
5,000.00	4,997.67	5,018.67	5,018.67	9.27	11.17	-43.33	65.00	-0.40	88.43	68.02	20.41	4.333	
5,100.00	5,097.67	5,118.67	5,118.67	9.48	11.39	-42.99	65.00	-0.40	87.47	66.63	20.85	4.196	
5,200.00	5,197.66	5,218.66	5,218.66	9.69	11.62	-42.97	65.00	-0.40	86.09	64.80	21.28	4.045	
5,300.00	5,297.64	5,318.64	5,318.64	9.90	11.84	-43.49	65.00	-0.40	84.38	62.66	21.72	3.885	
5,339.44	5,337.06	5,358.06	5,358.06	9.99	11.93	-44.26	65.00	-0.40	84.26	62.36	21.89	3.849	SF
5,400.00	5,397.45	5,418.45	5,418.45	10.12	12.07	-46.52	65.00	-0.40	85.36	63.23	22.13	3.857	
5,500.00	5,494.38	5,515.38	5,515.38	10.38	12.28	-58.91	65.00	-0.40	98.46	76.21	22.25	4.425	

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design: Crow Federal - #12H - Wellbore #1 / Job #1210350 - Plan 1 4-25-2012													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Semi-Major Axis	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Warning
5,600.00	5,584.54	5,605.54	5,605.54	10.72	12.49	-73.17	65.00	-0.40	130.79	109.43	21.36	6.124	
5,700.00	5,664.03	5,685.03	5,685.03	11.23	12.67	-80.46	65.00	-0.40	187.67	168.54	19.14	9.807	
5,800.00	5,730.85	5,751.85	5,751.85	12.01	12.82	-82.07	65.00	-0.40	261.59	244.60	16.99	15.397	
5,900.00	5,780.76	5,801.76	5,801.76	13.18	12.93	-82.75	65.00	-0.40	347.85	333.36	14.49	24.000	
6,000.00	5,809.37	5,830.37	5,830.37	14.77	12.99	-83.70	65.00	-0.40	443.31	426.83	16.47	26.910	
6,100.00	5,822.23	6,634.57	6,273.97	16.67	19.32	-12.52	68.98	527.90	433.90	420.30	13.60	31.899	
6,120.72	5,822.92	6,655.29	6,274.49	17.11	19.72	-12.61	69.13	548.62	433.69	419.93	13.76	31.522	
6,200.00	5,823.81	6,734.55	6,276.51	18.79	21.30	-12.85	69.73	627.85	434.70	420.32	14.38	30.225	
6,300.00	5,826.03	6,834.55	6,279.05	21.06	23.43	-12.87	70.49	727.81	435.01	419.65	15.36	28.319	
6,400.00	5,828.28	6,934.54	6,281.59	23.42	25.68	-13.12	71.25	827.77	435.19	418.79	16.40	26.536	
6,500.00	5,829.96	7,034.53	6,284.13	25.86	28.03	-13.42	72.01	927.72	435.93	418.49	17.44	24.994	
6,600.00	5,830.14	7,134.48	6,286.67	28.36	30.44	-12.96	72.76	1,027.64	438.51	419.82	18.69	23.467	
6,700.00	5,830.06	7,234.43	6,289.21	30.90	32.90	-12.60	73.52	1,127.55	441.33	421.31	20.02	22.047	
6,800.00	5,829.89	7,334.38	6,291.75	33.48	35.41	-12.42	74.28	1,227.47	444.15	422.77	21.38	20.776	
6,900.00	5,829.82	7,434.35	6,294.29	36.08	37.95	-12.46	75.04	1,327.40	446.75	424.03	22.73	19.658	
7,000.00	5,829.64	7,534.31	6,296.83	38.70	40.52	-12.51	75.79	1,427.33	449.46	425.38	24.08	18.662	
7,100.00	5,830.06	7,634.27	6,299.37	41.34	43.11	-12.12	76.55	1,527.25	451.82	426.22	25.60	17.647	
7,200.00	5,830.53	7,734.22	6,301.91	44.00	45.72	-11.76	77.31	1,627.17	454.13	426.95	27.18	16.710	
7,300.00	5,831.49	7,834.19	6,304.45	46.67	48.35	-11.39	78.07	1,727.10	455.98	427.17	28.80	15.830	
7,400.00	5,833.16	7,934.16	6,306.99	49.35	50.99	-11.01	78.82	1,827.03	457.15	426.64	30.50	14.987	
7,500.00	5,835.50	8,034.13	6,309.53	52.04	53.64	-10.64	79.58	1,926.97	457.67	425.42	32.24	14.195	
7,600.00	5,838.29	8,134.10	6,312.06	54.74	56.30	-10.28	80.34	2,026.91	457.76	423.73	34.03	13.453	
7,685.48	5,840.61	8,219.57	6,314.24	57.04	58.58	-10.13	80.99	2,112.35	457.75	422.29	35.46	12.909	
7,700.00	5,841.15	8,234.08	6,314.61	57.44	58.97	-10.05	81.10	2,126.85	457.66	421.91	35.75	12.803	
7,800.00	5,843.40	8,334.07	6,317.15	60.13	61.64	-10.27	81.85	2,226.81	457.72	420.58	37.14	12.324	
7,900.00	5,846.01	8,434.04	6,319.68	62.83	64.33	-10.66	82.61	2,326.74	457.29	418.88	38.41	11.904	
7,914.31	5,846.34	8,448.34	6,320.05	63.22	64.71	-10.73	82.72	2,341.03	457.26	418.68	38.58	11.851	
8,000.00	5,846.80	8,533.98	6,322.22	65.54	67.02	-11.14	83.37	2,426.65	458.65	419.05	39.60	11.582	
8,100.00	5,846.60	8,633.91	6,324.76	68.24	69.71	-11.62	84.13	2,526.55	461.07	420.25	40.82	11.294	
8,200.00	5,846.65	8,733.88	6,327.30	70.96	72.41	-11.73	84.88	2,626.48	463.50	421.22	42.29	10.961	
8,300.00	5,847.14	8,833.86	6,329.84	73.68	75.11	-11.88	85.64	2,726.42	465.47	421.73	43.75	10.640	
8,400.00	5,848.24	8,933.85	6,332.38	76.40	77.82	-11.90	86.40	2,826.37	466.92	421.61	45.31	10.306	
8,500.00	5,850.33	9,033.84	6,334.92	79.13	80.53	-11.78	87.16	2,926.33	467.45	420.50	46.95	9.957	
8,600.00	5,852.54	9,133.84	6,337.46	81.86	83.24	-11.83	87.91	3,026.30	467.75	419.27	48.47	9.649	
8,700.00	5,854.83	9,233.84	6,340.00	84.58	85.95	-11.91	88.67	3,126.26	467.94	417.96	49.98	9.363	
8,800.00	5,857.43	9,333.84	6,342.54	87.31	88.67	-12.09	89.43	3,226.22	467.77	416.36	51.41	9.098	
8,900.00	5,860.30	9,433.84	6,345.09	90.04	91.39	-12.18	90.19	3,326.19	467.39	414.47	52.92	8.833	
8,947.32	5,861.57	9,481.16	6,346.29	91.34	92.68	-12.20	90.55	3,373.49	467.30	413.68	53.63	8.714	
9,000.00	5,862.78	9,533.83	6,347.63	92.78	94.11	-12.20	90.94	3,426.15	467.44	413.01	54.42	8.589	
9,100.00	5,864.27	9,633.83	6,350.17	95.51	96.84	-12.11	91.70	3,526.11	468.55	412.50	56.05	8.360	
9,200.00	5,865.86	9,733.82	6,352.71	98.25	99.56	-11.92	92.46	3,626.06	469.62	411.85	57.77	8.129	
9,300.00	5,868.00	9,833.81	6,355.25	100.99	102.29	-11.72	93.22	3,726.02	470.16	410.62	59.54	7.897	
9,400.00	5,870.55	9,933.80	6,357.79	103.73	105.02	-11.54	93.98	3,825.98	470.28	408.99	61.29	7.672	
9,500.00	5,873.09	10,033.80	6,360.33	106.47	107.75	-11.43	94.73	3,925.94	470.36	407.36	63.00	7.466	
9,600.00	5,875.95	10,133.80	6,362.87	109.21	110.48	-11.30	95.49	4,025.90	470.14	405.41	64.73	7.263	
9,609.04	5,876.20	10,142.84	6,363.10	109.45	110.72	-11.28	95.56	4,034.94	470.13	405.24	64.88	7.246	
9,700.00	5,877.16	10,233.78	6,365.41	111.95	113.21	-11.15	96.25	4,125.85	471.59	405.21	66.38	7.105	
9,800.00	5,877.05	10,333.74	6,367.95	114.69	115.94	-11.09	97.01	4,225.77	474.32	406.24	68.08	6.967	
9,900.00	5,877.22	10,433.71	6,370.49	117.43	118.67	-11.07	97.76	4,325.71	476.73	407.01	69.72	6.838	
10,000.00	5,877.76	10,533.69	6,373.03	120.17	121.41	-11.01	98.52	4,425.65	478.80	407.39	71.40	6.706	
10,100.00	5,878.66	10,633.67	6,375.57	122.92	124.14	-10.90	99.28	4,525.60	480.55	407.39	73.16	6.568	
10,200.00	5,879.76	10,733.66	6,378.11	125.66	126.88	-10.79	100.04	4,625.55	482.09	407.16	74.94	6.433	

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design	Crow Federal - #12H - Wellbore #1 / Job #1210350 - 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Azimuth from North	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)		
10,262.00	5,880.52	10,795.65	6,379.68	127.36	128.57	-10.72	100.51	4,687.52	482.98	406.94	76.04	6.352	



Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal - #13H - OH / Job #1310316 - Surveys (Capstar 114)													Offset Site Error:	0.00 usft
Survey Program: 613-MWD													Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Semi-Major Axis	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
600.00	599.99	599.39	599.38	0.00	0.66	178.39		-92.03	0.75	89.77	89.11	0.66	135.402	
700.00	699.99	699.21	699.20	0.20	0.86	178.52		-92.83	-0.04	89.74	88.69	1.05	85.493	
710.48	710.46	709.66	709.64	0.22	0.88	178.68		-92.93	-0.32	89.74	88.64	1.09	82.004 CC	
800.00	799.98	798.54	798.38	0.41	1.08	-178.10		-94.04	-5.15	90.07	88.59	1.48	60.923 ES	
900.00	899.95	897.79	897.20	0.64	1.30	-171.23		-95.67	-14.09	92.12	90.20	1.92	47.996	
1,000.00	999.88	999.75	998.86	0.86	1.52	-164.28		-96.30	-21.97	94.63	92.26	2.37	39.972	
1,100.00	1,099.76	1,098.18	1,097.03	1.10	1.74	-157.43		-95.87	-28.91	97.92	95.10	2.82	34.708	
1,200.00	1,199.55	1,195.09	1,193.59	1.33	1.98	-150.07		-96.16	-37.19	104.99	101.71	3.29	31.950	
1,300.00	1,299.28	1,294.03	1,292.05	1.58	2.23	-142.91		-97.10	-46.90	115.17	111.42	3.75	30.683	
1,400.00	1,398.96	1,395.20	1,392.89	1.84	2.47	-137.09		-97.74	-55.01	125.65	121.44	4.20	29.890	
1,500.00	1,498.60	1,497.09	1,494.64	2.09	2.70	-132.89		-98.29	-60.01	134.96	130.32	4.64	29.088	
1,600.00	1,598.39	1,599.42	1,596.94	2.30	2.92	-130.09		-98.31	-62.81	141.14	136.09	5.04	27.990	
1,700.00	1,698.33	1,701.47	1,698.99	2.49	3.12	-128.80		-98.21	-63.06	143.02	137.58	5.44	26.310	
1,800.00	1,798.31	1,803.01	1,800.52	2.69	3.32	-128.19		-97.83	-62.08	142.01	136.17	5.84	24.306	
1,892.80	1,891.09	1,896.57	1,894.05	2.89	3.50	-127.96		-97.52	-60.12	141.25	135.02	6.23	22.667	
1,900.00	1,898.29	1,903.76	1,901.25	2.90	3.51	-127.96		-97.51	-59.93	141.25	134.99	6.26	22.560	
2,000.00	1,998.26	2,003.29	2,000.75	3.11	3.70	-127.85		-96.92	-57.82	141.58	134.92	6.66	21.248	
2,100.00	2,098.22	2,101.87	2,099.32	3.31	3.89	-127.75		-96.64	-56.60	142.84	135.79	7.06	20.237	
2,200.00	2,198.20	2,201.24	2,198.69	3.51	4.08	-128.17		-96.74	-55.80	144.19	136.74	7.46	19.337	
2,300.00	2,298.18	2,301.29	2,298.74	3.71	4.28	-128.77		-96.77	-55.46	145.83	137.97	7.86	18.553	
2,400.00	2,398.15	2,400.94	2,398.38	3.91	4.48	-129.24		-96.37	-55.34	147.45	139.18	8.27	17.838	
2,500.00	2,498.12	2,500.98	2,498.43	4.12	4.69	-129.63		-95.82	-55.59	149.27	140.59	8.67	17.208	
2,600.00	2,598.08	2,601.73	2,599.16	4.32	4.89	-129.85		-94.54	-55.91	150.64	141.55	9.09	16.579	
2,700.00	2,698.04	2,700.91	2,698.32	4.52	5.10	-129.72		-92.55	-56.99	152.16	142.66	9.50	16.020	
2,800.00	2,798.04	2,800.68	2,798.07	4.72	5.31	-129.33		-91.06	-58.20	152.81	142.90	9.91	15.420	
2,900.00	2,898.03	2,900.63	2,898.01	4.92	5.52	-129.16		-90.04	-58.97	152.91	142.58	10.32	14.814	
3,000.00	2,998.03	2,999.37	2,996.74	5.13	5.72	-129.02		-89.01	-60.25	153.56	142.83	10.74	14.302	
3,100.00	3,098.01	3,098.85	3,096.18	5.33	5.94	-128.70		-87.88	-62.50	155.01	143.85	11.16	13.895	
3,200.00	3,198.00	3,198.70	3,196.01	5.53	6.15	-128.51		-87.03	-64.75	156.49	144.92	11.57	13.524	
3,300.00	3,297.99	3,299.11	3,296.41	5.74	6.37	-128.85		-87.20	-66.22	157.85	145.86	11.99	13.165	
3,400.00	3,397.97	3,399.79	3,397.09	5.94	6.58	-129.75		-88.07	-66.36	158.65	146.24	12.41	12.783	
3,500.00	3,497.95	3,500.34	3,497.62	6.15	6.78	-130.77		-89.09	-66.09	159.43	146.60	12.83	12.429	
3,600.00	3,597.93	3,602.37	3,599.65	6.35	6.99	-131.76		-89.50	-65.40	159.39	146.15	13.24	12.036	
3,700.00	3,697.91	3,703.49	3,700.74	6.55	7.19	-133.14		-89.70	-62.86	157.79	144.14	13.66	11.555	
3,800.00	3,797.91	3,802.87	3,800.09	6.76	7.39	-133.71		-89.98	-60.38	155.84	141.77	14.07	11.079	
3,900.00	3,897.87	3,903.20	3,900.39	6.96	7.60	-133.48		-90.35	-57.97	153.81	139.33	14.48	10.622	
4,000.00	3,997.83	4,003.22	4,000.38	7.17	7.80	-133.12		-90.55	-55.57	151.76	136.86	14.90	10.187	
4,100.00	4,097.80	4,103.49	4,100.61	7.39	8.00	-132.74		-90.43	-53.07	149.48	134.17	15.31	9.762	
4,200.00	4,197.77	4,202.89	4,200.00	7.60	8.20	-132.36		-90.34	-50.93	147.47	131.74	15.73	9.377	
4,300.00	4,297.75	4,302.25	4,299.34	7.81	8.40	-132.06		-90.34	-49.11	145.96	129.81	16.15	9.039	
4,400.00	4,397.73	4,402.53	4,399.61	8.02	8.61	-131.70		-90.41	-47.58	144.50	127.93	16.57	8.723	
4,500.00	4,497.71	4,502.28	4,499.35	8.23	8.81	-131.36		-90.14	-46.13	143.02	126.04	16.98	8.421	
4,600.00	4,597.71	4,600.83	4,597.89	8.44	9.02	-130.89		-89.85	-45.64	142.23	124.83	17.40	8.174	
4,698.00	4,695.69	4,698.59	4,695.66	8.64	9.23	-130.32		-89.80	-45.62	142.06	124.25	17.81	7.977	
4,700.00	4,697.70	4,700.58	4,697.64	8.65	9.23	-130.31		-89.80	-45.62	142.03	124.21	17.82	7.972	
4,800.00	4,797.69	4,800.04	4,797.10	8.85	9.44	-130.05		-90.01	-45.83	141.77	123.54	18.23	7.776	
4,816.67	4,814.36	4,816.90	4,813.96	8.89	9.47	-130.04		-89.97	-45.94	141.62	123.32	18.30	7.738 SF	
4,900.00	4,897.68	4,876.06	4,872.69	9.06	9.61	-128.67		-90.05	-52.07	147.55	128.94	18.61	7.929	
5,000.00	4,997.67	4,946.00	4,938.69	9.27	9.79	-123.89		-90.04	-74.78	173.05	154.06	18.99	9.112	
5,100.00	5,097.67	5,011.00	4,995.46	9.48	10.02	-118.94		-90.54	-106.34	215.05	195.68	19.37	11.105	
5,200.00	5,197.66	5,064.37	5,038.74	9.69	10.26	-115.60		-91.79	-137.50	269.04	249.33	19.71	13.651	
5,300.00	5,297.64	5,107.00	5,070.91	9.90	10.50	-113.43		-92.87	-165.41	332.44	312.42	20.02	16.608	

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design: Crow Federal - #13H - OH / Job #1310316 - Surveys (Capstar 114)													Offset Site Error: 0.00 usft	
Survey Program: 613-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi-Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance			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)	Minimum Separation (usft)		Separation Factor	
5,400.00	5,397.45	5,139.00	5,092.83	10.12	10.73	-111.72	-93.44	-188.71	406.64	386.45	20.18	20.147		
5,500.00	5,494.38	5,159.27	5,105.46	10.38	10.90	-110.49	-93.63	-204.55	496.07	476.48	19.60	25.315		
5,600.00	5,584.54	5,171.00	5,112.28	10.72	11.00	-109.62	-93.67	-214.10	593.68	573.98	19.70	30.135		
5,700.00	5,664.03	5,171.00	5,112.28	11.23	11.00	-107.74	-93.67	-214.10	692.62	671.78	20.84	33.228		
5,800.00	5,730.85	5,159.49	5,105.59	12.01	10.90	-104.81	-93.63	-204.73	787.85	769.58	18.26	43.137		
5,900.00	5,780.76	5,139.00	5,092.83	13.18	10.73	-102.12	-93.44	-188.71	877.99	863.62	14.37	61.101		
6,000.00	5,809.37	5,139.00	5,092.83	14.77	10.73	-99.90	-93.44	-188.71	959.71	947.56	12.15	78.961		
6,100.00	5,822.23	5,107.00	5,070.91	16.67	10.50	-98.94	-92.87	-165.41	1,036.00	1,024.88	11.12	93.164		
6,200.00	5,823.81	5,107.00	5,070.91	18.79	10.50	-97.98	-92.87	-165.41	1,107.70	1,096.00	11.69	94.723		
6,300.00	5,826.03	5,075.00	5,047.01	21.06	10.32	-97.28	-92.08	-144.17	1,183.18	1,171.05	12.13	97.541		
6,400.00	5,828.28	5,075.00	5,047.01	23.42	10.32	-96.65	-92.08	-144.17	1,261.11	1,248.58	12.53	100.632		
6,500.00	5,829.96	5,043.00	5,021.83	25.86	10.16	-96.20	-91.19	-124.45	1,340.73	1,327.33	13.40	100.077		
6,600.00	5,830.14	5,043.00	5,021.83	28.36	10.16	-95.61	-91.19	-124.45	1,421.34	1,407.13	14.21	100.007		
6,700.00	5,830.06	5,011.00	4,995.46	30.90	10.02	-95.16	-90.54	-106.34	1,503.42	1,488.78	14.64	102.716		
6,800.00	5,829.89	5,011.00	4,995.46	33.48	10.02	-94.76	-90.54	-106.34	1,587.13	1,571.97	15.16	104.670		
6,900.00	5,829.82	4,991.96	4,979.20	36.08	9.95	-94.48	-90.32	-96.43	1,672.39	1,656.78	15.61	107.153		
7,000.00	5,829.64	4,979.00	4,967.99	38.70	9.90	-94.23	-90.18	-89.93	1,758.72	1,742.04	16.67	105.489		
7,100.00	5,830.06	4,979.00	4,967.99	41.34	9.90	-93.92	-90.18	-89.93	1,846.42	1,828.65	17.77	103.899		
7,200.00	5,830.53	4,960.35	4,951.58	44.00	9.84	-93.67	-90.05	-81.09	1,934.84	1,916.43	18.40	105.139		
7,300.00	5,831.49	4,946.00	4,938.69	46.67	9.79	-93.44	-90.04	-74.78	2,024.56	2,005.24	19.32	104.792		
7,400.00	5,833.16	4,946.00	4,938.69	49.35	9.79	-93.21	-90.04	-74.78	2,115.22	2,095.04	20.18	104.801		
7,500.00	5,835.50	4,946.00	4,938.69	52.04	9.79	-93.01	-90.04	-74.78	2,206.95	2,185.91	21.04	104.898		
7,600.00	5,838.29	4,946.00	4,938.69	54.74	9.79	-92.82	-90.04	-74.78	2,299.53	2,277.57	21.96	104.709		
7,700.00	5,841.15	4,930.54	4,924.55	57.44	9.75	-92.68	-90.07	-68.53	2,392.38	2,371.49	20.89	114.518		
7,800.00	5,843.40	4,915.00	4,910.07	60.13	9.70	-92.63	-90.12	-62.89	2,485.99	2,464.89	21.10	117.804		
7,900.00	5,846.01	4,915.00	4,910.07	62.83	9.70	-92.60	-90.12	-62.89	2,579.86	2,558.31	21.55	119.726		
8,000.00	5,846.80	4,915.00	4,910.07	65.54	9.70	-92.57	-90.12	-62.89	2,673.55	2,651.26	22.29	119.926		
8,100.00	5,846.60	4,915.00	4,910.07	68.24	9.70	-92.54	-90.12	-62.89	2,767.36	2,744.02	23.34	118.584		
8,200.00	5,846.65	4,915.00	4,910.07	70.96	9.70	-92.47	-90.12	-62.89	2,861.62	2,836.94	24.68	115.957		
8,300.00	5,847.14	4,915.00	4,910.07	73.68	9.70	-92.41	-90.12	-62.89	2,956.41	2,931.12	25.29	116.900		
8,400.00	5,848.24	4,915.00	4,910.07	76.40	9.70	-92.34	-90.12	-62.89	3,051.69	3,024.09	27.59	110.591		
8,500.00	5,850.33	4,915.00	4,910.07	79.13	9.70	-92.26	-90.12	-62.89	3,147.52	3,120.02	27.50	114.451		
8,600.00	5,852.54	4,915.00	4,910.07	81.86	9.70	-92.21	-90.12	-62.89	3,243.67	3,215.96	27.71	117.064		
8,700.00	5,854.83	4,898.38	4,894.29	84.58	9.66	-92.16	-90.14	-57.66	3,339.56	3,311.36	28.19	118.446		
8,800.00	5,857.43	4,883.00	4,879.46	87.31	9.62	-92.13	-90.09	-53.62	3,436.45	3,407.58	28.87	119.024		
8,900.00	5,860.30	4,883.00	4,879.46	90.04	9.62	-92.09	-90.09	-53.62	3,533.16	3,503.08	30.08	117.461		
9,000.00	5,862.78	4,883.00	4,879.46	92.78	9.62	-92.04	-90.09	-53.62	3,629.93	3,598.67	31.27	116.096		
9,100.00	5,864.27	4,883.00	4,879.46	95.51	9.62	-91.99	-90.09	-53.62	3,726.62	3,693.46	33.16	112.384		
9,200.00	5,865.86	4,883.00	4,879.46	98.25	9.62	-91.93	-90.09	-53.62	3,823.49	3,789.20	34.29	111.505		
9,300.00	5,868.00	4,883.00	4,879.46	100.99	9.62	-91.87	-90.09	-53.62	3,920.64	3,885.33	35.31	111.033		
9,400.00	5,870.55	4,883.00	4,879.46	103.73	9.62	-91.82	-90.09	-53.62	4,018.03	3,982.52	35.50	113.169		
9,500.00	5,873.09	4,883.00	4,879.46	106.47	9.62	-91.78	-90.09	-53.62	4,115.55	4,079.58	35.97	114.417		
9,600.00	5,875.95	4,883.00	4,879.46	109.21	9.62	-91.74	-90.09	-53.62	4,213.25	4,175.67	37.58	112.118		
9,700.00	5,877.16	4,883.00	4,879.46	111.95	9.62	-91.69	-90.09	-53.62	4,310.69	4,273.09	37.60	114.634		
9,800.00	5,877.05	4,883.00	4,879.46	114.69	9.62	-91.65	-90.09	-53.62	4,407.97	4,370.46	37.52	117.494		
9,900.00	5,877.22	4,883.00	4,879.46	117.43	9.62	-91.62	-90.09	-53.62	4,505.44	4,467.16	38.28	117.685		
10,000.00	5,877.76	4,883.00	4,879.46	120.17	9.62	-91.58	-90.09	-53.62	4,603.09	4,563.24	39.85	115.504		
10,100.00	5,878.66	4,883.00	4,879.46	122.92	9.62	-91.55	-90.09	-53.62	4,700.91	4,659.85	41.06	114.487		
10,200.00	5,879.76	4,883.00	4,879.46	125.66	9.62	-91.51	-90.09	-53.62	4,798.86	4,756.91	41.94	114.409		
10,262.00	5,880.52	4,883.00	4,879.46	127.36	9.62	-91.49	-90.09	-53.62	4,859.64	4,817.19	42.45	114.471		

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal - #14H - OH/Job #1310557 - Surveys (Capstar 114)													Offset Site Error: 0.00 usft	
Survey Program: 601-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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
600.00	599.99	599.71	599.69	0.00	0.67	178.52	-28.45	-1.10	26.16	25.50	0.66	39.401	CC	
700.00	699.99	699.76	699.74	0.20	0.87	178.34	-29.55	-1.59	26.44	25.38	1.06	24.894		
791.43	791.41	791.21	791.18	0.39	1.05	179.86	-30.28	-2.09	26.35	24.91	1.44	18.301		
800.00	799.98	799.77	799.74	0.41	1.07	179.92	-30.36	-2.13	26.32	24.85	1.48	17.839	ES	
900.00	899.95	899.69	899.66	0.64	1.28	-174.51	-31.43	-2.62	26.88	24.97	1.90	14.116		
1,000.00	999.88	999.60	999.56	0.86	1.49	-164.82	-32.34	-3.68	28.10	25.76	2.34	11.990		
1,100.00	1,099.76	1,099.64	1,099.57	1.10	1.70	-151.64	-32.43	-5.89	30.62	27.84	2.79	10.985		
1,200.00	1,199.55	1,199.29	1,199.18	1.33	1.91	-137.91	-31.52	-8.55	35.31	32.08	3.23	10.934		
1,300.00	1,299.28	1,298.88	1,298.73	1.58	2.12	-126.36	-30.26	-11.33	41.92	38.25	3.67	11.424		
1,400.00	1,398.96	1,398.79	1,398.60	1.84	2.32	-117.74	-28.91	-13.50	49.63	45.53	4.10	12.108		
1,500.00	1,498.60	1,498.62	1,498.42	2.09	2.52	-111.79	-27.76	-14.41	57.34	52.82	4.52	12.686		
1,600.00	1,598.39	1,598.46	1,598.25	2.30	2.73	-107.78	-26.75	-15.11	63.29	58.37	4.92	12.871		
1,700.00	1,698.33	1,698.47	1,698.25	2.49	2.93	-105.11	-25.86	-15.55	66.24	60.93	5.31	12.483		
1,800.00	1,798.31	1,798.58	1,798.36	2.69	3.14	-103.07	-25.20	-15.74	67.01	61.30	5.71	11.730		
1,900.00	1,898.29	1,898.74	1,898.53	2.90	3.35	-101.67	-24.50	-15.67	68.50	62.36	6.13	11.167		
2,000.00	1,998.26	1,998.82	1,998.60	3.11	3.56	-101.12	-23.69	-15.39	70.67	64.13	6.55	10.796		
2,100.00	2,098.22	2,098.76	2,098.53	3.31	3.77	-100.71	-22.70	-15.10	72.70	65.75	6.95	10.455		
2,200.00	2,198.20	2,198.88	2,198.64	3.51	3.98	-100.90	-21.57	-14.83	73.73	66.36	7.36	10.015		
2,300.00	2,298.18	2,298.67	2,298.43	3.71	4.19	-101.39	-20.13	-14.63	74.34	66.57	7.77	9.562		
2,400.00	2,398.15	2,399.66	2,399.40	3.91	4.40	-101.89	-18.42	-13.93	74.40	66.21	8.19	9.081		
2,500.00	2,498.12	2,500.23	2,499.93	4.12	4.61	-102.26	-16.16	-12.16	73.21	64.60	8.61	8.502		
2,600.00	2,598.08	2,600.13	2,599.78	4.32	4.82	-102.77	-13.85	-10.14	71.66	62.63	9.03	7.938		
2,700.00	2,698.04	2,699.22	2,698.85	4.52	5.02	-103.98	-12.40	-8.51	70.66	61.22	9.44	7.484		
2,800.00	2,798.04	2,799.00	2,798.62	4.72	5.23	-104.87	-12.20	-7.74	70.09	60.24	9.85	7.114		
2,900.00	2,898.03	2,899.02	2,898.64	4.92	5.44	-105.52	-11.95	-6.92	69.03	58.76	10.27	6.724		
3,000.00	2,998.03	2,999.14	2,998.75	5.13	5.65	-106.47	-11.56	-6.03	67.87	57.18	10.69	6.352		
3,100.00	3,098.01	3,099.29	3,098.90	5.33	5.86	-108.03	-11.54	-4.75	66.49	55.38	11.10	5.987		
3,200.00	3,198.00	3,199.35	3,198.93	5.53	6.07	-110.52	-12.31	-3.03	64.84	53.32	11.52	5.629		
3,300.00	3,297.99	3,299.26	3,298.82	5.74	6.28	-113.66	-13.47	-1.02	63.02	51.09	11.94	5.280		
3,400.00	3,397.97	3,399.14	3,398.67	5.94	6.49	-116.94	-14.48	0.82	61.48	49.12	12.36	4.975		
3,500.00	3,497.95	3,498.98	3,498.49	6.15	6.69	-120.46	-15.61	2.57	60.42	47.65	12.77	4.730		
3,600.00	3,597.93	3,598.93	3,598.43	6.35	6.90	-123.89	-16.48	4.17	59.42	46.23	13.19	4.505		
3,679.18	3,677.10	3,677.54	3,677.03	6.51	7.06	-126.30	-17.04	5.18	58.80	45.29	13.52	4.351		
3,700.00	3,697.91	3,697.76	3,697.25	6.55	7.11	-127.03	-17.30	5.22	58.93	45.33	13.60	4.333		
3,800.00	3,797.91	3,796.11	3,795.54	6.76	7.31	-127.63	-19.91	3.47	61.65	47.64	14.01	4.400		
3,900.00	3,897.87	3,897.03	3,896.40	6.96	7.52	-126.01	-22.64	1.19	64.84	50.41	14.43	4.493		
4,000.00	3,997.83	3,997.25	3,996.58	7.17	7.73	-122.19	-22.35	-1.22	66.67	51.81	14.85	4.489		
4,100.00	4,097.80	4,096.97	4,096.27	7.39	7.94	-118.72	-22.10	-3.73	68.90	53.63	15.27	4.512		
4,200.00	4,197.77	4,197.11	4,196.38	7.60	8.15	-115.81	-22.09	-6.29	71.45	55.76	15.69	4.554		
4,300.00	4,297.75	4,297.83	4,297.09	7.81	8.36	-114.15	-22.44	-7.37	73.01	56.90	16.11	4.531		
4,400.00	4,397.73	4,397.45	4,396.71	8.02	8.57	-112.87	-23.21	-8.30	74.44	57.91	16.53	4.503		
4,500.00	4,497.71	4,498.87	4,498.12	8.23	8.79	-112.02	-23.97	-8.86	75.58	58.63	16.96	4.458		
4,600.00	4,597.71	4,599.29	4,598.53	8.44	8.99	-111.46	-24.09	-7.69	74.76	57.38	17.38	4.303		
4,700.00	4,697.70	4,699.49	4,698.72	8.65	9.20	-110.54	-23.82	-6.43	73.82	56.03	17.79	4.149		
4,800.00	4,797.69	4,799.41	4,798.64	8.85	9.41	-109.98	-23.45	-5.10	72.16	53.95	18.21	3.963		
4,900.00	4,897.68	4,899.22	4,898.43	9.06	9.62	-110.29	-23.36	-3.87	69.67	51.04	18.63	3.740		
5,000.00	4,997.67	4,999.04	4,998.25	9.27	9.83	-110.84	-23.35	-2.84	67.54	48.49	19.05	3.545		
5,100.00	5,097.67	5,098.92	5,098.13	9.48	10.04	-111.73	-23.40	-2.01	65.94	46.47	19.47	3.386		
5,177.65	5,175.31	5,175.86	5,175.07	9.64	10.20	-112.76	-23.43	-1.51	65.13	45.33	19.80	3.289		
5,200.00	5,197.66	5,198.00	5,197.21	9.69	10.25	-113.04	-23.50	-1.69	65.16	45.27	19.89	3.276	SF	
5,300.00	5,297.64	5,288.43	5,287.28	9.90	10.44	-112.35	-23.55	-8.79	72.60	52.30	20.30	3.577		
5,400.00	5,397.45	5,375.09	5,371.77	10.12	10.63	-108.16	-23.02	-27.75	97.41	76.83	20.58	4.732		

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal - #14H - OH/Job #1310557 - Surveys (Capstar 114)														Offset Site Error:	0.00 usft
Survey Program: 601-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	Offset	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
5,500.00	5,494.38	5,443.40	5,435.93	10.38	10.80	-104.60	-20.97	-50.97	151.15	130.98	20.17	7.494			
5,600.00	5,584.54	5,487.42	5,475.24	10.72	10.92	-103.49	-19.76	-70.70	228.82	209.65	19.16	11.940			
5,700.00	5,664.03	5,511.06	5,495.50	11.23	11.00	-101.23	-19.21	-82.87	320.63	301.66	18.98	16.897			
5,800.00	5,730.85	5,520.07	5,503.06	12.01	11.04	-97.88	-19.07	-87.76	417.39	394.77	22.61	18.458			
5,900.00	5,780.76	5,517.24	5,500.70	13.18	11.03	-95.33	-19.11	-86.21	515.48	497.36	18.12	28.449			
6,000.00	5,809.37	5,497.00	5,483.52	14.77	10.95	-93.98	-19.52	-75.51	611.10	598.36	12.74	47.966			
6,100.00	5,822.23	5,497.00	5,483.52	16.67	10.95	-93.48	-19.52	-75.51	702.88	691.43	11.45	61.375			
6,200.00	5,823.81	5,471.23	5,461.01	18.79	10.88	-93.27	-20.19	-62.99	791.39	779.41	11.98	66.036			
6,300.00	5,826.03	5,454.00	5,445.57	21.06	10.82	-92.99	-20.66	-55.36	881.90	869.50	12.41	71.090			
6,400.00	5,828.28	5,454.00	5,445.57	23.42	10.82	-92.76	-20.66	-55.36	973.88	961.14	12.74	76.430			
6,500.00	5,829.96	5,431.89	5,425.35	25.86	10.77	-92.65	-21.31	-46.46	1,066.35	1,052.63	13.72	77.711			
6,600.00	5,830.14	5,412.00	5,406.81	28.36	10.72	-92.39	-21.94	-39.28	1,159.35	1,144.80	14.55	79.680			
6,700.00	5,830.06	5,412.00	5,406.81	30.90	10.72	-92.13	-21.94	-39.28	1,252.83	1,237.89	14.94	83.831			
6,800.00	5,829.89	5,412.00	5,406.81	33.48	10.72	-91.95	-21.94	-39.28	1,347.25	1,331.90	15.35	87.759			
6,900.00	5,829.82	5,390.78	5,386.75	36.08	10.67	-91.87	-22.59	-32.40	1,441.96	1,426.27	15.69	91.887			
7,000.00	5,829.64	5,369.00	5,365.92	38.70	10.62	-91.80	-23.17	-26.05	1,537.45	1,520.60	16.84	91.292			
7,100.00	5,830.06	5,369.00	5,365.92	41.34	10.62	-91.64	-23.17	-26.05	1,633.09	1,614.96	18.13	90.061			
7,200.00	5,830.53	5,369.00	5,365.92	44.00	10.62	-91.49	-23.17	-26.05	1,729.25	1,710.48	18.77	92.120			
7,300.00	5,831.49	5,369.00	5,365.92	46.67	10.62	-91.36	-23.17	-26.05	1,825.94	1,806.04	19.89	91.789			
7,400.00	5,833.16	5,369.00	5,365.92	49.35	10.62	-91.24	-23.17	-26.05	1,923.12	1,902.30	20.82	92.384			
7,500.00	5,835.50	5,347.43	5,345.09	52.04	10.57	-91.15	-23.55	-20.47	2,020.26	1,998.74	21.52	93.889			
7,600.00	5,838.29	5,326.00	5,324.22	54.74	10.53	-91.05	-23.68	-15.60	2,118.19	2,095.89	22.30	94.977			
7,700.00	5,841.15	5,326.00	5,324.22	57.44	10.53	-90.98	-23.68	-15.60	2,215.92	2,195.20	20.72	106.940			
7,800.00	5,843.40	5,326.00	5,324.22	60.13	10.53	-91.00	-23.68	-15.60	2,313.76	2,292.17	21.59	107.190			
7,900.00	5,846.01	5,326.00	5,324.22	62.83	10.53	-91.04	-23.68	-15.60	2,411.83	2,388.38	23.45	102.840			
8,000.00	5,846.80	5,326.00	5,324.22	65.54	10.53	-91.08	-23.68	-15.60	2,509.70	2,486.53	23.17	108.301			
8,100.00	5,846.60	5,326.00	5,324.22	68.24	10.53	-91.10	-23.68	-15.60	2,607.54	2,584.11	23.43	111.288			
8,200.00	5,846.65	5,326.00	5,324.22	70.96	10.53	-91.08	-23.68	-15.60	2,705.60	2,681.25	24.35	111.124			
8,300.00	5,847.14	5,326.00	5,324.22	73.68	10.53	-91.07	-23.68	-15.60	2,803.87	2,778.91	24.96	112.356			
8,400.00	5,848.24	5,326.00	5,324.22	76.40	10.53	-91.05	-23.68	-15.60	2,902.36	2,874.75	27.60	105.140			
8,500.00	5,850.33	5,307.27	5,305.86	79.13	10.49	-91.01	-23.65	-11.92	3,000.75	2,973.80	26.96	111.314			
8,600.00	5,852.54	5,304.63	5,303.26	81.86	10.48	-91.00	-23.64	-11.45	3,099.50	3,072.36	27.14	114.203			
8,700.00	5,854.83	5,302.13	5,300.80	84.58	10.47	-90.99	-23.63	-11.01	3,198.33	3,170.60	27.73	115.346			
8,800.00	5,857.43	5,283.00	5,281.91	87.31	10.43	-90.99	-23.51	-7.99	3,297.53	3,269.13	28.41	116.085			
8,900.00	5,860.30	5,283.00	5,281.91	90.04	10.43	-90.98	-23.51	-7.99	3,396.49	3,367.11	29.38	115.602			
9,000.00	5,862.78	5,283.00	5,281.91	92.78	10.43	-90.96	-23.51	-7.99	3,495.45	3,464.82	30.63	114.113			
9,100.00	5,864.27	5,283.00	5,281.91	95.51	10.43	-90.94	-23.51	-7.99	3,594.31	3,561.38	32.93	109.145			
9,200.00	5,865.86	5,283.00	5,281.91	98.25	10.43	-90.91	-23.51	-7.99	3,693.25	3,659.02	34.23	107.909			
9,300.00	5,868.00	5,283.00	5,281.91	100.99	10.43	-90.88	-23.51	-7.99	3,792.31	3,756.98	35.33	107.329			
9,400.00	5,870.55	5,283.00	5,281.91	103.73	10.43	-90.85	-23.51	-7.99	3,891.48	3,856.37	35.11	110.844			
9,500.00	5,873.09	5,283.00	5,281.91	106.47	10.43	-90.83	-23.51	-7.99	3,990.69	3,955.34	35.35	112.890			
9,600.00	5,875.95	5,283.00	5,281.91	109.21	10.43	-90.81	-23.51	-7.99	4,089.98	4,052.58	37.40	109.372			
9,700.00	5,877.16	5,283.00	5,281.91	111.95	10.43	-90.79	-23.51	-7.99	4,189.09	4,151.90	37.19	112.635			
9,800.00	5,877.05	5,283.00	5,281.91	114.69	10.43	-90.77	-23.51	-7.99	4,288.07	4,251.32	36.75	116.672			
9,900.00	5,877.22	5,283.00	5,281.91	117.43	10.43	-90.76	-23.51	-7.99	4,387.15	4,349.68	37.46	117.101			
10,000.00	5,877.76	5,283.00	5,281.91	120.17	10.43	-90.74	-23.51	-7.99	4,486.30	4,447.08	39.22	114.381			
10,100.00	5,878.66	5,283.00	5,281.91	122.92	10.43	-90.72	-23.51	-7.99	4,585.54	4,544.96	40.58	113.011			
10,200.00	5,879.76	5,283.00	5,281.91	125.66	10.43	-90.71	-23.51	-7.99	4,684.83	4,643.37	41.46	112.992			
10,262.00	5,880.52	5,283.00	5,281.91	127.36	10.43	-90.70	-23.51	-7.99	4,746.42	4,704.46	41.96	113.121			

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design Crow Federal - #15H - OH / Job #1310461 - Plan #2 04-18-13													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	Offset	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
600.00	599.99	603.99	603.99	0.00	1.23	2.00	40.00	-0.30	42.32	41.09	1.23	34.387 CC, ES		
700.00	699.99	703.99	703.99	0.20	1.46	2.73	40.00	-0.30	43.17	41.52	1.65	26.169		
800.00	799.98	803.98	803.98	0.41	1.68	2.43	40.00	-0.30	44.07	41.98	2.09	21.077		
900.00	899.95	903.95	903.95	0.64	1.90	-0.32	40.00	-0.30	44.67	42.14	2.54	17.615		
1,000.00	999.88	1,003.88	1,003.88	0.86	2.13	-5.02	40.00	-0.30	45.39	42.40	2.99	15.196		
1,100.00	1,099.76	1,103.76	1,103.76	1.10	2.35	-11.13	40.00	-0.30	46.35	42.91	3.44	13.466		
1,200.00	1,199.55	1,203.55	1,203.55	1.33	2.58	-18.79	40.00	-0.30	47.87	43.97	3.90	12.272		
1,300.00	1,299.28	1,303.28	1,303.28	1.58	2.80	-26.58	40.00	-0.30	50.79	46.42	4.36	11.640		
1,400.00	1,398.96	1,402.96	1,402.96	1.84	3.03	-33.85	40.00	-0.30	55.16	50.34	4.82	11.436		
1,500.00	1,498.60	1,502.60	1,502.60	2.09	3.25	-40.09	40.00	-0.30	60.76	55.48	5.27	11.523		
1,600.00	1,598.39	1,602.39	1,602.39	2.30	3.47	-43.79	40.00	-0.30	65.69	60.00	5.70	11.535		
1,700.00	1,698.33	1,702.33	1,702.33	2.49	3.70	-45.06	40.00	-0.30	68.79	62.69	6.11	11.267		
1,800.00	1,798.31	1,802.31	1,802.31	2.69	3.92	-44.88	40.00	-0.30	70.62	64.09	6.53	10.818		
1,900.00	1,898.29	1,902.29	1,902.29	2.90	4.15	-45.60	40.00	-0.30	72.38	65.42	6.96	10.394		
2,000.00	1,998.26	2,002.26	2,002.26	3.11	4.37	-47.30	40.00	-0.30	73.82	66.42	7.39	9.985		
2,100.00	2,098.22	2,102.22	2,102.22	3.31	4.60	-49.03	40.00	-0.30	75.01	67.19	7.82	9.595		
2,200.00	2,198.20	2,202.20	2,202.20	3.51	4.82	-50.54	40.00	-0.30	74.94	66.70	8.24	9.094		
2,300.00	2,298.18	2,302.18	2,302.18	3.71	5.05	-52.18	40.00	-0.30	74.12	65.45	8.67	8.549		
2,400.00	2,398.15	2,402.15	2,402.15	3.91	5.27	-53.93	40.00	-0.30	73.20	64.10	9.10	8.044		
2,500.00	2,498.12	2,502.12	2,502.12	4.12	5.50	-55.76	40.00	-0.30	72.18	62.65	9.53	7.573		
2,600.00	2,598.08	2,602.08	2,602.08	4.32	5.72	-57.66	40.00	-0.30	71.06	61.09	9.96	7.132		
2,700.00	2,698.04	2,702.04	2,702.04	4.52	5.95	-59.66	40.00	-0.30	69.92	59.53	10.40	6.727		
2,800.00	2,798.04	2,802.04	2,802.04	4.72	6.17	-60.43	40.00	-0.30	69.33	58.50	10.82	6.405		
2,900.00	2,898.03	2,902.03	2,902.03	4.92	6.40	-60.79	40.00	-0.30	68.61	57.36	11.25	6.098		
3,000.00	2,998.03	3,002.03	3,002.03	5.13	6.62	-61.42	40.00	-0.30	67.58	55.90	11.68	5.784		
3,100.00	3,098.01	3,102.01	3,102.01	5.33	6.85	-62.21	40.00	-0.30	66.42	54.31	12.12	5.482		
3,200.00	3,198.00	3,202.00	3,202.00	5.53	7.07	-62.97	40.00	-0.30	65.11	52.56	12.55	5.189		
3,300.00	3,297.99	3,301.99	3,301.99	5.74	7.29	-63.69	40.00	-0.30	63.59	50.61	12.98	4.900		
3,400.00	3,397.97	3,401.97	3,401.97	5.94	7.52	-64.54	40.00	-0.30	61.94	48.53	13.41	4.618		
3,500.00	3,497.95	3,501.95	3,501.95	6.15	7.74	-65.56	40.00	-0.30	60.35	46.51	13.84	4.360		
3,600.00	3,597.93	3,601.93	3,601.93	6.35	7.97	-66.53	40.00	-0.30	58.64	44.37	14.27	4.109		
3,700.00	3,697.91	3,701.91	3,701.91	6.55	8.19	-67.46	40.00	-0.30	56.91	42.20	14.71	3.870		
3,746.16	3,744.07	3,748.07	3,748.07	6.65	8.30	-67.56	40.00	-0.30	56.59	41.69	14.91	3.797		
3,800.00	3,797.91	3,801.91	3,801.91	6.76	8.42	-67.01	40.00	-0.30	57.09	41.95	15.14	3.772		
3,900.00	3,897.87	3,901.87	3,901.87	6.96	8.64	-65.54	40.00	-0.30	59.25	43.68	15.57	3.806		
4,000.00	3,997.83	4,001.83	4,001.83	7.17	8.87	-64.19	40.00	-0.30	61.64	45.64	16.00	3.852		
4,100.00	4,097.80	4,101.80	4,101.80	7.39	9.09	-63.03	40.00	-0.30	63.94	47.50	16.44	3.890		
4,200.00	4,197.77	4,201.77	4,201.77	7.60	9.32	-62.02	40.00	-0.30	66.05	49.18	16.87	3.915		
4,300.00	4,297.75	4,301.75	4,301.75	7.81	9.54	-61.32	40.00	-0.30	67.87	50.56	17.31	3.921		
4,400.00	4,397.73	4,401.73	4,401.73	8.02	9.77	-60.50	40.00	-0.30	69.61	51.87	17.74	3.924		
4,500.00	4,497.71	4,501.71	4,501.71	8.23	9.99	-59.91	40.00	-0.30	71.08	52.91	18.18	3.911		
4,600.00	4,597.71	4,601.71	4,601.71	8.44	10.22	-59.43	40.00	-0.30	72.22	53.61	18.61	3.881		
4,700.00	4,697.70	4,701.70	4,701.70	8.65	10.44	-58.95	40.00	-0.30	73.52	54.48	19.04	3.861		
4,800.00	4,797.69	4,801.69	4,801.69	8.85	10.67	-58.38	40.00	-0.30	73.99	54.51	19.47	3.799		
4,900.00	4,897.68	4,901.68	4,901.68	9.06	10.89	-57.60	40.00	-0.30	73.16	53.25	19.91	3.675		
5,000.00	4,997.67	5,001.67	5,001.67	9.27	11.12	-57.01	40.00	-0.30	72.23	51.88	20.34	3.550		
5,100.00	5,097.67	5,101.67	5,101.67	9.48	11.34	-56.79	40.00	-0.30	71.17	50.39	20.78	3.425		
5,200.00	5,197.66	5,201.66	5,201.66	9.69	11.56	-57.03	40.00	-0.30	69.82	48.60	21.22	3.291		
5,300.00	5,297.64	5,301.64	5,301.64	9.90	11.79	-58.00	40.00	-0.30	68.35	46.70	21.65	3.157		
5,330.19	5,327.82	5,331.82	5,331.82	9.97	11.86	-58.63	40.00	-0.30	68.34	46.56	21.79	3.137 SF		
5,400.00	5,397.45	5,401.45	5,401.45	10.12	12.01	-61.38	40.00	-0.30	70.44	48.41	22.03	3.197		
5,500.00	5,494.38	5,498.38	5,498.38	10.38	12.23	-72.94	40.00	-0.30	88.09	66.16	21.93	4.017		

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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Offset Design: Crow Federal - #15H - OH / Job #1310461 - Plan #2 04-18-13										Offset Site Error: 0.00 usft		
Survey Program: 0-MWD										Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis		Azimuth from North (°)	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)				
5,600.00	5,584.54	5,588.54	5,588.54	10.72	12.43	-84.12	40.00	-0.30	125.75	104.92	20.83	6.038
5,700.00	5,664.03	5,668.03	5,668.03	11.23	12.61	-88.11	40.00	-0.30	185.08	166.29	18.79	9.849
5,800.00	5,730.85	5,725.00	5,725.00	12.01	12.74	-87.54	40.00	-0.36	259.47	242.52	16.95	15.310
5,900.00	5,780.76	5,750.00	5,749.96	13.18	12.79	-86.88	39.99	-1.63	348.55	334.37	14.18	24.578
6,000.00	5,809.37	5,762.18	5,762.08	14.77	12.81	-86.95	39.98	-2.83	446.65	430.69	15.96	27.991
6,100.00	5,822.23	5,762.75	5,762.65	16.67	12.82	-87.67	39.98	-2.90	546.30	525.08	21.22	25.742
6,200.00	5,823.81	5,759.01	5,758.93	18.79	12.81	-88.21	39.99	-2.48	645.68	628.35	17.33	37.267
6,300.00	5,826.03	5,750.00	5,749.96	21.06	12.79	-88.52	39.99	-1.63	745.36	727.51	17.85	41.754
6,400.00	5,828.28	5,750.00	5,749.96	23.42	12.79	-88.81	39.99	-1.63	844.96	823.24	21.72	38.907
6,500.00	5,829.96	5,750.00	5,749.96	25.86	12.79	-89.05	39.99	-1.63	944.59	929.70	14.89	63.429
6,600.00	5,830.14	5,750.00	5,749.96	28.36	12.79	-89.07	39.99	-1.63	1,044.25	1,030.07	14.18	73.662
6,700.00	5,830.06	5,750.00	5,749.96	30.90	12.79	-89.09	39.99	-1.63	1,143.94	1,128.36	15.58	73.413
6,800.00	5,829.89	5,750.00	5,749.96	33.48	12.79	-89.15	39.99	-1.63	1,243.67	1,225.48	18.20	68.349
6,900.00	5,829.82	5,750.00	5,749.96	36.08	12.79	-89.24	39.99	-1.63	1,343.44	1,321.06	22.37	60.043
7,000.00	5,829.64	5,750.00	5,749.96	38.70	12.79	-89.32	39.99	-1.63	1,443.23	1,425.36	17.86	80.798
7,100.00	5,830.06	5,750.00	5,749.96	41.34	12.79	-89.31	39.99	-1.63	1,543.09	1,525.72	17.37	88.831
7,200.00	5,830.53	5,750.00	5,749.96	44.00	12.79	-89.31	39.99	-1.63	1,642.97	1,625.11	17.86	91.975
7,300.00	5,831.49	5,739.26	5,739.25	46.67	12.77	-89.30	40.00	-0.88	1,742.71	1,723.61	19.09	91.268
7,400.00	5,833.16	5,738.60	5,738.59	49.35	12.77	-89.29	40.00	-0.85	1,842.63	1,822.53	20.10	91.659
7,500.00	5,835.50	5,738.10	5,738.09	52.04	12.77	-89.28	40.00	-0.82	1,942.59	1,921.37	21.22	91.536
7,600.00	5,838.29	5,737.72	5,737.71	54.74	12.77	-89.27	40.00	-0.80	2,042.56	2,018.75	23.82	85.764
7,700.00	5,841.15	5,737.38	5,737.37	57.44	12.76	-89.29	40.00	-0.78	2,142.53	2,092.03	50.50	42.425
7,800.00	5,843.40	5,736.97	5,736.96	60.13	12.76	-89.38	40.00	-0.76	2,242.43	2,180.87	61.56	36.427
7,900.00	5,846.01	5,736.65	5,736.64	62.83	12.76	-89.48	40.00	-0.75	2,342.31	2,273.32	68.99	33.949
8,000.00	5,846.80	5,736.10	5,736.09	65.54	12.76	-89.59	40.00	-0.72	2,442.14	2,390.39	51.75	47.193
8,100.00	5,846.60	5,725.00	5,725.00	68.24	12.74	-89.67	40.00	-0.36	2,542.12	2,498.01	44.11	57.634
8,200.00	5,846.65	5,725.00	5,725.00	70.96	12.74	-89.71	40.00	-0.36	2,641.99	2,605.66	36.33	72.715
8,300.00	5,847.14	5,725.00	5,725.00	73.68	12.74	-89.74	40.00	-0.36	2,741.89	2,700.79	41.09	66.726
8,400.00	5,848.24	5,725.00	5,725.00	76.40	12.74	-89.77	40.00	-0.36	2,841.82	2,815.00	26.81	105.979
8,500.00	5,850.33	5,725.00	5,725.00	79.13	12.74	-89.78	40.00	-0.36	2,941.79	2,897.72	44.07	66.750
8,600.00	5,852.54	5,725.00	5,725.00	81.86	12.74	-89.80	40.00	-0.36	3,041.76	2,981.08	60.68	50.126
8,700.00	5,854.83	5,725.00	5,725.00	84.58	12.74	-89.83	40.00	-0.36	3,141.73	3,071.85	69.88	44.959
8,800.00	5,857.43	5,725.00	5,725.00	87.31	12.74	-89.86	40.00	-0.36	3,241.69	3,163.25	78.44	41.326
8,900.00	5,860.30	5,725.00	5,725.00	90.04	12.74	-89.89	40.00	-0.36	3,341.67	3,261.42	80.25	41.641
9,000.00	5,862.78	5,725.00	5,725.00	92.78	12.74	-89.91	40.00	-0.36	3,441.65	3,400.97	40.69	84.588
9,100.00	5,864.27	5,725.00	5,725.00	95.51	12.74	-89.91	40.00	-0.36	3,541.62	3,510.47	31.15	113.708
9,200.00	5,865.86	5,725.00	5,725.00	98.25	12.74	-89.91	40.00	-0.36	3,641.59	3,608.47	33.12	109.961
9,300.00	5,868.00	5,725.00	5,725.00	100.99	12.74	-89.91	40.00	-0.36	3,741.57	3,706.35	35.23	106.215
9,400.00	5,870.55	5,725.00	5,725.00	103.73	12.74	-89.91	40.00	-0.36	3,841.56	3,806.38	35.19	109.176
9,500.00	5,873.09	5,725.00	5,725.00	106.47	12.74	-89.91	40.00	-0.36	3,941.55	3,894.67	46.88	84.072
9,600.00	5,875.95	5,725.00	5,725.00	109.21	12.74	-89.91	40.00	-0.36	4,041.55	4,006.81	34.74	116.335
9,700.00	5,877.16	5,725.00	5,725.00	111.95	12.74	-89.91	40.00	-0.36	4,141.51	4,105.93	35.58	116.403
9,800.00	5,877.05	5,725.00	5,725.00	114.69	12.74	-89.91	40.00	-0.36	4,241.44	4,203.06	38.38	110.526
9,900.00	5,877.22	5,725.00	5,725.00	117.43	12.74	-89.92	40.00	-0.36	4,341.37	4,301.23	40.14	108.143
10,000.00	5,877.76	5,725.00	5,725.00	120.17	12.74	-89.92	40.00	-0.36	4,441.33	4,403.50	37.83	117.405
10,100.00	5,878.66	5,725.00	5,725.00	122.92	12.74	-89.92	40.00	-0.36	4,541.29	4,502.94	38.35	118.418
10,200.00	5,879.76	5,725.00	5,725.00	125.66	12.74	-89.92	40.00	-0.36	4,641.27	4,602.18	39.09	118.738
10,262.00	5,880.52	5,725.00	5,725.00	127.36	12.74	-89.92	40.00	-0.36	4,703.25	4,663.71	39.54	118.952

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



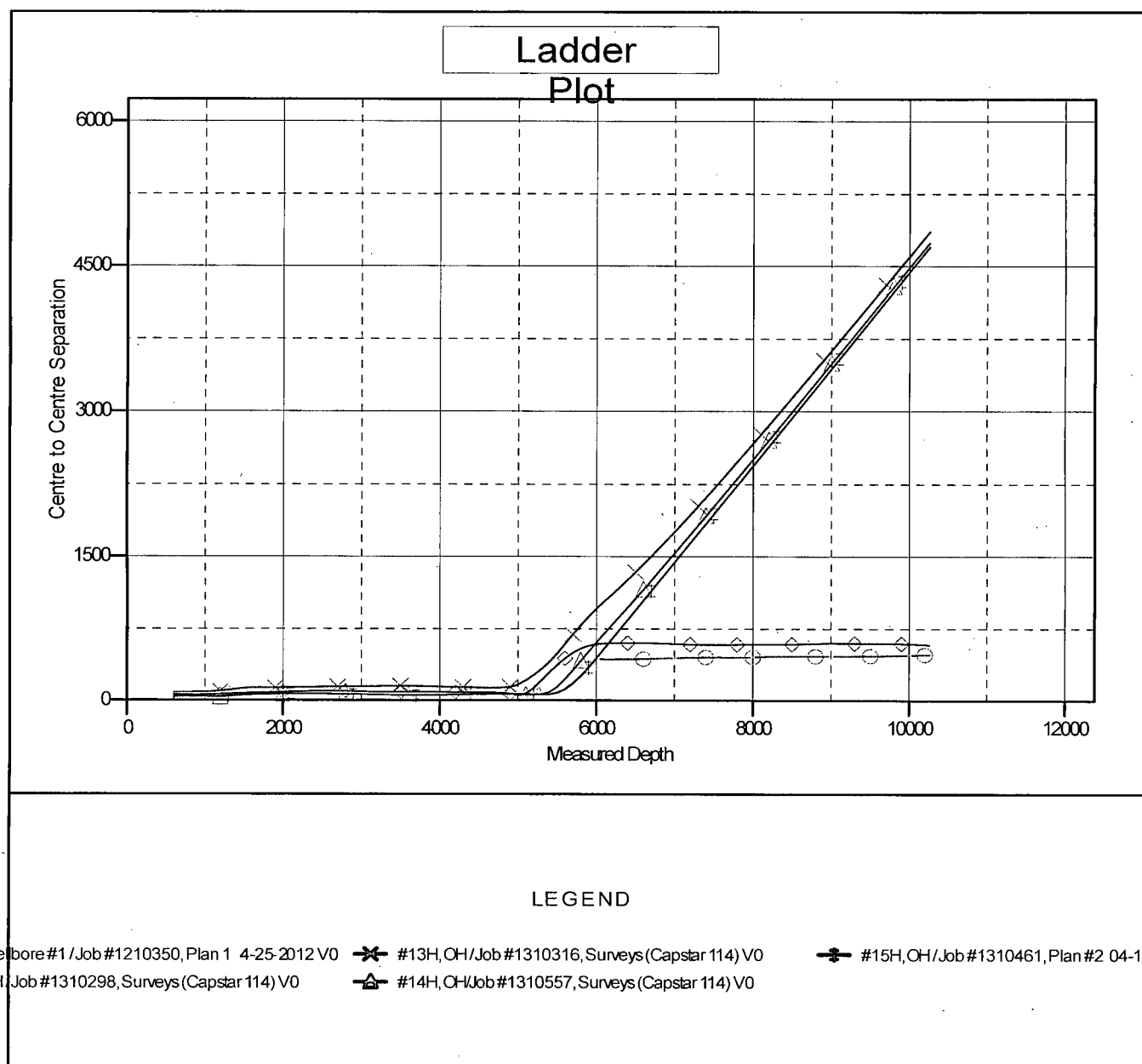
Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3894.00usft (Capstar 114)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.000000 W

Coordinates are relative to: #11H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.25°



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:	Well #11H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Reference Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#11H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH/Job #1310714	Database:	GCR DB v5000
Reference Design:	Survey: Phoenix MWD Survey	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3894.00usft (Capstar 114)

Offset Depths are relative to Offset Datum

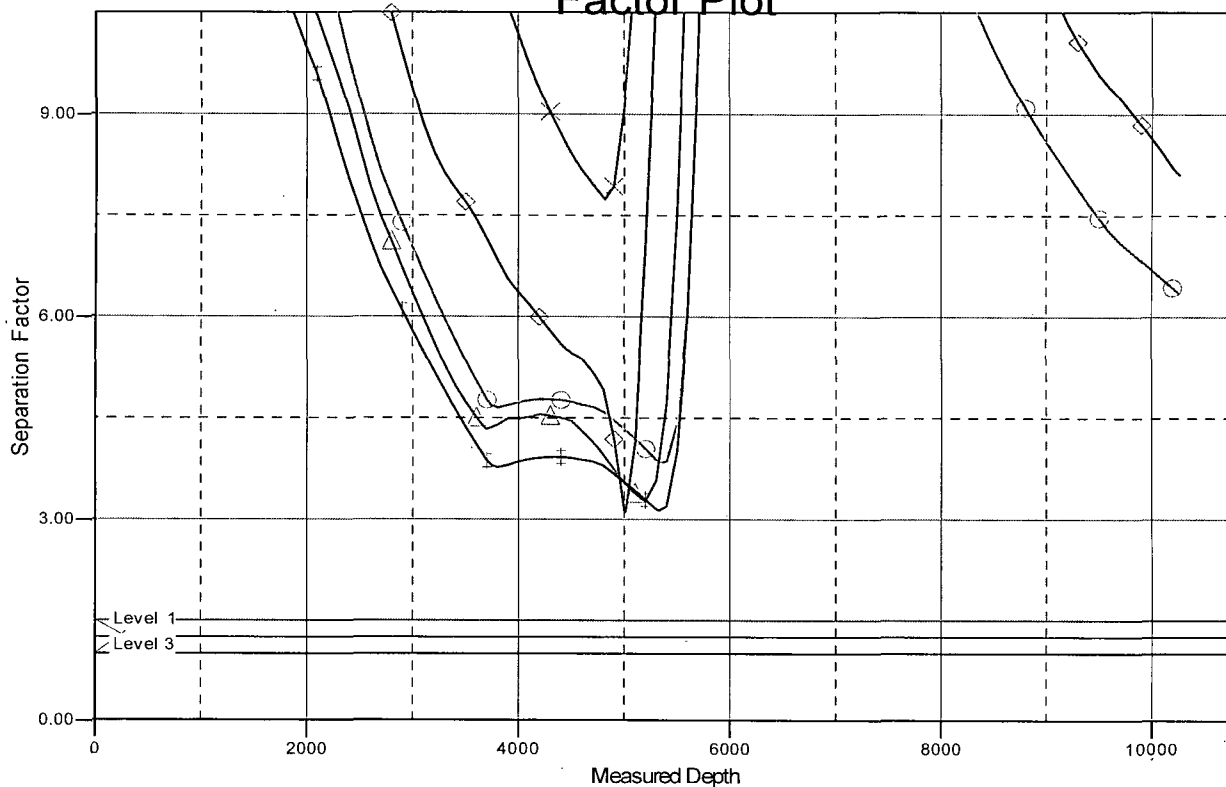
Central Meridian is 104° 19' 60.000000 W

Coordinates are relative to: #11H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.25°

Separation Factor Plot



LEGEND

Wellbore #1 / Job #1210350, Plan 1 4-25-2012 V0 #13H, OH/Job #1310316, Surveys (Capstar 114) V0 #15H, OH/Job #1310461, Plan #2 04-18-1
H, Job #1310298, Surveys (Capstar 114) V0 #14H, OH/Job #1310557, Surveys (Capstar 114) V0