

**Before the Oil Conservation Commission
August 13, 2020**

De Novo Hearing Order R-21251

*Commission Case Numbers: 21273 and 21274
(Division Case Numbers 20865 and 20866)*



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

**IN THE MATTER OF THE APPLICATIONS OF
MARATHON OIL PERMIAN, LLC FOR COMPULSORY POOLING**

DE NOVO HEARING OF ORDER NO. R-21251

**COMMISSION CASE NOS. 21273 AND 21274
DIVISION CASE NOS. 20865 AND 20866**

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Tab A: Landman Exhibits

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Exhibit 10: AFEs



Jennifer Wilding
NOJV Asset Manager

Mid-Continent Business Unit
North American Exploration and
Production Co.,
a division of Chevron U.S.A. Inc.
1400 Smith Street, Room 40084
Houston, Texas 77002
Tel 713-372-9950
Jennifer.Wilding@chevron.com

November 13, 2019

New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505

Re: N/2 of Section 12
Township 23 South, Range 28 East
Eddy County, New Mexico

Ladies and Gentlemen:

Chevron U.S.A Inc. ("Chevron") and Marathon Oil Company ("Marathon") are in discussions regarding the assignment of Chevron's leasehold interest in the N/2 of Section 12, T23S, R28E to Marathon. Once final terms are agreed upon, Assignments reflecting this agreement will be filed in the respective county.

Accordingly, Chevron hereby grants Marathon the right to represent its interest and supports the designation of Marathon as operator and its planned development of wells drilled in the above captioned lands.

Should you have any questions regarding the above, please email me at Jennifer.Wilding@Chevron.com or call me at 713-375-9950.

Sincerely,


Jennifer Wilding
NOJV Asset Manager





Occidental Petroleum Ltd.

A subsidiary of Occidental Petroleum Corporation

5 Greenway Plaza, Suite 110, Houston, Texas 77046-0521
P.O. Box 4294, Houston, Texas 77210-4294
Phone 713.366.5330
john_schneider@oxy.com

November 13, 2019

New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505

Re: N/2 of Section 7
Township 23 South, Range 29 East
Eddy County, New Mexico

Ladies and Gentlemen:

OXY Y-1 Company ("OXY") and Marathon Oil Company ("Marathon") are in discussions regarding the assignment of an undivided interest of OXY's leasehold interest in the N/2 of Section 7 to Marathon. Once final terms are agreed upon, Assignments reflecting this agreement will be filed in the respective county.

Accordingly, OXY hereby grants Marathon the right to represent its interest and supports the designation of Marathon as operator and its planned development of wells drilled in the above captioned lands.

Should you have any questions regarding the above, please email me at john_schneider@oxy.com or call me at 713-366-5330.

Sincerely,

OXY Y-1 COMPANY

Name: John Schneider
Title: Land Manager- New Mexico





Brandon Patrick
Land Manager
Novo Oil & Gas Northern Delaware, LLC
1001 W. Wilshire Blvd., Suite 206
Oklahoma City, Oklahoma 73116
Office: 405-286-4197
bpatrick@novoog.com

November 11, 2019

VIA FED EX AND ELECTRONIC MAIL

New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, New Mexico, 87505

Re: Support for Marathon Oil Permian LLC's Valkyrie cases, Case Numbers 20866 and 20865, located in the N/2 of Section 12-23S-28E and the N/2 of Section 7-23S-29E, Eddy County, New Mexico

Ladies and Gentlemen:

Novo Oil & Gas Northern Delaware, LLC ("Novo") respectfully submits this letter in support of Marathon Oil Permian LLC's ("Marathon") "Valkyrie" cases, Case Numbers 20866 and 20865, which are set for hearing on November 14, 2019. Marathon has proposed a two-mile development plan that would traverse Sections 12-23S-28E and 7-23S-29E, Eddy County, New Mexico.

Novo has proposed a two-mile development plan ("Astrodog") being represented by Case Numbers 20916 and 20917, both of which would traverse the N/2 of Section 8-23S-29E and the N/2 of Section 9-23S-29E, Eddy County, New Mexico. Novo's cases are set for hearing on November 14, 2019.

It is Novo's opinion that the Marathon "Valkyrie" and Novo "Astrodog" development plans represent an efficient use of the surface and subsurface in and around the Designated Potash Area as set forth in Order No. 3324 issued by the Department of Interior. Further, Novo supports the designation of Marathon as operator of the spacing units that will be developed by Marathon's Valkyrie wells.

Novo understands that BTA Oil Producers, LLC ("BTA") has expressed concerns with Marathon's Valkyrie development plans. Specifically, BTA has stated that BTA has its own plans to develop the N/2 of Section 7-23S-29E and NW/4 of Section 8-23S-29E. Novo believes that the Valkyrie and Astrodog development plans together represent a more efficient development plan than BTA's plan.

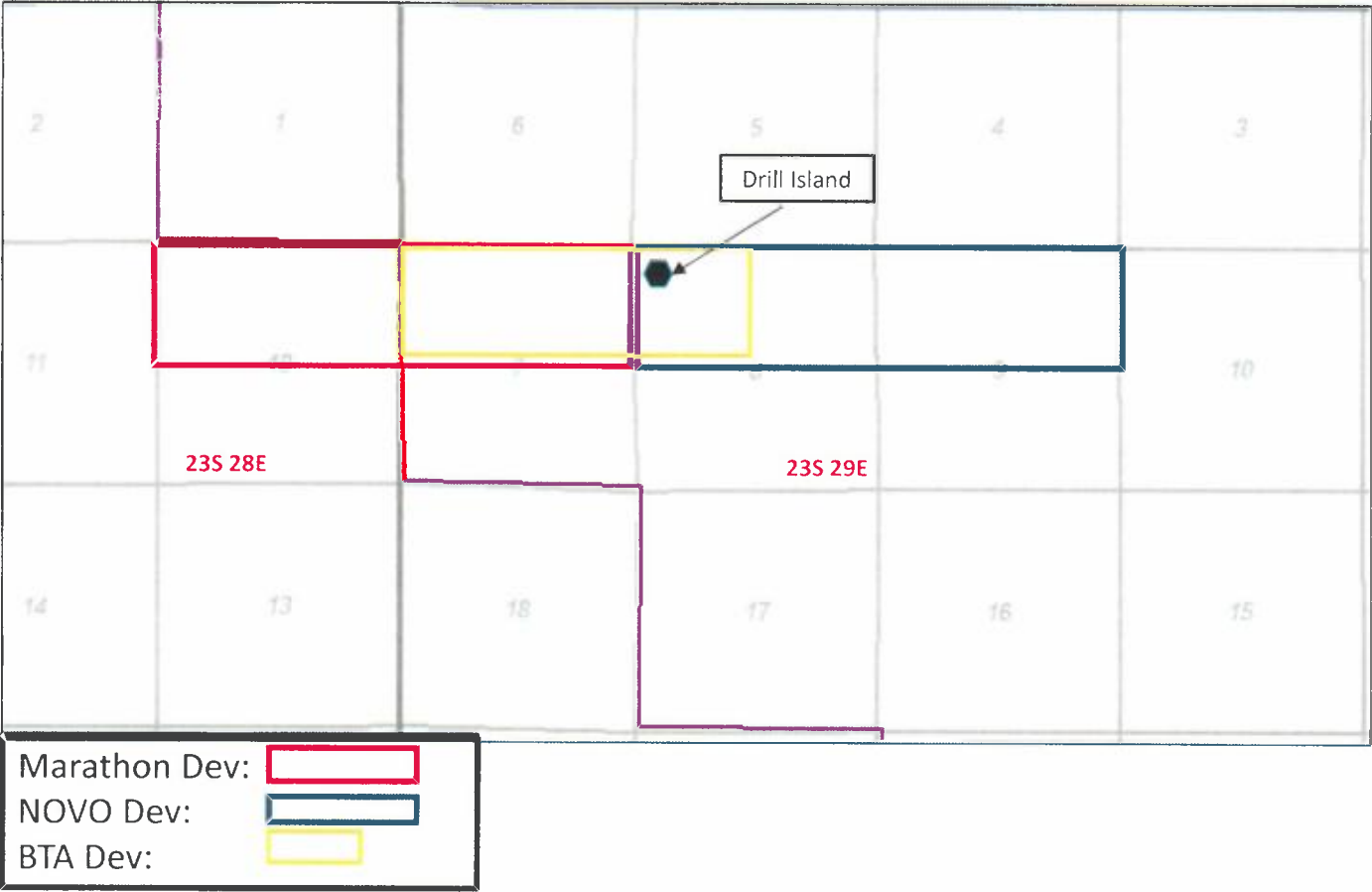
If you have any questions, please contact me using the information at the top of this letter.

Sincerely,

Brandon Patrick



Development Plans



District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 745-1283 Fax: (575) 745-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6175 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 15011	³ Pool Name CULEBRA BLUFF, SOUTH; BONE SPRING
⁴ Property Code	⁵ Property Name VALKYRIE 12 SB FEDERAL COM	⁶ Well Number 13H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3007'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Ida	Feet from the	North/South line	Feet from the	East/West line	County
E	12	23S	28E		1649	NORTH	1087	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

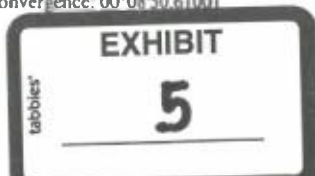
UL or lot no.	Section	Township	Range	Lot Ida	Feet from the	North/South line	Feet from the	East/West line	County
H	7	23S	29E		1980	NORTH	100	EAST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
317.13			

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.

Defining Well SURFACE HOLE LOCATION 1649' FNL 1087' FWL, SECTION 12 NAD 83, SPCS NM EAST X: 630133.40' / Y: 481292.74' LAT: 32.32281863N / LON: 104.04587271W NAD 27, SPCS NM EAST X: 588950.72' / Y: 481233.16' LAT: 32.32289754N / LON: 104.04537807W	KICK OFF POINT 1980' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X: 629143.97' / Y: 480946.14' LAT: 32.32187315N / LON: 104.04807873W NAD 27, SPCS NM EAST X: 587961.31' / Y: 480886.58' LAT: 32.32175210N / LON: 104.04858401W	"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. Signature _____ Date _____ Printed Name _____ E-mail Address _____
FIRST TAKE POINT 1980' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X: 629143.97' / Y: 480946.14' LAT: 32.32187315N / LON: 104.04807873W NAD 27, SPCS NM EAST X: 587961.31' / Y: 480886.58' LAT: 32.32175210N / LON: 104.04858401W	LAST TAKE POINT/BOTTOM HOLE LOCATION 1980' FNL 100' FWL, SECTION 7 NAD 83, SPCS NM EAST X: 639385.02' / Y: 480843.09' LAT: 32.32151084N / LON: 104.01592694W NAD 27, SPCS NM EAST X: 598202.21' / Y: 480783.40' LAT: 32.32138931N / LON: 104.01543346W	CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 629049.20' / Y: 481610.56' B - X: 639475.64' / Y: 481492.33' C - X: 639494.87' / Y: 480182.85' D - X: 629038.85' / Y: 480296.05'
CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 587866.56' / Y: 481550.98' B - X: 598282.64' / Y: 481432.62' C - X: 598312.03' / Y: 480103.18' D - X: 587856.17' / Y: 480236.80'	PRELIMINARY THIS PLAT IS NOT TO BE USED FOR SALE, BIDDING, RECORDATION, OR THE BASIS FOR ISSUANCE OF A PERMIT FOR	

Distances/areas relative to NAD 83 Combined Scale Factor: 0.99977431 Convergence: 00°08'50.61001"



Distances/areas relative to NAD 83 Combined Scale Factor: 0.99977431 Convergence: 00°08'50.61001"

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1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
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District III
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Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
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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 VALKYRIE 12 WA FEDERAL COM		⁶ Well Number 3H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC		⁹ Elevation 3007'

" Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	23S	28E		1619	NORTH	1093	WEST	EDDY

" 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
A	7	23S	29E		1254	NORTH	100	EAST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
634.11			

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>INFIll Well</p> <p>SURFACE HOLE LOCATION 1619' FNL 1093' FWL, SECTION 12 NAD 83, SPCS NM EAST X:630139.64' / Y:481322.08' LAT:32.32289924N / LON:104.04585224W NAD 27, SPCS NM EAST X:588958.97' / Y:481262.50' LAT:32.32277815N / LON:104.04535759W</p> <p>KICK OFF POINT 1254' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629149.69' / Y:481672.32' LAT:32.32388924N / LON:104.04905398W NAD 27, SPCS NM EAST X:587967.05' / Y:481612.74' LAT:32.32374821N / LON:104.04855918W</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 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>"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>Date of Survey _____</p> <p>Signature _____</p>	
	<p>CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 629059.56' / Y: 482925.07' B - X: 639456.42' / Y: 482621.80' C - X: 639494.87' / Y: 480162.85' D - X: 629038.85' / Y: 480296.05'</p> <p>CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 587876.94' / Y: 482865.46' B - X: 598273.66' / Y: 482762.07' C - X: 598312.03' / Y: 480103.18' D - X: 587856.17' / Y: 480236.50'</p>	
	<p>Diagram: A plat map showing sections 11, 12, 6, 7, 5, and 8. It includes labels for 'KOP/ FIRST TAKE', 'SHL', 'PI', 'LAST TAKE/ BHL', and various distances and bearings (e.g., 1619', 1093', 100', N89°06'53"E ~ 5270.13', S87°52'34"E ~ 4958.72').</p>	
<p>SHEET 1 OF 3 JOB No. R4000_001_B REV 0 JCS 9/4/2019</p>		

Distances/areas relative to NAD 83 Combined Scale Factor: 0.99977431 Convergence: 00°08'50.61001"

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District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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Santa Fe, NM 87505

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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 VALKYRIE 12 WD FEDERAL COM	⁶ Well Number 2H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3008'

" Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	23S	28E		1556	NORTH	880	WEST	EDDY

" 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
A	7	23S	29E		330	NORTH	100	EAST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
634.11			

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.

Infill Well SURFACE HOLE LOCATION 1556' FNL 880' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629927.59' / Y:481382.56' LAT:32.32306705N / LON:104.0465382W NAD 27, SPCS NM EAST X:588744.92' / Y:481322.98' LAT:32.32294597N / LON:104.04604352W	KICK OFF POINT 330' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629156.97' / Y:482596.54' LAT:32.32640972N / LON:104.04902247W NAD 27, SPCS NM EAST X:587974.35' / Y:482536.94' LAT:32.32628871N / LON:104.04852758W	" 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 retains only a working interest or an undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well or 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.	
		Signature _____ Date _____	
		Printed Name _____	
		E-mail Address _____	
"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.		"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.	
FIRST TAKE POINT 330' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629156.97' / Y:482596.54' LAT:32.32640972N / LON:104.04902247W NAD 27, SPCS NM EAST X:587974.35' / Y:482536.94' LAT:32.32628871N / LON:104.04852758W		LAST TAKE POINT/BOTTOM HOLE LOCATION 330' FNL 100' FWL, SECTION 7 NAD 83, SPCS NM EAST X:639361.13' / Y:482495.10' LAT:32.32605211N / LON:104.01598844W NAD 27, SPCS NM EAST X:598178.36' / Y:482435.37' LAT:32.32593062N / LON:104.01549478W	
CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 629059.56' / Y: 482925.07' B - X: 639458.42' / Y: 482821.80' C - X: 639494.87' / Y: 480162.85' D - X: 629038.85' / Y: 480296.05'		CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 587876.94' / Y: 482865.48' B - X: 598273.66' / Y: 482762.07' C - X: 598312.03' / Y: 480103.18' D - X: 587856.17' / Y: 480236.50'	
SHEET 1 OF 3 JOB No. R4000_003_A REV 0 JCS 9/4/2019			

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Santa Fe, NM 87505

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 VALKYRIE 12 WD FEDERAL COM	⁶ Well Number 4H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3008'

" Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	23S	28E		1585	NORTH	874	WEST	EDDY

" 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
A	7	23S	29E		1254	NORTH	100	EAST	EDDY

¹² Dedicated Acres 634.11	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.

Infill Well SURFACE HOLE LOCATION 1585' FNL 874' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629921.34' / Y:481353.22' LAT:32.32298643N / LON:104.04655867W NAD 27, SPCS NM EAST X:588738.67' / Y:481293.63' LAT:32.32286535N / LON:104.046064W	KICK OFF POINT 1254' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629149.69' / Y:481672.32' LAT:32.32386924N / LON:104.04905398W NAD 27, SPCS NM EAST X:587967.05' / Y:481612.74' LAT:32.32374821N / LON:104.04855918W		" 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.
			Signature _____ Date _____ Printed Name _____ E-mail Address _____
" 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.			Date of Survey _____ Signature _____ Surveyor
SHEET 1 OF 3 JOB No. R4000_003_B REV 0 JCS 9/4/2019			Certificate Number _____

Distances/areas relative to NAD 83 Combined Scale Factor: 0.99977431 Convergence: 00°08'50.61001"

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¹ API Number	² Pool Code 98220	³ Pool Name PURPLE SAGE; WOLFCAMP (GAS)
⁴ Property Code	⁵ Property Name VALKYRIE 12 WD FEDERAL COM	⁶ Well Number 6H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3009'

" 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
E	12	23S	28E		1614	NORTH	868	WEST	EDDY

" 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
H	7	23S	29E		2178	NORTH	100	EAST	EDDY

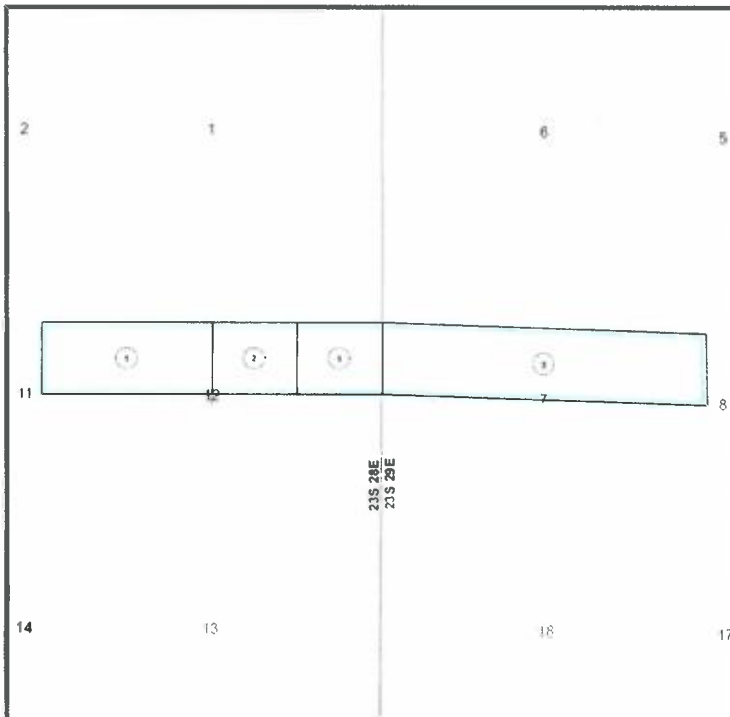
¹² Dedicated Acres 634.11	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

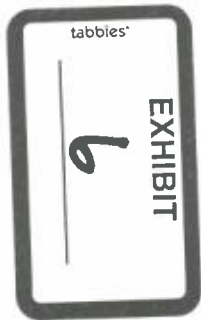
<p>SURFACE HOLE LOCATION 1614' FNL 868' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629915.10' / Y:481323.88' LAT:32.32290582N / LON:104.04657915W NAD 27, SPCS NM EAST X:588732.43' / Y:481284.29' LAT:32.32278474N / LON:104.04608448W</p>	<p>KICK OFF POINT 2178' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629142.41' / Y:480748.10' LAT:32.32132876N / LON:104.04908549W NAD 27, SPCS NM EAST X:587959.74' / Y:480688.54' LAT:32.32120771N / LON:104.04859078W</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>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p>
<p>SECTION 2 A SECTION 11</p> <p>SECTION 1 SECTION 12</p> <p>SECTION 6 SECTION 7</p> <p>SECTION 5 SECTION 8</p> <p>SHL N89°06'53"E - 5274.90'</p> <p>PI S87°52'18"E - 4974.65'</p> <p>LAST TAKE/ BHL</p> <p>KOP/ FIRST TAKE</p> <p>FIRST TAKE POINT 2178' FNL 100' FWL, SECTION 12 NAD 83, SPCS NM EAST X:629142.41' / Y:480748.10' LAT:32.32132876N / LON:104.04908549W NAD 27, SPCS NM EAST X:587959.74' / Y:480688.54' LAT:32.32120771N / LON:104.04859078W</p> <p>LAST TAKE POINT/BOTTOM HOLE LOCATION 2178' FNL 100' FWL, SECTION 7 NAD 83, SPCS NM EAST X:639387.89' / Y:480644.85' LAT:32.32096588N / LON:104.01591956W NAD 27, SPCS NM EAST X:598205.07' / Y:480585.16' LAT:32.32084435N / LON:104.0154261W</p> <p>CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 629059.58' / Y: 482925.07' B - X: 639458.42' / Y: 482821.80' C - X: 639494.87' / Y: 480162.85' D - X: 629038.85' / Y: 480296.05'</p> <p>CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 587876.84' / Y: 482965.46' B - X: 598273.66' / Y: 482762.07' C - X: 598312.03' / Y: 480103.18' D - X: 587856.17' / Y: 480236.50'</p> <p>SHEET 1 OF 3 JOB No. R4000_003_C REV 0 JCS 9/4/2019</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>Date of Survey _____</p> <p>Signature _____</p> <p>CERTIFICATE IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE ISSUANCE OF A PERMIT</p> <p>Certificate Number _____</p>		

Distances/areas relative to NAD 83 Combined Scale Factor: 0.99977431 Convergence: 00°08'50.6100"

Lease Tract Map
Valkyrie 12 SB Federal Com 13H
S/2 of N/2 of Sections 12 T23S-R28E & 7, T23S-R29E – 317.13 acres



- Tract 1: Fed NMNM-032636
- Tract 2: Fed NMNM- 032636
- Tract 3: Fed NMNM-103879



Summary of Interests: Bone Spring
Valkyrie 12 SB Federal Com 13H
S/2 of N/2 of Sections 12 T23S-R28E & 7, T23S-R29E – 317.13 acres

Committed / Pooled Working Interest:

Marathon Oil Permian LLC (Operator)	37.839720%
Chevron USA, Inc.	6.306562%
OXY Y-1 Company	10.864000%
BTA Oil Producers LLC	38.683188%
Devon Energy Production Company	3.153250%
Westall Oil & Gas, LLC	1.576640%
Tap Rock Resources, LLC	1.576640%

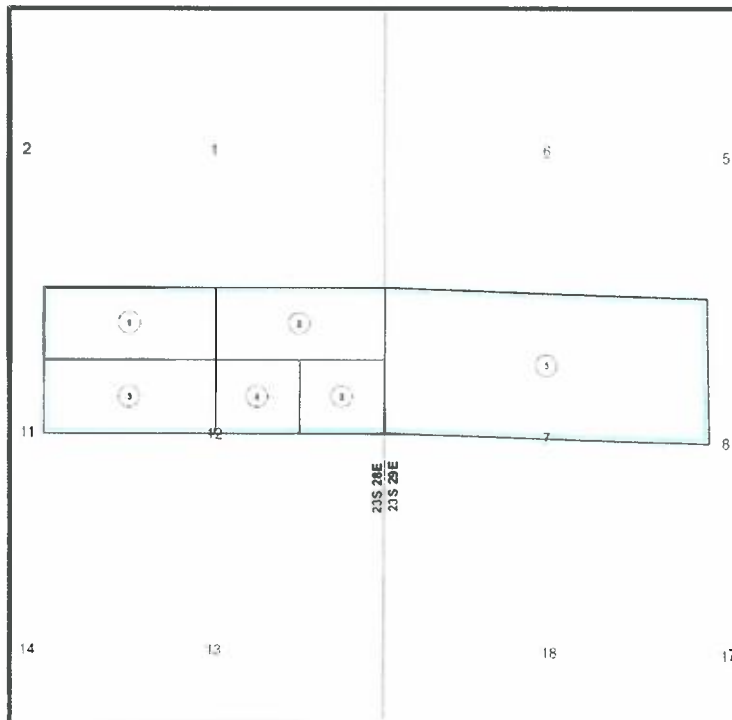
<u>TOTAL:</u>	<u>100.00%</u>
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Submitted Letter of Support

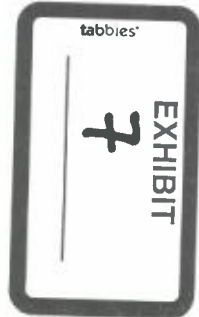


Lease Tract Map

Valkyrie 12 WXY Federal Com 1H, Valkyrie 12 WA Federal Com 3H, Valkyrie 12 WXY Federal Com 5H,
Valkyrie 12 WD Federal Com 2H, Valkyrie 12 WD Federal Com 4H, Valkyrie 12 WD Federal Com 6H
N/2 of Sections 12 T23S-R28E & 7, T23S-R29E – 634.11 acres



- Tract 1: Fed NMNM-091078
- Tract 2: Fed NMNM-090527
- Tract 3: Fed NMNM-032636
- Tract 4: Fed NMNM-032636
- Tract 5: Fed NMNM-103879



Summary of Interests: Wolfcamp

**Valkyrie 12 WXY Federal Com 1H, Valkyrie 12 WA Federal Com 3H, Valkyrie 12 WXY Federal Com 5H,
Valkyrie 12 WD Federal Com 2H, Valkyrie 12 WD Federal Com 4H, Valkyrie 12 WD Federal Com 6H
N/2 of Sections 12 T23S-R28E & 7, T23S-R29E – 634.11 acres**

Committed / Pooled Working Interest:

Marathon Oil Permian LLC (Operator)	18.92416100%
Chevron USA, Inc.	28.38624210%
OXY Y-1 Company	10.86616978%
BTA Oil Producers LLC	38.67387180%
Devon Energy Production Company	1.57701350%
Westall Oil & Gas, LLC	0.78850670%
Tap Rock Resources, LLC	0.78850670%

<u>TOTAL:</u>	<u>100.00%</u>
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*****Submitted Letter of Support*****



Communications Log

Date	Marathon Communications
2/6/2019	Marathon requests staking
2/20/2019	Marathon initiates brokers to research subject tracts
2/28/2019	Initial trade discussions commence between Oxy and Marathon
3/11/2019	Marathon counters
3/19/2019	Oxy counters
4/1/2019	Marathon counters
Various	Clarifying requests exchanged
4/17/2019	Oxy counters
6/26/2019	Meeting set up to discuss Chevron trade for Section 12
7/9/2019	Section 7 brought into trade discussions
7/9/2019	Meeting to discuss Chevron Trade (Section 12 included)
Various	66 emails regarding proposed trade exchanged between Marathon and Oxy beginning 7/9/2019
7/29/2019	Marathon receives notice of BTA's Ochoa wells
9/26/2019	Marathon proposes trade to BTA
10/10/2019	Marathon meets with BTA



Chase Rice
Staff Land Professional



Marathon Oil Permian LLC
5555 San Felipe Street
Houston, Texas 77056
Telephone: 713-296-3055
Fax: 713-513-4006
cfrice@marathonoil.com

July 12, 2019

VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED
7019 0700 0000 8791 1589

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

Re: Valkyrie 12 Federal Com 1H, 2H, 3H, 4H, 5H, 6H, 7H, 8H, 9H, 10H, 11H, 12H, 13H, 14H & 15H
Well Proposals
Section 12, Township 23 South, Range 28 East and Section 7, Township 23 South, Range 29 East
Eddy County, New Mexico

Dear Chevron USA, Inc.:

Marathon Oil Permian LLC ("Marathon") proposes the drilling of the following wells located in Section 12, 23S-28E and Section 7, 23S-29E, Eddy County, New Mexico, all to be drilled from four surface pad locations.

Pad	Well Name	SHL	BHL	Proration Unit	Target TVD	Est. MD
1	Valkyrie 12 WXY Federal Com 1H	1067' FWL & 1237' FNL of Sec. 12	100' FEL & 330' FNL of Sec. 7	N2 of Secs. 7 & 12	9,676'	20,184'
1	Valkyrie 12 WA Federal Com 3H	1062' FWL & 1271' FNL of Sec. 12	100' FEL & 1254' FNL of Sec. 7	N2 of Secs. 7 & 12	9,866'	20,344'
1	Valkyrie 12 SB Federal Com 13H	1056' FWL & 1296' FNL of Sec. 12	100' FEL & 1980' FNL of Sec. 7	S2N2 of Secs. 7 & 12	8,255'	18,782'
1	Valkyrie 12 WXY Federal Com 5H	1051' FWL & 1324' FNL of Sec. 12	100' FEL & 2178' FNL of Sec. 7	N2 of Secs. 7 & 12	9,676'	20,206'
2	Valkyrie 12 WA Federal Com 7H	541' FWL & 1745' FSL of Sec. 12	100' FEL & 2178' FSL of Sec. 7	S2 of Secs. 7 & 12	9,866'	20,356'
2	Valkyrie 12 SB Federal Com 14H	537' FWL & 1712' FSL of Sec. 12	100' FEL & 1980' FSL of Sec. 7	N2S2 of Secs. 7 & 12	8,255'	18,750'
2	Valkyrie 12 WXY Federal Com 9H	533' FWL & 1704' FSL of Sec. 12	100' FEL & 1254' FSL of Sec. 7	S2 of Secs. 7 & 12	9,676'	20,202'
2	Valkyrie 12 SB Federal Com 15H	529' FWL & 1650' FSL of Sec. 12	100' FEL & 660' FSL of Sec. 7	S2S2 of Secs. 7 & 12	8,255'	18,858'
2	Valkyrie 12 WA Federal Com 11H	526' FWL & 1623' FSL of Sec. 12	100' FEL & 330' FSL of Sec. 7	S2 of Secs. 7 & 12	9,866'	20,502'
3	Valkyrie 12 WD Federal Com 2H	963' FWL & 1233' FNL of Sec. 12	100' FEL & 330' FNL of Sec. 7	N2 of Secs. 7 & 12	10,357'	20,849'
3	Valkyrie 12 WD Federal Com 4H	957' FWL & 1263' FNL of Sec. 12	100' FEL & 1254' FNL of Sec. 7	N2 of Secs. 7 & 12	10,547'	21,013'
3	Valkyrie 12 WD Federal Com 6H	953' FWL & 1293' FNL of Sec. 12	100' FEL & 2178' FNL of Sec. 7	N2 of Secs. 7 & 12	10,357'	20,876'
4	Valkyrie 12 WD Federal Com 8H	471' FWL & 1720' FSL of Sec. 20	100' FEL & 2178' FSL of Sec. 7	S2 of Secs. 7 & 12	10,547'	21,034'
4	Valkyrie 12 WD Federal Com 10H	463' FWL & 1685' FSL of Sec. 20	100' FEL & 1254' FSL of Sec. 7	S2 of Secs. 7 & 12	10,357'	20,880'
4	Valkyrie 12 WD Federal Com 12H	460' FWL & 1657' FSL of Sec. 20	100' FEL & 330' FSL of Sec. 7	S2 of Secs. 7 & 12	10,547'	21,179'

EXHIBIT

9

tabbles*

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These proposed locations and target depths are subject to change depending on any surface or subsurface concerns encountered. The AFEs 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 the wells under the terms of the 1989 AAPL JOA. Enclosed is a draft of the JOA covering the contract area. The JOA has the following general provisions:

- 100%/300%/300% non-consent penalty
- \$7,000/\$700 drilling and producing rates
- Contract area of All of Section 12, 23S-28E and All of Section 7, 23S-29E, covering all depths

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.

If you do not wish to participate, Marathon proposes to acquire your interest via term assignment at the following terms:

- 3-year term
- \$8,000 bonus consideration per net mineral acre
- Delivering an 80% NRI, proportionately reduced

This term assignment offer terminates on August 12, 2019 and is subject to due diligence and title verification satisfactory to Marathon.

Should you have any questions regarding this or other matters, please do not hesitate to contact me at the above listed phone number or email.

Sincerely,



Chase Rice
Marathon Oil Permian LLC

Valkyrie 12 Federal Com 1H, 2H, 3H, 4H, 5H, 6H, 7H, 8H, 9H, 10H, 11H, 12H, 13H, 14H & 15H

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WXY Federal Com 1H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WXY Federal Com 1H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 2H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 2H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WA Federal Com 3H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WA Federal Com 3H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 4H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 4H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WXY Federal Com 5H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WXY Federal Com 5H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 6H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 6H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WA Federal Com 7H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WA Federal Com 7H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 8H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 8H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WXY Federal Com 9H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WXY Federal Com 9H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 10H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 10H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WA Federal Com 11H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WA Federal Com 11H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 12H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 WD Federal Com 12H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 SB Federal Com 13H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 SB Federal Com 13H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 SB Federal Com 14H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 SB Federal Com 14H.

_____ Chevron USA, Inc. elects to participate in the drilling, completing, and equipping of the Valkyrie 12 SB Federal Com 15H.

_____ Chevron USA, Inc. elects NOT to participate in the drilling, completing, and equipping of the Valkyrie 12 SB Federal Com 15H.

Chevron USA, Inc.

By: _____

Print Name: _____

Title: _____

Date: _____

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

DATE 7/11/2019
DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
COMPLETION PREPARED BY JOSH SHANNON
FACILITIES PREPARED BY BRIAN LIPSCOMB
ARTIFICIAL LIFT PREPARED BY BRIAN LIPSCOMB

Asset Team	PERMIAN			
Field	CULEBRA BLUFF, SC	FORMATION: 2ND BONE SPRINGS	WILDCAT	EXPLORATION
Lease/Facility	VALKYRIE 12 5B FEDERAL COM 13H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth 18,782 Est Drilling Days _____ Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	50,250
7001250	Land Broker Fees and Services	33,750
TOTAL LOCATION COST - INTANGIBLE		84,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	19,000
7012050	Intermediate Casing 1	66,000
7012050	Intermediate Casing 2	208,000
7012050	Production Casing	141,000
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		596,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	32,500
7019220	Drilling Rig - day work/footage	489,375
7019040	Directional Drilling Services	155,000
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	35,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	62,000
7012310	Solids Control equipment	32,000
7012020	Bits	72,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	56,000
7019140	Fuel (Mud)	30,000
7001460	Water (non potable)	25,000
7012350	Water (potable)	5,000
7019000	Well Logging Services	-
7019150	Mud Logging/geosteering	14,000
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
7001160	Contract Services - Disposal/Non-Hazardous Waste	80,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7000030	Contract Labor - Operations	3,000
7001200	Contract Services - Facilities	10,000
7019300	Well Services - Well Control Services	19,063
7019350	Well Services - Well/Wellhead Services	10,000
7018150	Rental Tools and Equipment (surface rentals)	72,500
7018150	Rig Equipment and Misc.	9,063
7001110	Telecommunications Services	5,000
7001120	Consulting Services	85,188
7001400	Safety and Environmental	29,000
7018120	Rental Buildings (trailers)	14,500
7019310	Coring (sidewalls & analysis)	-
7011010	7% Contingency & Taxes	156,533
TOTAL DRILLING - INTANGIBLE		\$1,796,721
TOTAL DRILLING COST		\$2,392,721

COMPLETION - TANGIBLE

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



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

DATE 7/13/2019

Asset Team PERMIAN
Field CULEBRA BLUFF, SC FORMATION: 2ND BONE SPRINGS
Lease/Facility VALKYRIE 12 SB FEDERAL COM 13H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001170	Location and Access (dress location after rig move, set anchors)	10,000
7019220	Drilling Rig During Completion	-
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	350,000
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)	470,000
7019320	Fracturing Services	3,174,815
7019330	Perforating	300,000
7019360	Wireline Services	15,000
7001460	Water Hauling & Disposal (frac fluids)	355,000
7016180	Freight - Truck (haul pipe; drig & compl)	20,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drig; lightplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. BIL, BHA)	-
7000030	Contract Labor - general	60,000
7001110	Telecommunications Services	100,000
7001400	Safety and Environmental	-
7001120	Consulting Services	100,000
7018150	Zipper Manfold	220,000
7019300	Frack Stack Rentals	85,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	100,000
7018120	Rental Buildings (trailers)	35,000
7000030	Contract Labor - Pumping (pump-down pumps)	60,000
7011010	8% Contingency & Taxes	385,185
TOTAL COMPLETION - INTANGIBLE		\$5,840,000

TOTAL COMPLETION COST

\$5,855,000

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	17,120
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	62,878
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	-
7012270	Miscellaneous Materials (containment system)	35,847
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	7,264
7012290	Metering and Instrumentation	5,823
7012290	I&E Materials	105,326
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	336,771
7012500	Tanks	235,346
7012100	Heater Treater	-
7012640	Flare & Accessories	23,293
7000010	Electrical Labor	10,482
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	-
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$840,149

TOTAL SURFACE EQUIPMENT COST

\$ 840,149

ARTIFICIAL LIFT

7006640	Company Labor	45,000
7012180	Gas Lift Equipment	15,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	6,250
7012140	Elect Sub Pumps (ESP)	17,500
7019350	Well Services-Well/Wellhead Services	6,000
7012270	Materials & Supplies-Tangible	6,000
7012550	Surface Wellhead Equipment	5,000
7012390	Pig Launchers/Receivers & Rel Equip	6,250
7011010	8% Contingency & Taxes	3,000
TOTAL ARTIFICIAL LIFT		110,000

TOTAL ARTIFICIAL LIFT COST

\$ 110,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

	TOTAL COST
TOTAL LOCATION COST	\$ 84,000
TOTAL DRILLING COST	\$ 2,392,721
TOTAL COMPLETIONS COST	\$ 5,855,000
TOTAL SURFACE EQUIPMENT COST	\$ 840,149
TOTAL ARTIFICIAL LIFT COST	\$ 110,000
GRAND TOTAL COST	\$9,281,870

Participant's Approval

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

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

DATE 7/11/2019
DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
COMPLETION PREPARED BY JOSH SHANNON
FACILITIES PREPARED BY BRIAN LIPSCOMB
ARTIFICIAL LIFT PREPARED BY BRIAN LIPSCOMB

Asset Team	PERMIAN			
Field	PURPLE SAGE; WON	FORMATION: WOLFCAMP XY	WILDCAT	EXPLORATION
Lease/Facility	VALKYRIE 32 WXY FEDERAL COM 1H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth 20,184 Est Drilling Days _____ Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	50,250
7001250	Land Broker Fees and Services	33,750
TOTAL LOCATION COST - INTANGIBLE		84,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	19,000
7012050	Intermediate Casing 1	66,000
7012050	Intermediate Casing 2	253,000
7012050	Production Casing	141,000
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		641,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	32,500
7019220	Drilling Rig - day work/footage	602,213
7019040	Directional Drilling Services	201,000
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	35,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	72,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	30,000
7001460	Water (non potable)	25,000
7012350	Water (potable)	5,000
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
7001160	Contract Services - Disposal/Non-Hazardous Waste	80,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7000030	Contract Labor - Operations	3,000
7001200	Contract Services - Facilities	10,000
7019300	Well Services - Well Control Services	21,363
7019350	Well Services - Well/Wellhead Services	10,000
7018150	Rental Tools and Equipment (surface rentals)	90,900
7018150	Rig Equipment and Misc.	11,363
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,808
7001400	Safety and Environmental	36,360
7018120	Rental Buildings (trailers)	18,180
7019310	Coring (sidewalls & analysis)	-
7011010	7% Contingency & Taxes	176,980
TOTAL DRILLING - INTANGIBLE		\$2,064,265

TOTAL DRILLING COST \$2,705,265

COMPLETION - TANGIBLE

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

Asset Team PERMIAN
 Field PURPLE SAGE; WOI FORMATION: WOLFCAMP XY
 Lease/Facility VALKYRIE 12 WKY FEDERAL COM 1H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	10,000
7019220	Drilling Rig During Completion	-
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	350,000
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)	470,000
7019320	Fracturing Services	3,174,815
7019330	Perforating	300,000
7019360	Wireline Services	15,000
7001460	Water Hauling & Disposal (frac fluids)	354,000
7016180	Freight - Truck (haul pipe; drlg & compl)	20,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drlg; lghtplant,hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bht, BHA)	-
7000030	Contract Labor - general	60,000
7001110	Telecommunications Services	100,000
7001400	Safety and Environmental	-
7001120	Consulting Services	100,000
7018150	Zipper Manifold	220,000
7019300	Frack Stack Rentals	85,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lghtplants)	100,000
7018120	Rental Buildings (trailers)	35,000
7000030	Contract Labor - Pumping (pump-down pumps)	60,000
7011010	8% Contingency & Taxes	385,185
TOTAL COMPLETION - INTANGIBLE		\$5,839,000

TOTAL COMPLETION COST

\$5,854,000

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	17,120
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	62,878
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	-
7012270	Miscellaneous Materials (containment system)	35,847
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	7,264
7012290	Metering and Instrumentation	5,823
7012290	I&E Materials	105,326
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	336,771
7012500	Tanks	235,346
7012100	Heater Treater	-
7012640	Flare & Accessories	23,293
7000010	Electrical Labor	10,482
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	-
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$840,149

TOTAL SURFACE EQUIPMENT COST

\$ 840,149

ARTIFICIAL LIFT

7006640	Company Labor	45,000
7012180	Gas Lift Equipment	15,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	6,250
7012140	Elect Sub Pumps (ESP)	17,500
7019350	Well Services-Well/Wellhead Services	6,000
7012270	Materials & Supplies-Tangible	6,000
7012550	Surface Wellhead Equipment	5,000
7012390	Pig Launchers/Receivers & Rel Equip	6,250
7011010	8% Contingency & Taxes	3,000
TOTAL ARTIFICIAL LIFT		110,000

TOTAL ARTIFICIAL LIFT COST

\$ 110,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

	TOTAL COST
TOTAL LOCATION COST	\$ 84,000
TOTAL DRILLING COST	\$ 2,705,265
TOTAL COMPLETIONS COST	\$ 5,854,000
TOTAL SURFACE EQUIPMENT COST	\$ 840,149
TOTAL ARTIFICIAL LIFT COST	\$ 110,000
GRAND TOTAL COST	\$9,593,414

Participant's Approval

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

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

DATE 7/11/2019
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY BRIAN LIPSCOMB
 ARTIFICIAL LIFT PREPARED BY BRIAN LIPSCOMB

Asset Team	PERMIAN			
Field	PURPLE SAGE WOI	FORMATION: WOLFCAMP A	WILDCAT	EXPLORATION
Lease/Facility	VALKYRIE 12 WA FEDERAL COM 3H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth 20,344 Est Drilling Days _____ Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	50,250
7001250	Land Broker Fees and Services	33,750
TOTAL LOCATION COST - INTANGIBLE		84,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	19,000
7012050	Intermediate Casing 1	66,000
7012050	Intermediate Casing 2	253,000
7012050	Production Casing	141,000
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		641,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	32,500
7019220	Drilling Rig - day work/footage	602,213
7019040	Directional Drilling Services	201,000
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	35,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	72,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	20,000
7019140	Fuel (Mud)	30,000
7001460	Water (non potable)	25,000
7012350	Water (potable)	5,000
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
7001160	Contract Services - Disposal/Non-Hazardous Waste	80,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7000030	Contract Labor - Operations	3,000
7001200	Contract Services - Facilities	10,000
7019300	Well Services - Well Control Services	21,363
7019350	Well Services - Well/Wellhead Services	10,000
7018150	Rental Tools and Equipment (surface rentals)	90,900
7018150	Rig Equipment and Misc.	11,363
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,808
7001400	Safety and Environmental	36,360
7018120	Rental Buildings (trailers)	18,180
7019310	Coring (sidewalls & analysis)	-
7011010	7% Contingency & Taxes	176,980
TOTAL DRILLING - INTANGIBLE		\$2,064,265

TOTAL DRILLING COST \$2,705,265

COMPLETION - TANGIBLE

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

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

DATE 7/11/2019

Asset Team PERMIAN
Field PURPLE SAGE; WO1 FORMATION: WOLFCAMP A
Lease/Facility VALKYRIE 12 WA FEDERAL COM 3H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	10,000
7019220	Drilling Rig During Completion	-
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	350,000
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)	470,000
7019320	Fracturing Services	3,174,815
7019330	Perforating	300,000
7019360	Wireline Services	15,000
7001460	Water Hauling & Disposal (frac fluids)	354,000
7016180	Freight - Truck (haul pipe; drlg & compl)	20,000
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	60,000
7001110	Telecommunications Services	100,000
7001400	Safety and Environmental	-
7001120	Consulting Services	100,000
7018150	Zipper Manifold	220,000
7019300	Frack Stack Rentals	85,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	100,000
7018120	Rental Buildings (trailers)	35,000
7000030	Contract Labor - Pumping (pump-down pumps)	60,000
7011010	8% Contingency & Taxes	385,185
TOTAL COMPLETION - INTANGIBLE		\$5,839,000

TOTAL COMPLETION COST

\$5,854,000

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	17,120
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	62,878
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	-
7012270	Miscellaneous Materials (containment system)	35,847
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	7,264
7012290	Metering and Instrumentation	5,823
7012290	I&E Materials	105,326
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	336,771
7012500	Tanks	235,346
7012100	Heater Treater	-
7012640	Flare & Accessories	23,293
7000010	Electrical Labor	10,482
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	-
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$840,149

TOTAL SURFACE EQUIPMENT COST

\$ 840,149

ARTIFICIAL LIFT

7006640	Company Labor	45,000
7012180	Gas Lift Equipment	15,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	6,250
7012140	Elect Sub Pumps (ESP)	17,500
7019350	Well Services-Well/Wellhead Services	6,000
7012270	Materials & Supplies-Tangible	6,000
7012550	Surface Wellhead Equipment	5,000
7012390	Pig Launchers/Receivers & Ref Equip	6,250
7011010	8% Contingency & Taxes	3,000
TOTAL ARTIFICIAL LIFT		110,000

TOTAL ARTIFICIAL LIFT COST

\$ 110,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL LOCATION COST	\$ 84,000
TOTAL DRILLING COST	\$ 2,705,265
TOTAL COMPLETIONS COST	\$ 5,854,000
TOTAL SURFACE EQUIPMENT COST	\$ 840,149
TOTAL ARTIFICIAL LIFT COST	\$ 110,000

GRAND TOTAL COST

\$9,593,414

Participant's Approval

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

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

DATE 7/11/2019
DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
COMPLETION PREPARED BY JOSH SHANNON
FACILITIES PREPARED BY BRIAN UPSCOMB
ARTIFICIAL LIFT PREPARED BY BRIAN UPSCOMB

Asset Team	PERMIAN	FORMATION: WOLFCAMP XY	WILDCAT	EXPLORATION
Field	PURPLE SAGE; WOI		DEVELOPMENT	RECOMPLETION
Lease/Facility	VALKYRIE 12 WXY FEDERAL COM SH		X EXPLOITATION	WORKOVER
Location	EDDY COUNTY			
Prospect	MALAGA			

Est Total Depth 20,206 Est Drilling Days _____ Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	50,250
7001250	Land Broker Fees and Services	33,750
TOTAL LOCATION COST - INTANGIBLE		84,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	19,000
7012050	Intermediate Casing 1	66,000
7012050	Intermediate Casing 2	253,000
7012050	Production Casing	142,000
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		642,000

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	32,500
7019220	Drilling Rig - day work/footage	602,213
7019040	Directional Drilling Services	201,000
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	35,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	66,600
7012310	Solids Control equipment	41,000
7012020	Bits	72,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	70,000
7019140	Fuel (Mud)	30,000
7001460	Water (non potable)	25,000
7012350	Water (potable)	5,000
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
7001160	Contract Services - Disposal/Non-Hazardous Waste	80,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7000030	Contract Labor - Operations	3,000
7001200	Contract Services - Facilities	10,000
7019300	Well Services - Well Control Services	21,363
7019350	Well Services - Well/Wellhead Services	10,000
7018150	Rental Tools and Equipment (surface rentals)	90,900
7018150	Rig Equipment and Misc.	11,363
7001110	Telecommunications Services	5,000
7001120	Consulting Services	106,808
7001400	Safety and Environmental	36,360
7018120	Rental Buildings (trailers)	18,180
7019310	Coring (sidewalls & analysis)	-
7011010	7% Contingency & Taxes	177,050
TOTAL DRILLING - INTANGIBLE		\$2,064,335

TOTAL DRILLING COST \$2,706,335

COMPLETION - TANGIBLE

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

Asset Team PERMIAN
Field PURPLE SAGE; WOI FORMATION: WOLFCAMP XY
Lease/Facility VALKYRIE 12 WKY FEDERAL COM SH

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	10,000
7019220	Drilling Rig During Completion	-
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	350,000
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)	470,000
7019320	Fracturing Services	3,174,815
7019330	Perforating	300,000
7019360	Wireline Services	15,000
7001460	Water Hauling & Disposal (frac fluids)	354,000
7016180	Freight - Truck (haul pipe; drlg & compl)	20,000
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	60,000
7001110	Telecommunications Services	100,000
7001400	Safety and Environmental	-
7001120	Consulting Services	100,000
7018150	Zipper Manifold	220,000
7019300	Frack Stack Rentals	85,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	100,000
7018120	Rental Buildings (trailers)	35,000
7000030	Contract Labor - Pumping (pump-down pumps)	60,000
7011010	8% Contingency & Taxes	385,185
TOTAL COMPLETION - INTANGIBLE		\$5,839,000

TOTAL COMPLETION COST

\$5,854,000

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	17,120
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	62,878
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	-
7012270	Miscellaneous Materials (containment system)	35,847
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	7,164
7012390	Metering and Instrumentation	5,823
7012290	I&E Materials	105,326
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	336,771
7012500	Tanks	235,346
7012100	Heater Treater	-
7012640	Flare & Accessories	23,293
7000010	Electrical Labor	10,482
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	-
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$840,149

TOTAL SURFACE EQUIPMENT COST

\$ 840,149

ARTIFICIAL LIFT

7006640	Company Labor	45,000
7012180	Gas Lift Equipment	15,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	6,250
7012140	Elect Sub Pumps (ESP)	17,500
7019350	Well Services-Well/Wellhead Services	6,000
7012270	Materials & Supplies-Tangible	6,000
7012550	Surface Wellhead Equipment	5,000
7012390	Pig Launchers/Receivers & Rel Equip	6,250
7011010	8% Contingency & Taxes	3,000
TOTAL ARTIFICIAL LIFT		110,000

TOTAL ARTIFICIAL LIFT COST

\$ 110,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST	\$ 84,000
TOTAL DRILLING COST	\$ 2,706,335
TOTAL COMPLETIONS COST	\$ 5,854,000
TOTAL SURFACE EQUIPMENT COST	\$ 840,149
TOTAL ARTIFICIAL LIFT COST	\$ 110,000
GRAND TOTAL COST	\$9,594,484

Participant's Approval

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

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

DATE 7/11/2019
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY BRIAN LIPSCOMB
 ARTIFICIAL LIFT PREPARED BY BRIAN LIPSCOMB

Asset Team	PERMIAN			
Field	PURPLE SAGE; WOI	FORMATION: WOLFCAMP D	WILDCAT	EXPLORATION
Lease/Facility	VALKYRIE 12 WD FEDERAL COM 2H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			
Est Total Depth	20,849	Est Drilling Days		Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	67,000
7001250	Land Broker Fees and Services	45,000
TOTAL LOCATION COST - INTANGIBLE		112,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	19,000
7012050	Intermediate Casing 1	66,000
7012050	Intermediate Casing 2	253,000
7012050	Production Casing	191,840
7012050	Drig Uner 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		691,840

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	43,333
7019220	Drilling Rig - day work/footage	746,100
7019040	Directional Drilling Services	248,000
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	35,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	71,300
7012310	Solids Control equipment	49,000
7012020	Bits	72,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	85,000
7019140	Fuel (Mud)	30,000
7001460	Water (non potable)	25,000
7012350	Water (potable)	5,000
7019000	Well Logging Services	
7019150	Mud Logging/geosteering	23,000
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
7001160	Contract Services - Disposal/Non-Hazardous Waste	80,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7000030	Contract Labor - Operations	3,000
7001200	Contract Services - Facilities	10,000
7019300	Well Services - Well Control Services	23,817
7019350	Well Services - Well/Wellhead Services	10,000
7018150	Rental Tools and Equipment (surface rentals)	110,533
7018150	Rig Equipment and Misc.	13,817
7001110	Telecommunications Services	5,000
7001120	Consulting Services	129,877
7001400	Safety and Environmental	44,213
7018120	Rental Buildings (trailers)	22,107
7019310	Coring (sidewalls & analysis)	
7011010	7% Contingency & Taxes	201,036
TOTAL DRILLING - INTANGIBLE		\$2,381,132

TOTAL DRILLING COST

\$3,072,972

COMPLETION - TANGIBLE

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

Asset Team PERMIAN
 Field PURPLE SAGE; WOI FORMATION: WOLFCAMP D
 Lease/Facility VALKYRIE 12 WD FEDERAL COM 2H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	10,000
7019220	Drilling Rig During Completion	-
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	350,000
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)	470,000
7019320	Fracturing Services	3,684,100
7019330	Perforating	300,000
7019360	Wireline Services	15,000
7001460	Water Hauling & Disposal (frac fluids)	271,000
7016180	Freight - Truck (haul pipe; drig & compl)	20,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drig; lightplant, hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. Bht, BHA)	-
7000030	Contract Labor - general	60,000
7001110	Telecommunications Services	100,000
7001400	Safety and Environmental	-
7001120	Consulting Services	100,000
7018150	Zipper Manifold	220,000
7019300	Frack Stack Rentals	85,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	100,000
7018120	Rental Buildings (trailers)	35,000
7000030	Contract Labor - Pumping (pump-down pumps)	60,000
7011010	8% Contingency & Taxes	425,900
TOTAL COMPLETION - INTANGIBLE		\$6,306,000

TOTAL COMPLETION COST \$6,321,000

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	18,576
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	70,817
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	-
7012270	Miscellaneous Materials (containment system)	43,281
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	9,375
7012290	Metering and Instrumentation	7,764
7012290	I&E Materials	114,060
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Power	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	323,837
7012500	Tanks	235,346
7012100	Heater Treater	-
7012640	Flare & Accessories	31,057
7000010	Electrical Labor	11,937
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	-
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$866,051

TOTAL SURFACE EQUIPMENT COST \$ 866,051

ARTIFICIAL LIFT

7006640	Company Labor	45,000
7012180	Gas Lift Equipment	15,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	6,250
7012140	Elect Sub Pumps (ESP)	17,500
7019350	Well Services-Well/Wellhead Services	6,000
7012270	Materials & Supplies-Tangible	6,000
7012550	Surface Wellhead Equipment	5,000
7012390	Pig Launchers/Receivers & Rel Equip	6,250
7011010	8% Contingency & Taxes	3,000
TOTAL ARTIFICIAL LIFT		110,000

TOTAL ARTIFICIAL LIFT COST \$ 110,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

	TOTAL COST
TOTAL LOCATION COST	\$ 112,000
TOTAL DRILLING COST	\$ 3,072,972
TOTAL COMPLECTIONS COST	\$ 6,321,000
TOTAL SURFACE EQUIPMENT COST	\$ 866,051
TOTAL ARTIFICIAL LIFT COST	\$ 110,000
GRAND TOTAL COST	\$10,482,024

Participant's Approval

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

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

DATE 7/11/2019
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY BRIAN UPSCOMB
 ARTIFICIAL LIFT PREPARED BY BRIAN UPSCOMB

Asset Team	PERMIAN	FORMATION: WOLFCAMP D	W/LOCAT	EXPLORATION
Field	PURPLE SAGE: WOJ		DEVELOPMENT	RECOMPLETION
Lease/Facility	VALKYRIE 12 WD FEDERAL COM 4H		X EXPLOITATION	WORKOVER
Location	EDDY COUNTY			
Prospect	MALAGA			

Est Total Depth 21,013 Est Drilling Days _____ Est Completion Days 11

LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	67,000
7001250	Land Broker Fees and Services	45,000
TOTAL LOCATION COST - INTANGIBLE		112,000

DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	19,000
7012050	Intermediate Casing 1	66,000
7012050	Intermediate Casing 2	253,000
7012050	Production Casing	191,905
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		691,905

DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	43,333
7019220	Drilling Rig - day work/footage	746,100
7019040	Directional Drilling Services	248,000
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	35,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	71,300
7012310	Solids Control equipment	49,000
7012020	Bits	72,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	85,000
7019140	Fuel (Mud)	30,000
7001460	Water (non potable)	25,000
7012350	Water (potable)	5,000
7019000	Well Logging Services	-
7019150	Mud Logging/geosteering	23,000
7019250	Stabilizers, Hole Openers, Underreamers (OH 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
7001160	Contract Services - Disposal/Non-Hazardous Waste	80,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7000030	Contract Labor - Operations	3,000
7001200	Contract Services - Facilities	10,000
7019300	Well Services - Well Control Services	23,817
7019350	Well Services - Well/Wellhead Services	10,000
7018150	Rental Tools and Equipment (surface rentals)	110,533
7018150	Rig Equipment and Misc.	13,817
7001110	Telecommunications Services	5,000
7001120	Consulting Services	129,877
7001400	Safety and Environmental	44,213
7018120	Rental Buildings (trailers)	22,107
7019310	Coring (sidewalls & analysis)	-
7011010	7% Contingency & Taxes	201,040
TOTAL DRILLING - INTANGIBLE		\$2,381,137

TOTAL DRILLING COST

\$3,073,042

COMPLETION - TANGIBLE

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

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

DATE 7/11/2019

Asset Team PERMIAN
Field PURPLE SAGE; WO1 FORMATION: WOLFCAMP D
Lease/Facility VALKYRIE 12 WD FEDERAL COM 4H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	10,000
7019220	Drilling Rig During Completion	-
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	350,000
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)	470,000
7019320	Fracturing Services	3,684,100
7019330	Perforating	300,000
7019360	Wireline Services	15,000
7001460	Water Hauling & Disposal (frac fluids)	271,000
7016180	Freight - Truck (haul pipe; drlg & compl)	20,000
7018150	BOP Rental & Testing	-
7018150	Rental Tools and Equipment (incl drlg; lightplant, hydra-walk)	-
7018150	CT Downhole Rental Equipment (ie. BRT, BHA)	-
7000030	Contract Labor - general	60,000
7001110	Telecommunications Services	100,000
7001400	Safety and Environmental	-
7001120	Consulting Services	100,000
7018150	Zipper Manifold	220,000
7019300	Frac Stack Rentals	85,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	100,000
7018120	Rental Buildings (trailers)	35,000
7000030	Contract Labor - Pumping (pump-down pumps)	60,000
7011010	8% Contingency & Taxes	425,900
TOTAL COMPLETION - INTANGIBLE		\$6,306,000

TOTAL COMPLETION COST

\$6,321,000

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	18,576
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	70,817
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	-
7012270	Miscellaneous Materials (containment system)	43,281
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	9,375
7012290	Metering and Instrumentation	7,764
7012290	I&E Materials	114,060
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Flare	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	323,837
7012500	Tanks	235,346
7012100	Heater Treater	-
7012640	Flare & Accessories	31,057
7000010	Electrical Labor	11,937
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	-
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$866,051

TOTAL SURFACE EQUIPMENT COST

\$ 866,051

ARTIFICIAL LIFT

7006640	Company Labor	45,000
7012180	Gas Lift Equipment	15,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	6,250
7012140	Elect Sub Pumps (ESP)	17,500
7019350	Well Services-Well/Wellhead Services	6,000
7012270	Materials & Supplies-Tangible	6,000
7012550	Surface Wellhead Equipment	5,000
7012390	Pig Launchers/Receivers & Rel Equip	6,250
7011010	8% Contingency & Taxes	3,000
TOTAL ARTIFICIAL LIFT		110,000

TOTAL ARTIFICIAL LIFT COST

\$ 110,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL COST

TOTAL LOCATION COST	\$ 112,000
TOTAL DRILLING COST	\$ 3,073,042
TOTAL COMPLETIONS COST	\$ 6,321,000
TOTAL SURFACE EQUIPMENT COST	\$ 866,051
TOTAL ARTIFICIAL LIFT COST	\$ 110,000

GRAND TOTAL COST

\$10,482,093

Participant's Approval

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

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

DATE 7/11/2019
 DRILLING & LOCATION PREPARED BY MATTHEW RUGAARD
 COMPLETION PREPARED BY JOSH SHANNON
 FACILITIES PREPARED BY BRIAN LIPSCOMB
 ARTIFICIAL LIFT PREPARED BY BRIAN LIPSCOMB

Asset Team	PERMIAN			
Field	PURPLE SAGE; WOI	FORMATION: WOLF CAMP D	WILOCAT	EXPLORATION
Lease/Facility	VALKYRIE 12 WD FEDERAL COM 6H		DEVELOPMENT	RECOMPLETION
Location	EDDY COUNTY		X EXPLOITATION	WORKOVER
Prospect	MALAGA			

Est Total Depth	<u>20,876</u>	Est Drilling Days	<u> </u>	Est Completion Days	<u>11</u>
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LOCATION COST - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access	67,000
7001250	Land Broker Fees and Services	45,000

TOTAL LOCATION COST - INTANGIBLE	<u>112,000</u>
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DRILLING COST - TANGIBLE

7012050	Conductor Pipe	28,000
7012050	Surface Casing	19,000
7012050	Intermediate Casing 1	66,000
7012050	Intermediate Casing 2	253,000
7012050	Production Casing	192,975
7012050	Drig Uner 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	<u>692,975</u>
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DRILLING COST - INTANGIBLE

7019200	Drilling Rig Mob/Demob	43,333
7019220	Drilling Rig - day work/footage	746,100
7019040	Directional Drilling Services	248,000
7019020	Cement and Cementing Service Surface	15,000
7019020	Cement and Cementing Service Intermediate 1	25,000
7019020	Cement and Cementing Service Intermediate 2	35,000
7019020	Cement and Cementing Service Production	60,000
7019140	Mud Fluids & Services	71,300
7012310	Solids Control equipment	49,000
7012020	Bits	72,000
7019010	Casing Crew and Services	30,000
7016350	Fuel (Rig)	85,000
7019140	Fuel (Mud)	30,000
7001460	Water (non potable)	25,000
7012350	Water (potable)	5,000
7019000	Well Logging Services	-
7019150	Mud Logging/geosteering	23,000
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
7001160	Contract Services - Disposal/Non-Hazardous Waste	80,000
7001440	Vacuum Trucks	10,000
7000030	Contract Labor - general	30,000
7000030	Contract Labor - Operations	3,000
7001200	Contract Services - Facilities	10,000
7019300	Well Services - Well Control Services	23,817
7019350	Well Services - Well/Wellhead Services	10,000
7018150	Rental Tools and Equipment (surface rentals)	110,533
7018150	Rig Equipment and Misc.	13,817
7001110	Telecommunications Services	5,000
7001120	Consulting Services	129,877
7001400	Safety and Environmental	44,213
7018120	Rental Buildings (trailers)	22,107
7019310	Coring (sidewalls & analysis)	-
7011010	7% Contingency & Taxes	201,115

TOTAL DRILLING - INTANGIBLE	<u>52,381,212</u>
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TOTAL DRILLING COST	<u>\$3,074,187</u>
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COMPLETION - TANGIBLE

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

TOTAL COMPLETION - TANGIBLE	<u>\$15,000</u>
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Asset Team PERMIAN
Field PURPLE SAGE; WO1 FORMATION: WOLF CAMP O
Lease/Facility VALKYRIE 12 WD FEDERAL COM 6H

COMPLETION - INTANGIBLE

GL CODE	DESCRIPTION	ESTIMATED COST
7001270	Location and Access (dress location after rig move, set anchors)	10,000
7019220	Drilling Rig During Completion	-
7019140	Mud Fluids & Services	-
7019030	Coiled Tubing Services (3 runs)	350,000
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)	470,000
7019320	Fracturing Services	3,684,100
7019330	Perforating	300,000
7019360	Wireline Services	15,000
7001460	Water Hauling & Disposal (frac fluids)	271,000
7016180	Freight - Truck (haul pipe; drlg & compl)	20,000
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	60,000
7001110	Telecommunications Services	100,000
7001400	Safety and Environmental	-
7001120	Consulting Services	100,000
7018150	Zipper Manifold	220,000
7019300	Frack Stack Rentals	85,000
7016190	Freight (Transportation Services)	-
7018150	Equipment Rental (w/o operator, frac tanks, lightplants)	100,000
7018120	Rental Buildings (trailers)	35,000
7000030	Contract Labor - Pumping (pump-down pumps)	60,000
7011010	8% Contingency & Taxes	425,900
TOTAL COMPLETION - INTANGIBLE		\$6,306,000

TOTAL COMPLETION COST

\$6,321,000

SURFACE EQUIPMENT - TANGIBLE

7012350	Misc. Piping, Fittings & Valves	18,576
7006640	Company Labor & Burden	-
7000030	Contract Labor - General	70,817
7001110	Telecommunication equip (Telemetry)	-
7012410	Line Pipe & Accessories	-
7012270	Miscellaneous Materials (containment system)	43,281
7008060	SCADA	-
7016180	Freight - truck	-
7001190	Contract Engineering	9,375
7012290	Metering and Instrumentation	7,764
7012290	I&E Materials	114,060
7012200	Gas Treating	-
7012200	Dehydration	-
7012010	Compressor	-
7012350	Flare	-
7012610	Vapor Recovery Unit	-
7012440	Separator & other pressure vessels	323,837
7012500	Tanks	235,346
7012100	Heater Treater	-
7012640	Flare & Accessories	31,057
7000010	Electrical Labor	11,937
7000010	Mechanical Labor	-
7012480	Rod Pumping unit & Pad	-
7012180	Pumping Unit Engine	-
7012350	Electrical Power (electrical cooperative construction costs)	-
TOTAL SURFACE EQUIPMENT - TANGIBLE		\$866,051

TOTAL SURFACE EQUIPMENT COST

\$ 866,051

ARTIFICIAL LIFT

7006640	Company Labor	45,000
7012180	Gas Lift Equipment	15,000
7012480	Rod Pumping, Sucker Rods & Rod Pump	6,250
7012140	Elect Sub Pumps (ESP)	17,500
7019350	Well Services-Well/Wellhead Services	6,000
7012270	Materials & Supplies-Tangible	6,000
7012550	Surface Wellhead Equipment	5,000
7012390	Pig Launchers/Receivers & Rel Equip	6,250
7011010	8% Contingency & Taxes	3,000
TOTAL ARTIFICIAL LIFT		110,000

TOTAL ARTIFICIAL LIFT COST

\$ 110,000

SUMMARY OF ESTIMATED DRILLING WELL COSTS

TOTAL LOCATION COST	\$ 112,000
TOTAL DRILLING COST	\$ 3,074,187
TOTAL COMPLETIONS COST	\$ 6,321,000
TOTAL SURFACE EQUIPMENT COST	\$ 866,051
TOTAL ARTIFICIAL LIFT COST	\$ 110,000

GRAND TOTAL COST

\$10,483,238

Participant's Approval

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

Tab B: Geology Exhibits

Exhibit 11: Locator Map

Exhibit 12: Preferred Well Orientation

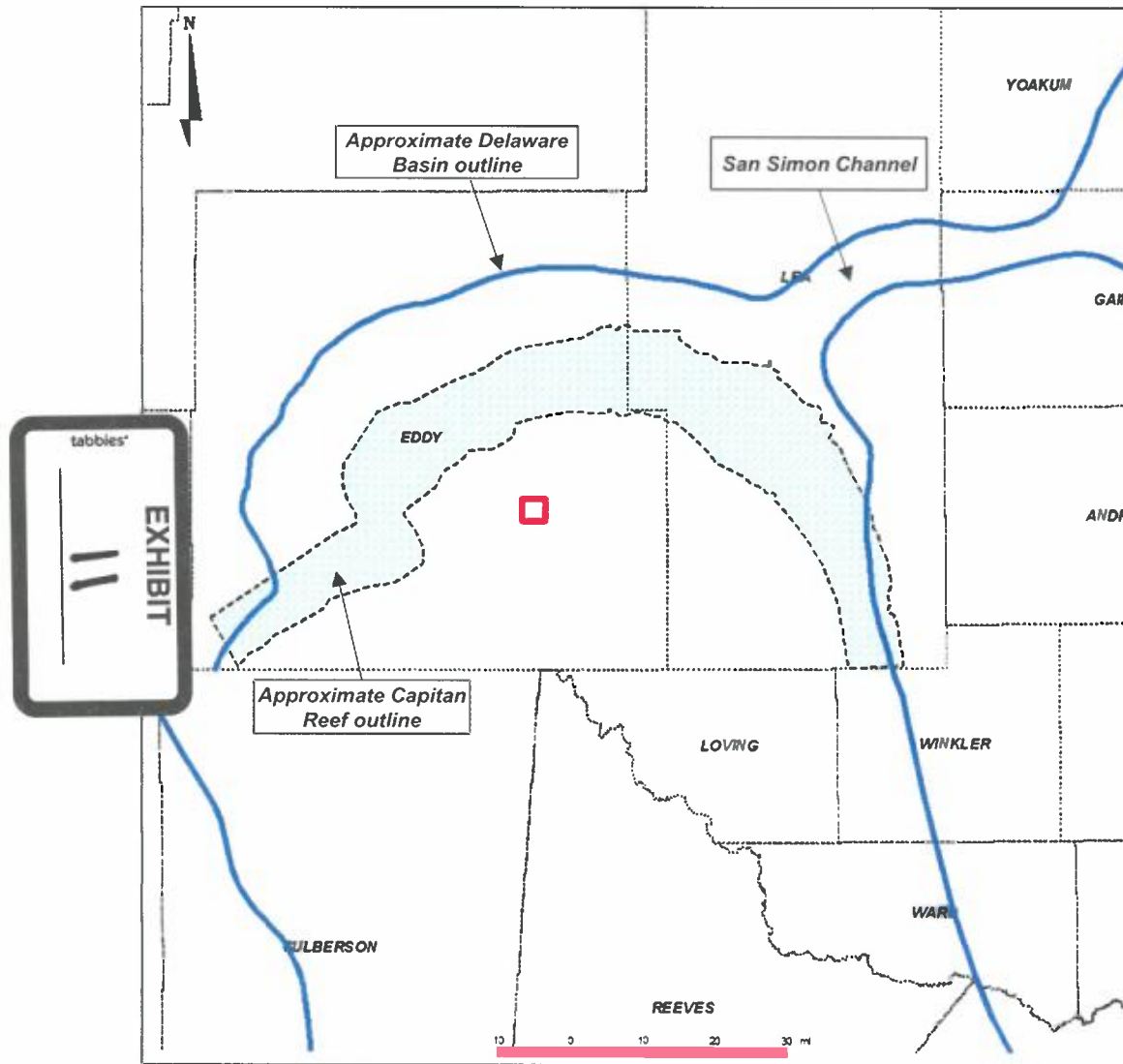
Exhibit 13: Second Bone Spring Geology Study

Exhibit 14: Upper Wolfcamp Geology Study

Exhibit 15: Lower Wolfcamp Geology Study

Valkyrie 12 Federal Com Unit

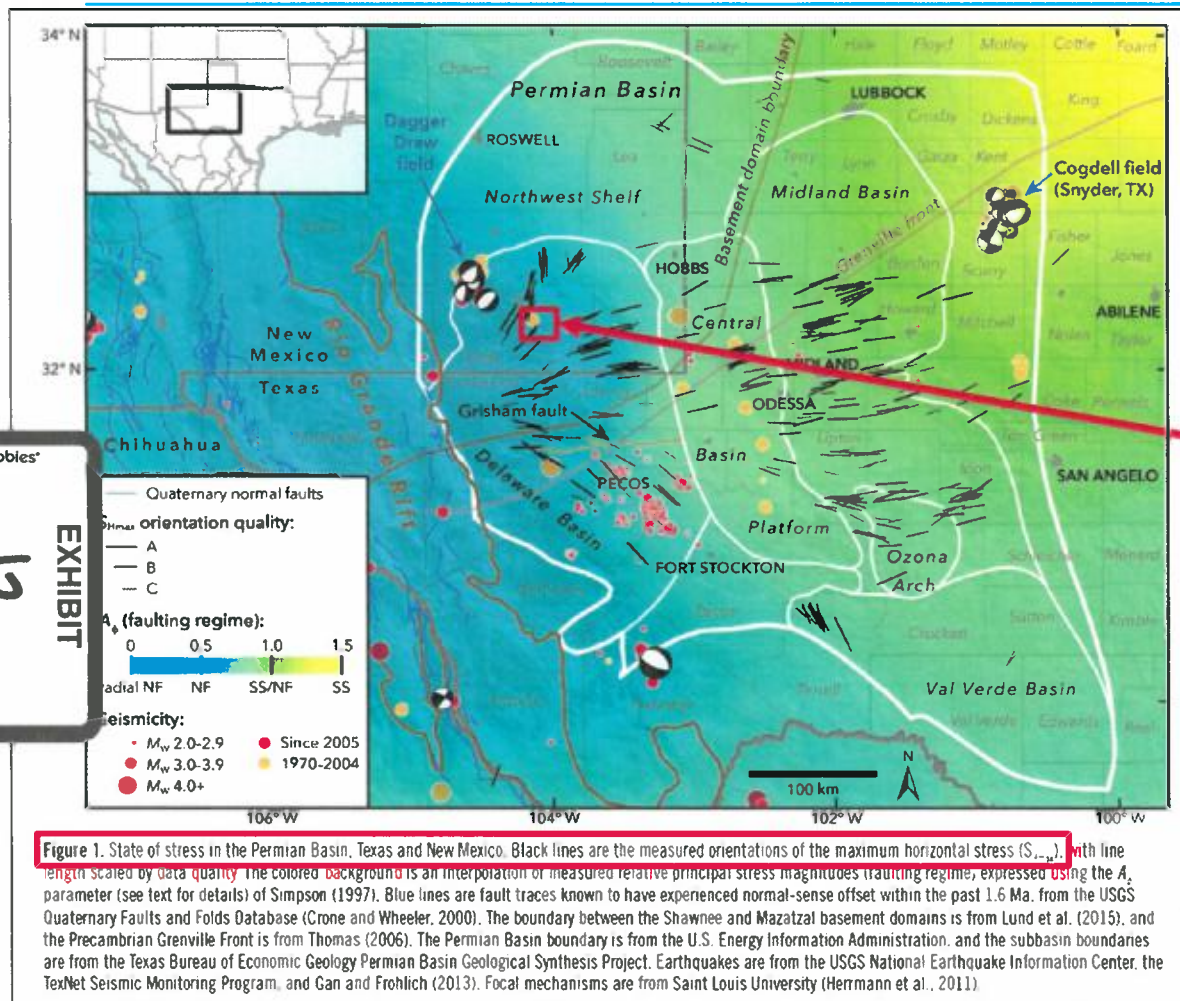
Locator Map



- Approximate location of proposed Valkyrie 12 Federal Com well locations shown with red box
- Located basinward of the Capitan Reef
- Mid Eddy county

Valkyrie 12 Federal Com Unit

Preferred Well Orientation - SHmax



Preferred well orientation E/W to maximize lateral length with respect to Marathon's acreage.

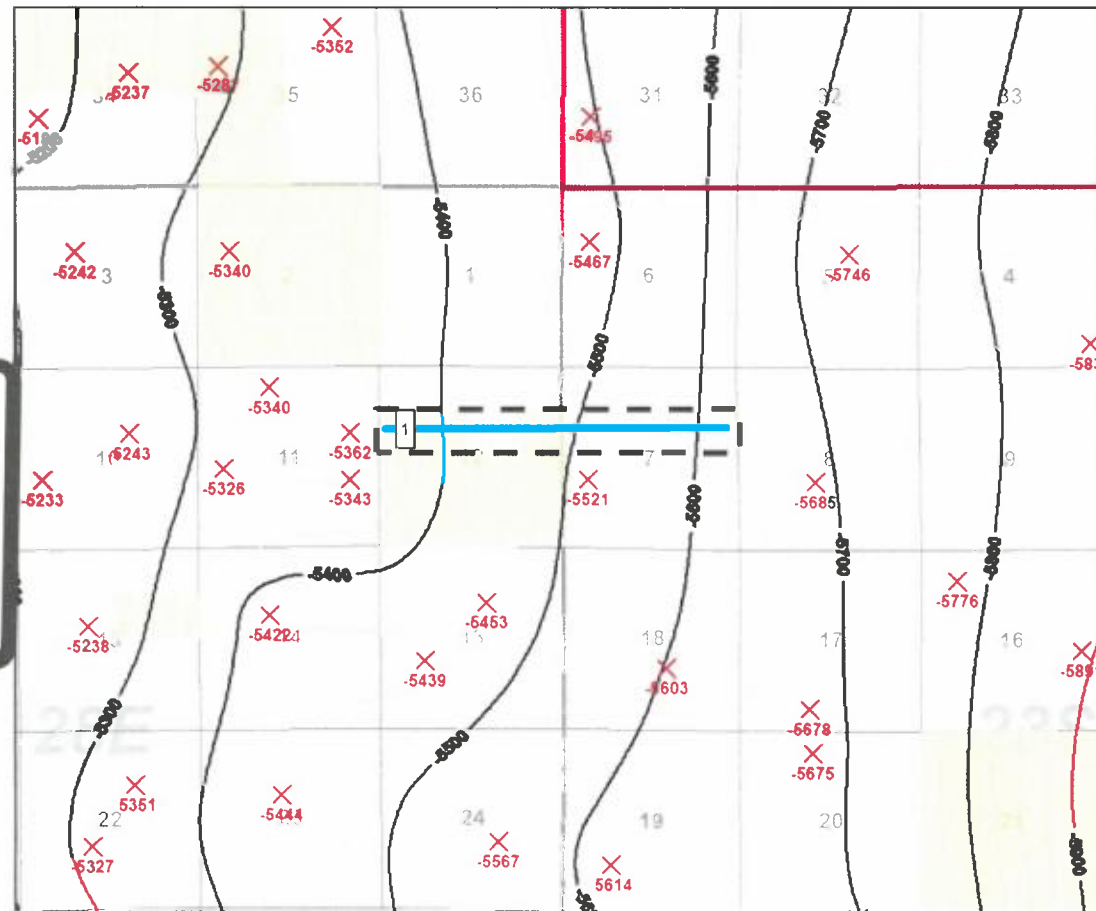
As outlined in Snee & Zoback (2018), SH_{max} is at approximately 45 degrees in mid Eddy county. Therefore, hydraulic fractures will propagate out at ~45 degrees. Production is expected to be the same for wells oriented either N/S or E/W.

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>.

Valkyrie 12 Federal Com Unit

Structure Map – Base of Second Bone Spring Sand (TVDSS)



Map Legend

MRO Acreage Project Area

SBSG

MRO – Horizontal Location

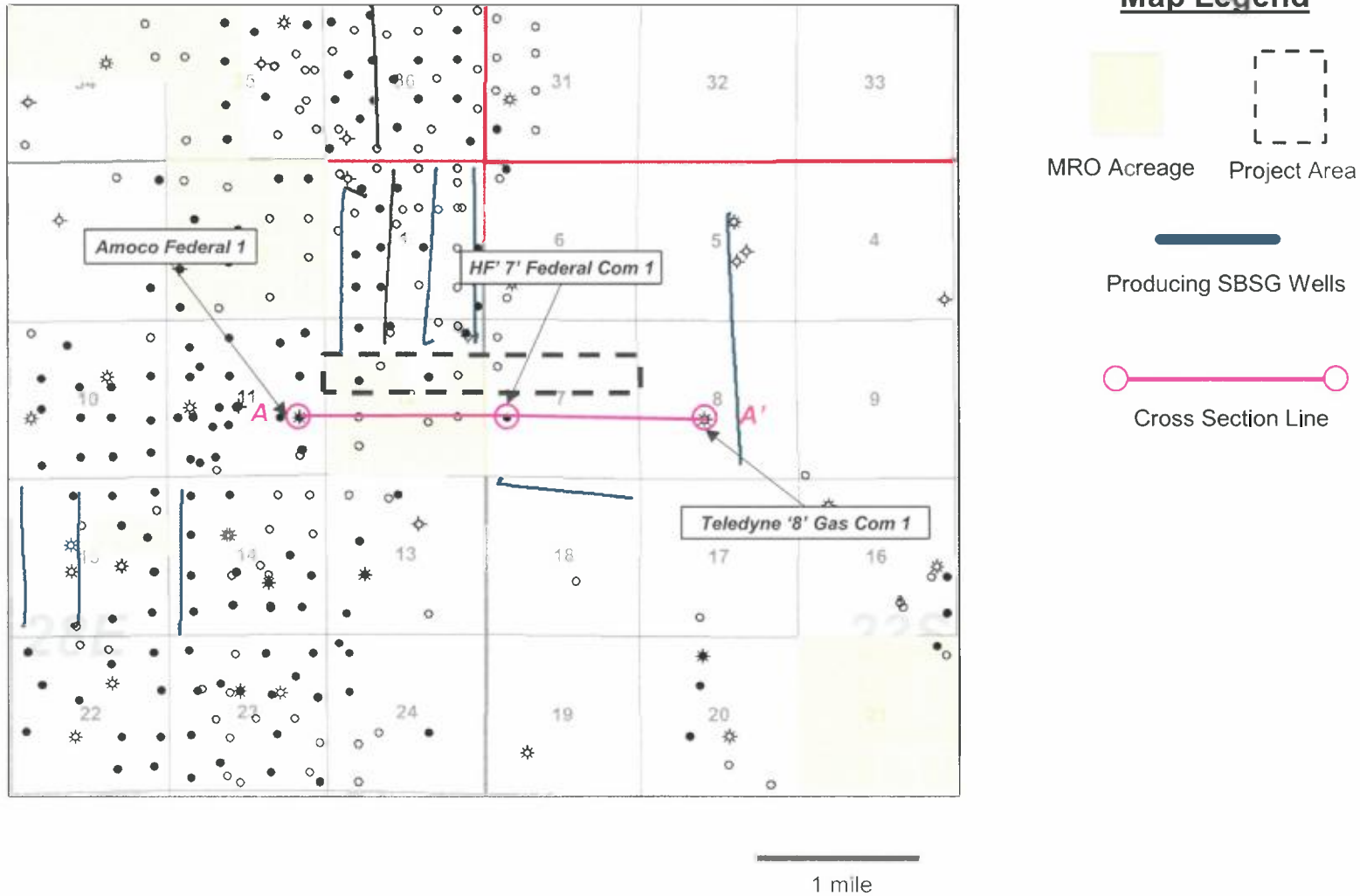
1 Valkyrie 12 SB Federal Com 13H

C.I. = 25'

1 mile

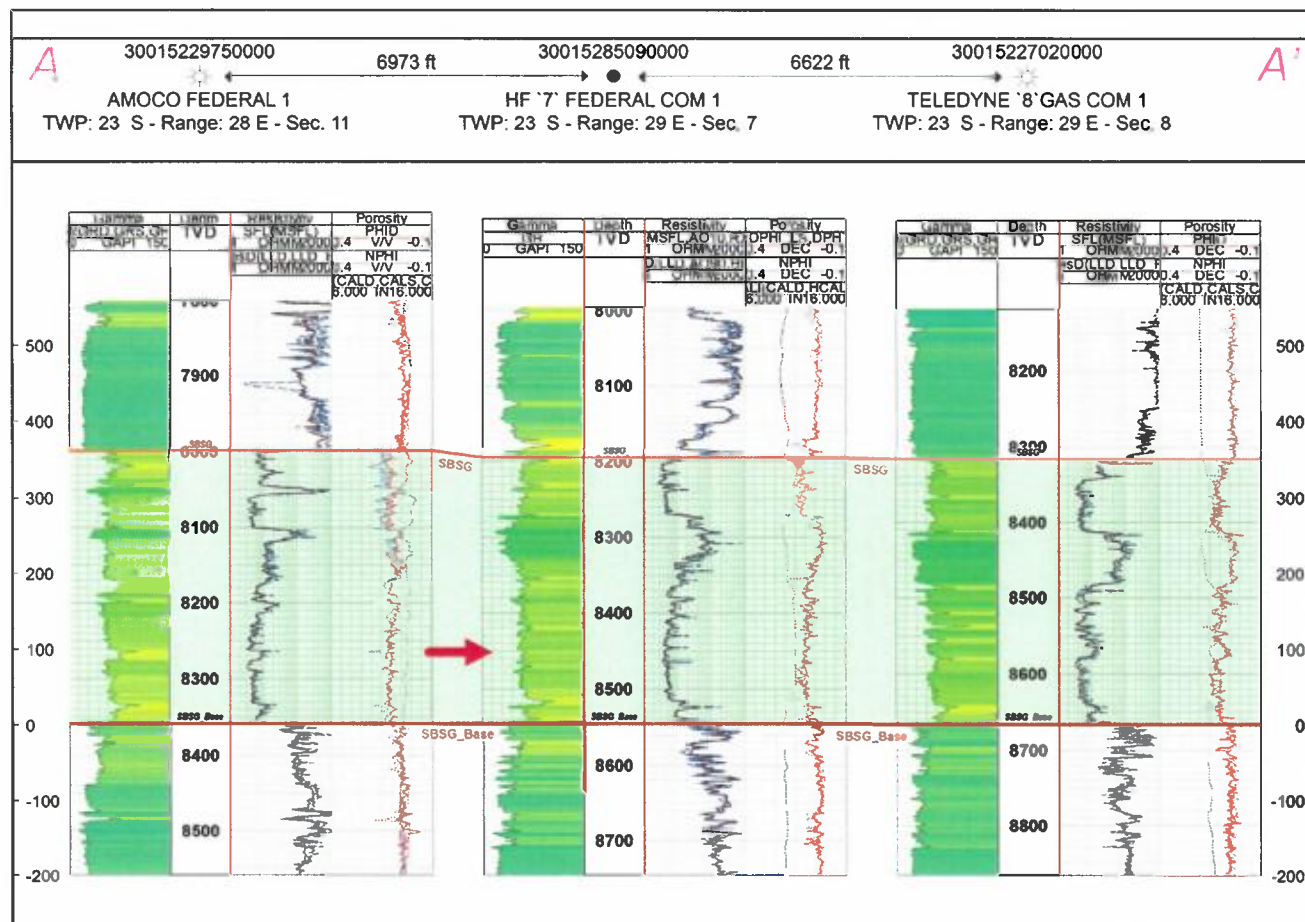
Valkyrie 12 Federal Com Unit

Reference Map for Cross Section – Bone Spring Wells



Valkyrie 12 Federal Com Unit

Stratigraphic Cross Section (Base Second Bone Spring Sand Datum)

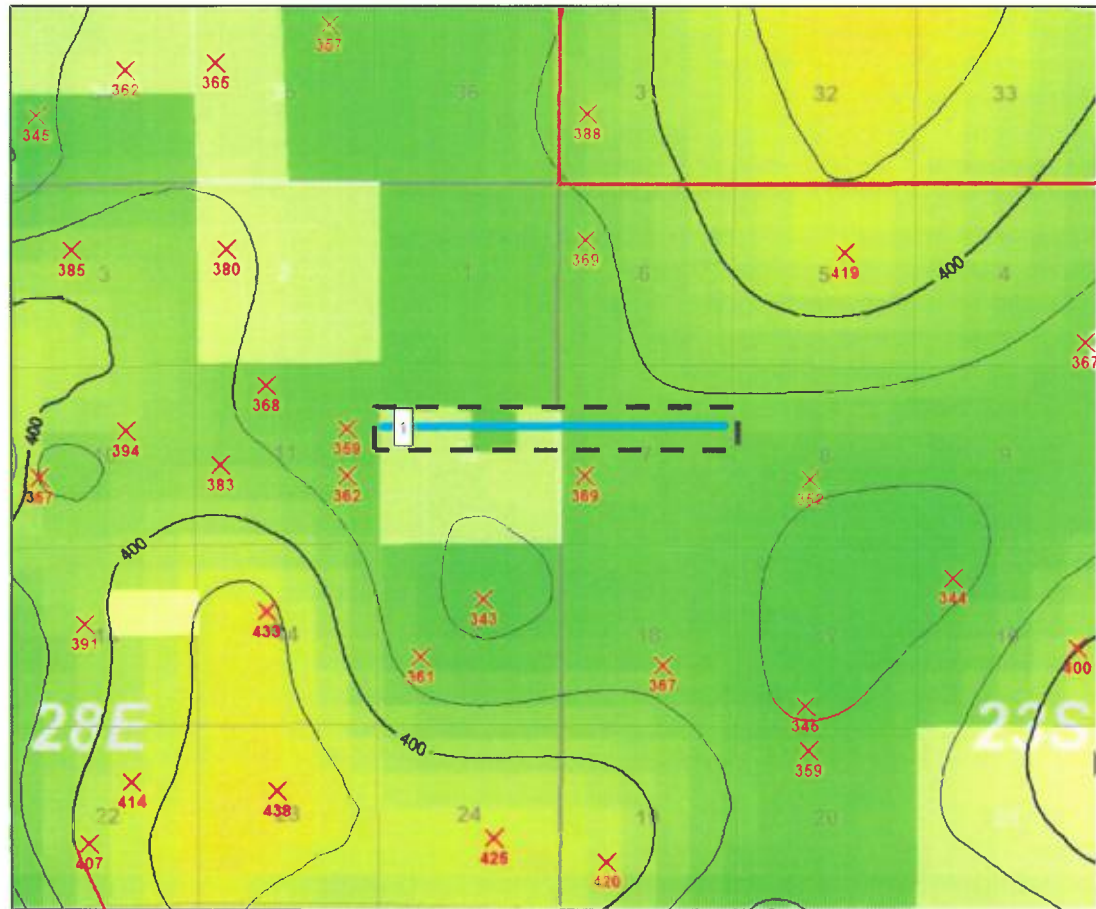


Gross interval thickness
relatively consistent
from west to east





Producing Zone – Second
Bone Spring Sand

Valkyrie 12 Federal Com Unit

Gross Interval Isochore – Second Bone Spring Sand



Map Legend

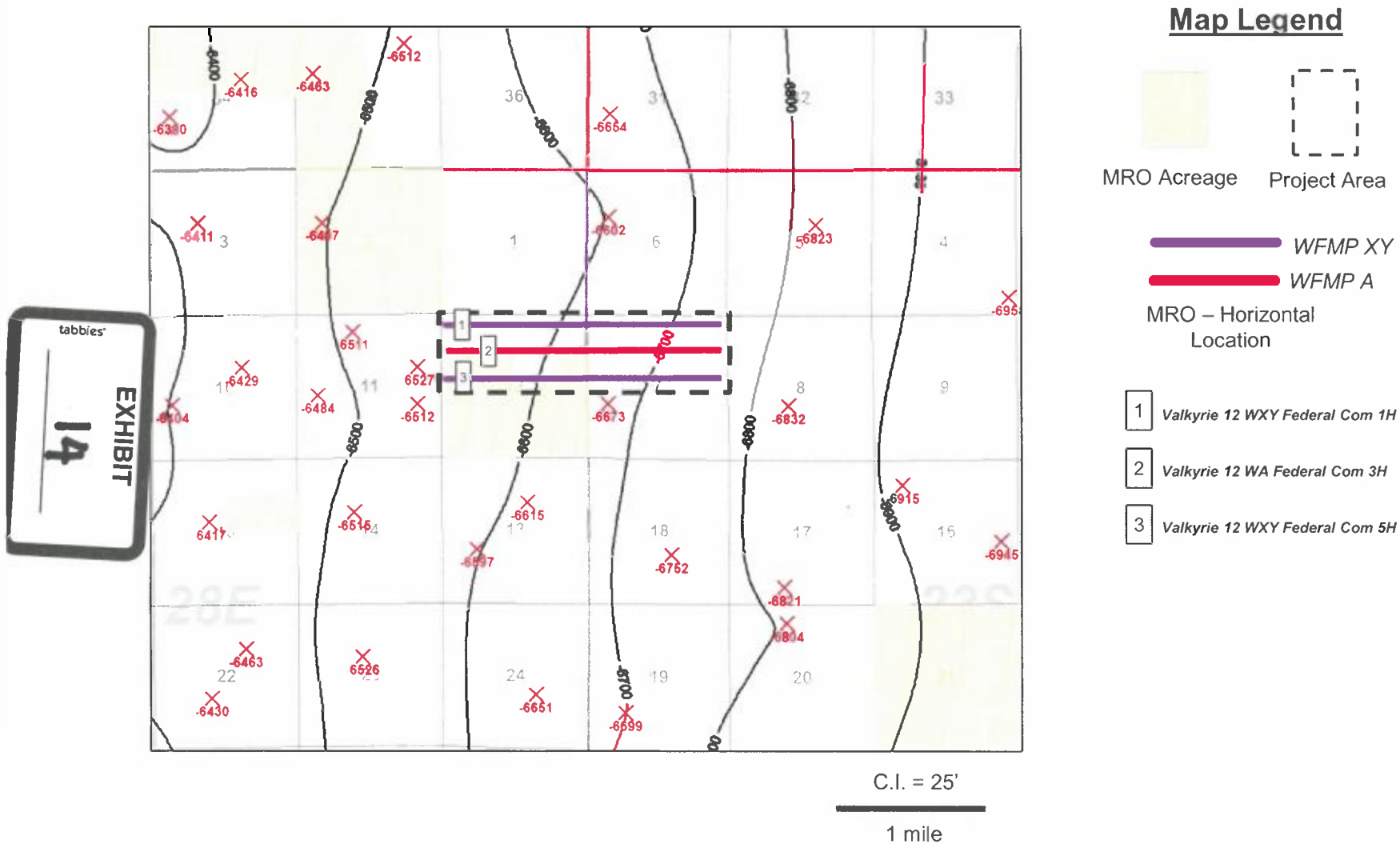
-  MRO Acreage
-  Project Area
-  SBSG
- MRO – Horizontal Location
-  1 Valkyrie 12 SB Federal Com 13H

C.I. = 25'

1 mile

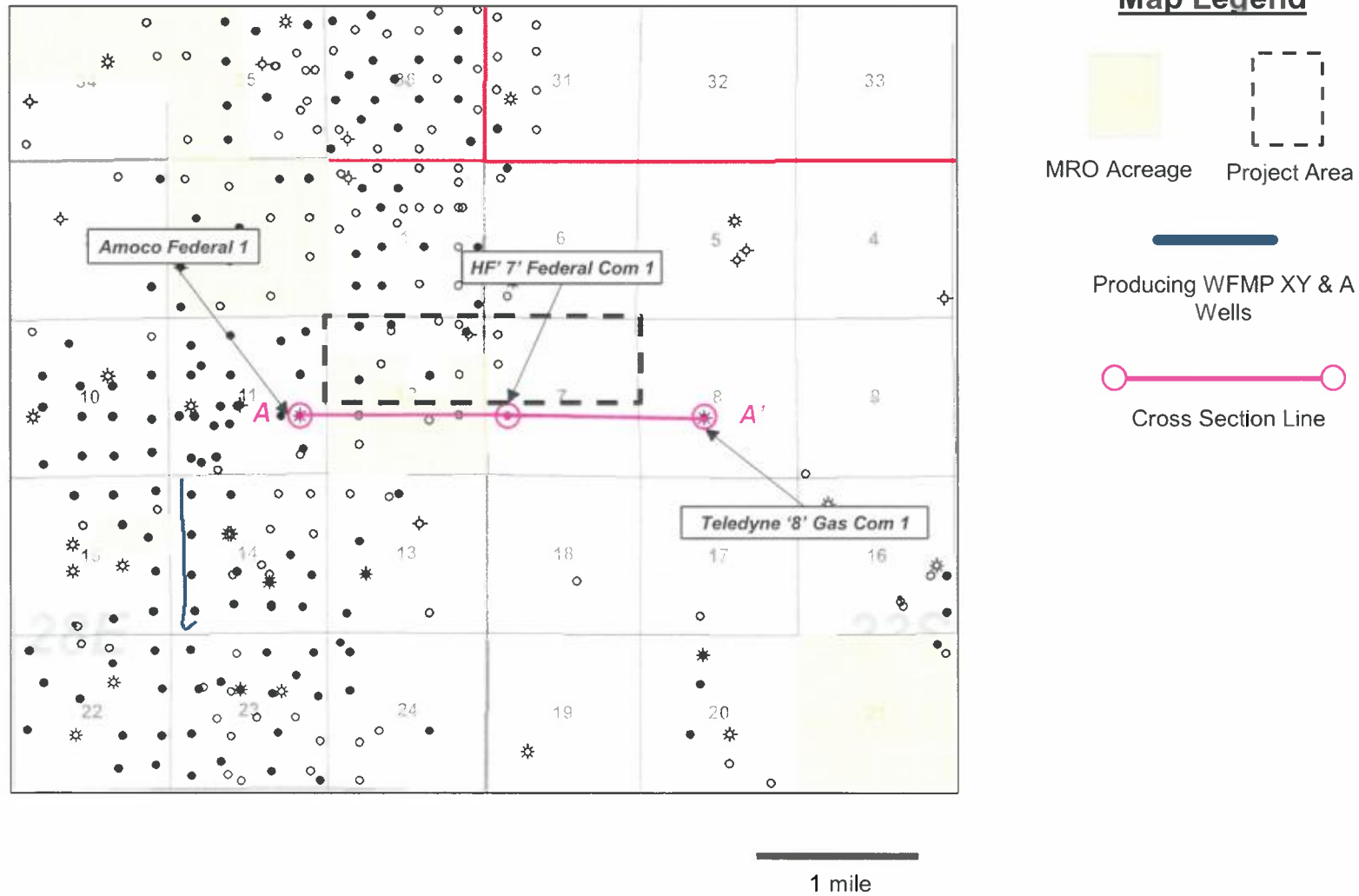
Valkyrie 12 Federal Com Unit

Structure Map for Upper Wolfcamp Wells – Top of Wolfcamp (TVDSS)



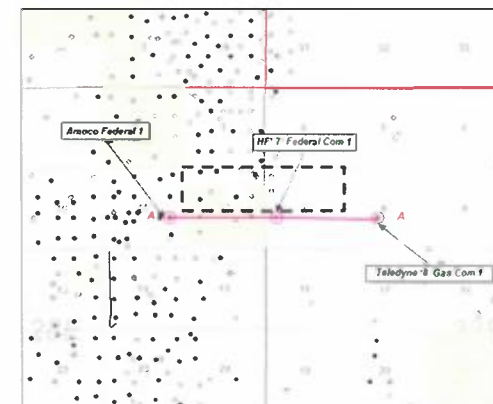
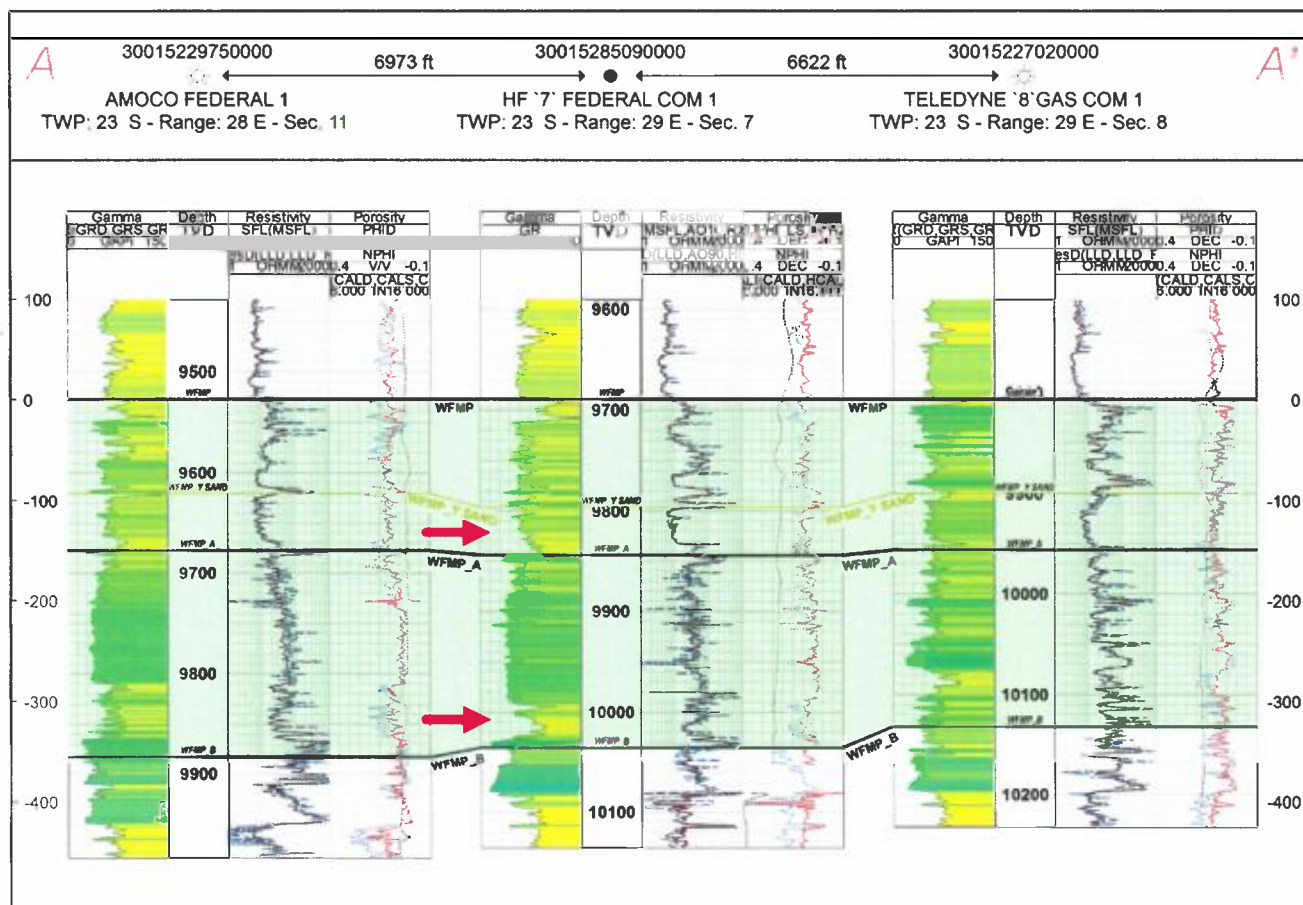
Valkyrie 12 Federal Com Unit

Reference Map for Cross Section – Upper Wolfcamp Wells



Valkyrie 12 Federal Com Unit

Stratigraphic Cross Section (Top Wolfcamp Datum)



Gross interval thickness decreases slightly from west to east

Producing Zone –
Wolfcamp XY & WFMP A

Valkyrie 12 Federal Com Unit

Gross Interval Isochore – Wolfcamp to Wolfcamp B



Map Legend

 MRO Acreage
 Project Area

 WFMP XY

 WFMP A

MRO – Horizontal
Location

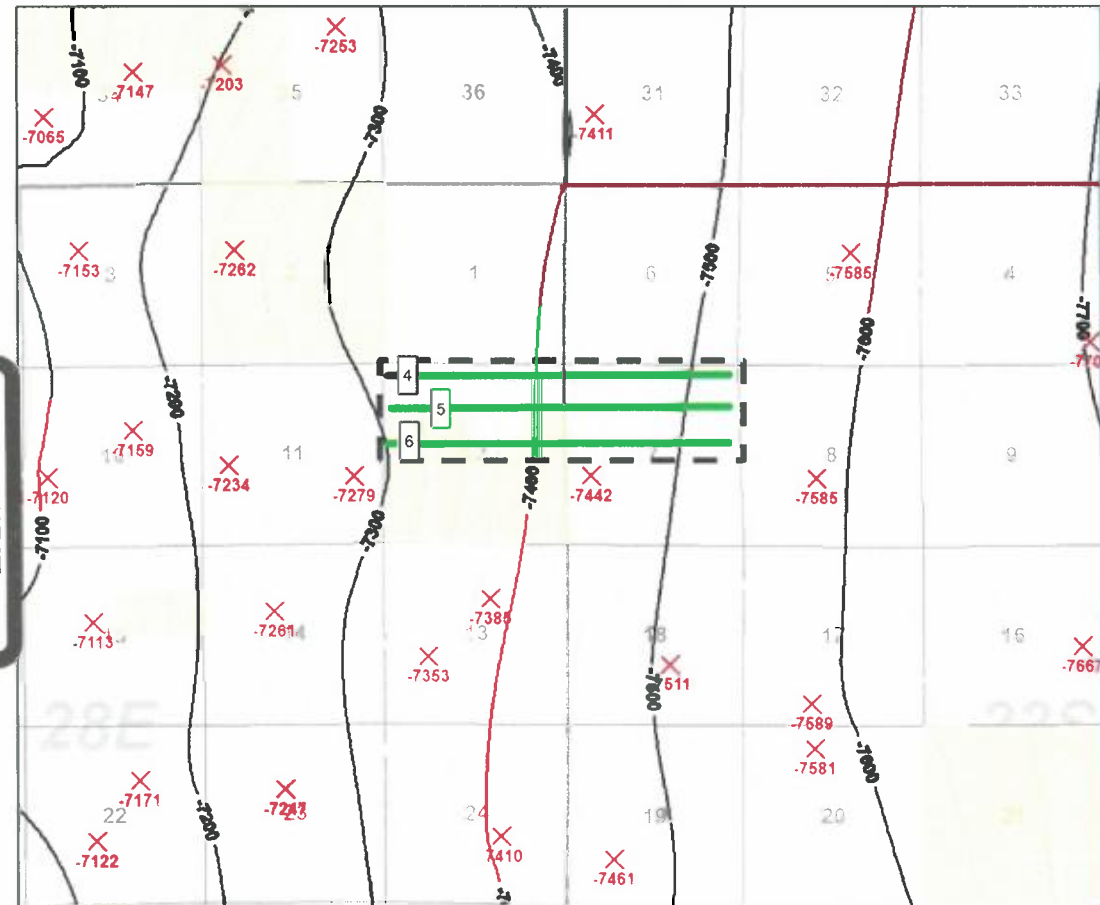
- 1 Valkyrie 12 WXY Federal Com 1H
- 2 Valkyrie 12 WA Federal Com 3H
- 3 Valkyrie 12 WXY Federal Com 5H

C.I. = 25'

1 mile

Valkyrie 12 Federal Com Unit

Structure Map for Lower Wolfcamp Wells – Top of Wolfcamp C2 (TVDSS)



Map Legend

MRO Acreage Project Area

WFMP D

MRO – Horizontal Location

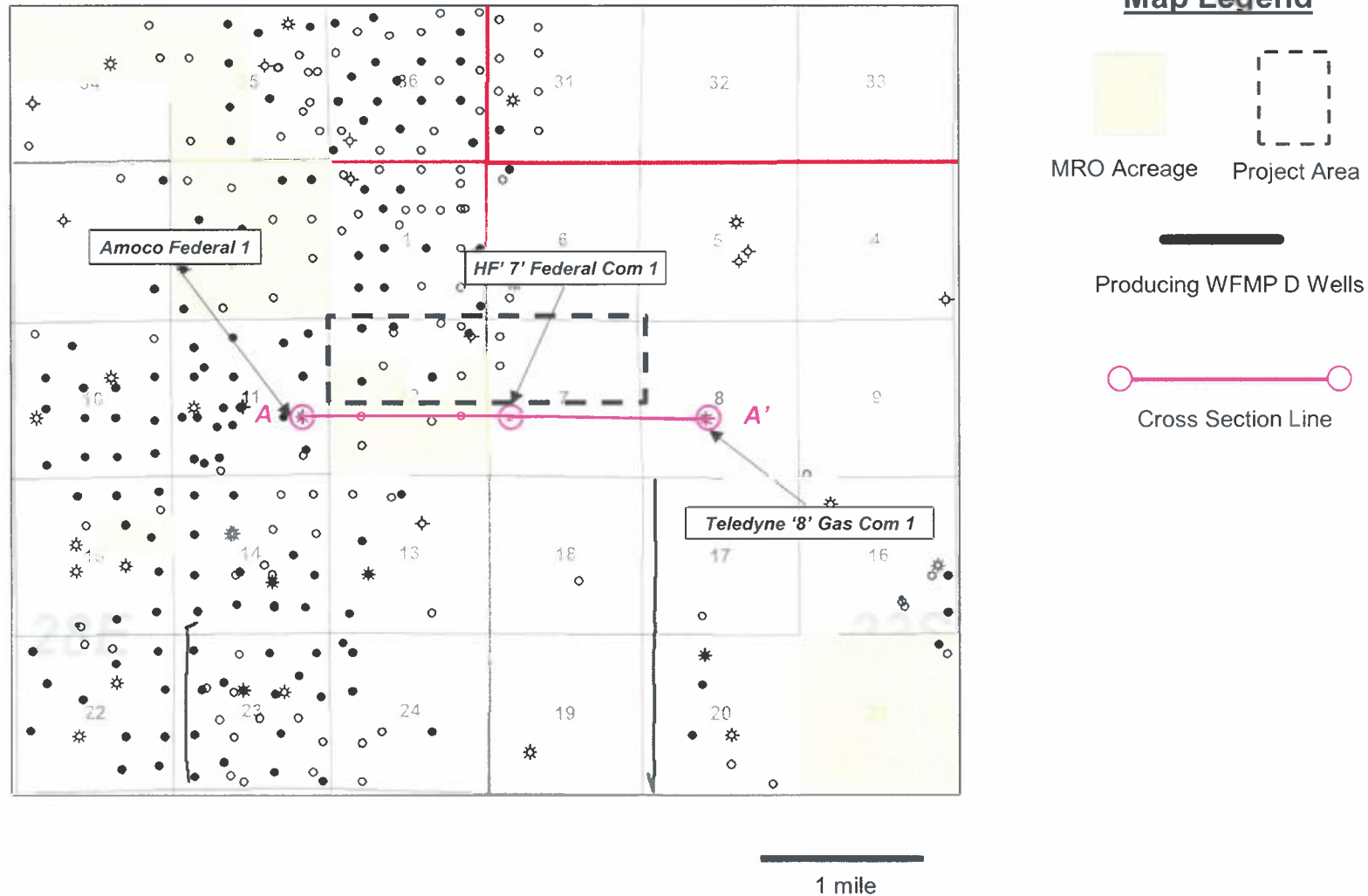
- 4 Valkyrie 12 WD Federal Com 2H
- 5 Valkyrie 12 WD Federal Com 4H
- 6 Valkyrie 12 WD Federal Com 6H

C.I. = 25'

1 mile

Valkyrie 12 Federal Com Unit

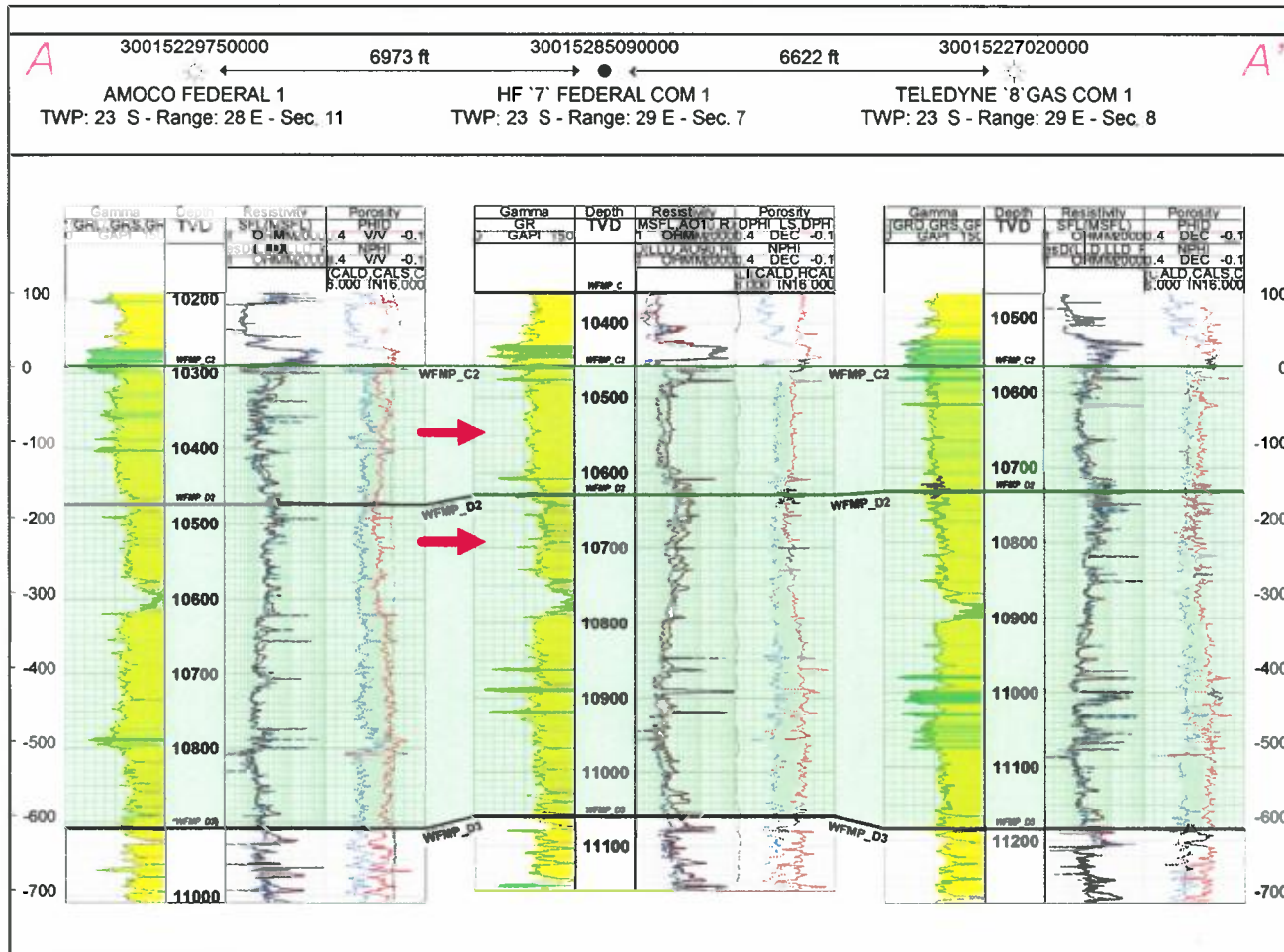
Reference Map for Cross Section – Lower Wolfcamp Wells



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Valkyrie 12 Federal Com Unit

Stratigraphic Cross Section (Top Wolfcamp C2 Datum)

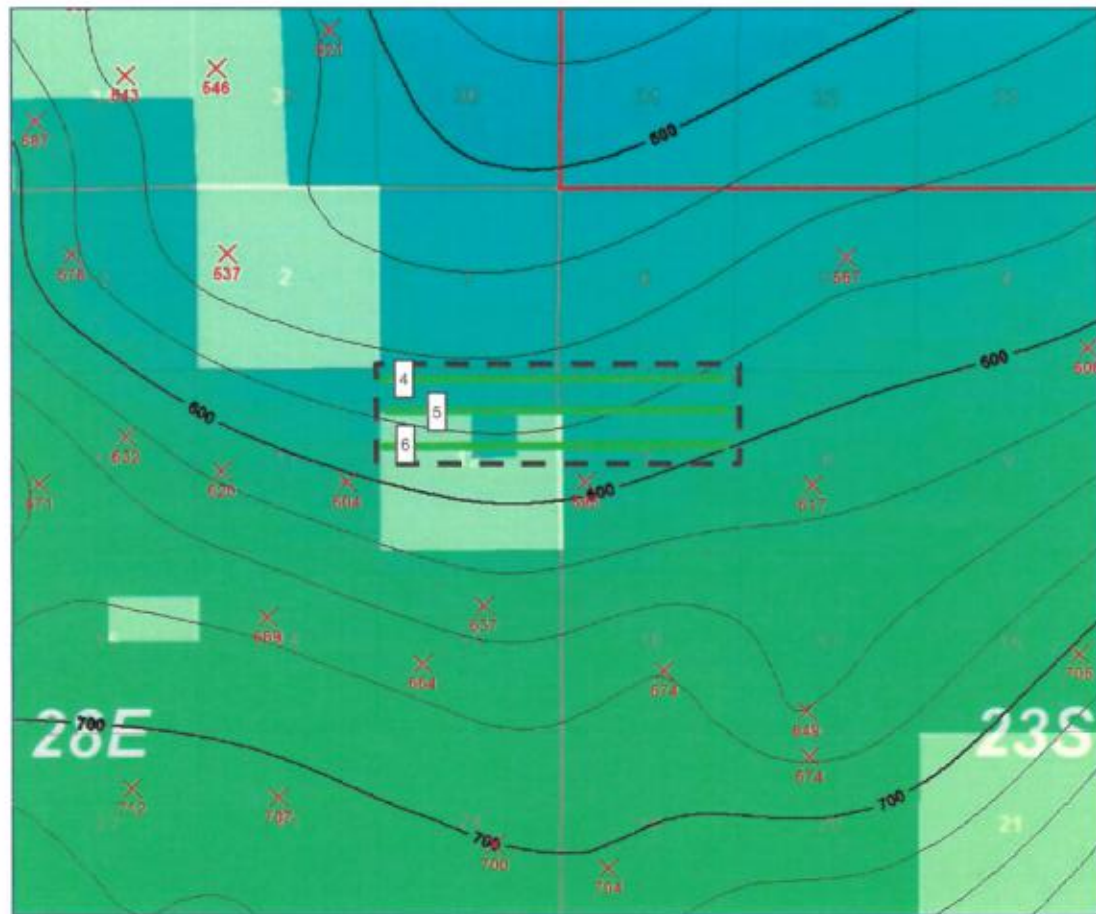


Gross interval thickness
relatively consistent
from west to east

Producing Zone –
Wolfcamp C2 & D2

Valkyrie 12 Federal Com Unit

Gross Interval Isochore – Wolfcamp C2 to Wolfcamp D3



Map Legend

MRO Acreage Project Area

WFMP D

MRO – Horizontal Location

- 4 Valkyrie 12 WD Federal Com 2H
- 5 Valkyrie 12 WD Federal Com 4H
- 6 Valkyrie 12 WD Federal Com 6H

C.I. = 25'

1 mile

4h

Tab C: Engineer Exhibits

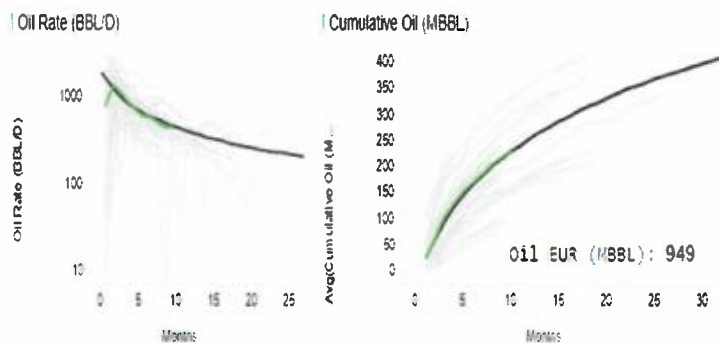
Exhibit 16: Effects of Lateral Length Slide

Effects of Lateral Length on Well Performance

Arps EUR Equation Upper Wolfcamp

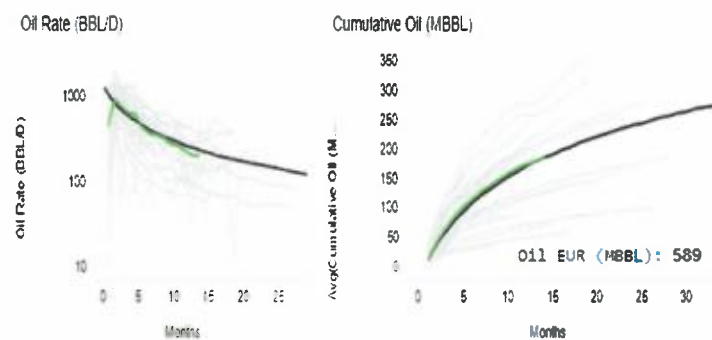
2 Mile Lateral Length

Well Count	Avg proppant/ft	Avg WPS	Avg LL, ft	AVG EUR (BO)/ Avg LL ft
36	1992	5	9694	97.9



1.5 Mile Lateral Length

Well Count	Avg proppant/ft	Avg WPS	Avg LL, ft	AVG EUR (BO)/ Avg LL ft
37	2203	5	6818	86.4



- Longer laterals EURs are higher than shorter laterals
- Avg EUR/ Avg LL in the 2 Mile laterals is 13% greater than 1.5 Mile Laterals

*Source Data: DrillingInfo and IHS