

Before the Oil Conservation Division Examiner Hearing September 19th, 2019

Case No. 16381

Crossbow Fed Com 23-27-8 WXY 2H, WA 4H, WXY 9H, WA 10H, WXY 8H, WXY 14H, WA 15H and WA 16H



**STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION**

**APPLICATION OF MARATHON OIL PERMIAN LLC FOR COMPUSLORY
POOLING, EDDY COUNTY, NEW MEXICO.**

CASE NO. 16381

AFFIDAVIT

STATE OF TEXAS)
) ss.
COUNTY OF MIDLAND)

Clayton W. Rule, being duly sworn, deposes and states:

1. I am over the age of 18, I am a land supervisor for Marathon Oil Permian LLC and have personal knowledge of the matters stated herein.
2. I have not testified before the Oil Conservation Division ("Division") before.
3. My resume is attached as Exhibit 1.
4. I received a Bachelors of Business Administration from Baylor University and a Masters of Business Administration from the University of Texas, Dallas.
5. I have worked as a landman or land supervisor since 2006, first at Jim Burgin & Associates, and then at Marathon. I have been working at Marathon since 2010.
6. I have been certified as a professional landman by the American Association of Professional Landmen and as a certified professional lease and title analysis by the National Association of Lease and Title Analysts.
7. My area of responsibility at Marathon includes the area of Eddy County in New Mexico.
8. I am familiar with the application filed by Marathon in this case.
9. I am familiar with the status of the lands that are subject to this application.



10. I submit the following information pursuant to NMAC 19.15.4.12.A(1) in support of the above referenced compulsory pooling applications.

11. Attached as **Exhibit 2** is the application for Case No. 16381.

12. The purpose of these applications is to force pool working interest owners into the horizontal spacing unit described below, and in the wells to be drilled in the unit.

13. No opposition is expected because the interest owners being pooled have been contacted regarding the proposed wells, but have failed or refused to voluntarily commit their interests in the wells.

14. In this case, Marathon seeks an order from the Division pooling all uncommitted mineral interests within a Wolfcamp horizontal spacing unit underlying Sections 7 and 18, Township 23 South, Range 27 East, NMPM, Eddy County, New Mexico.

15. This spacing unit will be dedicated to the Crossbow Fed Com 23-27-8 WXY 2H, Crossbow Fed Com 23-27-8 WA 4H, Crossbow Fed Com 23-27-8 WXY 9H, Crossbow Fed Com 23-27-8 WA 10H, Crossbow Fed Com 23-27-8 WXY 8H, Crossbow Fed Com 23-27-8 WXY 14H, Crossbow Fed Com 23-27-8 WA 15H, and Crossbow Fed Com 23-27-8 16H wells, to be horizontally drilled.

16. Attached as **Exhibit 3** are the proposed C-102s for the wells.

17. The wells will develop the Purple Sage Wolfcamp Pool, Pool Code 98220, which is a gas pool, and which is governed by special pool rules.

18. The wells will comply with the setback requirements for the Purple Sage Wolfcamp Pool.

19. A lease tract map outlining the unit being pooled is attached hereto as **Exhibit 4**. The parties being pooled and the percent of their interests is also included as part of Exhibit 4.

20. There are no depth severances within the Wolfcamp formation.

21. I have conducted a diligent search of the public records in the county where the wells are located, and conducted phone directory and computer searches to locate contact information for parties entitled to notification, and mailed all parties well proposals, including an Authorization for Expenditure.

22. The proposal letters for the Wolfcamp wells were all received by the parties to whom they were sent. In other words, no proposal letters were returned or undeliverable.

23. Marathon sent a proposal letter to Magnum Hunter based on the title report it had at the time. Marathon also sent a letter to Cimarex, which acquired Magnum Hunter. Magnum Hunter also changed its name to Blue Ridge Resources in 2017. Marathon provided its counsel with addresses for Cimarex and Blue Ridge Resources, and, as Exhibit 8 demonstrates, Marathon's counsel sent notice letters including the pooling application and notice of the pooling hearing to both Cimarex and Blue Ridge Resources. After notice of Marathon's compulsory pooling application and hearing was sent, Mewbourne acquired Magnum Hunter's interest.

24. **Exhibit 5** is a summary of Marathon's efforts to obtain voluntary joinder. In my opinion, Marathon has made a good faith effort to obtain voluntary joinder of the working interest owners in the proposed wells.

25. **Exhibit 6** is an example of the proposal letters sent to working interest owners, which was sent in July 2018. In early August 2018, Marathon sent a follow up letter regarding certain information in the proposal letters and AFEs, which clarified that the anticipated costs associated with the wells were described in the AFEs themselves, and not in the proposal letter or summary information in the AFEs.

26. **Exhibit 7** contains the Authorization for Expenditure for the proposed wells. The estimated cost of the wells set forth therein is fair and reasonable, and is comparable to the costs of other wells of similar depths and length drilled in this area of New Mexico.

27. Marathon requests overhead and administrative rates of \$8000.00/month for drilling a well and \$800.00/month for a producing well. These rates are fair, and comparable to the rates charged by other operators for wells of this type in this area of Southeastern, New Mexico. Marathon requests that these rates be adjusted periodically as provided in the COPAS Accounting Procedure. Marathon requests the maximum cost plus 200% risk charge be assessed against non-consenting working interest owners.

28. Marathon requests that it be designated operator of the wells.

29. Marathon requests that it be allowed a period of one (1) year between when the wells are drilled and when the first well is completed under the order.

30. The parties Marathon is seeking to pool were notified of this hearing. Marathon requests that overriding royalty interest owners be pooled.

31. **Exhibit 8** is an affidavit of notice prepared by counsel for Marathon that shows the parties who were notified of this hearing, the status of whether they received notice, and an affidavit of publication from the Carlsbad Current-Argus newspaper, showing that notice of this hearing was published on August 24, 2018.

32. The attachments to this affidavit were prepared by me, or compiled from company business records, or were prepared at my direction and the information provided herein is correct and complete to the best of my knowledge and belief.

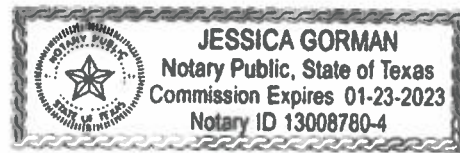
33. The granting of this application is in the interests of conservation and the prevention of waste.

C. Rule
Clayton W. Rule

SUBSCRIBED AND SWORN to before me this 18th day of September, 2019 by Clayton W. Rule on behalf of Marathon Oil Permian LLC.

Jessica Gorman
Notary Public

My commission expires: 1/23/2023



Clayton W. Rule

3903 Morning Creek Ct, Fulshear, TX 77441 • 713-213-8051 • cwrule@marathonoil.com

Experienced Landman with a demonstrated history of successful execution on large-scale projects.

Professional Experience

Marathon Oil Company (8/2010 to Current)

Land Supervisor - Permian

- Experience coordinating land activities for both conventional and resources assets in Permian, Gulf Coast, Rocky Mountains and Mid-Con
 - Exploration Projects
 - Multi Rig Development Programs
 - Legacy Production Management
- Served as Team Lead for over \$2.4B in A&D projects
 - PSA Negotiation
 - Diligence
 - Defect Resolution
- Skilled negotiator of various land use and land trade agreements
- Ability to manage large teams of brokers, in house landmen and analysts
- Broad based knowledge of land, accounting and upstream operations
- Significant experience in Lease and Land Administration

Jim Burgin & Associates, Inc. (8/2006 to 8/2010)

Landman

- Managed large trend leasing projects throughout the state of Texas
- Performed all aspects of title review including abstracting and curative
- Negotiated leases, damage settlements, and right of way acquisitions

Education

Masters of Business Administration

University of Texas at Dallas – Richardson, Texas

Bachelors of Business Administration

Baylor University – Waco, Texas

Certifications

Certified Professional Landman

- American Association of Professional Landmen

Certified Professional Lease and Title Analyst

- National Association of Lease and Title Analyst



STATE OF NEW MEXICO
DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES
OIL CONSERVATION DIVISION

APPLICATION OF MARATHON
OIL PERMIAN LLC FOR A HORIZONTAL
STANDARD SPACING UNIT AND
COMPULSORY POOLING,
EDDY COUNTY, NEW MEXICO.

CASE NO. 16381

APPLICATION

Marathon Oil Permian LLC ("Marathon"), OGRID Number 372098, through its undersigned attorneys, hereby makes an application to the Oil Conservation Division pursuant to the provisions of NMSA (1978), Section 70-2-17, for an order: (1) creating a 1280-acre, more or less, spacing unit covering Sections 7 and 8, Township 23 South, Range 27 East, NMPM, Eddy County, New Mexico; and, (2) pooling all mineral interests in the Wolfcamp formation underlying the spacing and proration unit. In support of this application, Marathon states as follows:

1. Marathon is an interest owner in the subject lands and has a right to drill a well thereon.
2. Marathon seeks to dedicate Sections 7 and 8, Township 23 South, Range 27 East, NMPM, Eddy County, New Mexico to the proposed wells to form a 1280-acre, more or less, spacing unit.
3. Marathon plans to drill the **Crossbow 23 27 8 WXY 2H, Crossbow 23 27 8 WA 4H, Crossbow Federal 23 27 8 WXY 9H, Crossbow Federal 23 27 8 WA 10H, Crossbow**



Federal 23 27 8 WXY 8H Crossbow Federal 23 27 8 WXY 14H, Crossbow Federal 23 27 8 WA 15H and Crossbow Federal 23 27 8 WA 16H wells to a depth sufficient to test the Wolfcamp formation. These wells will be horizontally drilled using the same drilling rig.

4. These wells will be located within the Purple Sage Wolfcamp Gas Pool, which is subject to special pool rules that establish 330 foot setback requirements. The producing intervals that Marathon seeks to drill will comply with the 330 foot setback requirements.

5. Marathon sought, but has been unable to obtain a voluntary agreement from all interest owners in the Wolfcamp formation underlying the proposed spacing unit to participate in the drilling of the wells or to otherwise commit their interests to the wells.

6. The creation of the unit and pooling of all interests in the Wolfcamp formation underlying the proposed spacing unit will prevent the drilling of unnecessary wells, prevent waste and protect correlative rights.

WHEREFORE, Marathon requests this application be set for hearing before an Examiner of the Oil Conservation Division on September 6, 2018, and after notice and hearing as required by law, the Division enter its order:

- A. Creating a spacing unit in the Wolfcamp formation comprised of Sections 7 and 8, Township 23 South, Range 27 East, NMPM, Eddy County, New Mexico;
- B. Pooling all mineral interests in the Wolfcamp formation underlying this spacing unit;
- C. Designating Marathon as operator of this unit and the wells to be drilled thereon;
- D. Authorizing Marathon to recover its costs of drilling, equipping and completing these wells;

E. Approving actual operating charges and costs charged for supervision, together with a provision adjusting the rates pursuant to the COPAS accounting procedure; and

F. Setting a 200% charge for the risk involved in drilling and completing the wells in the event a working interest owner elects not to participate in the wells.

Respectfully submitted,

MODRALL, SPERLING, ROEHL, HARRIS
& SISK, P.A.

By: 

Jennifer Bradfute

Deana M. Bennett

Post Office Box 2168

500 Fourth Street NW, Suite 1000

Albuquerque, New Mexico 87103-2168

Telephone: 505.848.1800

Attorneys for Applicant

CASE NO. 1638: Application of Marathon Oil Permian LLC for a horizontal spacing and proration unit and compulsory pooling, Eddy County, New Mexico. Applicant seeks an order from the Division: (1) creating a 1280-acre, more or less, spacing unit in covering Sections 7 and 8, Township 23 South, Range 27 East, NMPM, Eddy County, New Mexico; and, (2) pooling all mineral interests in the Wolfcamp formation underlying this proposed spacing and proration unit. This proposed spacing unit will be the unit for the **Crossbow 23 27 8 WXY 2H**, **Crossbow 23 27 8 WA 4H**, **Crossbow Federal 23 27 8 WXY 9H**, **Crossbow Federal 23 27 8 WA 10H**, **Crossbow Federal 23 27 8 WXY 8H**, **Crossbow Federal 23 27 8 WXY 14H**, **Crossbow Federal 23 27 8 WA 15H** and **Crossbow Federal 23 27 8 WA 16H** wells, to be horizontally drilled. The producing area for these wells will be orthodox. Also to be considered will be the cost of drilling and completing said wells, the allocation of these costs as well as the actual operating costs and charges for supervision, designation of Marathon as operator of the wells, and a 200% charge for risk involved in drilling said wells. Said area is located approximately 8 miles southwest of Carlsbad, New Mexico.

AUG 07 2018 PM 03:36

A small white label with a black border. The word "EXHIBIT" is printed in bold, uppercase letters at the top. Below it, the number "3" is handwritten in a large, bold, black font. The label is attached to the bottom left corner of the document.

District I
1625 N. French Dr., Hobbs, NM 88240
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District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number		² Pool Code 98220		³ Pool Name PURPLE SAGE; WOLFCAMP (GAS)	
⁴ Property Code		⁵ Property Name CROSSBOW FED COM 23-27-8 WA			⁶ Well Number 4H
⁷ OGRID No. 372098		⁸ Operator Name MARATHON OIL PERMIAN LLC			⁹ Elevation 3159'

¹⁰ Surface Location

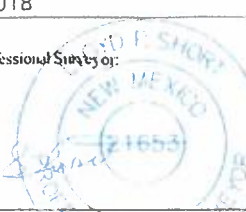
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	8	23S	27E		1029	SOUTH	378	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	7	23S	27E		330	SOUTH	330	WEST	EDDY

¹² Dedicated Acres 637.68	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>KICK OFF POINT 330' FSL 255' FEL, SECTION 8 NAD 83, SPCS NM EAST X: 581154.84' / Y: 477645.22' LAT: 32.31305368N / LON: -104.20444555W NAD 27, SPCS NM EAST X: 539972.79' / Y: 477586.33' LAT: 32.31293480N / LON: -104.20394533W</p>		<p>SURFACE HOLE LOCATION 1029' FSL 378' FEL, SECTION 8 NAD 83, SPCS NM EAST X: 581008.53' / Y: 478343.64' LAT: 32.31497403N / LON: -104.20491646W NAD 27, SPCS NM EAST X: 539826.49' / Y: 478284.74' LAT: 32.31485518N / LON: -104.20441615W</p>		<p>" OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p>	
<p>CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 570879.74' / Y: 479890.39' B - X: 581328.41' / Y: 480085.92' C - X: 581420.97' / Y: 477316.50' D - X: 570884.96' / Y: 477243.10'</p>		<p>CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 529697.88' / Y: 479831.57' B - X: 540146.41' / Y: 480026.96' C - X: 540238.91' / Y: 477257.61' D - X: 529703.05' / Y: 477184.35'</p>		<p>Signature _____ Date _____</p>	
<p>LAST TAKE/ BHL S 89°22'54" W - 4,930.07'</p>		<p>SHL S 89°49'33" W - 4,935.75'</p>		<p>Printed Name _____</p>	
<p>LAST TAKE POINT/BOTTOM HOLE LOCATION 330' FSL 330' FWL, SECTION 7 NAD 83, SPCS NM EAST X: 571214.30' / Y: 477576.67' LAT: 32.31289401N / LON: -104.23662299W NAD 27, SPCS NM EAST X: 530032.40' / Y: 477517.91' LAT: 32.31277560N / LON: -104.23612156W</p>		<p>FIRST TAKE POINT 330' FSL 330' FEL, SECTION 8 NAD 83, SPCS NM EAST X: 581079.81' / Y: 477644.86' LAT: 32.31305294N / LON: -104.20468842W NAD 27, SPCS NM EAST X: 539897.76' / Y: 477585.97' LAT: 32.31293407N / LON: -104.20418818W</p>		<p>SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p>	
<p>SEPTEMBER 4, 2018 Date of Survey</p>		<p>Signature and Seal of Professional Surveyor: </p>		<p>Certificate Number LLOYD P. SHORT 21653</p>	

SEPTEMBER 4, 2018
Date of Survey
Signature and Seal of Professional Surveyor
Lloyd P. Short
Certificate Number
LLOYD P. SHORT 21653

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¹ API Number	² Pool Code 98220	³ Pool Name PURPLE SAGE; WOLFCAMP (GAS)
⁴ Property Code	⁵ Property Name CROSSBOW FED COM 23-27-8 WA	⁶ Well Number 10H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3158'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	8	23S	27E		1029	SOUTH	318	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	7	23S	27E		1654	SOUTH	330	WEST	EDDY

¹² Dedicated Acres 637.68	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

	<p>¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p> <p>¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>SEPTEMBER 4, 2018 Date of Survey</p> <p>Signature and Seal of Professional Surveyor: </p> <p>Certificate Number LLOYD P. SHORT 21653</p>
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⁴ Property Code	⁵ Property Name CROSSBOW FED COM 23-27-8 WXY	⁶ Well Number 8H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3170'

¹⁰ Surface Location

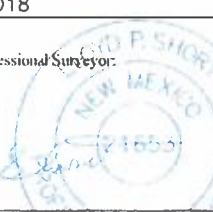
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	8	23S	27E		1267	NORTH	317	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	7	23S	27E		1659	NORTH	330	WEST	EDDY

¹² Dedicated Acres 638.16	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>LAST TAKE POINT/BOTTOM HOLE LOCATION 1659' FNL 330' FWL, SECTION 7 NAD 83, SPCS NM EAST X:571210.97' / Y:480895.09' LAT:32.32201590N / LON:-104.23662409W NAD 27, SPCS NM EAST X:530029.13' / Y:480836.24' LAT:32.32189754N / LON:-104.23612240W</p> <p>CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 570883.00' / Y: 482551.56' B - X: 581392.87' / Y: 482621.61' C - X: 581328.41' / Y: 480085.92' D - X: 570879.74' / Y: 479890.39'</p> <p>KICK OFF POINT 1600' FNL 255' FEL, SECTION 8 NAD 83, SPCS NM EAST X:581097.08' / Y:481020.45' LAT:32.32233190N / LON:-104.204861939W NAD 27, SPCS NM EAST X:539915.10' / Y:480961.47' LAT:32.32221308N / LON:-104.20411889W</p>	<p>SURFACE HOLE LOCATION 1267' FNL 317' FEL, SECTION 8 NAD 83, SPCS NM EAST X:581043.60' / Y:481353.48' LAT:32.32324751N / LON:-104.20479125W NAD 27, SPCS NM EAST X:539861.62' / Y:481294.49' LAT:32.32312670N / LON:-104.20429070W</p> <p>CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 529701.19' / Y: 482492.66' B - X: 540210.92' / Y: 482562.59' C - X: 540146.41' / Y: 480026.96' D - X: 529697.88' / Y: 479831.57'</p> <p>FIRST TAKE POINT 1600' FNL 330' FEL, SECTION 8 NAD 83, SPCS NM EAST X:581022.04' / Y:481019.51' LAT:32.32232957N / LON:-104.20486235W NAD 27, SPCS NM EAST X:539840.06' / Y:480960.54' LAT:32.32221076N / LON:-104.20436183W</p>	<p>¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p> <p>¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>SEPTEMBER 4, 2018 Date of Survey</p> <p>Signature and Seal of Professional Surveyor: </p> <p>Certificate Number LLOYD P. SHORT 21653</p>
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⁴ Property Code	⁵ Property Name CROSSBOW FED COM 23-27-8 WXY	⁶ Well Number 14H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3171'

¹⁰ Surface Location

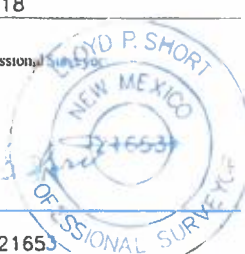
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	8	23S	27E		1266	NORTH	347	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	7	23S	27E		330	NORTH	330	WEST	EDDY

¹² Dedicated Acres 638.16	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>16 LAST TAKE POINT/BOTTOM HOLE LOCATION 330' FNL 330' FWL, SECTION 7 NAD 83, SPCS NM EAST X: 571212.60' / Y: 482224.38' LAT: 32.32566992N / LON: -104.23661493W NAD 27, SPCS NM EAST X: 530030.78' / Y: 482165.49' LAT: 32.32555158N / LON: -104.23611314W</p> <p>CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 570883.00' / Y: 482551.56' B - X: 581392.87' / Y: 482621.61' C - X: 581328.41' / Y: 480085.92' D - X: 570879.74' / Y: 479890.39'</p>	<p>17 FIRST TAKE POINT 330' FNL 330' FEL, SECTION 8 NAD 83, SPCS NM EAST X: 581054.34' / Y: 482290.13' LAT: 32.32582221N / LON: -104.20475284W NAD 27, SPCS NM EAST X: 539872.38' / Y: 482231.12' LAT: 32.32570341N / LON: -104.20425222W</p> <p>CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 529701.19' / Y: 482492.66' B - X: 540210.92' / Y: 482562.59' C - X: 540146.41' / Y: 480026.96' D - X: 529697.88' / Y: 479831.57'</p>	<p>17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p>
<p>18 KICK OFF POINT 330' FNL 255' FEL, SECTION 8 NAD 83, SPCS NM EAST X: 581129.37' / Y: 482290.46' LAT: 32.32582286N / LON: -104.20450993W NAD 27, SPCS NM EAST X: 539947.41' / Y: 482231.45' LAT: 32.32570407N / LON: -104.20400932W</p>	<p>19 SURFACE HOLE LOCATION 1266' FNL 347' FEL, SECTION 8 NAD 83, SPCS NM EAST X: 581013.58' / Y: 481353.47' LAT: 32.32324758N / LON: -104.20488844W NAD 27, SPCS NM EAST X: 539831.60' / Y: 481294.48' LAT: 32.32312878N / LON: -104.20438789W</p>	<p>18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>SEPTEMBER 4, 2018 Date of Survey</p> <p>Signature and Seal of Professional Surveyor </p> <p>Certificate Number LLOYD P. SHORT 21653</p>

SHEET 1 OF 3
JOB No. R3795.011
REV 0 BM 07/26/2018

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
511 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code 98220	³ Pool Name PURPLE SAGE; WOLFCAMP (GAS)
⁴ Property Code	⁵ Property Name CROSSBOW FED COM 23-27-8 WA	⁶ Well Number 15H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3171'

¹⁰ Surface Location

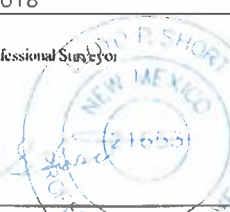
UI. or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	8	23S	27E		1266	NORTH	377	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UI. or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	7	23S	27E		2328	NORTH	330	WEST	EDDY

¹² Dedicated Acres 638.16	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p>	
<p>18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>SEPTEMBER 4, 2018 Date of Survey</p> <p>Signature and Seal of Professional Surveyor </p> <p>Certificate Number LLOYD P. SHORT 21653</p>	

16 LAST TAKE POINT/BOTTOM HOLE LOCATION
2328' FNL 330' FWL, SECTION 7
NAD 83, SPCS NM EAST
X: 571210.15' / Y: 480225.90'
LAT: 32.32017637N / LON: -104.23662870W
NAD 27, SPCS NM EAST
X: 530028.29' / Y: 480167.06'
LAT: 32.32005800N / LON: -104.23612707W

16 SURFACE HOLE LOCATION
1266' FNL 377' FEL, SECTION 8
NAD 83, SPCS NM EAST
X: 580983.57' / Y: 481353.48'
LAT: 32.32324772N / LON: -104.20498557W
NAD 27, SPCS NM EAST
X: 539801.60' / Y: 481294.49'
LAT: 32.32312891N / LON: -104.20448502W

CORNER COORDINATES
NAD 83, SPCS NM EAST
A - X: 570883.00' / Y: 482551.56'
B - X: 581392.87' / Y: 482621.61'
C - X: 581328.41' / Y: 480085.92'
D - X: 570879.74' / Y: 479890.39'

CORNER COORDINATES
NAD 27, SPCS NM EAST
A - X: 529701.19' / Y: 482492.66'
B - X: 540210.92' / Y: 482562.59'
C - X: 540146.41' / Y: 480026.96'
D - X: 529697.88' / Y: 479831.57'

KICK OFF POINT
2209' FNL 255' FEL, SECTION 8
NAD 83, SPCS NM EAST
X: 581081.59' / Y: 480410.83'
LAT: 32.32065620N / LON: -104.20475193W
NAD 27, SPCS NM EAST
X: 539899.60' / Y: 480351.80'
LAT: 32.32053737N / LON: -104.20417145W

FIRST TAKE POINT
2211' FNL 330' FEL, SECTION 8
NAD 83, SPCS NM EAST
X: 581006.52' / Y: 480409.26'
LAT: 32.32065213N / LON: -104.20491494W
NAD 27, SPCS NM EAST
X: 539824.53' / Y: 480350.30'
LAT: 32.32053331N / LON: -104.20441446W

SHEET 1 OF 3
JOB No. R3795_008
REV1 BM 07/26/2018

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Form C-102
Revised August 1, 2011
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District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code 98220	³ Pool Name PURPLE SAGE; WOLFCAMP (GAS)
⁴ Property Code	⁵ Property Name CROSSBOW FED COM 23-27-8 WA	⁶ Well Number 16H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3166'

¹⁰ Surface Location

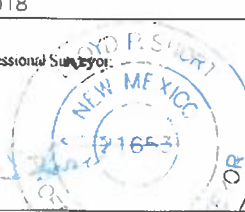
U/L or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	8	23S	27E		1267	NORTH	287	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

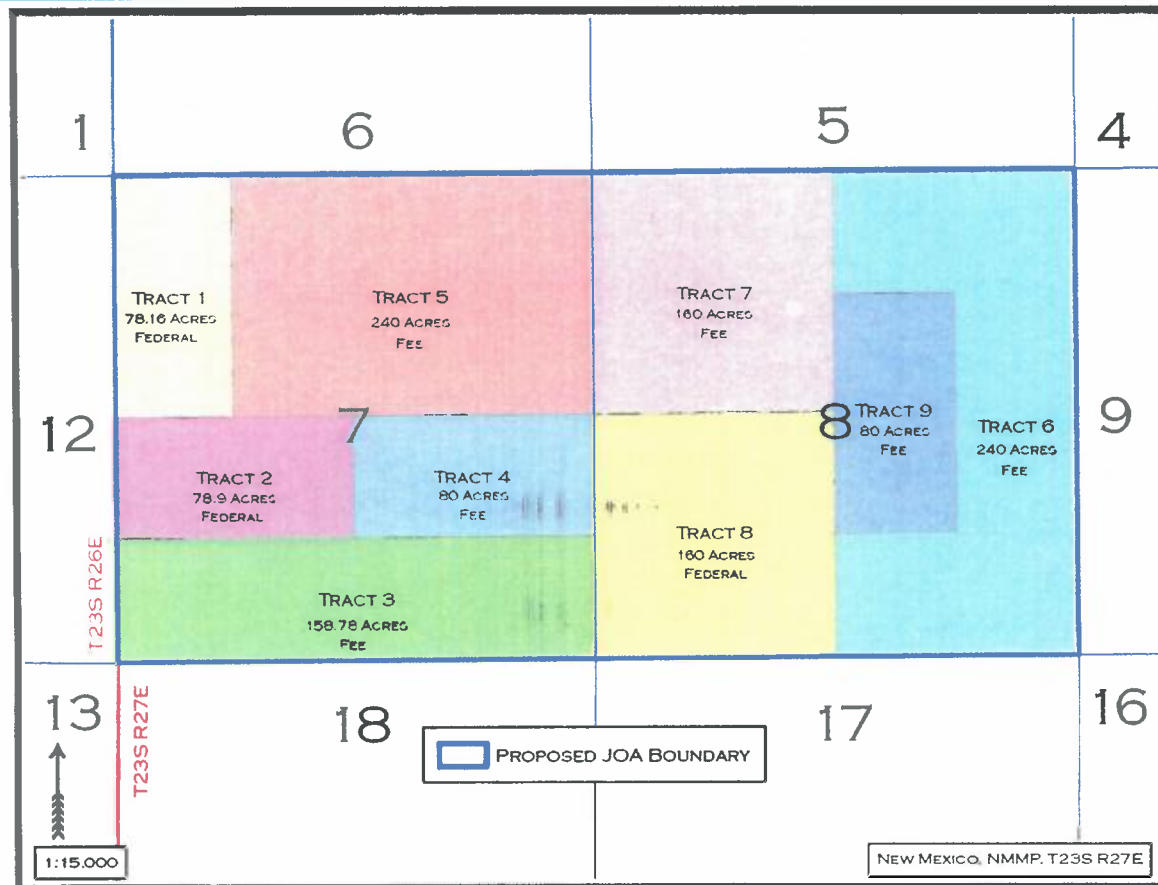
U/L or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	7	23S	27E		999	NORTH	330	WEST	EDDY

¹² Dedicated Acres 638.16	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>LAST TAKE POINT/BOTTOM HOLE LOCATION 999' FNL 330' FWL, SECTION 7 NAD 83, SPCS NM EAST X:571211.78' / Y:481555.16' LAT:32.32383032N / LON:-104.23661954W NAD 27, SPCS NM EAST X:530029.95' / Y:481496.29' LAT:32.3237196N / LON:-104.23611780W</p>		<p>FIRST TAKE POINT 940' FNL 330' FEL, SECTION 8 NAD 83, SPCS NM EAST X:581038.82' / Y:481679.78' LAT:32.32414448N / LON:-104.20480545W NAD 27, SPCS NM EAST X:539856.85' / Y:481620.78' LAT:32.32402568N / LON:-104.20430487W</p>		<p>¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p>	
<p>LAST TAKE/ BHL 999'</p>		<p>FIRST TAKE 940'</p>		<p>¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>SEPTEMBER 4, 2018 Date of Survey</p> <p>Signature and Seal of Professional Surveyor: </p> <p>Certificate Number LLOYD P. SHORT 21653</p>	
<p>KICK OFF POINT 940' FNL 255' FEL, SECTION 8 NAD 83, SPCS NM EAST X:581113.87' / Y:481680.71' LAT:32.32414681N / LON:-104.20456248W NAD 27, SPCS NM EAST X:539931.90' / Y:481621.71' LAT:32.32402800N / LON:-104.20406192W</p>		<p>SURFACE HOLE LOCATION 1267' FNL 287' FEL, SECTION 8 NAD 83, SPCS NM EAST X:581073.60' / Y:481353.51' LAT:32.32324752N / LON:-104.20469413W NAD 27, SPCS NM EAST X:539891.62' / Y:481294.53' LAT:32.32312871N / LON:-104.20419359W</p>			
<p>CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 570883.00' / Y: 482551.56' B - X: 581392.87' / Y: 482621.61' C - X: 581328.41' / Y: 480085.92' D - X: 570879.74' / Y: 479890.39'</p>		<p>CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 529701.19' / Y: 482492.66' B - X: 540210.92' / Y: 482562.59' C - X: 540146.41' / Y: 480026.96' D - X: 529697.88' / Y: 479831.57'</p>			

Lease Tract Map
Crossbow Federal 23 27 8 Spacing Unit (1280 acres)



- Total Federal Acres: 317.06
- Total Fee Acres: 958.78

Summary of Interests: *Wolfcamp Formation* Crossbow Federal 23 27 8 Spacing Unit

Committed Working Interest:88.46%

Interest Owner	Tract 1 WI	Tract 2 WI	Tract 3 WI	Tract 4 WI	Tract 5 WI	Tract 6 WI	Tract 7 WI	Tract 8 WI	Tract 9 WI	Unit WI
Marathon Oil Permian LLC	0.50972780	0.50972780	1.00000000	1.00000000	1.00000000	1.00000000	0.80498121	0.75633121	1.00000000	0.88463117

Uncommitted Working Interest:11.54%

Interest Owner	Tract 1 WI	Tract 2 WI	Tract 3 WI	Tract 4 WI	Tract 5 WI	Tract 6 WI	Tract 7 WI	Tract 8 WI	Tract 9 WI	Unit WI
Mewbourne Oil Company	0.45360312	0.45360312	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.05584000
Warwick-Ares, LLC	0.03666908	0.03666908	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00451408
David M. Madden, Trustee of the Robert H. St. John Family Trust	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.03611250	0.04815000	0.00000000	0.01056716
Grinch, LLC	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.10833750	0.14445000	0.00000000	0.03170147
DeAnne Shepard	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00150000	0.00200000	0.00000000	0.00043893
Island Resources	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.04782717	0.04782717	0.00000000	0.01199578
Texas Independent Exploration Inc.	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00124162	0.00124162	0.00000000	0.00031142
TOTALS	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000

Unleased Mineral Interest:0.0000%



**Summary of Interests: ORI Bone Spring and Wolfcamp Formations
Crossbow Federal 23 27 8 Spacing Unit**

Total Unit Overriding Royalties:2.03%

Interest Owner	Tract 1 ORI	Tract 2 ORI	Tract 3 ORI	Tract 4 ORI	Tract 5 ORI	Tract 6 ORI	Tract 7 ORI	Tract 8 ORI	Tract 9 ORI	Unit ORI
Wallace H. Scott Unified Credit Trust	0.00297677	0.00297677								0.00036908
Magnum Hunter Production, Inc.	0.05372362	0.05372362								0.00666109
MDM Holdings			0.01000000							0.00031352
Island Resources			0.00172500					0.00150000		0.00024219
Lowell Todd Armstrong			0.00010709					0.00006984		0.00001212
Madison M. Hinkle and wife, Susan M. Hinkle						0.01157407			0.00625000	0.00256911
Rolla R. Hinkle III						0.01428240		0.01111111	0.00625000	0.00447200
Jim Brannigan						0.00833333			0.01000000	0.00219463
Madison M. Hinkle						0.00270833		0.01111111		0.00190289
Chi Energy, Inc.						0.00250000				0.00047028
Mary K. Hughes								0.00625000		0.00078380
Morris E. Schertz								0.00277778		0.00034835

Summary of Attempted Contacts: Crossbow

- Marathon sent well proposal letters on July 12, 2018 and a revision on August 3, 2018.
- According to Marathon's records, all of the proposal letters were received by the parties to whom they were sent.
- Marathon sent Joint Operating Agreements to the working interest owners on January 8, 2019 to see if they would participate in the well and/or execute a joint operating agreement.
- Marathon continued to attempt to contact the parties who had not executed an agreement.
- Marathon filed an application to force pool parties who had not entered in to an agreement.
- Marathon sent notices of the force pooling application to the addresses of record at the time of the filing of the application.
- Marathon then also published notice in a newspaper of general circulation in the county where the wells will be located.



Matt S. Tate, CPL
Land Professional



Marathon Oil Company
5555 San Felipe Street
Houston, TX 77056
Telephone: 713-296-2164
Fax: 713.235.8033
matthewstate@marathonoil.com

July 12, 2018

VIA OVERNIGHT DELIVERY

Chevron USA, Inc.
6301 Deauville Blvd.
Midland, Texas 79706

Re: Crossbow Federal 23 27 8 2H, 4H, 8H, 9H, 10H, 14H, 15H and 16H Well Proposals
Sections 7 and 8, T23S-R27E
Eddy County, New Mexico

Dear Working Interest Owner:

Marathon Oil Permian LLC ("MRO") proposes the drilling and completion of the following wells located in Sections 7 and 8, T23S-R27E, Eddy County, New Mexico, to be drilled from two separate pad locations currently in the E/2 NE/4 and E/2 SE/4 of Sec 8, T23S-R27E (subject to change).

Please note the following proposed wells replace the previously proposed Crossbow Federal 23 27 8 WXY 2H, TB 3H and WA 4H well proposals dated May 3, 2018.

- **Crossbow Federal 23 27 8 WA 4H** with a proposed first take point located 330' FEL and 330' FSL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 330' FSL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WA Formation (~9,092' TVD) with a productive lateral length approximately 9,841'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.
- **Crossbow Federal 23 27 8 WXY 2H** with a proposed first take point located 330' FEL and 990' FSL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 990' FSL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WXY Formation (~9,027' TVD) with a productive lateral length approximately 9,841'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.
- **Crossbow Federal 23 27 8 WA 10H** with a proposed first take point located 330' FEL and 1650' FSL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 1650' FSL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WA Formation (~9,092' TVD) with a productive lateral length approximately 9,841'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.
- **Crossbow Federal 23 27 8 WXY 9H** with a proposed first take point located 330' FEL and 2310' FSL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 2310' FSL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WXY Formation (~9,027' TVD) with a productive lateral length approximately 9,841'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.



- **Crossbow Federal 23 27 8 WA 15H** with a proposed first take point located 330' FEL and 2310' FNL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 2310' FNL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WA Formation (~9,092' TVD) with a productive lateral length approximately 9,900'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.
- **Crossbow Federal 23 27 8 WXY 8H** with a proposed first take point located 330' FEL and 1650' FNL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 1650' FNL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WXY Formation (~9,027' TVD) with a productive lateral length approximately 9,900'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.
- **Crossbow Federal 23 27 8 WA 16H** with a proposed first take point located 330' FEL and 990' FNL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 990' FNL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WA Formation (~9,092' TVD) with a productive lateral length approximately 9,900'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.
- **Crossbow Federal 23 27 8 WXY 14H** with a proposed first take point located 330' FEL and 330' FNL of Section 8, T23S-R27E, and a proposed last take point located 330' FWL and 330' FNL of Section 7, T23S-R27E. The well will have a targeted interval located in the Wolfcamp WXY Formation (~9,027' TVD) with a productive lateral length approximately 9,900'. The total estimated drilling and completion cost is \$9,756,288 as shown in the attached AFE.

These proposed locations and target depths are subject to change depending on any surface or subsurface concerns encountered. The AFE's represent an estimate of the costs that will be incurred to drill and complete the wells, but those electing to participate in the wells are responsible for their proportionate share of the actual costs incurred.

Marathon proposes drilling these wells under the terms of the 1989 AAPL JOA and a copy will be provided to you following this proposal. The JOA will contain the following general provisions:

- 100%/300%/300% non-consent penalty
- \$8,000/\$800 drilling and producing rates
- Contract area covering Section 7 and 8, T23S-R27E, limited to the Wolfcamp Formation

If your election is to participate in the drilling and completion of the wells, please sign and return a copy of this letter along with the enclosed AFE within thirty (30) days of receipt of this proposal.

Should you have any questions regarding this or other matters, please don't hesitate to contact me at the above listed numbers or email address.

Sincerely,

Matt S. Tate, CPL
Permian Basin

Crossbow Federal 23 27 8 4H, 2H, 10H, 9H, 15H, 8H, 16H and 14H

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 4H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 4H.**

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 2H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 2H.**

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 10H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 10H.**

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 9H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 9H.**

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 15H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 15H.**

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 8H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 8H.**

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 16H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WA 16H.**

_____ elects to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 14H.**

_____ elects NOT to participate in the drilling, completing, and equipping of the **Crossbow Federal 23 27 8 WXY 14H.**

Chevron USA, Inc.

By: _____

Print Name: _____

Title: _____

Date: _____

Matt S. Tate, CPL
Land Professional



Marathon Oil Company
5555 San Felipe Street
Houston, TX 77056
Telephone: 713-296-2164
Fax: 713.235.8033
matthewstate@marathonoil.com

August 3, 2018

VIA OVERNIGHT DELIVERY

Chevron USA, Inc.
6301 Deauville Blvd.
Midland, Texas 79706

Re: Clarification to Marathon Oil Permian LLC's Crossbow Federal 23 27 8
2H, 4H, 8H, 9H, 10H, 14H, 15H and 16H Well Proposals
Sections 7 and 8, T23S-R27E
Eddy County, New Mexico

Dear Working Interest Owner:

Marathon Oil Permian LLC ("MRO") recently proposed the subject wells by letter dated July 10, 2018, which contained certain discrepancies. The following information provided in the proposal package can be disregarded:

- Please disregard the total estimated drilling and completion cost of \$9,756,288 provided for each well on pages 1 and 2 of the proposal letter.
- Please disregard all information provided under the "Project Description & Reason for Expenditure" portion of the AFE.

All other information provided in the well proposal letter and the AFE's is correct, including the first and last take points, target interval, TVD, lateral length and all cost described in the AFE.

Should you have any questions regarding this or other matters, please don't hesitate to contact me at the above listed numbers or email address.

Sincerely,

Matt S. Tate, CPL
Permian Basin

Permian Asset Team		Location	23,28,30	Rig	480
Field	PURPLE SAGE;WOLFCAMP (GAS) [98220]	State	NEW MEXICO		
Lease / Facility	CROSSBOW FEDERAL 23 27 8 WXY 2H	County/Parish	EDDY		
Operator	MARATHON OIL PERMIAN LLC	Estimated Start Date	18-Feb-2018		
		Estimated Completion Date	25-Mar-2018		
Estimated Gross Cost This AFE: \$9,762,456					

Project Description & Reason for Expenditure: Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems. The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By: AC PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL

Final Approval

Date: _____
Title: Regional Vice President Permian Asset Team

Participant's Approval

Name of
Company: _____

Signature: _____

Title: _____ Date: _____



MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY MATT HENSCHEN
 ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team	PERMIAN		
Field	PURPLE SAGE;WOLI	FORMATION: WOLFCAMP	WILDCAT
Lease/Facility	CROSSBOW FEDERAL 23 27 8 WXY 2H		EXPLORATION
Location	EDDY COUNTY		DEVELOPMENT
Prospect	MALAGA		X EXPLOITATION
			WORKOVER

Est Total Depth	19,119	Est Drilling Days	22.8	Est Completion Days	11
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LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	16,000
7012050	Intermediate Casing 1	61,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	137,000
7012050	Orig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		583,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	565,000
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service	15,000
7019020	Cement and Cementing Service	25,000
7019020	Cement and Cementing Service	40,000
7019020	Cement and Cementing Service	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	70,000
7019020	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging/geosteering	19,000
7019250	Stabilizers, Hole Openers, Underreamers (DH rentals)	15,000
7019110	Casing inspection/cleaning	15,000
7019110	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	144,871

TOTAL DRILLING - INTANGIBLE	\$1,847,081
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TOTAL DRILLING COST	\$2,430,081
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COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000
TOTAL COMPLETION - TANGIBLE		\$170,000

MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
 Field PURPLE SAGE/WOLI FORMATION: WOLF CAMP
 Lease/Facility CROSSBOW FEDERAL 23 27 8 WKY 2H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drig)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drig & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (ind drig; lightplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. BIt, BHA)	-
7000030	Contract Labor - general	50,000
7001110	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001120	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frack Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800
TOTAL COMPLETION COST		\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	I&E Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000010	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$800,575
TOTAL SURFACE EQUIPMENT COST		\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Pig Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-
TOTAL ARTIFICIAL LIFT		79,000
TOTAL ARTIFICIAL LIFT COST		\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

	TOTAL COST
TOTAL LOCATION COST	\$ 75,000
TOTAL DRILLING COST	\$ 2,430,081
TOTAL COMPLETIONS COST	\$ 6,377,800

TOTAL SURFACE EQUIPMENT COST
TOTAL ARTIFICIAL LIFT COST
GRAND TOTAL COST

\$ 800,575
\$ 79,000
\$9,762,456



AUTHORITY FOR EXPENDITURE
EXPLORATION & PRODUCTION

Drilling Project #
Pad Project #
DATE: 7/10/2018

Permian Asset Team			
Field	PURPLE SAGE;WOLFCAMP (GAS) [98220]	Location 23,28,30	Rig 480
Lease / Facility	CROSSBOW FEDERAL 23 27 & WA 4H	State	NEW MEXICO
Operator	MARATHON OIL PERMIAN LLC	County/Parish	EDDY

Estimated Start Date	18-Feb-2018
Estimated Completion Date	25-Mar-2018

Estimated Gross Cost This AFE: **\$9,762,456**

Project Description & Reason for Expenditure: Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems.

The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By: AG PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL

Final Approval

Title: Regional Vice President Permian Asset Team Date: _____

Participant's Approval

Name of Company: _____

Signature: _____

Title: _____ Date: _____

MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY MATT HENSCHEN
 ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team	PERMIAN			
Field	PURPLE SAGE/WOLI	FORMATION: WOLFCAMP	WILDCAT	EXPLORATION
Lease/Facility	CROSSBOW FEDERAL 23 27 B WA 4H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth	19,209	Est Drilling Days	22.8	Est Completion Days	11
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LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	16,000
7012050	Intermediate Casing 1	61,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	137,000
7012050	Drig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		583,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	565,000
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service	15,000
7019020	Cement and Cementing Service	25,000
7019020	Cement and Cementing Service	40,000
7019020	Cement and Cementing Service	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	70,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging-geosteering	19,000
7019250	Stabilizers, Hole Openers, Underreamers (DH rentals)	15,000
7019110	Casing Inspection/cleaning	15,000
7019110	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	144,871
TOTAL DRILLING - INTANGIBLE		\$1,847,081

TOTAL DRILLING COST

\$2,430,081

COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000
TOTAL COMPLETION - TANGIBLE		\$170,000

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
Field PURPLE SAGE;WOLI FORMATION: WOLFCAMP
Lease/Facility CROSSBOW FEDERAL 23 27 8 WA 4H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drlg)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drlg & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drlg; lightplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bit, BHA)	-
7000030	Contract Labor - general	50,000
7001110	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001120	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frack Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800

TOTAL COMPLETION COST

\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	I&E Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000010	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$800,575

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Pig Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-
TOTAL ARTIFICIAL LIFT		79,000

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST

\$ 75,000

TOTAL DRILLING COST

\$ 2,430,081

TOTAL COMPLETIONS COST

\$ 6,377,800

TOTAL SURFACE EQUIPMENT COST
TOTAL ARTIFICIAL LIFT COST
GRAND TOTAL COST

\$ 800,575
\$ 79,000
\$9,762,456



Drilling Project #
Pad Project #
DATE: 7/10/2018

Permian Asset Team	
Field	PURPLE SAGE;WOLFCAMP (GAS) [98220]
Lease / Facility	CROSSBOW FEDERAL 23 27 8 WXY 9H
Operator	MARATHON OIL PERMIAN LLC
Location	23,28,30
Rig	480
State	NEW MEXICO
County/Parish	EDDY
Estimated Start Date	18-Feb-2018
Estimated Completion Date	25-Mar-2018
Estimated Gross Cost This AFE: \$9,762,458	

Project Description & Reason for Expenditure: Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems.

The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By: AG PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL

Final Approval

Date: _____
Title: Regional Vice President Permian Asset Team

Participant's Approval

Name of
Company: _____

Signature: _____

Title: _____ Date: _____

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
COMPLETION PREPARED BY JOSH SHANNON
FACILITIES PREPARED BY MATT HENSCHEN
ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team	PERMIAN				
Field	PURPLE SAGE;WOLI	FORMATION: WOLFCAMP	WILDCAT	EXPLORATION	
Lease/Facility	CROSSBOW FEDERAL 23 27 6 WXY 9H		DEVELOPMENT	RECOMPLETION	
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER	
Prospect	MALAGA				
Est Total Depth	19,199	Est Drilling Days	22.8	Est Completion Days	11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	16,000
7012050	Intermediate Casing 1	61,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	137,000
7012050	Drig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		583,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	565,000
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service	15,000
7019020	Cement and Cementing Service	25,000
7019020	Cement and Cementing Service	40,000
7019020	Cement and Cementing Service	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	70,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging/geosteering	19,000
7019250	Stabilizers, Hole Openers, Underreamers (DH rentals)	15,000
7019110	Casing Inspection/cleaning	15,000
7019110	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	144,871
TOTAL DRILLING - INTANGIBLE		\$1,847,081

TOTAL DRILLING COST

\$2,430,081

COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000
TOTAL COMPLETION - TANGIBLE		\$170,000

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
Field PURPLE SAGE/WOLI FORMATION: WOLFCAMP
Lease/Facility CROSSBOW FEDERAL 29 27 8 WKY 9H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drlg)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drlg & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drlg, rightplant, hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. BH, BHA)	-
7000030	Contract Labor - general	50,000
7001110	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001120	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frack Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, rightplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800

TOTAL COMPLETION COST

\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	BLE Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000010	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$800,575

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Pig Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-
TOTAL ARTIFICIAL LIFT		79,000

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST	\$ 75,000
TOTAL DRILLING COST	\$ 2,430,081
TOTAL COMPLETIONS COST	\$ 6,377,800

TOTAL SURFACE EQUIPMENT COST
TOTAL ARTIFICIAL LIFT COST
GRAND TOTAL COST

\$ 800,575
\$ 79,000
\$9,762,456

Permian Asset Team		Location 23,28,30	Rig 480
Field	PURPLE SAGE;WOLFCAMP (GAS) [98220]	State	NEW MEXICO
Lease / Facility	CROSSBOW FEDERAL 23 27 8 WA 10H	County/Parish	EDDY
Operator	MARATHON OIL PERMIAN LLC	Estimated Start Date	18-Feb-2018
		Estimated Completion Date	25-Mar-2018
Estimated Gross Cost This AFE: \$9,834,324			

Project Description & Reason for Expenditure: Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems.

The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By: AG PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL

Final Approval

Date: _____
Title: Regional Vice President Permian Asset Team

Participant's Approval

Name of
Company: _____

Signature: _____

Title: _____ Date: _____

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018
DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
COMPLETION PREPARED BY JOSH SHANNON
FACILITIES PREPARED BY MATT HENSCHEN
ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team	PERMIAN			
Field	PURPLE SAGE/WOLI	FORMATION: WOLFCAMP	WILDCAT	EXPLORATION
Lease/Facility	CROSSBOW FEDERAL 23 27 8 WA 10H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth	19,202	Est Drilling Days	22.8	Est Completion Days	11
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LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	16,000
7012050	Intermediate Casing 1	61,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	137,000
7012050	Drig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		583,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	632,800
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service	15,000
7019020	Cement and Cementing Service	25,000
7019020	Cement and Cementing Service	40,000
7019020	Cement and Cementing Service	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	70,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging-geosteering	19,000
7019250	Stabilizers, Hole Openers, Underreamers (DH rentals)	15,000
7019110	Casing inspection/cleaning	15,000
7019110	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	148,939
TOTAL DRILLING - INTANGIBLE		51,918,949

TOTAL DRILLING COST

\$2,501,949

COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000
TOTAL COMPLETION - TANGIBLE		\$170,000

MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
 Field PURPLE SAGE;WOLI FORMATION: WOLFCAMP
 Lease/Facility CROSSBOW FEDERAL 25 27 8 WA 10H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drlg)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drlg & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (ind drlg; lightplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bit, BHA)	-
7000030	Contract Labor - general	50,000
7001110	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001120	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frack Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800

TOTAL COMPLETION COST

\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	I&E Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000010	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$800,575

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Pig Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-
TOTAL ARTIFICIAL LIFT		79,000

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST

\$ 75,000

TOTAL DRILLING COST

\$ 2,501,949

TOTAL COMPLETIONS COST

\$ 6,377,800

TOTAL SURFACE EQUIPMENT COST
TOTAL ARTIFICIAL LIFT COST

\$ 800,575
\$ 79,000

GRAND TOTAL COST

\$9,834,324

Permian Asset Team

Field **PURPLE SAGE;WOLFCAMP (GAS) [98220]**
Lease / Facility **CROSSBOW FEDERAL 23 27 8 WXY 8H**
Operator **MARATHON OIL PERMIAN LLC**

Location **23,28,30** Rig **480**
State **NEW MEXICO**
County/Parish **EDDY**
Estimated Start Date **18-Feb-2018**
Estimated Completion Date **25-Mar-2018**

Estimated Gross Cost This AFE: **\$9,762,456**

Project Description & Reason for Expenditure:

Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems.

The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By: **AG PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL**

Final Approval

Date: _____

Title: Regional Vice President Permian Asset Team

Participant's Approval

Name of
Company: _____

Signature: _____

Title: _____ Date: _____

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
COMPLETION PREPARED BY JOSH SHANNON
FACILITIES PREPARED BY MATT HENSCHEN
ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team	PERMIAN				
Field	PURPLE SAGE/WOLI	FORMATION: WOLFCAMP	WILDCAT	EXPLORATION	
Lease/Facility	CROSSBOW FEDERAL 23 27 8 WXY BH		DEVELOPMENT	RECOMPLETION	
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER	
Prospect	MALAGA				
Est Total Depth	19,181	Est Drilling Days	22.8	Est Completion Days	11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	16,000
7012050	Intermediate Casing 1	61,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	137,000
7012050	Drig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		583,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	565,000
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service	15,000
7019020	Cement and Cementing Service	25,000
7019020	Cement and Cementing Service	40,000
7019020	Cement and Cementing Service	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	70,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging/geosteering	19,000
7019250	Stabilizers, Mole Openers, Underreamers (DH rentals)	15,000
7019110	Casing Inspection/cleaning	15,000
7019110	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	144,871
TOTAL DRILLING - INTANGIBLE		\$1,847,081

TOTAL DRILLING COST

\$2,430,081

COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000
TOTAL COMPLETION - TANGIBLE		\$170,000

MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
 Field PURPLE SAGE;WOLU FORMATION: WOLFCAMP
 Lease/Facility CROSSBOW FEDERAL 23 27 8 WXY 8H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drlg)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drlg & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drlg; lghtplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bit, BHA)	-
7000030	Contract Labor - general	50,000
7001110	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001120	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frack Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lghtplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800

TOTAL COMPLETION COST

\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001110	Telecommunication equip (Telemetry)	-
7012410	Una Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	I&E Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000010	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$800,575

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Pig Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-
TOTAL ARTIFICIAL LIFT		79,000

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST	\$ 75,000
TOTAL DRILLING COST	\$ 2,430,081
TOTAL COMPLETIONS COST	\$ 6,377,800

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

GRAND TOTAL COST

\$9,762,456

Permian Asset Team

Field **PURPLE SAGE;WOLFCAMP (GAS) [98220]**
Lease / Facility **CROSSBOW FEDERAL 23 27 & WXY 14H**
Operator **MARATHON OIL PERMIAN LLC**

Location **23,28,30** Rig **480**

State **NEW MEXICO**

County/Parish **EDDY**

Estimated Start Date **18-Feb-2018**

Estimated Completion Date **25-Mar-2018**

Estimated Gross Cost This AFE: **\$9,755,036**

Project Description & Reason for Expenditure:

Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems.

The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By **AG PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL**

Final Approval

Title: **Regional Vice President Permian Asset Team** Date: _____

Participant's Approval

Name of
Company: _____

Signature: _____

Title: _____ Date: _____

MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY MATT HENSCHEN
 ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team	PERMIAN			
Field	PURPLE SAGE/WOLI	FORMATION: WOLFCAMP	WILDCAT	EXPLORATION
Lease/Facility	CROSSBOW FEDERAL 23 27 8 WKY 14H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth	<u>19,229</u>	Est Drilling Days	<u>22.8</u>	Est Completion Days	<u>11</u>
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LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	15,000
7012050	Intermediate Casing 1	55,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	137,000
7012050	Drig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		576,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	565,000
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service	15,000
7019020	Cement and Cementing Service	25,000
7019020	Cement and Cementing Service	40,000
7019020	Cement and Cementing Service	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	70,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging-geosteering	19,000
7019250	Stabilizers, Mole Openers, Underreamers (DH rentals)	15,000
7019110	Casing Inspection/cleaning	15,000
7019110	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	144,451
TOTAL DRILLING - INTANGIBLE		\$1,846,661

TOTAL DRILLING COST

\$2,422,661

COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000
TOTAL COMPLETION - TANGIBLE		\$170,000

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
Field PURPLE SAGE;WOLI FORMATION: WOLFCAMP
Lease/Facility CROSSBOW FEDERAL 23 27 B WKY 14H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drlg)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drlg & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drlg; lightplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bit, BHA)	-
7000030	Contract Labor - general	50,000
7001130	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001220	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frac Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800

TOTAL COMPLETION COST

\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001130	Telecommunication equip (Telemetry)	-
7012410	Use Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	I&E Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000030	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$800,575

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Plg Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-
TOTAL ARTIFICIAL LIFT		79,000

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST	\$ 75,000
TOTAL DRILLING COST	\$ 2,422,661
TOTAL COMPLETIONS COST	\$ 6,377,800

TOTAL SURFACE EQUIPMENT COST
TOTAL ARTIFICIAL LIFT COST
GRAND TOTAL COST

\$ 800,575
\$ 79,000
\$9,755,036



AUTHORITY FOR EXPENDITURE
EXPLORATION & PRODUCTION

Drilling Project #
Pad Project #
DATE: 7/10/2018

Permian Asset Team	
Field	PURPLE SAGE; WOLFCAMP (GAS) [98220]
Lease / Facility	CROSSBOW FEDERAL 23 27 8 WA 16H
Operator	MARATHON OIL PERMIAN LLC
Location	23,28,30
Rig	480
State	NEW MEXICO
County/Parish	EDDY
Estimated Start Date	18-Feb-2018
Estimated Completion Date	25-Mar-2018
Estimated Gross Cost This AFE: \$9,729,596	

Project Description & Reason for Expenditure: Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems. The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By: AG PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL

Final Approval

Date: _____
Title: Regional Vice President Permian Asset Team

Participant's Approval

Name of Company: _____
Signature: _____
Title: _____ Date: _____

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018
DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
COMPLETION PREPARED BY JOSH SHANNON
FACILITIES PREPARED BY MATT HENSCHEN
ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team PERMIAN
Field PURPLE SAGE;WOLI FORMATION: WOLFCAMP
Lease/Facility CROSSBOW FEDERAL 23 27 8 WA 15H
Location EDDY COUNTY
Prospect MALAGA

WILDCAT
DEVELOPMENT
X EXPLOITATION
EXPLORATION
RECOMPLETION
WORKOVER

Est Total Depth 19,285 Est Drilling Days 22.8 Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	16,000
7012050	Intermediate Casing 1	61,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	106,000
7012050	Drig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		552,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	565,000
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	40,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	70,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging+geosteering	19,000
7019250	Stabilizers, Hole Openers, Underreamers (DH rentals)	15,000
7019110	Casing Inspection/cleaning	15,000
7019110	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	143,011

TOTAL DRILLING - INTANGIBLE \$1,845,221

TOTAL DRILLING COST \$2,397,221

COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000

TOTAL COMPLETION - TANGIBLE \$170,000

MARATHON OIL PERMIAN LLC
AUTHORITY FOR EXPENDITURE
DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
Field PURPLE SAGE;WOU FORMATION: WOLF CAMP
Lease/Facility CROSSBOW FEDERAL 23 27 8 WA 15H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drig)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drig & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drig; lightplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bit, BHA)	-
7000030	Contract Labor - general	50,000
7001110	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001120	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frack Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800

TOTAL COMPLETION COST

\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	I&E Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000010	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$800,575

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Pig Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-
TOTAL ARTIFICIAL LIFT		79,000

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST	\$ 75,000
TOTAL DRILLING COST	\$ 2,397,221
TOTAL COMPLETIONS COST	\$ 6,377,800

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

GRAND TOTAL COST

\$9,729,596



AUTHORITY FOR EXPENDITURE
EXPLORATION & PRODUCTION

Drilling Project #
Pad Project #
DATE: 7/19/2018

Permian Asset Team	
Field	PURPLE SAGE; WOLFCAMP (GAS) [88220]
Lease / Facility	CROSSBOW FEDERAL 23 27 8 WA 16H
Operator	MARATHON OIL PERMIAN LLC
Location	23,28,30
Rig	480
State	NEW MEXICO
County/Parish	EDDY
Estimated Start Date	18-Feb-2018
Estimated Completion Date	25-Mar-2018
Estimated Gross Cost This AFE: \$9,762,456	

Project Description & Reason for Expenditure: Drill, Complete, & Equip a Horizontal Well

This well is planned to be drilled and completed with multistage fracturing using plug and perf. The estimated cost of drilling, testing, completing, and equipping the well is \$7,057,016 as detailed in the provided authority for expenditure document. This will include installation of transitional and long term artificial lift systems. The well will be drilled to a total vertical depth of 9,580' and a total measured depth of 14,474', with an estimated treatable lateral length of 4,632' in the WOLFCAMP WXY formation and will be completed with an estimated 30 stages and approximately 2,500 lbs/ft of proppant.

Prepared By: AG PRADEEP, MATTHEW RUGAARD, JOSH SHANNON, MATT HENSCHEN, BILLY MOORE, LANE NEAL

Final Approval

Date: _____
Title: Regional Vice President Permian Asset Team

Participant's Approval

Name of
Company: _____

Signature: _____

Title: _____ Date: _____

MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY MATT HENSCHEN
 ARTIFICIAL LIFT PREPARED BY BILLY MOORE

Asset Team	PERMIAN			
Field	PURPLE SAGE:WOLI	FORMATION: WOLFCAMP	WILDCAT	EXPLORATION
Lease/Facility	CROSSBOW FEDERAL 23 27 8 WA 16H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth 19,249 Est Drilling Days 22.8 Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	37,500
7001250	Land Broker Fees and Services	37,500
TOTAL LOCATION COST - INTANGIBLE		75,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	16,000
7012050	Intermediate Casing 1	61,000
7012050	Intermediate Casing 2	207,000
7012050	Production Casing	137,000
7012050	Drig Liner Hanger, Tieback Eq & Csg Accessories	55,000
7012550	Drilling Wellhead Equipment	50,000
7012040	Casing & Tubing Access	24,000
7012270	Miscellaneous MRO Materials	5,000
TOTAL DRILLING - TANGIBLE		583,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	33,750
7019220	Drilling Rig - day work/footage	565,000
7019040	Directional Drilling Services	191,700
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	40,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	43,000
7012020	Bits	70,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	18,000
7001460	Water (non potable)	25,000
7019000	Well Logging Services	-
7019150	Mud Logging-geosteering	19,000
7019250	Stabilizers, Hole Openers, Underreamers (DH rentals)	15,000
7019310	Casing Inspection/cleaning	15,000
7019310	Drill pipe/collar inspection services	10,000
7016180	Freight - truck	25,000
7001460	Water hauling and disposal (includes soil farming)	60,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7018150	Rental Tools and Equipment (surface-rentals)	90,400
7018150	Rig Equipment and Misc.	11,300
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,220
7001400	Safety and Environmental	36,160
7018120	Rental Buildings (trailers)	18,080
7019310	Coring (sidewalls & analysis)	-
7011010	8% Contingency & Taxes	144,871
TOTAL DRILLING - INTANGIBLE		\$1,847,081

TOTAL DRILLING COST \$2,430,081

COMPLETION - TANGIBLE

7012580	Tubing	75,000
7012040	Tubing Accessories (nipple, wireline entry)	15,000
7012550	Wellhead Equip	20,000
7012560	Packers - Completion Equipment	60,000
TOTAL COMPLETION - TANGIBLE		\$170,000

MARATHON OIL PERMIAN LLC
 AUTHORITY FOR EXPENDITURE
 DETAIL OF ESTIMATED WELL COSTS

DATE 7/10/2018

Asset Team PERMIAN
 Field PURPLE SAGE;WOLI FORMATION: WOLFCAMP
 Lease/Facility CROSSBOW FEDERAL 23 27 8 WA 16H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	20,000
7019220	Drilling Rig During Completion	80,000
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	240,000
7019240	Snubbing Services	-
7019270	Pulling/Swab Units	-
7016350	Fuel (from drig)	-
7019010	Casing Crew and Services	-
7019020	Cement and Cementing Services	-
7019080	Well Testing Services (flow hand & equip)	195,000
7019320	Fracturing Services	3,550,000
7019330	Perforating	300,000
7019360	Wireline Services	10,000
7001460	Water Hauling & Disposal (frac fluids)	600,000
7016180	Freight - Truck (haul pipe; drig & compl)	15,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drig; lightplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bit, BHA)	-
7000030	Contract Labor - general	50,000
7001110	Telecommunications Services	130,000
7001400	Safety and Environmental	-
7001120	Consulting Services	60,000
7018150	Zipper Manifold	165,000
7019300	Frack Stack Rentals	70,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	140,000
7018120	Rental Buildings (trailers)	60,000
7000030	Contract Labor - Pumping (pump-down pumps)	120,000
7011010	8% Contingency & Taxes	402,800
TOTAL COMPLETION - INTANGIBLE		\$6,207,800

TOTAL COMPLETION COST

\$6,377,800

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	85,794
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	67,540
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	26,786
7012270	Miscellaneous Materials (containment system)	43,227
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	29,116
7012290	Metering and Instrumentation	235,914
7012290	I&E Materials	-
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	85,919
7012500	Tanks	144,894
7012100	Heater Treater	17,330
7012640	Flare & Accessories	11,646
7000010	Electrical Labor	29,116
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	23,293

TOTAL SURFACE EQUIPMENT - TANGIBLE

\$800,575

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

ARTIFICIAL LIFT

7006640	Company Labor	2,500
7012180	Gas Lift Equipment	38,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	-
7012140	Elect Sub Pumps (ESP)	-
7019350	Well Services-Well/Wellhead Services	20,000
7012270	Materials & Supplies-Tangible	13,000
7012550	Surface Wellhead Equipment	5,500
7012390	Pig Launchers/Receivers & Rel Equip	-
7011010	8% Contingency & Taxes	-

TOTAL ARTIFICIAL LIFT

79,000

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST
 TOTAL DRILLING COST
 TOTAL COMPLETIONS COST

\$ 75,000
 \$ 2,430,081
 \$ 6,377,800

TOTAL SURFACE EQUIPMENT COST

\$ 800,575

TOTAL ARTIFICIAL LIFT COST

\$ 79,000

GRAND TOTAL COST

\$9,762,456

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF MARATHON OIL
PERMIAN LLC FOR A HORIZONTAL
SPACING AND PRORATION UNIT
AND COMPULSORY POOLING,
EDDY COUNTY, NEW MEXICO.

CASE NO. 16381

AFFIDAVIT

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

Deana M. Bennett, attorney in fact and authorized representative of Marathon Oil Permian LLC, the Applicant herein, being first duly sworn, upon oath, states that the above-referenced Application was sent under a notice letter and that proof of receipt is attached hereto.


Deana M. Bennett

SUBSCRIBED AND SWORN to before me this 18th day of September, 2019 by Deana M. Bennett.


Notary Public



My commission expires: 02-27-21



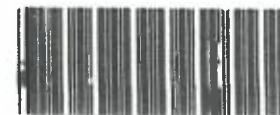
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USPS Article Number	Date Created	Name 1	Name 2	Address	City	State	Zip	Mailing Status	Service Options	Batch ID	Mail Delivery Date
9314869904300049702372	2018-08-17 10:57 AM	Wells Fargo Central Pacific Holdings, Inc.		600 California Street, 20th FL	San Francisco	CA	94108	Delivered	Return Receipt - Electronic	142474	08-30-2018
9314869904300049702365	2018-08-17 10:57 AM	Warwick-Ares, LLC		6608 N. Western Ave, Box 417	Oklahoma City	OK	73116	Delivered	Return Receipt - Electronic	142474	08-20-2018
9314869904300049702358	2018-08-17 10:57 AM	Wallace H. Scott Unified Credit Trust		10205 River Plantation Dr	Austin	TX	78747	Delivered	Return Receipt - Electronic	142474	09-07-2018
9314869904300049702341	2018-08-17 10:57 AM	Texas Independent Exploration Limited		6760 Portwest Dr	Houston	TX	77024	Delivered	Return Receipt - Electronic	142474	08-20-2018
9314869904300049702334	2018-08-17 10:57 AM	Rolla R. Hinkle, III		P.O. Box 2292	Roswell	NM	88202	Delivered	Return Receipt - Electronic	142474	08-21-2018
9314869904300049702327	2018-08-17 10:57 AM	Robert St. John Family Trust	C/O David Madden	11922 Castle Ridge Dr.	Houston	TX	77077	Delivered	Return Receipt - Electronic	142474	08-24-2018
9314869904300049702310	2018-08-17 10:57 AM	Post Oak Crown IV, LLC		5200 San Felipe	Houston	TX	77056	To be Returned	Return Receipt - Electronic	142474	
9314869904300049702303	2018-08-17 10:57 AM	Morris E. Schertz		P.O. Box 2588	Roswell	NM	88202	Delivered	Return Receipt - Electronic	142474	08-21-2018
9314869904300049702297	2018-08-17 10:57 AM	Mike Moylett		P.O. Box 50820	Midland	TX	79710	Delivered	Return Receipt - Electronic	142474	08-22-2018
9314869904300049702280	2018-08-17 10:57 AM	Merit Partners, LP (Tap Rock)		13727 Noel Road, Suite 1200	Dallas	TX	75240	Delivered	Return Receipt - Electronic	142474	08-20-2018
9314869904300049702273	2018-08-17 10:57 AM	Merit Partners, LP (Tap Rock)		602 Park Point Drive, Suite 200	Golden	CO	80401	Delivered	Return Receipt - Electronic	142474	08-20-2018
9314869904300049702266	2018-08-17 10:57 AM	Merit Partners, LP		13727 Noel Road #500	Dallas	TX	75240	Delivered	Return Receipt - Electronic	142474	08-20-2018
9314869904300049702259	2018-08-17 10:57 AM	McVay Drilling, Inc.		401 E. Bender Blvd.,	Hobbs	NM	88240	Delivered	Return Receipt - Electronic	142474	08-21-2018
9314869904300049702242	2018-08-17 10:57 AM	McCombs Energy, LLC		5599 San Felipe St. #1200	Houston	TX	77056	Lost	Return Receipt - Electronic	142474	
9314869904300049702235	2018-08-17 10:57 AM	Mary K. Hughes		1000 Warren Ave.,	Gillette	WY	82716	Delivered	Return Receipt - Electronic	142474	08-22-2018
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Zina Crum
Modrall Sperling
500 4th Street NW
Suite 1000
Albuquerque NM 87102

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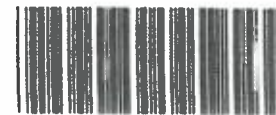
Firm Mailing Book ID: 149204

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2	9314 8699 0430 0049 7019 00	Beth Hackathorn Gallegos 230 West 6th Ave., Denver CO 80204	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
3	9314 8699 0430 0049 7019 17	Blue Ridge Mountain Resources 122 West John Carpenter Freeway, Suite 300 Irving TX 75039	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
4	9314 8699 0430 0049 7019 24	Bonefish, LLC, Atten: Steve Dyer RHINO 4601 Hondo Pass, Suite K El Paso TX 79904	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
5	9314 8699 0430 0049 7019 31	Brazos Limited Partnership 300 N. Breckenridge Ave Breckenridge TX 76424	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
6	9314 8699 0430 0049 7019 48	CEP Minerals, LLC P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
7	9314 8699 0430 0049 7019 55	Chevron USA, Inc. 6301 Deauville Blvd. Midland, Texas TX 79706	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
8	9314 8699 0430 0049 7019 62	Chi Energy, Inc. 212 North Main St., Suite 200 Midland TX 79701	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
9	9314 8699 0430 0049 7019 79	Chi Partners, LLC 212 North Main St., Suite 200 Midland TX 79701	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
10	9314 8699 0430 0049 7019 86	Cimarex Energy Company 600 N. Maricfeld St, Suite 600 Midland TX 79701	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
11	9314 8699 0430 0049 7019 93	Collins & Jones Investments, LLC 508 W. Wall Street, Suite 1200 Midland TX 79701	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
12	9314 8699 0430 0049 7020 06	Crown Oil Partners V, L.P. 4000 N. Big Spring, Suite 300 Midland TX 79705	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
13	9314 8699 0430 0049 7020 13	Crown Oil Partners, LP P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
14	9314 8699 0430 0049 7020 20	Crown Ventures III, LLC P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
15	9314 8699 0430 0049 7020 37	David W. Cromwell P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice



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Line	Article Number	Name, Street & P.O. Address	Postage	Fee	R.R.Fee	Reference	Rest.Del.Fee Contents
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17	9314 8699 0430 0049 7020 51	DeAnne Shepard 27 Splitrock Ct. The Woodlands TX 77381	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
18	9314 8699 0430 0049 7020 68	Doug Laufer 3407 Jefferson Ave. Suite 100 Austin TX 78703	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
19	9314 8699 0430 0049 7020 75	Fortis Minerals II, LLC 1111 Bagby St., Suite 2150 Houston TX 77002	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
20	9314 8699 0430 0049 7020 82	Gene H. Davis 5605 Drexel Court Midland TX 79707	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
21	9314 8699 0430 0049 7020 99	Gerard G. Vavrek P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
22	9314 8699 0430 0049 7021 05	Good News Minerals, LLC P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
23	9314 8699 0430 0049 7021 12	Grinch, LLC 6760 Portwest Dr Houston TX 77024	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
24	9314 8699 0430 0049 7021 29	H. Jason Wacker 5601 Hillcrest Midland TX 79707	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
25	9314 8699 0430 0049 7021 36	Island Resources 6760 Portwest Dr Houston TX 77024	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
26	9314 8699 0430 0049 7021 43	Island Resources 1600 Smith Street, Suite 3800 Houston TX 77002	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
27	9314 8699 0430 0049 7021 50	Jeremiah, LLC 501 E Jemez St Hobbs NM 88240	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
28	9314 8699 0430 0049 7021 67	Jesse A. Faught, Jr. P.O. Box 52603 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
29	9314 8699 0430 0049 7021 74	Jim Brannigan 2610 Gaye Drive Roswell NM 88201	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
30	9314 8699 0430 0049 7021 81	Kaleb Smith P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice



Zina Crum
Modrall Sperling
500 4th Street NW
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Albuquerque NM 87102

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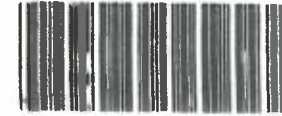
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31	9314 8699 0430 0049 7021 98	LDM Holdings, LLC. 4616 Owendle Dr., Benbrook TX 76116	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
32	9314 8699 0430 0049 7022 04	LMC Energy 550 W. Texas Ave., Suite 945 Midland TX 79701	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
33	9314 8699 0430 0049 7022 11	Lowell Todd Armstrong 850 Azalea St. Houston TX 77018	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
34	9314 8699 0430 0049 7022 28	Madison M. Hinkle et ux, Susan M. Hinkle P.O. Box 2292 Roswell NM 88202	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
35	9314 8699 0430 0049 7022 35	Mary K. Hughes 1000 Warren Ave., Gillette WY 82716	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
36	9314 8699 0430 0049 7022 42	McCombs Energy, LLC 5599 San Felipe St. #1200 Houston TX 77056	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
37	9314 8699 0430 0049 7022 59	McVay Drilling, Inc. 401 E. Bender Blvd., Hobbs NM 88240	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
38	9314 8699 0430 0049 7022 66	Merit Partners, LP 13727 Noel Road #500 Dallas TX 75240	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
39	9314 8699 0430 0049 7022 73	Merit Partners, LP (Tap Rock) 602 Park Point Drive, Suite 200 Golden CO 80401	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
40	9314 8699 0430 0049 7022 80	Merit Partners, LP (Tap Rock) 13727 Noel Road, Suite 1200	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
41	9314 8699 0430 0049 7022 97	Mike Moylett P.O. Box 50820 Midland TX 79710	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
42	9314 8699 0430 0049 7023 03	Morris E. Schertz P.O. Box 2588 Roswell NM 88202	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
43	9314 8699 0430 0049 7023 10	Post Oak Crown IV, LLC 5200 San Felipe Houston TX 77056	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
44	9314 8699 0430 0049 7023 27	Robert St. John Family Trust C/O David Madden 11922 Castle Ridge Dr.	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
45	9314 8699 0430 0049 7023 34	Kella R. Hinkle, III P.O. Box 2292 Roswell NM 88202	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice



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Line	Article Number	Name, Street & P.O. Address	Postage	Fee	R.R.Fee	Reference	Rest.Del.Fee Contents
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47	9314 8699 0430 0049 7023 58	Wallace H. Scott Unified Credit Trust 10205 River Plantation Dr Austin TX 78747	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
48	9314 8699 0430 0049 7023 65	Warwick-Ares, LLC 6608 N. Western Ave. Box 417 Oklahoma City OK 73116	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
49	9314 8699 0430 0049 7023 72	Wells Fargo Central Pacific Holdings, Inc. 600 California Street, 20th FL San Francisco CA 94108	\$1.21	\$3.45	\$1.50	81363-0154	\$0.00 Notice
Totals:			\$59.29	\$169.05	\$73.50		\$0.00
Grand Total:							\$301.84

List Number of Pieces
Listed by Sender

49

Total Number of Pieces
Received at Post Office

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Postmaster:
Name of receiving employee

[Signature]

Dated:



CARLSBAD
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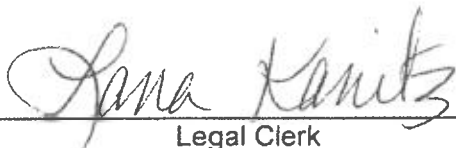
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MODRALL SPERLING
PO BOX 2168

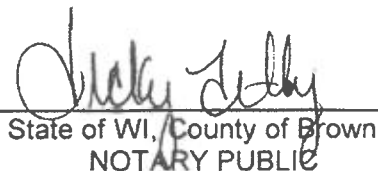
ALBUQUERQUE NM 87103

I, a legal clerk of the **Carlsbad Current-Argus**, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

08/24/18


Legal Clerk

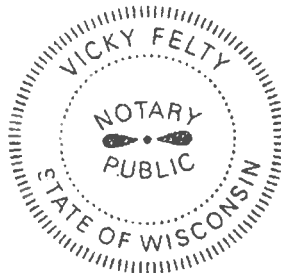
Subscribed and sworn before me this
24th of August 2018.


State of WI, County of Brown
NOTARY PUBLIC

9-19-4
My Commission Expires

Case No. 16381: Notice to all affected parties, as v devisees of Texas Independent Exploration Limit sources & Grinch, LLC); Lowell Todd Armstrong Grinch, LLC; DeAnne Shepard; Robert St. John Fan Madden, Trustee; Merit Partners, LP; Tap Rock; E Resources; Warwick-Ares, LLC; Chevron USA, I Bonefish, LLC, Atten: Steve Dyer RHINO; Blue Ridge ces; Crown Oil Partners V, L.P.; Crown Oil Partners ergy Company; Wallace H. Scott Unified Credit Plantation Dr., Austin, TX 78747; McCombs Energ ed Partnership; Chi Partners, LLC; Gene H. Davis; C it Partners, LP; Doug Laufer; Andrews Oil, LP; McVa R. Hinkle, III.; Madison M. Hinkle et ux, Susan M. Minerals, LLC; CEP Minerals, LLC; Mike Moylett; D Smith; Post Oak Crown IV, LLC; Post Oak Crown IV Central Pacific Holdings, Inc.; Crown Oil Partners, Investments, LLC; LMC Energy; Gerard G. Vavrek; H. Jason Wacker; David W. Cromwell; Crown Ve Brannigan; Island Resources; LDM Holdings, LLC Gallegos; Mary K. Hughes; Fortis Minerals II, LLC; the application of Marathon Oil Permian LLC for a and proration unit and compulsory pooling, Eddy C The State of New Mexico, through its Oil Conservat gives notice that the Division will conduct a public order from the Division: (1) creating a 1280-acre, n unit in covering Sections 7 and 8, Township 23 Sc NMPM, Eddy County, New Mexico; and, (2) pooling in the Wolfcamp formation underlying this pro proration unit. This proposed spacing unit will be th bow 23 27 8 WXY 2H, Crossbow 23 27 8 WA 4H, (27 8 WXY 9H, Crossbow Federal 23 27 8 WA 10H, (27 8 WXY 8H Crossbow Federal 23 27 8 WXY 14H, (27 8 WA 15H and Crossbow Federal 23 27 8 WA 1 zontally drilled. The producing area for these wells v to be considered will be the cost of drilling and co the allocation of these costs as well as the actual charges for supervision, designation of Marathon wells, and a 200% charge for risk involved in drilling : Said area is located approximately 8 miles southwest New Mexico.

Pub: August 24, 2018 Legal # 1259253



Case No. 16381: Notice to all affected parties, as well as the heirs and devisees of Texas Independent Exploration Limited (incl. Island Resources & Grinch, LLC); Lowell Todd Armstrong; Island Resources; Grinch, LLC; DeAnne Shepard; Robert St. John Family Trust C/O David Madden, Trustee; Merit Partners, LP; Tap Rock; Blue Ridge Mountain Resources; Warwick-Ares, LLC; Chevron USA, Inc.; Jeremiah, LLC; Bonefish, LLC, Atten: Steve Dyer RHINO; Blue Ridge Mountain Resources; Crown Oil Partners V, L.P.; Crown Oil Partners V, L.P.; Cimarex Energy Company; Wallace H. Scott Unified Credit Trust; 10205 River Plantation Dr., Austin, TX 78747; McCombs Energy, LLC; Brazos Limited Partnership; Chi Partners, LLC; Gene H. Davis; Chi Energy, Inc.; Merit Partners, LP; Doug Laufer; Andrews Oil, LP; McVay Drilling, Inc.; Rolla R. Hinkle, III.; Madison M. Hinkle et ux, Susan M. Hinkle; Good News Minerals, LLC; CEP Minerals, LLC; Mike Moylett; Deane Durham; Kaleb Smith; Post Oak Crown IV, LLC; Post Oak Crown IV-B, LLC; Wells Fargo Central Pacific Holdings, Inc.; Crown Oil Partners, LP; Collins & Jones Investments, LLC; LMC Energy; Gerard G. Vavrek; Jesse A. Faught, Jr.; H. Jason Wacker; David W. Cromwell; Crown Ventures III, LLC; Jim Brannigan; Island Resources; LDM Holdings, LLC.; Beth Hackathorn Gallegos; Mary K. Hughes; Fortis Minerals II, LLC; Morris E. Schertz of the application of Marathon Oil Permian LLC for a horizontal spacing and proration unit and compulsory pooling, Eddy County, New Mexico. The State of New Mexico, through its Oil Conservation Division, hereby gives notice that the Division will conduct a public hearing at 8:15 a.m. on September 6, 2018, to consider this application. Applicant seeks an order from the Division: (1) creating a 1280-acre, more or less, spacing unit in covering Sections 7 and 8, Township 23 South, Range 27 East, NMPM, Eddy County, New Mexico; and, (2) pooling all mineral interests in the Wolfcamp formation underlying this proposed spacing and proration unit. This proposed spacing unit will be the unit for the Crossbow 23 27 8 WXY 2H, Crossbow 23 27 8 WA 4H, Crossbow Federal 23 27 8 WXY 9H, Crossbow Federal 23 27 8 WA 10H, Crossbow Federal 23 27 8 WXY 8H Crossbow Federal 23 27 8 WXY 14H, Crossbow Federal 23 27 8 WA 15H and Crossbow Federal 23 27 8 WA 16H wells, to be horizontally drilled. The producing area for these wells will be orthodox. Also to be considered will be the cost of drilling and completing said wells, the allocation of these costs as well as the actual operating costs and charges for supervision, designation of Marathon as operator of the wells, and a 200% charge for risk involved in drilling said wells. Said area is located approximately 8 miles southwest of Carlsbad, New Mexico.

Pub: August 24, 2018 Legal # 1259253

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF MARATHON OIL PERMIAN LLC FOR COMPUSLORY
POOLING, EDDY COUNTY, NEW MEXICO.

CASE NO. **16381**

AFFIDAVIT

STATE OF TEXAS)
) ss.
COUNTY OF MIDLAND)

Thomas Lockwood, being duly sworn, deposes and states:

1. I am over the age of 18, I am a geologist for Marathon Oil Permian LLC, and have personal knowledge of the matters stated herein. I have been qualified by the Oil Conservation Division ("Division") as an expert petroleum geologist.

2. **Exhibit 9** is a locator map showing the approximate location of the proposed wells in relation to the Capitan Reef.

3. **Exhibit 10** is a wellbore schematic showing the proposed laterals within the unit.

4. **Exhibit 11** is structure map of the top of the Wolfcamp. The proposed project area is identified by a black-dashed box, and the proposed wells are identified by red and purple lines. Red indicates WA wells (Wolfcamp A) and purple indicates the WXY wells (Wolfcamp Y-Sand).

5. The contour interval used for Exhibit 11 is 25 feet.

6. Exhibit 11 shows that the structure dips east.

7. **Exhibit 12** identifies three wells in the vicinity of the proposed wells, shown by a line of cross-section running from A to A'.

8. **Exhibit 13** is a stratigraphic cross section hung on the top of the Wolfcamp. The well logs on the cross-section give a representative sample of the Wolfcamp formation in the area. The target zone is identified by the words "Producing Zone" and the shaded area across the cross section, along with a red arrow.

9. In my opinion, the Wolfcamp Y-Sand thickness is relatively consistent from west to east.

10. The Wolfcamp A thickness increases by approximately 50 feet from west to east.

11. **Exhibit 14** is a Gross Interval Wolfcamp to Wolfcamp B. The formation is relatively uniform across the proposed well unit.

12. I conclude from the maps that:

- a. The horizontal spacing unit is justified from a geologic standpoint.
- b. There are no structural impediments or faulting that will interfere with horizontal development.
- c. Each quarter quarter section in the unit will contribute more or less equally to production.

13. **Exhibit 15** provides an overview of the stress orientation in the area based on the Snee-Zoback paper.

14. The preferred well orientation for this unit is East/West, as it allows Marathon to operate 2 mile laterals. Since SHmax is at approximately 45 degrees in mid Eddy County, production is expected to be the same regardless of wellbore orientation.

15. Exhibits 9-15 were prepared by my or under my supervision or compiled from company business records.

16. In my opinion, the granting of Marathon's application is in the interests of conservation and the prevention of waste.

Thomas Lockwood

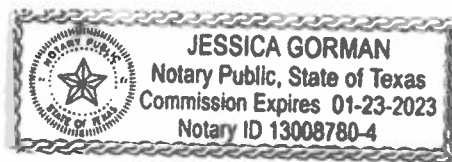
Thomas Lockwood

SUBSCRIBED AND SWORN to before me this 17th day of September, 2019 by Thomas Lockwood, on behalf of Marathon Oil Permian LLC.

Jessica Gorman

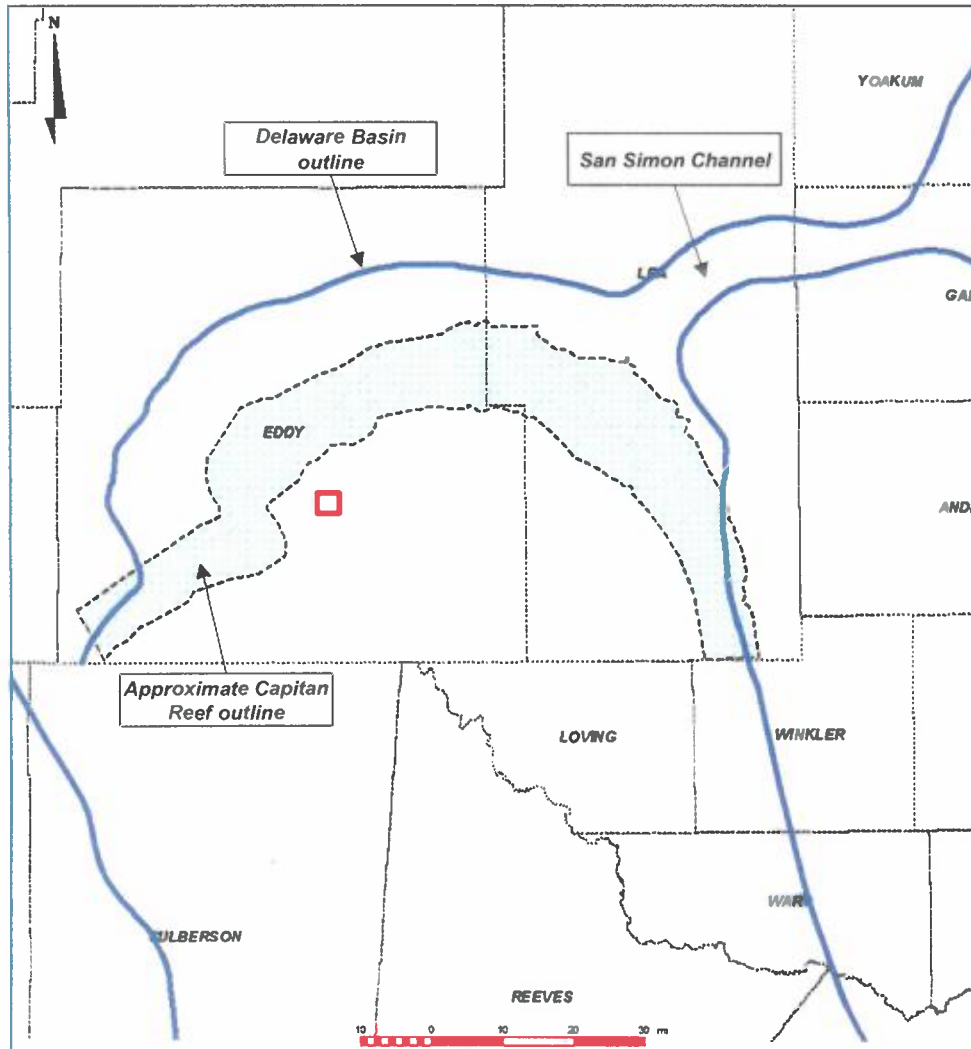
Notary Public

My commission expires: 1/23/2023



Crossbow 8 Fed Com Unit

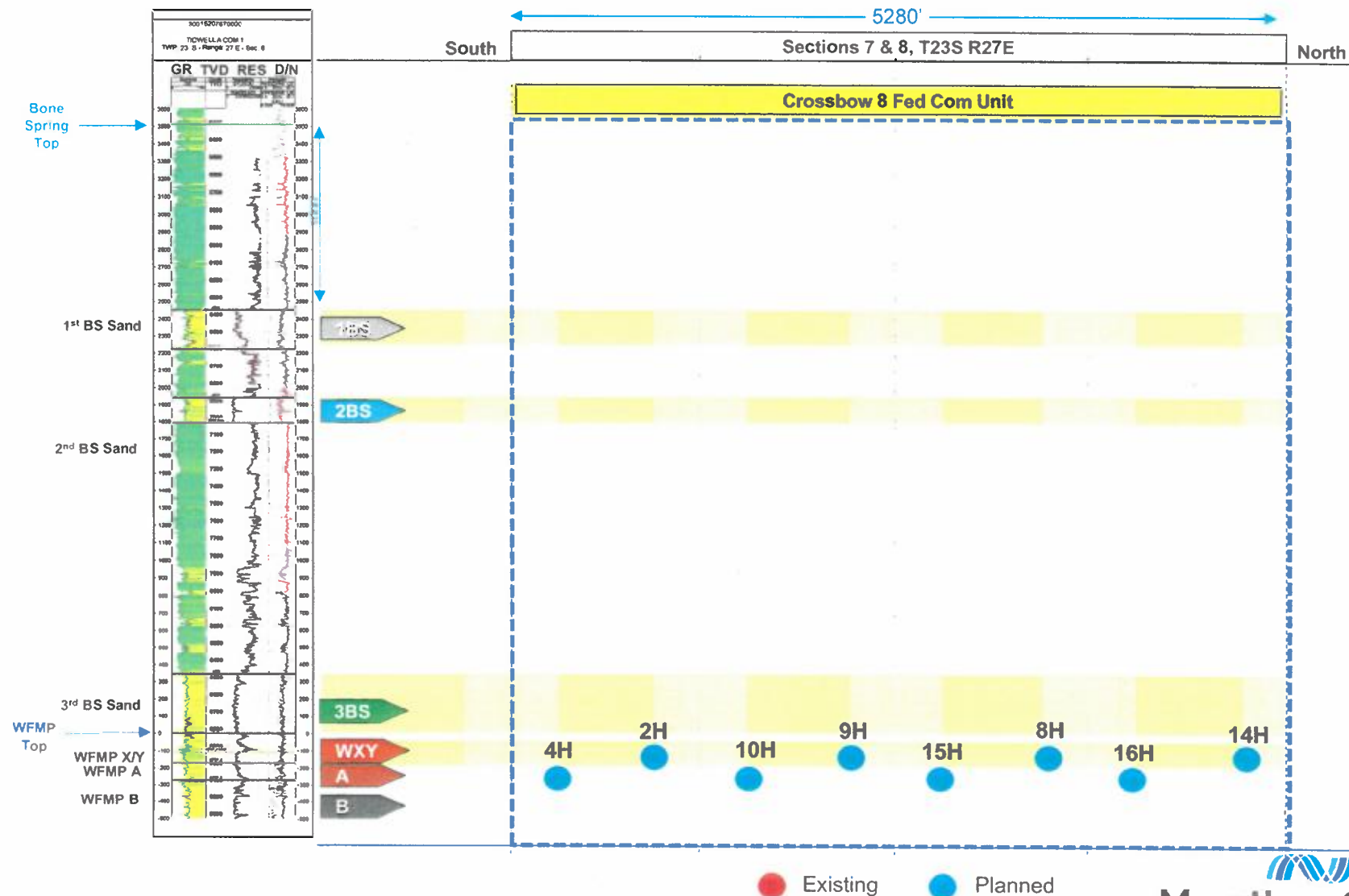
Locator Map



- Approximate location of proposed Crossbow 8 Fed Com well locations shown with red box
- Located basinward of the Capitan Reef
- Mid Eddy county

Crossbow 8 Fed Com Unit

Wellbore Schematic



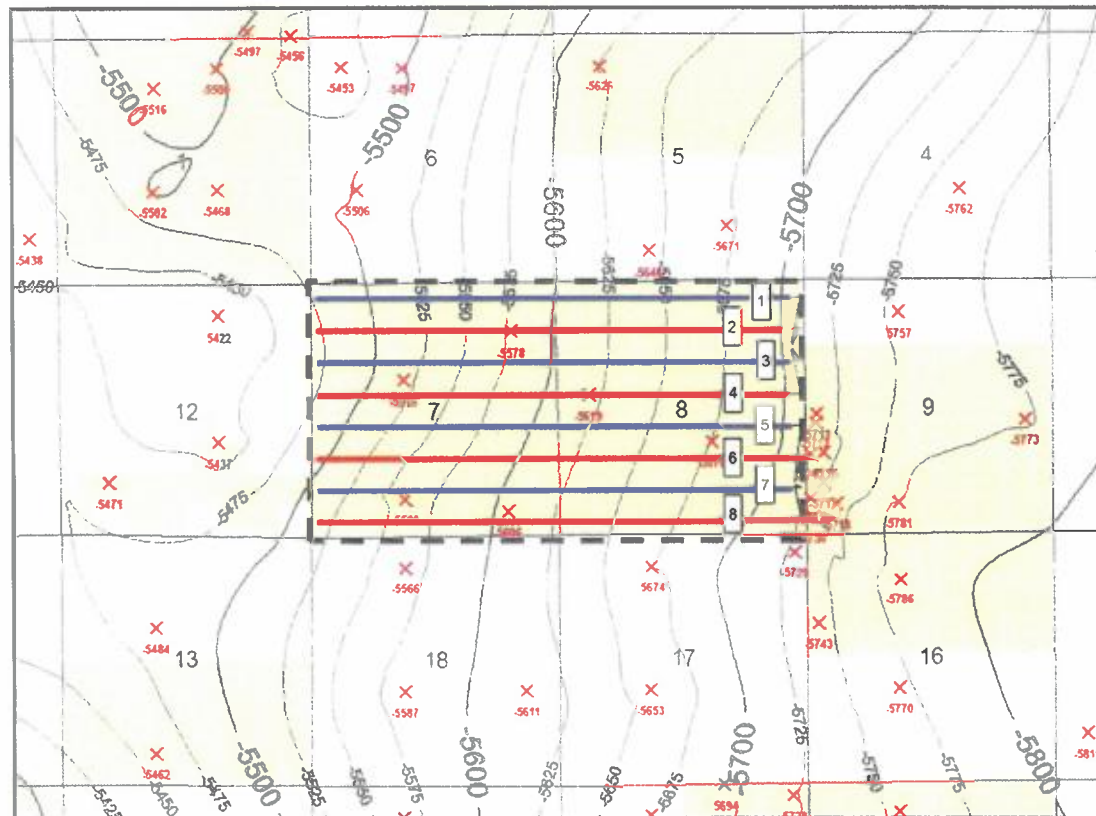
MarathonOil

EXHIBIT

10

Crossbow 8 Fed Com Unit

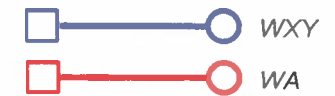
Structure Map – Top of Wolfcamp (TVDSS)



C.I. = 25'

1 mile

Map Legend



MRO – Horizontal
Location



MRO Acreage



Project Area

- 1 Crossbow 8 WXY Fed Com 14H
- 2 Crossbow 8 WA Fed Com 16H
- 3 Crossbow 8 WXY Fed Com 8H
- 4 Crossbow 8 WA Fed Com 15H
- 5 Crossbow 8 WXY Fed Com 9H
- 6 Crossbow 8 WA Fed Com 10H
- 7 Crossbow 8 WXY Fed Com 2H
- 8 Crossbow 8 WA Fed Com 4H


Marathon Oil

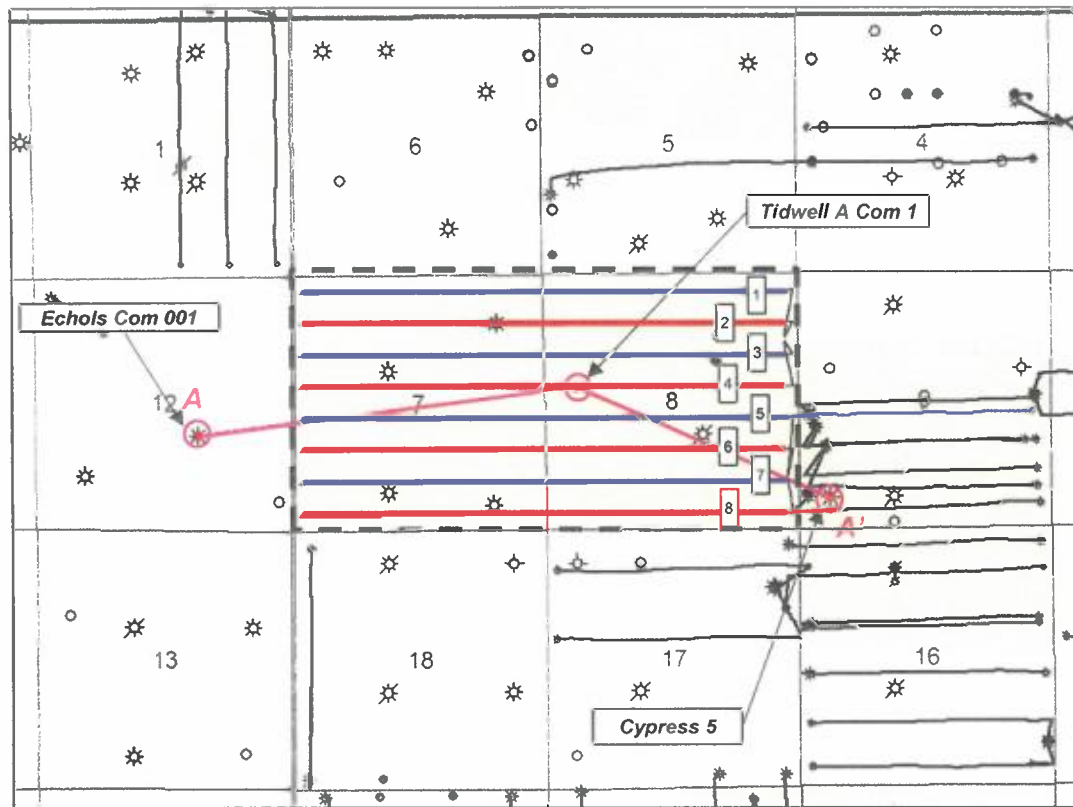
EXHIBIT

tabbles

11

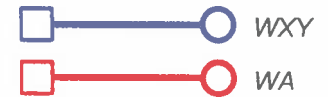
Crossbow 8 Fed Com Unit

Reference Map for Cross Section – Upper Wolfcamp Wells



1 mile

Map Legend



MRO – Horizontal
Location



MRO Acreage



Project Area

- 1 Crossbow 8 WXY Fed Com 14H
- 2 Crossbow 8 WA Fed Com 16H
- 3 Crossbow 8 WXY Fed Com 8H
- 4 Crossbow 8 WA Fed Com 15H
- 5 Crossbow 8 WXY Fed Com 9H
- 6 Crossbow 8 WA Fed Com 10H
- 7 Crossbow 8 WXY Fed Com 2H
- 8 Crossbow 8 WA Fed Com 4H


Marathon Oil

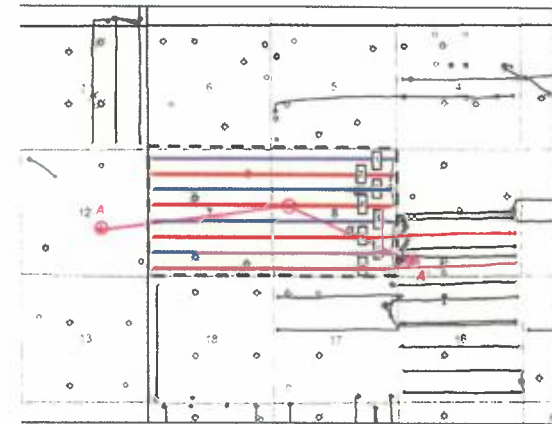
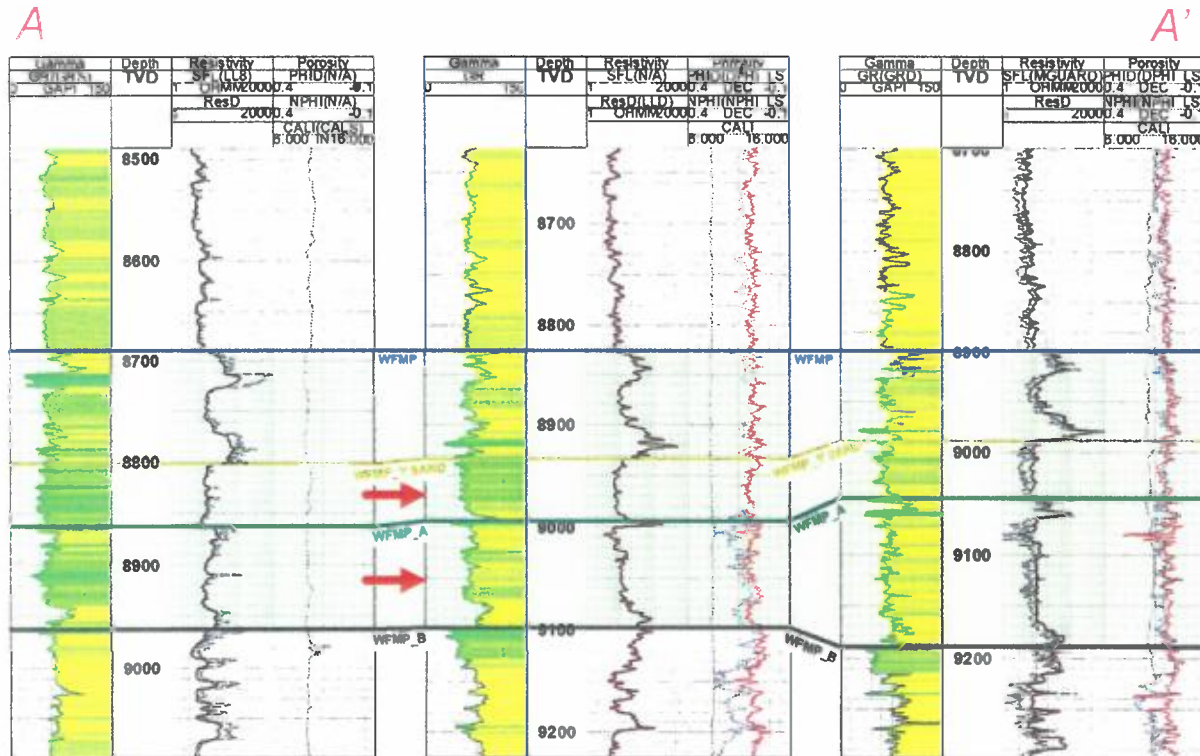
EXHIBIT

tabbles

12

Crossbow 8 Fed Com Unit

Stratigraphic Cross Section (Top Wolfcamp Datum)



Wolfcamp Y-Sand thickness relatively consistent from west to east

Wolfcamp A thickness increases by ~50 from west to east

Gross interval thickness thickens slightly from west to east

Marathon Oil

EXHIBIT

13

tabbles

Gross Interval Isochore – Wolfcamp to Wolfcamp B

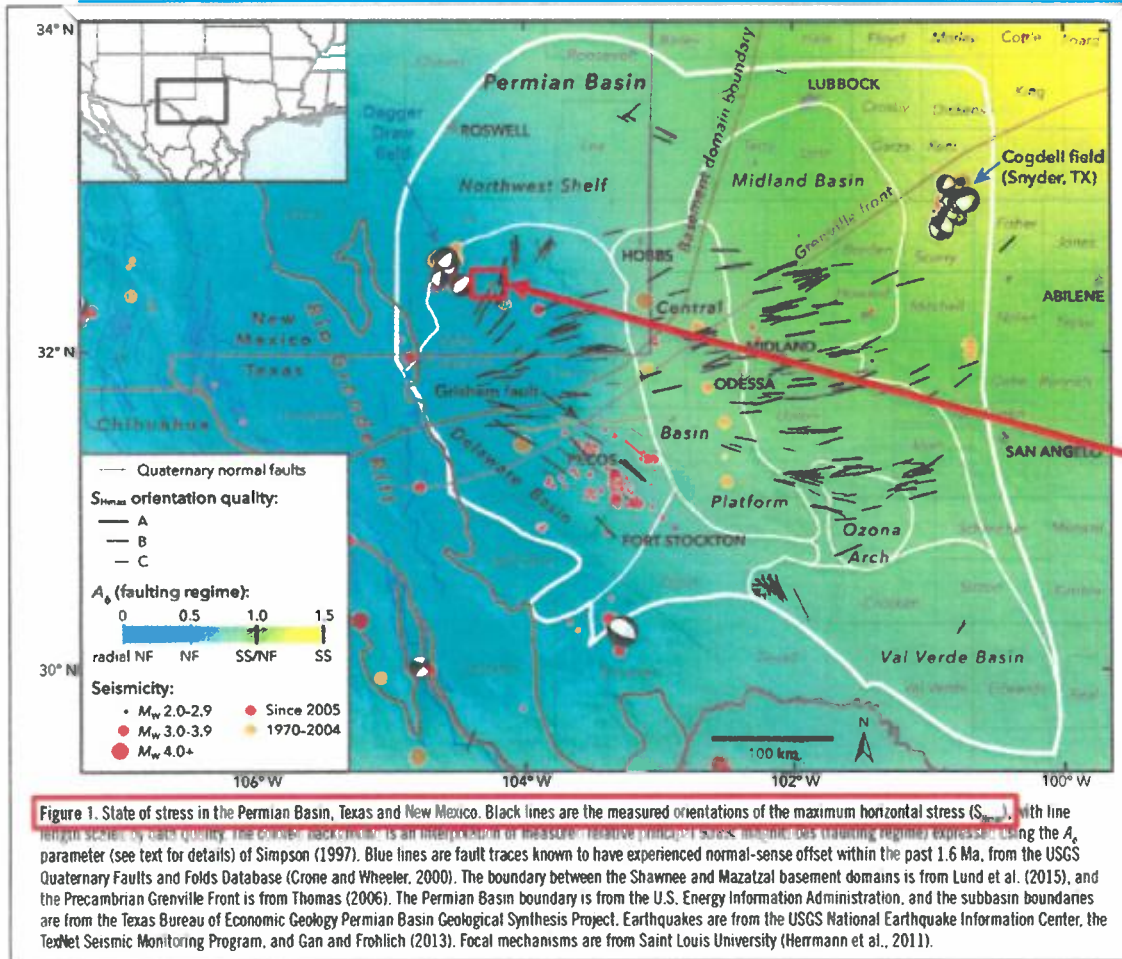


Project Area

- 1 Crossbow 8 WXY Fed Com 14H
- 2 Crossbow 8 WA Fed Com 16H
- 3 Crossbow 8 WXY Fed Com 8H
- 4 Crossbow 8 WA Fed Com 15H
- 5 Crossbow 8 WXY Fed Com 9H
- 6 Crossbow 8 WA Fed Com 10H
- 7 Crossbow 8 WXY Fed Com 2H
- 8 Crossbow 8 WA Fed Com 4H

Crossbow 8 Fed Com Unit

Preferred Well Orientation - SHmax



Source:

Snee, J.L. & M.D. Zoback, 2018, State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity: The Leading Edge, 810-819, <https://doi.org/10.1190/tle37020810.1>.

Preferred well orientation is E/W.

This orientation maximizes lateral length with respect to Marathon's acreage.

As outlined in Snee & Zoback (2018), S_{Hmax} is at approximately 45 degrees in mid Eddy county. Therefore, hydraulic fractures will propagate out at ~45 degrees. Production is expected to be the same for wells oriented either N/S or E/W.


Marathon Oil

EXHIBIT

15

tabbles