

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTNMOCD
HobbsFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2		5. Lease Serial No. NMNM13647
1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
2. Name of Operator MARATHON OIL PERMIAN, LLC • Contact: JENNIFER E VAN CUREN E-Mail: jvancuren@marathonoil.com		7. If Unit or CA/Agreement, Name and/or No.
3a. Address 5555 SAN FELIPE RD HOUSTON, TX 77057	3b. Phone No. (include area code) Ph: 713-296-2500	8. Well Name and No. CAVE LION 5 FEDEAL WC 5H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 5 T26S R35E Mer NMP SWSW 185FSL 480FWL ✓ 32.065600 N Lat, 103.396000 W Lon		9. API Well No. 30-025-44102
		10. Field and Pool or Exploratory Area HARDEN TANK; WOLFCAMP
		11. County or Parish, State LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

MARATHON OIL PERMIAN LLC HAS attached the anti collision report as requested by Jennifer Sanchez.

14. I hereby certify that the foregoing is true and correct. Electronic Submission #398107 verified by the BLM Well Information System For MARATHON OIL PERMIAN, LLC, sent to the Hobbs Committed to AFMSS for processing by JENNIFER SANCHEZ on 12/20/2017 (1)	
Name (Printed/Typed) JENNIFER E VAN CUREN	Title SR. REGULATORY COMPLIANCE REP
Signature (Electronic Submission)	Date 12/14/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____	Title _____
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.	Office _____

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

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

Survey Tool Program		Date	12/4/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5,000.00	Plan #3 (OH)	MWD+IFR1	OWSG MWD + IFR1	
5,000.00	10,000.00	Plan #3 (OH)	MWD+IFR1	OWSG MWD + IFR1	
10,000.00	17,075.02	Plan #3 (OH)	MWD+IFR1	OWSG MWD + IFR1	

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured	Offset Measured	Distance		Separation Factor	Warning
	Depth (usft)	Depth (usft)	Between Centres (usft)	Between Ellipses (usft)		
Cave Lion 5 Federal						
WC #5H - OH - OH	9,788.54	9,789.19	92.72	37.81	1.689	CC
WC #5H - OH - OH	9,800.00	9,800.36	92.74	37.76	1.687	ES
WC #5H - OH - OH	9,900.00	9,899.76	93.71	38.13	1.686	SF
WC #5H - ST01 - MWD	9,788.54	9,789.19	92.72	37.81	1.689	CC
WC #5H - ST01 - MWD	9,800.00	9,800.36	92.74	37.76	1.687	ES
WC #5H - ST01 - MWD	9,900.00	9,899.76	93.71	38.13	1.686	SF

Offset Design Cave Lion 5 Federal - WC #5H - OH - OH											Offset Site Error: 0.00 usft		
Survey Program: 208-GYRO-MWD, 1146-MWD+IFR1											Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis			Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Minimum Separation (usft)	Separation Factor
0.00	0.00	0.00	1.00	0.00	0.00	89.60	1.05	150.00	150.01				
100.00	100.00	98.93	99.93	0.13	0.15	89.55	1.17	150.02	150.03	149.74	0.29	521.104	
200.00	200.00	198.85	199.85	0.49	0.31	89.41	1.54	150.09	150.10	149.30	0.80	187.302	
300.00	300.00	298.76	299.76	0.85	0.64	89.29	1.85	150.22	150.23	148.74	1.49	100.816	
400.00	400.00	399.04	400.04	1.21	0.99	89.21	2.08	150.28	150.30	148.10	2.20	68.369	
500.00	500.00	499.04	500.04	1.57	1.34	89.16	2.21	150.28	150.30	147.39	2.91	51.721	
600.00	600.00	599.28	600.28	1.93	1.69	89.12	2.30	150.18	150.20	146.59	3.61	41.562	
700.00	700.00	699.66	700.66	2.29	2.04	89.04	2.52	149.87	149.89	145.57	4.32	34.678	
800.00	800.00	799.83	800.82	2.64	2.39	88.91	2.85	149.33	149.36	144.33	5.03	29.692	
900.00	900.00	899.64	900.63	3.00	2.74	88.85	2.99	148.82	148.85	143.12	5.74	25.945	
1,000.00	1,000.00	999.52	1,000.51	3.36	3.09	88.82	3.05	148.46	148.49	142.05	6.44	23.041	
1,100.00	1,100.00	1,099.64	1,100.63	3.72	3.41	88.76	3.19	148.04	148.07	140.94	7.13	20.768	
1,141.59	1,141.59	1,140.60	1,141.59	3.87	3.49	88.78	3.14	147.95	147.99	140.63	7.35	20.130	
1,200.00	1,200.00	1,198.46	1,199.45	4.08	3.51	88.89	2.87	148.07	148.10	140.51	7.59	19.525	
1,300.00	1,300.00	1,298.09	1,299.08	4.44	3.56	89.02	2.54	148.64	148.67	140.68	7.99	18.604	
1,400.00	1,400.00	1,398.19	1,399.18	4.79	3.64	89.17	2.15	149.25	149.27	140.83	8.43	17.703	
1,500.00	1,500.00	1,499.60	1,500.58	5.15	3.76	89.51	1.28	149.47	149.47	140.57	8.91	16.785	

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

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Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Cave Lion 5 Federal - WC #5H - OH - OH													Offset Site Error:	0.00 usft
Survey Program: 208-GYRO-MWD, 1146-MWD+IFR1													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,600.00	1,600.00	1,600.88	1,601.84	5.49	3.90	-104.94	-0.40	148.60	148.72	139.33	9.39	15.841		
1,700.00	1,699.99	1,701.50	1,702.43	5.82	4.07	-104.51	-2.80	147.11	147.58	137.70	9.88	14.933		
1,800.00	1,799.97	1,800.88	1,801.76	6.15	4.26	-104.40	-5.19	145.62	146.65	136.24	10.40	14.096		
1,900.00	1,899.92	1,900.84	1,901.69	6.48	4.47	-104.65	-7.50	144.40	146.21	135.26	10.95	13.354		
1,950.45	1,950.34	1,950.98	1,951.81	6.65	4.59	-104.84	-8.83	143.84	146.13	134.89	11.23	13.008		
2,000.00	1,999.84	2,000.28	2,001.08	6.82	4.70	-105.04	-10.27	143.39	146.21	134.69	11.51	12.697		
2,100.00	2,099.73	2,100.87	2,101.62	7.16	4.95	-105.66	-13.36	142.34	146.41	134.31	12.10	12.099		
2,200.00	2,199.56	2,201.75	2,202.41	7.50	5.21	-106.26	-17.34	140.78	146.36	133.65	12.70	11.521		
2,300.00	2,299.35	2,302.48	2,302.94	7.84	5.49	-106.41	-23.35	138.67	145.95	132.63	13.32	10.957		
2,400.00	2,399.08	2,402.33	2,402.46	8.18	5.77	-106.23	-30.96	136.37	145.54	131.59	13.95	10.434		
2,413.67	2,412.70	2,415.85	2,415.94	8.23	5.81	-106.23	-32.01	136.08	145.53	131.50	14.04	10.369		
2,500.00	2,498.73	2,501.25	2,501.10	8.53	6.06	-106.45	-38.31	134.60	145.90	131.32	14.59	10.003		
2,600.00	2,498.35	2,500.72	2,500.33	8.87	6.36	-107.05	-45.13	133.45	147.04	131.81	15.23	9.653		
2,700.00	2,497.97	2,501.53	2,500.89	9.22	6.67	-107.61	-52.15	132.17	148.08	132.19	15.89	9.319		
2,800.00	2,497.59	2,502.92	2,501.94	9.57	6.99	-107.79	-60.21	130.06	148.27	131.71	16.56	8.955		
2,900.00	2,497.21	2,504.76	2,503.34	9.93	7.31	-107.70	-69.06	126.95	147.45	130.22	17.23	8.558		
3,000.00	2,496.83	3,005.37	3,003.55	10.28	7.64	-107.97	-76.93	122.74	145.54	127.64	17.90	8.129		
3,100.00	3,096.45	3,104.20	3,102.07	10.63	7.96	-108.63	-83.68	118.81	143.91	125.33	18.58	7.745		
3,200.00	3,196.07	3,204.60	3,202.21	10.99	8.29	-109.51	-89.96	115.29	142.80	123.53	19.26	7.413		
3,300.00	3,295.80	3,305.15	3,302.48	11.35	8.62	-109.91	-96.30	111.22	140.73	120.78	19.95	7.055		
3,400.00	3,395.64	3,403.55	3,400.65	11.70	8.95	-109.90	-101.86	107.48	138.38	117.74	20.64	6.706		
3,500.00	3,495.56	3,502.86	3,499.80	12.05	9.28	-109.53	-106.61	104.56	136.37	115.05	21.32	6.395		
3,600.00	3,595.53	3,602.92	3,599.71	12.41	9.62	-108.46	-111.35	101.78	133.97	111.96	22.01	6.086		
3,700.00	3,695.53	3,701.80	3,698.47	12.75	9.95	88.16	-115.79	99.35	131.45	108.76	22.70	5.792		
3,800.00	3,795.53	3,801.05	3,797.62	13.10	10.29	89.86	-119.69	97.60	129.62	106.24	23.38	5.544		
3,900.00	3,895.53	3,902.75	3,899.25	13.44	10.63	91.11	-122.47	95.27	127.35	103.28	24.07	5.292		
4,000.00	3,995.53	4,003.82	4,000.23	13.79	10.97	92.08	-124.49	91.69	123.86	99.11	24.75	5.005		
4,100.00	4,095.53	4,103.52	4,099.85	14.13	11.31	93.16	-126.62	87.92	120.18	94.75	25.43	4.726		
4,200.00	4,195.53	4,203.05	4,199.29	14.48	11.65	94.14	-128.41	84.31	116.68	90.56	26.12	4.468		
4,300.00	4,295.53	4,301.76	4,297.95	14.83	11.98	95.11	-130.15	81.49	113.97	87.16	26.80	4.252		
4,400.00	4,395.53	4,400.53	4,396.69	15.18	12.32	96.03	-131.82	79.83	112.46	84.97	27.49	4.091		
4,500.00	4,495.53	4,499.52	4,495.67	15.52	12.66	96.85	-133.33	79.05	111.85	83.67	28.18	3.969		
4,511.82	4,507.36	4,511.21	4,507.36	15.57	12.70	96.93	-133.49	79.02	111.84	83.58	28.26	3.958		
4,600.00	4,595.53	4,598.24	4,594.38	15.87	12.99	97.46	-134.57	79.31	112.27	83.41	28.86	3.890		
4,700.00	4,695.53	4,696.93	4,693.05	16.22	13.32	98.03	-135.91	80.75	113.89	84.36	29.53	3.857		
4,800.00	4,795.53	4,796.24	4,792.32	16.57	13.65	98.66	-137.52	83.10	116.47	86.26	30.21	3.856		
4,900.00	4,895.53	4,895.37	4,891.40	16.92	13.98	99.15	-138.99	85.90	119.49	88.61	30.88	3.870		
5,000.00	4,995.53	4,995.58	4,991.54	17.10	14.31	99.72	-140.76	89.20	123.03	91.64	31.39	3.919		
5,100.00	5,095.53	5,095.86	5,091.76	17.11	14.64	99.95	-141.77	92.14	126.09	94.35	31.73	3.974		
5,200.00	5,195.53	5,197.23	5,193.11	17.12	14.98	99.91	-142.12	94.68	128.62	96.53	32.09	4.008		
5,300.00	5,295.53	5,298.03	5,293.89	17.14	15.31	99.73	-141.99	96.27	130.15	97.71	32.44	4.012		
5,400.00	5,395.53	5,397.57	5,393.42	17.17	15.63	99.49	-141.69	97.80	131.62	98.82	32.80	4.013		
5,500.00	5,495.53	5,498.22	5,494.06	17.21	15.96	99.27	-141.41	99.20	132.95	99.78	33.17	4.008		
5,600.00	5,595.53	5,598.17	5,594.00	17.26	16.29	99.07	-141.12	100.39	134.07	100.53	33.54	3.997		
5,700.00	5,695.53	5,698.11	5,693.93	17.31	16.62	98.91	-140.95	101.59	135.24	101.31	33.92	3.986		
5,800.00	5,795.53	5,798.03	5,793.85	17.37	16.96	98.79	-140.86	102.82	136.43	102.12	34.32	3.976		
5,900.00	5,895.53	5,898.10	5,893.91	17.43	17.29	98.62	-140.64	104.13	137.70	102.98	34.72	3.966		
6,000.00	5,995.53	5,998.52	5,994.32	17.51	17.62	98.44	-140.35	105.19	138.70	103.57	35.13	3.949		
6,100.00	6,095.53	6,098.30	6,094.10	17.59	17.96	98.26	-140.05	106.10	139.56	104.02	35.54	3.927		
6,200.00	6,195.53	6,198.02	6,193.80	17.67	18.29	98.05	-139.72	107.36	140.76	104.80	35.96	3.914		
6,300.00	6,295.53	6,301.17	6,296.94	17.77	18.64	97.85	-139.30	107.98	141.31	104.91	36.40	3.882		

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Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis (")	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,400.00	6,395.53	6,403.44	6,399.19	17.87	18.98	97.34	-137.78	106.00	139.19	102.35	36.84	3.778		
6,500.00	6,495.53	6,503.55	6,499.25	17.98	19.31	96.78	-136.10	103.43	136.44	99.16	37.28	3.660		
6,600.00	6,595.53	6,603.40	6,599.06	18.09	19.64	96.31	-134.69	100.90	133.75	96.03	37.73	3.545		
6,700.00	6,695.53	6,703.52	6,699.14	18.21	19.98	95.87	-133.41	98.33	131.07	92.88	38.18	3.433		
6,800.00	6,795.53	6,803.37	6,798.95	18.34	20.32	95.44	-132.17	95.73	128.36	89.71	38.65	3.321		
6,900.00	6,895.53	6,903.81	6,899.34	18.47	20.66	95.05	-131.04	92.96	125.51	86.39	39.12	3.209		
7,000.00	6,995.53	7,003.69	6,999.17	18.61	20.99	94.60	-129.83	90.07	122.52	82.93	39.59	3.094		
7,100.00	7,095.53	7,103.09	7,098.53	18.75	21.33	94.12	-128.59	87.24	119.59	79.51	40.08	2.984		
7,200.00	7,195.53	7,200.50	7,195.91	18.90	21.66	93.31	-126.83	86.17	118.37	77.81	40.56	2.919		
7,300.00	7,295.53	7,300.38	7,295.77	19.06	21.99	92.30	-124.74	86.05	118.15	77.10	41.05	2.878		
7,400.00	7,395.53	7,400.56	7,395.93	19.22	22.33	91.30	-122.68	85.83	117.86	76.31	41.54	2.837		
7,500.00	7,495.53	7,500.30	7,495.65	19.39	22.66	90.45	-120.91	85.55	117.55	75.51	42.04	2.796		
7,516.01	7,511.54	7,516.19	7,511.54	19.42	22.72	90.32	-120.65	85.54	117.54	75.42	42.12	2.790		
7,600.00	7,595.53	7,599.87	7,595.21	19.56	23.00	89.67	-119.33	85.71	117.72	75.17	42.55	2.767		
7,700.00	7,695.53	7,699.65	7,694.97	19.74	23.33	88.85	-117.64	86.02	118.05	74.99	43.06	2.741		
7,800.00	7,795.53	7,799.52	7,794.82	19.92	23.67	88.09	-116.05	86.57	118.64	75.06	43.58	2.722		
7,900.00	7,895.53	7,899.78	7,895.08	20.10	24.01	87.50	-114.81	87.04	119.15	75.05	44.10	2.702		
8,000.00	7,995.53	8,000.64	7,995.94	20.29	24.35	87.08	-113.93	87.08	119.24	74.60	44.64	2.671		
8,100.00	8,095.53	8,101.46	8,096.75	20.49	24.70	86.73	-113.24	86.32	118.52	73.34	45.18	2.623		
8,200.00	8,195.53	8,202.51	8,197.79	20.69	25.04	86.54	-112.93	84.84	117.08	71.35	45.72	2.561		
8,300.00	8,295.53	8,305.66	8,300.88	20.89	25.40	86.46	-112.98	81.55	113.89	67.63	46.27	2.462		
8,400.00	8,395.53	8,406.26	8,401.35	21.10	25.75	86.68	-113.72	76.46	108.80	61.98	46.82	2.324		
8,500.00	8,495.53	8,502.67	8,497.68	21.31	26.09	87.31	-115.06	72.95	105.09	57.70	47.39	2.217		
8,600.00	8,595.53	8,602.34	8,597.32	21.53	26.44	88.15	-116.68	71.15	103.21	55.26	47.96	2.152		
8,700.00	8,695.53	8,702.38	8,697.34	21.75	26.79	88.89	-118.04	69.35	101.38	52.86	48.53	2.089		
8,800.00	8,795.53	8,801.39	8,796.34	21.97	27.14	89.27	-118.72	68.16	100.17	51.07	49.10	2.040		
8,900.00	8,895.53	8,901.42	8,896.36	22.20	27.49	89.41	-118.99	67.33	99.34	49.66	49.68	2.000		
9,000.00	8,995.53	9,001.52	8,996.46	22.43	27.84	89.60	-119.32	66.50	98.51	48.25	50.26	1.960		
9,100.00	9,095.53	9,101.79	9,096.72	22.66	28.19	89.85	-119.74	65.32	97.33	46.49	50.84	1.914		
9,200.00	9,195.53	9,201.45	9,196.37	22.90	28.54	90.20	-120.34	64.28	96.29	44.86	51.43	1.872		
9,300.00	9,295.53	9,301.49	9,296.41	23.14	28.89	90.25	-120.42	63.49	95.49	43.48	52.02	1.836		
9,400.00	9,395.53	9,400.87	9,395.78	23.38	29.23	90.06	-120.09	62.58	94.58	41.98	52.60	1.798		
9,413.13	9,408.66	9,413.75	9,408.66	23.42	29.27	89.98	-119.97	62.57	94.57	41.89	52.68	1.795		
9,500.00	9,495.53	9,500.39	9,495.29	23.63	29.57	89.22	-118.70	62.95	94.96	41.77	53.19	1.785		
9,600.00	9,595.53	9,601.30	9,596.19	23.88	29.92	88.30	-117.20	62.68	94.72	40.94	53.78	1.761		
9,700.00	9,695.53	9,701.94	9,696.83	24.13	30.26	87.73	-116.28	61.56	93.64	39.26	54.38	1.722		
9,788.54	9,784.07	9,789.19	9,784.07	24.36	30.57	87.85	-116.53	60.66	92.72	37.81	54.91	1.689 CC		
9,800.00	9,795.53	9,800.36	9,795.23	24.38	30.61	87.91	-116.63	60.68	92.74	37.76	54.98	1.687 ES		
9,900.00	9,895.53	9,899.76	9,894.62	24.64	30.95	88.74	-117.95	61.68	93.71	38.13	55.58	1.686 SF		
10,000.00	9,995.53	9,999.39	9,994.23	24.77	31.30	89.84	-119.74	62.78	94.79	38.74	56.05	1.691		
10,100.00	10,095.53	10,098.63	10,093.45	24.78	31.64	90.43	-120.72	64.53	96.55	40.16	56.39	1.712		
10,200.00	10,195.53	10,198.26	10,193.04	24.79	31.98	89.85	-119.75	66.89	98.93	42.19	56.74	1.744		
10,300.00	10,295.53	10,298.16	10,292.90	24.80	32.32	89.73	-119.53	69.45	101.49	44.39	57.09	1.778		
10,400.00	10,395.53	10,400.66	10,395.39	24.82	32.67	89.98	-119.96	70.91	102.91	45.42	57.49	1.790		
10,500.00	10,495.53	10,501.56	10,496.29	24.85	33.03	90.48	-120.87	70.61	102.62	44.75	57.87	1.773		
10,565.00	10,560.53	10,565.82	10,560.53	24.87	33.25	91.14	-122.04	70.41	102.43	44.32	58.11	1.763		
10,600.00	10,595.53	10,600.57	10,595.27	24.88	33.38	91.63	-122.92	70.44	102.48	44.24	58.25	1.759		
10,700.00	10,695.53	10,700.27	10,694.92	24.92	33.73	93.50	-126.29	70.72	102.91	44.28	58.63	1.755		
10,800.00	10,795.53	10,799.53	10,794.12	24.96	34.08	95.30	-129.57	71.21	103.66	44.64	59.02	1.756		
10,900.00	10,895.53	10,897.21	10,891.74	25.00	34.42	96.38	-131.81	73.62	106.35	46.96	59.39	1.791		

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

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Cave Lion 5 Federal - WC #5H - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 208-GYRO-MWD, 1146-MWD+IFR1														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
11,000.00	10,995.53	10,996.63	10,991.08	25.05	34.76	96.70	-132.84	77.27	110.11	50.33	59.78	1.842			
11,100.00	11,095.53	11,097.53	11,091.90	25.11	35.11	96.98	-133.88	81.34	114.25	54.05	60.19	1.898			
11,200.00	11,195.53	11,200.37	11,194.70	25.17	35.47	98.17	-136.44	82.57	115.75	55.11	60.63	1.909			
11,300.00	11,295.53	11,300.14	11,294.45	25.24	35.81	99.08	-138.37	82.96	116.42	55.38	61.05	1.907			
11,400.00	11,395.53	11,399.63	11,393.93	25.31	36.16	98.97	-138.35	84.21	117.66	56.20	61.46	1.914			
11,500.00	11,495.53	11,500.73	11,495.02	25.39	36.51	98.74	-138.04	85.39	118.77	56.88	61.89	1.919			
11,600.00	11,595.53	11,602.24	11,596.53	25.47	36.86	99.03	-138.59	85.02	118.49	56.16	62.33	1.901			
11,700.00	11,695.53	11,703.56	11,697.83	25.55	37.22	99.53	-139.39	83.46	117.09	54.33	62.77	1.866			
11,800.00	11,795.53	11,804.00	11,798.24	25.64	37.57	97.23	-139.09	81.24	114.88	51.67	63.20	1.818			
11,900.00	11,895.27	11,904.24	11,898.45	25.74	37.92	100.44	-138.24	78.77	113.31	49.67	63.64	1.780			
11,921.94	11,917.02	11,926.15	11,920.35	25.76	37.99	101.84	-138.05	78.17	113.24	49.50	63.74	1.777			
12,000.00	11,993.75	12,003.41	11,997.57	25.83	38.26	108.69	-137.54	75.79	114.56	50.48	64.08	1.788			
12,100.00	12,088.54	12,104.30	12,098.32	25.93	38.61	120.88	-133.65	73.01	124.02	59.56	64.45	1.924			
12,200.00	12,176.42	12,222.25	12,212.56	26.04	39.00	131.51	-106.06	70.81	137.37	73.15	64.21	2.139			
12,300.00	12,254.74	12,355.90	12,328.23	26.14	39.41	139.14	-40.35	66.01	144.58	81.96	62.63	2.309			
12,400.00	12,321.10	12,471.54	12,414.07	26.24	39.72	145.33	36.70	58.84	148.20	86.72	61.48	2.411			
12,500.00	12,373.49	12,596.47	12,491.00	26.34	40.04	154.03	133.85	44.59	150.68	91.34	59.34	2.539			
12,600.00	12,410.32	12,718.36	12,554.08	26.47	40.34	165.44	235.73	23.15	160.67	103.42	57.24	2.807			
12,700.00	12,430.47	12,846.56	12,598.13	26.61	40.63	175.61	353.76	1.01	172.92	117.13	55.79	3.100			
12,800.00	12,434.15	12,972.78	12,618.27	26.77	40.87	-178.47	477.47	-11.87	184.96	129.41	55.55	3.329			
12,900.00	12,433.63	13,084.78	12,623.87	26.97	41.08	-176.81	589.21	-16.82	190.60	134.74	55.86	3.412			
13,000.00	12,433.11	13,181.30	12,626.78	27.20	41.27	-175.78	685.57	-21.49	194.38	138.24	56.14	3.463			
13,100.00	12,432.80	13,297.64	12,625.95	27.46	41.53	-175.29	801.80	-24.31	194.16	137.44	56.73	3.423			
13,161.85	12,432.28	13,352.83	12,624.74	27.64	41.66	-175.34	856.96	-24.61	193.10	136.28	56.82	3.398			
13,200.00	12,432.08	13,388.29	12,624.88	27.75	41.75	-175.30	892.43	-25.13	193.46	136.54	56.92	3.399			
13,203.55	12,432.06	13,391.87	12,624.91	27.76	41.76	-175.30	896.01	-25.18	193.51	136.58	56.93	3.399			
13,300.00	12,431.56	13,471.00	12,625.52	28.07	41.95	-175.62	975.13	-24.95	195.45	138.36	57.09	3.424			
13,400.00	12,431.04	13,471.00	12,625.52	28.42	41.95	-175.62	975.13	-24.95	228.47	169.63	58.85	3.883			
13,500.00	12,430.53	13,471.00	12,625.52	28.80	41.95	-175.62	975.13	-24.95	293.59	232.20	61.39	4.782			
13,600.00	12,430.01	13,471.00	12,625.52	29.21	41.95	-175.62	975.13	-24.95	374.43	311.42	63.01	5.942			
13,700.00	12,429.49	13,471.00	12,625.52	29.64	41.95	-175.62	975.13	-24.95	462.81	398.84	63.97	7.234			
13,800.00	12,428.98	13,471.00	12,625.52	30.10	41.95	-175.62	975.13	-24.95	555.15	490.57	64.58	8.596			
13,900.00	12,428.46	13,471.00	12,625.52	30.58	41.95	-175.62	975.13	-24.95	649.76	584.77	64.99	9.998			
14,000.00	12,427.94	13,471.00	12,625.52	31.08	41.95	-175.62	975.13	-24.95	745.78	680.49	65.29	11.423			
14,100.00	12,427.42	13,471.00	12,625.52	31.60	41.95	-175.62	975.13	-24.95	842.73	777.21	65.51	12.864			
14,200.00	12,426.91	13,471.00	12,625.52	32.15	41.95	-175.62	975.13	-24.95	940.31	874.62	65.69	14.314			
14,300.00	12,426.39	13,471.00	12,625.52	32.71	41.95	-175.62	975.13	-24.95	1,038.36	972.51	65.84	15.770			
14,400.00	12,425.87	13,471.00	12,625.52	33.30	41.95	-175.62	975.13	-24.95	1,136.74	1,070.77	65.97	17.231			
14,500.00	12,425.35	13,471.00	12,625.52	33.90	41.95	-175.62	975.13	-24.95	1,235.39	1,169.30	66.08	18.694			
14,600.00	12,424.84	13,471.00	12,625.52	34.51	41.95	-175.62	975.13	-24.95	1,334.23	1,268.05	66.19	20.158			
14,700.00	12,424.32	13,471.00	12,625.52	35.14	41.95	-175.62	975.13	-24.95	1,433.24	1,366.96	66.28	21.623			
14,800.00	12,423.80	13,471.00	12,625.52	35.79	41.95	-175.62	975.13	-24.95	1,532.38	1,466.00	66.37	23.088			
14,900.00	12,423.28	13,471.00	12,625.52	36.45	41.95	-175.62	975.13	-24.95	1,631.62	1,565.16	66.46	24.551			
15,000.00	12,422.77	13,471.00	12,625.52	37.13	41.95	-175.62	975.13	-24.95	1,730.95	1,664.41	66.54	26.014			
15,100.00	12,422.25	13,471.00	12,625.52	37.81	41.95	-175.62	975.13	-24.95	1,830.35	1,763.73	66.62	27.474			
15,200.00	12,421.73	13,471.00	12,625.52	38.51	41.95	-175.62	975.13	-24.95	1,929.81	1,863.11	66.70	28.933			
15,300.00	12,421.21	13,471.00	12,625.52	39.22	41.95	-175.62	975.13	-24.95	2,029.33	1,962.55	66.78	30.390			
15,400.00	12,420.70	13,471.00	12,625.52	39.94	41.95	-175.62	975.13	-24.95	2,128.89	2,062.04	66.85	31.845			
15,500.00	12,420.18	13,471.00	12,625.52	40.68	41.95	-175.62	975.13	-24.95	2,228.49	2,161.56	66.93	33.296			
15,600.00	12,419.66	13,471.00	12,625.52	41.42	41.95	-175.62	975.13	-24.95	2,328.12	2,261.12	67.01	34.745			
15,700.00	12,419.14	13,471.00	12,625.52	42.17	41.95	-175.62	975.13	-24.95	2,427.79	2,360.71	67.08	36.191			

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

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Cave Lion 5 Federal - WC #5H - OH - OH													Offset Site Error:	0.00 usft
Survey Program: 208-GYRO-MWD, 1146-MWD+IFR1													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
15,800.00	12,418.63	13,471.00	12,625.52	42.92	41.95	-175.62	975.13	-24.95	2,527.48	2,460.32	67.16	37.634		
15,900.00	12,418.11	13,471.00	12,625.52	43.69	41.95	-175.62	975.13	-24.95	2,627.20	2,559.96	67.24	39.074		
16,000.00	12,417.59	13,471.00	12,625.52	44.47	41.95	-175.62	975.13	-24.95	2,726.93	2,659.62	67.32	40.510		
16,100.00	12,417.07	13,471.00	12,625.52	45.25	41.95	-175.62	975.13	-24.95	2,826.69	2,759.29	67.39	41.942		
16,200.00	12,416.56	13,471.00	12,625.52	46.04	41.95	-175.62	975.13	-24.95	2,926.46	2,858.98	67.47	43.372		
16,300.00	12,416.04	13,471.00	12,625.52	46.83	41.95	-175.62	975.13	-24.95	3,026.24	2,958.69	67.55	44.797		
16,400.00	12,415.52	13,471.00	12,625.52	47.63	41.95	-175.62	975.13	-24.95	3,126.04	3,058.41	67.64	46.218		
16,500.00	12,415.01	13,471.00	12,625.52	48.44	41.95	-175.62	975.13	-24.95	3,225.86	3,158.14	67.72	47.636		
16,600.00	12,414.49	13,471.00	12,625.52	49.25	41.95	-175.62	975.13	-24.95	3,325.68	3,257.88	67.80	49.049		
16,700.00	12,413.97	13,471.00	12,625.52	50.07	41.95	-175.62	975.13	-24.95	3,425.51	3,357.63	67.89	50.459		
16,800.00	12,413.45	13,471.00	12,625.52	50.89	41.95	-175.62	975.13	-24.95	3,525.36	3,457.38	67.97	51.864		
16,900.00	12,412.94	13,471.00	12,625.52	51.72	41.95	-175.62	975.13	-24.95	3,625.21	3,557.15	68.06	53.265		
17,000.00	12,412.42	13,471.00	12,625.52	52.56	41.95	-175.62	975.13	-24.95	3,725.07	3,656.92	68.15	54.662		
17,075.02	12,412.03	13,471.00	12,625.52	53.18	41.95	-175.62	975.13	-24.95	3,799.99	3,731.77	68.21	55.706		

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Cave Lion 5 Federal - WC #5H - ST01 - MWD													Offset Site Error:	0.00 usft
Survey Program: 208-GYRO-MWD, 1148-MWD+IFR1, 13303-MWD+IFR1													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)				Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	1.00	0.00	0.00	89.60	1.05	150.00	150.01					
100.00	100.00	98.93	99.93	0.13	0.15	89.55	1.17	150.02	150.03	0.29	521.104			
200.00	200.00	198.85	199.85	0.49	0.31	89.41	1.54	150.09	150.10	0.80	187.302			
300.00	300.00	298.76	299.76	0.85	0.64	89.29	1.85	150.22	150.23	1.49	100.816			
400.00	400.00	399.04	400.04	1.21	0.99	89.21	2.08	150.28	150.30	2.20	68.369			
500.00	500.00	499.04	500.04	1.57	1.34	89.16	2.21	150.28	150.30	2.91	51.721			
600.00	600.00	599.28	600.28	1.93	1.69	89.12	2.30	150.18	150.20	3.61	41.562			
700.00	700.00	699.66	700.66	2.29	2.04	89.04	2.52	149.87	149.89	4.32	34.678			
800.00	800.00	799.83	800.82	2.64	2.39	88.91	2.85	149.33	149.36	5.03	29.692			
900.00	900.00	899.64	900.63	3.00	2.74	88.85	2.99	148.82	148.85	5.74	25.945			
1,000.00	1,000.00	999.52	1,000.51	3.36	3.09	88.82	3.05	148.46	148.49	6.44	23.041			
1,100.00	1,100.00	1,099.64	1,100.63	3.72	3.41	88.76	3.19	148.04	148.07	7.13	20.768			
1,141.59	1,141.59	1,140.60	1,141.59	3.87	3.49	88.78	3.14	147.95	147.99	7.35	20.130			
1,200.00	1,200.00	1,198.46	1,199.45	4.08	3.51	88.89	2.87	148.07	148.10	7.59	19.525			
1,300.00	1,300.00	1,298.09	1,299.08	4.44	3.56	89.02	2.54	148.64	148.67	7.99	18.604			
1,400.00	1,400.00	1,398.19	1,399.18	4.79	3.64	89.17	2.15	149.25	149.27	8.43	17.703			
1,500.00	1,500.00	1,499.60	1,500.58	5.15	3.76	89.51	1.28	149.47	149.47	8.91	16.785			
1,600.00	1,600.00	1,600.88	1,601.84	5.49	3.90	-104.94	-0.40	148.60	148.72	9.39	15.841			
1,700.00	1,699.99	1,701.50	1,702.43	5.82	4.07	-104.51	-2.80	147.11	147.58	9.88	14.933			
1,800.00	1,799.97	1,800.88	1,801.76	6.15	4.26	-104.40	-5.19	145.62	146.65	10.40	14.096			
1,900.00	1,899.92	1,900.84	1,901.69	6.48	4.47	-104.65	-7.50	144.40	146.21	10.95	13.354			
1,950.45	1,950.34	1,950.98	1,951.81	6.65	4.59	-104.84	-8.83	143.84	146.13	11.23	13.008			
2,000.00	1,999.84	2,000.28	2,001.08	6.82	4.70	-105.04	-10.27	143.39	146.21	11.51	12.697			
2,100.00	2,099.73	2,100.87	2,101.62	7.16	4.95	-105.66	-13.36	142.34	146.41	12.10	12.099			
2,200.00	2,199.56	2,201.75	2,202.41	7.50	5.21	-106.26	-17.34	140.78	146.36	12.70	11.521			
2,300.00	2,299.35	2,302.48	2,302.94	7.84	5.49	-106.41	-23.35	138.67	145.95	13.32	10.957			
2,400.00	2,399.08	2,402.33	2,402.46	8.18	5.77	-106.23	-30.96	136.37	145.54	13.95	10.434			
2,413.67	2,412.70	2,415.85	2,415.94	8.23	5.81	-106.23	-32.01	136.08	145.53	14.04	10.369			
2,500.00	2,498.73	2,501.25	2,501.10	8.53	6.06	-106.45	-38.31	134.60	145.90	14.59	10.003			
2,600.00	2,598.35	2,600.72	2,600.33	8.87	6.36	-107.05	-45.13	133.45	147.04	15.23	9.653			
2,700.00	2,697.97	2,701.53	2,700.89	9.22	6.67	-107.61	-52.15	132.17	148.08	15.89	9.319			
2,800.00	2,797.59	2,802.92	2,801.94	9.57	6.99	-107.79	-60.21	130.06	148.27	16.56	8.955			
2,900.00	2,897.21	2,904.76	2,903.34	9.93	7.31	-107.70	-69.06	126.95	147.45	17.23	8.558			
3,000.00	2,996.83	3,005.37	3,003.55	10.28	7.64	-107.97	-76.93	122.74	145.54	17.90	8.129			
3,100.00	3,096.45	3,104.20	3,102.07	10.63	7.96	-108.63	-83.68	118.81	143.91	18.58	7.745			
3,200.00	3,196.07	3,204.60	3,202.21	10.99	8.29	-109.51	-89.96	115.29	142.80	19.26	7.413			
3,300.00	3,295.80	3,305.15	3,302.48	11.35	8.62	-109.91	-96.30	111.22	140.73	19.95	7.055			
3,400.00	3,395.64	3,403.55	3,400.65	11.70	8.95	-109.90	-101.86	107.48	138.38	20.64	6.706			
3,500.00	3,495.56	3,502.86	3,499.80	12.05	9.28	-109.53	-106.61	104.56	136.37	21.32	6.395			
3,600.00	3,595.53	3,602.92	3,599.71	12.41	9.62	-108.46	-111.35	101.78	133.97	22.01	6.086			
3,700.00	3,695.53	3,701.80	3,698.47	12.75	9.95	88.16	-115.79	99.35	131.45	22.70	5.792			
3,800.00	3,795.53	3,801.05	3,797.62	13.10	10.29	89.86	-119.69	97.60	129.62	23.38	5.544			
3,900.00	3,895.53	3,902.75	3,899.25	13.44	10.63	91.11	-122.47	95.27	127.35	24.07	5.292			
4,000.00	3,995.53	4,003.82	4,000.23	13.79	10.97	92.08	-124.49	91.69	123.86	24.75	5.005			
4,100.00	4,095.53	4,103.52	4,099.85	14.13	11.31	93.16	-126.62	87.92	120.18	25.43	4.726			
4,200.00	4,195.53	4,203.05	4,199.29	14.48	11.65	94.14	-128.41	84.31	116.68	26.12	4.468			
4,300.00	4,295.53	4,301.76	4,297.95	14.83	11.98	95.11	-130.15	81.49	113.97	26.80	4.252			
4,400.00	4,395.53	4,400.53	4,396.69	15.18	12.32	96.03	-131.82	79.83	112.46	27.49	4.091			
4,500.00	4,495.53	4,499.52	4,495.67	15.52	12.66	96.85	-133.33	79.05	111.85	28.18	3.969			
4,511.82	4,507.36	4,511.21	4,507.36	15.57	12.70	96.93	-133.49	79.02	111.84	28.26	3.958			
4,600.00	4,595.53	4,598.24	4,594.38	15.87	12.99	97.46	-134.57	79.31	112.27	28.86	3.890			

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

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Cave Lion 5 Federal - WC #5H - ST01 - MWD													Offset Site Error:	0.00 usft
Survey Program: 208-GYRO-MWD, 1146-MWD+IFR1, 13303-MWD+IFR1													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,700.00	4,695.53	4,696.93	4,693.05	16.22	13.32	98.03	-135.91	80.75	113.89	84.36	29.53	3.857		
4,800.00	4,795.53	4,796.24	4,792.32	16.57	13.65	98.66	-137.52	83.10	116.47	86.26	30.21	3.856		
4,900.00	4,895.53	4,895.37	4,891.40	16.92	13.98	99.15	-138.99	85.90	119.49	88.61	30.88	3.870		
5,000.00	4,995.53	4,995.58	4,991.54	17.10	14.31	99.72	-140.76	89.20	123.03	91.64	31.39	3.919		
5,100.00	5,095.53	5,095.86	5,091.76	17.11	14.64	99.95	-141.77	92.14	126.09	94.35	31.73	3.974		
5,200.00	5,195.53	5,197.23	5,193.11	17.12	14.98	99.91	-142.12	94.68	128.62	96.53	32.09	4.008		
5,300.00	5,295.53	5,298.03	5,293.89	17.14	15.31	99.73	-141.99	96.27	130.15	97.71	32.44	4.012		
5,400.00	5,395.53	5,397.57	5,393.42	17.17	15.63	99.49	-141.69	97.80	131.62	98.82	32.80	4.013		
5,500.00	5,495.53	5,498.22	5,494.06	17.21	15.96	99.27	-141.41	99.20	132.95	99.78	33.17	4.008		
5,600.00	5,595.53	5,598.17	5,594.00	17.26	16.29	99.07	-141.12	100.39	134.07	100.53	33.54	3.997		
5,700.00	5,695.53	5,698.11	5,693.93	17.31	16.62	98.91	-140.95	101.59	135.24	101.31	33.92	3.986		
5,800.00	5,795.53	5,798.03	5,793.85	17.37	16.96	98.79	-140.86	102.82	136.43	102.12	34.32	3.976		
5,900.00	5,895.53	5,898.10	5,893.91	17.43	17.29	98.62	-140.64	104.13	137.70	102.98	34.72	3.966		
6,000.00	5,995.53	5,998.52	5,994.32	17.51	17.62	98.44	-140.35	105.19	138.70	103.57	35.13	3.949		
6,100.00	6,095.53	6,098.30	6,094.10	17.59	17.96	98.26	-140.05	106.10	139.56	104.02	35.54	3.927		
6,200.00	6,195.53	6,198.02	6,193.80	17.67	18.29	98.05	-139.72	107.36	140.76	104.80	35.96	3.914		
6,300.00	6,295.53	6,301.17	6,296.94	17.77	18.64	97.85	-139.30	107.98	141.31	104.91	36.40	3.882		
6,400.00	6,395.53	6,403.44	6,399.19	17.87	18.98	97.34	-137.78	106.00	139.19	102.35	36.84	3.778		
6,500.00	6,495.53	6,503.55	6,499.25	17.98	19.31	96.78	-136.10	103.43	136.44	99.16	37.28	3.660		
6,600.00	6,595.53	6,603.40	6,599.06	18.09	19.64	96.31	-134.69	100.90	133.75	96.03	37.73	3.545		
6,700.00	6,695.53	6,703.52	6,699.14	18.21	19.98	95.87	-133.41	98.33	131.07	92.88	38.18	3.433		
6,800.00	6,795.53	6,803.37	6,798.95	18.34	20.32	95.44	-132.17	95.73	128.36	89.71	38.65	3.321		
6,900.00	6,895.53	6,903.81	6,899.34	18.47	20.66	95.05	-131.04	92.96	125.51	86.39	39.12	3.209		
7,000.00	6,995.53	7,003.69	6,999.17	18.61	20.99	94.60	-129.83	90.07	122.52	82.93	39.59	3.094		
7,100.00	7,095.53	7,103.09	7,098.53	18.75	21.33	94.12	-128.59	87.24	119.59	79.51	40.08	2.984		
7,200.00	7,195.53	7,200.50	7,195.91	18.90	21.66	93.31	-126.83	86.17	118.37	77.81	40.56	2.919		
7,300.00	7,295.53	7,300.38	7,295.77	19.06	21.99	92.30	-124.74	86.05	118.15	77.10	41.05	2.878		
7,400.00	7,395.53	7,400.56	7,395.93	19.22	22.33	91.30	-122.68	85.83	117.86	76.31	41.54	2.837		
7,500.00	7,495.53	7,500.30	7,495.65	19.39	22.66	90.45	-120.91	85.55	117.55	75.51	42.04	2.796		
7,516.01	7,511.54	7,516.19	7,511.54	19.42	22.72	90.32	-120.65	85.54	117.54	75.42	42.12	2.790		
7,600.00	7,595.53	7,599.87	7,595.21	19.56	23.00	89.67	-119.33	85.71	117.72	75.17	42.55	2.767		
7,700.00	7,695.53	7,699.65	7,694.97	19.74	23.33	88.85	-117.64	86.02	118.05	74.99	43.06	2.741		
7,800.00	7,795.53	7,799.52	7,794.82	19.92	23.67	88.09	-116.05	86.57	118.64	75.06	43.58	2.722		
7,900.00	7,895.53	7,899.78	7,895.08	20.10	24.01	87.50	-114.81	87.04	119.15	75.05	44.10	2.702		
8,000.00	7,995.53	8,000.64	7,995.94	20.29	24.35	87.08	-113.93	87.08	119.24	74.60	44.64	2.671		
8,100.00	8,095.53	8,101.46	8,096.75	20.49	24.70	86.73	-113.24	86.32	118.52	73.34	45.18	2.623		
8,200.00	8,195.53	8,202.51	8,197.79	20.69	25.04	86.54	-112.93	84.84	117.08	71.35	45.72	2.561		
8,300.00	8,295.53	8,305.66	8,300.88	20.89	25.40	86.46	-112.98	81.55	113.89	67.63	46.27	2.462		
8,400.00	8,395.53	8,406.26	8,401.35	21.10	25.75	86.68	-113.72	76.46	108.80	61.98	46.82	2.324		
8,500.00	8,495.53	8,502.67	8,497.68	21.31	26.09	87.31	-115.06	72.95	105.09	57.70	47.39	2.217		
8,600.00	8,595.53	8,602.34	8,597.32	21.53	26.44	88.15	-116.68	71.15	103.21	55.26	47.96	2.152		
8,700.00	8,695.53	8,702.38	8,697.34	21.75	26.79	88.89	-118.04	69.35	101.38	52.86	48.53	2.089		
8,800.00	8,795.53	8,801.39	8,796.34	21.97	27.14	89.27	-118.72	68.16	100.17	51.07	49.10	2.040		
8,900.00	8,895.53	8,901.42	8,896.36	22.20	27.49	89.41	-118.99	67.33	99.34	49.66	49.68	2.000		
9,000.00	8,995.53	9,001.52	8,996.46	22.43	27.84	89.60	-119.32	66.50	98.51	48.25	50.26	1.960		
9,100.00	9,095.53	9,101.79	9,096.72	22.66	28.19	89.85	-119.74	65.32	97.33	46.49	50.84	1.914		
9,200.00	9,195.53	9,201.45	9,196.37	22.90	28.54	90.20	-120.34	64.28	96.29	44.86	51.43	1.872		
9,300.00	9,295.53	9,301.49	9,296.41	23.14	28.89	90.25	-120.42	63.49	95.49	43.48	52.02	1.836		
9,400.00	9,395.53	9,400.87	9,395.78	23.38	29.23	90.06	-120.09	62.58	94.58	41.98	52.60	1.798		
9,413.13	9,408.66	9,413.75	9,408.66	23.42	29.27	89.98	-119.97	62.57	94.57	41.89	52.68	1.795		

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

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Cave Lion 5 Federal - WC #5H - ST01 - MWD														Offset Site Error:	0.00 usft
Survey Program: 208-GYRO-MWD, 1146-MWD+IFR1, 13303-MWD+IFR1														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
9,500.00	9,495.53	9,500.39	9,495.29	23.63	29.57	89.22	-118.70	62.95	94.96	41.77	53.19	1.785			
9,600.00	9,595.53	9,601.30	9,596.19	23.88	29.92	88.30	-117.20	62.68	94.72	40.94	53.78	1.761			
9,700.00	9,695.53	9,701.94	9,696.83	24.13	30.26	87.73	-116.28	61.56	93.64	39.26	54.38	1.722			
9,788.54	9,784.07	9,789.19	9,784.07	24.36	30.57	87.85	-116.53	60.66	92.72	37.81	54.91	1.689 CC			
9,800.00	9,795.53	9,800.36	9,795.23	24.38	30.61	87.91	-116.63	60.68	92.74	37.76	54.98	1.687 ES			
9,900.00	9,895.53	9,899.76	9,894.62	24.64	30.95	88.74	-117.95	61.68	93.71	38.13	55.58	1.686 SF			
10,000.00	9,995.53	9,999.39	9,994.23	24.77	31.30	89.84	-119.74	62.78	94.79	38.74	56.05	1.691			
10,100.00	10,095.53	10,098.63	10,093.45	24.78	31.64	90.43	-120.72	64.53	96.55	40.16	56.39	1.712			
10,200.00	10,195.53	10,198.26	10,193.04	24.79	31.98	89.85	-119.75	66.89	98.93	42.19	56.74	1.744			
10,300.00	10,295.53	10,298.16	10,292.90	24.80	32.32	89.73	-119.53	69.45	101.49	44.39	57.09	1.778			
10,400.00	10,395.53	10,400.66	10,395.39	24.82	32.67	89.98	-119.96	70.91	102.91	45.42	57.49	1.790			
10,500.00	10,495.53	10,501.56	10,496.29	24.85	33.03	90.48	-120.87	70.61	102.62	44.75	57.87	1.773			
10,565.00	10,560.53	10,565.82	10,560.53	24.87	33.25	91.14	-122.04	70.41	102.43	44.32	58.11	1.763			
10,600.00	10,595.53	10,600.57	10,595.27	24.88	33.38	91.63	-122.92	70.44	102.48	44.24	58.25	1.759			
10,700.00	10,695.53	10,700.27	10,694.92	24.92	33.73	93.50	-126.29	70.72	102.91	44.28	58.63	1.755			
10,800.00	10,795.53	10,799.53	10,794.12	24.96	34.08	95.30	-129.57	71.21	103.66	44.64	59.02	1.756			
10,900.00	10,895.53	10,897.21	10,891.74	25.00	34.42	96.38	-131.81	73.62	106.35	46.96	59.39	1.791			
11,000.00	10,995.53	10,996.63	10,991.08	25.05	34.76	96.70	-132.84	77.27	110.11	50.33	59.78	1.842			
11,100.00	11,095.53	11,097.53	11,091.90	25.11	35.11	96.98	-133.88	81.34	114.25	54.05	60.19	1.898			
11,200.00	11,195.53	11,200.37	11,194.70	25.17	35.47	98.17	-136.44	82.57	115.75	55.11	60.63	1.909			
11,300.00	11,295.53	11,300.14	11,294.45	25.24	35.81	99.08	-138.37	82.96	116.42	55.38	61.05	1.907			
11,400.00	11,395.53	11,399.63	11,393.93	25.31	36.16	98.97	-138.35	84.21	117.66	56.20	61.46	1.914			
11,500.00	11,495.53	11,500.73	11,495.02	25.39	36.51	98.74	-138.04	85.39	118.77	56.88	61.89	1.919			
11,600.00	11,595.53	11,602.24	11,596.53	25.47	36.86	99.03	-138.59	85.02	118.49	56.16	62.33	1.901			
11,700.00	11,695.53	11,703.56	11,697.83	25.55	37.22	99.53	-139.39	83.46	117.09	54.33	62.77	1.866			
11,800.00	11,795.53	11,804.00	11,798.24	25.64	37.57	97.23	-139.09	81.24	114.88	51.67	63.20	1.818			
11,900.00	11,895.27	11,904.24	11,898.45	25.74	37.92	100.44	-138.24	78.77	113.31	49.67	63.64	1.780			
11,921.84	11,917.02	11,926.15	11,920.35	25.76	37.99	101.84	-138.05	78.17	113.24	49.50	63.74	1.777			
12,000.00	11,993.75	12,003.41	11,997.57	25.83	38.26	108.69	-137.54	75.79	114.56	50.48	64.08	1.788			
12,100.00	12,088.54	12,104.30	12,098.32	25.93	38.61	120.88	-133.65	73.01	124.02	59.56	64.45	1.924			
12,200.00	12,176.42	12,222.25	12,212.56	26.04	39.00	131.51	-106.06	70.81	137.37	73.15	64.21	2.139			
12,300.00	12,254.74	12,355.90	12,328.23	26.14	39.41	139.14	-40.35	66.01	144.58	81.96	62.63	2.309			
12,400.00	12,321.10	12,471.54	12,414.07	26.24	39.72	145.33	36.70	58.84	148.20	86.72	61.48	2.411			
12,500.00	12,373.49	12,596.47	12,491.00	26.34	40.04	154.03	133.85	44.59	150.68	91.34	59.34	2.539			
12,600.00	12,410.32	12,718.36	12,554.08	26.47	40.34	165.44	235.73	23.15	160.67	103.42	57.24	2.807			
12,700.00	12,430.47	12,846.56	12,598.13	26.61	40.63	175.61	353.76	1.01	172.92	117.13	55.79	3.100			
12,800.00	12,434.15	12,972.78	12,618.27	26.77	40.87	-178.47	477.47	-11.87	184.96	129.41	55.55	3.329			
12,900.00	12,433.63	13,084.78	12,623.87	26.97	41.08	-176.81	589.21	-16.82	190.60	134.74	55.86	3.412			
13,000.00	12,433.11	13,181.30	12,626.78	27.20	41.27	-175.78	685.57	-21.49	194.38	138.24	56.14	3.463			
13,100.00	12,432.80	13,278.34	12,631.34	27.46	43.87	-174.34	782.30	-27.86	200.06	143.70	56.36	3.550			
13,200.00	12,432.08	13,382.33	12,636.06	27.75	44.96	-172.43	885.82	-36.31	205.93	149.28	56.65	3.635			
13,300.00	12,431.56	13,485.97	12,637.97	28.07	45.01	-170.23	989.02	-45.79	209.50	152.52	56.98	3.677			
13,400.00	12,431.04	13,584.64	12,639.07	28.42	45.06	-168.15	1,087.25	-54.89	212.65	155.17	57.48	3.700			
13,500.00	12,430.53	13,690.74	12,639.34	28.80	45.11	-166.18	1,192.99	-63.67	215.04	157.08	57.96	3.710			
13,600.00	12,430.01	13,800.43	12,635.95	29.21	45.17	-165.13	1,302.51	-68.13	213.26	154.84	58.43	3.650			
13,700.00	12,429.49	13,903.94	12,631.49	29.64	45.22	-165.61	1,405.90	-66.32	208.90	150.10	58.80	3.553			
13,800.00	12,428.98	14,007.90	12,625.91	30.10	45.28	-167.29	1,509.50	-59.95	202.50	143.41	59.09	3.427			
13,900.00	12,428.46	14,102.48	12,620.00	30.58	45.33	-168.69	1,603.75	-54.78	195.59	136.18	59.41	3.292			
14,000.00	12,427.94	14,195.25	12,618.13	31.08	45.38	-169.19	1,696.49	-53.71	193.64	133.76	59.88	3.234			
14,100.00	12,427.42	14,295.28	12,617.85	31.60	45.43	-170.81	1,796.41	-49.21	192.92	132.62	60.30	3.199			
14,200.00	12,426.91	14,396.70	12,617.18	32.15	45.49	-172.74	1,897.67	-43.66	191.85	131.10	60.76	3.158			

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

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

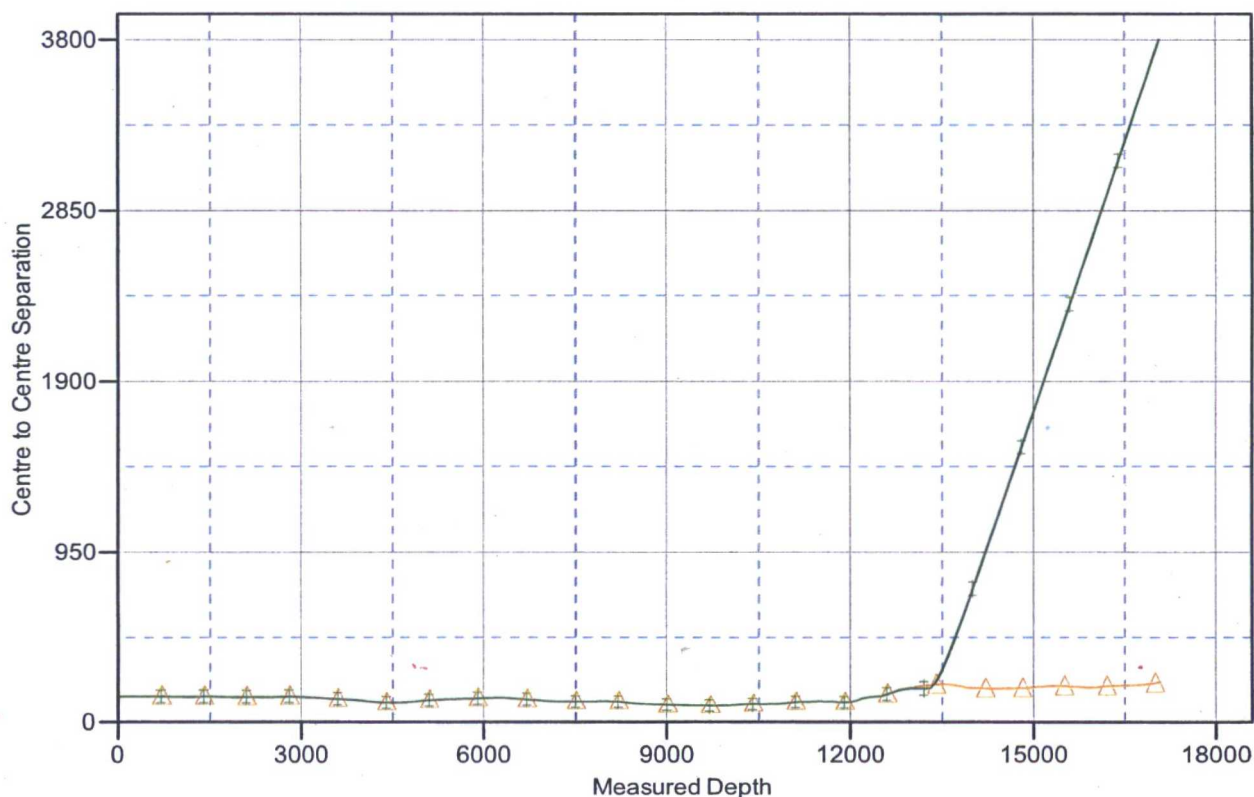
Offset Design Cave Lion 5 Federal - WC #5H - ST01 - MWD														Offset Site Error:	0.00 usft
Survey Program: 208-GYRO-MWD, 1146-MWD+IFR1, 13303-MWD+IFR1														Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
14,300.00	12,426.39	14,497.85	12,616.24	32.71	45.55	-176.47	1,998.13	-32.14	190.25	129.04	61.22	3.108			
14,367.52	12,426.04	14,563.38	12,615.58	33.11	45.58	179.97	2,062.70	-20.97	189.54	127.91	61.63	3.075			
14,400.00	12,425.87	14,594.07	12,615.51	33.30	45.60	178.21	2,092.89	-15.44	189.74	127.85	61.89	3.066			
14,500.00	12,425.35	14,695.52	12,615.60	33.90	45.67	173.09	2,193.02	0.67	191.64	128.73	62.91	3.046			
14,600.00	12,424.84	14,795.09	12,614.88	34.51	45.74	170.30	2,292.22	9.08	192.81	128.87	63.94	3.015			
14,700.00	12,424.32	14,899.84	12,614.47	35.14	45.82	169.18	2,396.90	11.90	193.60	128.72	64.88	2.984			
14,800.00	12,423.80	14,999.20	12,613.01	35.79	45.92	168.72	2,496.24	12.31	192.95	127.22	65.73	2.935			
14,810.55	12,423.75	15,009.62	12,612.83	35.86	45.93	168.57	2,506.66	12.67	192.92	127.08	65.84	2.930			
14,900.00	12,423.28	15,093.95	12,613.42	36.45	46.11	168.71	2,590.95	11.56	193.93	127.42	66.51	2.916			
15,000.00	12,422.77	15,188.30	12,617.56	37.13	46.46	170.48	2,684.99	5.29	197.74	130.67	67.06	2.949			
15,100.00	12,422.25	15,300.58	12,620.90	37.81	46.94	173.04	2,796.80	-4.24	200.14	132.36	67.77	2.953			
15,101.36	12,422.24	15,299.15	12,621.01	37.82	46.94	173.05	2,795.36	-4.22	200.25	132.50	67.75	2.956			
15,200.00	12,421.73	15,392.61	12,623.93	38.51	47.37	176.68	2,887.78	-17.66	202.65	134.37	68.28	2.968			
15,300.00	12,421.21	15,497.85	12,626.33	39.22	47.89	179.77	2,992.25	-29.64	205.12	135.98	69.15	2.966			
15,400.00	12,420.70	15,601.25	12,626.62	39.94	48.40	-179.21	3,095.54	-34.33	205.95	135.82	70.13	2.937			
15,500.00	12,420.18	15,704.99	12,624.68	40.68	48.93	-179.26	3,199.25	-35.17	204.58	133.42	71.17	2.875			
15,600.00	12,419.66	15,805.35	12,621.97	41.42	49.45	-179.41	3,299.57	-35.63	202.39	130.23	72.16	2.805			
15,700.00	12,419.14	15,904.76	12,619.41	42.17	49.98	-179.62	3,398.95	-35.88	200.32	127.17	73.15	2.738			
15,800.00	12,418.63	16,006.52	12,616.74	42.92	50.54	-179.97	3,500.67	-35.69	198.22	124.00	74.22	2.671			
15,900.00	12,418.11	16,102.50	12,613.97	43.69	51.08	179.98	3,596.60	-36.46	195.87	120.70	75.18	2.606			
15,920.62	12,418.00	16,121.62	12,613.79	43.85	51.19	-179.95	3,615.72	-36.93	195.79	120.44	75.36	2.598			
16,000.00	12,417.59	16,195.20	12,614.49	44.47	51.62	-179.34	3,689.24	-39.74	196.97	120.91	76.05	2.590			
16,100.00	12,417.07	16,294.41	12,617.24	45.25	52.20	-178.43	3,788.32	-43.96	200.32	123.21	77.11	2.598			
16,200.00	12,416.56	16,394.12	12,620.10	46.04	52.79	-178.13	3,887.96	-46.12	203.74	125.54	78.21	2.605			
16,300.00	12,416.04	16,500.12	12,621.74	46.83	53.43	-178.29	3,993.94	-46.71	205.79	126.32	79.47	2.590			
16,400.00	12,415.52	16,601.05	12,621.56	47.63	54.05	-178.72	4,094.87	-46.18	206.09	125.48	80.61	2.557			
16,500.00	12,415.01	16,699.50	12,621.62	48.44	54.67	-179.01	4,193.32	-46.12	206.65	124.94	81.71	2.529			
16,600.00	12,414.49	16,798.52	12,622.03	49.25	55.29	-179.19	4,292.34	-46.49	207.57	124.73	82.84	2.506			
16,700.00	12,413.97	16,895.51	12,623.64	50.07	55.92	-179.27	4,389.31	-47.22	209.74	125.82	83.91	2.499			
16,800.00	12,413.45	16,995.82	12,626.05	50.89	56.57	-179.24	4,489.59	-48.37	212.66	127.56	85.11	2.499			
16,900.00	12,412.94	17,093.83	12,627.74	51.72	57.22	-179.13	4,587.57	-49.79	214.93	128.69	86.24	2.492			
17,000.00	12,412.42	17,186.67	12,632.52	52.56	57.85	-178.81	4,680.25	-52.03	220.57	133.37	87.21	2.529			
17,075.02	12,412.03	17,268.35	12,636.81	53.18	58.40	-178.67	4,761.80	-53.52	224.95	136.61	88.34	2.546			

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Reference Depths are relative to Well @ 3296.00usft (GL: 3271' + KB:
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.0000 W

Coordinates are relative to: BC #1H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.50"

Ladder Plot



LEGEND

WC #5H, ST01, MWD V0 WC #5H, OH, OH V0

Company:	Marathon Oil	Local Co-ordinate Reference:	Well BC #1H
Project:	Lea County, NM	TVD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Reference Site:	Cave Lion 5 Federal	MD Reference:	Well @ 3296.00usft (GL: 3271' + KB: 25' (H&P423))
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	BC #1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WellPlanner1
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Reference Depths are relative to Well @ 3296.00usft (GL: 3271' + KB:

Offset Depths are relative to Offset Datum

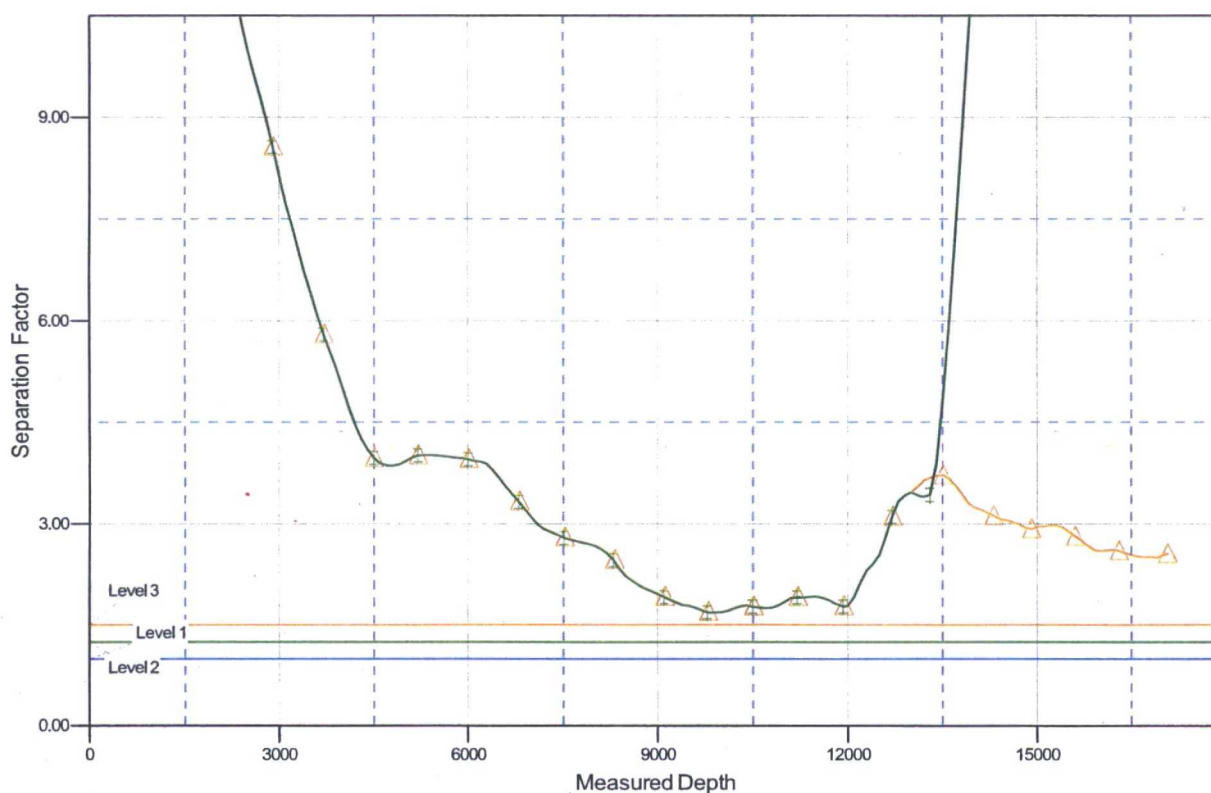
Central Meridian is 104° 19' 60.0000 W

Coordinates are relative to: BC #1H

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

Grid Convergence at Surface is: 0.50°

Separation Factor Plot



LEGEND

WC #5H, ST01, MWD V0 WC #5H, OH CH V0