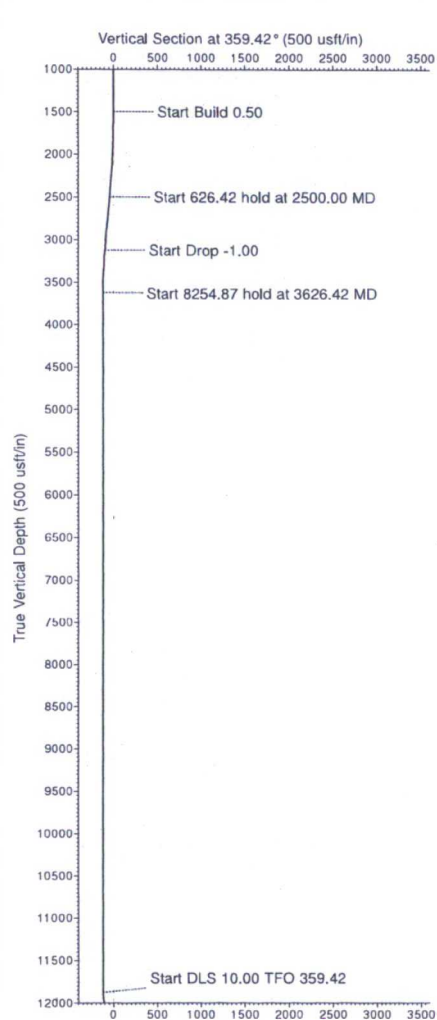




Marathon Oil
Lea County, NM
Cave Lion 5 Federal
BC #1H
Prelim Plan A
GL: 3271' + KB: 26.5' (H&P498)

US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1866
New Mexico East 3001
Mean Sea Level

RKB Elevation: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	388805.07	790215.00	32.0654776	-103.3964918	

SECTION DETAILS

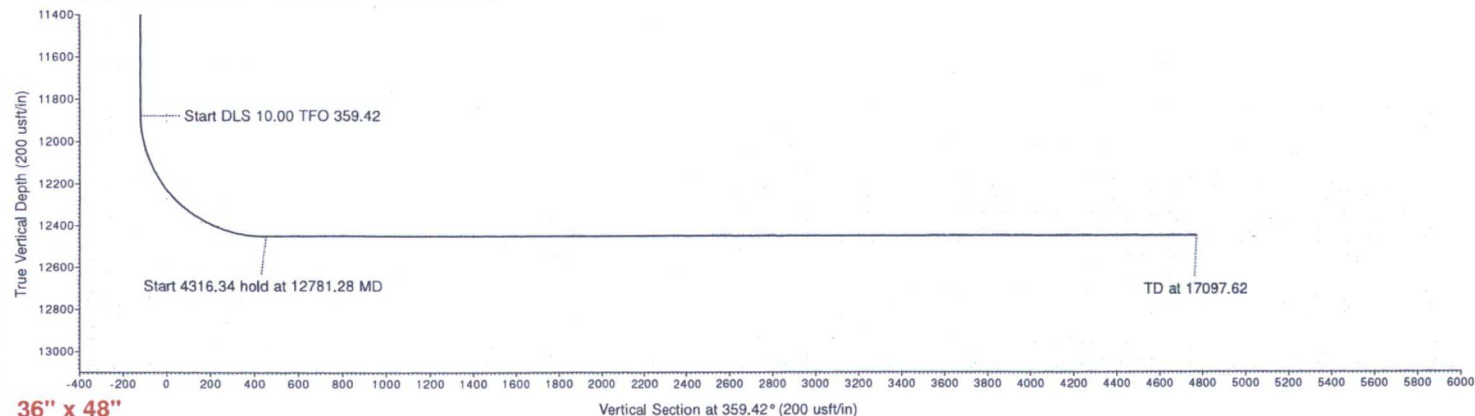
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00
3	2500.00	5.00	179.52	2498.73	-43.60	0.36	0.50	-43.61
4	3126.42	5.00	179.52	3122.76	-98.20	0.82	0.00	-98.20
5	3626.42	0.00	0.00	3622.13	-120.00	1.00	1.00	-120.00
6	11881.29	0.00	0.00	11877.00	-120.00	1.00	0.00	-120.00
7	12781.28	90.00	359.42	12449.96	452.92	-4.79	10.00	452.95
8	17097.62	90.00	359.42	12450.00	4769.04	-48.37	0.00	4769.29

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

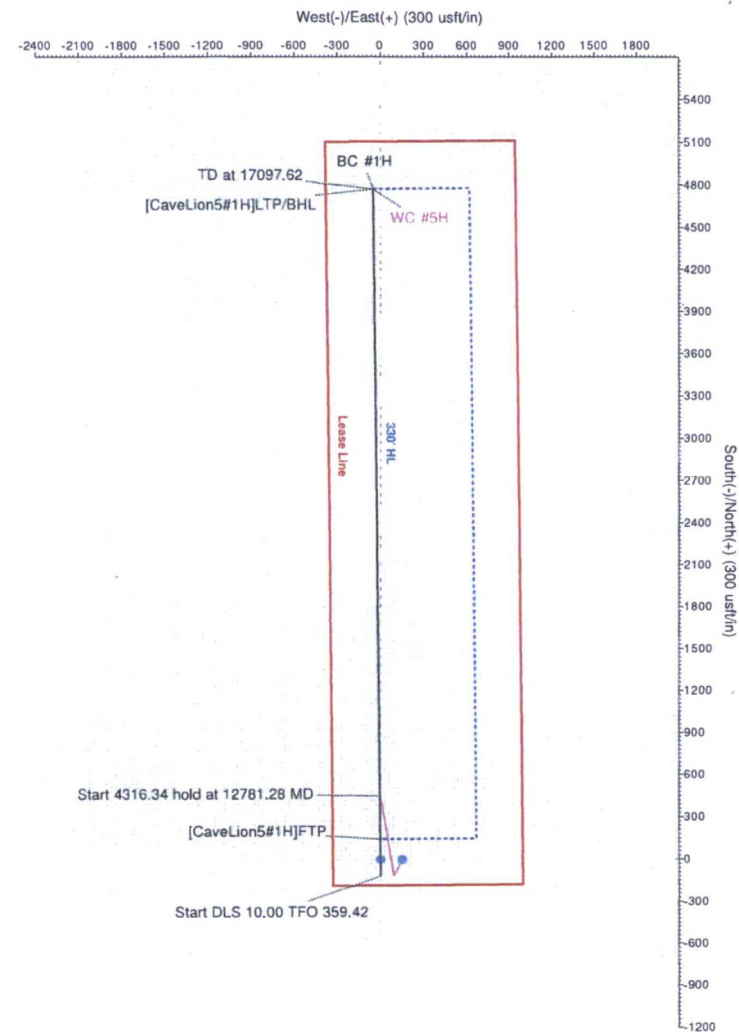
Name	TVD	+N/-S	+E/-W	Northing	Easting
[CaveLion5#1H]FTP	0.00	144.97	-1.41	388950.04	790213.59
[CaveLion5#1H]LTP/BHL	12450.00	4769.04	-48.37	393574.11	790166.63



Target Line: 12450' TVD @ 0° VS, 90° INC



36" x 48"



Azimuths to Grid North
True North: -0.50°
Magnetic North: 6.24°
Magnetic Field
Strength: 47900.3nT
Dip Angle: 59.80°
Date: 9/18/2017
Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): 6.24°

Declination (M to T): 6.73° East

Company: Marathon Oil
Project: Lea County, NM
Site: Cave Lion 5 Federal
Well: BC #1H
Wellbore: OH
Design: Prelim Plan A

Local Co-ordinate Reference: Well BC #1H
TVD Reference: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))
MD Reference: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Cave Lion 5 Federal				
Site Position:		Northing:	388,805.07 usft	Latitude:	32.0654776
From:	Map	Easting:	790,215.00 usft	Longitude:	-103.3964918
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.50 °

Well	BC #1H				
Well Position	+N/-S	0.00 usft	Northing:	388,805.07 usft	Latitude: 32.0654776
	+E/-W	0.00 usft	Easting:	790,215.00 usft	Longitude: -103.3964918
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level: 3,271.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/18/2017	6.73	59.80	47,900.30

Design	Prelim Plan A				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.42	

Survey Tool Program	Date	9/18/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5,000.00	Prelim Plan A (OH)	MWD+HDGM	OWSG MWD + HRGM	
5,000.00	10,000.00	Prelim Plan A (OH)	MWD+HDGM	OWSG MWD + HRGM	
10,000.00	17,097.62	Prelim Plan A (OH)	MWD+HDGM	OWSG MWD + HRGM	

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
[CaveLion5#1H]FTP									
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

Company: Marathon Oil
Project: Lea County, NM
Site: Cave Lion 5 Federal
Well: BC #1H
Wellbore: OH
Design: Prelim Plan A

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MD Reference: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.50	179.52	1,600.00	-0.44	0.00	-0.44	0.50	0.50	0.00
1,700.00	1.00	179.52	1,699.99	-1.75	0.01	-1.75	0.50	0.50	0.00
1,800.00	1.50	179.52	1,799.97	-3.93	0.03	-3.93	0.50	0.50	0.00
1,900.00	2.00	179.52	1,899.92	-6.98	0.06	-6.98	0.50	0.50	0.00
2,000.00	2.50	179.52	1,999.84	-10.91	0.09	-10.91	0.50	0.50	0.00
2,100.00	3.00	179.52	2,099.73	-15.70	0.13	-15.70	0.50	0.50	0.00
2,200.00	3.50	179.52	2,199.56	-21.37	0.18	-21.37	0.50	0.50	0.00
2,300.00	4.00	179.52	2,299.35	-27.91	0.23	-27.91	0.50	0.50	0.00
2,400.00	4.50	179.52	2,399.08	-35.32	0.29	-35.32	0.50	0.50	0.00
2,500.00	5.00	179.52	2,498.73	-43.60	0.36	-43.61	0.50	0.50	0.00
2,600.00	5.00	179.52	2,598.35	-52.32	0.44	-52.32	0.00	0.00	0.00
2,700.00	5.00	179.52	2,697.97	-61.03	0.51	-61.04	0.00	0.00	0.00
2,800.00	5.00	179.52	2,797.59	-69.75	0.58	-69.75	0.00	0.00	0.00
2,900.00	5.00	179.52	2,897.21	-78.47	0.65	-78.47	0.00	0.00	0.00
3,000.00	5.00	179.52	2,996.83	-87.18	0.73	-87.18	0.00	0.00	0.00
3,100.00	5.00	179.52	3,096.45	-95.90	0.80	-95.90	0.00	0.00	0.00
3,126.42	5.00	179.52	3,122.76	-98.20	0.82	-98.20	0.00	0.00	0.00
3,200.00	4.26	179.52	3,196.11	-104.14	0.87	-104.14	1.00	-1.00	0.00
3,300.00	3.26	179.52	3,295.89	-110.70	0.92	-110.71	1.00	-1.00	0.00
3,400.00	2.26	179.52	3,395.77	-115.53	0.96	-115.53	1.00	-1.00	0.00
3,500.00	1.26	179.52	3,495.72	-118.61	0.99	-118.61	1.00	-1.00	0.00
3,600.00	0.26	179.52	3,595.71	-119.94	1.00	-119.94	1.00	-1.00	0.00
3,626.42	0.00	0.00	3,622.13	-120.00	1.00	-120.00	1.00	-1.00	0.00
3,700.00	0.00	0.00	3,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,000.00	0.00	0.00	3,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00

Company: Marathon Oil
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Wellbore: OH
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Survey Calculation Method: Minimum Curvature
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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.00	0.00	0.00	4,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,000.00	0.00	0.00	7,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,800.00	0.00	0.00	8,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,000.00	0.00	0.00	8,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,100.00	0.00	0.00	9,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,600.00	0.00	0.00	9,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,700.00	0.00	0.00	9,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,800.00	0.00	0.00	9,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,000.00	0.00	0.00	9,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,100.00	0.00	0.00	10,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,200.00	0.00	0.00	10,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,300.00	0.00	0.00	10,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,400.00	0.00	0.00	10,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,500.00	0.00	0.00	10,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,600.00	0.00	0.00	10,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,700.00	0.00	0.00	10,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,800.00	0.00	0.00	10,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
10,900.00	0.00	0.00	10,895.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,000.00	0.00	0.00	10,995.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,100.00	0.00	0.00	11,095.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,200.00	0.00	0.00	11,195.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,300.00	0.00	0.00	11,295.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,400.00	0.00	0.00	11,395.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,500.00	0.00	0.00	11,495.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,600.00	0.00	0.00	11,595.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,700.00	0.00	0.00	11,695.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,800.00	0.00	0.00	11,795.71	-120.00	1.00	-120.00	0.00	0.00	0.00
11,881.29	0.00	0.00	11,877.00	-120.00	1.00	-120.00	0.00	0.00	0.00
11,900.00	1.87	359.42	11,895.71	-119.69	1.00	-119.70	10.00	10.00	0.00
11,950.00	6.87	359.42	11,945.55	-115.88	0.96	-115.89	10.00	10.00	0.00
12,000.00	11.87	359.42	11,994.87	-107.75	0.88	-107.75	10.00	10.00	0.00
12,050.00	16.87	359.42	12,043.29	-95.34	0.75	-95.34	10.00	10.00	0.00
12,100.00	21.87	359.42	12,090.44	-78.76	0.58	-78.76	10.00	10.00	0.00
12,150.00	26.87	359.42	12,135.97	-58.14	0.38	-58.14	10.00	10.00	0.00
12,200.00	31.87	359.42	12,179.53	-33.62	0.13	-33.62	10.00	10.00	0.00
12,250.00	36.87	359.42	12,220.79	-5.41	-0.16	-5.40	10.00	10.00	0.00
12,300.00	41.87	359.42	12,259.43	26.30	-0.48	26.30	10.00	10.00	0.00
12,350.00	46.87	359.42	12,295.16	61.25	-0.83	61.26	10.00	10.00	0.00

Company: Marathon Oil
Project: Lea County, NM
Site: Cave Lion 5 Federal
Well: BC #1H
Wellbore: OH
Design: Prelim Plan A

Local Co-ordinate Reference: Well BC #1H
TVD Reference: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))
MD Reference: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,400.00	51.87	359.42	12,327.70	99.19	-1.21	99.19	10.00	10.00	0.00
12,450.00	56.87	359.42	12,356.82	139.81	-1.62	139.82	10.00	10.00	0.00
12,500.00	61.87	359.42	12,382.29	182.82	-2.06	182.83	10.00	10.00	0.00
12,550.00	66.87	359.42	12,403.91	227.88	-2.51	227.90	10.00	10.00	0.00
12,600.00	71.87	359.42	12,421.52	274.66	-2.99	274.68	10.00	10.00	0.00
12,650.00	76.87	359.42	12,434.98	322.79	-3.47	322.81	10.00	10.00	0.00
12,700.00	81.87	359.42	12,444.20	371.92	-3.97	371.94	10.00	10.00	0.00
12,750.00	86.87	359.42	12,449.10	421.66	-4.47	421.68	10.00	10.00	0.00
12,781.28	90.00	359.42	12,449.96	452.92	-4.79	452.95	10.00	10.00	0.00
12,800.00	90.00	359.42	12,449.96	471.64	-4.97	471.67	0.00	0.00	0.00
12,900.00	90.00	359.42	12,449.96	571.64	-5.98	571.67	0.00	0.00	0.00
13,000.00	90.00	359.42	12,449.96	671.63	-6.99	671.67	0.00	0.00	0.00
13,100.00	90.00	359.42	12,449.96	771.63	-8.00	771.67	0.00	0.00	0.00
13,200.00	90.00	359.42	12,449.96	871.62	-9.01	871.67	0.00	0.00	0.00
13,300.00	90.00	359.42	12,449.96	971.62	-10.02	971.67	0.00	0.00	0.00
13,400.00	90.00	359.42	12,449.96	1,071.61	-11.03	1,071.67	0.00	0.00	0.00
13,500.00	90.00	359.42	12,449.97	1,171.61	-12.04	1,171.67	0.00	0.00	0.00
13,600.00	90.00	359.42	12,449.97	1,271.60	-13.05	1,271.67	0.00	0.00	0.00
13,700.00	90.00	359.42	12,449.97	1,371.59	-14.06	1,371.67	0.00	0.00	0.00
13,800.00	90.00	359.42	12,449.97	1,471.59	-15.07	1,471.67	0.00	0.00	0.00
13,900.00	90.00	359.42	12,449.97	1,571.58	-16.08	1,571.67	0.00	0.00	0.00
14,000.00	90.00	359.42	12,449.97	1,671.58	-17.09	1,671.67	0.00	0.00	0.00
14,100.00	90.00	359.42	12,449.97	1,771.57	-18.10	1,771.67	0.00	0.00	0.00
14,200.00	90.00	359.42	12,449.97	1,871.57	-19.11	1,871.67	0.00	0.00	0.00
14,300.00	90.00	359.42	12,449.97	1,971.56	-20.12	1,971.67	0.00	0.00	0.00
14,400.00	90.00	359.42	12,449.97	2,071.56	-21.13	2,071.67	0.00	0.00	0.00
14,500.00	90.00	359.42	12,449.97	2,171.55	-22.14	2,171.67	0.00	0.00	0.00
14,600.00	90.00	359.42	12,449.98	2,271.55	-23.15	2,271.67	0.00	0.00	0.00
14,700.00	90.00	359.42	12,449.98	2,371.54	-24.16	2,371.67	0.00	0.00	0.00
14,800.00	90.00	359.42	12,449.98	2,471.54	-25.17	2,471.67	0.00	0.00	0.00
14,900.00	90.00	359.42	12,449.98	2,571.53	-26.18	2,571.67	0.00	0.00	0.00
15,000.00	90.00	359.42	12,449.98	2,671.53	-27.19	2,671.67	0.00	0.00	0.00
15,100.00	90.00	359.42	12,449.98	2,771.52	-28.20	2,771.67	0.00	0.00	0.00
15,200.00	90.00	359.42	12,449.98	2,871.52	-29.21	2,871.67	0.00	0.00	0.00
15,300.00	90.00	359.42	12,449.98	2,971.51	-30.22	2,971.67	0.00	0.00	0.00
15,400.00	90.00	359.42	12,449.98	3,071.51	-31.23	3,071.67	0.00	0.00	0.00
15,500.00	90.00	359.42	12,449.98	3,171.50	-32.24	3,171.67	0.00	0.00	0.00
15,600.00	90.00	359.42	12,449.99	3,271.50	-33.25	3,271.67	0.00	0.00	0.00
15,700.00	90.00	359.42	12,449.99	3,371.49	-34.26	3,371.67	0.00	0.00	0.00
15,800.00	90.00	359.42	12,449.99	3,471.49	-35.27	3,471.67	0.00	0.00	0.00
15,900.00	90.00	359.42	12,449.99	3,571.48	-36.28	3,571.67	0.00	0.00	0.00
16,000.00	90.00	359.42	12,449.99	3,671.48	-37.29	3,671.67	0.00	0.00	0.00

Company: Marathon Oil
Project: Lea County, NM
Site: Cave Lion 5 Federal
Well: BC #1H
Wellbore: OH
Design: Prelim Plan A

Local Co-ordinate Reference: Well BC #1H
TVD Reference: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))
MD Reference: Well @ 3297.50usft (GL: 3271' + KB: 26.5' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Planned Survey

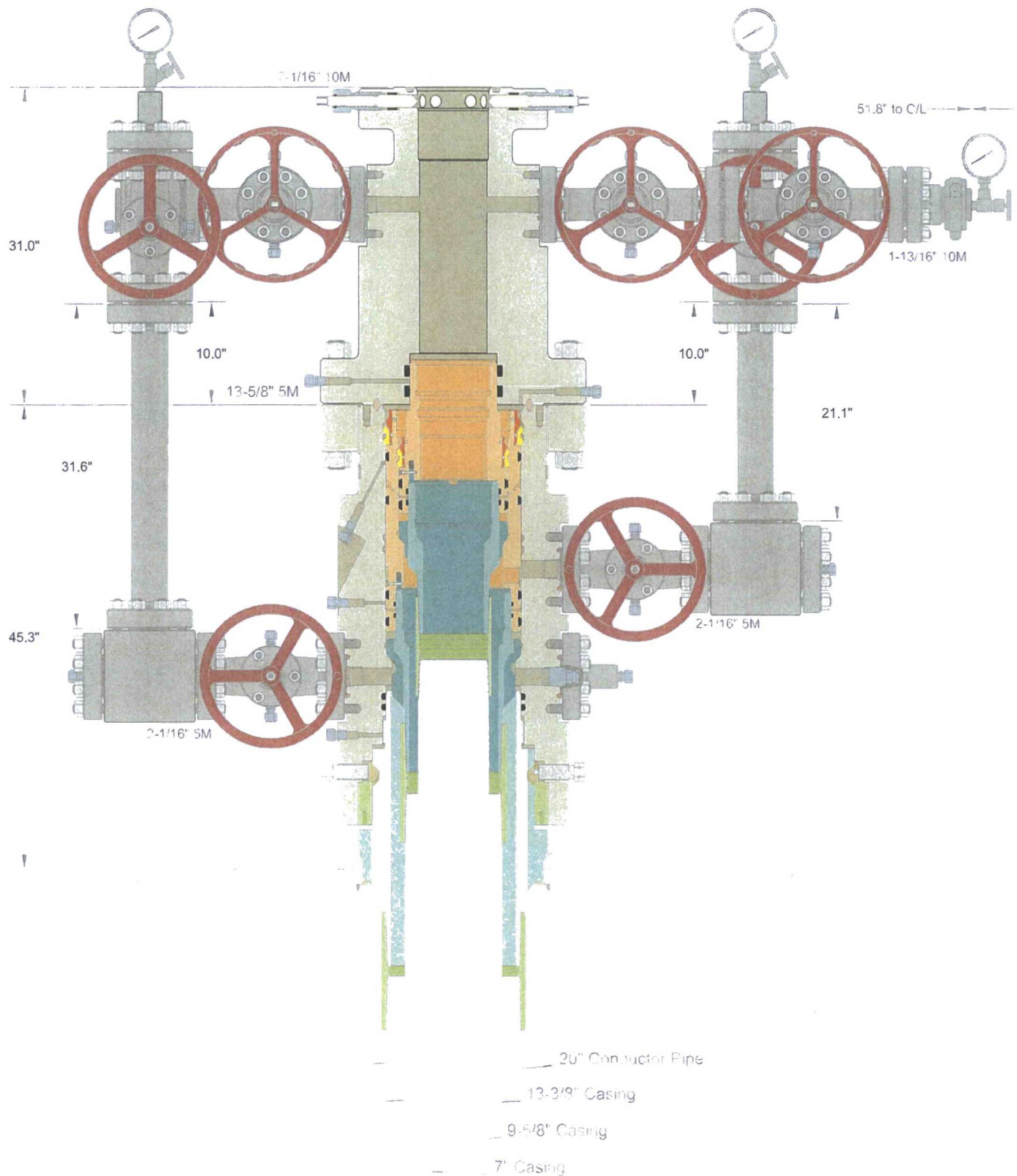
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,100.00	90.00	359.42	12,449.99	3,771.47	-38.30	3,771.67	0.00	0.00	0.00
16,200.00	90.00	359.42	12,449.99	3,871.47	-39.31	3,871.67	0.00	0.00	0.00
16,300.00	90.00	359.42	12,449.99	3,971.46	-40.32	3,971.67	0.00	0.00	0.00
16,400.00	90.00	359.42	12,449.99	4,071.46	-41.33	4,071.67	0.00	0.00	0.00
16,500.00	90.00	359.42	12,449.99	4,171.45	-42.34	4,171.67	0.00	0.00	0.00
16,600.00	90.00	359.42	12,450.00	4,271.45	-43.35	4,271.67	0.00	0.00	0.00
16,700.00	90.00	359.42	12,450.00	4,371.44	-44.36	4,371.67	0.00	0.00	0.00
16,800.00	90.00	359.42	12,450.00	4,471.44	-45.36	4,471.67	0.00	0.00	0.00
16,900.00	90.00	359.42	12,450.00	4,571.43	-46.37	4,571.67	0.00	0.00	0.00
17,000.00	90.00	359.42	12,450.00	4,671.43	-47.38	4,671.67	0.00	0.00	0.00
17,097.62	90.00	359.42	12,450.00	4,769.04	-48.37	4,769.29	0.00	0.00	0.00

[CaveLion5#1H]LTP/BHL

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
[CaveLion5#1H]FTP	0.00	0.00	0.00	144.97	-1.41	388,950.04	790,213.59	32.0658762	-103.3964923
- plan misses target center by 144.98usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
[CaveLion5#1H]LTP/BHI	0.00	0.00	12,450.00	4,769.04	-48.37	393,574.11	790,166.63	32.0785874	-103.3965143
- plan hits target center									
- Point									

Checked By: _____ Approved By: _____ Date: _____



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CACTUS WELLHEAD LLC

MARATHON OIL COMPANY

20" x 13-3/8" x 9-5/8" x 7" MBU-3T-CFL-R-DBLO Wellhead
With 13-5/8" 5M x 7-1/16" 10M CTH-DBLHPS Tubing Head (31" LG)
Utilizing Pin Down Mandrel Casing Hangers

DRAWN	DLE	24JUL17
AFPPV		
DRAWING NO.	ODE0001624	

QUALITY CONTROL	No.: QC-DB- 380 / 2012
	Page : 1 / 61
Hose No.: 63389, 63390, 63391 63392, 63393	Revision : 0
	Date: 28. August 2012.
	Prepared by : <i>Scalá Linder</i>
	Appr. by: <i>Scalá Linder</i>

CHOKES AND KILL HOSES

id.: 3" 69 MPa x 35 ft (10,67 m)

DATA BOOK

Purchaser: H & P

Purchaser Order No.:

ContiTech Rubber Order No.: 531895

ContiTech Beattie Co. Order No.: 006227

NOT DESIGNED FOR WELL TESTING