

ENGINEERING CALCS

Nasik

Cascade Creek 697-15-54

CC 697-15-40A

CC 697-15-40A

Plan: CC 697-15-40A Plan1

Standard Planning Report

12 February, 2014

Oxy

Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well CC 697-15-40A
Company:	ENGINEERING CALCS	TVD Reference:	WELL @ 8625.00ft (Original Well Elev)
Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
Site:	Cascade Creek 697-15-54	North Reference:	True
Well:	CC 697-15-40A	Survey Calculation Method:	Minimum Curvature
Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Project	Nasik, Planning		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado Central 502		

Site	Cascade Creek 697-15-54, 16-54		
Site Position:		Northing:	625,361.65 ft
From:	Map	Easting:	1,238,150.52 ft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	39° 31' 9.611 N
		Longitude:	108° 12' 3.264 W
		Grid Convergence:	-1.70 °

Well	CC 697-15-40A, CC 697-15-40A		
Well Position	+N/-S	-9.47 ft	Northing: 625,352.75 ft
	+E/-W	-18.90 ft	Easting: 1,238,131.35 ft
Position Uncertainty	0.00 ft	Wellhead Elevation:	Latitude: 39° 31' 9.517 N
			Longitude: 108° 12' 3.505 W
			Ground Level: 8,640.00 ft

Wellbore	CC 697-15-40A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/9/2014	10.11	65.65	51,956

Design	CC 697-15-40A Plan1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	312.20

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	10.00	312.20	1,097.47	29.24	-32.24	2.00	2.00	0.00	312.20	
5,309.34	10.00	312.20	5,242.85	520.24	-573.71	0.00	0.00	0.00	0.00	
5,809.34	0.00	0.00	5,740.32	549.48	-605.95	2.00	-2.00	0.00	180.00	
9,232.02	0.00	0.00	9,163.00	549.48	-605.95	0.00	0.00	0.00	0.00	15-40A BHL

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well CC 697-15-40A
Company:	ENGINEERING CALCS	TVD Reference:	WELL @ 8625.00ft (Original Well Elev)
Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
Site:	Cascade Creek 697-15-54	North Reference:	True
Well:	CC 697-15-40A	Survey Calculation Method:	Minimum Curvature
Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	90.00	0.00	0.00	0.00	0.00	0.00	0.00
16									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	2.00	312.20	699.98	1.17	-1.29	1.75	2.00	2.00	0.00
800.00	4.00	312.20	799.84	4.69	-5.17	6.98	2.00	2.00	0.00
900.00	6.00	312.20	899.45	10.54	-11.63	15.69	2.00	2.00	0.00
1,000.00	8.00	312.20	998.70	18.73	-20.65	27.88	2.00	2.00	0.00
1,100.00	10.00	312.20	1,097.47	29.24	-32.24	43.52	2.00	2.00	0.00
1,200.00	10.00	312.20	1,195.95	40.90	-45.10	60.89	0.00	0.00	0.00
1,300.00	10.00	312.20	1,294.43	52.57	-57.97	78.25	0.00	0.00	0.00
1,400.00	10.00	312.20	1,392.91	64.23	-70.83	95.62	0.00	0.00	0.00
1,500.00	10.00	312.20	1,491.39	75.89	-83.70	112.98	0.00	0.00	0.00
1,600.00	10.00	312.20	1,589.87	87.56	-96.56	130.35	0.00	0.00	0.00
1,700.00	10.00	312.20	1,688.35	99.22	-109.42	147.71	0.00	0.00	0.00
1,800.00	10.00	312.20	1,786.83	110.89	-122.29	165.08	0.00	0.00	0.00
1,900.00	10.00	312.20	1,885.31	122.55	-135.15	182.44	0.00	0.00	0.00
2,000.00	10.00	312.20	1,983.79	134.22	-148.01	199.81	0.00	0.00	0.00
2,100.00	10.00	312.20	2,082.27	145.88	-160.88	217.17	0.00	0.00	0.00
2,200.00	10.00	312.20	2,180.75	157.55	-173.74	234.54	0.00	0.00	0.00
2,300.00	10.00	312.20	2,279.23	169.21	-186.60	251.90	0.00	0.00	0.00
2,400.00	10.00	312.20	2,377.72	180.88	-199.47	269.27	0.00	0.00	0.00
2,500.00	10.00	312.20	2,476.20	192.54	-212.33	286.63	0.00	0.00	0.00
2,600.00	10.00	312.20	2,574.68	204.21	-225.19	303.99	0.00	0.00	0.00
2,700.00	10.00	312.20	2,673.16	215.87	-238.06	321.36	0.00	0.00	0.00
2,800.00	10.00	312.20	2,771.64	227.54	-250.92	338.72	0.00	0.00	0.00
2,900.00	10.00	312.20	2,870.12	239.20	-263.78	356.09	0.00	0.00	0.00
3,000.00	10.00	312.20	2,968.60	250.87	-276.65	373.45	0.00	0.00	0.00
9 5/8"									
3,100.00	10.00	312.20	3,067.08	262.53	-289.51	390.82	0.00	0.00	0.00
3,200.00	10.00	312.20	3,165.56	274.20	-302.38	408.18	0.00	0.00	0.00
3,300.00	10.00	312.20	3,264.04	285.86	-315.24	425.55	0.00	0.00	0.00
3,400.00	10.00	312.20	3,362.52	297.52	-328.10	442.91	0.00	0.00	0.00
3,500.00	10.00	312.20	3,461.00	309.19	-340.97	460.28	0.00	0.00	0.00
3,600.00	10.00	312.20	3,559.48	320.85	-353.83	477.64	0.00	0.00	0.00
3,700.00	10.00	312.20	3,657.97	332.52	-366.69	495.01	0.00	0.00	0.00
3,800.00	10.00	312.20	3,756.45	344.18	-379.56	512.37	0.00	0.00	0.00
3,900.00	10.00	312.20	3,854.93	355.85	-392.42	529.74	0.00	0.00	0.00
4,000.00	10.00	312.20	3,953.41	367.51	-405.28	547.10	0.00	0.00	0.00
4,100.00	10.00	312.20	4,051.89	379.18	-418.15	564.47	0.00	0.00	0.00
4,200.00	10.00	312.20	4,150.37	390.84	-431.01	581.83	0.00	0.00	0.00
4,300.00	10.00	312.20	4,248.85	402.51	-443.87	599.20	0.00	0.00	0.00
4,400.00	10.00	312.20	4,347.33	414.17	-456.74	616.56	0.00	0.00	0.00
4,500.00	10.00	312.20	4,445.81	425.84	-469.60	633.93	0.00	0.00	0.00
4,600.00	10.00	312.20	4,544.29	437.50	-482.47	651.29	0.00	0.00	0.00
4,700.00	10.00	312.20	4,642.77	449.17	-495.33	668.66	0.00	0.00	0.00
4,800.00	10.00	312.20	4,741.25	460.83	-508.19	686.02	0.00	0.00	0.00
4,873.91	10.00	312.20	4,814.04	469.45	-517.70	698.86	0.00	0.00	0.00

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Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
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Well:	CC 697-15-40A	Survey Calculation Method:	Minimum Curvature
Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Fort Union									
4,900.00	10.00	312.20	4,839.73	472.50	-521.06	703.39	0.00	0.00	0.00
5,000.00	10.00	312.20	4,938.22	484.16	-533.92	720.75	0.00	0.00	0.00
5,100.00	10.00	312.20	5,036.70	495.83	-546.78	738.12	0.00	0.00	0.00
5,200.00	10.00	312.20	5,135.18	507.49	-559.65	755.48	0.00	0.00	0.00
5,300.00	10.00	312.20	5,233.66	519.15	-572.51	772.84	0.00	0.00	0.00
5,309.34	10.00	312.20	5,242.85	520.24	-573.71	774.47	0.00	0.00	0.00
5,400.00	8.19	312.20	5,332.37	529.87	-584.33	788.79	2.00	-2.00	0.00
5,500.00	6.19	312.20	5,431.58	538.27	-593.59	801.30	2.00	-2.00	0.00
5,600.00	4.19	312.20	5,531.17	544.34	-600.29	810.34	2.00	-2.00	0.00
5,700.00	2.19	312.20	5,631.01	548.08	-604.41	815.90	2.00	-2.00	0.00
5,800.00	0.19	312.20	5,730.98	549.47	-605.94	817.97	2.00	-2.00	0.00
5,809.34	0.00	0.00	5,740.32	549.48	-605.95	817.99	2.00	-2.00	0.00
5,900.00	0.00	0.00	5,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,000.00	0.00	0.00	5,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,100.00	0.00	0.00	6,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,135.54	0.00	0.00	6,066.52	549.48	-605.95	817.99	0.00	0.00	0.00
Mesaverde Group Top									
6,200.00	0.00	0.00	6,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,300.00	0.00	0.00	6,230.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,368.23	0.00	0.00	6,299.21	549.48	-605.95	817.99	0.00	0.00	0.00
Williams Fork ("base Ohio Creek")									
6,400.00	0.00	0.00	6,330.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,500.00	0.00	0.00	6,430.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,600.00	0.00	0.00	6,530.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,700.00	0.00	0.00	6,630.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,800.00	0.00	0.00	6,730.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,881.18	0.00	0.00	6,812.16	549.48	-605.95	817.99	0.00	0.00	0.00
Williams Fork Shale Marker									
6,900.00	0.00	0.00	6,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,000.00	0.00	0.00	6,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,100.00	0.00	0.00	7,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,200.00	0.00	0.00	7,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,300.00	0.00	0.00	7,230.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,325.02	0.00	0.00	7,256.00	549.48	-605.95	817.99	0.00	0.00	0.00
Continuous Top of Gas									
7,400.00	0.00	0.00	7,330.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,500.00	0.00	0.00	7,430.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,600.00	0.00	0.00	7,530.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,700.00	0.00	0.00	7,630.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,800.00	0.00	0.00	7,730.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,900.00	0.00	0.00	7,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,000.00	0.00	0.00	7,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,100.00	0.00	0.00	8,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,200.00	0.00	0.00	8,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,300.00	0.00	0.00	8,230.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,400.00	0.00	0.00	8,330.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,500.00	0.00	0.00	8,430.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,600.00	0.00	0.00	8,530.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,662.93	0.00	0.00	8,593.92	549.48	-605.95	817.99	0.00	0.00	0.00
Cameo Coal									
8,700.00	0.00	0.00	8,630.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,800.00	0.00	0.00	8,730.98	549.48	-605.95	817.99	0.00	0.00	0.00

Oxy

Planning Report

Database:	HOPSP	Local Co-ordinate Reference:	Well CC 697-15-40A
Company:	ENGINEERING CALCS	TVD Reference:	WELL @ 8625.00ft (Original Well Elev)
Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
Site:	Cascade Creek 697-15-54	North Reference:	True
Well:	CC 697-15-40A	Survey Calculation Method:	Minimum Curvature
Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,900.00	0.00	0.00	8,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,000.00	0.00	0.00	8,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,050.78	0.00	0.00	8,981.77	549.48	-605.95	817.99	0.00	0.00	0.00
Rollins									
9,100.00	0.00	0.00	9,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,200.00	0.00	0.00	9,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,232.02	0.00	0.00	9,163.00	549.48	-605.95	817.99	0.00	0.00	0.00
TD - 4 1/2									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
15-40A surf - plan hits target center - Point	0.00	358.30	0.00	0.00	0.00	625,352.75	1,238,131.35	39° 31' 9.517 N	108° 12' 3.505 W
15-40A BHL - plan hits target center - Point	0.00	358.30	9,163.00	549.48	-605.95	625,920.00	1,237,542.00	39° 31' 14.948 N	108° 12' 11.238 W

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
90.00	90.00	16	16.000	20.000	
3,000.00	2,968.60	9 5/8"	9.625	12.250	
9,232.02	9,163.00	4 1/2	4.500	8.750	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,873.91	4,814.04	Fort Union		4.00	10.00
6,135.54	6,066.52	Mesaverde Group Top		3.00	28.00
6,368.23	6,299.21	Williams Fork ("base Ohio Creek")		3.00	11.00
6,881.18	6,812.16	Williams Fork Shale Marker		4.00	34.00
7,325.02	7,256.00	Continuous Top of Gas			
8,662.93	8,593.92	Cameo Coal		5.00	13.00
9,050.78	8,981.77	Rollins		5.00	27.00
9,232.02	9,163.00	TD			

ENGINEERING CALCS

Nasik

Cascade Creek 697-15-54

CC 697-15-40A

CC 697-15-40A

Plan: CC 697-15-40A Plan1

Standard Planning Report

12 February, 2014

Oxy

Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well CC 697-15-40A
Company:	ENGINEERING CALCS	TVD Reference:	WELL @ 8625.00ft (Original Well Elev)
Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
Site:	Cascade Creek 697-15-54	North Reference:	True
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Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Project	Nasik, Planning		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado Central 502		

Site	Cascade Creek 697-15-54, 16-54		
Site Position:		Northing:	625,361.65 ft
From:	Map	Easting:	1,238,150.52 ft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	39° 31' 9.611 N
		Longitude:	108° 12' 3.264 W
		Grid Convergence:	-1.70 °

Well	CC 697-15-40A, CC 697-15-40A		
Well Position	+N/-S	-9.47 ft	Northing:
	+E/-W	-18.90 ft	Easting:
Position Uncertainty	0.00 ft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	CC 697-15-40A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/9/2014	10.11	65.65	51,956

Design	CC 697-15-40A Plan1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	312.20

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	10.00	312.20	1,097.47	29.24	-32.24	2.00	2.00	0.00	312.20	
5,309.34	10.00	312.20	5,242.85	520.24	-573.71	0.00	0.00	0.00	0.00	
5,809.34	0.00	0.00	5,740.32	549.48	-605.95	2.00	-2.00	0.00	180.00	
9,232.02	0.00	0.00	9,163.00	549.48	-605.95	0.00	0.00	0.00	0.00	15-40A BHL

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well CC 697-15-40A
Company:	ENGINEERING CALCS	TVD Reference:	WELL @ 8625.00ft (Original Well Elev)
Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
Site:	Cascade Creek 697-15-54	North Reference:	True
Well:	CC 697-15-40A	Survey Calculation Method:	Minimum Curvature
Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	90.00	0.00	0.00	0.00	0.00	0.00	0.00
16									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	2.00	312.20	699.98	1.17	-1.29	1.75	2.00	2.00	0.00
800.00	4.00	312.20	799.84	4.69	-5.17	6.98	2.00	2.00	0.00
900.00	6.00	312.20	899.45	10.54	-11.63	15.69	2.00	2.00	0.00
1,000.00	8.00	312.20	998.70	18.73	-20.65	27.88	2.00	2.00	0.00
1,100.00	10.00	312.20	1,097.47	29.24	-32.24	43.52	2.00	2.00	0.00
1,200.00	10.00	312.20	1,195.95	40.90	-45.10	60.89	0.00	0.00	0.00
1,300.00	10.00	312.20	1,294.43	52.57	-57.97	78.25	0.00	0.00	0.00
1,400.00	10.00	312.20	1,392.91	64.23	-70.83	95.62	0.00	0.00	0.00
1,500.00	10.00	312.20	1,491.39	75.89	-83.70	112.98	0.00	0.00	0.00
1,600.00	10.00	312.20	1,589.87	87.56	-96.56	130.35	0.00	0.00	0.00
1,700.00	10.00	312.20	1,688.35	99.22	-109.42	147.71	0.00	0.00	0.00
1,800.00	10.00	312.20	1,786.83	110.89	-122.29	165.08	0.00	0.00	0.00
1,900.00	10.00	312.20	1,885.31	122.55	-135.15	182.44	0.00	0.00	0.00
2,000.00	10.00	312.20	1,983.79	134.22	-148.01	199.81	0.00	0.00	0.00
2,100.00	10.00	312.20	2,082.27	145.88	-160.88	217.17	0.00	0.00	0.00
2,200.00	10.00	312.20	2,180.75	157.55	-173.74	234.54	0.00	0.00	0.00
2,300.00	10.00	312.20	2,279.23	169.21	-186.60	251.90	0.00	0.00	0.00
2,400.00	10.00	312.20	2,377.72	180.88	-199.47	269.27	0.00	0.00	0.00
2,500.00	10.00	312.20	2,476.20	192.54	-212.33	286.63	0.00	0.00	0.00
2,600.00	10.00	312.20	2,574.68	204.21	-225.19	303.99	0.00	0.00	0.00
2,700.00	10.00	312.20	2,673.16	215.87	-238.06	321.36	0.00	0.00	0.00
2,800.00	10.00	312.20	2,771.64	227.54	-250.92	338.72	0.00	0.00	0.00
2,900.00	10.00	312.20	2,870.12	239.20	-263.78	356.09	0.00	0.00	0.00
3,000.00	10.00	312.20	2,968.60	250.87	-276.65	373.45	0.00	0.00	0.00
9 5/8"									
3,100.00	10.00	312.20	3,067.08	262.53	-289.51	390.82	0.00	0.00	0.00
3,200.00	10.00	312.20	3,165.56	274.20	-302.38	408.18	0.00	0.00	0.00
3,300.00	10.00	312.20	3,264.04	285.86	-315.24	425.55	0.00	0.00	0.00
3,400.00	10.00	312.20	3,362.52	297.52	-328.10	442.91	0.00	0.00	0.00
3,500.00	10.00	312.20	3,461.00	309.19	-340.97	460.28	0.00	0.00	0.00
3,600.00	10.00	312.20	3,559.48	320.85	-353.83	477.64	0.00	0.00	0.00
3,700.00	10.00	312.20	3,657.97	332.52	-366.69	495.01	0.00	0.00	0.00
3,800.00	10.00	312.20	3,756.45	344.18	-379.56	512.37	0.00	0.00	0.00
3,900.00	10.00	312.20	3,854.93	355.85	-392.42	529.74	0.00	0.00	0.00
4,000.00	10.00	312.20	3,953.41	367.51	-405.28	547.10	0.00	0.00	0.00
4,100.00	10.00	312.20	4,051.89	379.18	-418.15	564.47	0.00	0.00	0.00
4,200.00	10.00	312.20	4,150.37	390.84	-431.01	581.83	0.00	0.00	0.00
4,300.00	10.00	312.20	4,248.85	402.51	-443.87	599.20	0.00	0.00	0.00
4,400.00	10.00	312.20	4,347.33	414.17	-456.74	616.56	0.00	0.00	0.00
4,500.00	10.00	312.20	4,445.81	425.84	-469.60	633.93	0.00	0.00	0.00
4,600.00	10.00	312.20	4,544.29	437.50	-482.47	651.29	0.00	0.00	0.00
4,700.00	10.00	312.20	4,642.77	449.17	-495.33	668.66	0.00	0.00	0.00
4,800.00	10.00	312.20	4,741.25	460.83	-508.19	686.02	0.00	0.00	0.00
4,873.91	10.00	312.20	4,814.04	469.45	-517.70	698.86	0.00	0.00	0.00

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well CC 697-15-40A
Company:	ENGINEERING CALCS	TVD Reference:	WELL @ 8625.00ft (Original Well Elev)
Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
Site:	Cascade Creek 697-15-54	North Reference:	True
Well:	CC 697-15-40A	Survey Calculation Method:	Minimum Curvature
Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Fort Union									
4,900.00	10.00	312.20	4,839.73	472.50	-521.06	703.39	0.00	0.00	0.00
5,000.00	10.00	312.20	4,938.22	484.16	-533.92	720.75	0.00	0.00	0.00
5,100.00	10.00	312.20	5,036.70	495.83	-546.78	738.12	0.00	0.00	0.00
5,200.00	10.00	312.20	5,135.18	507.49	-559.65	755.48	0.00	0.00	0.00
5,300.00	10.00	312.20	5,233.66	519.15	-572.51	772.84	0.00	0.00	0.00
5,309.34	10.00	312.20	5,242.85	520.24	-573.71	774.47	0.00	0.00	0.00
5,400.00	8.19	312.20	5,332.37	529.87	-584.33	788.79	2.00	-2.00	0.00
5,500.00	6.19	312.20	5,431.58	538.27	-593.59	801.30	2.00	-2.00	0.00
5,600.00	4.19	312.20	5,531.17	544.34	-600.29	810.34	2.00	-2.00	0.00
5,700.00	2.19	312.20	5,631.01	548.08	-604.41	815.90	2.00	-2.00	0.00
5,800.00	0.19	312.20	5,730.98	549.47	-605.94	817.97	2.00	-2.00	0.00
5,809.34	0.00	0.00	5,740.32	549.48	-605.95	817.99	2.00	-2.00	0.00
5,900.00	0.00	0.00	5,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,000.00	0.00	0.00	5,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,100.00	0.00	0.00	6,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,135.54	0.00	0.00	6,066.52	549.48	-605.95	817.99	0.00	0.00	0.00
Mesaverde Group Top									
6,200.00	0.00	0.00	6,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,300.00	0.00	0.00	6,230.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,368.23	0.00	0.00	6,299.21	549.48	-605.95	817.99	0.00	0.00	0.00
Williams Fork ("base Ohio Creek")									
6,400.00	0.00	0.00	6,330.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,500.00	0.00	0.00	6,430.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,600.00	0.00	0.00	6,530.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,700.00	0.00	0.00	6,630.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,800.00	0.00	0.00	6,730.98	549.48	-605.95	817.99	0.00	0.00	0.00
6,881.18	0.00	0.00	6,812.16	549.48	-605.95	817.99	0.00	0.00	0.00
Williams Fork Shale Marker									
6,900.00	0.00	0.00	6,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,000.00	0.00	0.00	6,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,100.00	0.00	0.00	7,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,200.00	0.00	0.00	7,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,300.00	0.00	0.00	7,230.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,325.02	0.00	0.00	7,256.00	549.48	-605.95	817.99	0.00	0.00	0.00
Continuous Top of Gas									
7,400.00	0.00	0.00	7,330.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,500.00	0.00	0.00	7,430.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,600.00	0.00	0.00	7,530.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,700.00	0.00	0.00	7,630.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,800.00	0.00	0.00	7,730.98	549.48	-605.95	817.99	0.00	0.00	0.00
7,900.00	0.00	0.00	7,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,000.00	0.00	0.00	7,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,100.00	0.00	0.00	8,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,200.00	0.00	0.00	8,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,300.00	0.00	0.00	8,230.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,400.00	0.00	0.00	8,330.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,500.00	0.00	0.00	8,430.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,600.00	0.00	0.00	8,530.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,662.93	0.00	0.00	8,593.92	549.48	-605.95	817.99	0.00	0.00	0.00
Cameo Coal									
8,700.00	0.00	0.00	8,630.98	549.48	-605.95	817.99	0.00	0.00	0.00
8,800.00	0.00	0.00	8,730.98	549.48	-605.95	817.99	0.00	0.00	0.00

Oxy Planning Report

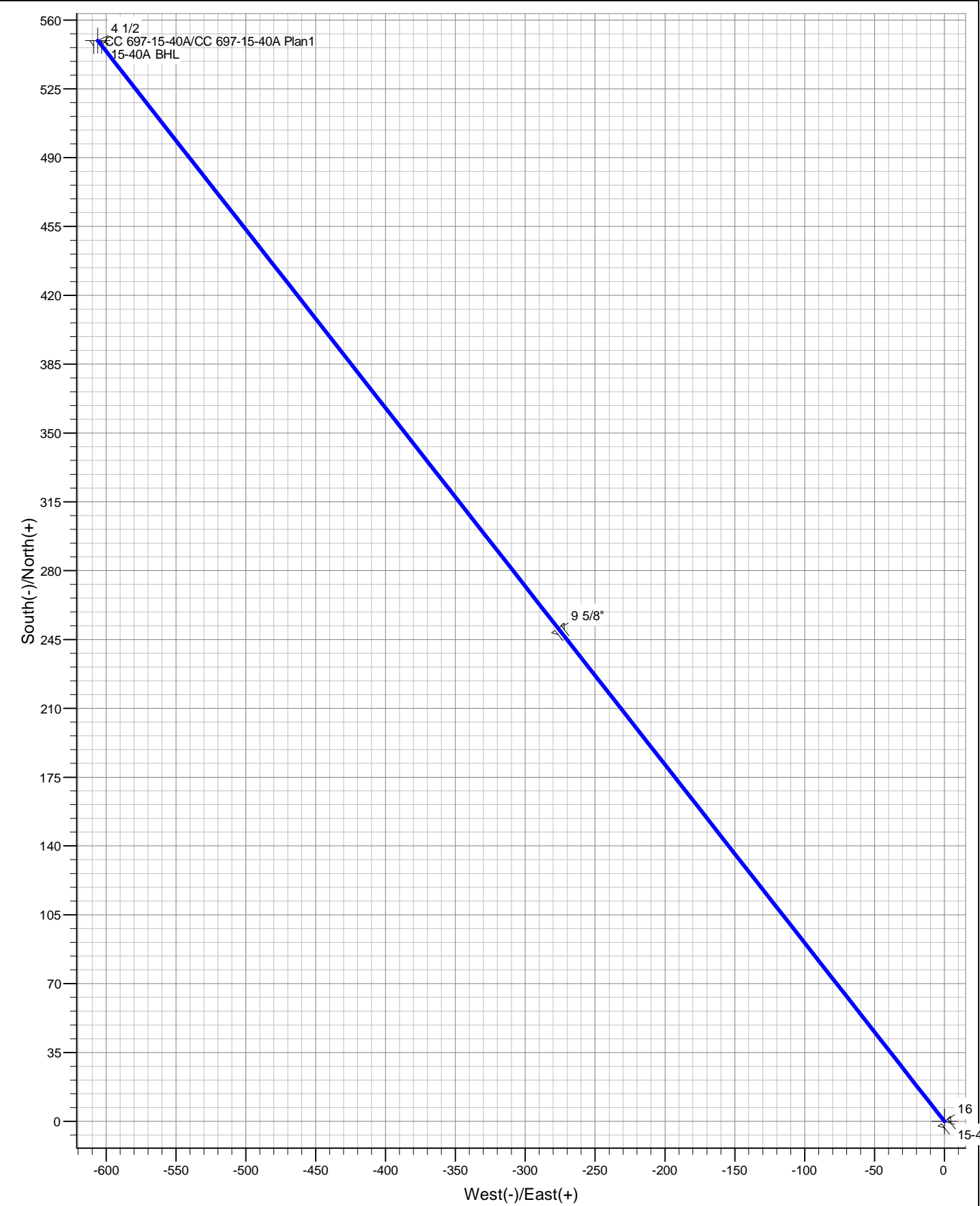
Database:	HOPSP	Local Co-ordinate Reference:	Well CC 697-15-40A
Company:	ENGINEERING CALCS	TVD Reference:	WELL @ 8625.00ft (Original Well Elev)
Project:	Nasik	MD Reference:	WELL @ 8625.00ft (Original Well Elev)
Site:	Cascade Creek 697-15-54	North Reference:	True
Well:	CC 697-15-40A	Survey Calculation Method:	Minimum Curvature
Wellbore:	CC 697-15-40A		
Design:	CC 697-15-40A Plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,900.00	0.00	0.00	8,830.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,000.00	0.00	0.00	8,930.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,050.78	0.00	0.00	8,981.77	549.48	-605.95	817.99	0.00	0.00	0.00
Rollins									
9,100.00	0.00	0.00	9,030.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,200.00	0.00	0.00	9,130.98	549.48	-605.95	817.99	0.00	0.00	0.00
9,232.02	0.00	0.00	9,163.00	549.48	-605.95	817.99	0.00	0.00	0.00
TD - 4 1/2									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
15-40A surf - plan hits target center - Point	0.00	358.30	0.00	0.00	0.00	625,352.75	1,238,131.35	39° 31' 9.517 N	108° 12' 3.505 W
15-40A BHL - plan hits target center - Point	0.00	358.30	9,163.00	549.48	-605.95	625,920.00	1,237,542.00	39° 31' 14.948 N	108° 12' 11.238 W

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
90.00	90.00	16	16.000	20.000	
3,000.00	2,968.60	9 5/8"	9.625	12.250	
9,232.02	9,163.00	4 1/2	4.500	8.750	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,873.91	4,814.04	Fort Union		4.00	10.00
6,135.54	6,066.52	Mesaverde Group Top		3.00	28.00
6,368.23	6,299.21	Williams Fork ("base Ohio Creek")		3.00	11.00
6,881.18	6,812.16	Williams Fork Shale Marker		4.00	34.00
7,325.02	7,256.00	Continuous Top of Gas			
8,662.93	8,593.92	Cameo Coal		5.00	13.00
9,050.78	8,981.77	Rollins		5.00	27.00
9,232.02	9,163.00	TD			



Plan: CC 697-15-40A Plan1 (CC 697-15-40A/CC 697-15-40A)	
Created By: Oxy	Date: 11:32, February 12 2014
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
15-40A surf	0.00	0.00	0.00	625352.75	1238131.35	39° 31' 9.517 N	108° 12' 3.505 W	Point	
- plan hits target center									
15-40A BHL	9163.00	549.48	-605.95	625920.00	1237542.00	39° 31' 14.948 N	108° 12' 11.238 W	Point	
- plan hits target center									

T

M

Azimuths to True North

Magnetic North: 10.12°

Magnetic Field

Strength: 51955.7snT

Dip Angle: 65.65°

Date: 1/9/2014

Model: IGRF2010

